# SECTION TRANSAXLE & TRANSMISSION

TM

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### **PRECAUTIONS**

< PRECAUTION > [CVT: RE0F10E]

# **PRECAUTION**

### **PRECAUTIONS**

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

The Supplemental Restraint System such as "AIR BAG" and "SEAT BELT PRE-TENSIONER", used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. Information necessary to service the system safely is included in the SR and SB section of this Service Manual.

### **WARNING:**

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

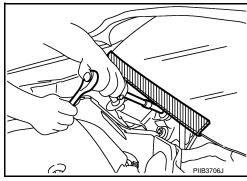
PRECAUTIONS WHEN USING POWER TOOLS (AIR OR ELECTRIC) AND HAMMERS

### **WARNING:**

- When working near the 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 or batteries, and wait at least three minutes before performing any service.

Precaution for Procedure without Cowl Top Cover

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



Precaution for TCM and Transaxle Assembly Replacement

INFOID:0000000012552195

INFOID:0000000012552194

### **CAUTION:**

- To replace TCM, refer to TM-85, "Description".
- To replace transaxle assembly, refer to <u>TM-86</u>, "<u>Description</u>".

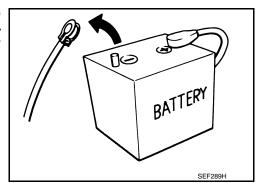
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< PRECAUTION > [CVT: RE0F10E]

### **General Precautions**

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



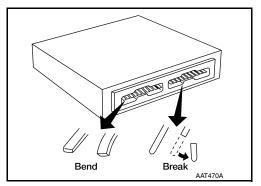
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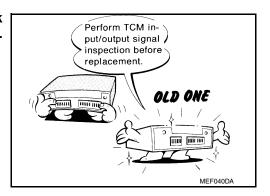
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 When connecting or disconnecting pin connectors into or from TCM, do not damage pin terminals (bend or break).
 Check that there are not any bends or breaks on TCM pin terminal, when connecting pin connectors.

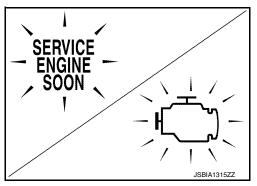


 Perform TCM input/output signal inspection and check whether TCM functions normally or not before replacing TCM. Refer to <u>TM-54</u>, "<u>Reference Value</u>".



 Perform "DTC (Diagnostic Trouble Code) CONFIRMATION PROCEDURE".

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



- Always use the specified brand of CVT fluid. Refer to MA-17, "FOR USA AND CANADA: Fluids and Lubricants" (For United States and Canada), MA-19, "FOR MEXICO: Fluids and Lubricants" (For Mexico).
- 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.

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### **PRECAUTIONS**

< PRECAUTION > [CVT: RE0F10E]

# On Board Diagnosis (OBD) System of CVT and Engine

INFOID:0000000012552197

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

CAUTION:

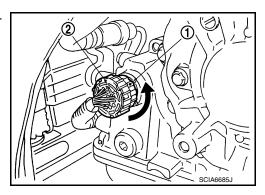
- Be sure to turn the ignition switch OFF and disconnect the battery cable from the negative terminal before any repair or inspection work. The open/short circuit of related switches, sensors, solenoid valves, etc. will cause the MIL to light up.
- Be sure to connect and lock the connectors securely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

# Removal and Installation Procedure for CVT Unit Connector

INFOID:0000000012552198

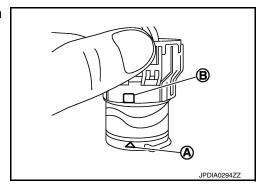
### **REMOVAL**

Rotate bayonet ring ① counterclockwise. Pull out CVT unit harness connector ② upward and remove it.

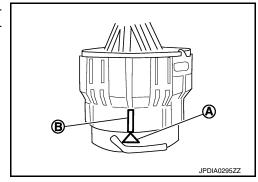


### **INSTALLATION**

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



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

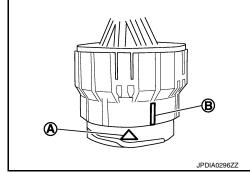


### **CAUTION:**

### **PRECAUTIONS**

< PRECAUTION > [CVT: RE0F10E]

Never mistake the slit of bayonet ring for other dent portion.



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### **PREPARATION**

< PREPARATION > [CVT: RE0F10E]

# **PREPARATION**

# **PREPARATION**

# **Special Service Tools**

INFOID:0000000012552199

The actual shape of the tools may differ from t	hose illustrated here.	
Tool number (TechMate No.) Tool name		Description
1. KV311039S0 ( — ) Charging pipe set 2. KV31103920* ( — ) O-ring	JSDIA1844ZZ	CVT fluid changing and adjustment
KV38107900 ( — ) Differential side oil seal protector	PDIA1183J	Installing drive shaft a: 32 mm (1.26 in) dia.
KV31103700 ( — ) Drift	c ba	Differential side oil seal (Transaxle case side) a: 53 mm (2.09 in) dia. b: 57 mm (2.24 in) dia. c: 70 mm (2.76 in) dia. d: 8 mm (0.31 in) dia.

<sup>\*:</sup> The O-ring as a unit part is set as a SST.

# **Commercial Service Tools**

INFOID:0000000012552200

Tool name		Description
Power tool		Loosening nuts, screws and bolts
	PIIB1407E	

# **PREPARATION**

< PREPARATION >	[CVT: RE0F10E]
-----------------	----------------

Tool name		Description
Drift	c ba	Differential side oil seal (Converter housing side) a: 47 mm (1.85 in) dia. b: 51 mm (2.01 in) dia. c: 70 mm (2.76 in) dia. d: 8 mm (0.31 in) dia.
Drift	a b NT115	Installing converter housing oil seal a: 65 mm (2.56 in) dia. b: 60 mm (2.36 in) dia.

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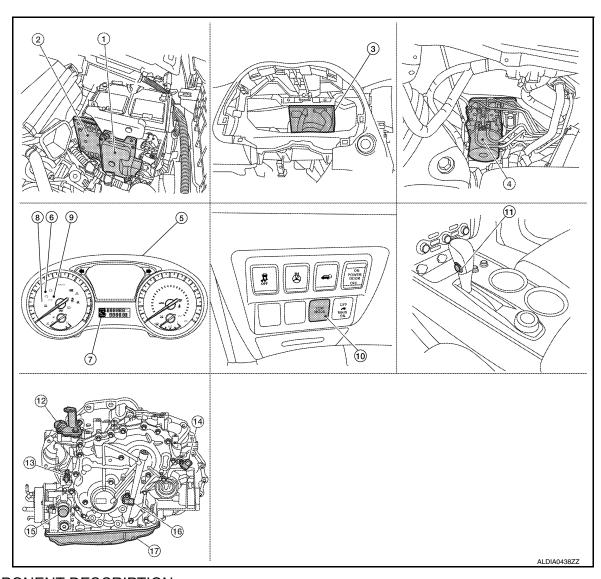
# SYSTEM DESCRIPTION

COMPONENT PARTS CVT CONTROL SYSTEM

CVT CONTROL SYSTEM: Component Parts Location

INFOID:0000000012552201

[CVT: RE0F10E]



COMPONENT DESCRIPTION

# **COMPONENT PARTS**

[CVT: RE0F10E]

### < SYSTEM DESCRIPTION >

NO.	Component	Function
1	TCM	TM-18, "CVT CONTROL SYSTEM: TCM"
2	ECM	Mainly transmits the following signal to TCM via CAN communication.  • Engine and CVT integrated control signal  NOTE:  General term for the communication (torque-down permission, torque-down request, etc.) exchanged between the ECM and TCM.  • Engine speed signal  • Engine coolant temperature signal  • Accelerator pedal position signal  • Closed throttle position signal  Mainly receives the following signals from TCM via CAN communication.  • Malfunction indicator lamp (MIL) signal  Refer to EC-20, "ENGINE CONTROL SYSTEM: Component Parts Location" for detailed installation location.
3	всм	Mainly transmits the following signal to TCM via CAN communication.  • Stop lamp switch signal Refer to BCS-4, "BODY CONTROL SYSTEM: Component Parts Location" for detailed installation location.
4	ABS actuator and electric unit (control unit)	Mainly transmits the following signal to TCM via CAN communication.  • Vehicle speed signal (ABS)  • ABS operation signal  • TCS operation signal  • VDC operation signal  • ABS malfunction signal  Refer to BRC-11, "Component Parts Location" (TYPE 1) or BRC-169,  "Component Parts Location" (TYPE 2) for detailed installation location.
(5)	Combination meter	Mainly transmits the following signal to TCM via CAN communication.  Overdrive control switch signal  Tow mode switch signal Mainly receives the following signals from TCM via CAN communication.  Shift position indicator signal  OD OFF indicator lamp signal  Tow mode indicator lamp signal  Refer to MWI-6, "METER SYSTEM: Component Parts Location" for detailed installation location.
6	Malfunction indicator lamp (MIL)	TM-24, "CVT CONTROL SYSTEM : Malfunction Indicator Lamp (MIL)"
7	Shift position indicator	TM-24, "CVT CONTROL SYSTEM : Shift Position Indicator"
8	OD OFF indicator lamp	TM-23, "CVT CONTROL SYSTEM : OD OFF Indicator Lamp"
9	Tow mode indicator lamp	TM-24, "CVT CONTROL SYSTEM : TOW Mode Indicator Lamp"
10	Tow mode switch	TM-23, "CVT CONTROL SYSTEM : Tow Mode Switch"
11)	Overdrive control switch	TM-23, "CVT CONTROL SYSTEM : Overdrive Control Switch"
12	Transmission range switch	TM-18, "CVT CONTROL SYSTEM : Transmission Range Switch"
13	Input speed sensor	TM-18, "CVT CONTROL SYSTEM : Input Speed Sensor"
14)	Output speed sensor	TM-20, "CVT CONTROL SYSTEM : Output Speed Sensor"
15	CVT unit connector	_
16	Primary speed sensor	TM-19, "CVT CONTROL SYSTEM : Primary Speed Sensor"

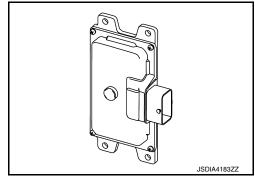
NO. Component **Function** TM-20, "CVT CONTROL SYSTEM: CVT Fluid Temperature Sensor" CVT fluid temperature sensor\* Primary pressure sensor\* TM-21, "CVT CONTROL SYSTEM: Primary Pressure Sensor" TM-21, "CVT CONTROL SYSTEM: Secondary Pressure Sensor" Secondary pressure sensor\* Line pressure solenoid valve\* TM-21, "CVT CONTROL SYSTEM: Line Pressure Solenoid Valve" Control (17)Primary pressure solenoid valve\* TM-22, "CVT CONTROL SYSTEM: Primary Pressure Solenoid Valve" valve TM-22, "CVT CONTROL SYSTEM: Secondary Pressure Solenoid Valve" Secondary pressure solenoid valve\* Torque converter clutch solenoid TM-22, "CVT CONTROL SYSTEM: Torque Converter Clutch Solenoid valve\* Valve" Select solenoid valve\* TM-23, "CVT CONTROL SYSTEM: Select Solenoid Valve"

### CVT CONTROL SYSTEM: TCM

INFOID:0000000012552202

[CVT: RE0F10E]

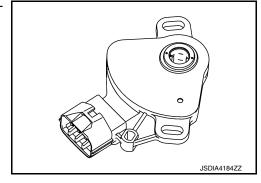
- The TCM consists of a microcomputer and connectors for signal input and output and for power supply.
- The vehicle driving status is judged based on the signals from the sensors, switches, and other control units, and the optimal transaxle control is performed.
- For TCM control items, refer to <u>TM-35</u>, "CVT CONTROL SYSTEM : System Description".



# CVT CONTROL SYSTEM: Transmission Range Switch

INFOID:0000000012552203

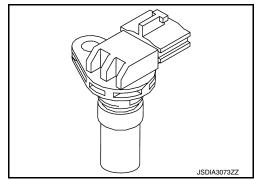
- The transmission range switch is installed to upper part of transaxle case.
- The transmission range switch detects the selector lever position.



INFOID:0000000012552204

# CVT CONTROL SYSTEM: Input Speed Sensor

- The input speed sensor is installed to the front side of transaxle case.
- The input speed sensor detects input shaft speed.

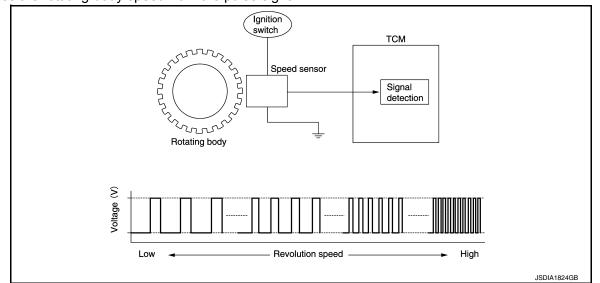


<sup>\*:</sup> These components are included in control valve assembly.

### **COMPONENT PARTS**

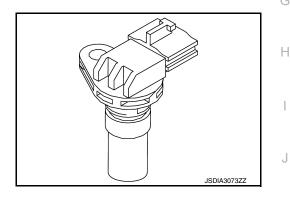
### < SYSTEM DESCRIPTION >

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



# CVT CONTROL SYSTEM: Primary Speed Sensor

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



[CVT: RE0F10E]

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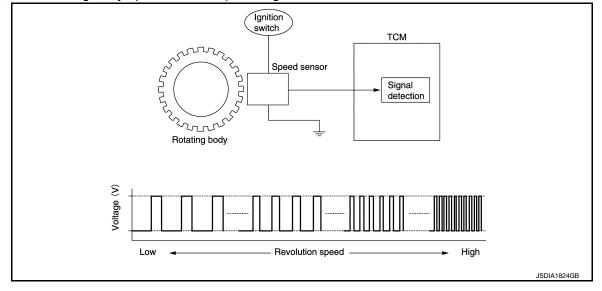
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• The primary speed sensor generates an ON-OFF pulse signal according to the rotating body speed. TCM judges the rotating body speed from the pulse signal.



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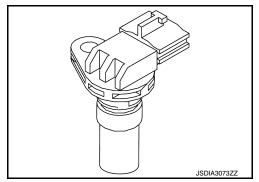
# CVT CONTROL SYSTEM : Output Speed Sensor

INFOID:0000000012552206

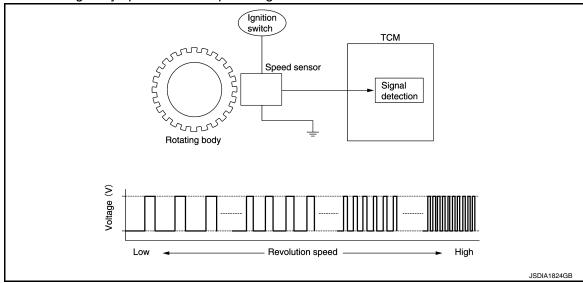
[CVT: RE0F10E]

- The output speed sensor is installed to the back side of transaxle case.
- The output speed sensor detects final gear speed.

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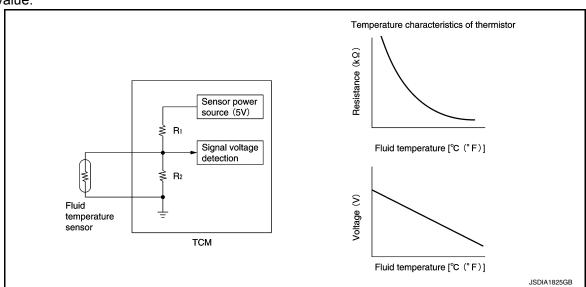
The output speed sensor generates an ON-OFF pulse signal according to the rotating body speed. TCM judges the rotating body speed from the pulse signal.



# CVT CONTROL SYSTEM: CVT Fluid Temperature Sensor

INFOID:0000000012552207

- The CVT fluid temperature sensor is installed to control valve.
- The CVT fluid temperature sensor detects CVT fluid temperature in oil pan.
- The fluid temperature sensor uses a thermistor, and changes the signal voltage by converting changes in the CVT fluid temperature to a resistance value. TCM evaluates the CVT fluid temperature from the signal voltage value.



# **COMPONENT PARTS**

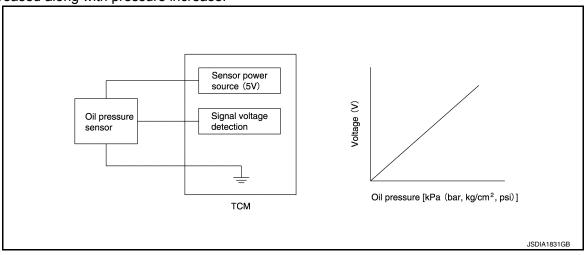
< SYSTEM DESCRIPTION >

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

INFOID:0000000012552208

[CVT: RE0F10E]

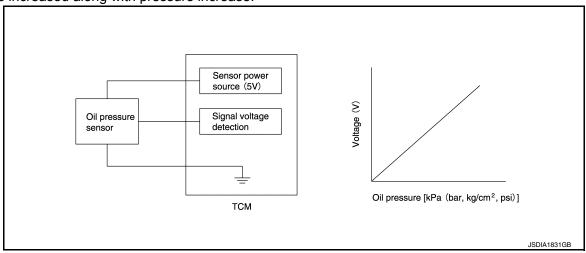
- · The primary pressure sensor is installed to control valve.
- The primary pressure sensor detects the pressure applied to the primary pulley.
- When pressure is applied to the ceramic device in the primary pressure sensor, the ceramic device is deformed, resulting in voltage change. TCM evaluates the primary pressure from its voltage change. Voltage is increased along with pressure increase.



# CVT CONTROL SYSTEM: Secondary Pressure Sensor

INFOID:0000000012552209

- The secondary pressure sensor is installed to control valve.
- The secondary pressure sensor detects the pressure applied to the secondary pulley.
- When pressure is applied to the metal diaphragm in the secondary pressure sensor, the metal diaphragm is deformed, resulting in voltage change. TCM evaluates the secondary pressure from its voltage change. Voltage is increased along with pressure increase.



### CVT CONTROL SYSTEM: Line Pressure Solenoid Valve

INFOID:0000000012552210

- The line pressure solenoid valve is installed to control valve.
- The line pressure solenoid valve controls the pressure regulator valve. For information about the pressure regulator valve, refer to TM-30, "TRANSAXLE: Component Description".

Revision: November 2015 TM-21 2016 Pathfinder

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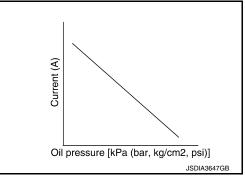
### **COMPONENT PARTS**

### < SYSTEM DESCRIPTION >

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

### NOTE:

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



# CVT CONTROL SYSTEM: Primary Pressure Solenoid Valve

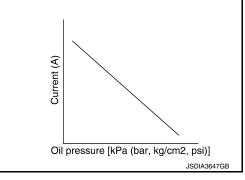
INFOID:0000000012552211

[CVT: RE0F10E]

- The primary pressure solenoid valve is installed to control valve.
- The primary pressure solenoid valve controls the primary reducing valve. For information about the primary reducing valve, refer to <u>TM-30</u>, <u>"TRANSAXLE"</u>: <u>Component Description"</u>.
- The primary pressure solenoid valve uses the linear solenoid valve [N/H (normal high) type].

### NOTE:

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



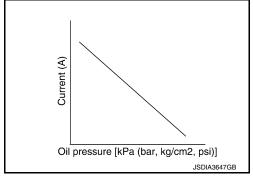
# CVT CONTROL SYSTEM : Secondary Pressure Solenoid Valve

INFOID:0000000012552212

- The secondary pressure solenoid valve is installed to control valve.
- The secondary pressure solenoid valve controls the secondary reducing valve. For information about the secondary reducing valve, refer to <a href="mailto:TM-30">TM-30</a>, "TRANSAXLE: Component Description".
- The secondary pressure solenoid valve uses the linear solenoid valve [N/H (normal high) type].

### NOTE:

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



# CVT CONTROL SYSTEM: Torque Converter Clutch Solenoid Valve

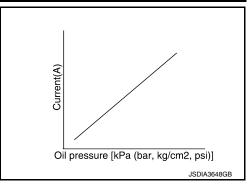
INFOID:0000000012552213

- The torque converter clutch solenoid valve is installed to control valve.
- The torque converter clutch solenoid valve controls the torque converter clutch control valve. For information about the torque converter clutch control valve, refer to <a href="mailto:TM-30">TM-30</a>, "TRANSAXLE: Component Description".

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

### NOTE:

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



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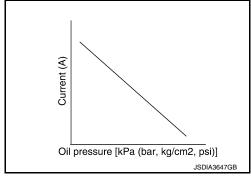
[CVT: RE0F10E]

### CVT CONTROL SYSTEM: Select Solenoid Valve

- The select solenoid valve is installed to control valve.
- The select solenoid valve adjusts the forward clutch engaging pressure and the reverse brake engaging
- The select solenoid valve uses the linear solenoid valve [N/H (normal high) type].

### NOTE:

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



### CVT CONTROL SYSTEM: Overdrive Control Switch

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

### CVT CONTROL SYSTEM: Tow Mode Switch

- The Tow mode switch is installed to instrument lower panel (LH).
- When the Tow mode indicator lamp on the combination meter is OFF and the Tow mode switch is pressed, the Tow mode is active and the Tow mode indicator lamp is ON.
- When the Tow mode indicator lamp on the combination meter is ON and the Tow mode switch is pressed. the Tow mode is cancelled and the Tow mode indicator lamp is OFF.

# CVT CONTROL SYSTEM: OD OFF Indicator Lamp

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

Condition (status)	OD OFF indicator lamp
Ignition switch OFF.	OFF
Ignition switch ON.	ON (Approx. 2 sec.)
Overdrive control switch is pressed when the selector lever is in the "D" position and the OD OFF indicator lamp is OFF	ON



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**TM-23** Revision: November 2015 2016 Pathfinder [CVT: RE0F10E]

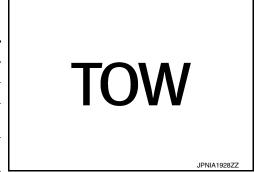
Condition (status)	OD OFF indicator lamp	
Overdrive control switch is pressed when the selector lever is in the "D" position and the OD OFF indicator lamp is ON.	OFF	
Selector lever is shifted to other position when the selector lever is at "D" position and the OD OFF indicator lamp is ON.	OFF	

# CVT CONTROL SYSTEM: TOW Mode Indicator Lamp

INFOID:0000000012552218

- TOW mode indicator lamp is positioned on the combination meter.
- TOW mode indicator lamp is ON when set to the tow mode.

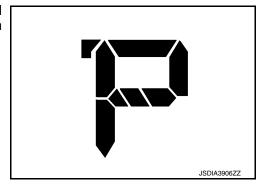
Condition (status)	Tow mode indicator lamp		
Ignition switch OFF.	OFF		
Ignition switch ON.	OFF		
Tow mode switch is pressed when the TOW mode indicator lamp is OFF	ON		
Tow mode switch is pressed when the TOW mode indicator lamp is ON.	OFF		



### CVT CONTROL SYSTEM: Shift Position Indicator

INFOID:0000000012552219

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



# CVT CONTROL SYSTEM: Malfunction Indicator Lamp (MIL)

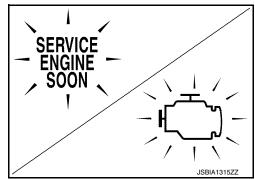
INFOID:0000000012552220

The malfunction indicator lamp (MIL) is located on the combination meter.

The MIL will illuminate when the ignition switch is turned ON without the engine running. This is a bulb check.

When the engine is started, the MIL should turn off. If the MIL remains illuminated, the on board diagnostic system has detected an engine system malfunction.

For details, refer to EC-32, "Malfunction Indicator Lamp (MIL)".



### SHIFT LOCK SYSTEM

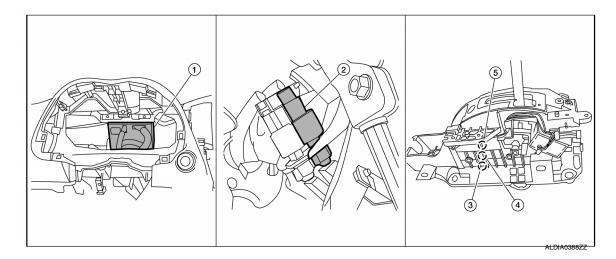
### **COMPONENT PARTS**

< SYSTEM DESCRIPTION >

# SHIFT LOCK SYSTEM : Component Parts Location

INFOID:0000000012552221

[CVT: RE0F10E]



- BCM (view with combination meter removed)
- 4. Shift lock solenoid (view with center 5. console removed)
- Stop lamp switch
  - Park position switch (view with center console removed)
- Shift lock release button (view with center console removed)

# COMPONENT DESCRIPTION

Revision: November 2015

Component	Function
Stop lamp switch	<ul> <li>The stop lamp switch turns ON when the brake pedal is depressed.</li> <li>When the stop lamp switch turns ON, the shift lock solenoid is energized.</li> </ul>
Shift lock release button	Forcibly releases the shift lock when pressed.
Shift lock solenoid	It operates according to the signal from the stop lamp switch and moves the lock lever.
Park position switch	It detects that the selector lever is in "P" position.

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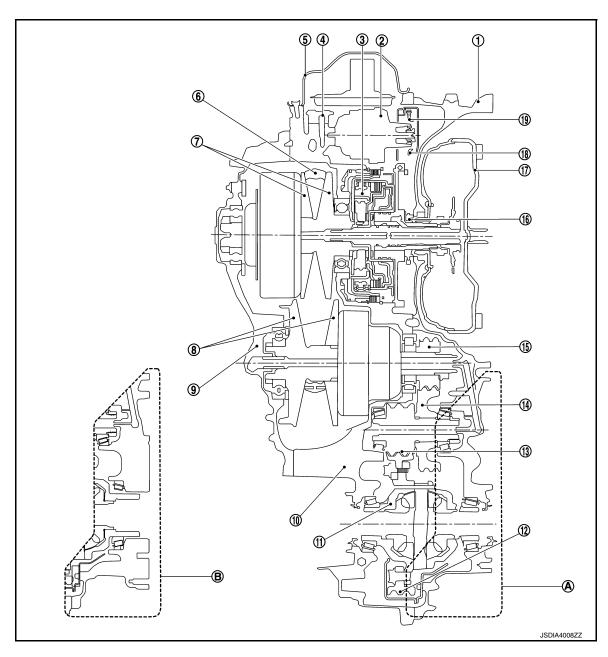
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### [CVT: RE0F10E]

# STRUCTURE AND OPERATION TRANSAXLE

TRANSAXLE: Cross-Sectional View

INFOID:0000000012552222



- Converter housing
- Control valve
- Planetary pulley
- 10 Transaxle case
- Reduction gear
- Drive sprocket
- (19) Oil pump chain
- (A) 2WD models

- Oil pump
- Oil pan
- Secondary pulley
- ① Differential case
- 14 Idler gear
- 17) Torque converter
- (B) 4WD models

- Planetary gear
- 6 Chain belt
- Side cover
- Final gear
- (15) Output gear
- Driven sprocket

### TRANSAXLE: Transaxle Mechanism

INFOID:0000000012552223

[CVT: RE0F10E]

### TORQUE CONVERTER (WITH LOCK-UP FUNCTION)

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

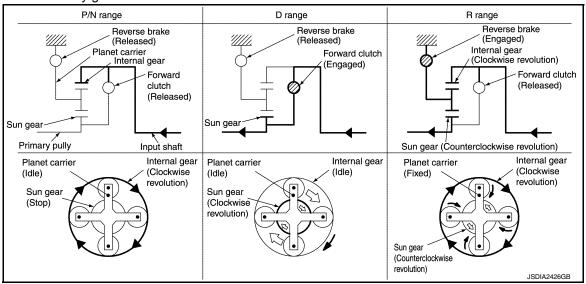
### OIL PUMP

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

### PLANETARY GEAR

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

Operation of Planetary gear

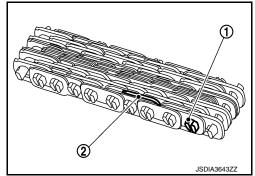


### **BELT & PULLEY**

It is composed of a pair of pulleys (the groove width is changed freely in the axial direction) and the chain belt .The groove width changes according to wrapping radius of chain 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.

### Chain belt

The chain belt consists of approximately 150 locker pins ① and 1,000 link plates ②. Chains are rotated by locker pins sandwiched by pulleys. This produces tension difference in chains among pulleys. Accordingly, the power is transferred by the tension.



### Pulley

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

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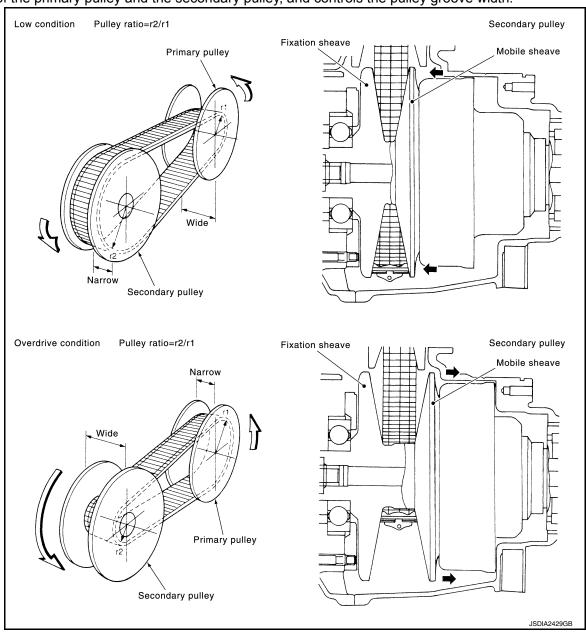
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[CVT: RE0F10E]

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

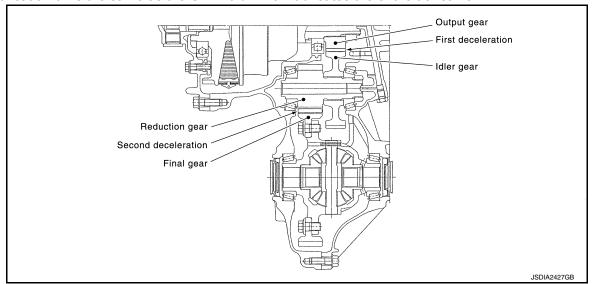


### FINAL DRIVE AND DIFFERENTIAL

The deceleration gears are composed of 2 stages: primary deceleration (output gear, idler gear pair) and secondary deceleration (reduction gear, final gear pair). All of these gears are helical gears.

### < SYSTEM DESCRIPTION >

The lubrication oil is the same as the CVT fluid which lubricates the entire transaxle.



TRANSAXLE : Operation Status

INFOID:0000000012552224

×: Engaged or applied.

[CVT: RE0F10E]

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Selector lever position	Parking mech- anism	Forward clutch	Reverse brake	Primary pulley	Secondary pulley	Chain belt	Final drive
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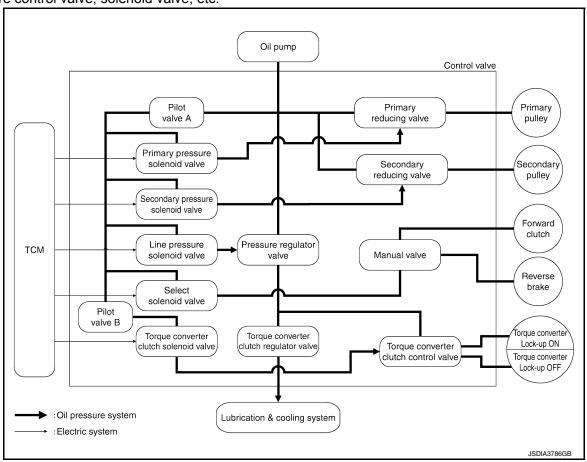
< SYSTEM DESCRIPTION >

# TRANSAXLE : Oil Pressure System

INFOID:0000000012552225

[CVT: RE0F10E]

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



# TRANSAXLE: Component Description

INFOID:0000000012552226

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

### < SYSTEM DESCRIPTION >

Part name	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 lockup ON/OFF.				
Primary pulley	It is composed of a pair of pulleys (the groove width is changed freely in the axial direction) and the chain				
Secondary pulley	belt. The groove width changes according to wrapping radius of steel belt and pulley from low status to overdrive status continuously with non-step. It is controlled with the oil pressures of primary pulley and				
Chain belt	secondary pulley.				
Manual shaft					
Parking rod	When the manual shaft is in the P position, the parking rod that is linked to the manual shaft rotates the				
Parking pawl	parking pole. When the parking pole rotates, it engages with the parking gear, fixing the parking gear. As a result, the secondary pulley that is integrated with the parking gear is fixed.				
Parking gear	, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				
Output gear					
Idler gear	The deceleration gears are composed of 2 stages: primary deceleration (output gear, idler gear pair) and				
Reduction gear	secondary deceleration (reduction gear, final gear pair). All of these gears are helical gears.				
Differential					
Torque converter regulator valve	Adjusts the feed pressure to the torque converter to the optimum pressure corresponding to the driving condition.				
Pressure regulator valve	Adjusts the discharge pressure from the oil pump to the optimum pressure (line pressure) corresponding to the driving condition.				
Torque converter clutch control valve	Adjusts the torque converter engage and disengage pressures.				
Manual valve	Distributes the clutch operation pressure to each circuit according to the selector lever position.				
Secondary reducing valve	Reduces line pressure and adjusts secondary pressure.				
Primary reducing valve	Reduces line pressure and adjusts primary pressure.				
Pilot valve A	Reduces line pressure and adjusts pilot pressure to the solenoid valves listed below.  Primary pressure solenoid valve Secondary pressure solenoid valve Select solenoid valve Line pressure solenoid valve				
Pilot valve B	Reduces pilot pressure and adjusts pilot pressure to the torque converter clutch solenoid valve.				

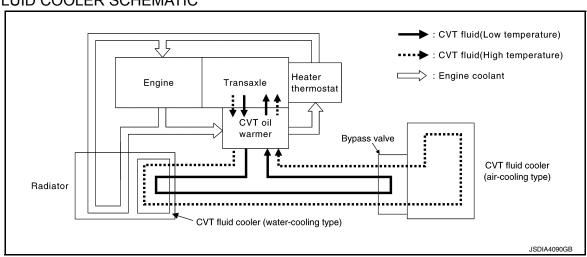
# FLUID COOLER & FLUID WARMER SYSTEM

# FLUID COOLER & FLUID WARMER SYSTEM: System Description

INFOID:0000000012552227

[CVT: RE0F10E]

### CVT FLUID COOLER SCHEMATIC



### COMPONENT DESCRIPTION

**CVT Oil Warmer** 

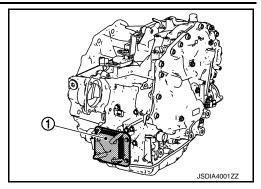
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### < SYSTEM DESCRIPTION >

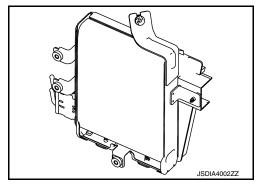
- The CVT oil warmer ① is installed on the front part of transaxle assembly.
- When engine is started while engine and CVT are cold, engine coolant temperature rises more quickly than CVT fluid temperature. CVT oil warmer is provided with two circuits for CVT and engine coolant respectively so that warmed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



[CVT: RE0F10E]

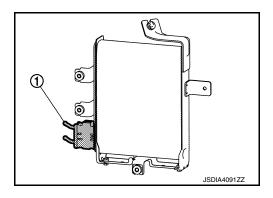
### **CVT Fluid Cooler**

- The CVT fluid cooler is installed to the vehicle front LH.
- The CVT fluid cooler prevents CVT fluid temperature from an abnormal increase while driving the vehicle. When flowing into the CVT fluid cooler, CVT fluid is cooled by driving blast while driving the vehicle.

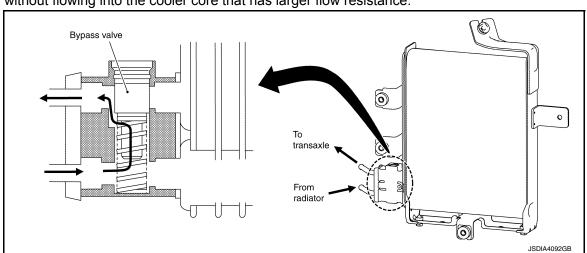


### Bypass Valve

- The bypass valve ① is installed to the CVT fluid cooler.
- Bypass valve controls CVT fluid flow.

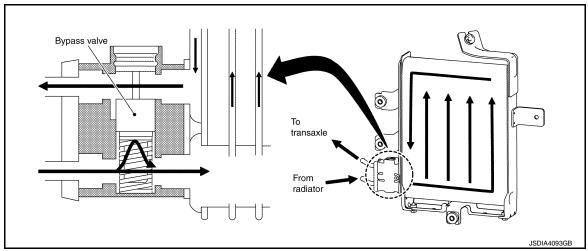


• When CVT fluid temperature is low, the bypass valve is open. Most of CVT fluid therefore returns to the transaxle without flowing into the cooler core that has larger flow resistance.



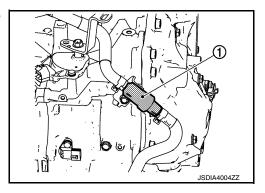
### < SYSTEM DESCRIPTION >

 When CVT fluid temperature rises [to approximately 65°C (149°F)], bypass valve fully closes and allows CVT fluid to flow into cooler core. CVT fluid flowing into cooler core is cooled by air stream caused by vehicle travel and returned to transaxle.



Heater Thermostat

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



### SHIFT LOCK SYSTEM

# SHIFT LOCK SYSTEM: System Description

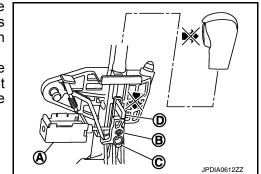
The shift lever cannot be shifted from the "P" position unless the brake pedal is depressed while the ignition switch is set to ON. The shift lock is unlocked by turning the shift lock solenoid ON when the ignition switch is set to ON, the park position switch is turned ON (selector lever is in "P" position), 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 detent rod (D). For these reasons, the selector lever cannot be shifted from the "P" position.



When Brake Pedal Is Depressed (Shift Operation Allowed)

Revision: November 2015 TM-33 2016 Pathfinder

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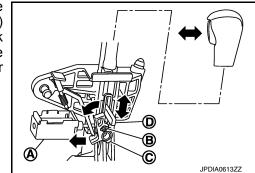
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### < SYSTEM DESCRIPTION >

can be shifted to other positions.

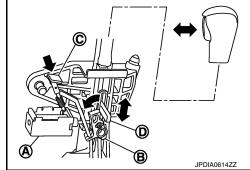
The shift lock solenoid (A) is turned ON (energized) when the brake pedal is depressed with the ignition switch ON. The solenoid rod (B) is compressed by the electromagnetic force. The connecting lock lever (C) rotates when the solenoid is activated. Therefore, the detent rod (D) can be moved. For these reasons, the selector lever



[CVT: RE0F10E]

### "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 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.



D : Detent rod

### **CAUTION:**

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

[CVT: RE0F10E]

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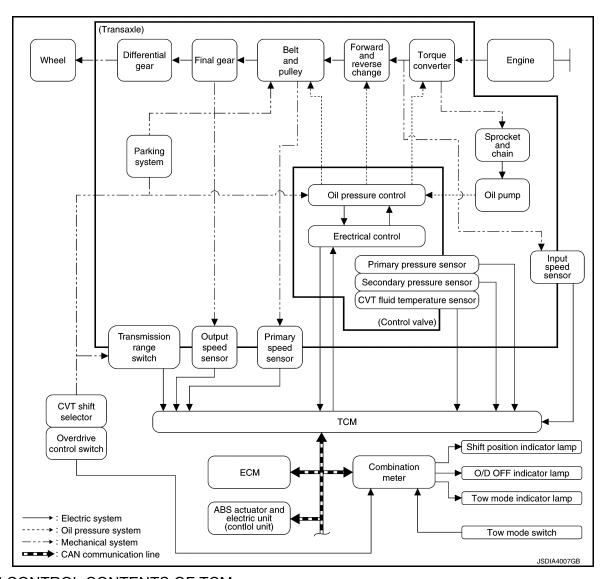
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### **SYSTEM**

### CVT CONTROL SYSTEM

CVT CONTROL SYSTEM: System Description

### SYSTEM DIAGRAM



### MAIN CONTROL CONTENTS OF TCM

Controls	Reference
Line pressure control	TM-40, "LINE PRESSURE CONTROL : System Description"
Shift control	TM-41, "SHIFT CONTROL : System Description"
Select control	TM-43. "SELECT CONTROL : System Description"
Lock-up control	TM-44, "LOCK-UP CONTROL : System Description"
Fail-safe	TM-60, "Fail-safe"
Self-diagnosis function	TM-49, "CONSULT Function"
Communication function with CONSULT	TM-49, "CONSULT Function"

### LIST OF CONTROL ITEMS AND INPUT/OUTPUT

Shift control

Line pressure

control

Control Item

Accelerator pedal position signal

Closed throttle position signal

Engine torque signal

(CAN communication)
Engine speed signal
(CAN communication)

(CAN communication)

(CAN communication)

Stop lamp switch signal

	(CAN communication)	×	×	×	×	
Input	Primary pressure sensor					×
	Secondary pressure sensor	×	×			×
	CVT fluid temperature sensor	×	×	×	×	×
	Primary speed sensor	×	×	×	×	×
	Output speed sensor	×	×		×	×
	Input speed sensor	×	×	×	×	×
	Transmission range switch	×	×	×	×	×
	Overdrive control switch (CAN communication)	×	×		×	
	Line pressure solenoid valve	×	×	×		×
	Primary pressure solenoid valve	×	×			×
	Torque converter clutch solenoid valve				×	×
Output	Secondary pressure solenoid valve	×	×			×
	Select solenoid valve	×		×		×
	Shift position indicator (CAN communication)			×		
	Overdrive control switch (CAN communication)	×				

### CVT CONTROL SYSTEM : Fail-safe

INFOID:0000000013272603

TCM has a fail-safe mode. The mode functions so that operation can be continued even if the signal circuit of the main electronically controlled input/output parts is damaged.

If the vehicle shows following behaviors including "poor acceleration", a malfunction of the applicable system is detected by TCM and the vehicle may be in a fail-safe mode. At this time, check the DTC code and perform inspection and repair according to the malfunction diagnosis procedures.

### Fail-safe function

DTC	Vehicle behavior	Conditions of vehicle
P062F	Not changed from normal driving	_
P0705	Shift position indicator on combination meter is not displayed Selector shock is large Start is slow Acceleration is slow Lock-up is not performed	_

## **SYSTEM**

YSTEN	/ DESCRIPTION >	[CVT: RE0F10E]	
DTC	Vehicle behavior	Conditions of vehicle	
P0706	<ul> <li>Shift position indicator on combination meter is not displayed</li> <li>Selector shock is large</li> <li>Start is slow</li> <li>Acceleration is slow</li> <li>Lock-up is not performed</li> </ul>	_	
	Start is slow     Acceleration is slow	Engine coolant temperature when engine start: Temp. ≥ 10°C (50°F)	
P0711	<ul><li>Selector shock is large</li><li>Start is slow</li><li>Acceleration is slow</li></ul>	Engine coolant temperature when engine start: -35°C (-31°F) ≤ Temp. < 10°C (50°F)	
	Selector shock is large     Start is slow     Acceleration is slow	Engine coolant temperature when engine star: Temp. <-35°C (-31°F)	
	Start is slow     Acceleration is slow	Engine coolant temperature when engine start: Temp. ≥ 10°C (50°F)	
P0712	Selector shock is large     Start is slow     Acceleration is slow	Engine coolant temperature when engine start: -35°C (-31°F) ≤ Temp. < 10°C (50°F)	
	Selector shock is large     Start is slow     Acceleration is slow	Engine coolant temperature when engine star: Temp. <-35°C (-31°F)	
	Start is slow     Acceleration is slow	Engine coolant temperature when engine start: Temp. ≥ 10°C (50°F)	
P0713	Selector shock is large     Start is slow     Acceleration is slow	Engine coolant temperature when engine start: -35°C (-31°F) ≤ Temp. < 10°C (50°F)	
	<ul><li>Selector shock is large</li><li>Start is slow</li><li>Acceleration is slow</li></ul>	Engine coolant temperature when engine star: Temp. <-35°C (-31°F)	
P0715	<ul><li>Start is slow</li><li>Acceleration is slow</li><li>Lock-up is not performed</li></ul>	_	
P0717	Start is slow     Acceleration is slow     Lock-up is not performed	_	
P0740	Start is slow     Acceleration is slow     Lock-up is not performed	_	
P0743	Start is slow     Acceleration is slow     Lock-up is not performed	_	
P0744	Start is slow     Acceleration is slow     Lock-up is not performed	_	
P0746	<ul> <li>Selector shock is large</li> <li>Start is slow</li> <li>Acceleration is slow</li> <li>Lock-up is not performed</li> </ul>	_	

DTC	Vehicle behavior	Conditions of vehicle
P0776	Selector shock is large     Start is slow     Acceleration is slow     Lock-up is not performed     Vehicle speed is not increased	When a malfunction occurs on the low oil pressure side
	Selector shock is large     Start is slow     Acceleration is slow     Lock-up is not performed	When a malfunction occurs on the high oil pressure side
P0778	<ul><li>Selector shock is large</li><li>Start is slow</li><li>Acceleration is slow</li><li>Lock-up is not performed</li></ul>	_
P0779	Selector shock is large     Start is slow     Acceleration is slow     Lock-up is not performed	
P0841	Not changed from normal driving	
P0847	Not changed from normal driving	_
P0848	Not changed from normal driving	_
P084C	Not changed from normal driving	
P084D	Not changed from normal driving	
P0863	Selector shock is large     Start is slow     Acceleration is slow     Lock-up is not performed	_
P0890	Selector shock is large     Start is slow     Acceleration is slow     Lock-up is not performed     Vehicle speed is not increased	
P0962	Selector shock is large     Start is slow     Acceleration is slow     Lock-up is not performed	_
P0963	Selector shock is large     Start is slow     Acceleration is slow     Lock-up is not performed	_
P0965	Selector shock is large     Start is slow     Acceleration is slow     Lock-up is not performed	When a malfunction occurs on the low oil pressure side
	<ul><li>Selector shock is large</li><li>Lock-up is not performed</li></ul>	When a malfunction occurs on the high oil pressure side
P0966	Selector shock is large     Start is slow	
P0967	Selector shock is large     Start is slow     Acceleration is slow     Lock-up is not performed	_
P17F0	Not changed from normal driving	_
P17F1	Not changed from normal driving	_
P17F2	Not changed from normal driving	_

### **SYSTEM**

### < SYSTEM DESCRIPTION >

DTC	Vehicle behavior	Conditions of vehicle	
P2765	Start is slow     Acceleration is slow     Lock-up is not performed	_	А
P2813	<ul><li>Selector shock is large</li><li>Start is slow</li><li>Acceleration is slow</li><li>Vehicle speed is not increased</li></ul>	When a malfunction occurs on the low oil pressure side	В
	Selector shock is large	When a malfunction occurs on the high oil pressure side	
P2814	Selector shock is large	_	
P2815	Selector shock is large	_	TM
U0073	<ul><li>Selector shock is large</li><li>Start is slow</li><li>Acceleration is slow</li><li>Lock-up is not performed</li></ul>	_	Е
U0100	<ul><li>Selector shock is large</li><li>Start is slow</li><li>Acceleration is slow</li><li>Lock-up is not performed</li></ul>	_	F
U0102	Not changed from normal driving	_	
U0140	Not changed from normal driving	_	G
U0141	Not changed from normal driving	_	
U0155	Not changed from normal driving	_	Н
U0300	<ul><li>Selector shock is large</li><li>Start is slow</li><li>Acceleration is slow</li><li>Lock-up is not performed</li></ul>	_	I
U1000	Not changed from normal driving	_	
U1117	Not changed from normal driving	_	J

## CVT CONTROL SYSTEM: Protection Control

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[CVT: RE0F10E]

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

### CONTROL FOR WHEEL SPIN

Control	When a wheel spin is detected, the engine output and gear ratio are limited and the line pressure is increased. Limits engine output when a wheel spin occurs in any of right and left drive wheels.
Vehicle behavior in control	If the accelerator is kept depressing during wheel spin, the engine revolution and vehicle speed are limited to a certain degree.
Normal return condition	Wheel spin convergence returns the control to the normal control.

## TORQUE IS REDUCED WHEN DRIVING WITH THE REVERSE GEAR

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

### CONTROL WHEN FLUID TEMPERATURE IS HIGH

revolution and the maximum	

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

### REVERSE PROHIBIT CONTROL

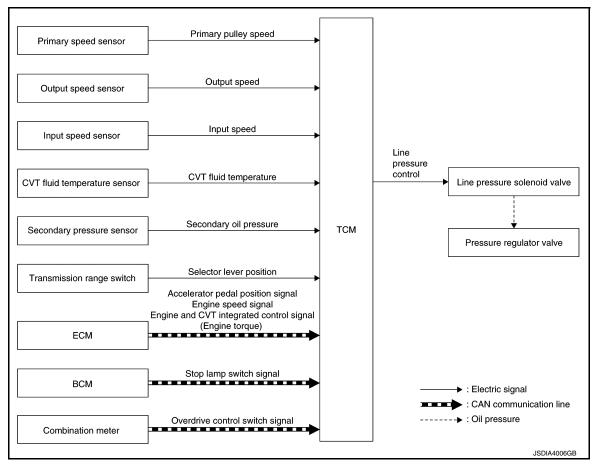
Control	The reverse brake is controlled to avoid becoming engaged when the selector lever is set in "R" position while driving in forward direction at more than the specified speed.
Vehicle behavior in control	If the selector lever is put at "R" position when driving with the forward gear, the gear becomes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

## LINE PRESSURE CONTROL

## LINE PRESSURE CONTROL: System Description

INFOID:0000000012552232

### SYSTEM DIAGRAM



### **DESCRIPTION**

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

### Normal Oil Pressure Control

Appropriate line pressure and secondary pressure suitable for driving condition are determined based on the accelerator pedal position, engine speed, primary pulley (input) speed, secondary pulley (output) speed, vehi-

INFOID:0000000012552233

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

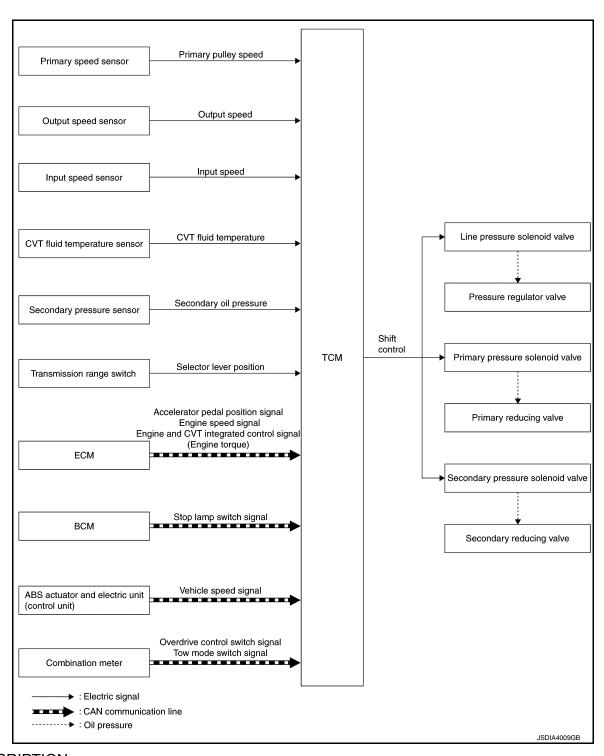
Secondary Pressure Feedback Control

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

### SHIFT CONTROL

## SHIFT CONTROL: System Description

#### SYSTEM DIAGRAM



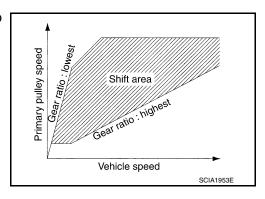
DESCRIPTION

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

#### Shift Position Function

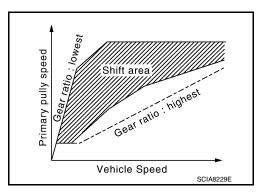
D Position (Normal)

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



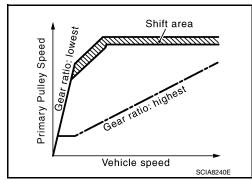
• D Position (OD OFF)

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



· L Position

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



Hill Climbing And Descending Control

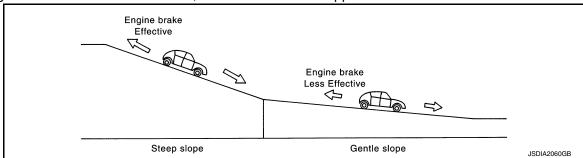
If a downhill is detected with the accelerator pedal is released, the system performs downshift to increase the engine brake force so that vehicle may not be accelerated more than necessary. If a climbing hill is detected, the system improves the acceleration performance in re-acceleration by limiting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

NOTE:

### **SYSTEM**

### < SYSTEM DESCRIPTION >

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



#### Control In Acceleration

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

#### Tow Mode

- In tow mode, sluggish acceleration and insufficient engine brake output resulting from towing are assisted and improved by CVT gear shifting.
- When all of the following conditions are satisfied, CVT goes into tow mode.
- Tow mode switch is ON
- When CVT judges a towing condition from vehicle behavior.

#### Tow Mode Function

Situation		Operation	
Road condition Brake pedal operation		Орегация	
Flat road	Depressed	To assist deceleration resulting from brake operation, the tow mode function increases engine revolution by shifting down and makes the engine brake effective.	
Uphill	_	In tow mode, the shift range on the HIGH side is limited more than that of normal mode and uphill driving control is improved.	
Downhill	Depressed	To assist deceleration resulting from brake operation, the tow mode function increases engine revolution by shifting down more than the time when driving on flat roads and makes the engine brake effective.	

## SELECT CONTROL

**SELECT CONTROL**: System Description

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Revision: November 2015 TM-43 2016 Pathfinder

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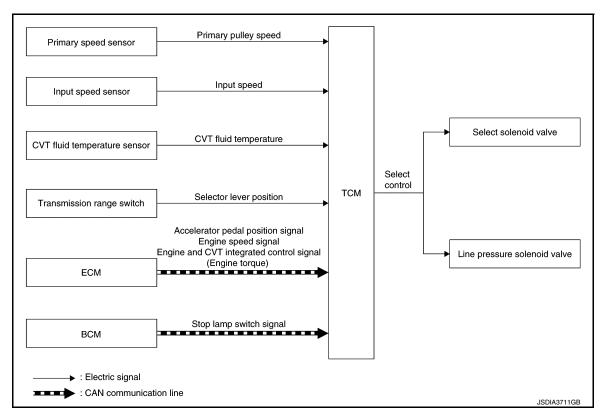
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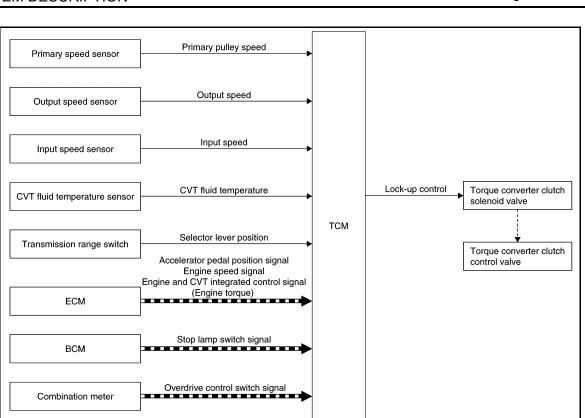
Based on accelerator pedal angle, engine speed, primary pulley speed, and the input speed, the optimum operating pressure is set to reduce impact of a selector lever operation while shifting from "N" ("P") to "D" ("R") position.

LOCK-UP CONTROL

LOCK-UP CONTROL : System Description

INFOID:0000000012552235

SYSTEM DIAGRAM



## DESCRIPTION

: Electric signal
: CAN communication line
: Oil pressure

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

#### Lock-up engagement

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

#### Lock-up release condition

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

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## ON BOARD DIAGNOSTIC (OBD) SYSTEM

[CVT: RE0F10E]

< SYSTEM DESCRIPTION >

## ON BOARD DIAGNOSTIC (OBD) SYSTEM

Description INFOID:000000012552236

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

Function of OBD

The GST is connected to the diagnosis connector on the vehicle and communicates with the on-board control units to perform diagnosis. The diagnosis connector is the same as for CONSULT. Refer to GI-55, "Description".

< SYSTEM DESCRIPTION >

## DIAGNOSIS SYSTEM (TCM) DIAGNOSIS DESCRIPTION

[CVT: RE0F10E]

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

INFOID:0000000012552238

#### NOTE:

"Start the engine and turn OFF the ignition switch after warm-up." This is defined as 1 trip.

### 1 TRIP DETECTION DIAGNOSIS

When initial malfunction is detected, TCM memorizes DTC. In these diagnoses, some illuminate MIL and some do not. Refer to TM-65, "DTC Index".

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#### 2 TRIP DETECTION DIAGNOSIS

When initial malfunction is detected, TCM memorizes DTC of the 1st trip. MIL does not light at this stage. <1 trip>

If the same malfunction is detected again in next driving, TCM memorizes DTC. When DTC is memorized, MIL lights. <2 trip>

"Trip" of the "2 trip detection diagnosis" indicates the driving mode that executes self-diagnosis during driving.

x: Check possible —: Check not possible

	DTC at t	he 1st trip	t trip DTC		N	MIL	
Item	Display at the 1st trip	Display at the 2nd trip	Display at the 1st trip	Display at the 2nd trip	Illumination at the 1st trip	Illumination at the 2nd trip	
1 trip detection diagnosis (Refer to TM-65, "DTC Index")	_	_	×	_	×	_	
2 trip detection diagnosis (Refer to <u>TM-65</u> , " <u>DTC Index"</u> )	×	_	_	×	_	×	

## DIAGNOSIS DESCRIPTION: DTC and DTC of 1st Trip

INFOID:0000000012552239

#### 2 TRIP DETECTION DIAGNOSIS THAT ILLUMINATES MIL

- The DTC number of the 1st trip is the same as the DTC number.
- · When a malfunction is detected at the 1st trip, TCM memorizes DTC of the 1st trip. MIL does not light at this stage. If the same malfunction is not detected at the 2nd trip (conforming to necessary driving conditions), DTC at the 1st trip is erased from TCM. If the same malfunction is detected at the 2nd trip, TCM memorizes DTC and MIL lights at the same time.
- The DTC of the 1st trip is specified in Service \$01 of SAE J1979/ISO 15031-5. Since detection of DTC at the 1st trip does not illuminate MIL, warning for a problem is not given to a driver.
- For procedure to delete DTC and 1st trip DTC from TCM, refer to TM-49, "CONSULT Function".
- If DTC of the 1st trip is detected, it is necessary to check the cause according to the "Diagnosis flow". Refer to TM-82, "Work Flow".

## DIAGNOSIS DESCRIPTION: Malfunction Indicator Lamp (MIL)

INFOID:0000000012552240

- TCM not only detects DTC, but also sends the MIL signal to ECM through CAN communication. ECM sends the MIL signal to the combination meter through CAN communication according to the signal, and illuminates MIL.
- For malfunction indicator lamp (MIL) description, refer to EC-32, "Malfunction Indicator Lamp (MIL)".

## DIAGNOSIS DESCRIPTION: Counter System

INFOID:0000000012552241

## RELATION BETWEEN DTC AT 1ST TRIP/DTC/MIL AND DRIVING CONDITIONS (FOR 2 TRIP DE-TECTION DIAGNOSIS THAT ILLUMINATES MIL)

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

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[CVT: RE0F10E]

#### < SYSTEM DESCRIPTION >

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

#### COUNTER SYSTEM LIST

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

### **DRIVING CONDITION**

#### Driving condition A

Driving condition A is the driving condition that provides warm-up.

In specific, count-up is performed when all of the following conditions are satisfied.

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

#### NOTE:

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

### Driving condition B

Driving condition B is the driving condition that performs all diagnoses once.

In specific, count-up is performed when all of the following conditions are satisfied.

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

#### NOTE:

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

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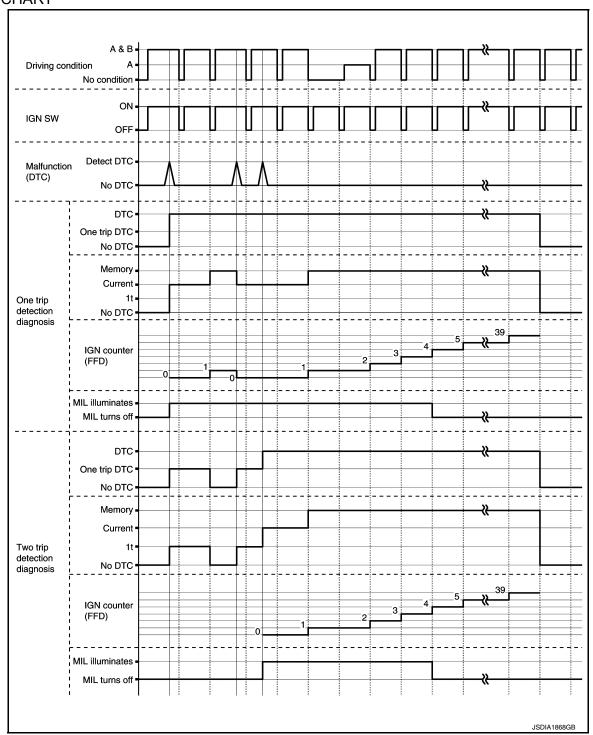
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### TIME CHART



## **CONSULT Function**

#### INFOID:0000000012552242

#### **CAUTION:**

After disconnecting the CONSULT vehicle interface (VI) from the data link connector, the ignition must be cycled OFF  $\rightarrow$  ON (for at least 5 seconds)  $\rightarrow$  OFF. If this step is not performed, the BCM may not go to "sleep mode", potentially causing a discharged battery and a no-start condition.

APPLICABLE ITEM

[CVT: RE0F10E]

#### < SYSTEM DESCRIPTION >

Conditions	Function
Work Support	The settings for ECU functions can be changed.
Self Diagnostic Results	The ECU self diagnostic results are displayed.
Data Monitor	The ECU input/output data is displayed in real time.
CAN Diagnosis Support Monitor	The result of transmit/receive diagnosis of CAN communication is displayed.
ECU Identification	The ECU part number is displayed.
CALIB DATA	The calibration data status of TCM can be checked.

#### SELF DIAGNOSTIC RESULTS

Refer to TM-65, "DTC Index".

DTC at 1st trip and method to read DTC

- DTC (P0705, P0711, P0720, etc.) is specified by SAE J2012/ISO 15031-6.
- DTC and DTC at 1st trip are displayed on "Self Diagnostic results" of CONSULT.
   When DTC is currently detected, "CRNT" is displayed. If "PAST" is displayed, it shows a malfunction occurred in the past. The trip number of drive without malfunction of concerned DTC can be confirmed with "IGN counter" inside "FFD".
- When the DTC at the 1st trip is detected, "1t" is displayed.

### DTC deletion method

#### NOTE:

If the ignition switch is left ON after repair, turn OFF the ignition switch and wait for 10 seconds or more. Then, turn the ignition ON again. (Engine stop)

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

#### IGN counter

The ignition counter is displayed in "FFD" and the number of times of satisfied "Driving condition A" is displayed after normal recovery of DTC. Refer to <u>TM-47</u>, "<u>DIAGNOSIS DESCRIPTION</u>: Counter System".

- If malfunction (DTC) is currently detected, "0" is displayed.
- After normal recovery, every time "Driving condition A" is satisfied, the display value increases from 1 → 2 → 3...38 → 39.
- When MIL turns OFF due to the malfunction and the counter reaches 40, the DTC is erased.

#### NOTE:

The counter display of "40" cannot be checked.

#### **DATA MONITOR**

#### NOTE:

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

Monitored item	(Unit)	Remarks
VSP SENSOR	(km/h or mph)	Displays the vehicle speed calculated from the CVT output shaft speed.
ESTM VSP SIG	(km/h or mph)	<ul> <li>Displays the vehicle speed signal (ABS) received through CAN communication.</li> <li>Models with ABS are displayed.</li> </ul>
INPUT SPEED SENSOR	(rpm)	Displays the input speed calculated from the pulse signal of the input speed sensor.
PRI SPEED SEN	(rpm)	Displays the primary pulley speed calculated from the pulse signal of the primary speed sensor.
SEC REV SENSOR	(rpm)	Displays the secondary pulley speed calculated from the pulse signal of the output speed sensor.
ENG SPEED SIG	(rpm)	Displays the engine speed received through CAN communication.
SEC PRESSURE SEN	(V)	Displays the signal voltage of the secondary pressure sensor.
PRI PRESSURE SEN	(V)	Displays the signal voltage of the primary pressure sensor.
ATF TEMP SEN	(V)	Displays the signal voltage of the CVT fluid temperature sensor.
G SENSOR*	(G)	Displays the signal voltage of the G sensor.

[CVT: RE0F10E]

## < SYSTEM DESCRIPTION >

Monitored item	(Unit)	Remarks			
VIGN SEN	(V)	Displays the battery voltage applied to TCM.			
PVING VOLT	(V)	Displays the backup voltage of TCM.			
VEHICLE SPEED	(km/h or mph)	Displays the vehicle speed recognized by TCM.			
INPUT REV	(rpm)	Displays the input shaft speed of CVT recognized by TCM.			
PRI SPEED	(rpm)	Displays the primary pulley speed recognized by TCM.			
SEC SPEED	(rpm)	Displays the secondary pulley speed recognized by TCM.			
ENG SPEED	(rpm)	Displays the engine speed recognized by TCM.			
SLIP REV	(rpm)	Displays the speed difference between the input shaft speed of CVT and the engine speed.			
PULLEY GEAR RATIO		Displays the pulley gear ratio calculated from primary pulley speed/secondary pulley speed.			
G SPEED	(G)	Displays the acceleration and deceleration speed of the vehicle calculated from vehicle speed change.			
ACCEL POSI SEN 1	(deg)	Displays the estimated throttle position received through CAN communication.			
VENG TRQ	(Nm)	Display the engine torque recognized by TCM.			
PRI TRQ	(Nm)	Display the input shaft torque of CVT.			
TRQ RTO		Display the torque ratio of torque converter.			
SEC PRESSURE	(MPa)	Displays the secondary pressure calculated from the signal voltage of the secondary pressure sensor.			
PRI PRESSURE	(MPa)	Displays the primary pressure calculated from the signal voltage of the primary pressure sensor.			
FLUID TEMP	(°C or °F)	Displays the CVT fluid temperature calculated from the signal voltage of the CVT fluid temperature sensor.			
DSR REV	(rpm)	Displays the target primary pulley speed calculated from processing of gear shift control.			
TGT PLLY GR RATIO		Displays the target gear ratio of the pulley from processing of gear shift control.			
LU PRS	(MPa)	Displays the target oil pressure of the torque converter clutch solenoid valve calculated from oil pressure processing of gear shift control.			
LINE PRS	(MPa)	Displays the target oil pressure of the line pressure solenoid valve calculated from oil pressure processing of gear shift control.			
TRGT PRI PRESSURE	(MPa)	Displays the target oil pressure of the primary pressure solenoid valve calculated from oil pressure processing of gear shift control.			
TRGT SELECT PRESSURE	(MPa)	Displays the target oil pressure of the select solenoid valve calculated from oil pressure processing of gear shift control.			
TRGT SEC PRESSURE	(MPa)	Displays the target oil pressure of the secondary pressure solenoid valve calculated from oil pressure processing of gear shift control.			
ISOLT1	(A)	Displays the command current from TCM to the torque converter clutch solenoid valve.			
ISOLT2	(A)	Displays the command current from TCM to the line pressure solenoid valve.			
PRI SOLENOID	(A)	Displays the command current from TCM to the primary pressure solenoid valve.			
SEC SOLENOID CURRENT	(A)	Displays the command current from TCM to the secondary pressure solenoid valve.			
SELECT SOLENOID CUR- RENT	(A)	Displays the command current from TCM to the select solenoid valve.			
SOLMON1	(A)	Monitors the command current from TCM to the torque converter clutch solenoid valve and displays the monitored value.			
SOLMON2	(A)	Monitors the command current from TCM to the line pressure solenoid valve and displays the monitored value.			
PRI SOL MON	(A)	Monitors the command current from TCM to the primary pressure solenoid valve and displays the monitored value.			

[CVT: RE0F10E]

## < SYSTEM DESCRIPTION >

Monitored item	(Unit)	Remarks
SEC SOL MON CURRENT	(A)	Monitors the command current from TCM to the secondary pressure solenoid valve and displays the monitored value.
SELECT SOL MON CURRENT	(A)	Monitors the command current from TCM to the select solenoid valve and displays the monitored value.
D POSITION SW	(On/Off)	Displays the operation status of the transmission range switch (D position).
N POSITION SW	(On/Off)	Displays the operation status of the transmission range switch (N position).
R POSITION SW	(On/Off)	Displays the operation status of the transmission range switch (R position).
P POSITION SW	(On/Off)	Displays the operation status of the transmission range switch (P position).
L POSITION SW	(On/Off)	Displays the operation status of the transmission range switch (L position).
DS RANGE SW*	(On/Off)	Displays the operation status of the transmission range switch (Ds position).
BRAKESW	(On/Off)	Displays the reception status of the stop lamp switch signal received through CAN communication.
IDLE SW	(On/Off)	Displays the reception status of the closed throttle position signal received through CAN communication.
SPORT MODE SW	(On/Off)	Displays the reception status of the overdrive control switch signal received through CAN communication.
ECO MODE SW*	(On/Off)	Displays the reception status of the ECO mode switch signal received through CAN communication.
STRDWNSW*	(On/Off)	Displays the operation status of the paddle shifter (down switch).
STRUPSW*	(On/Off)	Displays the operation status of the paddle shifter (up switch).
DOWNLVR*	(On/Off)	Displays the operation status of the selector lever (down switch).
UPLVR*	(On/Off)	Displays the operation status of the selector lever (up switch).
NONMMODE*	(On/Off)	Displays if the selector lever position is not at the manual shift gate.
MMODE*	(On/Off)	Displays if the selector lever position is at the manual shift gate.
TOW MODE SW	(On/Off)	Displays the reception status of the TOW mode switch signal received through CAN communication.
SHIFT IND SIGNAL		Displays the transaxle value of shift position signal transmitted via CAN communication.
CVT LAMP*	(On/Off)	Displays the transaxle status of the CVT warning lamp signal transmitted through CAN communication.
SPORT MODE IND	(On/Off)	Displays the transaxle status of the O/D OFF indicator lamp signal transmitted through CAN communication.
MANU MODE SIGNAL*	(On/Off)	Displays the transaxle status of the manual mode signal transmitted through CAN communication.
DS RANGE SIGNAL*	(On/Off)	Displays the shift position signal status from transmission range switch (Ds position).
ECO MODE SIGNAL*	(On/Off)	Displays the transaxle status of the ECO mode signal transmitted through CAN communication.
VDC ON	(On/Off)	Displays the reception status of the VDC operation signal received through CAN communication.
TCS ON	(On/Off)	Displays the reception status of the TCS operation signal received through CAN communication.
ABS FAIL SIGNAL	(On/Off)	Displays the reception status of the ABS malfunction signal received through CAN communication.
ABS ON	(On/Off)	Displays the reception status of the ABS operation signal received through CAN communication.
RANGE		Displays the gear position recognized by TCM.
M GEAR POS*		Display the target gear of manual mode
0 00		
G SEN SLOPE*	(%)	Displays the gradient angle calculated from the G sensor signal voltage.

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## < SYSTEM DESCRIPTION >

Monitored item	(Unit)	Remarks
N IDLE STATUS*	(On/Off)	Displays idle neutral status.
ENGBRKLVL	(On/Off)	Displays the setting of "ENGINE BRAKE ADJ" in "Work Support".
DRIVE MODE STATS*		Displays the drive mode status recognized by TCM.
SNOW MODE*	(On/Off)	Displays whether it is the SNOW mode.
ECO MODE*	(On/Off)	Displays whether it is the ECO mode.
NORMAL MODE*	(On/Off)	Displays whether it is the NORMAL mode.
SPORT MODE*	(On/Off)	Displays whether it is the SPORT mode.
AIR BLDING STATE*	(INCOMP/ COMP)	Displays the status of "ELECTRIC O.P. AIR BLEEDING" in "Work Support".
ELECTRIC OP DUTY*	(%)	Displays the command signal value (duty) of the electric oil pump transmitted from TCM.
E-OP DUTY MON*	(%)	Monitors the status signal value (duty) transmitted from the electric oil pump and displays the monitored value.
ELECTRIC OP RELAY*	(On/Off)	Displays the command status from TCM to the electric oil pump relay.
E-OP RELAY MON*	(On/Off)	Monitors the command status from TCM to the oil pump relay and displays the monitored value.
CVT-B		Displays CVT fluid temperature count.     This monitor item does not use.
CVT-A	(On/Off)	Displays CVT fluid temperature count.     This monitor item does not use.

<sup>\*:</sup> Not applicable but displayed.

## **WORK SUPPORT**

Item name	Description		
CONFORM CVTF DETERIORTN	Checks the degradation level of the CVT fluid under severe conditions.		
ERASE MEMORY DATA	Performs "erasing of the calibration data" and "erasing of the learned value" at the same time.		
G SENSOR CALIBRATION	Compensates the G sensor.		
ERASE LEARNING VALUE	Erases learning value memorized by TCM.		
ENGINE BRAKE ADJ.	Although there is no malfunction on the transaxle and the CVT system, if a customer make a complaint like "I do not feel comfortable with automatic operation of the engine brake on downhill", the engine brake may be cancelled with "engine brake adjustment".		
ERASE CALIBRATION DATA	Erases calibration data memorized by TCM.		
WRITE IP CHARA - REPLACEMENT AT/CVT	Writes IP characteristics when transaxle assembly is replaced.		
READ IP CHARA - REPLACEMENT TCM	Reads IP characteristics when TCM is replaced.		
WRITE IP CHARA - REPLACEMENT TCM	Writes IP characteristics when TCM is replaced.		

### Engine brake adjustment

ENGINE BRAKE LEVEL

ON : Turn ON the engine brake control.
OFF : Turn OFF the engine brake control.

Check the degradation level of the CVT fluid.

CVTF degradation level data

210,000 or more : Replacement of the CVT fluid is required.

Less than 210,000 : Replacement of the CVT fluid is not required.

## **ECU DIAGNOSIS INFORMATION**

## **TCM**

Reference Value

#### CONSULT DATA MONITOR STANDARD VALUE

- In CONSULT, electric shift timing or lock-up timing, i.e. operation timing of each solenoid valve, is displayed.
  Therefore, if there is an obvious difference between the shift timing estimated from a shift shock (or engine
  speed variations) and that shown on the CONSULT, the mechanism parts (including the hydraulic circuit)
  excluding the solenoids and sensors may be malfunctioning. In this case, check the mechanical parts following the appropriate diagnosis procedure.
- Shift point (gear position) displayed on CONSULT slightly differs from shift pattern described in Service Manual. This is due to the following reasons.
- Actual shift pattern may vary slightly within specified tolerances.
- While shift pattern described in Service Manual indicates start of each shift, CONSULT shows gear position at end of shift.
- The solenoid display (ON/OFF) on CONSULT is changed at the start of gear shifting. In contrast, the gear
  position display is changed at the time when gear shifting calculated in the control unit is completed.

#### NOTE:

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

Monitor item	Condition	Value/Status (Approx.)
VSP SENSOR	While driving	Almost same as the speedometer display.
ESTM VSP SIG	While driving	Almost same as the speedometer display.
INPUT SPEED SENSOR	In driving (lock-up ON)	Approximately matches the engine speed.
PRI SPEED SEN	In driving (lock-up ON)	Approximately matches the engine speed.
SEC REV SENSOR	While driving	VSP SENSOR × 40
ENG SPEED SIG	Engine running	Almost same reading as tachometer
SEC PRESSURE SEN	<ul><li>After engine warm up</li><li>Selector lever: "N" position</li><li>At idle</li></ul>	1.7 V
PRI PRESSURE SEN	<ul><li>After engine warm up</li><li>Selector lever: "N" position</li><li>At idle</li></ul>	1.23 V
	CVT fluid: Approx. 20°C (68°F)	2.01 – 2.05 V
ATF TEMP SEN	CVT fluid: Approx. 50°C (122°F)	1.45 – 1.50 V
	CVT fluid: Approx. 80°C (176°F)	0.90 – 0.94 V
G SENSOR	Always	0 V
VIGN SEN	Ignition switch: ON	10.0 – 16.0 V
PVIGN VOLT	Ignition switch: ON	10.0 – 16.0 V
VEHICLE SPEED	While driving	Almost same as the speedometer display.
INPUT REV	In driving (lock-up ON)	Almost same as the engine speed.
PRI SPEED	In driving (lock-up ON)	Approximately matches the engine speed.
SEC SPEED	While driving	VSP SENSOR × 40
ENG SPEED	Engine running	Almost same reading as tachometer
SLIP REV	While driving	Engine speed – Input speed
PULLEY GEAR RATIO	In driving (forward)	2.43 – 0.38
FULLET GEAR RATIO	In driving (reverse)	2.43

Monitor item	Condition	Value/Status (Approx.)	
	Vehicle stopped	0.00 G	Α
G SPEED	During acceleration	The value changes to the positive side along with acceleration.	D
	During deceleration	The value changes to the positive side along with deceleration.	В
ACCEL POSI SEN 1	Accelerator pedal released	0.00 deg	С
ACCEL FOSI SEN I	Accelerator pedal fully depressed	80.00 deg	
VENG TRQ	While driving	The value changes along with acceleration/ deceleration.	TM
PRI TRQ	While driving	The value changes along with acceleration/ deceleration.	
TRQ RTO	While driving	The value changes along with acceleration/ deceleration.	Е
SEC PRESSURE	<ul><li>After engine warm up</li><li>Selector lever: "N" position</li><li>At idle</li></ul>	1.800 MPa	F
PRI PRESSURE	<ul><li>After engine warm up</li><li>Selector lever: "N" position</li><li>At idle</li></ul>	1.100 MPa	G
FLUID TEMP	Ignition switch ON.	Displays the CVT fluid temperature.	
DSR REV	While driving	It varies along with the driving condition.	Н
TGT PLLY GR RATIO	In driving (forward)	2.43 – 0.38	
	In driving (reverse)	2.43	
	<ul><li>Engine started</li><li>Vehicle is stopped.</li></ul>	−0.50 MPa	
LU PRS	<ul> <li>Selector lever: "D" position</li> <li>Accelerator pedal position: 1/8 or less</li> <li>Vehicle speed: 20 km/h (12 MPH) or more</li> </ul>	0.45 MPa	J
LINE PRS	After engine warm up     Selector lever: "N" position     At idle	1.800 MPa	K
LINETRO	<ul><li>After engine warm up</li><li>Selector lever: "N" position</li><li>Depress the accelerator pedal fully</li></ul>	4.930 – 5.430 MPa	L
TRGT PRI PRESSURE	<ul><li>After engine warm up</li><li>Selector lever: "N" position</li><li>At idle</li></ul>	1.100 MPa	M
TARGET SELECT PRESSURE	<ul><li>After engine warm up</li><li>Selector lever: "N" position</li><li>At idle</li></ul>	0.000 MPa	Ν
TARGET SEC PRESSUR	<ul><li>After engine warm up</li><li>Selector lever: "N" position</li><li>At idle</li></ul>	1.800 MPa	0
ISOLT1	_	_	
ISOLT2	_	_	Р
PRI SOLENOID	_	_	1
SEC SOLENOID CURRENT	_	_	
SELECT SOLENOID CURRENT	_	_	
SOLMON1	_	_	
SOLMON2	_	_	
PRI SOL MON	_	_	

Monitor item	Condition	Value/Status (Approx.)
SEC SOL MON CURRENT	_	_
SELECT SOL MON CURRENT	_	_
D DOCITION CW	Selector lever: "D" position	On
D POSITION SW	Other than the above	Off
N POSITION SW	Selector lever: "N" position	On
N POSITION SW	Other than the above	Off
R POSITION SW	Selector lever: "R" position	On
R POSITION SW	Other than the above	Off
P POSITION SW	Selector lever: "P" position	On
F FOSITION SW	Other than the above	Off
DOCITION CW	Selector lever: "L" position	On
POSITION SW	Other than the above	Off
DS RANGE SW	Always	Off
DDAKESW	Brake pedal is depressed	On
BRAKESW	Brake pedal is released	Off
DI E CW	Accelerator pedal is released	On
IDLE SW	Accelerator pedal is fully depressed	Off
	Press the overdrive control switch	On
SPORT MODE SW	Release the overdrive control switch	Off
ECO MODE SW	Always	Off
STRDWNSW	Always	Off
STRUPSW	Always	Off
DOWNLVR	Always	Off
JPLVR	Always	Off
NONMMODE	Always	On
MMODE	Always	Off
	In tow mode	On
FOW MODE SW	Other than above	Off
	When the selector lever is positioned in between each position.	OFF
	Selector lever: P position	Р
SHIFT IND SIGNAL	Selector lever: R position	R
	Selector lever: N position	N
	Selector lever: D position	D
	Selector lever: L position	L
2V/T I AMD	Approx. 2 seconds after ignition switch ON	On
CVT LAMP	Other than the above	Off
DODT MODE IND	In OD OFF	On
SPORT MODE IND	Other than the above	Off
MANU MODE SIGNAL	Always	Off
OS RANGE SIGNAL	Always	Off
ECO MODE SIGNAL	Always	Off
	VDC is activated	On
VDC ON	Other than the above	Off

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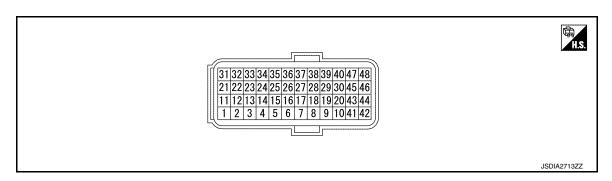
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ECO DIAGNOSIS INFORM	[011111201102]	
Monitor item	Condition	Value/Status (Approx.)
T00 0N	TCS is activated	On
TCS ON	Other than the above	Off
ADO FAIL CIONAL	When ABS malfunction signal is received	On
ABS FAIL SIGNAL	Other than the above	Off
ADO ON	ABS is activated	On
ABS ON	Other than the above	Off
	Selector lever: P and N positions	N/P
	Selector lever: R position	R
RANGE	Selector lever: D position	D
	Selector lever: D position (in OD OFF)	S
	Selector lever: L position	L
M GEAR POS	Always	1
G SEN SLOPE	Always	0%
	When G sensor calibration is completed	DONE
G SEN CALIBRATION	When G sensor calibration is not completed	YET
N IDLE STATUS	Always	Off
ENODDIA) #	When the engine brake level of "ENGINE BRAKE ADJ". in "Work Support" is ON	On
ENGBRKLVL	When the engine brake level of "ENGINE BRAKE ADJ". in "Work Support" is OFF	Off
DRIVE MODE STATS	Always	NOMAL
SNOW MODE	Always	Off
ECO MODE	Always	Off
NORMAL MODE	Always	Off
SPORT MODE	Always	Off
AIR BLDING STATE	Always	COMP
ELECTRIC OP DUTY	Always	0%
E-OP DUTY MON	Always	0%
ELECTRIC OP RELAY	Always	Off
E-OP RELAY MON	Always	Off
CVT-A*	_	_
0.75		<del></del>

<sup>\*:</sup> These monitor items do not use.

## **TERMINAL LAYOUT**

CVT-B\*



INPUT/OUTPUT SIGNAL STANDARD

CVT: RE0F10E]	
	_
	•

Terminal No. (Wire color)		Description			Condition	Value (Approx.)
+	_	Signal	Input/ Output	Condition		Value (Approx.)
2	Ground	L position switch	Input		Selector lever: "L" position	10 – 16 V
(SB)	Ground	L position switch	Input		Other than the above	0 V
4	Ground	D position switch	Input		Selector lever: "D" position	10 – 16 V
(Y)	Ground	D position switch	iliput		Other than the above	0 V
5	Ground	N position switch	Input	Ignition switch	Selector lever: "N" position	10 – 16 V
(L)	Ground	N position switch	iliput	ON	Other than the above	0 V
6	Ground	R position switch	Input		Selector lever: "R" position	10 – 16 V
(BR)	Ground	ix position switch	iliput		Other than the above	0 V
7	Ground	P position switch	Input		Selector lever: "P" position	10 – 16 V
(V)	Ground	P position switch	iliput		Other than the above	0 V
11 (Y)	Ground	Sensor ground	_	Always		0 V
		nd CVT fluid tempera-			CVT fluid: Approx. 20°C (68°F)	2.01 – 2.05 V
12 (LG)	Ground		Output   Switch   CV I fluid: Approx. 50°C			1.45 – 1.50 V
					0.90 – 0.94 V	
16 (Y)	Ground	Secondary pressure sensor	Input	Selector lever: "N" position     At idle		1.67 – 1.69 V
17 (LG)	Ground	Primary pressure sensor	Input	Selecto     At idle	r lever: "N" position	0.90 – 0.92 V
23 (P)	_	CAN-L	Input/ Output	_		_
24 (LG)	Ground	Input speed sensor	Input	<ul> <li>Selector lever: "L" position</li> <li>Vehicle speed: 20 km/h (12 MPH)</li> </ul>		800 Hz 1mSec/div 5V/div JSDIA3770GB
26		Sensor power sup-		Ignition sv	vitch: ON	5.0 V
(LG)	Ground Conton power cup			0 V		

	Terminal No. (Wire color)  Description		Condition	Volue (Arres)	
+	-	Signal	Input/ Output	Condition	Value (Approx.)
30	Ground	Line pressure sole-	Output	<ul><li> After engine warming up</li><li> Selector lever: "N" position</li><li> At idle</li></ul>	2.5mSec/div 5V/div JSDIA1897GB
(SB)		noid valve	·	<ul> <li>After engine warming up</li> <li>Selector lever: "N" position</li> <li>Depress the accelerator pedal fully</li> </ul>	2.5mSec/div 5V/div JSDIA1898GB
33 (L)	_	CAN-H	Input/ Output	_	_
34 (BR)	Ground	Output speed sensor	Input	<ul> <li>Selector lever: "L" position</li> <li>Vehicle speed: 20 km/h (12 MPH)</li> </ul>	200 Hz 2.5mSec/div 5V/div JSDIA1897GB
35 (LG)	Ground	Primary speed sensor	Input	<ul> <li>Selector lever: "L" position</li> <li>Vehicle speed: 20 km/h (12 MPH)</li> </ul>	600 Hz  1mSec/div  5V/div  JSDIA3770GB
37 (BR)	Ground	Select solenoid valve	Output	<ul><li>Engine started</li><li>Vehicle is stopped</li><li>Selector lever: "N" position</li></ul>	2.5mSec/div 5V/div JSDIA1897GB

Terminal No. (Wire color)		Description		Condition	Value (Approx.)	
+	_	Signal	Input/ Output	Condition	value (Approx.)	
38	Ground	Torque converter clutch solenoid valve	Output	<ul> <li>Selector lever: "D" position</li> <li>Accelerator pedal position: 1/8 or less</li> <li>Vehicle speed: 20 km/h (12 MPH) or more</li> </ul>	1mSec/div 5V/div JSDIA1900GB	
(Y)			Сигриг	<ul><li>Engine started</li><li>Vehicle is stopped</li></ul>	2.5mSec/div  5V/div  JSDIA1903GB	
39 (L)	Ground	Secondary pressure solenoid valve	Output	<ul> <li>Selector lever: "L" position</li> <li>Vehicle speed: 20 km/h (12 MPH)</li> </ul>	2.5mSec/div 5V/div JSDIA1897GB	
40 (V)	Ground	Primary pressure solenoid valve	Output	<ul> <li>Selector lever: "L" position</li> <li>Vehicle speed: 20 km/h (12 MPH)</li> </ul>	2.5mSec/div 5V/div JSDIA1897GB	
41 (B)	Ground	Ground	Output	Always	0 V	
42 (B)	Ground	Ground	Output	Always	0 V	
45 (LG)	Ground	Power (backup)	Input	Always	10 – 16 V	
46 (LG)	Ground	Power (backup)	Input	Always	10 – 16 V	
47 (Y)	Ground	Power supply	Input	Ignition switch: ON Ignition switch: OFF	10 – 16 V 0 V	
48			Ignition switch: OFF	10 – 16 V		
46 (Y)	Ground	Power supply	Input	Ignition switch: OFF	0 V	

Fail-safe

TCM has a fail-safe mode. The mode functions so that operation can be continued even if the signal circuit of the main electronically controlled input/output parts is damaged.

If the vehicle shows following behaviors including "poor acceleration", a malfunction of the applicable system is detected by TCM and the vehicle may be in a fail-safe mode. At this time, check the DTC code and perform inspection and repair according to the malfunction diagnosis procedures.

Fail-safe function

TC	Vehicle behavior	Conditions of vehicle
2F	Not changed from normal driving	_
)5	Shift position indicator on combination meter is not displayed Selector shock is large Start is slow Acceleration is slow Lock-up is not performed	_
	Shift position indicator on combination meter is not displayed     Selector shock is large     Start is slow     Acceleration is slow     Lock-up is not performed	_
	Start is slow     Acceleration is slow	Engine coolant temperature when engine start: Temp. ≥ 10°C (50°F)
	Selector shock is large     Start is slow     Acceleration is slow	Engine coolant temperature when engine start: -35°C (-31°F) ≤ Temp. < 10°C (50°F)
	Selector shock is large     Start is slow     Acceleration is slow	Engine coolant temperature when engine star: Temp. <-35°C (-31°F)
	Start is slow     Acceleration is slow	Engine coolant temperature when engine start: Temp. ≥ 10°C (50°F)
2	Selector shock is large     Start is slow     Acceleration is slow	Engine coolant temperature when engine start: -35°C (-31°F) ≤ Temp. < 10°C (50°F)
	Selector shock is large     Start is slow     Acceleration is slow	Engine coolant temperature when engine star: Temp. <-35°C (-31°F)
	Start is slow     Acceleration is slow	Engine coolant temperature when engine start: Temp. ≥ 10°C (50°F)
i	Selector shock is large     Start is slow     Acceleration is slow	Engine coolant temperature when engine start: -35°C (-31°F) ≤ Temp. < 10°C (50°F)
	Selector shock is large     Start is slow     Acceleration is slow	Engine coolant temperature when engine star: Temp. <-35°C (-31°F)
5	Start is slow     Acceleration is slow     Lock-up is not performed	_
17	Start is slow     Acceleration is slow     Lock-up is not performed	_
10	Start is slow     Acceleration is slow     Lock-up is not performed	_
13	Start is slow     Acceleration is slow     Lock-up is not performed	_
14	Start is slow     Acceleration is slow     Lock-up is not performed	_
746	Selector shock is large     Start is slow     Acceleration is slow     Lock-up is not performed.	_

· Lock-up is not performed

DTC	Vehicle behavior	Conditions of vehicle
P0776	Selector shock is large     Start is slow     Acceleration is slow     Lock-up is not performed     Vehicle speed is not increased	When a malfunction occurs on the low oil pressure side
	Selector shock is large     Start is slow     Acceleration is slow     Lock-up is not performed	When a malfunction occurs on the high oil pressure side
P0778	<ul><li>Selector shock is large</li><li>Start is slow</li><li>Acceleration is slow</li><li>Lock-up is not performed</li></ul>	_
P0779	<ul><li>Selector shock is large</li><li>Start is slow</li><li>Acceleration is slow</li><li>Lock-up is not performed</li></ul>	
P0841	Not changed from normal driving	
P0847	Not changed from normal driving	_
P0848	Not changed from normal driving	_
P084C	Not changed from normal driving	
P084D	Not changed from normal driving	
P0863	<ul><li>Selector shock is large</li><li>Start is slow</li><li>Acceleration is slow</li><li>Lock-up is not performed</li></ul>	_
P0890	<ul> <li>Selector shock is large</li> <li>Start is slow</li> <li>Acceleration is slow</li> <li>Lock-up is not performed</li> <li>Vehicle speed is not increased</li> </ul>	
P0962	Selector shock is large     Start is slow     Acceleration is slow     Lock-up is not performed	_
P0963	Selector shock is large     Start is slow     Acceleration is slow     Lock-up is not performed	_
P0965	Selector shock is large     Start is slow     Acceleration is slow     Lock-up is not performed	When a malfunction occurs on the low oil pressure side
	Selector shock is large     Lock-up is not performed	When a malfunction occurs on the high oil pressure side
P0966	Selector shock is large     Start is slow     Acceleration is slow     Lock-up is not performed	_
P0967	Selector shock is large     Start is slow     Acceleration is slow     Lock-up is not performed	_
P17F0	Not changed from normal driving	_
P17F1	Not changed from normal driving	_
P17F2	Not changed from normal driving	_

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DTC	Vehicle behavior	Conditions of vehicle
P2765	Start is slow     Acceleration is slow     Lock-up is not performed	_
P2813	<ul><li>Selector shock is large</li><li>Start is slow</li><li>Acceleration is slow</li><li>Vehicle speed is not increased</li></ul>	When a malfunction occurs on the low oil pressure side
	Selector shock is large	When a malfunction occurs on the high oil pressure side
P2814	Selector shock is large	_
P2815	Selector shock is large	_
U0073	<ul><li>Selector shock is large</li><li>Start is slow</li><li>Acceleration is slow</li><li>Lock-up is not performed</li></ul>	_
U0100	<ul><li>Selector shock is large</li><li>Start is slow</li><li>Acceleration is slow</li><li>Lock-up is not performed</li></ul>	_
U0102	Not changed from normal driving	_
U0140	Not changed from normal driving	_
U0141	Not changed from normal driving	_
U0155	Not changed from normal driving	_
U0300	<ul><li>Selector shock is large</li><li>Start is slow</li><li>Acceleration is slow</li><li>Lock-up is not performed</li></ul>	_
U1000	Not changed from normal driving	_
U1117	Not changed from normal driving	_

Protection Control

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

### CONTROL FOR WHEEL SPIN

Control	When a wheel spin is detected, the engine output and gear ratio are limited and the line pressure is increased. Limits engine output when a wheel spin occurs in any of right and left drive wheels.
Vehicle behavior in control	If the accelerator is kept depressing during wheel spin, the engine revolution and vehicle speed are limited to a certain degree.
Normal return condi-	Wheel spin convergence returns the control to the normal control.

## TORQUE IS REDUCED WHEN DRIVING WITH THE REVERSE GEAR

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

### CONTROL WHEN FLUID TEMPERATURE IS HIGH

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

## REVERSE PROHIBIT CONTROL

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

## **DTC Inspection Priority Chart**

INFOID:0000000012552246

[CVT: RE0F10E]

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

Priority	DTC (Diagnostic Trouble Code)	Reference
	P0863 CONTROL UNIT (CAN)	TM-151, "DTC Logic"
	U0073 COMM BUS A OFF	TM-97, "DTC Logic"
	U0100 LOST COMM (ECM A)	TM-98, "DTC Logic"
	U0102 LOST COMM (TRANSFER)	TM-99, "DTC Logic"
1	U0140 LOST COMM (BCM)	TM-100, "DTC Logic"
ı	U0141 LOST COMM (BCM A)	TM-101, "DTC Logic"
	U0155 LOST COMM (IPC)	TM-102, "DTC Logic"
	U0300 CAN COMM DATA	TM-103, "DTC Logic"
	U1000 CAN COMM CIRC	TM-104, "DTC Logic"
	U1117 LOST COMM (ABS)	TM-105, "DTC Logic"
	P0740 TORQUE CONVERTER	TM-128, "DTC Logic"
	P0743 TORQUE CONVERTER	TM-130, "DTC Logic"
	P0778 PC SOLENOID B	TM-138, "DTC Logic"
	P0779 PC SOLENOID B	TM-140, "DTC Logic"
2	P0962 PC SOLENOID A	TM-154, "DTC Logic"
2	P0963 PC SOLENOID A	TM-156, "DTC Logic"
	P0966 PC SOLENOID B	TM-160, "DTC Logic"
	P0967 PC SOLENOID B	TM-162, "DTC Logic"
	P2814 SELECT SOLENOID	TM-172, "DTC Logic"
	P2815 SELECT SOLENOID	TM-174, "DTC Logic"

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Priority	DTC (Diagnostic Trouble Code)	Reference
	P062F EEPROM	TM-106, "DTC Logic"
	P0705 T/M RANGE SENSOR A	TM-107, "DTC Logic"
	P0706 T/M RANGE SENSOR A	TM-113, "DTC Logic"
	P0711 FLUID TEMP SENSOR A	TM-116, "DTC Logic"
	P0712 FLUID TEMP SENSOR A	TM-118, "DTC Logic"
	P0713 FLUID TEMP SENSOR A	TM-120, "DTC Logic"
	P0715 INPUT SPEED SENSOR A	TM-122, "DTC Logic"
3	P0717 INPUT SPEED SENSOR A	TM-125, "DTC Logic"
	P0841 FLUID PRESS SEN/SW A	TM-142, "DTC Logic"
	P0847 FLUID PRESS SEN/SW B	TM-143, "DTC Logic"
	P0848 FLUID PRESS SEN/SW B	TM-145, "DTC Logic"
	P084C FLUID PRESS SEN/SW H	TM-147, "DTC Logic"
	P084D FLUID PRESS SEN/SW H	TM-149, "DTC Logic"
	P0890 TCM	TM-152, "DTC Logic"
	P2765 INPUT SPEED SENSOR B	TM-167, "DTC Logic"
	P0744 TORQUE CONVERTER	TM-132, "DTC Logic"
	P0746 PC SOLENOID A	TM-134, "DTC Logic"
	P0776 PC SOLENOID B	TM-136, "DTC Logic"
	P0965 PC SOLENOID B	TM-158, "DTC Logic"
4	P17F0 CVT JUDDER (T/M INSPECTION)	TM-164, "DTC Description"
	P17F1 CVT JUDDER (C/V INSPECTION)	TM-165, "DTC Description"
	P17F2 CVT JUDDER (T/C INSPECTION)	TM-166, "DTC Description"
	P2813 SELECT SOLENOID	TM-170, "DTC Logic"

DTC Index

### NOTE:

• If multiple malfunction codes are detected at the same time, check each code according to the "DTC check priority list". TM-64, "DTC Inspection Priority Chart".

• The ignition counter is displayed in "FFD". Refer to TM-49, "CONSULT Function".

DTC*1,*2		Items			
GST	CONSULT (TRANSMISSION)	(CONSULT screen terms)	Trip	MIL	Reference
P062F	P062F	EEPROM	1	ON	TM-106
P0705	P0705	T/M RANGE SENSOR A	2	ON	TM-107
P0706	P0706	T/M RANGE SENSOR A	2	ON	<u>TM-113</u>
P0711	P0711	FLUID TEMP SENSOR A	2	ON	<u>TM-116</u>
P0712	P0712	FLUID TEMP SENSOR A	2	ON	<u>TM-118</u>
P0713	P0713	FLUID TEMP SENSOR A	2	ON	TM-120
P0715	P0715	INPUT SPEED SENSOR A	2	ON	TM-122
P0717	P0717	INPUT SPEED SENSOR A	2	ON	TM-125
P0740	P0740	TORQUE CONVERTER	2	ON	TM-128
P0743	P0743	TORQUE CONVERTER	2	ON	TM-130
P0744	P0744	TORQUE CONVERTER	2	ON	TM-132
P0746	P0746	PC SOLENOID A	2	ON	TM-134
P0776	P0776	PC SOLENOID B	2	ON	TM-136

DTC	<u>5</u> *1, *2	Items			
GST	CONSULT (TRANSMISSION)	(CONSULT screen terms)	Trip	MIL	Reference
P0778	P0778	PC SOLENOID B	2	ON	<u>TM-138</u>
P0779	P0779	PC SOLENOID B	2	ON	<u>TM-140</u>
P0841	P0841	FLUID PRESS SEN/SW A	2	ON	TM-142
P0847	P0847	FLUID PRESS SEN/SW B	2	ON	<u>TM-143</u>
P0848	P0848	FLUID PRESS SEN/SW B	2	ON	<u>TM-145</u>
P084C	P084C	FLUID PRESS SEN/SW H	2	ON	<u>TM-147</u>
P084D	P084D	FLUID PRESS SEN/SW H	2	ON	TM-149
P0863	P0863	CONTROL UNIT (CAN)	1	ON	<u>TM-151</u>
P0890	P0890	TCM	1	ON	TM-152
P0962	P0962	PC SOLENOID A	2	ON	TM-154
P0963	P0963	PC SOLENOID A	2	ON	<u>TM-156</u>
P0965	P0965	PC SOLENOID B	2	ON	<u>TM-158</u>
P0966	P0966	PC SOLENOID B	2	ON	<u>TM-160</u>
P0967	P0967	PC SOLENOID B	2	ON	TM-162
_	P17F0	CVT JUDDER (T/M INSPECTION)	1	_	TM-164
_	P17F1	CVT JUDDER (C/V INSPECTION)	1	_	<u>TM-165</u>
_	P17F2	CVT JUDDER (T/C INSPECTION)	1	_	TM-166
P2765	P2765	INPUT SPEED SENSOR B	2	ON	TM-167
P2813	P2813	SELECT SOLENOID	2	ON	<u>TM-170</u>
P2814	P2814	SELECT SOLENOID	2	ON	<u>TM-172</u>
P2815	P2815	SELECT SOLENOID	2	ON	<u>TM-174</u>
U0073	U0073	COMM BUS A OFF	1	ON	TM-97
U0100	U0100	LOST COMM (ECM A)	1	ON	TM-98
_	U0102	LOST COMM (TRANSFER)	1	_	TM-99
_	U0140	LOST COMM (BCM)	1	_	TM-100
_	U0141	LOST COMM (BCM A)	1	_	<u>TM-101</u>
_	U0155	LOST COMM (IPC)	1	_	TM-102
_	U0300	CAN COMM DATA	1	_	TM-103
_	U1000	CAN COMM CIRC	1	_	TM-104
_	U1117	LOST COMM (ABS)	1	_	<u>TM-105</u>

<sup>\*1:</sup> These numbers are specified by SAE J2012/ISO 15031-6.

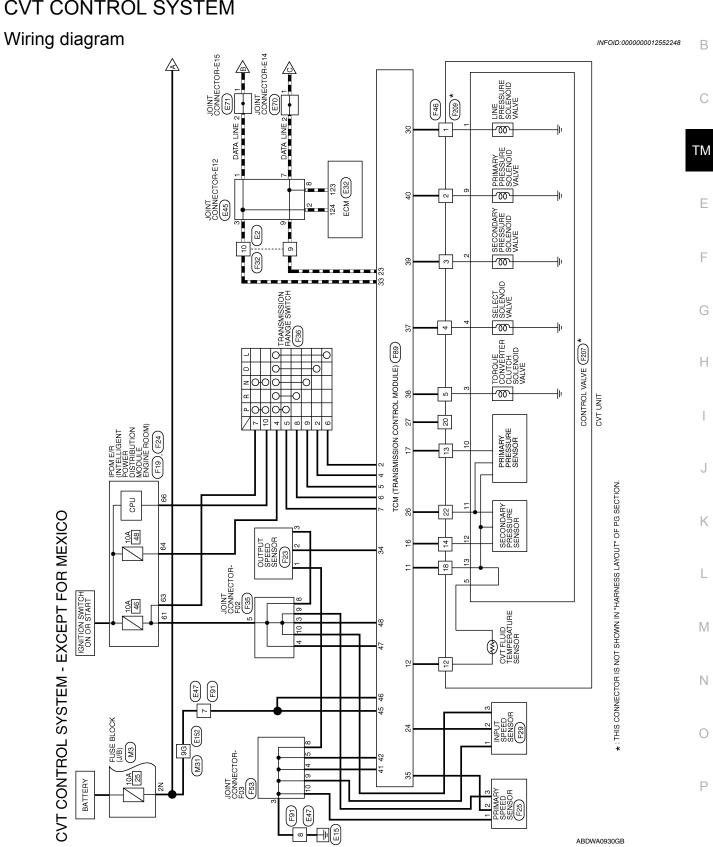
<sup>\*2:</sup> The DTC number of the 1st trip is the same as the DTC number.

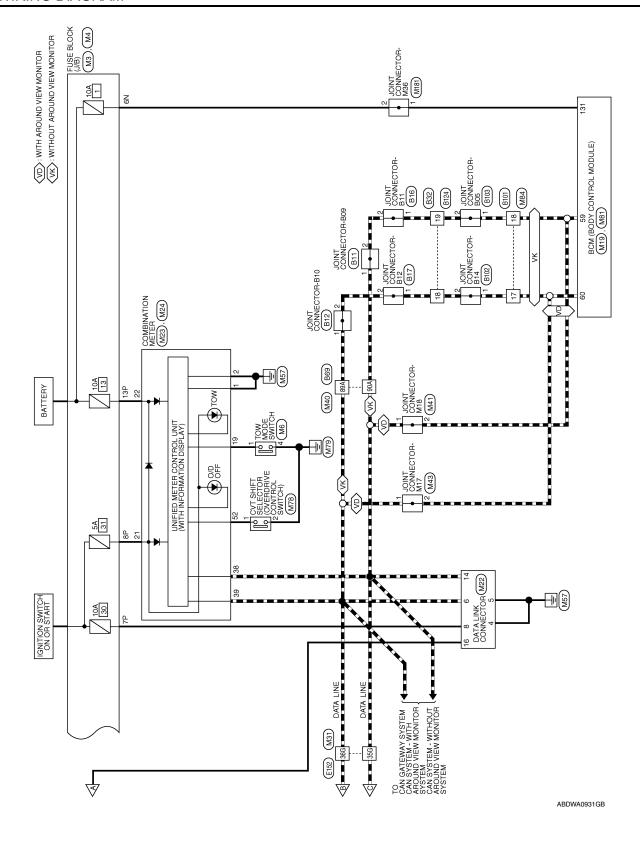
< WIRING DIAGRAM > [CVT: RE0F10E]

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# WIRING DIAGRAM

## **CVT CONTROL SYSTEM**





Connector Name TOW MODE SWITCH

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Connector No.

Connector Color GRAY

[CVT: RE0F10E]

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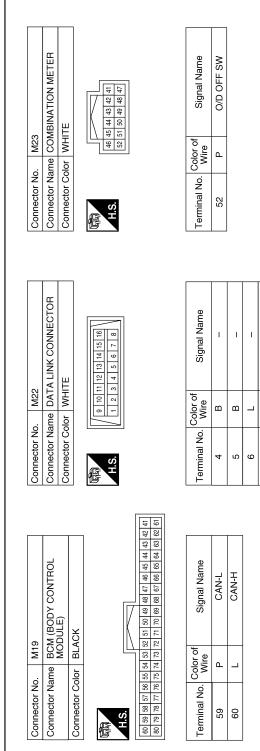
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Connector No. M4	Connector Name FUSE BLOCK (J/B)	Connector Color WHITE	(7P 6P 5P 4P (2P 1P 10P 9P 1P 16P 1P 1P 10P 9P 1P 16P 1SP 1P 1P 1SP 1S	Terminal No. Wire Signal Name
13	Connector Name FUSE BLOCK (J/B)	HITE	3N   SN 1N   SN 4N   S	of Signal Name
. M	me FL	lor W	NS NS	Color c Wire
Connector No.   M3	Connector Nai	Connector Color WHITE	(中) H.S.	Terminal No. Wire

Š.	No. Wire	Signal Name	Termina	Color of Wire	lor of Vire	Signal Name	Te	Color of Wire	Color of Wire	Signal Name
	BG	1	7P		FG	ı		-	SB	ı
	W	1	8P		BG	ı		4	В	I
			13P		M	ı				
							L			

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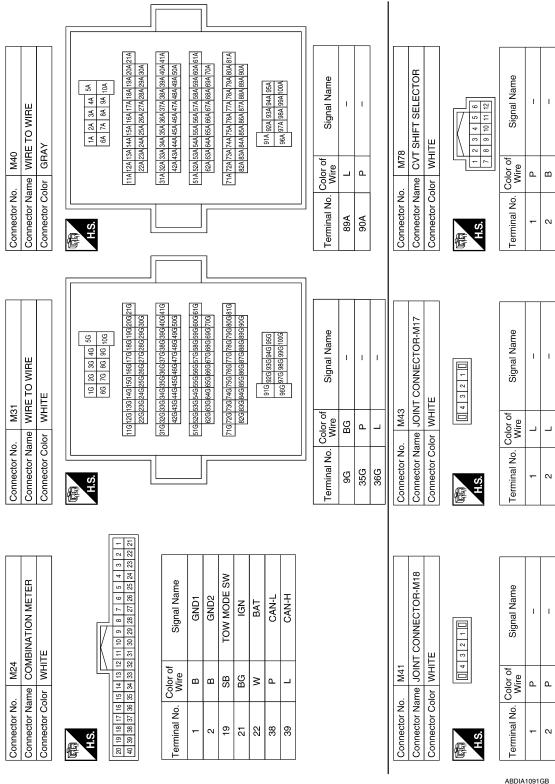


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Signal Name	I	1	ı	_	ı	ı	
Color of Wire	В	В	7	FIG	Ь	BG	
Terminal No. Wire	4	5	9	8	14	16	
-							
Φ.	CAN-L	CAN-H					
Signal Name	P CAN-L	L CAN-H					

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## **CVT CONTROL SYSTEM**

< WIRING DIAGRAM > [CVT: RE0F10E]

Connector Name JOINT CONNECTOR-M36 Connector Color WHITE	Color of Signal Name Wire W - W	E45 JOINT CONNECTOR-E12 BLUE 10 9 8 7 6 5 4 3 2 1	Color of Signal Name  L
Connector Name Connector Color	Terminal No. Wol	Connector No. Ed Connector Name JC Connector Color BI H.S.	Terminal No. Col
Connector Name WIRE TO WIRE  Connector Color WHITE  MH.S.  (6   15   14   13   12   11   10   9   8   7   6   5   4   3   2   1    (7   2   3   30   20   22   7   20   19   18   17    (8   2   3   30   20   22   7   20   19   18   17    (9   1   2   3   3   3   3   3   3   3   3   3	Terminal No. Color of Signal Name  17 L	Connector No. E32  Connector Name ECM (EXCEPT FOR MEXICO)  Connector Color BLACK  IZZITSS[123] (135] (145] (	Terminal No. Wire Signal Name  123 P CAN-L  124 L CAN-H
Connector Name BCM (BODY CONTROL MODULE)  Connector Color WHITE  Connector Color WHITE  Tal	Terminal No.   Color of   Signal Name   Wire   BAT BCM FUSE	Connector No. E2  Connector Name WIRE TO WIRE  Connector Color WHITE  H.S.   1   2   3   4   5   6   7   8   10   11   12   13   14   15   15   15   15   15   15   15	Terminal No. Color of Wire Signal Name  9 P

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## **CVT CONTROL SYSTEM**

< WIRING DIAGRAM > [CVT: RE0F10E]

Connector No.	. E70		Connector No.		E71
Connector Na	me JOIN	Connector Name JOINT CONNECTOR-E14	Connecto	r Name	Connector Name JOINT CONNECTOR-E15
Connector Color BLACK	lor BLA	O,K	Connecto	Connector Color BLACK	BLACK
		R			
H.S.	9	4 3 2 1	H.S.		6 5 4 3 2 1
					-
Terminal No. Color of Wire	Color of Wire	Signal Name	Terminal No. Wire	No. Color	of Signal Name
-	۵	1	-	_	ı
2	۵	ı	2	٦	-

Signal Name

Color of Wire LG

Terminal No. 7

Connector Name WIRE TO WIRE Connector Color BROWN

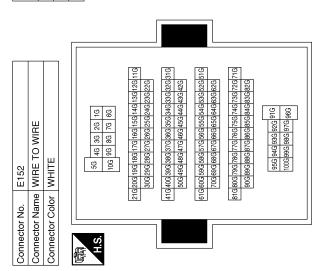
E47

Connector No.

1

Connector No.	). F19	
Connector Name		IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Color WHITE	olor WH	ΠE
原南 H.S.	52 53 56 57	57 58 59 60 61
Terminal No.   Color of Wire	Color of Wire	Signal Name
61	Υ	AT ECU

Signal Name	_	-	_
Color of Wire	ГG	۵	٦
Terminal No.	96	35G	998

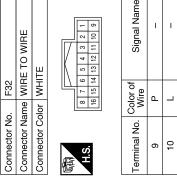


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[CVT: RE0F10E] < WIRING DIAGRAM >

	Connector Name PRIMARY SPEED SENSOR Connector Color BLACK			Signal Name	1	1	ı
. F25	me PRIM lor BLAC	<	3 2	Color of Wire	В	LG	>
Connector No.	Connector Name PRIMAF	Ą	山东 H.S.	Terminal No. Wire	Į.	2	3
	Connector Name POWER DISTRIBUTION MODULE ENGINE ROOM)		72 73 72 73	Signal Name	INHIBIT SW	START IG EGI	NP SW
F24	IPDM E/ POWER MODUL	v WHITE	62 63 64 65 68 69 70 71	color of Wire	7	LG	<b>5</b>
Connector No.	Connector Nam	Connector Color WHITE	崎南 H.S.	Terminal No.   Color of Wire	63	64	99
	Connector Name OUTPUT SPEED SENSOR Connector Color BLACK	<	2 1	Signal Name	1	1	ı
). F23	tme OUT			Color of Wire	Ф	BB	>
Connector No.	Connector Name OUTPU Connector Color BLACK	Ą	प्रमूज H.S.	Terminal No.   Color of   Wire	-	2	က

							1					ī
	Connector Name JOINT CONNECTOR-F02	4CK		4 3 2 1	9 8 7 6	Signal Name	ı	1	-	ı	ı	
F35	me JOI	or BLACK		5	•	Color of Wire	>	>	Y	>	>	
Connector No.	Connector Nar	Connector Color	Ð	西山	Ċ.	Terminal No. Wire	က	4	5	80	6	
	/IRE		ſī	- Z	1 10 9	ignal Name	ı	ı				



Connector No.	F29
Connector Name	Connector Name   INPUT SPEED SENSOF
Connector Color BLACK	BLACK
E S	3 2 1

Signal Name	ı	1	-
Color of Wire	В	LG	Y
erminal No. Color of Wire	1	2	3

Signal Name	I	I	-
Color of Wire	В	LG	У
Terminal No.	1	2	3

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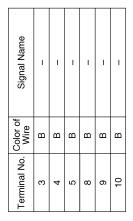
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[CVT: RE0F10E]

tor No.	F53
tor Name	tor Name   JOINT CONNECTOR-F03
tor Color BLACK	BLACK













Signal Name	í	ı	ı	ı	ı	ı	ı	ı	ı	ı	ı	ı	I	I	1	I	l	_	-	ı	1	1
Color of Wire	SB	>	٦	BR	>	ı	ı	ı	ı	ı	1	ГG	LG	<b>\</b>	ı	ı	ı	У	_	Э	-	БJ
Ferminal No.	-	2	က	4	5	9	7	80	6	10	11	12	13	14	15	16	17	18	19	20	21	22







Signal Name	ı	ı	ı	1	1	1	1	1
Color of Wire	<b>&gt;</b>	LG	>	SB	_	BR	Т	ŋ
Terminal No. Color of Wire	2	4	5	9	7	8	6	10

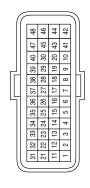
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< WIRING DIAGRAM > [CVT: RE0F10E]

Signal Name	ı	CAN-H	OUTPUT SPEED SENS	PRI SPEED SENS	ı	SELECT SOL VALVE	TCC SOLE VALVE	SEC PRESS SOLE VALVE	PRI PRESS SOLE VALVE	GND	GND	ı	ı	BATT	BATT	VIGN	VIGN
Color of Wire	ı	_	BR	re	1	BR	>	_	>	В	В	ı	1	LG	ГG	>	٨
Terminal No.	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48

Terminal No.	Color of Wire	Signal Name
=	>	SENSOR GND
12	LG	CVT FLUID TEMP SENS
13	ı	I
14	1	I
15	1	I
16	Υ	SEC PRESS SENS
17	ГG	PRI PRESS SENS
18	_	-
19	1	ı
20	1	-
21	1	-
22	_	1
23	Д	CAN-L
24	LG	INPUT SPEED SENS
25	_	-
56	LG	SENS PWR SUPPLY
27	В	ı
28	-	1
29	ı	ı
30	SB	LINE PRESS SOL VALVE
31	_	ı

Connector No.	F89
Connector Name	Connector Name CONTROL MODULE) (EXCEPT FOR MEXICO)
Connector Color BLACK	BLACK



Signal Name	I	L RANGE SW	I	D RANGE SW	N RANGE SW	R RANGE SW	P RANGE SW	I	1	I	
Color of Wire	1	SB	ı	Υ	_	BR	>	-	ı	ı	
Terminal No.	-	2	3	4	5	9	7	8	6	10	

Signal Name	ı	ı	
Color of Wire	ГG	В	
Terminal No.	7	8	

F91	VIRE TO WIRE	BROWN	
Connector No.	Connector Name   WIRE TO WIRE	Connector Color E	





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Revision: November 2015 TM-75 2016 Pathfinder

< WIRING DIAGRAM > [CVT: RE0F10E]

Signal Name	_	1	1
Color of Wire	В	В/У	1
Terminal No.	12	13	14

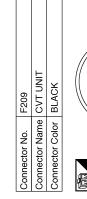
Signal Name	ı	ı	ı	-	1	ı	1	I	ı
Color of Wire	<b>&gt;</b>	۵	В	1	ı	1	0	_	Ν
Terminal No. Wire	3	4	5	9	7	8	6	10	11

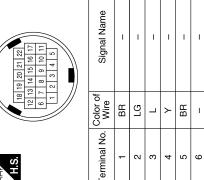
7	Connector Name   CONTROL VALVE		8 9 10 11 12 13 14	Signal Name	ı	I
F207	me CO	lor	5 6 1	Color of Wire	GR	BR
Connector No.	Connector Na	Connector Color	H.S.	Terminal No. Wire	-	2

Connector No.	B11
Connector Name	Connector Name JOINT CONNECTOR-B09
Connector Color WHITE	WHITE
	]43211

8 3 2 1 1	Signal Name	ı	ı
4	Color of Wire	Ь	۵
语 E	Terminal No. Wire	1	٥

Signal Name	1	ı	ı	ı	ı	ı	1	ı	ı	1	ı	1	1	ı	ı	ı
Color of Wire	ı	1	-	-	1	>	LG	<b>\</b>	_	1	-	>	1	SB	1	LG
Terminal No.	7	8	6	10	11	12	13	14	15	16	17	18	19	20	21	22





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< WIRING DIAGRAM > [CVT: RE0F10E]

WHITE  WHITE  WHITE  Or of Signal Name  L  L  L  P  P  -  P  P  -  P  P  -  P  -  P  -  -	(
Connector No. B17 Connector Name JOINT C Connector Color WHITE  Terminal No. Wire  1 L 2 L 89A L 90A P	T
Signal Name	
ctor No.  ctor N	
	1
Signal   N   Sig	P

Revision: November 2015 TM-77 2016 Pathfinder

[CVT: RE0F10E]

B103	Connector Name JOINT CONNECTOR-B05	WHITE		lor of Signal Name	ı	- П
Connector No.	Connector Name	Connector Color WHITE	原 H.S.	Terminal No. Wire	-	2
72	Connector Name JOINT CONNECTOR-B14	ITE	3 2 1 1	Signal Name	ı	ı
Connector No.   B102	ector Name JOI	Connector Color WHITE	4	Terminal No. Wire	1	2 L
Conn	Conn	Conn	1 H.S.	Termi		
B101	Connector Name WIRE TO WIRE	HITE	21 22 23 24 25 26 27 28 29 30 31 32	of Signal Name	ı	ı
	Name W	Solor W	1 2 3 4 5 17 18 19 20 21	Color c Wire	_	۵
Connector No.	Sonnector I	Connector Color WHITE	H.S.	Color of Wire	17	18

				_	_
				16	32
		Г		15	3
				4	8
				13	59
				12	28
				9 10 11 12 13 14 15 16	17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32
	ш			9	56
	E			6	25
	≥		N	7 8	24
	0	l		7	23
4		쁜		9	22
B124	III	₹		5	21
m	>	>		4	20
	e	~		6	19
o	an	응		2	28
Z	Z	5		-	17
호	ᅙ	Į			_
Connector No.	Connector Name WIRE TO WIRE	Connector Color WHITE	E	) E	ģ

Signal Name	1	ı
Color of Wire	7	Ъ
Terminal No.	18	19

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# **CVT SHIFT LOCK SYSTEM**

Wiring diagram INFOID:0000000012552249

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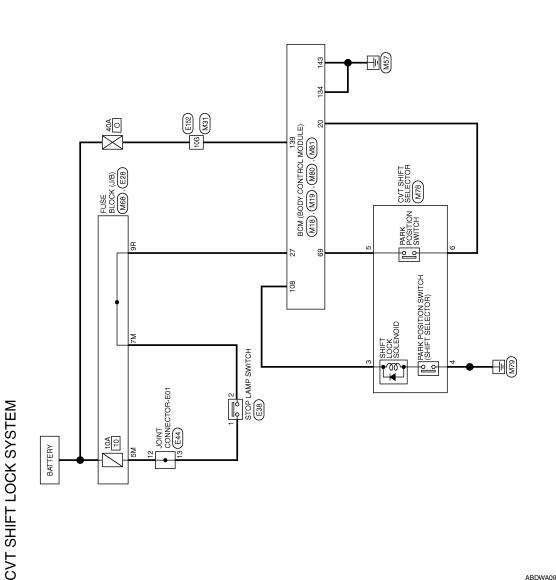
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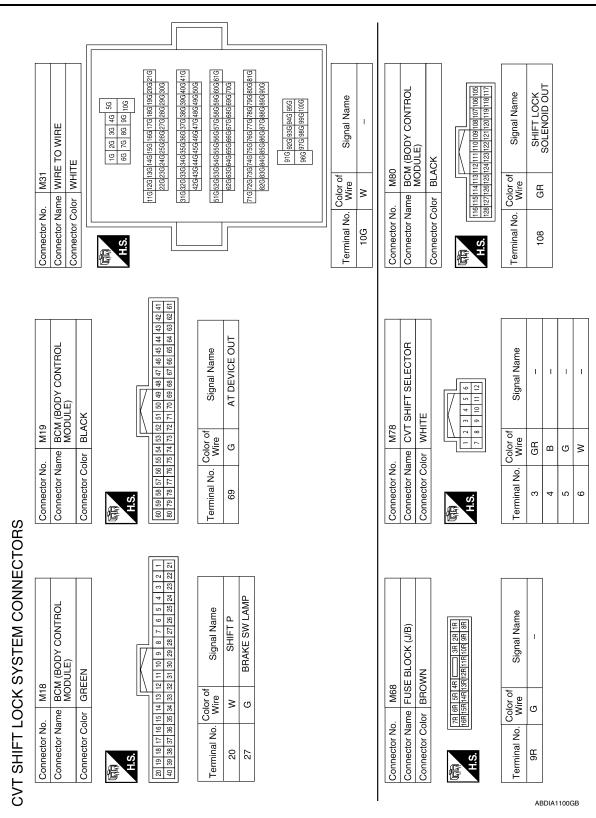
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### **CVT SHIFT LOCK SYSTEM**

< WIRING DIAGRAM > [CVT: RE0F10E]



# **CVT SHIFT LOCK SYSTEM**

< WIRING DIAGRAM > [CVT: RE0F10E]

E38 STOP LAMP SWITCH WHITE	0   r   4   0	Signal Name	Signal Name	
Connector No. E38 Connector Name STOP L Connector Color WHITE	H.S.	Terminal No. Color of Wire 1 Y 2 R	Terminal No. Color of Wire 10G P	
Connector Name FUSE BLOCK (J/B) Connector Color WHITE	(斯) (10M (3M (2M (2M (1M (2M (2M (2M (2M (2M (2M (2M (2M (2M (2	Terminal No. Color of Signal Name  5M Y  7M R	Connector No.   E152	
	٦			
M81 BCM (BODY CONTROL MODULE) WHITE	182   183   194   194   195   188	Signal Name  GND2  BAT POWER F/L  GND1	MHITE   MHIT	
Connector No. M81  Connector Name BCM (B MODUL	143 142	O. Color of Wire B B B		
to to	H.S.	Terminal No. 134 139 143	Connector No. Connector Name Connector Color Terminal No. Www. M. 12 13 13	

Revision: November 2015 TM-81 2016 Pathfinder

### DIAGNOSIS AND REPAIR WORK FLOW

[CVT: RE0F10E]

< BASIC INSPECTION >

# **BASIC INSPECTION**

### DIAGNOSIS AND REPAIR WORK FLOW

Work Flow

### NOTE:

"DTC" includes DTC at the 1st trip.

# OBTAIN INFORMATION ABOUT SYMPTOM

Refer to <u>TM-83</u>, "<u>Diagnostic Work Sheet</u>" and interview the customer to obtain the malfunction information (conditions and environment when the malfunction occurred) as much as possible when the customer brings in the vehicle.

>> GO TO 2.

### 2.CHECK DTC

- 1. Before checking the malfunction, check whether any DTC exists.
- 2. If DTC exists, perform the following operations.
- Records the DTCs. (Print out using CONSULT and affix to the Work Order Sheet.)
- Erase DTCs.
- Check the relation between the cause found by DTC and the malfunction information from customer. <u>TM-189</u>, "Symptom Table" can be used effectively.
- Check the relevant information including STI, etc.

### Do malfunction information and DTC exists?

Malfunction information and DTC exists.>>GO TO 3.

Malfunction information exists but no DTC.>>GO TO 4.

No malfunction information, but DTC exists.>>GO TO 5.

# 3.REPRODUCE MALFUCTION SYSTEM

Check the malfunction described by the customer on the vehicle.

Check if the behavior is fail safe or normal operation. Refer to TM-60. "Fail-safe".

Interview sheet can be used effectively when reproduce malfunction conditions. Refer to <u>TM-83</u>, "<u>Diagnostic</u> Work Sheet".

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

>> GO TO 5.

# 4. REPRODUCE MALFUNCTION SYMPTOM

Check the malfunction described by the customer on the vehicle.

Check if the behavior is fail safe or normal operation. Refer to TM-60, "Fail-safe".

Interview sheet can be used effectively when reproduce malfunction conditions. Refer to <u>TM-83</u>, "<u>Diagnostic Work Sheet</u>".

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

>> GO TO 6.

# 5. PERFORM "DTC CONFIRMATION PROCEDURE"

Perform "DTC CONFIRMATION PROCEDURE" of the appropriate DTC to check if DTC is detected again. Refer to TM-64, "DTC Inspection Priority Chart" when multiple DTCs are detected, and then determine the order for performing the diagnosis.

### Is any DTC detected?

YES >> GO TO 7.

NO >> Follow GI-47, "Intermittent Incident" to check.

 $oldsymbol{6}.$ IDENTIFY MALFUNCTIONING SYSTEM WITH "DIAGNOSIS CHART BY SYMPTOM"

### DIAGNOSIS AND REPAIR WORK FLOW

< BASIC INSPECTION > [CVT: RE0F10E]

Use TM-189.	"Symptom	Table" from the	symptom inspectio	n result in step 4.	Then identify	where to	start per-
forming the d	liagnosis ba	sed on possible	causes and symptom	oms.			

>> GO TO 8.

# 7. REPAIR OR REPLACE THE MALFUNCTIONING PARTS

Repair or replace the detected malfunctioning parts.

Reconnect parts or connector after repairing or replacing, and then erase DTC if necessary.

>> GO TO 8.

# 8. FINAL CHECK

Perform "DTC CONFIRMATION PROCEDURE" again to make sure that the repair is correctly performed. Check that malfunctions are not reproduced when obtaining the malfunction information from the customer, referring to the symptom inspection result in step 3 or 4.

### Is DTC or malfunction symptom reproduced?

YES-1 (DTC is reproduced.)>>GO TO 5.

YES-2 (Malfunction is reproduced.)>>GO TO 6.

NO >> Before delivering the vehicle to the customer, make sure that DTC is erased.

### Diagnostic Work Sheet

### DESCRIPTION

There are many operating conditions that may cause a malfunction of the transmission parts. By understanding those conditions properly, a quick and exact diagnosis can be achieved.

In general, perception of a problem varies depending on individuals. Ask the customer about his/her concerns carefully. It is important to understand the phenomenon or status. To systemize all the information for the diagnosis, prepare the question sheet referring to the question points.

In some cases, multiple conditions that appear simultaneously may cause a DTC to be detected.

### **KEY POINTS**

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

Symptoms

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### Worksheet Sample

_	_		Question sheet			
Customer's	MR/MS	Registration number		Initial year registration	Year Month day	
name		Vehicle type		Chassis No.		
Storage date	Year Month day	Engine		Mileage	km/mile	
Symptom		☐ Vehicle doe	es not start. (□ R position □	☐ D position ☐ L po	osition)	
		☐ Upshifting of	does not occur.   Downs	hifting does not occu	r.	
		☐ Lock-up malfunction				
		☐ Shift point i	s too high. ☐ Shift	t point is too low.		
		☐ Shift shock	(□ N⇒D □ Lock-up □ R	, D, and L position)		
		□ Slip (□ N⇒	D □ Lock-up □ R, D, and	d L position)		
		☐ Noise	☐ Vibration			
		When selecto	r lever position is shifted, shift	t pattern does not cha	ange.	
		□ Other (			)	
First occurrence		□ Recently (as from month of year )				
Frequency of occurr	rence	☐ Always	☐ Under certain condition	s 🗆 Sometime	es ( time(s)/day)	

# **DIAGNOSIS AND REPAIR WORK FLOW**

< BASIC INSPECTION > [CVT: RE0F10E]

			(	Question s	sheet				
Customer's name	MR	/MS	Registration number				Initial year registration	Yea	r Month day
Harrie		İ	Vehicle type				Chassis No.		
Storage date	Year M	onth day	Engine				Mileage		km/mile
Climate con- ditions			Irrelevant						
	Weather		□ Clear	☐ Cloud	□ Ra	iin	□ Snow	☐ Others	)
	Temperature		□ Hot □	□ Warm	□ Cool	□ Co	old 🗆 Tempe	erature (Approx.	°C/°F)
	Relative humidity		☐ High	☐ Mode	erate	□ Lov	N		
Transaxle con	dition		☐ In cold-start ☐ During warm-up (approx. °C/°F) ☐ After warm-up ☐Engine speed: rpm						
Road conditions			☐ Urban area ☐ Suburb area ☐ Highway ☐ Mountainous road (uphill or downhill)						
Operating condition, etc.			Irrelevant ☐ When engir ☐ During acce ☐ During corn	eleration		onstant	☐ During dri speed driving	ving □ During decel	eration
Other condition	ns								

### ADDITIONAL SERVICE WHEN REPLACING TCM

[CVT: RE0F10E] < BASIC INSPECTION > ADDITIONAL SERVICE WHEN REPLACING TCM Α Description INFOID:0000000012552252 Always perform the following items when the TCM is replaced. В SAVING AND WRITING OF TCM DATA TCM performs accurate control by retrieving data (inherent characteristic value) of each solenoid. For this reason, it is necessary to save data of current TCM in CONSULT before replacing the TCM. After this, the saved data must be written in new TCM. Refer to TM-85, "Work Procedure". Work Procedure TΜ INFOID:0000000012552253 **CAUTION:** When replacing TCM together with transaxle assembly, perform "ADDITIONAL SERVICE WHEN REPLACING TRANSAXLE ASSEMBLY". Refer to TM-86, "Description". 1. SAVE THE TCM DATA Save necessary data stored in TCM in CONSULT according to the following instructions: (P)With CONSULT Turn ignition switch OFF and wait for 10 seconds. 2. Turn ignition switch ON. Select "Work Support" in "TRANSMISSION" 3. Select "READ IP CHARA - REPLACEMENT TCM". Н Import data according to the instructions on the CONSULT screen. >> GO TO 2. 2.REPLACE THE TCM Turn ignition switch OFF and wait for 10 seconds. Replace the TCM. Refer to TM-204, "Removal and Installation". >> GO TO 3. K 3.WRITE THE TCM DATA NOTE: Write data saved in CONSULT into a new TCM according to the following instructions: (P)With CONSULT Turn ignition switch OFF and wait for 10 seconds. 2. Turn ignition switch ON. Select "Work Support" in "TRANSMISSION". Select "WRITE IP CHARA - REPLACEMENT TCM". Write data saved in CONSULT in TCM according to the instructions on the CONSULT screen. N >> WORK END Р

### ADDITIONAL SERVICE WHEN REPLACING TRANSAXLE ASSEMBLY

< BASIC INSPECTION > [CVT: RE0F10E]

# ADDITIONAL SERVICE WHEN REPLACING TRANSAXLE ASSEMBLY

**Description** 

Perform the following work after the transaxle assembly is replaced.

#### **ERASING AND WRITING TCM DATA**

• TCM performs accurate control by retrieving data (inherent characteristic value) of each solenoid. For this reason, after replacing transaxle assembly, it is necessary to erase data stored in TCM and write new data.

#### ERASING OF CVT FLUID DEGRADATION LEVEL DATA

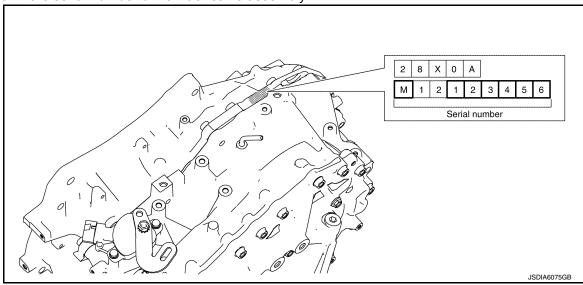
 TCM records the degradation level of the CVT fluid calculated from the vehicle driving status. Therefore, if the transaxle assembly is replaced, it is necessary to erase the CVT fluid degradation level data recorded by TCM.

Refer to TM-86, "Work Procedure".

Work Procedure

# 1. CHECK THE SERIAL NUMBER (PART 1)

Write down the serial number of new transaxle assembly.



>> GO TO 2.

# 2.CHECK THE SERIAL NUMBER (PART 2)

#### (P)With CONSULT

- 1. Turn ignition switch ON.
- Insert the attached CD into CONSULT.
- 3. Select "Work Support" in "TRANSMISSION".
- Select "WRITE IP CHARA REPLACEMENT AT/CVT".
- Check that the serial number displayed on CONSULT screen and those written in the memo agree.

### Never perform writing procedure.

6. Go back to MENU of "Work Support".

>> GO TO 3.

# 3. INITIALIZE TCM

### (P)With CONSULT

- Set parking brake.
- 2. Select "ERASE MEMORY DATA".
- 3. Touch "Start" according to the instructions on the CONSULT screen.

### Is "COMPLETED" displayed?

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### ADDITIONAL SERVICE WHEN REPLACING TRANSAXLE ASSEMBLY

[CVT: RE0F10E] < BASIC INSPECTION > YES >> GO TO 4. NO >> Turn ignition switch OFF and wait for a minimum of 10 seconds then perform the work again. Α 4.WRITE THE DATA NOTE: В Write data of new solenoid in TCM according to the following instructions: (P)With CONSULT Shift the selector lever to the P position. C 2. Turn ignition switch OFF and wait for 10 seconds. 3. Turn ignition switch ON. 4. Select "Work Support" in "TRANSMISSION". 5. Select "WRITE IP CHARA - REPLACEMENT AT/CVT". TM 6. Write data in TCM according to the instructions on the CONSULT screen. NOTE: When writing is complete, the shift position indicator of the combination meter displays P. Е >> GO TO 5. Erase cvt fluid degradation level data F Select "WORK SUPPORT" in "TRANSMISSION". 2. Select "CONFORM CVTF DETERIORTN". Touch "Clear". >> WORK END Н K L Ν

# ADDITIONAL SERVICE WHEN REPLACING TCM AND TRANSAXLE ASSEMBLY

< BASIC INSPECTION > [CVT: RE0F10E]

# ADDITIONAL SERVICE WHEN REPLACING TCM AND TRANSAXLE AS-SEMBLY

**Description** 

When replacing TCM and transaxle assembly simultaneously, perform the following work.

#### TCM PROGRAMMING

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

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

#### WRITING TCM DATA

TCM performs accurate control by retrieving data (inherent characteristic value) of each solenoid. For this
reason, after replacing TCM and transaxle assembly, it is necessary to write new data in TCM.
 Refer to TM-88, "Work Procedure".

Work Procedure

# 1. SAVE TCM DATA (VEHICLE SPECIFICATIONS)

### (P)With CONSULT

- Turn ignition switch OFF.
- 2. Connect all of disconnected connectors.
- 3. Turn ignition switch ON.
- Select "Re/programming, Configuration".
- Select "AT/CVT".

#### NOTE:

If "AT/CVT" is not displayed and TCM data cannot be saved on CONSULT, GO TO 2.

- 6. Select "Programming".
- Save TCM data on CONSULT according to the CONSULT display.

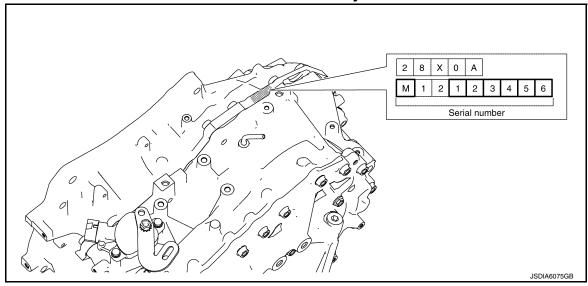
>> GO TO 2.

# 2.REPLACE TCM AND TRANSAXLE ASSEMBLY

- 1. Turn ignition switch OFF and wait for 10 seconds.
- 2. Replace TCM and transaxle assembly. Refer to <u>TM-204, "Removal and Installation"</u> (TCM), <u>TM-227, "Removal and Installation"</u> (Transaxle assembly).

#### **CAUTION:**

Write down the serial number of new transaxle assembly.



>> GO TO 3.

# ADDITIONAL SERVICE WHEN REPLACING TCM AND TRANSAXLE ASSEMBLY

BLY	
< BASIC INSPECTION > [CVT: RE0F10	E]
3.WRITE TCM DATA (VEHICLE SPECIFICATIONS)	
NOTE: Write data saved in CONSULT into a new TCM according to the following instructions:  (B) With CONSULT  1. Select "Programming".  2. Perform programming according to the CONSULT display.	
00 TO 4	
>> GO TO 4.  4.WRITE TCM DATA (IP CHARACTERISTICS VALUE)	_
NOTE: Write data of new solenoid in TCM according to the following instructions:  With CONSULT CAUTION:	
When the work is interrupted, obtain data again from the supplied CD.	
<ol> <li>Shift the selector lever to the P position.</li> <li>Turn ignition switch OFF and wait for 10 seconds.</li> <li>Turn ignition switch ON.</li> <li>Insert the supplied CD into CONSULT.</li> </ol>	
<ol> <li>Select "Work Support" in "TRANSMISSION".</li> <li>Select "WRITE IP CHARA - REPLACEMENT AT/CVT".</li> <li>Check that the serial number displayed on CONSULT screen and those written in the memo agree.</li> <li>Write data in TCM according to the instructions on the CONSULT screen.</li> </ol>	
<b>NOTE:</b> When writing is complete, the shift position indicator of the combination meter displays P.	
>> WORK END	

### ADDITIONAL SERVICE WHEN REPLACING CONTROL VALVE

< BASIC INSPECTION > [CVT: RE0F10E]

### ADDITIONAL SERVICE WHEN REPLACING CONTROL VALVE

Description INFOID:000000013477997

Perform the following work after the control valve is replaced. For work procedure, refer to <u>TM-90, "Work Procedure"</u>.

#### WRITING TCM DATA

TCM performs accurate control by retrieving data (inherent characteristic value) of each solenoid. For this
reason, after replacing control valve, it is necessary to write new data.

#### ERASING OF CVT FLUID DEGRADATION LEVEL DATA

• TCM records the degradation level of the CVT fluid calculated from the vehicle driving status. Therefore, if the control valve is replaced, it is necessary to erase the CVT fluid degradation level data recorded by TCM.

Work Procedure

1.WRITE TCM DATA (IP CHARACTERISTICS VALUE)

### NOTE:

Write data of new solenoid in TCM according to the following instructions:

### (P)With CONSULT

#### **CAUTION:**

When the work is interrupted, obtain data again from the supplied CD.

- 1. Shift the selector lever to the P position.
- 2. Turn ignition switch OFF and wait for 10 seconds.
- 3. Turn ignition switch ON.
- Insert the supplied CD into CONSULT.
- Select "Work Support" in "TRANSMISSION".
- Select "WRITE IP CHARA REPLACEMENT AT/CVT".
- Write data in TCM according to the instructions on the CONSULT screen. Refer to CONSULT operation manual.

>> GO TO 2.

# 2.erase cvt fluid degradation level data

#### (P)With CONSULT

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

>> GO TO 3.

# 3. PERFORM CLUTCH POINT LEARNING

Refer to TM-91, "Description".

>> WORK END

**CLUTCH POINT LEARNING** [CVT: RE0F10E] < BASIC INSPECTION > **CLUTCH POINT LEARNING** Α Description INFOID:0000000013477999 TCM memorizes a clutch point (engagement timing), and this enables accurate control. For work procedure, refer to TM-91, "Work Procedure". Work Procedure INFOID:0000000013478000 1. CLUTCH POINT LEARNING With CONSULT

1. Start the engin  $\mathsf{TM}$ Start the engine. Select "Work Support" in "TRANSMISSION". Select "FWO CLUTCH POINT LEARNING". Perform learning according to the CONSULT display. Е **CAUTION:** After the completion in D position, perform in R position. F >> WORK END Н K L M

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# CVT FLUID COOLER SYSTEM

Cleaning

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

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

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

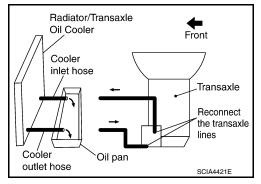
### CVT FLUID COOLER CLEANING PROCEDURE

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

#### NOTE:

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

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

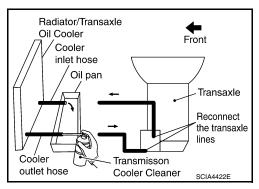


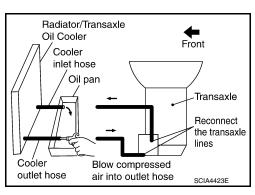
[CVT: RE0F10E]

5. Insert the extension adapter hose of a can of Transmission Cooler Cleaner into the cooler outlet hose.

### **CAUTION:**

- Wear safety glasses and rubber gloves when spraying the Transmission Cooler Cleaner.
- Spray Transmission Cooler Cleaner only with adequate ventilation.
- Avoid contact with eyes and skin.
- Never breath vapors or spray mist.
- Hold the hose and can as high as possible and spray Transmission Cooler Cleaner in a continuous stream into the cooler outlet hose until CVT fluid flows out of the cooler inlet hose for 5 seconds.
- 7. Insert the tip of an air gun into the end of the cooler outlet hose.
- 8. Wrap a shop rag around the air gun tip and end of the cooler outlet hose.
- Blow compressed air regulated to 5 to 9 kg/cm<sup>2</sup> (70 to 130 psi) through the cooler outlet hose for 10 seconds to force out any remaining CVT fluid.
- 10. Repeat steps 5 through 9 three additional times.
- 11. Position an oil pan under the banjo bolts that connect the CVT fluid cooler steel lines to the transaxle.
- 12. Remove the banjo bolts.
- 13. Flush each steel line from the cooler side back toward the transaxle by spraying Transmission Cooler Cleaner in a continuous stream for 5 seconds.
- 14. Blow compressed air regulated to 5 to 9 kg/cm<sup>2</sup> (70 to 130 psi) through each steel line from the cooler side back toward the transaxle for 10 seconds to force out any remaining CVT fluid.
- 15. Ensure all debris is removed from the steel cooler lines.
- 16. Ensure all debris is removed from the banjo bolts and fittings.





### CVT FLUID COOLER SYSTEM

< BASIC INSPECTION > [CVT: RE0F10E]

17. Perform "CVT FLUID COOLER DIAGNOSIS PROCEDURE".

### CVT FLUID COOLER DIAGNOSIS PROCEDURE

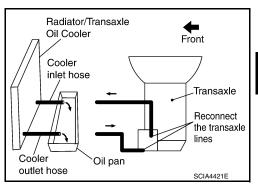
#### NOTE:

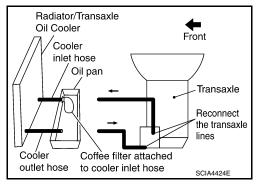
Insufficient cleaning of the cooler inlet hose exterior may lead to inaccurate debris identification.

- 1. Position an oil pan under the transaxle's inlet and outlet cooler hoses.
- 2. Clean the exterior and tip of the cooler inlet hose.
- 3. Insert the extension adapter hose of a can of Transmission Cooler Cleaner into the cooler outlet hose.

#### **CAUTION:**

- Wear safety glasses and rubber gloves when spraying the Transmission Cooler Cleaner.
- Spray Transmission Cooler Cleaner only with adequate ventilation.
- Avoid contact with eyes and skin.
- · Never breath vapors or spray mist.
- Hold the hose and can as high as possible and spray Transmission Cooler Cleaner in a continuous stream into the cooler outlet hose until CVT fluid flows out of the cooler inlet hose for 5 seconds.
- 5. Tie a common white, basket-type coffee filter to the end of the cooler inlet hose.

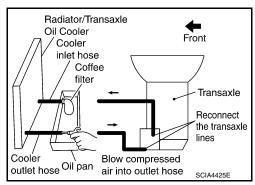


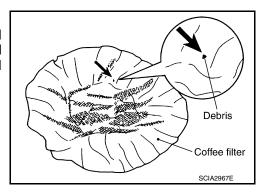


- 6. Insert the tip of an air gun into the end of the cooler outlet hose.
- 7. Wrap a shop rag around the air gun tip and end of cooler outlet hose.
- 8. Blow compressed air regulated to 5 to 9 kg/cm<sup>2</sup> (70 to 130 psi) through the cooler outlet hose to force any remaining CVT fluid into the coffee filter.
- 9. Remove the coffee filter from the end of the cooler inlet hose.
- 10. Perform "CVT FLUID COOLER INSPECTION PROCEDURE".

#### CVT FLUID COOLER INSPECTION PROCEDURE

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





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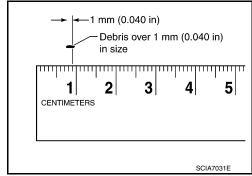
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### **CVT FLUID COOLER SYSTEM**

< BASIC INSPECTION > [CVT: RE0F10E]

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



### CVT FLUID COOLER FINAL INSPECTION

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

### STALL TEST

< BASIC INSPECTION > [CVT: RE0F10E]

### STALL TEST

Work Procedure

INSPECTION

- Check the engine oil level. Replenish if necessary. Refer to <u>LU-8</u>. "Inspection".
- 2. Check for leak of the CVT fluid. Refer to TM-194, "Inspection".
- 3. Drive for about 10 minutes to warm up the vehicle so that the CVT fluid temperature is 50 to 80°C (122 to 176°F).
- 4. Be sure to apply the parking brake and block the tires.
- 5. Start the engine, depress the brake pedal and shift the selector lever to "D" position.
- 6. While depressing the brake pedal, depress the accelerator pedal gradually.
- 7. Read the stall speed quickly and release your foot from the accelerator pedal quickly.

#### **CAUTION:**

Do not depress the accelerator pedal for 5 seconds or more during the test.

Stall speed : Refer to TM-232, "Stall Speed".

- 8. Shift the selector lever to "N" position.
- 9. Cool the CVT fluid.

#### **CAUTION:**

Run the engine with the idle speed for at least 1 minute.

10. Put the selector lever to the R position and perform Step 6 to Step 9 again.

#### NARROWING-DOWN MALFUNCTIONING PARTS

	Selector le	ver position	Possible cause	
	D	R	Possible cause	
	Н	0	Forward clutch	
	0	Н	Reverse brake	
Stall speed	L	L	Engine     Torque converter one way clutch	
	н	Н	Line pressure is low.     Primary pulley     Secondary pulley     Chain belt	

O: Within the stall speed standard value.

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H: Stall speed is higher than the standard value.

L: Stall speed is lower than the standard value.

### CVT POSITION

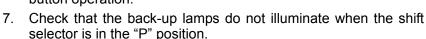
### Inspection and Adjustment

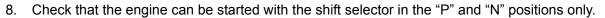
#### INFOID:0000000012552260

[CVT: RE0F10E]

### INSPECTION

- 1. Turn ON the ignition switch with the shift selector at the "P" position.
- 2. Press the shift selector button with the brake pedal depressed, and confirm that the shift selector can be moved to positions other than "P". Also confirm that movement is not allowed from the "P" position to other position without depressing the brake pedal.
- 3. Move the shift selector and check for "excessive effort", "sticking", "noise" or "rattle".
- 4. Confirm that shift selector stops at each position with the feel of engagement when it is moved through all the positions. Check whether or not the actual position the shift selector is in matches the position shown by the transaxle body.
- 5. Make sure that the shift selector is moved to all the shift positions in the manner shown.
  - (A): Press shift selector button to operate shift selector, while depressing the brake pedal.
  - (B): Press shift selector button to operate shift selector.
  - (C): Shift selector can be operated without pressing the shift selector button.
- 6. When the shift selector button is pressed without applying forward/backward force to the shift selector at "P", "R", "N", "D" or "Ds" positions, there should be no "sticking" on the shift selector button operation.





9. Check that the transaxle is locked completely when the shift selector is in the "P" position.

### **ADJUSTMENT**

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

### **CAUTION:**

Rotate the wheels at least a quarter turn and be certain the Park position mechanism is fully engaged.

Loosen control cable nut (A) and set manual lever (B) to the "P" position.

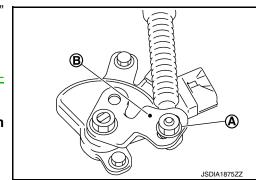
#### **CAUTION:**

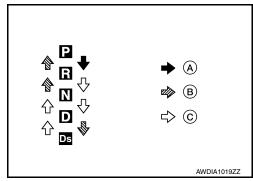
Do not apply force to the manual lever.

3. Tighten control cable nut to the specified torque. Refer to TM-200, "Exploded View".

#### **CAUTION:**

Hold the manual lever securely in the "P" position when tightening control cable nut.





### **U0073 COMMUNICATION BUS A OFF**

< DTC/CIRCUIT DIAGNOSIS >

# DTC/CIRCUIT DIAGNOSIS

# U0073 COMMUNICATION BUS A OFF

DTC Logic

### DTC DETECTION LOGIC

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

DTC CONFIRMATION PROCEDURE

# 1. PREPARATION BEFORE WORK

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

>> GO TO 2.

# 2. PERFORM DTC CONFIRMATION PROCEDURE

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

#### Is "U0073" detected?

YES >> Go to TM-97, "Diagnosis Procedure".

NO >> INSPECTION END

### Diagnosis Procedure

For the diagnosis procedure, refer to LAN-21, "Trouble Diagnosis Flow Chart".

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# **U0100 LOST COMMUNICATION (ECM A)**

< DTC/CIRCUIT DIAGNOSIS >

# U0100 LOST COMMUNICATION (ECM A)

DTC Logic

### DTC DETECTION LOGIC

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

### DTC CONFIRMATION PROCEDURE

# 1. PREPARATION BEFORE WORK

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

>> GO TO 2.

# 2. PERFORM DTC CONFIRMATION PROCEDURE

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

### Is "U0100" detected?

YES >> Go to TM-98, "Diagnosis Procedure".

NO >> INSPECTION END

# Diagnosis Procedure

For the diagnosis procedure, refer to LAN-21, "Trouble Diagnosis Flow Chart".

INFOID:0000000012552264

# **U0102 LOST COMMUNICATION (TRANSFER)**

< DTC/CIRCUIT DIAGNOSIS >

# U0102 LOST COMMUNICATION (TRANSFER)

**DTC Logic** INFOID:0000000012552265

### DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
U0140	LOST COMM (TRANSFER) (Lost Communication With Transfer Case Control Mod- ule)	When the ignition switch is ON, TCM is unable to receive the CAN communications signal from 4WD control unit continuously for 2 seconds or more.	4WD control unit     Harness or connector     (CAN communication line is open or shorted)

### DTC CONFIRMATION PROCEDURE

# 1. PREPARATION BEFORE WORK

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

>> GO TO 2.

# 2.PERFORM DTC CONFIRMATION PROCEDURE

### (P)With CONSULT

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

### Is "U0102" detected?

YES >> Go to TM-99, "Diagnosis Procedure".

>> INSPECTION END NO

### Diagnosis Procedure

For the diagnosis procedure, refer to LAN-21, "Trouble Diagnosis Flow Chart".

TM-99 Revision: November 2015 2016 Pathfinder TM

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INFOID:0000000012552266

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# **U0140 LOST COMMUNICATION (BCM)**

< DTC/CIRCUIT DIAGNOSIS >

# U0140 LOST COMMUNICATION (BCM)

DTC Logic

### DTC DETECTION LOGIC

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

### DTC CONFIRMATION PROCEDURE

# 1. PREPARATION BEFORE WORK

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

>> GO TO 2.

# 2. PERFORM DTC CONFIRMATION PROCEDURE

### (P)With CONSULT

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

### Is "U0140" detected?

YES >> Go to TM-100, "Diagnosis Procedure".

NO >> INSPECTION END

# Diagnosis Procedure

For the diagnosis procedure, refer to LAN-21, "Trouble Diagnosis Flow Chart".

INFOID:0000000012552268

### **U0141 LOST COMMUNICATION (BCM A)**

< DTC/CIRCUIT DIAGNOSIS >

# U0141 LOST COMMUNICATION (BCM A)

DTC Logic

### DTC DETECTION LOGIC

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

### DTC CONFIRMATION PROCEDURE

# 1. PREPARATION BEFORE WORK

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

>> GO TO 2.

# 2.PERFORM DTC CONFIRMATION PROCEDURE

### (P)With CONSULT

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

### Is "U0141" detected?

YES >> Go to TM-101, "Diagnosis Procedure".

NO >> INSPECTION END

### Diagnosis Procedure

For the diagnosis procedure, refer to LAN-21, "Trouble Diagnosis Flow Chart".

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INFOID:0000000012552270

# **U0155 LOST COMMUNICATION (IPC)**

< DTC/CIRCUIT DIAGNOSIS >

# U0155 LOST COMMUNICATION (IPC)

DTC Logic

### DTC DETECTION LOGIC

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

### DTC CONFIRMATION PROCEDURE

# 1. PREPARATION BEFORE WORK

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

>> GO TO 2.

# 2. PERFORM DTC CONFIRMATION PROCEDURE

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

### Is "U0155" detected?

YES >> Go to TM-102, "Diagnosis Procedure".

NO >> INSPECTION END

# Diagnosis Procedure

For the diagnosis procedure, refer to LAN-21, "Trouble Diagnosis Flow Chart".

INFOID:0000000012552272

### **U0300 CAN COMMUNICATION DATA**

< DTC/CIRCUIT DIAGNOSIS >

### U0300 CAN COMMUNICATION DATA

DTC Logic INFOID:0000000012552273

#### DTC DETECTION LOGIC

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

### DTC CONFIRMATION PROCEDURE

# 1. PREPARATION BEFORE WORK

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

>> GO TO 2.

# 2.check dtc detection

# (P)With CONSULT

- Start the engine and wait for 5 seconds or more.
- Check the DTC.

### Is "U0300" detected?

YES >> Go to TM-103, "Diagnosis Procedure".

>> INSPECTION END NO

### Diagnosis Procedure

1. CONTROL UNIT CHECK

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

# Is one control unit replaced?

YES >> The specification of the control unit replaced may be incorrect. Check the part number and the specification.

NO >> GO TO 2.

# 2.control unit check

#### (P)With CONSULT

- Remove one of the control unit replaced.
- Assemble the old control unit before replacement.
- Turn ignition switch ON, and wait for 2 seconds or more.
- Select "Self Diagnostic Results" in "TRANSMISSION".

#### Is "U0300" detected?

YES >> Turn OFF the ignition switch and check other control units in the same manner.

NO >> The specification of the control unit removed may be incorrect. Check the part number and the specification.

TM-103 Revision: November 2015 2016 Pathfinder

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### **U1000 CAN COMM CIRCUIT**

< DTC/CIRCUIT DIAGNOSIS >

### U1000 CAN COMM CIRCUIT

Description INFOID:000000012552275

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

DTC Logic INFOID:000000012552276

#### DTC DETECTION LOGIC

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

### DTC CONFIRMATION PROCEDURE

### 1. PREPARATION BEFORE WORK

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

>> GO TO 2.

# 2. CHECK DTC DETECTION

### (P)With CONSULT

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

#### Is "U1000" detected?

YES >> Go to TM-104, "Diagnosis Procedure".

NO >> INSPECTION END

# Diagnosis Procedure

For the diagnosis procedure, refer to LAN-21, "Trouble Diagnosis Flow Chart".

INFOID:0000000012552277

# **U1117 LOST COMMUNICATION (ABS)**

< DTC/CIRCUIT DIAGNOSIS >

# U1117 LOST COMMUNICATION (ABS)

DTC Logic

### DTC DETECTION LOGIC

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

DTC CONFIRMATION PROCEDURE

# 1. PREPARATION BEFORE WORK

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

>> GO TO 2.

# 2. PERFORM DTC CONFIRMATION PROCEDURE

### (P)With CONSULT

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

### Is "U1117" detected?

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

NO >> INSPECTION END

# Diagnosis Procedure

For the diagnosis procedure, refer to LAN-21, "Trouble Diagnosis Flow Chart".

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### P062F EEPROM

### P062F EEPROM

Description INFOID:000000012552280

TCM compares the calculated value stored in the flash ROM with the value stored in TCM. If the calculated value does not agree with the stored value, TCM judges this as a malfunction.

DTC Logic

### DTC DETECTION LOGIC

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

### DTC CONFIRMATION PROCEDURE

# 1. PREPARATION BEFORE WORK

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

>> GO TO 2.

# 2. CHECK DTC DETECTION

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

### Is "P062F" detected?

YES >> Go to TM-106, "Diagnosis Procedure".

NO >> INSPECTION END

# Diagnosis Procedure

INFOID:0000000012552282

[CVT: RE0F10E]

# 1. CHECK INTERMITTENT INCIDNT

Refer to GI-47, "Intermittent Incident".

### Is the inspection result normal?

YES >> Replace the TCM. Refer to TM-204, "Removal and Installation".

NO >> Repair or replace malfunctioning parts.

### P0705 TRANSMISSION RANGE SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

# P0705 TRANSMISSION RANGE SENSOR A

DTC Logic INFOID:0000000012552283

### DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P0705	T/M RANGE SENSOR A [Transmission Range Sensor A Circuit (PRNDL Input)]	When all of the following conditions are satisfied and this state is maintained for 2 seconds:  Two or more range signals simultaneously stay ON continuously  TCM power supply voltage: More than 11 V	<ul> <li>Harness or connector (Short circuit between transmission range switch and TCM)</li> <li>Transmission range switch</li> </ul>

DTC CONFIRMATION PROCEDURE

# 1. PREPARATION BEFORE WORK

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

>> GO TO 2.

# 2.check dtc detection

Turn ignition switch ON.

- Shift the selector lever through entire positions from "P" to "L". (Hold the selector lever at each position for 5 seconds or more.)
- Check the first trip DTC.

#### Is "P0705" detected?

YES >> Go to TM-107, "Diagnosis Procedure".

NO >> INSPECTION END

# Diagnosis Procedure

# CHECK TCM INPUT SIGNALS

### (P)With CONSULT

- Turn ignition switch ON.
- Select "Data Monitor" in "TRANSMISSION".
- Select "D POSITION SW", "N POSITION SW", "R POSITION SW", "P POSITION SW" and "L RANGE SW".
- Shift the selector lever through entire positions from "P" to "L" and check ON/OFF of each monitor item.

Monitor item	Condition	Condition
D POSITION SW	Selector lever: "D" position	On
D FOSITION SW	Other than the above	Off
N POSITION SW	Selector lever: "N" position	On
N FOSITION SW	Other than the above	Off
R POSITION SW	Selector lever: "R" position	On
K FOSITION SW	Other than the above	Off
P POSITION SW	Selector lever: "P" position	On
F FOSITION SW	Other than the above	Off
L POSITION SW	Selector lever: "L" position	On
ET COTTION SW	Other than the above	Off

### **♥Without CONSULT**

- Turn ignition switch OFF.
- Disconnect TCM connector.

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### P0705 TRANSMISSION RANGE SENSOR A

[CVT: RE0F10E]

### < DTC/CIRCUIT DIAGNOSIS >

- Turn ignition switch ON.
- 4. Shift the selector lever from "P" to "L" and check voltage between TCM harness connector terminals and ground.

+ TCM		<ul><li>Condition</li></ul>		Voltage	
Connector	Terminal				
			Selector lever: " L" position	10 – 16 V	
	2	Ground	Other than the above	Approx. 0 V	
	4		Selector lever: "D" position	10 – 16 V	
			Other than the above	Approx. 0 V	
F15	5		Selector lever: "N" position	10 – 16 V	
F 13			Other than the above	Approx. 0 V	
	6		Selector lever: "R" position	10 – 16 V	
			Other than the above	Approx. 0 V	
	7		Selector lever: "P" position	10 – 16 V	
			Other than the above	Approx. 0 V	

### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-47, "Intermittent Incident".

NO-1 ["D POSITION SW" is "ON" when selector is not in "D" position. (Or connector terminal 4 is at power voltage.)]>>GO TO 2.

NO-2 ["N POSITION SW" is "ON" when selector is not in "N" position. (Or connector terminal 5 is at power voltage.)]>>GO TO 4.

NO-3 ["R POSITION SW" is "ON" when selector is not in "R" position. (Or connector terminal 6 is at power voltage.)]>>GO TO 6.

NO-4 ["P POSITION SW" is "ON" when selector is not in "P" position. (Or connector terminal 7 is at power voltage.)]>>GO TO 8.

NO-5 ["L POSITION SW" is "ON" when selector is not in "L" position. (Or connector terminal 2 is at power voltage.)]>>GO TO 10.

# 2. CHECK D POSITION SW CIRCUIT (PART 1)

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

	Continuity		
Connector	Terr	Continuity	
		2	
E45	4	5	Not existed
F15		6	Not existed
		7	

### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace malfunctioning parts.

### 3. CHECK D POSITION SW CIRCUIT (PART 2)

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

### < DTC/CIRCUIT DIAGNOSIS >

+			Voltage
TCM		_	(Approx.)
Connector Terminal			
F15	4	Ground	0 V

### Is the inspection result normal?

YES >> GO TO 12.

NO >> Repair or replace malfunctioning parts.

# 4. CHECK N POSITION SW CIRCUIT (PART 1)

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

TCM			Continuity
Connector	Terr	minal	Continuity
		2	
F15	5	4	Not existed
		6	Not existed
		7	

### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace malfunctioning parts.

# 5.CHECK N POSITION SW CIRCUIT (PART 2)

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

+			Voltage (Approx.)	
TCM		-		
Connector Terminal			( 44.5)	
F15	5	Ground	0 V	

### Is the inspection result normal?

YES >> GO TO 12.

NO >> Repair or replace malfunctioning parts.

# 6. CHECK P POSITION SW CIRCUIT (PART 1)

- Turn ignition switch OFF.
- Disconnect TCM connector.
- Check continuity between TCM harness connector terminals.

TCM			Continuity
Connector	Terminal		Continuity
F15	7	2	
		4	Not existed
		5	Not existed
		6	

#### Is the inspection result normal?

YES >> GO TO 7.

NO >> Repair or replace malfunctioning parts.

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## < DTC/CIRCUIT DIAGNOSIS >

# $\overline{7}$ . CHECK P POSITION SW CIRCUIT (PART 2)

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

+			Malfara
TCM		_	Voltage (Approx.)
Connector Terminal			· · · · /
F15	7	Ground	0 V

#### Is the inspection result normal?

YES >> GO TO 12.

NO >> Repair or replace malfunctioning parts.

# 8. CHECK R POSITION SW CIRCUIT (PART1)

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

TCM			Continuity
Connector	Terr	minal	Continuity
F15	6	2	
		4	Not existed
		5	Not existed
		7	

### Is the inspection result normal?

YES >> GO TO 9.

NO >> Repair or replace malfunctioning parts.

# 9. CHECK R POSITION SW CIRCUIT (PART 2)

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

+			
TCM		_	Voltage (Approx.)
Connector Terminal			, , ,
F15	6	Ground	0 V

### Is the inspection result normal?

YES >> GO TO 12.

NO >> Repair or replace malfunctioning parts.

# 10.CHECK L POSITION SWITCH CIRCUIT (PART 1)

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

### < DTC/CIRCUIT DIAGNOSIS >

**TCM** Continuity Connector Terminal 4 5 F15 Not existed 6

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[CVT: RE0F10E]

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## Is the inspection result normal?

YES >> GO TO 11.

NO >> Repair or replace malfunctioning parts.

# 11. CHECK L POSITION SWITCH CIRCUIT (PART 2)

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

+			
ТСМ		-	Voltage (Approx.)
Connector Terminal			, , ,
F15	2	Ground	0 V

### Is the inspection result normal?

YES >> GO TO 12.

>> Repair or replace malfunctioning parts. NO

# 12. CHECK TRANSMISSION RANGE SWITCH

Check transmission range switch. Refer to TM-111, "Component Inspection".

#### Is the check result normal?

YES >> Check intermittent incident. Refer to GI-47, "Intermittent Incident".

NO >> Repair or replace malfunctioning parts.

# Component Inspection

## 1. CHECK TRANSMISSION RANGE SWITCH

Check continuity between transmission range switch connector terminals.

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

#### Is the inspection result normal?

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< DTC/CIRCUIT DIAGNOSIS > [CVT: RE0F10E]

YES >> INSPECTION END

NO >> There is a malfunction of transmission range switch. Replace transaxle assembly. Refer to TM- 227, "Removal and Installation".

< DTC/CIRCUIT DIAGNOSIS >

## P0706 TRANSMISSION RANGE SENSOR A

DTC Logic INFOID:0000000012552286

#### DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P0706	T/M RANGE SENSOR A (Transmission Range Sensor A Circuit Range/Performance)	When all of the following conditions are satisfied and this state is maintained for 30 seconds:  • All range signals stay OFF  • TCM power supply voltage: More than 11 V	Harness or connector     (Open circuit between ignition switch and transmission range switch/open circuit between transmission range switch and TCM)     Transmission range switch     Control cable

### DTC CONFIRMATION PROCEDURE

## 1.PREPARATION BEFORE WORK

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

>> GO TO 2.

# 2.PERFORM DTC CONFIRMATION PROCEDURE

- Turn ignition switch ON.
- Shift the selector lever through entire positions from "P" to "L". (Hold the selector lever at each position for 40 seconds or more.)
- Check the first trip DTC.

### Is "P0706" detected?

YES >> Go to TM-113, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

### 1.ADJUSTMENT OF CONTROL CABLE

Adjust control cable. Refer to TM-96, "Inspection and Adjustment".

>> GO TO 2.

## 2 Perform DTC Confirmation Procedure

## (P)With CONSULT

- Turn ignition switch ON.
- Select "Self Diagnostic Results" in "TRANSMISSION".
- Touch "Erase".
- Perform "DTC CONFIRMATION PROCEDURE". Refer to TM-113, "DTC Logic".

### Is "P0706" detected?

YES >> GO TO 3.

NO >> INSPECTION END

# 3.CHECK POWER CIRCUIT

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

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#### < DTC/CIRCUIT DIAGNOSIS >

+ Transmission range switch - Voltage

| Connector | Terminal | F36 | 4 | Ground | 10 – 16 V

### Is the inspection result normal?

YES >> GO TO 4.

NO >> GO TO 7.

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

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

Transmission	range switch	TCM		Continuity
Connector	Terminal	Connector	Terminal	Continuity
	2		4	
	5		7	
F36	6	F15	2	Existed
	8		6	
	9		5	

#### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace malfunctioning parts.

# ${f 5}.$ CHECK CIRCUIT BETWEEN TRANSMISSION RANGE SWITCH AND TCM (PART 2)

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

Transmission range switch			Continuity
Connector	Terminal	_	Continuity
F36	2		Not existed
	5		
	6	Ground	
	8		
	9		

#### Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace malfunctioning parts.

### 6.CHECK TRANSMISSION RANGE SWITCH

Check transmission range switch. Refer to TM-115, "Component Inspection".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-47, "Intermittent Incident".

NO >> Repair or replace malfunctioning parts.

## /.DETECT MALFUNCTIONING ITEMS

### Check the following items:

- Open circuit or short circuit in harness between ignition switch and IPDM E/R. Refer to PG-28, "Wiring Diagram IGNITION POWER SUPPLY -".
- Open circuit or short circuit in harness between IPDM E/R harness connector terminal 64 and transmission range switch harness connector terminal 4.

## < DTC/CIRCUIT DIAGNOSIS >

[CVT: RE0F10E]

• 10A fuse (No. 48, located in the IPDM E/R). Refer to PG-83, "IPDM E/R Terminal Arrangement".

IPDM E/R

### Is the check result normal?

YES >> Check intermittent incident. Refer to GI-47, "Intermittent Incident".

NO >> Repair or replace malfunctioning parts.

## Component Inspection

INFOID:0000000012552288

# 1. CHECK TRANSMISSION RANGE SWITCH

Check continuity between transmission range switch connector terminals.

Transmission range switch	Condition	Continuity	
Terminal	Condition	23. undity	
7 – 10	Manual lever: "P" and "N" positions	Existed	
7 – 10	Other than the above	Not existed	
4 – 5	Manual lever: "P" position	Existed	
4-5	Other than the above	Not existed	
4 – 8	Manual lever: "R" position	Existed	
	Other than the above	Not existed	
4 – 9	Manual lever: "N position	Existed	
	Other than the above	Not existed	
4 – 2	Manual lever: "D" position	Existed	
4 – 2	Other than the above	Not existed	
4 – 6	Manual lever: "L" position	Existed	
4 – 0	Other than the above	Not existed	

### Is the inspection result normal?

YES >> INSPECTION END

NO >> There is a malfunction of transmission range switch. Replace transaxle assembly. Refer to <u>TM-227</u>, "Removal and Installation".

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## P0711 TRANSMISSION FLUID TEMPERATURE SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

## P0711 TRANSMISSION FLUID TEMPERATURE SENSOR A

DTC Logic

#### DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P0711	FLUID TEMP SENSOR A (Transmission Fluid Tempera- ture Sensor A Circuit Range/ Performance)	When the temperature does not increase to the specified temperature within a specified time after all of the following conditions are satisfied:  • TCM power supply voltage: More than 11 V  • CAN communication is normal  • Engine speed: 450 rpm or more  • Accelerator pedal position: 3 deg. or more  • Vehicle speed: 10 km/h (7 MPH) or more  • U0100, P0705 and P0706 are not detected.  • Selector lever: "D" position	CVT fluid temperature sensor

#### DTC CONFIRMATION PROCEDURE

#### **CAUTION:**

## Always drive vehicle at a safe speed.

## 1.PREPARATION BEFORE WORK

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

>> GO TO 2.

# 2.PRECONDITIONING

- 1. Turn ignition switch ON.
- 2. Select "Data Monitor" in "TRANSMISSION".
- 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-116, "Diagnosis Procedure".

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

# 3.check dtc detection

- Start the engine.
- Drive the vehicle.
- 3. Maintain the following conditions for 14 minutes or more.

Selector lever : "D" position

Vehicle speed : More than 10 km/h (7 MPH)

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

#### Is "P0711" detected?

YES >> Go to TM-116, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

# 1. CHECK CVT FLUID TEMPERATURE SENSOR

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

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[CVT: RE0F10E]

## P0711 TRANSMISSION FLUID TEMPERATURE SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

CVT	unit	Condition	Resistance	
Connector	Terminal	Condition	(Approx.)	
		CVT fluid temperature: 20°C (68°F)	6.5 kΩ	
F209	F209 12 – 18	CVT fluid temperature: 50°C (122°F)	2.2 kΩ	
	CVT fluid temperature: 80°C (176°F)	0.87 kΩ		

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[CVT: RE0F10E]

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## Is the inspection result normal?

>> GO TO 2. YES

NO >> Replace transaxle assembly. Refer to TM-227, "Removal and Installation"

2. CHECK CIRCUIT BETWEEN TCM AND CVT UNIT (CVT FLUID TEMPERATURE SENSOR) (PART 1)

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

TO	TCM		CVT unit	
Connector	Terminal	Connector	Terminal	Continuity
F15	F15		18	Existed
F15	12	F40	12	Existed

### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace damaged parts.

3. CHECK CIRCUIT BETWEEN TCM AND CVT UNIT (CVT FLUID TEMPERATURE SENSOR) (PART 2)

Check continuity between TCM harness connector terminals and ground.

TCM		Ground	Continuity
Connector	Terminal	Ground	Continuity
F15	11	Ground	Not existed
1 13	12	Ground	Not existed

### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-47, "Intermittent Incident".

NO >> Repair or replace damaged parts. TM

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## P0712 TRANSMISSION FLUID TEMPERATURE SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

## P0712 TRANSMISSION FLUID TEMPERATURE SENSOR A

DTC Logic

#### DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P0712	FLUID TEMP SENSOR A (Transmission Fluid Tempera- ture Sensor A Circuit Low)	<ul> <li>When all of the following conditions are satisfied and this state is maintained for 5 seconds:</li> <li>TCM power supply voltage: More than 11 V</li> <li>Fluid temperature sensor detection voltage: 0.15 V or less</li> </ul>	Harness or connector     (CVT fluid temperature sensor circuit is shorted to ground)     CVT fluid temperature sensor

## DTC CONFIRMATION PROCEDURE

## 1. PREPARATION BEFORE WORK

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

>> GO TO 2.

# 2.PERFORM DTC CONFIRMATION PROCEDURE

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

### Is "P0712" detected?

YES >> Go to TM-118, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012552292

[CVT: RE0F10E]

# 1. CHECK CIRCUIT BETWEEN TCM AND CVT UNIT

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

TCM			Continuity	
Connector	Terminal	_	Continuity	
F15	12	Ground	Not existed	

### Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace malfunctioning part.

2.CHECK TERMINAL CODE ASSEMBLY

Check continuity between CVT unit connector terminal and ground

CVT	CVT unit		Continuity
Connector	Terminal		Continuity
F209	12	Ground	Not existed

### Is the inspection result normal?

YES >> GO TO 3.

NO >> Replace transaxle assembly. Refer to <u>TM-227</u>, "Removal and Installation".

3.CHECK CVT FLUID TEMPERATURE SENSOR

Check resistance between CVT unit connector terminals.

## P0712 TRANSMISSION FLUID TEMPERATURE SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

CV	Γunit	Condition	Resistance	
Connector	Terminal	Condition	(Approx.)	
		CVT fluid temperature: 20°C (68°F)	6.5 kΩ	
F209	12 – 18	CVT fluid temperature: 50°C (122°F)	2.2 kΩ	
		CVT fluid temperature: 80°C (176°F)	0.87 kΩ	

## Is the inspection result normal?

YES

>> Check intermittent incident. Refer to <u>GI-47, "Intermittent Incident"</u>.
>> Replace transaxle assembly. Refer to <u>TM-227, "Removal and Installation"</u>. NO

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## P0713 TRANSMISSION FLUID TEMPERATURE SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

## P0713 TRANSMISSION FLUID TEMPERATURE SENSOR A

DTC Logic

#### DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P0713	FLUID TEMP SENSOR A (Transmission Fluid Tempera- ture Sensor A Circuit High)	When all of the following conditions are satisfied and this state is maintained for 5 seconds:  TCM power supply voltage: More than 11 V  Vehicle speed: More than 10 km/h (7 MPH)  Fluid temperature sensor detection voltage: 2.48 V or more	Harness or connector     (CVT fluid temperature sensor circuit is open or shorted to power supply)     CVT fluid temperature sensor

## DTC CONFIRMATION PROCEDURE

## 1.PREPARATION BEFORE WORK

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

>> GO TO 2.

## 2. PERFORM DTC CONFIRMATION PROCEDURE

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

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

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

## Is "P0713" detected?

YES >> Go to TM-120, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012552294

[CVT: RE0F10E]

# $1.\mathsf{check}$ circuit between tcm and cvt unit (part 1)

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

TCM		CVT unit		Continuity
Connector	Terminal	Connector	Terminal	Continuity
F15	11	F46	18	Existed
F15	12	140	12	LAISIEU

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace malfunctioning parts.

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

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

## P0713 TRANSMISSION FLUID TEMPERATURE SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

+		-	Voltage (Approx.)
TCM			
Connector Terminal			
F15	12	Ground	0 V

## Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace malfunctioning parts.

# 3.CHECK CVT FLUID TEMPERATURE SENSOR

1. Turn ignition switch OFF.

2. Check resistance between CVT unit connector terminals.

CVT	Γunit	Condition	Resistance
Connector	Terminal	Condition	(Approx.)
		CVT fluid temperature: 20°C (68°F)	6.5 kΩ
F209	12 – 18	CVT fluid temperature: 50°C (122°F)	2.2 kΩ
		CVT fluid temperature: 80°C (176°F)	0.87 kΩ

### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-47, "Intermittent Incident".

NO >> There is malfunction of CVT fluid temperature sensor circuit. Replace transaxle assembly. Refer to TM-227, "Removal and Installation".

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## **P0715 INPUT SPEED SENSOR A**

[CVT: RE0F10E]

< DTC/CIRCUIT DIAGNOSIS >

## P0715 INPUT SPEED SENSOR A

DTC Logic

### DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P0715	INPUT SPEED SEN- SOR A (Input/Turbine Speed Sensor A Circuit)	<ul> <li>When 1 is satisfied and any of 2, 3 or 4 is satisfied:</li> <li>1. When the following conditions are satisfied:</li> <li>TCM power supply voltage: More than 11 V</li> <li>After range change completion, it spends 2 seconds or more.</li> <li>2. When all of the following conditions are satisfied and this state is maintained for 5 seconds:</li> <li>Primary pulley speed: Less than 150 rpm</li> <li>Secondary pulley speed: 500 rpm or more</li> <li>3. When all of the following conditions are satisfied and this state is maintained for 0.5 seconds:</li> <li>10-msec-ago primary pulley speed: 1,000 rpm or more</li> <li>Now primary pulley speed: 0 rpm</li> <li>4. When all of the following conditions are satisfied and this state is maintained for 5 seconds:</li> <li>Range: D or L</li> <li>Engine speed: 450 rpm or more</li> <li>Input peed: 300 rpm or more</li> <li>Primary pulley speed: 300 rpm or more</li> <li>Primary pulley speed: 300 rpm or more</li> <li>Differences between engine speed and primary pulley speed: More than 1,000 rpm</li> <li>Differences between primary pulley speed and input speed: More than 1,000 rpm</li> <li>Differences between engine speed and input speed: 1,000 rpm or less</li> <li>Lock-up command is being given (except for slip lock-up)</li> <li>DTC other than the applicable DTC is not detected.</li> </ul>	Harness or connector (Primary speed sensor circuit is open or shorted)     Primary speed sensor

### DTC CONFIRMATION PROCEDURE

#### **CAUTION:**

Be careful of the driving speed.

1.PREPARATION BEFORE WORK

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

>> GO TO 2.

# 2. CHECK DTC DETECTION

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

Selector lever : "D" position

Engine speed : 1,200 rpm or more

Vehicle speed : 40 km/h (25 MPH) or more

- Stop the vehicle.
- Check the first trip DTC.

Is "P0715" detected?

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## **P0715 INPUT SPEED SENSOR A**

## < DTC/CIRCUIT DIAGNOSIS >

YES >> Go to TM-123, "Diagnosis Procedure".

NO >> INSPECTION END

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[CVT: RE0F10E]

## Diagnosis Procedure

# 1. CHECK PRIMARY SPEED SENSOR POWER CIRCUIT

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

	+		
Primary sp	eed sensor	_	Voltage
Connector Terminal			
F25	3	Ground	10 – 16 V

### Is the inspection result normal?

YES >> GO TO 2.

NO >> GO TO 6.

# 2.CHECK PRIMARY SPEED SENSOR GROUND CIRCUIT

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

Primary speed sensor  Connector Terminal			Continuity
			Continuity
F25	1	Ground	Existed

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace malfunctioning parts.

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

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

Primary speed sensor		TCM		Continuity
Connector	Terminal	Connector	Terminal	Continuity
F25	2	F15	35	Existed

## Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace malfunctioning parts.

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

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

Primary sp	eed sensor	_	Continuity
Connector	Terminal		Continuity
F25	2	Ground	Not existed

## Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace malfunctioning parts.

## 5. CHECK TCM INPUT SIGNALS

Revision: November 2015 TM-123 2016 Pathfinder

## **P0715 INPUT SPEED SENSOR A**

[CVT: RE0F10E]

### < DTC/CIRCUIT DIAGNOSIS >

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

+ TCM		_	Condition	Frequency (Approx.)
Connector	Terminal			
F15	35	Ground	Selector lever: "L" position     Vehicle speed: 20 km/h (12 MPH)	700 Hz 1mSec/div 5V/div JSDIA1905GB

## Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-47, "Intermittent Incident".

NO >> Replace primary speed sensor. Refer to <u>TM-216</u>. "Removal and Installation".

# 6. DETECT MALFUNCTIONING ITEMS

## Check the following items:

- Open circuit or short circuit in harness between ignition switch and IPDM E/R. Refer to <u>PG-28</u>, "Wiring <u>Diagram IGNITION POWER SUPPLY -"</u>.
- Open circuit or short circuit in harness between IPDM E/R harness connector terminal 61 and primary speed sensor harness connector terminal 3.
- 10A fuse (No.46, located in the IPDM E/R). Refer to PG-83, "IPDM E/R Terminal Arrangement".
- IPDM E/R

#### Is the check result normal?

YES >> Check intermittent incident. Refer to GI-47, "Intermittent Incident".

NO >> Repair or replace malfunctioning parts.

## **P0717 INPUT SPEED SENSOR A**

< DTC/CIRCUIT DIAGNOSIS >

## P0717 INPUT SPEED SENSOR A

**DTC Logic** INFOID:0000000012552297

## DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible cause
P0717	INPUT SPEED SENSOR A (Input/Turbine Speed Sensor "A" Circuit No Signal)	<ol> <li>When 1 is satisfied and any of 2, 3 or 4 is satisfied:</li> <li>When the following conditions are satisfied:</li> <li>TCM power supply voltage: More than 11 V</li> <li>After range change completion, it spends 2 seconds or more.</li> <li>When all of the following conditions are satisfied and this state is maintained for 5 seconds:</li> <li>Primary pulley speed: 500 rpm or more</li> <li>Input speed: Less than 150 rpm</li> <li>Range: Other than P, N</li> <li>P0715 is not detected</li> <li>When all of the following conditions are satisfied and this state is maintained for 0.5 seconds:</li> <li>10-msec-ago input speed: 1,000 rpm or more</li> <li>Now input speed: 0 rpm</li> <li>When all of the following conditions are satisfied and this state is maintained for 5 seconds:</li> <li>Range: D or L</li> <li>Engine speed: 450 rpm or more</li> <li>Input peed: 300 rpm or more</li> <li>Primary pulley speed: 300 rpm or more</li> <li>Differences between engine speed and primary pulley speed: 1,000 rpm or less</li> <li>Differences between primary pulley speed and input speed: More than 1,000 rpm</li> <li>Differences between engine speed and input speed: More than 1,000 rpm</li> <li>Lock-up command is being given (except for slip lock-up)</li> <li>DTC other than the applicable DTC is not detected.</li> </ol>	Harness or connectors     (Input speed sensor circuit is open or shorted.)     Input speed sensor

## DTC CONFIRMATION PROCEDURE

## **CAUTION:**

Always drive vehicle at a safe speed.

1.PREPARATION BEFORE WORK

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

>> GO TO 2.

# 2.check dtc detection

## **With CONSULT**

- Start the engine.
- Drive the vehicle.
- Maintain the following conditions for 10 seconds or more.

Selector lever : "D" position [CVT: RE0F10E]

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### P0717 INPUT SPEED SENSOR A

#### < DTC/CIRCUIT DIAGNOSIS >

Engine speed : 1,200 rpm or more

Vehicle speed : 40 km/h (25 MPH) or more

4. Stop the vehicle.

5. Check the first trip DTC.

## Is "P0717" detected?

YES >> Go to TM-126, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012552298

[CVT: RE0F10E]

# 1. CHECK INPUT SPEED SENSOR POWER CIRCUIT

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

	+		
Input spe	ed sensor	_	Voltage
Connector Terminal			
F29	3	Ground	10 – 16 V

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> GO TO 6.

# 2.CHECK INPUT SPEED SENSOR GROUND CIRCUIT

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

Input speed sensor			_	Continuity
Connector Terminal			Continuity	
F29		1	Ground	Existed

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace malfunctioning parts.

# $3. \mathsf{CHECK}$ CIRCUIT BETWEEN INPUT SPEED SENSOR AND TCM (PART 1)

- Turn ignition switch OFF.
- 2. Disconnect TCM connector.
- Check continuity between input speed sensor harness connector terminal and TCM harness connector terminal.

Input speed sensor		TCM		Continuity
Connector	Terminal	Connector	Terminal	Continuity
F29	2	F15	24	Existed

### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace malfunctioning parts.

## f 4.CHECK CIRCUIT BETWEEN INPUT SPEED SENSOR AND TCM (PART 2)

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

## P0717 INPUT SPEED SENSOR A

#### < DTC/CIRCUIT DIAGNOSIS >

Input spe	ed sensor		Continuity
Connector Terminal			Continuity
F29	2	Ground	Not existed

## Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace malfunctioning parts.

# 5. CHECK TCM INPUT SIGNALS

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

+ TCM		_	Condition	Frequency (Approx.)
Connector	Terminal			(r pprox.)
F15	24	Ground	<ul> <li>Selector lever: "L" position</li> <li>Vehicle speed: 20 km/h (12 MPH)</li> </ul>	880 Hz 1mSec/div 5V/div JSDIA3769GB

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-47, "Intermittent Incident".

NO >> Replace input speed sensor. Refer to TM-215, "Removal and Installation".

## **O.** DETECT MALFUNCTIONING ITEMS

## Check the following items:

- Open circuit or short circuit in harness between ignition switch and IPDM E/R. Refer to PG-28, "Wiring Diagram IGNITION POWER SUPPLY -".
- Open circuit or short circuit in harness between IPDM E/R harness connector terminal 61 and input speed sensor harness connector terminal 3.
- 10A fuse (No.46, located in the IPDM E/R). Refer to PG-83, "IPDM E/R Terminal Arrangement".
- IPDM E/R

## Is the check result normal?

YES >> Check intermittent incident. Refer to GI-47, "Intermittent Incident".

NO >> Repair or replace malfunctioning parts.

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### P0740 TORQUE CONVERTER

[CVT: RE0F10E]

< DTC/CIRCUIT DIAGNOSIS >

## P0740 TORQUE CONVERTER

DTC Logic

### DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P0740	TORQUE CONVERTER (Torque Converter Clutch Circuit/Open)	<ul> <li>When all of the following conditions are satisfied and this state is maintained for 5 seconds:</li> <li>TCM power supply voltage: More than 11 V</li> <li>P0743 is not detected.</li> <li>TCM judges that solenoid valve circuit is open.</li> </ul>	Harness or connector     (Torque converter clutch solenoid valve circuit is open or shorted to power supply)     Torque converter clutch solenoid valve

### DTC CONFIRMATION PROCEDURE

#### CAUTION:

## Be careful of the driving speed.

## 1. PREPARATION BEFORE WORK

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

>> GO TO 2.

## 2.PREPARATION BEFORE OPERATION

#### (P)With CONSULT

- 1. Start the engine.
- Select "Data Monitor" in "TRANSMISSION".
- Select "FLUID TEMP".
- 4. Confirm that the CVT fluid temperature is in the following range.

FLUID TEMP : 20°C (68°F) or more

### **With GST**

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

#### NOTE:

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

### Is the CVT fluid 20°C (68°F) or more?

YES >> GO TO 3.

NO >> 1. Warm the transaxle.

GO TO 3.

# 3.check dtc detection

Drive the vehicle.

Maintain the following conditions for 10 seconds or more.

Selector lever : "D" position

Vehicle speed : 40 km/h (25 MPH) or more

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

#### Is "P0740" detected?

YES >> Go to TM-129, "Diagnosis Procedure".

NO >> INSPECTION END

## **P0740 TORQUE CONVERTER**

### < DTC/CIRCUIT DIAGNOSIS >

## **Diagnosis Procedure**

INFOID:0000000012552300

[CVT: RE0F10E]

# 1. CHECK CIRCUIT BETWEEN TCM AND CVT UNIT

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

TCM		CVT unit		Continuity
Connector	Terminal	Connector	Terminal	Continuity
F15	38	F46	2	Existed

### Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace malfunctioning parts.

# 2.check torque converter clutch solenoid valve circuit

Check resistance between CVT unit harness connector terminal and ground.

CVT unit			Condition	Resistance	
Connector	Terminal	_	Conducti	resistance	
			CVT fluid temperature: 20°C (68°F)	5.5 – 7.0 Ω	
F209 5		Ground	CVT fluid temperature: 50°C (122°F)	6.0 – 8.0 Ω	
			CVT fluid temperature: 80°C (176°F)	6.5 – 8.5 Ω	

### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-47, "Intermittent Incident".

NO >> There is malfunction of torque converter clutch solenoid valve circuit. Replace control valve assembly. Refer to TM-209, "Removal and Installation".

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## **P0743 TORQUE CONVERTER**

[CVT: RE0F10E]

< DTC/CIRCUIT DIAGNOSIS >

## P0743 TORQUE CONVERTER

DTC Logic

### DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P0743	TORQUE CONVERTER (Torque Converter Clutch Circuit Electrical)	<ul> <li>When all of the following conditions are satisfied and this state is maintained for 0.48 seconds:</li> <li>TCM power supply voltage: More than 11 V</li> <li>TCM judges that solenoid valve circuit is shorted to ground.</li> </ul>	Harness or connector     (Torque converter clutch solenoid valve circuit is shorted to ground)     Torque converter clutch solenoid valve

#### DTC CONFIRMATION PROCEDURE

#### **CAUTION:**

## Be careful of the driving speed.

## 1. PREPARATION BEFORE WORK

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

>> GO TO 2.

## 2. PREPARATION BEFORE OPERATION

#### (P)With CONSULT

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

FLUID TEMP : 20°C (68°F) or more

## **With GST**

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

#### NOTE:

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

### Is the CVT fluid 20°C (68°F) or more?

YES >> GO TO 3.

NO >> 1. Warm the transaxle.

GO TO 3.

# 3. CHECK DTC DETECTION

Drive the vehicle.

Maintain the following conditions for 10 seconds or more.

Selector lever : "D" position

Vehicle speed : 40 km/h (25 MPH) or more

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

#### Is "P0743" detected?

YES >> Go to TM-131, "Diagnosis Procedure".

NO >> INSPECTION END

## **P0743 TORQUE CONVERTER**

### < DTC/CIRCUIT DIAGNOSIS >

## **Diagnosis Procedure**

# [CVT: RE0F10E]

INFOID:0000000012552302

# 1. CHECK CIRCUIT BETWEEN TCM AND CVT UNIT

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

TO	CM		Continuity
Connector	Terminal		Continuity
F15	38	Ground	Not existed

### Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace malfunctioning parts.

# 2.check torque converter clutch solenoid valve circuit

Check resistance between CVT unit harness connector terminal and ground.

CVT unit			Condition	Resistance	
Connector	Terminal	_	Conducti	ivesistative	
			CVT fluid temperature: 20°C (68°F)	5.5 – 7.0 Ω	
F209 5		Ground	CVT fluid temperature: 50°C (122°F)	6.0 – 8.0 Ω	
			CVT fluid temperature: 80°C (176°F)	$6.5 - 8.5 \Omega$	

### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-47, "Intermittent Incident".

NO >> There is malfunction of torque converter clutch solenoid valve circuit. Replace control valve assembly. Refer to TM-209, "Removal and Installation".

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### P0744 TORQUE CONVERTER

[CVT: RE0F10E]

< DTC/CIRCUIT DIAGNOSIS >

## P0744 TORQUE CONVERTER

DTC Logic

#### DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P0744	TORQUE CONVERTER (Torque converter clutch circuit intermittent)	When all of the following conditions are satisfied and this state is maintained for 30 seconds:  TCM power supply voltage: More than 11 V  P0717 is not detected.  CAN communication is normal  Torque converter slip speed: (40+vihicle speed/2) rpm  LU pressure: More than 0.2 MPa	Torque converter clutch solenoid valve     Control valve assembly     Torque converter

### DTC CONFIRMATION PROCEDURE

### **CAUTION:**

## Be careful of the driving speed.

## 1.PREPARATION BEFORE WORK

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

>> GO TO 2.

# 2.PREPARATION BEFORE OPERATION

#### (P)With CONSULT

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

FLUID TEMP : 20°C (68°F) or more

## **With GST**

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

#### NOTE:

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

## Is the CVT fluid 20°C (68°F) or more?

YES >> GO TO 3.

NO >> 1. Warm the transaxle.

2. GO TO 3.

# 3.check dtc detection

1. Drive the vehicle.

2. Maintain the following conditions for 10 seconds or more.

Selector lever : "D" position

Accelerator pedal position : 0.5/8 or more

Vehicle speed : 40 km/h (25 MPH) or more

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

#### Is "P0744" detected?

YES >> Go to TM-133, "Diagnosis Procedure".

**P0744 TORQUE CONVERTER** [CVT: RE0F10E] < DTC/CIRCUIT DIAGNOSIS > NO >> INSPECTION END Α Diagnosis Procedure INFOID:0000000012552304 1. CHECK INTERMITTENT INCIDNT В Refer to GI-47, "Intermittent Incident". Is the inspection result normal? YES >> Replace transaxle assembly. Refer to TM-227, "Removal and Installation". С NO >> Repair or replace the malfunction items. TM Е F G Н K M

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## P0746 PRESSURE CONTROL SOLENOID A

[CVT: RE0F10E]

< DTC/CIRCUIT DIAGNOSIS >

# P0746 PRESSURE CONTROL SOLENOID A

DTC Logic

### DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P0746	PC SOLENOID A (Pressure Control Solenoid A Performance/Stuck Off)	The detecting condition A or detection condition B is detected twice or more (1 second or more later after detection of the first) in the same DC under the following diagnosis conditions:  • Diagnosis conditions  • Engine speed: More than 600 rpm  • Primary pulley speed: More than 450 rpm  • Idle is not being detected.  • Acceleration/deceleration speed: –0.49 m/ s² (–0.05 G) or more  • The primary pulley speed experienced 300 rpm or more and the secondary pulley speed experienced 250 rpm or more at least once.  • Secondary pulley speed: More than 150 rpm  • TCM power supply voltage: More than 11 V  • Detection condition A  • Status with the shifting ratio of the primary pulley speed/secondary pulley ratio exceeding 2.825 is 0.2 sec or more continuously.  • Detection condition B  • Status with the shifting ratio of the primary pulley speed/secondary pulley ratio exceeding 3.625 is 0.1 sec or more continuously.	Line pressure solenoid valve     Control valve assembly

### NOTE:

DC stands for "DRIVING CYCLE" and indicates a series of driving cycle of "Ignition switch OFF  $\rightarrow$  ON  $\rightarrow$  driving  $\rightarrow$  OFF".

#### DTC CONFIRMATION PROCEDURE

#### **CAUTION:**

Be careful of the driving speed.

1. PREPARATION BEFORE WORK

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

>> GO TO 2.

# 2. CHECK DTC DETECTION

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

Selector lever : "D" position

Accelerator pedal position : 0.5/8 or more

Vehicle speed : 40 km/h (25 MPH) or more

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

### Is "P0746" detected?

YES >> Go to TM-135, "Diagnosis Procedure".

Revision: November 2015 TM-134 2016 Pathfinder

P0746 PRESSURE CONTROL SOLENOID A [CVT: RE0F10E] < DTC/CIRCUIT DIAGNOSIS > NO >> INSPECTION END Α Diagnosis Procedure INFOID:0000000012552306 1. CHECK INTERMITTENT INCIDNT В Refer to GI-47, "Intermittent Incident". Is the inspection result normal? YES >> Replace transaxle assembly. Refer to TM-227, "Removal and Installation". С NO >> Repair or replace the malfunction items. TM Е F G

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## P0776 PRESSURE CONTROL SOLENOID B

[CVT: RE0F10E]

< DTC/CIRCUIT DIAGNOSIS >

# P0776 PRESSURE CONTROL SOLENOID B

DTC Logic

## DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible cause
P0776	PC SOLENOID B (Pressure Control Solenoid "B" Performance/Stuck Off)	When any of 1 or 2 is satisfied and this state is maintained for 10 seconds:  1. When all of the following conditions are satisfied:  DTC other than the applicable DTC is not detected.  Engine speed: More than 625 rpm  Selector lever: Other than P/N position  CVT fluid temperature: More than - 20°C (-4°F)  TCM power supply: More than 11 V  The difference between instruction pressure of secondary pressure and 10-msec-ago instruction secondary pressure: 0 MPa or more  Instruction pressure of secondary pressure: More than 1.2 MPa  When all of the following conditions are satisfied and this state is maintained for 5.5 seconds:  DTC other than the applicable DTC is not detected.  CVT fluid temperature: More than - 20°C (-4°F)  Selector lever: Other than P/N position Secondary pressure - instruction pressure of secondary pressure of secondary pressure: 1.2 MPa or more  When all of the following conditions are satisfied:  DTC other than the applicable DTC is not detected.  CVT fluid temperature: More than - 20°C (-4°F)  Selector lever: Other than P/N position TCM power supply: More than 1 V When all of the following conditions are satisfied:  DTC other than the applicable DTC is not detected.  CVT fluid temperature: More than - 20°C (-4°F)  Selector lever: Other than P/N position TCM power supply: More than 11 V When all of the following conditions are satisfied and this state is maintained for 5.5 seconds:  DTC other than the applicable DTC is not detected.  CVT fluid temperature: More than - 20°C (-4°F)  Selector lever: Other than P/N position resatisfied and this state is maintained for 5.5 seconds:  DTC other than the applicable DTC is not detected.  CVT fluid temperature: More than - 20°C (-4°F)  Selector lever: Other than P/N position secondary pressure is of secondary pressure and 10-msec-ago instruction secondary pressure and 10-msec-ago instruction secondary pressure is 0 MPa or more  Secondary pressure - instruction pressure of secondary pressure: More than 1.2 MPa	Secondary pressure solenoid valve

## P0776 PRESSURE CONTROL SOLENOID B

## [CVT: RE0F10E] < DTC/CIRCUIT DIAGNOSIS > DTC CONFIRMATION PROCEDURE Α **CAUTION:** Always drive vehicle at a safe speed. 1. PREPARATION BEFORE WORK В If another "DTC CONFIRMATION PROCEDURE" occurs just before, turn ignition switch OFF and wait for at least 10 seconds, then perform the next test. C >> GO TO 2. 2. CHECK DTC DETECTION TM Start the engine. 2. Drive the vehicle. Maintain the following condition for 20 seconds or more. Е Selector lever : "D" position Vehicle speed : 40 km/h (25 MPH) or more Accelerator pedal position : 1.0/8 or more Stop the vehicle. Check the first trip DTC. Is "P0776" detected? YES >> Go to TM-137, "Diagnosis Procedure". >> INSPECTION END NO Н Diagnosis Procedure INFOID:0000000012552308 1. CHECK INTERMITTENT INCIDNT Refer to GI-47, "Intermittent Incident". Is the inspection result normal? >> Replace transaxle assembly. Refer to TM-227, "Removal and Installation". YES NO >> Repair or replace the malfunction items. Ν

## P0778 PRESSURE CONTROL SOLENOID B

< DTC/CIRCUIT DIAGNOSIS >

## P0778 PRESSURE CONTROL SOLENOID B

DTC Logic

#### DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible cause
P0778	PC SOLENOID B (Pressure Control Solenoid "B" Electrical)	When all of the following conditions are satisfied and this state is maintained for 0.48 seconds: TCM power supply voltage: More than 11 V TCM judges that solenoid valve circuit is shorted to ground.	Harness or connectors     (Secondary pressure solenoid valve circuit is shorted to ground.)     Secondary pressure solenoid valve

#### DTC CONFIRMATION PROCEDURE

#### **CAUTION:**

Always drive vehicle at a safe speed.

1. PREPARATION BEFORE WORK

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

>> GO TO 2.

## 2.CHECK DTC DETECTION

- 1. Start the engine and wait for 5 seconds or more.
- Check the first trip DTC.

### Is "P0778" detected?

YES >> Go to TM-138, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012552310

[CVT: RE0F10E]

# 1. CHECK CIRCUIT BETWEEN TCM AND CVT UNIT

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

ТС	CM		Continuity
Connector	Terminal		Continuity
F15	39	Ground	Not existed

## Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace damaged parts.

## 2.CHECK SECONDARY PRESSURE SOLENOID VALVE CIRCUIT

Check continuity between CVT unit harness connector terminal and ground.

CVT unit			Condition	Resistance	
Connector	Terminal	_	Condition	resistance	
			CVT fluid temperature: 20°C (68°F)	5.5 – 7.0 Ω	
F209	3	Ground	CVT fluid temperature: 50°C (122°F)	$6.0 - 8.0 \Omega$	
			CVT fluid temperature: 80°C (176°F)	$6.5 - 8.5 \Omega$	

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-47, "Intermittent Incident".

## P0778 PRESSURE CONTROL SOLENOID B

< DTC/CIRCUIT DIAGNOSIS >

[CVT: RE0F10E]

NO >> There is malfunction of secondary pressure solenoid valve circuit. Replace control valve assembly. Refer to TM-209, "Removal and Installation".

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## P0779 PRESSURE CONTROL SOLENOID B

[CVT: RE0F10E]

< DTC/CIRCUIT DIAGNOSIS >

## P0779 PRESSURE CONTROL SOLENOID B

DTC Logic INFOID:0000000012552311

#### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
P0779	Pressure control solenoid B Intermittent	<ul> <li>When all of the following conditions are satisfied and this state is maintained for 0.2 seconds:</li> <li>TCM power supply voltage: More than 11 V</li> <li>P0778 is not detected</li> <li>TCM judges that solenoid valve circuit is open or shorted to power supply.</li> </ul>	Harness or connector     (Secondary pressure solenoid valve circuit open or shorted to power supply)     Secondary pressure solenoid valve

### DTC CONFIRMATION PROCEDURE

## 1. PREPARATION BEFORE WORK

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

>> GO TO 2.

# 2.CHECK DTC DETECTION

- Start the engine.
- Drive the vehicle.
- Maintain the following conditions for 5 seconds or more.

: "D" position Selector lever

Vehicle speed : 40 km/h (25 MPH) or more

- Stop the vehicle.
- Check the first trip DTC.

### Is "P0779" detected?

YES >> Go to TM-140, "Diagnosis Procedure".

>> INSPECTION END NO

# Diagnosis Procedure

INFOID:0000000012552312

# $1.\mathsf{check}$ circuit between $\mathsf{tcm}$ and $\mathsf{cvt}$ unit

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

TCM		CVT unit		Continuity
Connector	Terminal	Connector	Terminal	Continuity
F15	39	F46	3	Existed

## Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace damaged parts.

# 2.CHECK SECONDARY PRESSURE SOLENOID VALVE CIRCUIT

Check continuity between CVT unit harness connector terminal and ground.

## P0779 PRESSURE CONTROL SOLENOID B

## < DTC/CIRCUIT DIAGNOSIS >

CVT unit			Condition	Resistance	
Connector	Terminal	_	Condition	Resistance	
			CVT fluid temperature: 20°C (68°F)	5.5 – 7.0 Ω	
F209	F209 3	Ground	CVT fluid temperature: 50°C (122°F)	$6.0 - 8.0 \Omega$	
			CVT fluid temperature: 80°C (176°F)	$6.5 - 8.5 \Omega$	

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[CVT: RE0F10E]

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## Is the inspection result normal?

- YES >> Check intermittent incident. Refer to GI-47, "Intermittent Incident".
- NO >> There is malfunction of secondary pressure solenoid valve circuit. Replace control valve assembly. Refer to <a href="https://example.com/TM-209">There is malfunction of secondary pressure solenoid valve circuit. Replace control valve assembly. Refer to <a href="https://example.com/TM-209">There is malfunction of secondary pressure solenoid valve circuit. Replace control valve assembly. Refer to <a href="https://example.com/TM-209">There is malfunction of secondary pressure solenoid valve circuit. Replace control valve assembly. Refer to <a href="https://example.com/TM-209">There is malfunction of secondary pressure solenoid valve circuit.</a>

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## P0841 TRANSMISSION FLUID PRESSURE SEN/SW A

< DTC/CIRCUIT DIAGNOSIS >

## P0841 TRANSMISSION FLUID PRESSURE SEN/SW A

DTC Logic

#### DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible cause
P0841	FLUID PRESS SEN/SW A (Transmission Fluid Pressure Sensor/Switch "A" Circuit Range/Performance)	<ul> <li>When all of the following conditions are satisfied and this state is maintained for 5 seconds:</li> <li>TCM power supply voltage: More than 11 V</li> <li>DTC other than the applicable DTC is not detected.</li> <li>Primary pulley speed: 300 rpm or more</li> <li>Secondary pulley speed: 250 rpm or more</li> <li>Target speed for shifting: Less than 0.1 seconds</li> <li>Primary pulley pressure is outside the specified value.</li> </ul>	Harness or connectors     (Secondary pressure sensor circuit is open or shorted.)     Harness or connectors     (Primary pressure sensor circuit is open or shorted.)     Secondary pressure sensor

#### DTC CONFIRMATION PROCEDURE

#### **CAUTION:**

Always drive vehicle at a safe speed.

1. PREPARATION BEFORE WORK

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

>> GO TO 2.

# 2. CHECK DTC DETECTION

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

Selector lever : "D" position

Vehicle speed : Constant speed of 40 km/h (25 MPH)

**CAUTION:** 

#### Also keep the accelerator pedal position constant.

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

Is "P0841" detected?

YES >> Go to TM-142, "Diagnosis Procedure".

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000012552314

[CVT: RE0F10E]

# 1. CHECK INTERMITTENT INCIDENT

Refer to GI-47, "Intermittent Incident".

### Is the inspection result normal?

YES >> Replace the transaxle assembly. Refer to TM-227, "Removal and Installation".

NO >> Repair or replace damaged parts.

## P0847 TRANSMISSION FLUID PRESSURE SEN/SW B

< DTC/CIRCUIT DIAGNOSIS >

# P0847 TRANSMISSION FLUID PRESSURE SEN/SW B

DTC Logic INFOID:0000000012552315

#### DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P0847	FLUID PRESS SEN/SW B (Transmission Fluid Pressure Sensor/Switch B Circuit Low)	When all of the following conditions are satisfied and this state is maintained for 5 seconds:  • CVT fluid temperature: More than -20°C (-4°F)  • TCM power supply voltage: 11 V or more  • Secondary pressure sensor voltage: 0.09 V or less	Harness or connector     (Secondary pressure sensor circuit is open or shorted to ground)     Secondary pressure sensor     Control valve assembly

### DTC CONFIRMATION PROCEDURE

## 1. PREPARATION BEFORE WORK

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

>> GO TO 2.

## 2 .CHECK DTC DETECTION

### (P)With CONSULT

- Start the engine.
- Select "Data Monitor" in "TRANSMISSION".
- Select "FLUID TEMP".
- Maintain the following conditions for 10 seconds or more.

FLUID TEMP : -20°C (-4°F)

5. Check the first trip DTC.

## 

Start the engine and wait for at least 10 seconds.

#### **CAUTION:**

When the ambient temperature is less than  $-20^{\circ}$ C ( $-4^{\circ}$ F) and the engine is cold, warm up the engine for approximately 5 minutes.

2. Check the first trip DTC.

### Is "P0847" detected?

YES >> Go to TM-143, "Diagnosis Procedure".

>> INSPECTION END NO

## Diagnosis Procedure

# 1. CHECK TCM INPUT SIGNALS

- Turn ignition switch OFF.
- Start the engine.
- Check voltage between TCM harness connector terminals.

+				
TCM		- Condition	Voltage	
Connector	Terminal			
F15	16	Ground	Selector lever: "N" position     At idle	1.67 – 1.69 V

#### Is the inspection result normal?

TM-143 Revision: November 2015 2016 Pathfinder TΜ

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INFOID:0000000012552316

## P0847 TRANSMISSION FLUID PRESSURE SEN/SW B

[CVT: RE0F10E]

< DTC/CIRCUIT DIAGNOSIS >

YES >> Check intermittent incident. Refer to GI-47, "Intermittent Incident".

NO >> GO TO 2.

# $2.\mathsf{CHECK}$ CIRCUIT BETWEEN TCM AND CVT UNIT (PART 1)

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

TCM		CVT unit		Continuity
Connector	Terminal	Connector	Terminal	Continuity
	11		18	
F15	16	F46	14	Existed
	26		22	

## Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace malfunctioning parts.

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

Check continuity between TCM harness connector terminals and ground.

TO	CM	_	Continuity	
Connector Terminal		_	Continuity	
F15	16	Ground	Not existed	
1 13	26	Giodila	Not existed	

#### Is the inspection result normal?

YES >> There is malfunction of secondary pressure sensor circuit. Replace control valve assembly. Refer to <a href="mailto:TM-209">TM-209</a>, "Removal and Installation".

NO >> Repair or replace malfunctioning parts.

#### P0848 TRANSMISSION FLUID PRESSURE SEN/SW B

< DTC/CIRCUIT DIAGNOSIS >

### P0848 TRANSMISSION FLUID PRESSURE SEN/SW B

DTC Logic INFOID:0000000012552317

#### DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P0848	FLUID PRESS SEN/SW B (Transmission Fluid Pressure Sensor/Switch B Circuit Low)	<ul> <li>When all of the following conditions are satisfied and this state is maintained for 5 seconds:</li> <li>CVT fluid temperature: More than -20°C (-4°F)</li> <li>TCM power supply voltage: More than 11 V</li> <li>Instruction secondary pressure: 5.7 MPa or less</li> <li>Secondary pressure sensor voltage: 4.7 V or more</li> </ul>	<ul> <li>Harness or connector (Secondary pressure sensor circuit is shorted to power supply)</li> <li>Secondary pressure sensor</li> <li>Control valve assembly</li> </ul>

#### DTC CONFIRMATION PROCEDURE

### 1. PREPARATION BEFORE WORK

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

>> GO TO 2.

### 2.CHECK DTC DETECTION

### (P)With CONSULT

- Start the engine.
- Select "Data Monitor" in "TRANSMISSION".
- Select "FLUID TEMP".
- Maintain the following conditions for 10 seconds or more.

FLUID TEMP : More than -20°C (-4°F)

5. Check the first trip DTC.

#### 

Start the engine and wait for at least 10 seconds.

#### **CAUTION:**

When the ambient temperature is less than  $-20^{\circ}$ C ( $-4^{\circ}$ F) and the engine is cold, warm up the engine for approximately 5 minutes.

2. Check the first trip DTC.

#### Is "P0848" detected?

YES >> Go to TM-145, "Diagnosis Procedure".

>> INSPECTION END NO

#### Diagnosis Procedure

### 1. CHECK TCM INPUT SIGNALS

- Turn ignition switch OFF.
- Start the engine.
- Check voltage between TCM harness connector terminals.

-	+			
TCM		_	Condition	Voltage
Connector	Terminal			
F15	16	Ground	Selector lever: "N" position     At idle	1.67 – 1.69 V

TM-145 Revision: November 2015 2016 Pathfinder TM

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[CVT: RE0F10E]

#### P0848 TRANSMISSION FLUID PRESSURE SEN/SW B

[CVT: RE0F10E]

< DTC/CIRCUIT DIAGNOSIS >

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-47, "Intermittent Incident".

NO >> GO TO 2.

# 2.CHECK SECONDARY PRESSURE SENSOR POWER CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Connect TCM connector.
- 3. Disconnect CVT unit connector.
- 4. Turn ignition switch ON.
- 5. Check voltage between CVT unit harness connector terminal and ground.

	+		Mallana	
CVT	「 unit	_	Voltage (Approx.)	
Connector Terminal			, , ,	
F46	22	Ground	5.0 V	

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace malfunctioning parts.

### 3.CHECK SECONDARY PRESSURE SENSOR SIGNAL CIRCUIT

Check voltage between CVT unit harness connector terminal and ground.

	+		Voltage
CVT	Γ unit	_	Voltage (Approx.)
Connector Terminal			, , ,
F46	14	Ground	0 V

#### Is the inspection result normal?

YES >> There is malfunction of secondary pressure sensor circuit. Replace control valve assembly. Refer to <u>TM-209</u>, "Removal and Installation".

NO >> Repair or replace malfunctioning parts.

#### P084C TRANSMISSION FLUID PRESSURE SEN/SW H

[CVT: RE0F10E]

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< DTC/CIRCUIT DIAGNOSIS >

#### P084C TRANSMISSION FLUID PRESSURE SEN/SW H

DTC Logic

#### DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P084C	FLUID PRESS SEN/SW H (Transmission Fluid Pressure Sensor/Switch H Circuit Low)	When all of the following conditions are satisfied and this state is maintained for 5 seconds:  • CVT fluid temperature: More than -20°C (-4°F)  • TCM power supply voltage: More than 11 V  • Primary pressure sensor voltage: 0.09 V or less	<ul> <li>Harness or connector (Primary pressure sensor circuit is open or shorted to ground)</li> <li>Primary pressure sensor</li> <li>Control valve assembly</li> </ul>

#### DTC CONFIRMATION PROCEDURE

### 1. PREPARATION BEFORE WORK

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

>> GO TO 2.

### 2. CHECK DTC DETECTION

#### (P)With CONSULT

- Start the engine.
- Select "Data Monitor" in "TRANSMISSION".
- 3. Select "FLUID TEMP".
- 4. Maintain the following conditions for 10 seconds or more.

FLUID TEMP : More than  $-20^{\circ}\text{C} (-4^{\circ}\text{F})$ 

5. Check the first trip DTC.

#### ⊕With GST

1. Start the engine and wait for at least 10 seconds.

#### **CAUTION:**

When the ambient temperature is less than  $-20^{\circ}$ C ( $-4^{\circ}$ F) and the engine is cold, warm up the engine for approximately 5 minutes.

2. Check the first trip DTC.

#### Is "P084C" detected?

YES >> Go to TM-147, "Diagnosis Procedure".

NO >> INSPECTION END

### Diagnosis Procedure

### 1. CHECK TCM INPUT SIGNALS

- Turn ignition switch OFF.
- Start the engine.
- 3. Check voltage between TCM harness connector terminals.

	+			
TCM		_	- Condition	Voltage
Connector	Terminal			
F15	17	Ground	Selector lever: "N" position     At idle	0.90 – 0.92 V

#### Is the inspection result normal?

#### Revision: November 2015 TM-147 2016 Pathfinder

#### P084C TRANSMISSION FLUID PRESSURE SEN/SW H

[CVT: RE0F10E]

< DTC/CIRCUIT DIAGNOSIS >

YES >> Check intermittent incident. Refer to GI-47, "Intermittent Incident".

NO >> GO TO 2.

# $2. {\sf CHECK\ CIRCUIT\ BETWEEN\ TCM\ AND\ CVT\ UNIT\ (PART\ 1)}$

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

TCM		CVT unit		Continuity
Connector	Terminal	Connector	Terminal	Continuity
	11		18	
F15	17	F46	13	Existed
	26		22	

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace malfunctioning parts.

## ${f 3.}$ CHECK CIRCUIT BETWEEN TCM AND CVT UNIT (PART 2)

Check continuity between TCM harness connector terminals and ground.

TO	CM		Continuity
Connector	Terminal		
F15	17	Ground	Not existed
F 13	26	Giouria	NOI EXISIEU

#### Is the inspection result normal?

YES >> There is malfunction of primary pressure sensor circuit. Replace control valve assembly. Refer to TM-209, "Removal and Installation".

NO >> Repair or replace malfunctioning parts.

#### P084D TRANSMISSION FLUID PRESSURE SEN/SW H

[CVT: RE0F10E]

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< DTC/CIRCUIT DIAGNOSIS >

#### P084D TRANSMISSION FLUID PRESSURE SEN/SW H

DTC Logic

#### DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P084D	FLUID PRESS SEN/SW H (Transmission Fluid Pressure Sensor/Switch "H" Circuit High)	<ul> <li>When all of the following conditions are satisfied and this state is maintained for 5 seconds:</li> <li>CVT fluid temperature: More than -20°C (-4°F)</li> <li>TCM power supply voltage: More than 11 V</li> <li>Primary pressure sensor voltage: 4.7 V or more</li> </ul>	Harness or connector     (Primary pressure sensor circuit is open or shorted to ground)     Primary pressure sensor     Control valve assembly

#### DTC CONFIRMATION PROCEDURE

### 1. PREPARATION BEFORE WORK

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

>> GO TO 2.

#### 2. CHECK DTC DETECTION

#### (P)With CONSULT

- Start the engine.
- Select "Data Monitor" in "TRANSMISSION".
- 3. Select "FLUID TEMP".
- 4. Maintain the following conditions for 10 seconds or more.

FLUID TEMP : More than  $-20^{\circ}$ C ( $-4^{\circ}$ F)

5. Check the first trip DTC.

#### **®With GST**

1. Start the engine and wait for at least 10 seconds.

#### **CAUTION:**

When the ambient temperature is less than  $-20^{\circ}\text{C}$  ( $-4^{\circ}\text{F}$ ) and the engine is cold, warm up the engine for approximately 5 minutes.

2. Check the first trip DTC.

#### Is "P084D" detected?

YES >> Go to TM-149, "Diagnosis Procedure".

NO >> INSPECTION END

### Diagnosis Procedure

### 1. CHECK TCM INPUT SIGNALS

- Turn ignition switch OFF.
- Start the engine.
- 3. Check voltage between TCM harness connector terminals.

	+			
TCM		_	Condition	Voltage
Connector	Terminal			
F15	17	Ground	Selector lever: "N" position     At idle	0.90 – 0.92 V

Is the inspection result normal?

#### P084D TRANSMISSION FLUID PRESSURE SEN/SW H

[CVT: RE0F10E]

#### < DTC/CIRCUIT DIAGNOSIS >

YES >> Check intermittent incident. Refer to GI-47, "Intermittent Incident".

NO >> GO TO 2.

# 2.CHECK PRIMARY PRESSURE SENSOR POWER CIRCUIT

- Turn ignition switch OFF.
- 2. Connect TCM connector.
- 3. Disconnect CVT unit connector.
- 4. Turn ignition switch ON.
- 5. Check voltage between CVT unit harness connector terminal and ground.

	+		
CVT	「 unit	_	Voltage (Approx.)
Connector Terminal			, , ,
F46	22	Ground	5.0 V

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace malfunctioning parts.

### 3.CHECK PRIMARY PRESSURE SENSOR SIGNAL CIRCUIT

Check voltage between CVT unit harness connector terminal and ground.

	+	_	Voltage (Approx.)
CVT	unit		
Connector Terminal			, , ,
F46	13	Ground	0 V

#### Is the inspection result normal?

YES >> There is malfunction of primary pressure sensor circuit. Replace control valve assembly. Refer to TM-209, "Removal and Installation".

NO >> Repair or replace malfunctioning parts.

#### **P0863 TCM COMMUNICATION**

# < DTC/CIRCUIT DIAGNOSIS > [CVT: RE0F10E] P0863 TCM COMMUNICATION DTC Logic

#### DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P0863	CONTROL UNIT (CAN) (TCM Communication Circuit)	An error is detected at the initial CAN diagnosis of TCM.	TCM

#### DTC CONFIRMATION PROCEDURE

### 1. PREPARATION BEFORE WORK

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

>> GO TO 2.

### 2. CHECK DTC DETECTION

- Start the engine.
- Check the DTC.

#### Is "P0863" detected?

YES >> Go to TM-151, "Diagnosis Procedure".

NO >> INSPECTION END

### Diagnosis Procedure

### 1. CHECK INTERMITTENT INCIDNT

Refer to GI-47, "Intermittent Incident".

#### Is the inspection result normal?

YES >> Replace TCM. Refer to <u>TM-204</u>, "Removal and Installation".

NO >> Repair or replace malfunctioning parts.

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#### P0890 TCM

DTC Logic

#### DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P0890	TCM (Transmission Control Module Power Relay Sense Circuit Low)	When all of the following conditions are satisfied and this state is maintained for 0.2 seconds:  • TCM power supply voltage: More than 11 V  • Battery voltage: Less than 8.4 V	Harness or connector     (TCM power supply (back-up) circuit is open or shorted.)     TCM

#### DTC CONFIRMATION PROCEDURE

### 1.PREPARATION BEFORE WORK

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

>> GO TO 2.

### 2.check dtc detection

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

#### Is "P0890" detected?

YES >> Go to TM-152, "Diagnosis Procedure".

NO >> INSPECTION END

#### Diagnosis Procedure

INFOID:0000000012552326

[CVT: RE0F10E]

### 1. CHECK TCM POWER SUPPLY (BACK-UP) CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect TCM connector.
- 3. Check voltage between TCM harness connector terminals and ground.

TO	CM	Ground	Voltage	
Connector Terminal		Ground	voltage	
F15	45	Ground	10 – 16 V	
1 13	46	Ground	10 – 10 V	

#### Is the inspection result normal?

YES >> GO TO 3. NO >> GO TO 2.

2. DETECT MALFUNCTIONING ITEMS

#### Check the following items:

- Open circuit or short circuit in harness between battery positive terminal and TCM harness connector terminals 45, and 46.
- 10A fuse [No.25, located in the fuse block (J/B)]. Refer to PG-78, "Terminal Arrangement".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-47, "Intermittent Incident".

NO >> Repair or replace malfunctioning parts.

#### 3. CHECK INTERMITTENT INCIDENT

#### Refer to GI-47, "Intermittent Incident".

#### Is the inspection result normal?

### **P0890 TCM**

[CVT: RE0F10E]

YES >> Replace the TCM. Refer to TM-204, "Removal and Installation".

NO >> Repair or replace malfunctioning parts.

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#### P0962 PRESSURE CONTROL SOLENOID A

< DTC/CIRCUIT DIAGNOSIS >

#### P0962 PRESSURE CONTROL SOLENOID A

DTC Logic

#### DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P0962	PC SOLENOID A (Pressure Control Solenoid A Control Circuit Low)	<ul> <li>When all of the following conditions are satisfied and this state is maintained for 0.2 seconds:</li> <li>TCM power supply voltage: More than 11 V</li> <li>TCM judges that solenoid valve circuit is shorted to ground.</li> </ul>	Harness or connector     (Line pressure solenoid valve circuit is shorted to ground)     Line pressure solenoid valve

#### DTC CONFIRMATION PROCEDURE

### 1. PREPARATION BEFORE WORK

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

>> GO TO 2.

### 2.CHECK DTC DETECTION

- 1. Start the engine and wait for 5 seconds or more.
- 2. Check the first trip DTC.

#### Is "P0962" detected?

YES >> Go to TM-154, "Diagnosis Procedure".

NO >> INSPECTION END

### Diagnosis Procedure

INFOID:0000000012552328

[CVT: RE0F10E]

### 1. CHECK CIRCUIT BETWEEN TCM AND CVT UNIT

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

Т	CM	_	Continuity
Connector Terminal			Continuity
F15	30	Ground	Not existed

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace damaged parts.

### 2.CHECK LINE PRESSURE SOLENOID VALVE CIRCUIT

Check continuity between CVT unit harness connector terminal and ground.

CVT unit			Condition	Resistance	
Connector	Terminal	_	Condition	Resistance	
			CVT fluid temperature: 20°C (68°F)	5.5 – 7.0 Ω	
F209	1	Ground	CVT fluid temperature: 50°C (122°F)	6.0 – 8.0 Ω	
			CVT fluid temperature: 80°C (176°F)	6.5 – 8.5 Ω	

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-47, "Intermittent Incident".

#### P0962 PRESSURE CONTROL SOLENOID A

< DTC/CIRCUIT DIAGNOSIS >

[CVT: RE0F10E]

NO >> There is malfunction of line pressure solenoid valve circuit. Replace control valve assembly. Refer to TM-209, "Removal and Installation".

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#### P0963 PRESSURE CONTROL SOLENOID A

< DTC/CIRCUIT DIAGNOSIS >

#### P0963 PRESSURE CONTROL SOLENOID A

DTC Logic

#### DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P0963	PC SOLENOID A (Pressure Control Solenoid A Control Circuit High)	When all of the following conditions are satisfied and this state is maintained for 0.2 seconds:  TCM power supply voltage: More than 11 V  P0962 is not detected  TCM judges that solenoid valve circuit is open.	Harness or connector     (Line pressure solenoid valve circuit is open or shorted to power supply)     Line pressure solenoid valve

#### DTC CONFIRMATION PROCEDURE

### 1. PREPARATION BEFORE WORK

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

>> GO TO 2.

### 2.check dtc detection

- 1. Start the engine and wait for 5 seconds or more.
- 2. Check the first trip DTC.

#### Is "P0963" detected?

YES >> Go to TM-156, "Diagnosis Procedure".

NO >> INSPECTION END

### Diagnosis Procedure

INFOID:0000000012552330

[CVT: RE0F10E]

### 1. CHECK CIRCUIT BETWEEN TCM AND CVT UNIT

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

TCM		CVT unit		Continuity
Connector	Terminal	Connector	Terminal	Continuity
F15	30	F46	1	Existed

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace damaged parts.

### 2.CHECK LINE PRESSURE SOLENOID VALVE CIRCUIT

Check continuity between CVT unit harness connector terminal and ground.

CVT unit			Condition	Resistance	
Connector	Terminal	_	Condition	Nesistance	
			CVT fluid temperature: 20°C (68°F)	5.5 – 7.0 Ω	
F209	9 1 Ground		CVT fluid temperature: 50°C (122°F)	6.0 – 8.0 Ω	
			CVT fluid temperature: 80°C (176°F)	$6.5 - 8.5 \Omega$	

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-47, "Intermittent Incident".

#### P0963 PRESSURE CONTROL SOLENOID A

< DTC/CIRCUIT DIAGNOSIS >

[CVT: RE0F10E]

NO >> There is malfunction of line pressure solenoid valve circuit. Replace control valve assembly. Refer to TM-209, "Removal and Installation".

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#### P0965 PRESSURE CONTROL SOLENOID B

[CVT: RE0F10E]

< DTC/CIRCUIT DIAGNOSIS >

### P0965 PRESSURE CONTROL SOLENOID B

DTC Logic

#### DTC DETECTION LOGIC

-	CONSULT screen terms		
DTC	(Trouble diagnosis content)	DTC detection condition	Possible causes
P0965	PC SOLENOID B (Pressure Control Solenoid B Control Circuit Range Performance)	<ul> <li>When any of 1 or 2 is satisfied and this state is maintained for 10 seconds:</li> <li>1. When all of the following conditions are satisfied:</li> <li>DTC other than the applicable DTC is not detected.</li> <li>Engine speed: More than 625 rpm</li> <li>Selector lever: Other than P/N position</li> <li>CVT fluid temperature: More than -20°C (-4°F)</li> <li>TCM power supply: More than 11 V</li> <li>The difference between instruction pressure of primary pressure and 10-msecago instruction primary pressure is 0 MPa or more</li> <li>Instruction pressure of primary pressure: 0.86 MPa or more</li> <li>Instruction pressure of primary pressure - primary pressure: More than 1.2 MPa</li> <li>When all of the following conditions are satisfied and this state is maintained for 1 second:</li> <li>DTC other than the applicable DTC is not detected.</li> <li>CVT fluid temperature: More than -20°C (-4°F)</li> <li>Selector lever: Other than P/N position</li> <li>Engine speed: More than 625 rpm</li> <li>Instruction pressure of primary pressure: More than 2 MPa</li> <li>Primary pressure: 0.4 MPa or less</li> <li>When all of the following conditions are satisfied:</li> <li>DTC other than the applicable DTC is not detected.</li> <li>CVT fluid temperature: More than -20°C (-4°F)</li> <li>Selector lever: Other than P/N position</li> <li>TCM power supply: More than 11 V</li> <li>When all of the following conditions are satisfied and this state is maintained for 5.5 seconds:</li> <li>DTC other than the applicable DTC is not detected.</li> <li>CVT fluid temperature: More than -20°C (-4°F)</li> <li>Selector lever: Other than P/N position</li> <li>Primary pressure - instruction pressure of primary pressure instruction pressure of primary pressure and 10-msecago instruction primary pressure instruction pressure of primary pressure instruction pressure of primary pressure instruction pressure of primary pres</li></ul>	Harness or connector     (Primary pressure solenoid valve circuit is open or shorted.)     Primary pressure solenoid valve

#### P0965 PRESSURE CONTROL SOLENOID B

### [CVT: RE0F10E] < DTC/CIRCUIT DIAGNOSIS > 1. PREPARATION BEFORE WORK If another "DTC CONFIRMATION PROCEDURE" occurs just before, turn ignition switch OFF and wait for at least 10 seconds, then perform the next test.

>> GO TO 2.

### 2.check dtc detection

- Start the engine.
- 2. Drive the vehicle.
- Maintain the following conditions for 20 seconds or more.

: 40 km/h (25 MPH) or more Vehicle speed

- Stop the vehicle.
- Check the first trip DTC.

#### Is "P0965" detected?

YES >> Go to TM-159, "Diagnosis Procedure".

NO >> INSPECTION END

### Diagnosis Procedure

### 1. CHECK INTERMITTENT INCIDENT

Refer to GI-47, "Intermittent Incident".

#### Is the inspection result normal?

YES >> Replace transaxle assembly. Refer to TM-227, "Removal and Installation".

NO >> Repair or replace malfunctioning parts. TM

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INFOID:0000000012552332

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#### P0966 PRESSURE CONTROL SOLENOID B

< DTC/CIRCUIT DIAGNOSIS >

#### P0966 PRESSURE CONTROL SOLENOID B

DTC Logic

#### DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P0966	PC SOLENOID B (Pressure Control Solenoid B Control Circuit Low)	<ul> <li>When all of the following conditions are satisfied and this state is maintained for 0.48 seconds:</li> <li>TCM power supply voltage: More than 11 V</li> <li>TCM judges that solenoid valve circuit is shorted to ground.</li> </ul>	Harness or connector     (Primary pressure solenoid valve circuit shorted to ground)     Primary pressure solenoid valve

#### DTC CONFIRMATION PROCEDURE

### 1.PREPARATION BEFORE WORK

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

>> GO TO 2.

### 2. CHECK DTC DETECTION

- 1. Start the engine and wait for 5 seconds or more.
- 2. Check the first trip DTC.

#### Is "P0966" detected?

YES >> Go to TM-160, "Diagnosis Procedure".

NO >> INSPECTION END

### Diagnosis Procedure

INFOID:0000000012552334

[CVT: RE0F10E]

### 1. CHECK CIRCUIT BETWEEN TCM AND CVT UNIT

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

TO	CM	_	Continuity
Connector Terminal			Continuity
F15	40	Ground	Not existed

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace damaged parts.

### 2.CHECK PRIMARY PRESSURE SOLENOID VLAVE CIRCUIT

Check continuity between CVT unit harness connector terminal and ground.

CVT	unit		Condition	Resistance
Connector	Terminal	_	Condition Resist	
			CVT fluid temperature: 20°C (68°F)	5.5 – 7.0 Ω
F209	2	Ground	CVT fluid temperature: 50°C (122°F)	6.0 – 8.0 Ω
			CVT fluid temperature: 80°C (176°F)	6.5 – 8.5 Ω

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-47, "Intermittent Incident".

### P0966 PRESSURE CONTROL SOLENOID B

< DTC/CIRCUIT DIAGNOSIS >

[CVT: RE0F10E]

NO >> There is malfunction of primary pressure solenoid valve circuit. Replace control valve assembly. Refer to <a href="https://example.com/the-209">TM-209</a>, "Removal and Installation".

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#### P0967 PRESSURE CONTROL SOLENOID B

< DTC/CIRCUIT DIAGNOSIS >

#### P0967 PRESSURE CONTROL SOLENOID B

DTC Logic

#### DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P0967	PC SOLENOID B (Pressure Control Solenoid B Control Circuit High)	<ul> <li>When all of the following conditions are satisfied and this state is maintained for 0.2 seconds:</li> <li>TCM power supply voltage: More than 11 V</li> <li>P0966 is not detected</li> <li>TCM judges that solenoid valve circuit is open.</li> </ul>	Harness or connector     (Primary pressure solenoid valve circuit open or shorted to power supply)     Primary pressure solenoid valve

#### DTC CONFIRMATION PROCEDURE

### 1. PREPARATION BEFORE WORK

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

>> GO TO 2.

### 2.CHECK DTC DETECTION

- 1. Start the engine and wait for 5 seconds or more.
- Check the first trip DTC.

#### Is "P0967" detected?

YES >> Go to TM-162, "Diagnosis Procedure".

NO >> INSPECTION END

### Diagnosis Procedure

INFOID:0000000012552336

[CVT: RE0F10E]

### 1. CHECK CIRCUIT BETWEEN TCM AND CVT UNIT

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

TCM		CVT unit		Continuity	
Connector	Terminal	Connector	Terminal	Continuity	
F15	40	F46	2	Existed	

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace damaged parts.

### 2.CHECK PRIMARY PRESSURE SOLENOID VALVE CIRCUIT

Check continuity between CVT unit harness connector terminal and ground.

CVT	Γunit		Condition	Resistance
Connector	Terminal	_	Condition	
			CVT fluid temperature: 20°C (68°F)	5.5 – 7.0 Ω
F209	2	Ground	CVT fluid temperature: 50°C (122°F)	6.0 – 8.0 Ω
			CVT fluid temperature: 80°C (176°F)	$6.5 - 8.5 \Omega$

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-47, "Intermittent Incident".

### P0967 PRESSURE CONTROL SOLENOID B

< DTC/CIRCUIT DIAGNOSIS >

[CVT: RE0F10E]

NO >> There is malfunction of primary pressure solenoid valve circuit. Replace control valve assembly. Refer to TM-209, "Removal and Installation".

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#### P17F0 CVT JUDDER (T/M INSPECTION)

< DTC/CIRCUIT DIAGNOSIS >

### P17F0 CVT JUDDER (T/M INSPECTION)

DTC Description

#### DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition		
	P17F0 CVT JUDDER (T/M INSPECTION) [CVT Judder (Transmission inspection)]	Diagnosis condition	_	
D17E0		Signal	_	
P17F0		Threshold	Malfunction in chain belt and pulley	
		Diagnosis delay time	_	

#### POSSIBLE CAUSE

Transmission assembly

**FAIL-SAFE** 

Not changed from normal driving

#### DTC CONFIRMATION PROCEDURE

#### **CAUTION:**

- TM-164, "Diagnosis Procedure" must be performed before starting "DTC CONFIRMATION PROCE-DURE".
- · Always drive vehicle at a safe speed.

#### 1.PREPARATION BEFORE WORK

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

>> GO TO 2.

### 2. CHECK DTC DETECTION

- 1. With the throttle position 1/8, accelerate the vehicle from 0 km/h (0 MPH) to 50 km/h (31 MPH).
- 2. Drive the vehicle at 50 km/h (31 MPH) constant speed for 15 seconds.
- 3. Stop the vehicle with a brake force which allows the vehicle to stop in 10 to 20 seconds.
- 4. Repeat steps 1 to 3 above 5 times.

#### Is "P17F0" detected?

YES >> Go to TM-164, "Diagnosis Procedure".

NO >> INSPECTION END

### Diagnosis Procedure

INFOID:0000000013478607

[CVT: RE0F10E]

### 1. REPLACE TRANSAXLE ASSEMBLY

Replace the transaxel assembly. Refer to TM-227, "Removal and Installation".

>> WORK END

#### P17F1 CVT JUDDER (C/V INSPECTION)

< DTC/CIRCUIT DIAGNOSIS >

### P17F1 CVT JUDDER (C/V INSPECTION)

DTC Description

#### INFOID:0000000013478608

[CVT: RE0F10E]

#### DTC DETECTION LOGIC

#### **CAUTION:**

If DTC P17F1 is displayed with DTC P17F0, perform only trouble diagnosis of DTC P17F0. Refer to TM-164, "DTC Description".

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition		
	17F1 CVT JUDDER (C/V INSPECTION) [CVT judder (Control Valve Inspection)]	Diagnosis condition	_	
P17F1		Signal	_	
		Threshold	Malfunction in control valve	
		Diagnosis delay time	_	

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#### POSSIBLE CAUSE

Control valve

#### FAIL-SAFE

Not changed from normal driving

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#### DTC CONFIRMATION PROCEDURE

#### **CAUTION:**

- TM-165, "Diagnosis Procedure" must be performed before starting "DTC CONFIRMATION PROCEDURE".
- · Always drive vehicle at a safe speed.

### 1. PREPARATION BEFORE WORK

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

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#### >> GO TO 2.

### 2. CHECK DTC DETECTION

- 1. With the throttle position 1/8, accelerate the vehicle from 0 km/h (0 MPH) to 50 km/h (31 MPH).
- 2. Drive the vehicle at 50 km/h (31 MPH) constant speed for 15 seconds.
- 3. Stop the vehicle with a brake force which allows the vehicle to stop in 10 to 20 seconds.
- Repeat steps 1 to 3 above 5 times.

#### Is "P17F1" detected?

YES >> Go to TM-165, "Diagnosis Procedure".

NO >> INSPECTION END

# Diagnosis Procedure

### 1.REPLACE CONTROL VALVE

Replace control valve. Refer to TM-209, "Removal and Installation".

INFOID:0000000013478609

>> WORK END

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Revision: November 2015 TM-165 2016 Pathfinder

#### P17F2 CVT JUDDER (T/C INSPECTION)

< DTC/CIRCUIT DIAGNOSIS >

### P17F2 CVT JUDDER (T/C INSPECTION)

DTC Description

#### DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition		
		Diagnosis condition	_	
P17F2	CVT JUDDER (T/C INSPECTION) [CVT judder (Torque Converter Inspec-	Signal	_	
tion)]		Threshold	Malfunction in torque converter	
	-	Diagnosis delay time	_	

#### POSSIBLE CAUSE

Torque converter

**FAIL-SAFE** 

Not changed from normal driving

#### DTC CONFIRMATION PROCEDURE

#### **CAUTION:**

- TM-166, "Diagnosis Procedure" must be performed before starting "DTC CONFIRMATION PROCE-DURE".
- · Always drive vehicle at a safe speed.

#### 1.PREPARATION BEFORE WORK

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

>> GO TO 2.

### 2. CHECK DTC DETECTION

- 1. With the throttle position 1/8, accelerate the vehicle from 0 km/h (0 MPH) to 50 km/h (31 MPH).
- 2. Drive the vehicle at 50 km/h (31 MPH) constant speed for 15 seconds.
- 3. Stop the vehicle with a brake force which allows the vehicle to stop in 10 to 20 seconds.
- 4. Repeat steps 1 to 3 above 5 times.

#### Is "P17F2" detected?

YES >> Go to TM-166, "Diagnosis Procedure".

NO >> INSPECTION END

### Diagnosis Procedure

INFOID:0000000013478611

[CVT: RE0F10E]

### 1.REPLACE TORQUE CONVERTER

Replace the torque converter. Refer to TM-230, "Exploded View".

>> WORK END

#### **P2765 INPUT SPEED SENSOR B**

< DTC/CIRCUIT DIAGNOSIS >

### P2765 INPUT SPEED SENSOR B

DTC Logic

[CVT: RE0F10E]

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#### DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes	С
P2765	INPUT SPEED SENSOR B (Input/Turbine Speed Sensor B Circuit)	<ul> <li>When 1 is satisfied and any of 2, 3 or 4 is satisfied and this state is maintained for 5 seconds:</li> <li>When all of the following conditions are satisfied:</li> <li>TCM power supply voltage: More than 11 V</li> <li>After range change completion, it spends 2 seconds or more.</li> <li>When all of the following conditions are satisfied and this state is maintained for 5 seconds:</li> <li>Secondary pulley speed: Less than 149 rpm</li> <li>Primary pulley speed: 1,000 rpm or more</li> <li>When all of the following conditions are satisfied and this state is maintained for 0.5 seconds:</li> <li>10-msec-ago secondary pulley speed: 1000 rpm or more</li> <li>Now secondary pulley speed: 0 rpm</li> <li>When all of the following conditions are satisfied and this state is maintained for 5 seconds:</li> <li>Range: D or L</li> <li>Engine speed: 450 rpm or more</li> <li>Primary pulley speed: 300 rpm or more</li> <li>Primary pulley speed: 300 rpm or more</li> <li>The difference between engine speed and primary pulley speed is 1,000 rpm or less</li> <li>The difference between engine speed and input speed is 1,000 rpm or less</li> <li>The difference between primary pulley speed and input speed is 1,000 rpm or less</li> <li>Lock-up command is being given (except for slip lock-up)</li> <li>DTC other than the applicable DTC is not detected.</li> <li>When any of following items are satisfied:</li> <li>Primary pulley speed/secondary pulley speed: More than 2.9</li> <li>Primary pulley speed/secondary pulley speed: Less than 0.3</li> </ul>	Harness or connector     (Output speed sensor circuit is open or shorted)     Output speed sensor	E F G H I J K L M N O

DTC CONFIRMATION PROCEDURE

#### CAUTION:

Be careful of the driving speed.

1. PREPARATION BEFORE WORK

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

#### P2765 INPUT SPEED SENSOR B

#### < DTC/CIRCUIT DIAGNOSIS >

>> GO TO 2.

## 2. CHECK DTC DETECTION

1. Start the engine.

2. Drive the vehicle.

3. Maintain the following conditions for 10 seconds or more.

Selector lever : "D" position

Engine speed : 1,200 rpm or more

Vehicle speed : 55 km/h (34 MPH) or more

4. Stop the vehicle.

5. Check the first trip DTC.

#### Is "P2765" detected?

YES >> Go to TM-168, "Diagnosis Procedure".

NO >> INSPECTION END

### Diagnosis Procedure

INFOID:0000000012552338

[CVT: RE0F10E]

### 1. CHECK OUTPUT SPEED SENSOR POWER CIRCUIT

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

	+		
Output sp	eed sensor	_	Voltage
Connector Terminal			
F23	3	Ground	10 – 16 V

#### Is the inspection result normal?

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

### 2.check output speed sensor ground circuit

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

Output sp	eed sensor		Continuity
Connector	Connector Terminal		Continuity
F23	1	Ground	Existed

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace malfunctioning parts.

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

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

Output sp	Output speed sensor		TCM	
Connector	Terminal	Connector	Terminal	Continuity
F23	2	F15	34	Existed

#### Is the inspection result normal?

#### P2765 INPUT SPEED SENSOR B

#### < DTC/CIRCUIT DIAGNOSIS >

YES >> GO TO 4.

NO >> Repair or replace malfunctioning parts.

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

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

Output sp	eed sensor	_	Continuity
Connector	Terminal		Continuity
F23	2	Ground	Not existed

#### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace malfunctioning parts.

### 5.CHECK TCM INPUT SIGNALS

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

+ TCM		_	Condition	Frequency (Approx.)
Connector	Terminal			( ,pp. 5/)
F15	34	Ground	Selector lever: "L" position     Vehicle speed: 20 km/h (12 MPH)	200 Hz 2.5mSec/div 5V/div JSDIA1904GB

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-47, "Intermittent Incident".

NO >> Replace output speed sensor. Refer to TM-217, "Removal and Installation".

#### 6. DETECT MALFUNCTIONING ITEMS

#### Check the following items:

- Open circuit or short circuit in harness between ignition switch and IPDM E/R. Refer to PG-28, "Wiring Diagram - IGNITION POWER SUPPLY -".
- Open circuit or short circuit in harness between IPDM E/R harness connector terminal 61 and output speed sensor harness connector terminal 3.
- 10A fuse (No.46, located in the IPDM E/R). Refer to PG-78, "Terminal Arrangement".
- IPDM E/R

#### Is the check result normal?

YES >> Check intermittent incident. Refer to GI-47, "Intermittent Incident".

NO >> Repair or replace malfunctioning parts. TM

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[CVT: RE0F10E]

### P2813 SELECT SOLENOID

DTC Logic

#### DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P2813	SELECT SOLENOID (Select solenoid)	<ul> <li>When any of 1, or 2 is satisfied:</li> <li>1. When all the following conditions are established three times in 1DC</li> <li>Precondition</li> <li>DTC other than the applicable DTC is not detected.</li> <li>Throttle position: More than 6.27 deg.</li> <li>Vehicle speed: Less than 3 km/h (1 MPH)</li> <li>CVT fluid temperature: More than 20°C (68°F)</li> <li>Selector lever: Other than P, N</li> <li>Turbine speed when performed N → D, N (P) → R: More than 500 rpm</li> <li>TCM power supply voltage: More than 11 V</li> <li>Detection time</li> <li>N → D: 0.4 seconds</li> <li>N → R: 0.3 seconds</li> <li>P → R: 0.3 seconds</li> <li>P → R: 0.3 seconds</li> <li>P → Re ounting of time continues while all of the following conditions are satisfied and this state is maintained for 30 seconds:</li> <li>The counting of time continues while all of the following conditions are satisfied and stops when the conditions become unsatisfied (the count is maintained). When accumulated time reaches 30 seconds (Clutch is judged as engaged and the count is reset.)</li> <li>Selector lever: Other than P, N</li> <li>Vehicle speed: Less than 3 km/h (1 MPH)</li> <li>Differences between primary pulley speed and secondary speed: Less than 120 rpm</li> <li>Clutch instructions pressure: 0.95 MPa or more</li> <li>Differences between turbine speed and input speed: Less than 200 rpm</li> <li>Turbine speed – speed: More than 450 rpm</li> <li>DTC other than the applicable DTC is not detected.</li> <li>TCM power supply voltage: More than 11 V</li> </ul>	Select solenoid valve

#### NOTE:

DC stands for "DRIVING CYCLE" and indicates a series of driving cycle of "Ignition switch OFF  $\rightarrow$  ON  $\rightarrow$  driving  $\rightarrow$  OFF".

#### DTC CONFIRMATION PROCEDURE

#### **CAUTION:**

Be careful of the driving speed.

1. PREPARATION BEFORE WORK

#### **P2813 SELECT SOLENOID**

#### < DTC/CIRCUIT DIAGNOSIS >

[CVT: RE0F10E] If another "DTC CONFIRMATION PROCEDURE" occurs just before, turn ignition switch OFF and wait for at

>> GO TO 2.

### 2. CHECK DTC DETECTION 1

Start the engine.

Maintain the following conditions. (Keep 30seconds or more after the selector lever shifted.)

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 $: N \rightarrow D, N \rightarrow R, P \rightarrow R$ Selector lever

least 10 seconds, then perform the next test.

3. Check the first trip DTC.

#### Is "P2813" detected?

>> Go to TM-171, "Diagnosis Procedure". YES

>> INSPECTION END NO

#### Diagnosis Procedure

INFOID:0000000012552340

### 1. CHECK INTERMITTENT INCIDENT

Refer to GI-47, "Intermittent Incident".

#### Is the inspection result normal?

YES >> Replace transaxle assembly. Refer to TM-227, "Removal and Installation".

NO >> Repair or replace malfunctioning parts.

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TM-171 Revision: November 2015 2016 Pathfinder

#### **P2814 SELECT SOLENOID**

[CVT: RE0F10E]

< DTC/CIRCUIT DIAGNOSIS >

#### P2814 SELECT SOLENOID

**DTC Logic** INFOID:0000000012552341

#### DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P2814	SELECT SOLENOID (Select solenoid)	<ul> <li>When all of the following conditions are satisfied and this state is maintained for 0.48 seconds:</li> <li>TCM power supply voltage: 11 V or more</li> <li>TCM judges that solenoid valve circuit is shorted to ground.</li> </ul>	Harness or connector     (Select solenoid valve circuit shorted to ground)     Select solenoid valve

#### DTC CONFIRMATION PROCEDURE

Be careful of the driving speed.

1.PREPARATION BEFORE WORK

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

>> GO TO 2.

### 2. CHECK DTC DETECTION

- Start the engine.
- Maintain the following conditions. (Keep 5 seconds or more after the selector lever shifted.)

Selector lever  $: N \rightarrow D, N \rightarrow R, P \rightarrow R$ 

3. Check the first trip DTC.

#### Is "P2814" detected?

YES >> Go to TM-172, "Diagnosis Procedure".

>> INSPECTION END NO

### Diagnosis Procedure

INFOID:0000000012552342

### 1. CHECK CIRCUIT BETWEEN TCM AND CVT UNIT

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

TO	CM		Continuity
Connector	Terminal	_	Continuity
F15	37	Ground	Not existed

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace damaged parts.

### 2.CHECK SELECT SOLENOID VALVE CIRCUIT

Check continuity between CVT unit harness connector terminal and ground.

#### **P2814 SELECT SOLENOID**

#### < DTC/CIRCUIT DIAGNOSIS >

CVT unit			Condition	Resistance	
Connector	Terminal	_	Condition	Resistance	
			CVT fluid temperature: 20°C (68°F)	5.5 – 7.0 Ω	
F209			CVT fluid temperature: 50°C (122°F)	$6.0 - 8.0 \Omega$	
			CVT fluid temperature: 80°C (176°F)	$6.5 - 8.5 \Omega$	

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[CVT: RE0F10E]

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#### Is the inspection result normal?

- YES >> Check intermittent incident. Refer to GI-47, "Intermittent Incident".
- NO >> There is malfunction of select solenoid valve circuit. Replace control valve assembly. Refer to TM-209, "Removal and Installation".

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#### **P2815 SELECT SOLENOID**

< DTC/CIRCUIT DIAGNOSIS >

### P2815 SELECT SOLENOID

DTC Logic

#### DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P2815	SELECT SOLENOID (Select solenoid)	<ul> <li>When all of the following conditions are satisfied and this state is maintained for 0.2 seconds:</li> <li>TCM power supply voltage: More than 11 V</li> <li>TCM judges that solenoid valve circuit is open.</li> <li>P2814 is not detected.</li> </ul>	Harness or connector     (Select solenoid valve circuit open or shorted to power supply)     Select solenoid valve

#### DTC CONFIRMATION PROCEDURE

### 1. PREPARATION BEFORE WORK

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

>> GO TO 2.

### 2. CHECK DTC DETECTION

- 1. Start the engine.
- 2. Maintain the following conditions. (Keep 5 seconds or more after the selector lever shifted.)

Selector lever :  $N \rightarrow D$ ,  $N \rightarrow R$ ,  $P \rightarrow R$ 

3. Check the first trip DTC.

#### Is "P2815" detected?

YES >> Go to TM-174, "Diagnosis Procedure".

NO >> INSPECTION END

### Diagnosis Procedure

INFOID:0000000012552344

[CVT: RE0F10E]

### 1. CHECK CIRCUIT BETWEEN TCM AND CVT UNIT

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

TCM		CVT unit		Continuity	
Connector	Terminal	Connector Terminal		2 3. minuty	
F15	37	F46	4	Existed	

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace damaged parts.

#### 2.CHECK SELECT SOLENOID VALVE CIRCUIT

Check continuity between CVT unit harness connector terminal and ground.

#### **P2815 SELECT SOLENOID**

#### < DTC/CIRCUIT DIAGNOSIS >

CVT unit			Condition	Resistance	
Connector	Terminal	_	Condition	Resistance	
			CVT fluid temperature: 20°C (68°F)	5.5 – 7.0 Ω	
F209 4 Ground		Ground	CVT fluid temperature: 50°C (122°F)	$6.0 - 8.0 \Omega$	
		CVT fluid temperature: 80°C (176°F)	$6.5 - 8.5 \Omega$		

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[CVT: RE0F10E]

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#### Is the inspection result normal?

- YES >> Check intermittent incident. Refer to GI-47, "Intermittent Incident".
- NO >> There is malfunction of select solenoid valve circuit. Replace control valve assembly. Refer to TM-209, "Removal and Installation".

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#### MAIN POWER SUPPLY AND GROUND CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

#### MAIN POWER SUPPLY AND GROUND CIRCUIT

### Diagnosis Procedure

INFOID:0000000012552345

[CVT: RE0F10E]

### 1. CHECK TCM POWER CIRCUIT (PART 1)

- 1. Turn ignition switch OFF.
- 2. Disconnect TCM connector.
- 3. Check voltage between TCM harness connector terminals and ground.

	+		
TO	СМ	_	Voltage
Connector	Terminal		
F15	45	Ground	10 – 16 V
1 15	46	Ground	10 – 16 V

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> GO TO 4.

### 2.CHECK TCM POWER CIRCUIT (PART 2)

Check voltage between TCM harness connector terminals and ground.

+					
To	СМ	_	Condition	Voltage	
Connector	Terminal				
	47		Ignition switch ON	10 – 16 V	
F15	77	Ground	Ignition switch OFF	Approx. 0 V	
FIS	48	Giouna	Ignition switch ON	10 – 16 V	
			Ignition switch OFF	Approx. 0 V	

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> GO TO 5.

### 3. CHECK TCM GROUND CIRCUIT

Check continuity between TCM harness connector terminals and ground.

TO	CM		Continuity	
Connector Terminal			Continuity	
F15	41	Ground	Existed	
1 13	42	Giouna	LAISIEU	

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-47, "Intermittent Incident".

NO >> Repair or replace malfunctioning parts.

#### 4. DETECT MALFUNCTION ITEMS (PART 1)

#### Check the following items:

- Open circuit or short circuit in harness between battery positive terminal and fuse block (J/B). Refer to PG-28, "Wiring Diagram - IGNITION POWER SUPPLY -".
- Open circuit or short circuit in harness between fuse block (J/B) harness connector terminal 2N and TCM harness connector terminal 45, and 46.
- 10A fuse [No.25, located in the fuse block (J/B)]. Refer to PG-78, "Terminal Arrangement".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-47, "Intermittent Incident".

# MAIN POWER SUPPLY AND GROUND CIRCUIT [CVT: RE0F10E] < DTC/CIRCUIT DIAGNOSIS > NO >> Repair or replace malfunctioning parts. 5. DETECT MALFUNCTIONING ITEMS (PART 2) Α Check the following items: Open circuit or short circuit in harness between ignition switch and IPDM E/R. Refer to PG-28, "Wiring Diagram - IGNITION POWER SUPPLY -". • Open circuit or short circuit in harness between IPDM E/R harness connector terminal 61 and TCM harness connector terminal 47, and 48. • 10A fuse (No.46, located in the IPDM E/R). Refer to PG-78, "Terminal Arrangement". C IPDM E/R Is the check result normal? YES TΜ >> Check intermittent incident. Refer to GI-47, "Intermittent Incident". NO >> Repair or replace malfunctioning parts. Е F Н K L

Revision: November 2015 TM-177 2016 Pathfinder

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#### SHIFT POSITION INDICATOR CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

### SHIFT POSITION INDICATOR CIRCUIT

### Component Parts Function Inspection

INFOID:0000000012552346

[CVT: RE0F10E]

### 1. CHECK SHIFT POSITION INDICATOR

- 1. Start the engine.
- Shift selector lever.
- Check that the selector lever position and the shift position indicator on the combination meter are identical.

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to TM-178, "Diagnosis Procedure".

#### Diagnosis Procedure

INFOID:0000000012552347

### 1. CHECK TCM INPUT/OUTPUT SIGNAL

#### (P)With CONSULT

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

#### Is the check result normal?

YES >> INSPECTION END

- NO-1 ("RANGE" is changed but is not displayed on shift position indicator.>>Check "Self Diagnostic Result" in "TRANSMISSION".
- NO-2 ("RANGE" and shift position indicator are different.)>>Check "Self Diagnostic Result" in "TRANSMIS-SION".
- NO-3 (Specific "RANGE" is not displayed on shift position indicator.)>>Check "Self Diagnostic Result" in "METER/M&A".

#### **OVERDRIVE CONTROL SWITCH**

#### < DTC/CIRCUIT DIAGNOSIS >

### OVERDRIVE CONTROL SWITCH

### Component Function Check

#### INFOID:0000000012552348

[CVT: RE0F10E]

### $oldsymbol{1}$ . CHECK OD OFF INDICATOR LAMP FUNCTION

## В

Check OD OFF indicator lamp turns ON for approx. 2 seconds when ignition switch turns ON.

#### Is the inspection results normal?

YES >> GO TO 2.

NO

>> Go to TM-182, "Diagnosis Procedure".

### 2.check overdrive control switch function

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- Shift the selector lever to "D" position.
- Check that OD OFF indicator lamp turns ON/OFF when overdrive control switch is operated.

#### Is the inspection results normal?

YES >> INSPECTION END

>> Go to TM-179, "Diagnosis Procedure". NO

INFOID:0000000012552349

### Diagnosis Procedure

### $oldsymbol{1}$ . CHECK OVERDRIVE CONTROL SWITCH CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect CVT shift selector connector.

CV/T shift salastar

- Turn ignition switch ON.
- Check voltage between CVT shift selector harness connector terminals.

Connector	+	_	Voltage (Approx.)
Connector	Terminal		(лергох.)
M78	1	2	Battery voltage

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> GO TO 4.

CVT shift selector

#### 2.CHECK CVT SHIFT SELECTOR ASSEMBLY

Check continuity between CVT shift selector connector terminals.

	M

	Condition	Continuity	
Terminal	Conducti		
1 – 2	Overdrive control switch is depressed.	Existed	
	Overdrive control switch is released.	Not existed	

#### N

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-47, "Intermittent Incident".

NO >> GO TO 3.

### 3.CHECK OVERDRIVE CONTROL SWITCH

Р

- Remove shift selector handle. Refer to TM-198, "Exploded View".
- Check overdrive control switch. Refer to TM-180, "Component Inspection".

#### Is the inspection result normal?

YES >> Replace CVT shift selector assembly. Refer to TM-198, "Removal and Installation".

NO >> Repair or replace malfunctioning parts.

#### CHECK GROUND CIRCUIT

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

#### **OVERDRIVE CONTROL SWITCH**

#### < DTC/CIRCUIT DIAGNOSIS >

CVT shift selector			Continuity	
Connector	Terminal	_	Continuity	
M78	2	Ground	Existed	

#### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace malfunctioning parts.

### ${f 5.}$ CHECK CIRCUIT BETWEEN CVT SHIFT SELECTOR AND COMBINATION METER (PART 1)

- 1. Turn ignition switch OFF.
- Disconnect combination meter connector.
- Check continuity between CVT shift selector harness connector terminal and combination meter harness connector terminal.

CVT shift selector		Combination meter		Continuity	
Connector	Terminal	Connector	Terminal	Continuity	
M78	1	M24	52	Existed	

#### Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace malfunctioning parts.

#### 6.CHECK CIRCUIT BETWEEN CVT SHIFT SELECTOR AND COMBINATION METER (PART 2)

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

CVT shift selector		_	Continuity
Connector	Terminal		Continuity
M78	1	Ground	Not existed

#### Is the inspection result normal?

YES >> GO TO 7.

NO >> Repair or replace malfunctioning parts.

### 7.CHECK COMBINATION METER INPUT SIGNAL

- Connect all of disconnected connectors.
- Turn ignition switch ON.
- 3. Select "Data Monitor" in "METER/M&A".
- Select "O/D OFF SW".
- Check that "O/D OFF SW" turns ON/OFF when overdrive control switch is operated. Refer to <u>MWI-23</u>.
   "Reference Value".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-47, "Intermittent Incident".

NO >> Replace combination meter. Refer to MWI-85, "Removal and Installation".

### Component Inspection

1. CHECK OVERDRIVE CONTROL SWITCH

INFOID:0000000012552350

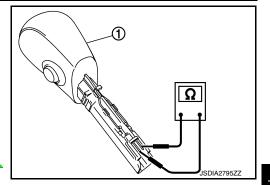
[CVT: RE0F10E]

# **OVERDRIVE CONTROL SWITCH**

### < DTC/CIRCUIT DIAGNOSIS >

Check continuity between wires of shift selector handle ①.

Condition	Continuity
Overdrive control switch is depressed	Existed
Overdrive control switch is released	Not existed



[CVT: RE0F10E]

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace shift selector handle. Refer to <u>TM-198</u>, <u>"Exploded View"</u>.

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#### OD OFF INDICATOR LAMP

#### < DTC/CIRCUIT DIAGNOSIS >

### OD OFF INDICATOR LAMP

# Component Function Check

INFOID:0000000012552351

[CVT: RE0F10E]

# 1. CHECK OD OFF INDICATOR LAMP FUNCTION

Check OD OFF indicator lamp turns ON for approx. 2 seconds when ignition switch turns ON.

#### Is the inspection results normal?

YES >> INSPECTION END

NO >> Go to TM-182, "Diagnosis Procedure".

# Diagnosis Procedure

INFOID:0000000012552352

# 1. CHECK DTC (TCM)

### (P)With CONSULT

- 1. Turn ignition switch ON.
- Check "Self Diagnostic Results" in "TRANSMISSION".

#### Is any DTC detected?

YES >> Check DTC detected item. Refer to TM-65, "DTC Index".

NO >> GO TO 2.

# 2.CHECK DTC (COMBINATION METER)

#### (P)With CONSULT

Check "Self Diagnostic Results" in "METER/M&A".

#### Is any DTC detected?

YES >> Check DTC detected item. Refer to MWI-29, "DTC Index".

NO >> GO TO 3.

# 3. CHECK COMBINATION METER INPUT/OUTPUT SIGNAL

#### (P)With CONSULT

- 1. Shift the selector lever to "D" position.
- 2. Select "Data Monitor" in "METER/M&A".
- Select "O/D OFF IND".
- Check that "O/D OFF IND" turns ON/OFF when overdrive control switch is operated. Refer to <u>MWI-23</u>, <u>"Reference Value"</u>.

#### Is the inspection result normal?

YES >> Replace combination meter. Refer to <a href="MWI-85">MWI-85</a>, "Removal and Installation".

NO >> GO TO 4.

# 4. CHECK TCM INPUT/OUTPUT SIGNAL

#### (P)With CONSULT

- Select "Data Monitor" in "TCM".
- Select "SPORT MODE IND".
- Check that "SPORT MODE IND" turns ON/OFF when overdrive control switch is operated. Refer to <u>TM-</u> 54, "Reference Value".

#### Is the inspection result normal?

YES >> Replace combination meter. Refer to MWI-85, "Removal and Installation".

NO >> Check overdrive control switch circuit. Refer to TM-179, "Diagnosis Procedure".

#### TOW MODE SYSTEM

#### [CVT: RE0F10E] < DTC/CIRCUIT DIAGNOSIS > TOW MODE SYSTEM Α Component Function Check INFOID:0000000012552353 ${f 1}$ . CHECK TOW MODE SWITCH FUNCTION В Check that TOW mode indicator lamp turns ON/OFF when tow mode switch is operated. Is the inspection results normal? YES >> INSPECTION END NO >> Go to TM-183, "Diagnosis Procedure". Diagnosis Procedure INFOID:0000000012552354 TM 1. CHECK DTC (TCM) (P)With CONSULT Start the engine. Check "Self Diagnostic Results" in "TRANSMISSION". Is any DTC detected? YES >> Check DTC detected item. Refer to TM-65, "DTC Index". NO >> GO TO 2. 2.CHECK DTC (COMBINATION METER) (P)With CONSULT Check "Self Diagnostic Results" in "METER/M&A". Is any DTC detected? YES >> Check DTC detected item. Refer to MWI-29, "DTC Index". NO >> GO TO 3. 3.CHECK COMBINATION METER INPUT/OUTPUT SIGNAL (P)With CONSULT Select "Data Monitor" in "METER/M&A". Select "TOW MODE IND". Check that "TOW MODE IND" turns ON/OFF when tow mode switch is operated. Refer to MWI-23, "Reference Value". Is the inspection result normal? >> Replace the combination meter. Refer to MWI-85, "Removal and Installation". NO >> GO TO 4. 4. CHECK TOW MODE SWITCH CIRCUIT Turn ignition switch OFF. Disconnect tow mode switch connector. 2. 3. Turn ignition switch ON. Check voltage between tow mode switch harness connector terminals. N Tow mode switch Voltage (Approx.) Connector Terminal 4 Battery voltage Is the inspection result normal? Р YES >> GO TO 5. NO >> GO TO 6. 5. CHECK TOW MODE SWITCH Check tow mode switch. Refer to TM-184, "Component Inspection".

>> Check intermittent incident. Refer to GI-47, "Intermittent Incident".

Is the inspection result normal?

#### TOW MODE SYSTEM

#### < DTC/CIRCUIT DIAGNOSIS >

NO >> Repair or replace malfunctioning parts.

# 6.check tow mode switch ground circuit

- 1. Turn ignition switch OFF.
- 2. Check continuity between tow mode switch harness connector terminal and ground.

Tow mod	Tow mode switch		Continuity
Connector	Terminal	_	Continuity
M6	4	Ground	Existed

#### Is the inspection result normal?

YES >> GO TO 7.

NO >> Repair or replace malfunctioning parts.

# 7.check circuit between combination meter and tow mode switch (part 1)

- 1. Disconnect combination meter connector.
- Check continuity between combination meter harness connector terminal and tow mode switch harness connector terminal.

Combination meter		Tow mode switch		Continuity
Connector	Terminal	Connector	Terminal	Continuity
M24	19	M6	1	Existed

#### Is the inspection result normal?

YES >> GO TO 8.

NO >> Repair or replace malfunctioning parts.

# 8.CHECK CIRCUIT BETWEEN COMBINATION METER AND TOW MODE SWITCH (PART 2)

Check continuity between combination meter harness connector terminal and ground.

Combination meter		_	Continuity
Connector	Terminal		Continuity
M24	19	Ground	Not existed

#### Is the inspection result normal?

YES >> GO TO 9.

NO

>> Repair or replace malfunctioning parts.

# 9.CHECK COMBINATION METER INPUT/OUTPUT SIGNAL (PART 3)

- Connect combination meter connector.
- 2. Turn ignition switch ON.
- 3. Check voltage between combination meter harness connector terminal and ground.

	+		
Combina	tion meter	_	Voltage
Connector	Terminal		
M24	19	Ground	Battery voltage

### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-47, "Intermittent Incident".

NO >> Replace the combination meter. Refer to MWI-85, "Removal and Installation".

# Component Inspection

INFOID:0000000012552355

[CVT: RE0F10E]

# 1. CHECK TOW MODE SWITCH

Check continuity between tow mode switch connector terminals.

# **TOW MODE SYSTEM**

### < DTC/CIRCUIT DIAGNOSIS >

TOW mode switch	Condition	Continuity	
Terminal	Condition		
1 – 4	Tow mode switch is depressed.	Existed	
1 – 4	Tow mode switch is released.	Not existed	

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### Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace tow mode switch. Refer to <u>TM-203</u>. "Removal and Installation".

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#### SHIFT LOCK SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

### SHIFT LOCK SYSTEM

# Component Function Check

INFOID:0000000012552356

[CVT: RE0F10E]

# 1.CHECK SHIFT LOCK OPERATION (PART 1)

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

#### Can the selector lever be shifted to any other position?

YES >> Go to TM-186, "Diagnosis Procedure".

NO >> GO TO 2.

# 2.CHECK SHIFT LOCK OPERATION (PART 2)

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

#### Can the selector lever be shifted to any other position?

YES >> Inspection End.

NO >> Go to TM-186, "Diagnosis Procedure".

# Diagnosis Procedure

INFOID:0000000012552357

Regarding Wiring Diagram information, refer to TM-79, "Wiring diagram".

# 1. CHECK POWER SOURCE

- 1. Turn ignition switch OFF.
- Disconnect BCM connector M18.
- Check voltage between BCM connector M18 terminal 27 and ground while pressing the brake pedal.

В	ВСМ		Condition	Voltage
Connector	Terminal	Ground	Brake pedal de-	Battery voltage
M18	27		pressed	Dattery voltage

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> GO TO 2.

# 2. CHECK STOP LAMPS

Do the stop lamps operate normally?

#### Is the inspection result normal?

YES >> Check the following:

- Harness between fuse block (J/B) and BCM.
- Fuse block (J/B).

NO >> Refer to TM-79, "Wiring diagram".

# 3.CHECK HARNESS BETWEEN BCM AND CVT SHIFT SELECTOR

- 1. Disconnect CVT shift selector connector.
- Check continuity between BCM connector M80 terminal 108 and CVT shift selector connector M78 terminal 3.

BCM		CVT shift selector		Continuity
Connector	Terminal	Connector	Terminal	Continuity
M80	108	M78	3	Yes

3. Check continuity between BCM connector M80 terminal 108 and ground.

### SHIFT LOCK SYSTEM

#### < DTC/CIRCUIT DIAGNOSIS >

В	CM		Continuity
Connector	Terminal	Ground	Continuity
M80	108		No

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[CVT: RE0F10E]

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### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace harness or connector.

4. CHECK GROUND CIRCUIT (CVT SHIFT SELECTOR)

Check continuity between CVT shift selector connector M78 terminal 4 and ground.

CVT shit	ft selector		Continuity
Connector	Terminal	Ground	Continuity
M78	4		Yes

#### Is the inspection result normal?

YES >> Replace CVT shift selector. Refer to TM-198, "Removal and Installation".

NO >> Repair or replace harness or connector.

# Component Inspection (Shift Lock Solenoid)

# 1. CHECK SHIFT LOCK SOLENOID

Apply voltage to terminals of shift lock solenoid and park position switch (shift selector) connector and check that shift lock solenoid is activated.

#### **CAUTION:**

- Connect the fuse between the terminals when applying the voltage.
- Never cause shorting between terminals.

+ (fuse)	-		
Shift lock solenoid		Condition	Status
Terr	minal		
3	4	Apply 12 V between terminals 3 and 4 with the park position switch (shift selector) in the "P" (park) position.	Shift lock solenoid operates

#### Is the inspection result normal?

YES >> Inspection End.

NO >> Replace CVT shift selector. Refer to TM-198, "Removal and Installation".

### Component Inspection (Park Position Switch)

# 1. CHECK PARK POSITION SWITCH (SHIFT SELECTOR)

Apply voltage to terminals of shift lock solenoid and park position switch (shift selector) connector and check that shift lock solenoid is activated.

#### **CAUTION:**

- · Connect the fuse between the terminals when applying the voltage.
- Never cause shorting between terminals.

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### SHIFT LOCK SYSTEM

#### < DTC/CIRCUIT DIAGNOSIS >

+ (fuse)	-		
Shift lock solenoid		Condition	Status
Terr	minal		
3	4	Apply 12 V between terminals 3 and 4 with the park position switch (shift selector) in the "P" (park) position.	Shift lock solenoid operates

#### Is the inspection result normal?

YES >> Inspection End.

NO >> Replace CVT shift selector. Refer to TM-198, "Removal and Installation".

# Component Inspection (Stop Lamp Switch)

INFOID:0000000012552360

[CVT: RE0F10E]

# 1. CHECK STOP LAMP SWITCH

Check the continuity between the stop lamp switch connector terminals.

Stop lan	np switch	Condition	Continuity		
Terr	minal	Condition	Continuity		
1	2	Depressed brake pedal	Yes		
1	2	Released brake pedal	No		

#### Is the inspection result normal?

YES >> Inspection End.

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

# **CVT CONTROL SYSTEM**

[CVT: RE0F10E]

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< SYMPTOM DIAGNOSIS >

# SYMPTOM DIAGNOSIS

# **CVT CONTROL SYSTEM**

Symptom Table INFOID:0000000012552361

- The diagnosis item number indicates the order of check. Start checking in the order from 1.
- Perform diagnoses of symptom table 1 before symptom table 2.

Symptom Table 1

											(144)							TM
	Symptom	Engine system	CAN communication line	Transmission range switch (P0705, P0706)	Input speed sensor (P0717)	Primary speed sensor (P0715)	Secondary speed sensor (P2765)	CVT fluid temperature sensor (P0711, P0712, P0713)	Primary pressure sensor (P084C, P084D)	Secondary pressure sensor (P0841, P0847, P0848)	Torque converter clutch solenoid valve (P0740, P0743, P0744)	Stall test	CVT position	Power supply	Control valve	CVT fluid level and state	Ignition switch and starter	E F G H
							TM-6	<u>5</u>			-	TM-95	1M-96	TM-176	TM-227	TM-194	PG-28, STR-5	J K
-	Large shock (N→ D position)	1	4	8				3			6		2		9	5		
Shift Shock	Large shock (N→ R position)	1	4	8				3			6		2		9	5		L
	Shock is too large for lock-up.	2	3								6		1		5	4		
	Vehicle cannot be started from D position.	8	3		5	6	7	9	10	11		4	2	12	13	1		M
	Vehicle cannot be started from R position.	8	3		5	6	7	9	10	11		4	2	12	13	1		
	Does not lock-up.	2	6	8	3	4	10	9	11	12	5	7			13	1		Ν
Slips/Will Not	Does not hold lock-up condition.	2	6	8	3	4	10	9	11	12	5	7			13	1		
Engage	Lock-up is not released.	2	6		3	4					5	7			8	1		0
	With selector lever in D position, acceleration is extremely poor.	3	4	5	7	8	9	12	10	11		2	6	13	14	1		
	With selector lever in R position, acceleration is extremely poor.	3	4	5	7	8	9	12	10	11		2	6	13	14	1		Р
	Slips at lock-up.	2	6	8	3	4	10	9	11	12	5	7			13	1		

[CVT: RE0F10E]

P0744) P0743, P0713) , P0848) (P0740, CVT fluid temperature sensor (P0711, P0712, sensor (P0841, P0847, P0706) Primary pressure sensor (P084C, P084D) clutch solenoid valve Transmission range switch (P0705, Secondary speed sensor (P2765) Primary speed sensor (P0715) nput speed sensor (P0717) Ignition switch and starter CAN communication line CVT fluid level and state Symptom Secondary pressure Torque converter Engine system Power supply Control valve CVT position test Stall STR-5 TM-176 TM-194 TM-227 **TM-96 TM-65** PG-28, No creep at all. Vehicle cannot run in all positions. With selector lever in D position, driving is not possible. With selector lever in R position, driving is not possible. Judder occurs during lock-up. Strange noise in D position. Strange noise in R position. Strange noise in N position. Vehicle does not decelerate by en-gine brake. Other Maximum speed low. With selector lever in P position, vehicle does not enter parking condition or, with selector lever in another position, parking condition is not cancelled. Vehicle runs with CVT in P position. Vehicle runs with CVT in N position. Engine stall. Engine stalls when selector lever shifted  $N \rightarrow D$  or R. Engine speed does not return to Does not shift 

# **CVT CONTROL SYSTEM**

< SYMPTOM DIAGNOSIS > [CVT: RE0F10E]

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	Symptom	Engine system	CAN communication line	Transmission range switch (P0705, P0706)	Input speed sensor (P0717)	Primary speed sensor (P0715)	Secondary speed sensor (P2765)	CVT fluid temperature sensor (P0711, P0712, P0713)	Primary pressure sensor (P084C, P084D)	Secondary pressure sensor (P0841, P0847, P0848)	Torque converter clutch solenoid valve (P0740, P0743, P0744)	Stall test	CVT position	Power supply	Control valve	CVT fluid level and state	Ignition switch and starter	F F
		EC-148					<u>TM-6</u>	5 <u>5</u>				TM-95	<u>TM-96</u>	TM-176	TM-227	TM-194	PG-28, STR-5	(  -
	Engine does not start in N or P postion.	.i-		3									2				1	
Other	Engine starts in positions other than N or P.	n		3									2				1	
Symptom	Table 2		u.												<u>.</u> L			
	Symptom	Torque converter	Transmission range switch		dund IIO	Forward clutch		Reverse brake	Planetary gear		Bearings	Parking mechanism		Stop lamp switch	Shift lock solenoid		CVT shift selector	
		TM-230					TN	1-226	<u> </u>			<u> </u>		<u>BR-7</u>	TM-186		TM-198	
	Large shock (N→ D position)		2			1												
Shift Shock	Large shock (N→ R position)		2					1								$\perp$		
	Shock is too large for lock-up.	1																

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[CVT: RE0F10E]

- STIVIT IC	JM DIAGNOSIS >									[	. INEU	
	Symptom	Torque converter	Transmission range switch	Oil pump	Forward clutch	Reverse brake	Planetary gear	Bearings	Parking mechanism	Stop lamp switch	Shift lock solenoid	CVT shift selector
		TM-230		1	l	TM-226	<u>5</u>	l	I	BR-7	TM-186	TM-198
	Vehicle cannot be started from D position.		3	1	2							
	Vehicle cannot be started from R position.		4	1		2			3			
	Does not lock-up.	1	3	2								
Slips/Will	Does not hold lock-up condition.	1	3	2								
Not Engage	Lock-up is not released.	1		2								
	With selector lever in D position, acceleration is extremely poor.	1	3		2							
	With selector lever in R position, acceleration is extremely poor.	1	4	2		3						
	Slips at lock-up.	1		2								
	No creep at all.	1	6	2	4	5	3					
	Vehicle cannot run in all positions.	1		2	4	5	3		6			
	With selector lever in D position, driving is not possible.	1		2	4		3		5			
	With selector lever in R position, driving is not possible.	1		2		4	3		5			
	Judder occurs during lock-up.	1										
	Strange noise in D position.	1		2	4		3	5				
	Strange noise in R position.	1		2		4	3					
	Strange noise in N position.	1		2			3					
Other	Maximum speed low.	1	5	2	4		3					
Other	With selector lever in P position, vehicle does not enter parking condition or, with selector lever in another position, parking condition is not cancelled.								1			
	Vehicle runs with CVT in P position.						2		1			
	Vehicle runs with CVT in N position.				2	3	1					
	Engine stall.	1										
	Engine stalls when selector lever shifted N $\rightarrow$ D or R.	1										
	Does not shift			1								

# **CVT CONTROL SYSTEM**

< SYMPTOM DIAGNOSIS > [CVT: RE0F10E]

	ON DI (O140010 )											
	Symptom	Torque converter	Transmission range switch	Oil pump	Forward clutch	Reverse brake	Planetary gear	Bearings	Parking mechanism	Stop lamp switch	Shift lock solenoid	CVT shift selector
		TM-230	TM-226						BR-7	TM-186	TM-198	
Other	When brake pedal is depressed with ignition switch ON, selector lever cannot be shifted from P position to other position.									1	2	3
Otrici	When brake pedal is not depressed with ignition switch ON, selector lever can be shifted from P position to other position.									1	2	3

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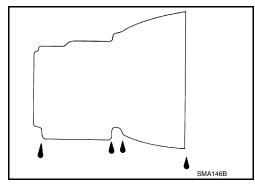
# PERIODIC MAINTENANCE

### **CVT FLUID**

Inspection INFOID:0000000012552362

#### **FLUID LEAKAGE**

- Check transaxle surrounding area (oil seal and plug etc.) for fluid leakage.
- If anything is found, repair or replace damaged parts and adjust CVT fluid level. Refer to <u>TM-196</u>, "<u>Adjustment</u>".



[CVT: RE0F10E]

INFOID:0000000012552363

Replacement

CVT fluid : Refer to TM-232, "General Specification".

Fluid capacity : Refer to TM-232, "General Specification".

#### **CAUTION:**

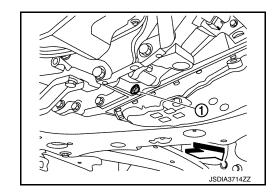
- Always use shop paper. Never use shop cloth.
- Replace a drain plug gasket with new ones at the final stage of the operation when installing.
- Use caution when looking into the drain hole as there is a risk of dripping fluid entering the eye.
- After replacement, always perform CVT fluid leakage check.
- 1. Select "Data Monitor" in "TRANSMISSION" using CONSULT.
- 2. Select "FLUID TEMP" and confirm that the CVT fluid temperature is 40°C (104°F) or less.
- 3. Check that the selector lever is in the "P" position, then completely engage the parking brake.
- 4. Lift up the vehicle.
- 5. Remove the drain plug and drain the CVT fluid from the oil pan. Refer to TM-206, "Exploded View".
- 6. Install the drain plug to oil pan.

#### **CAUTION:**

#### Drain plug gasket use the old one.

7. Remove the overflow plug ① from converter housing.

<□ : Vehicle front



#### CVT FLUID

#### < PERIODIC MAINTENANCE >

Install the charging pipe set (KV311039S0) (A) into the overflow plug hole.

#### **CAUTION:**

Tighten the charging pipe by hand.

9. Install the ATF changer hose (B) to the charging pipe.

Press the ATF changer hose all the way onto the charging pipe until it stops.

- 10. Fill approximately 3 liter (3-1/8 US qt, 2-5/8 lmp qt) of the CVT
- 11. Remove the ATF changer hose and charging pipe, then install the overflow plug.

#### NOTE:

Perform this work quickly because CVT fluid leaks.

- 12. Lift down the vehicle.
- 13. Start the engine.
- 14. While depressing the brake pedal, shift the selector lever to the entire position from "P" to "L", and shift it to the "P" position.

#### NOTE:

Hold the lever at each position for 5 seconds.

- 15. Check that the CONSULT "Data Monitor" in "FLUID TEMP" is 35°C (95°F) to 45°C (113°F).
- 16. Stop the engine.
- 17. Lift up the vehicle.
- 18. Remove the drain plug, and then drain CVT fluid from oil pan.
- 19. Repeat steps 8 to 18 (one time).
- Tighten the drain plug to the specified torque. Refer to <u>TM-206, "Exploded View"</u>.
- 21. Remove the overflow plug.
- 22. Install the charging pipe set (KV311039S0) into the overflow plug hole.

#### **CAUTION:**

Tighten the charging pipe by hand.

23. Install the ATF changer hose to the charging pipe.

#### **CAUTION:**

Press the ATF changer hose all the way onto the charging pipe until it stops.

- 24. Fill approximately 3 liter (3-1/8 US gt, 2-5/8 lmp gt) of the CVT fluid.
- 25. Remove the ATF changer hose and charging pipe, then install the overflow plug.

#### NOTE:

Perform this work quickly because CVT fluid leaks.

- 26. Lift down the vehicle.
- Start the engine.
- 28. While depressing the brake pedal, shift the selector lever to the entire position from "P" to "L", and shift it to the "P" position.

#### NOTE:

Hold the lever at each position for 5 seconds.

- 29. Check that the CONSULT "Data Monitor" in "FLUID TEMP" is 35°C (95°F) to 45°C (113°F).
- 30. Lift up the vehicle.
- 31. Remove the overflow plug and confirm that the CVT fluid is drained from the overflow plug hole.

#### CAUTION:

# Perform this work with the vehicle idling.

NOTE:

If the CVT fluid is not drained, refer to "Adjustment" and refill with the CVT fluid.

32. When the flow of CVT fluid slows to a drip, tighten the overflow plug to the specified torque. Refer to TM-206, "Exploded View".

#### **CAUTION:**

Never reuse O-ring.

Lift down the vehicle.

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[CVT: RE0F10E]

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#### CVT FLUID

#### < PERIODIC MAINTENANCE >

- 34. Select "Data Monitor" in "TRANSMISSION" using CONSULT.
- Select "CONFORM CVTF DETERIORTN".
- 36. Select "Erase".
- 37. Stop the engine.

Adjustment INFOID:0000000012552364

**CVT fluid** : Refer to TM-232, "General Specification". : Refer to TM-232, "General Specification". Fluid capacity

#### **CAUTION:**

- During adjustment of the CVT fluid level, check CONSULT so that the oil temperature may be maintained from 35 to 45°C (95 to 113°F).
- Maintain specified engine idle speed during CVT fluid level adjustment. Refer to EC-886, "Idle Speed".
- Use caution when looking into the drain hole as there is a risk of dripping fluid entering the eye.
- 1. Check that the selector lever is in the "P" position, then completely engage the parking brake.
- Start the engine.
- 3. Adjust the CVT fluid temperature to be approximately 40°C (104°F).

#### NOTE:

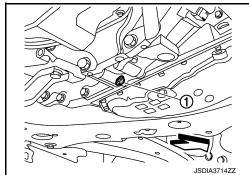
The CVT fluid is largely affected by temperature. Therefore be sure to use CONSULT and check the "FLUID TEMP" under "TRANSMISSION" in "Data Monitor" while adjusting.

4. While depressing the brake pedal, shift the selector lever to the entire position from "P" to "L", and shift it to the "P" position.

#### NOTE:

Hold the lever at each position for 5 seconds.

- Lift up the vehicle.
- Check that there is no CVT fluid leakage.
- 7. Remove the overflow plug (1) from converter housing.
  - $\langle \neg$ : Vehicle front



[CVT: RE0F10E]

8. Install the charging pipe set (KV311039S0) (A) into the overflow plug hole.

#### **CAUTION:**

Tighten the charging pipe by hand.

9. Install the ATF changer hose (B) to the charging pipe.

#### **CAUTION:**

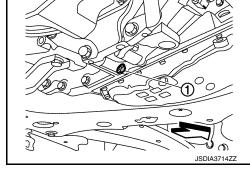
Press the ATF changer hose all the way onto the charging pipe until it stops.

- 10. Fill approximately 0.5 liter (1/2 US qt, 1/2 Imp qt) of the CVT
- 11. Remove the ATF changer hose from the charging pipe, and check that the CVT fluid drains out from the charging pipe. If it does not drain out, perform charging again.

#### CAUTION:

#### Perform this work with the vehicle idling.

- 12. When the flow of CVT fluid slows to a drip, remove the charging pipe from the converter housing.
- Tighten the overflow plug to the specified torque. Refer to <u>TM-206. "Exploded View"</u>.



# **CVT FLUID**

< PERIODIC MAINTENANCE > [CVT: RE0F10E]

**CAUTION:** 

Never reuse O-ring.

14. Lift down the vehicle.

15. Stop the engine.

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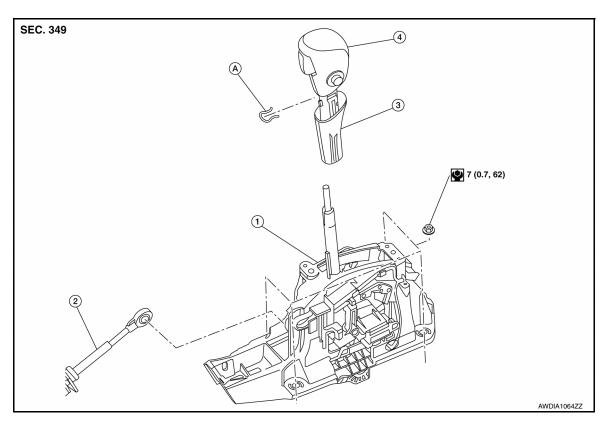
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# REMOVAL AND INSTALLATION

# **CVT SHIFT SELECTOR**

Exploded View



- 1. CVT shift selector assembly
- 4 Shift selector handle
- 2. Control cable
- A. Shift selector handle clip
- 3. Shift selector handle cover

INFOID:0000000012552366

[CVT: RE0F10E]

#### Removal and Installation

#### **REMOVAL**

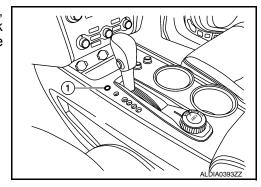
Apply the parking brake.

#### **CAUTION:**

Make sure the vehicle cannot move with the parking brake applied.

 Remove shift lock override button cover (1) using suitable tool, and insert suitable tool into opening to depress the shift lock override button. Move shift selector to "N" position while depressing shift lock override button.

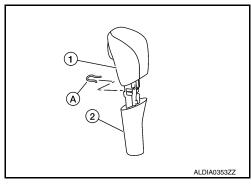
<⊃: Front



### **CVT SHIFT SELECTOR**

#### < REMOVAL AND INSTALLATION >

- 3. Remove the shift selector handle (1).
- a. Release the shift selector handle cover (2) using a suitable tool from the base of the shift selector handle (1).
- b. Remove the shift selector handle clip (A).
- c. Pull upward and remove the shift selector handle (1).



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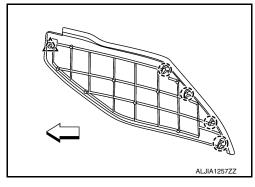
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Remove center console upper side finisher (LH). Refer to <u>IP-18. "Exploded View"</u>.

5. Release center console side finisher (LH/RH) clip and pawls using a suitable tool and remove.



⟨□: Front



6. Release shift selector finisher clips and pawls using a suitable tool, disconnect the harness connectors and remove. Refer to <a href="IP-18">IP-18</a>, "Exploded View".

- 7. Release the harness clip, then disconnect the harness connector from shift selector.
- 8. Remove the control cable from the shift selector assembly. Refer to TM-200, "Removal and Installation".
- 9. Remove the four shift selector assembly nuts and the shift selector assembly from the vehicle.

#### INSTALLATION

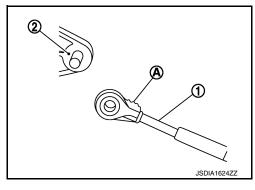
Installation is in the reverse order of removal.

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

#### NOTE:

Apply multi-purpose grease to control cable eye before installation.

Adjust control cable as necessary. Refer to <u>TM-201</u>, "<u>Inspection</u> and Adjustment".



Inspection

INFOID:0000000012552367

#### **INSPECTION**

Check the CVT position. If a malfunction is found, adjust the CVT position. Refer to <u>TM-96</u>, "Inspection and <u>Adjustment"</u>.

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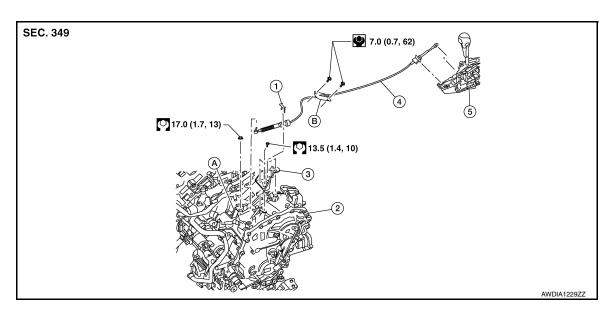
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Revision: November 2015 TM-199 2016 Pathfinder

# **CONTROL CABLE**

Exploded View



- 1. Bracket B
- 4. Bracket A
- A: Manual lever

- 2. Lock plate
- 5. Control cable
- B: Grommet

- 3. Transaxle assembly
- 6. CVT shift selector assembly

# Removal and Installation

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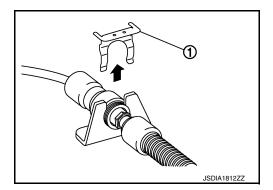
[CVT: RE0F10E]

# INSTALLATION

#### **CAUTION:**

### Always apply the parking brake before performing removal and installation.

- Remove the front air duct and air cleaner case assembly. Refer to <u>EM-24, "Removal and Installation"</u>.
- 2. Remove the control cable nut from the manual lever.
- 3. Remove the lock plate (1).



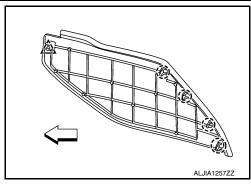
4. Remove center console upper side finisher (LH). Refer to IP-18, "Exploded View".

#### < REMOVAL AND INSTALLATION >

5. Release center console side finisher (LH/RH) clip and pawls using a suitable tool and remove.

∠\_`: Clip

( ): Pawl



[CVT: RE0F10E]

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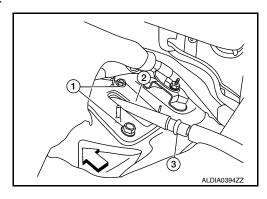
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6. Release shift selector finisher clips and pawls using a suitable tool, disconnect the harness connectors and remove. Refer to <a href="IP-18">IP-18</a>, "Exploded View".

7. Remove the control cable from the CVT shift selector assembly.

8. Remove the bolts (1) from the grommet (2).



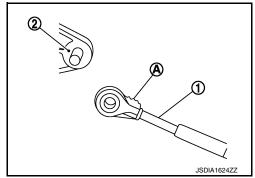
9. Remove the control cable from the vehicle.

#### INSTALLATION

Installation is in the reverse order of removal.

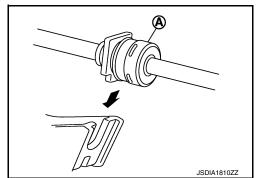
• Pay attention to the following when connecting the control cable to the CVT shift selector.

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



Install the socket (A) onto the CVT shift selector.CAUTION:

- Place the socket onto the CVT shift lever, then fasten it in place from above.
- Check that pulling on the socket does not disconnect it.



Inspection and Adjustment

Revision: November 2015

INFOID:0000000012552370

INSPECTION AFTER INSTALLATION

TM-201

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# **CONTROL CABLE**

[CVT: RE0F10E]

Check the CVT position. If a malfunction is found, adjust the CVT position. Refer to TM-199, "Inspection".

#### **TOW MODE SWITCH**

### < REMOVAL AND INSTALLATION >

# **TOW MODE SWITCH**

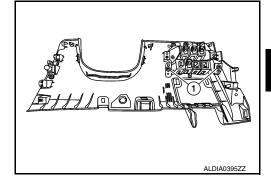
# Removal and Installation

INFOID:0000000012552371

[CVT: RE0F10E]

### **REMOVAL**

- 1. Remove instrument lower panel (LH). Refer to IP-25. "Removal and Installation".
- 2. Remove screws (1) from the bracket.
- 3. Remove tow mode switch.



#### **INSTALLATION**

Installation is in the reverse order of removal.

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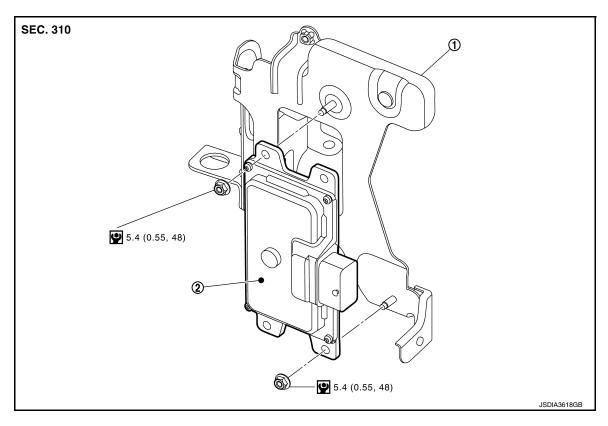
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[CVT: RE0F10E]

INFOID:0000000012552373

**TCM** 

Exploded View



1. Bracket 2. TCM

#### Removal and Installation

**CAUTION:** 

- To replace TCM, perform "WRITE IP CHARA REPLACEMENT TCM" of the CONSULT Work Support before removing TCM and save TCM data in CONSULT. Refer to <a href="mailto:TM-85">TM-85</a>, "Description".
- When replacing TCM, note the "CVTF DETERIORATION DATE" value displayed on CONSULT "CON-FORM CVTF DETERIORATION" in MAINTENANCE BOOKLET, before start the operation.
- When replacing TCM, perform "ADDITIONAL SERVICE WHEN REPLACING TCM". Refer to <u>TM-85</u>, "<u>Description</u>".
- When replacing TCM and transaxle assembly simultaneously, perform "ADDITIONAL SERVIE WHEN REPLACING TCM AND TRANSAXLE ASSEMBLY". Refer to <u>TM-88</u>, "<u>Description</u>".

#### REMOVAL

- Remove the front air duct. Refer to <u>EM-24, "Exploded View"</u>.
- 2. Disconnect the negative battery terminal. Refer to PG-93, "Removal and Installation".
- 3. Disconnect the TCM harness connector.
- 4. Remove the TCM and bracket as a set.
- Remove the TCM from the bracket.

#### INSTALLATION

Installation is the reverse order of removal.

Adjustment INFOID:000000012552374

#### ADJUSTMENT AFTER INSTALLATION

Perform "ADDITIONAL SERVICE WHEN REPLACING TCM". Refer to TM-85, "Description".

### **AIR BREATHER HOSE**

< REMOVAL AND INSTALLATION >

# AIR BREATHER HOSE

#### Removal and Installation

INFOID:0000000012552375

[CVT: RE0F10E]

#### **REMOVAL**

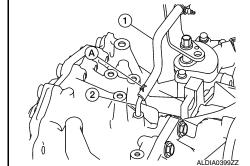
- 1. Remove the front air duct and air cleaner case assembly. Refer to EM-24, "Removal and Installation".
- 2. Remove air breather hose.

#### **INSTALLATION**

Installation is in the reverse order of removal.

#### **CAUTION:**

- · Check that air breather hose is not collapsed or blocked due to folding or bending when installed.
- Insert air breather hose (1) to air breather tube (2) all the way to the curve of the tube.
- Insert air breather hose to air breather tube so that the paint mark (A) is facing upward.



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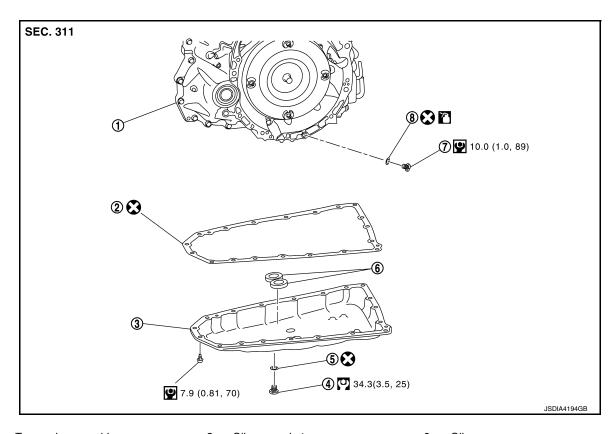
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# **OIL PAN**

Exploded View



- 1. Transaxle assembly
- 4. Drain plug
- 7. Overflow plug

- 2. Oil pan gasket
- 5. Drain plug gasket
- 8. O-ring

3. Oil pan

[CVT: RE0F10E]

INFOID:0000000012552377

6. Magnet

#### Removal and Installation

#### **REMOVAL**

- Remove drain plug from oil pan and then drain the CVT fluid.
- Remove drain plug gasket.

#### **CAUTION:**

#### Do not reuse drain plug gasket.

3. Remove the oil pan bolts, and then remove the oil pan and oil pan gasket.

#### **CAUTION:**

#### Do not reuse oil pan gasket.

4. Remove the magnets from the oil pan.

#### INSTALLATION

Installation is in the reverse order of removal.

#### **CAUTION:**

- Do not reuse oil pan gasket.
- Do not reuse drain plug gasket.
- Do not reuse O-ring.
- Completely clean the iron powder from the magnet area of oil pan and the magnets.

Install the oil pan to the transaxle case with the following procedure.

1. Install the oil pan gasket to the oil pan.

#### **CAUTION:**

Completely wipe out any moisture, oil, and old gasket from the oil pan gasket surface and bolt hole of oil pan and transaxle case.

Revision: November 2015 TM-206 2016 Pathfinder

### **OIL PAN**

#### < REMOVAL AND INSTALLATION >

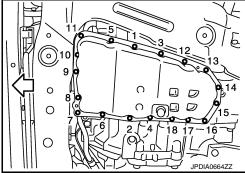
2. Install the oil pan assembly to the transaxle case, and then temporarily tighten the oil pan bolt.

3. Tighten the oil pan bolts in the order shown to the specified torque.

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Tighten the oil pan bolts again clockwise from (1) shown to the specified torque.



# Inspection and Adjustment

INFOID:0000000012552378

[CVT: RE0F10E]

#### INSPECTION AFTER REMOVAL

Check oil pan for foreign material.

- If a large amount of worn material is found, clutch plate may be worn.
- If iron powder is found, bearings, gears, or clutch plates may be worn.
- If aluminum powder is found, bushing may be worn, or chips or burrs of aluminum casting parts may enter. Check points where wear is found in all cases.

#### INSPECTION AFTER INSTALLATION

Check for CVT fluid leakage. Refer to TM-194, "Inspection".

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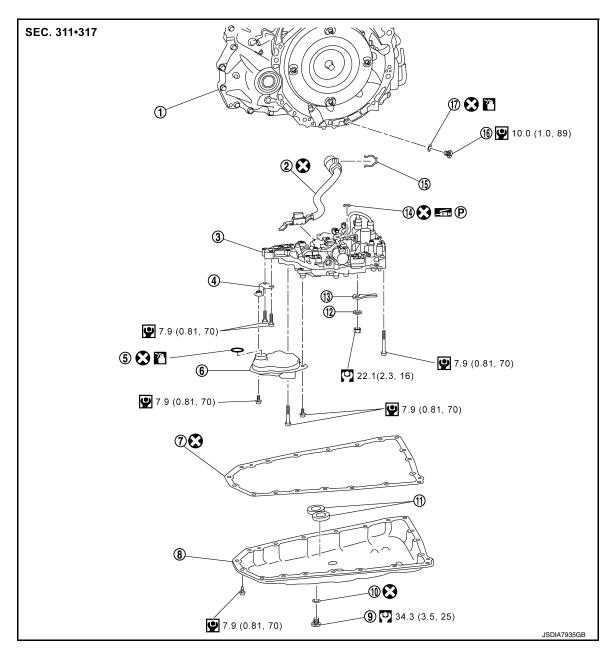
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# **CONTROL VALVE**

Exploded View

#### COMPONENT PARTS LOCATION



- Transaxle assembly
- 4 Bracket
- Oil pan gasket
- Drain plug gasket
- Manual plate
- 6 Overflow plug

- (2) Terminal cord assembly
- O-ring
- Oil pan
- Magnet
- 14 Lip seal
- (17) O-ring

- Control valve
- Oil strainer assembly

[CVT: RE0F10E]

- 9 Drain plug
- Spring washer
- Snap ring

: Always replace after every disassembly.

: N·m (kg-m, ft-lb)

: N·m (kg-m, in-lb)

### **CONTROL VALVE**

#### < REMOVAL AND INSTALLATION >

☐ P : Apply petroleum jelly

: Apply CVT fluid

### Removal and Installation

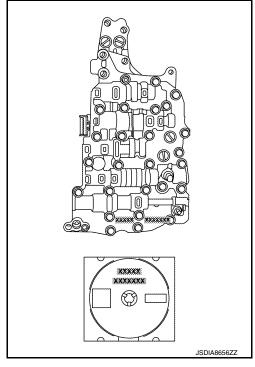
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[CVT: RE0F10E]

#### **CAUTION:**

Perform the following items when replacing the control valve.

- Check that the part number and serial number of the new control valve are identical to those of the attached CD.
- If old QR code sticker is affixed to transmission range switch, remove the QR code sticker and affix new QR code sticker included with new control valve.



#### **REMOVAL**

- Disconnect battery negative terminal. Refer to <u>PG-93</u>, "Exploded View".
- 2. Remove drain plug from oil pan and then drain the CVT fluid.
- 3. Remove drain plug gasket.

#### **CAUTION:**

Do not reuse drain plug gasket.

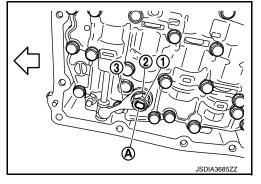
4. Remove the oil pan bolts, and then remove the oil pan and oil pan gasket.

#### **CAUTION:**

#### Do not reuse oil pan gasket.

- 5. Remove the magnets from the oil pan.
- 6. Remove the lock nut (1) and spring washer (2), and manual plate (3) from manual shaft (A).





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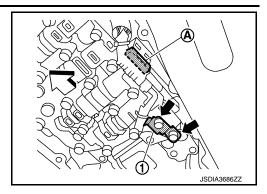
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[CVT: RE0F10E]

7. Remove CVT fluid temperature sensor bracket (1).

8. Disconnect control valve harness connector (A).



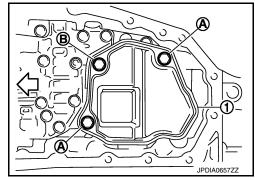
9. Remove the oil strainer assembly bolts (A) and (B), and then remove the oil strainer assembly (1).

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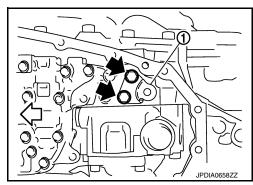
10. Remove O-ring from oil strainer assembly.

#### **CAUTION:**

Do not reuse O-ring.



11. Remove the bracket (1).



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

 $\triangleleft$  : Front

#### **CAUTION:**

Do not drop the control valve, ratio control valve and manual shaft.

#### NOTE:

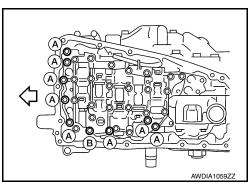
Control valve bolt heads may be marked with a number "7". Bolts marked as "7" are the bolts that need to be removed in order to remove the control valve.

13. Remove the lip seal (1) from the transaxle case.

#### **CAUTION:**

Do not reuse lip seal.

<□ : Front

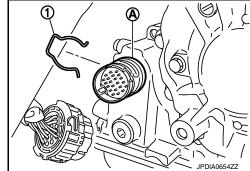


#### **CONTROL VALVE**

#### < REMOVAL AND INSTALLATION >

14. If the terminal cord assembly is being replaced, remove the terminal cord assembly with the following procedure.

- Remove the front fender side protector (LH). Refer to <u>EXT-28</u>, "FENDER PROTECTOR: Exploded View".
- b. Disconnect the CVT unit harness connector.
- c. Remove the snap ring (1) from the CVT unit harness connector (A).



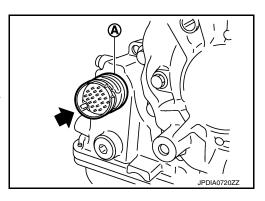
[CVT: RE0F10E]

d. Press the CVT unit harness connector (A) into the transaxle case.

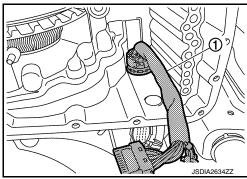
#### **CAUTION:**

Do not damage the CVT unit harness connector.

Clean around the harness connector to prevent foreign materials from entering into the transaxle case.



Remove terminal cord assembly (1) from inside the transaxle case.

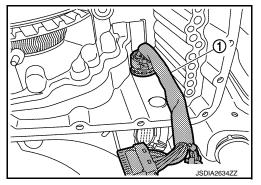


INSTALLATION

1. If terminal cord assembly is being replaced, install the terminal cord assembly with the following procedure.

a. Install terminal cord assembly (1) to the transaxle case.
 CAUTION:

- Do not reuse terminal cord assembly
- Connect the CVT unit connector with the stopper facing up, and then press in until it clicks.



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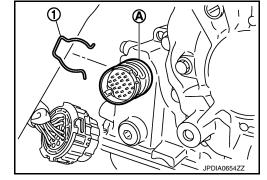
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- [CVT: RE0F10E] Install the snap ring (1) to the CVT unit harness connector (A).
- c. Connect the CVT unit harness connector.
- Install fender protector side cover (LH).

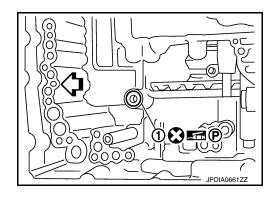


2. Install the lip seal (1) to the transaxle case.

#### **CAUTION:**

- Do not reuse lip seal.
- · Apply petroleum jelly to lip seal.





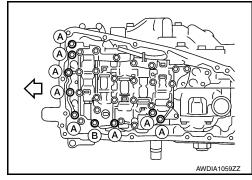
Install the control valve to the transaxle case.

#### **CAUTION:**

- Do not pinch the harness between the control valve and the transaxle case.
- Do not drop the control valve, ratio control valve and manual shaft.
- 4. Secure the control valve using the control valve bolts (A) and (B).



Bolt	Bolt length mm (in)	Number of bolts
А	54 (2.13)	8
В	44 (1.73)	1

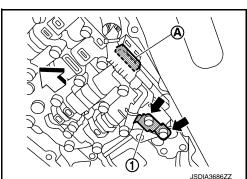


- 5. Connect the control valve harness connectors (A).
  - $\Diamond$ : Front

#### **CAUTION:**

- · Do not pinch the harness between the control valve and the transaxle case.
- · Securely insert the harness connector until it clicks and locks.
- Install CVT fluid temperature sensor bracket (1).





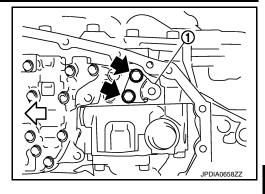
Install the bracket (1).

: Bolt : Front

8. Install O-ring to oil strainer assembly.

#### **CAUTION:**

- Do not reuse O-ring.
- Apply CVT fluid to O-ring.



[CVT: RE0F10E]

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Install the oil strainer assembly (1) using the oil strainer assembly bolts (A) and (B).

⟨⇒ : Front

Bolt	Bolt length mm (in)	Number of bolts
A	12 (0.47)	2
В	44 (1.73)	1

#### NOTE:

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

10. Install the manual plate (1) while aligning with the groove (A) of the manual valve.

#### **CAUTION:**

Assemble the manual plate while aligning its end with the cutout ( ) of the manual valve.

(A) : Manual shaft  $\triangleleft$ : Front

- 11. Install the spring washer (2) and the lock-nut (3), and then tighten to the specified torque.
- 12. Install the magnet while aligning it with the convex side of oil pan.

#### CAUTION:

Completely clean the iron powder from the magnet area of oil pan and the magnet.

- 13. Install the oil pan to the transaxle case with the following procedure.
  - 1. Install the oil pan gasket to the oil pan.

#### **CAUTION:**

- Completely wipe out any moisture, oil, and old gasket from the oil pan gasket surface and bolt hole of oil pan and transaxle case.
- · Do not reuse oil pan gasket.
- Install the oil pan assembly to the transaxle case, and then temporarily tighten the oil pan bolt.
- 3. Tighten the oil pan bolts in the order shown to the specified torque.

: Front

- Tighten the oil pan bolts again clockwise from (1) shown to the specified torque.
- 14. Install drain plug gasket to drain plug.

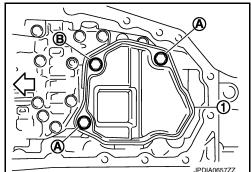
#### CAUTION:

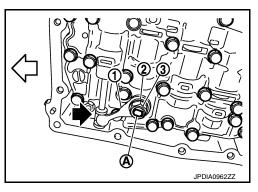
Do not reuse drain plug gasket.

15. Install drain plug to oil pan.

Revision: November 2015

16. Install new QR code sticker on Transmission Range (inhibitor) switch.





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### **CONTROL VALVE**

#### < REMOVAL AND INSTALLATION >

- 17. Connect battery negative terminal. Refer to PG-93, "Exploded View".
- 18. Fill the transaxle assembly with CVT fluid. Refer to TM-194, "Replacement".

# Inspection and Adjustment

INFOID:0000000013397239

[CVT: RE0F10E]

#### INSPECTION AFTER REMOVAL

Check oil pan for foreign material.

- If a large amount of worn material is found, clutch plate may be worn.
- If iron powder is found, bearings, gears, or clutch plates may be worn.
- If aluminum powder is found, bushing may be worn, or chips or burrs of aluminum casting parts may enter. Check points where wear is found in all cases.

#### INSPECTION AFTER INSTALLATION

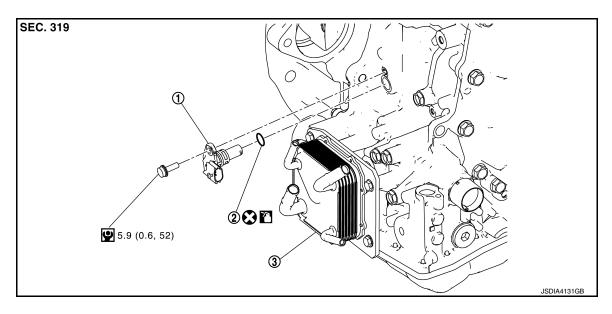
Check the CVT fluid level and leakage. Refer to TM-194, "Inspection".

#### ADJUSTMENT AFTER INSTALLATION

Perform "ADDITIONAL SERVICE WHEN REPLACING CONTROL VALVE." Refer to TM-90. "Description".

# INPUT SPEED SENSOR

**Exploded View** INFOID:0000000012552379



Input speed sensor

2. O-ring Transaxle assembly

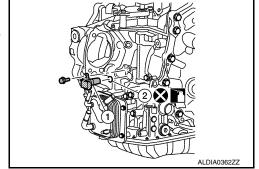
#### Removal and Installation

**REMOVAL** 

Remove the battery tray. Refer to PG-95, "Removal and Installation".

- Remove the starter motor. Refer to STR-20, "Removal and Installation".
- 3. Disconnect the harness connector from the input speed sensor (1).
- 4. Remove the input speed sensor bolt, then the input speed sen-
- 5. Remove the O-ring (2) from the input speed sensor (1). **CAUTION:**

Do not reuse O-ring.



#### **INSTALLATION**

Installation is in the reverse order of removal.

#### **CAUTION:**

- Do not reuse O-ring.
- Apply Genuine NISSAN CVT Fluid NS-3 to the O-ring.

# Inspection and Adjustment

INSPECTION AFTER INSTALLATION

Check for CVT fluid leakage. Refer to TM-194, "Inspection".

ADJUSTMENT AFTER INSTALLATION

Adjust CVT fluid level. Refer to TM-196, "Adjustment".

TM-215 Revision: November 2015 2016 Pathfinder

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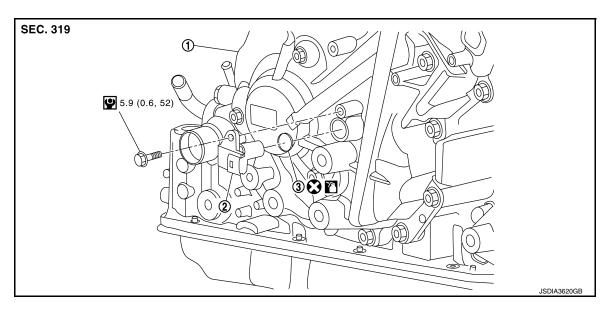
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# PRIMARY SPEED SENSOR

Exploded View



1. Transaxle assembly

2. Primary speed sensor

O-ring

#### Removal and Installation

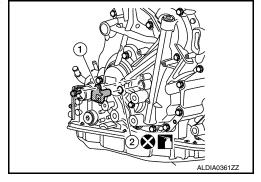
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[CVT: RE0F10E]

#### **REMOVAL**

- Disconnect the negative battery terminal. Refer to <u>PG-93, "Removal and Installation"</u>.
- Remove the front fender protector side cover (LH). Refer to <u>EXT-28</u>, "<u>FENDER PROTECTOR</u>: <u>Removal and Installation</u>".
- 3. Disconnect the harness connector from primary speed sensor (1).
- 4. Remove the primary speed sensor bolt, then the primary speed sensor (1).
- 5. Remove the O-ring (2) from the primary speed sensor (1). **CAUTION:**

Do not reuse O-ring.



#### **INSTALLATION**

Installation is in the reverse order of removal.

#### **CAUTION:**

- Do not reuse O-ring.
- Apply Genuine NISSAN CVT Fluid NS-3 to the O-ring.

# Inspection and Adjustment

INSPECTION AFTER INSTALLATION

Check for CVT fluid leakage. Refer to TM-194, "Inspection".

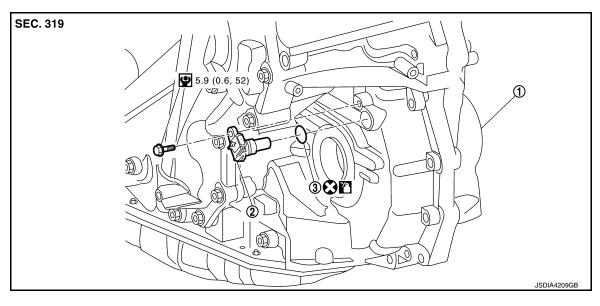
ADJUSTMENT AFTER INSTALLATION

Adjust CVT fluid level. Refer to TM-196, "Adjustment".

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# **OUTPUT SPEED SENSOR**

Exploded View



1. Transaxle assembly

2. Output speed sensor

3. O-ring

Removal and Installation

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[CVT: RE0F10E]

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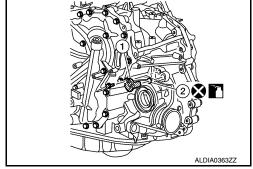
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#### **REMOVAL**

- 1. Disconnect the battery negative terminal. Refer to PG-93, "Removal and Installation".
- 2. Disconnect the harness connector from output speed sensor (1).
- 3. Remove the output speed sensor bolt, then the output speed sensor (1).
- 4. Remove the O-ring (2) from the output speed sensor (1). **CAUTION:**

Do not reuse O-ring.



#### INSTALLATION

Installation is in the reverse order of removal.

#### **CAUTION:**

- · Do not reuse O-ring.
- Apply Genuine NISSAN CVT Fluid NS-3 to the O-ring.

# Inspection and Adjustment

INSPECTION AFTER INSTALLATION

Check for CVT fluid leakage. Refer to TM-194, "Inspection".

ADJUSTMENT AFTER INSTALLATION

Adjust CVT fluid level. Refer to TM-196, "Adjustment".

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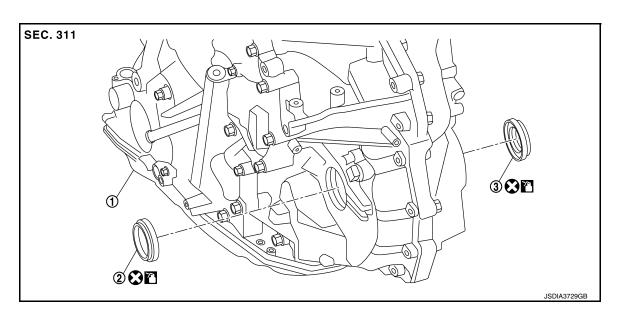
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# DIFFERENTIAL SIDE OIL SEAL

Exploded View



- 1. Transaxle assembly
- 2. Differential side oil seal (left side)
- 3. Differential side oil seal (right side) (2WD models only)

#### Removal and Installation

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[CVT: RE0F10E]

#### **REMOVAL**

- 1. Remove front drive shaft. Refer to <u>FAX-15</u>, "Removal and <u>Installation (LH)"</u> (LH) or <u>FAX-18</u>, "Removal and <u>Installation (RH)"</u> (RH).
- 2. Use oil seal remover or a similar means and remove the differential side oil seal. **CAUTION:**

When removing the differential side oil seal, be careful not to scratch the oil seal mounting surfaces of the transaxle case and converter housing.

#### INSTALLATION

Note the following, and installation is in the reverse order of removal.

- Measure height (A) of seal lip. Calculate protrusion (C) of oil seal lip according to measured height (A) of seal lip and reference value (B) of side oil insertion.
  - (1) : Differential side oil seal
  - (2) : Converter housing or transaxle case

Lip protrusion (C) : C=A-B

Differential side oil seal insertion : 0 mm (0 in)

reference value (B)

# JSDIA4816ZZ

#### **CAUTION:**

- · Do not reuse differential side oil seal.
- Put a mark on the measurement area and measure height of seal lip at four points diagonally using suitable tool.

#### NOTICE:

Since seal lips have a tolerance of  $\pm$  0.3 mm ( $\pm$  0.012 in) at maximum due to manufacturing tolerances or packing conditions, it is necessary to measure the seal lip height beforehand to clarify the tolerance.

# **DIFFERENTIAL SIDE OIL SEAL**

#### < REMOVAL AND INSTALLATION >

- As an indicator of the parallelism and insertion depth, cut a masking tape (1) to specified width [add 1 mm (0.04 in) to the value calculated from the tip of differential side oil seal lip] and affix to the differential side oil seal.
- Install the differential side oil seal using Tool, converter housing side using a suitable tool according to the guide of the masking tape (1).

**Tool number** : KV31103700 ( — )

#### **CAUTION:**

- If differential side oil seal is inserted deeper than the reference value, use a new differential side oil seal and perform the steps again.
- Apply CVT fluid to the differential side oil seal lip and around the oil seal.
- 4. Remove masking tape.
- 5. Adjust as instructed below to optimize the protrusion size and parallelism.

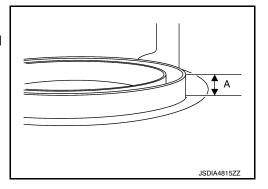
#### **CAUTION:**

If differential side oil seal is inserted deeper than the reference value, use a new differential side oil seal and perform the steps again.

Protrusion size (A)

#### **CAUTION:**

Protrusion must fall within  $\pm$  0.5 mm (0.020 in) of calculated size.



Parallelism at four diagonal points (➡)

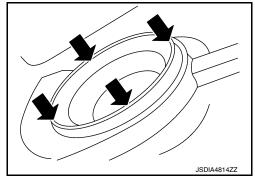
## **CAUTION:**

The difference among four diagonal points must be within 0.3 mm (0.012 in).

#### NOTE:

If differential side oil seal is uneven while installing, tilt suitable tool.

Check that the protrusion size and parallelism are adequate.



INFOID:0000000012552390

# Inspection and Adjustment

INSPECTION AFTER INSTALLATION

Check for CVT fluid leakage. Refer to TM-194, "Inspection".

ADJUSTMENT AFTER INSTALLATION

Adjust CVT fluid level. Refer to <a href="mailto:TM-196">TM-196</a>, "Adjustment".

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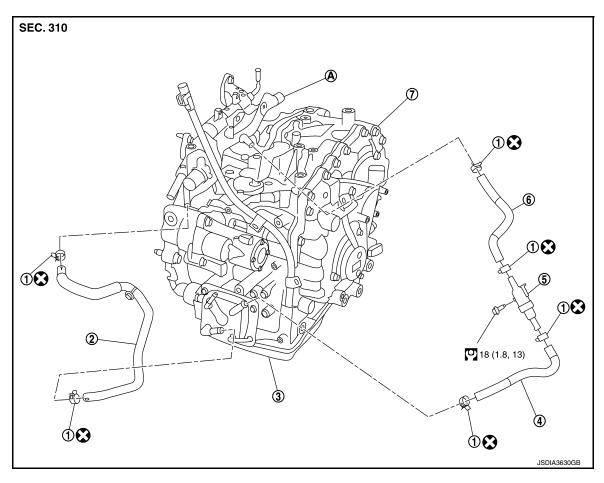
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# **WATER HOSE**

Exploded View



- 1. Hose clamp
- 4. CVT water hose B
- Transaxle assembly
- 2. CVT water hose A
- 5. Heater thermostat
- A. Water outlet

- 3. Transaxle assembly
- 6. CVT water hose C

#### Removal and Installation

# REMOVAL

#### **WARNING:**

Do not remove the radiator cap when the engine is hot. Serious burns could occur from high pressure engine coolant escaping from the radiator. Wrap a thick cloth around the cap. Slowly turn it a quarter turn to allow built-up pressure to escape. Carefully remove the cap by turning it all the way. CAUTION:

Perform this step engine is cold.

#### NOTE:

When removing components such as hoses, tubes/lines, etc., cap or plug openings to prevent fluid from spilling.

- Drain engine coolant from radiator. Refer to <u>CO-12, "Changing Engine Coolant"</u>.
- 2. Remove front air duct. Refer to EM-24, "Exploded View".
- 3. Remove hose clamps, and remove CVT water hose A.
- 4. Remove hose clamps, and remove CVT water hose B.
- 5. Remove hose clamps, and remove CVT water hose C.
- Remove CVT water tube.

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[CVT: RE0F10E]

# **WATER HOSE**

# < REMOVAL AND INSTALLATION >

# **INSTALLATION**

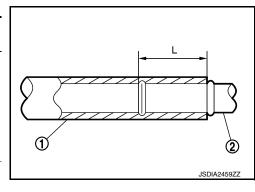
Installation is in the reverse order of removal.

## **CAUTION:**

- Do not reuse hose clamp.
- Hose clamp should not interfere with the spool or bulge.

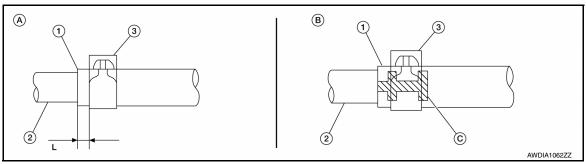
\*Refer to the following when installing water hose.

Refer to the following when installing water hose.				
Water hose (1)	Installation side tube (2)	Direction of paint mark	Hose insertion depth	
CVT water hose A	Water outlet	Upward		
CVI Water nose A	CVT oil warmer	Frontward		
	CVT oil warmer	Frontward	End reaches the 2- stage bulge.	
CVT water hose B	Heater thermostat	Align with the mark on the heater thermostat side		
CVT water hose C	Heater thermostat	Align with the mark on the heater thermostat side	End reaches the expansion part.	
	Water outlet	Upward	End reaches the 2-stage bulge.	



\*Refer to the following when installing hose clamps.

Water hose (1)	Installation side tube (2)	Hose clamp (3)		
		Direction of tab	Clamping position*	
Water hose A	Water outlet	Downward and 45° rightward	A: 5-7 mm (0.20 - 0.28 in) (L)	
Water Hose A	CVT oil warmer	Downward	from hose end.	
Water hose B	CVT oil warmer	Forward and 45° downward		
Water Hose B	Heater thermostat	Downward	B: Align with the paint mark (C)	
Water hose C	Heater thermostat	Downward	as shown.	
	Water outlet	Upward		



Inspection INFOID:000000012552393

# INSPECTION AFTER INSTALLATION

Start and warm up the engine. Visually check that there is no leakage of engine coolant and CVT fluid.

Revision: November 2015 TM-221 2016 Pathfinder

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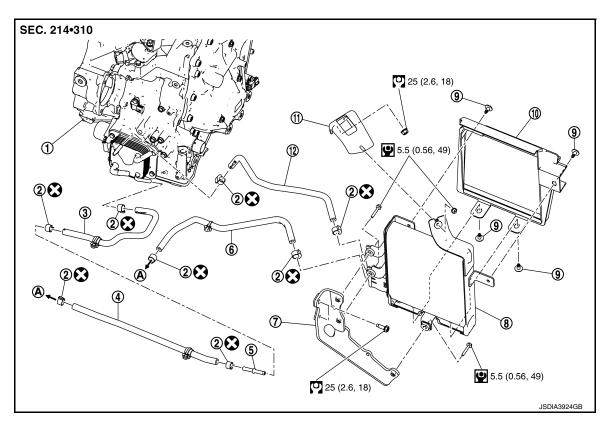
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# **CVT FLUID COOLER SYSTEM**

Exploded View

#### COMPONENT PARTS LOCATION



- 1. Transaxle assembly
- 4. CVT fluid cooler hose B
- 7. Bracket
- 10. Air guide
- A. To radiator

- 2. Hose clamp
- 5. Connector tube
- 8. CVT fluid cooler
- 11. Bracket

- 3. CVT fluid cooler hose A
- 6. CVT fluid cooler hose C
- 9. Clip
- 12. CVT fluid cooler hose D

#### Removal and Installation

INFOID:0000000012552395

[CVT: RE0F10E]

## **REMOVAL**

#### NOTE:

When removing components such as hoses, tubes/lines, etc., cap or plug openings to prevent fluid from spilling.

- Drain engine coolant from radiator. Refer to <u>CO-12, "Changing Engine Coolant"</u>.
- 2. Remove front air duct. Refer to EM-24, "Exploded View".
- 3. Remove hose clamps, and remove CVT fluid cooler hose A.
- 4. Remove hose clamps, and remove CVT fluid cooler hose B.
- 5. Remove CVT fluid cooler tube A and CVT fluid cooler tube B.

#### INSTALLATION

Installation is in the reverse order of removal.

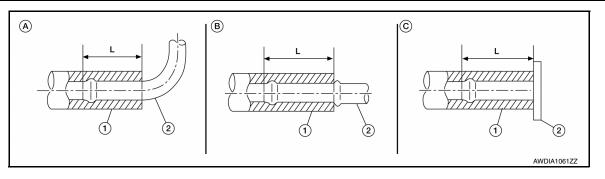
#### **CAUTION:**

- · Do not reuse hose clamps.
- · Hose clamps should not interfere with the spool or bulge.

# **CVT FLUID COOLER SYSTEM**

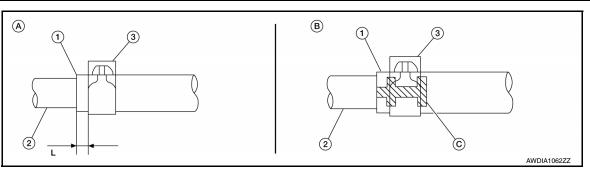
# < REMOVAL AND INSTALLATION >

*Refer to the following when installing CVT fluid cooler hoses				
Hose name (1)	Installation side tube (2)	Direction of paint mark	Hose insertion depth (L)	
CVT fluid cooler hose A	CVT oil warmer	Downward	B: End reaches the 2-step bulge.	
CVT IIulu coolei IIose A	Connector tube	Upward	B: End reaches the spool.	
CVT fluid cooler hose B	Connector tube	Upward	B. Life reaches the spoot.	
	Radiator	Upward	A: End reaches the radius curve end.	
CVT fluid cooler hose C	Radiator	Downward	C: Insert the hose until hose touches the radiator.	
CVT IIIIII COOIEI IIOSE C	CVT fluid cooler	Leftward	A: End reaches the radius curve end	
CVT fluid cooler hose D	CVT fluid cooler	Leftward	A. Litu reacties the radius curve end.	
	CVT oil warmer	Frontward	B: End reaches the 2-step bulge	



\*Refer to the following when installing CVT fluid cooler hoses

Hannama (4)	Installation side tube (2)	Hose clamp (3)		
Hose name (1)	installation side tube (2)	Direction of tab	Clamping position	
CVT fluid cooler hose A	CVT oil warmer	Downward	B: Align with the paint mark (C) as shown in the figure.	
Cor	Connector tube	Downward and 35° backward		
CVT fluid cooler hose B	Connector tube	Downward and 35° backward		
	Radiator	Upward		
C)/T fluid appler base C	Radiator Downward			
CVT fluid cooler hose C	CVT fluid cooler	Leftward		
CVT fluid cooler hose D	CVT fluid cooler	Leftward	B: Align with the paint mark (C) as shown in the figure.	
	CVT oil warmer	Frontward	54.0.	



Inspection INFOID:0000000012552396 Р

# INSPECTION AFTER INSTALLATION

Check for CVT fluid leakage. Refer to TM-194, "Inspection".

# ADJUSTMENT AFTER INSTALLATION

Adjust CVT fluid level. Refer to TM-196, "Adjustment".

TM-223 Revision: November 2015 2016 Pathfinder Α

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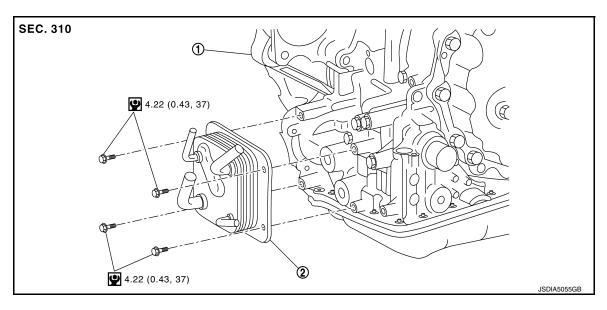
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# CVT OIL WARMER

Exploded View



1. Transaxle assembly

2. CVT oil warmer

## Removal and Installation

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[CVT: RE0F10E]

## **REMOVAL**

#### **WARNING:**

Do not remove the radiator cap when the engine is hot. Serious burns could occur from high pressure coolant escaping from the radiator. Wrap a thick cloth around the cap. Slowly turn it a quarter turn to allow built-up pressure to escape. Carefully remove the cap by turning it all the way.

CAUTION:

Perform this step engine is cold.

#### NOTE:

When removing components such as hoses, tubes/lines, etc., cap or plug openings to prevent fluid from spilling.

- Drain engine coolant from radiator. Refer to <u>CO-12, "Changing Engine Coolant"</u>.
- 2. Remove CVT water hose from CVT oil warmer. Refer to TM-220, "Exploded View".
- 3. Remove CVT fluid cooler hose from CVT oil warmer. Refer to TM-222, "Exploded View".
- 4. Remove CVT oil warmer.
- Remove bracket.

# **INSTALLATION**

Installation is in the reverse order of removal.

Inspection INFOID:000000012552399

## INSPECTION AFTER INSTALLATION

- Check for CVT fluid leakage. Refer to TM-194, "Inspection".
- Start and warm up the engine. Visually check that there is no leakage of engine coolant and CVT fluid.

#### ADJUSTMENT AFTER INSTALLATION

Adjust CVT fluid level. Refer to TM-196, "Adjustment".

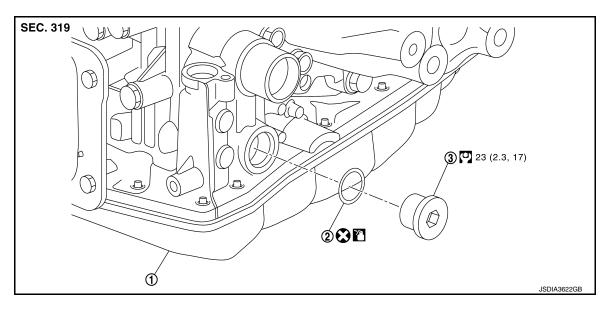
[CVT: RE0F10E]

# **PLUG**

Description INFOID:000000012552400

Replace the O-ring if oil leaks from the plug.

Exploded View



1. Transaxle assembly 2. O-ring 3. Plug

Removal and Installation

NOTE:

Replace the O-rings if oil leaks from the plugs.

REMOVAL

Remove the plugs and O-rings.

INSTALLATION

Installation is in the reverse order of removal.

**CAUTION:** 

- Do not reuse O-ring.
- Apply Genuine NISSAN CVT Fluid NS-3 to O-ring.

Inspection and Adjustment

INSPECTION AFTER INSTALLATION

Check for CVT fluid leakage. Refer to TM-194, "Inspection".

ADJUSTMENT AFTER INSTALLATION

Adjust CVT fluid level. Refer to TM-196, "Adjustment".

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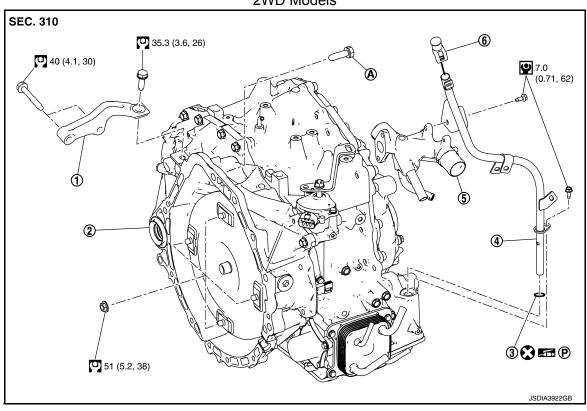
# [CVT: RE0F10E]

# **UNIT REMOVAL AND INSTALLATION**

# TRANSMISSION ASSEMBLY

**Exploded View** INFOID:0000000012552404

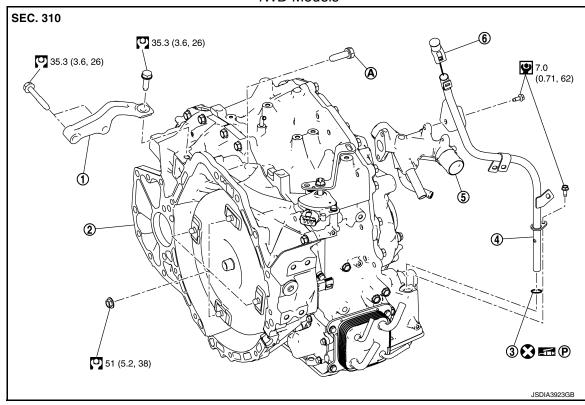
# 2WD Models



Gusset 1.

- 2. Transaxle assembly
- CVT fluid charging pipe 4.
- 5. Water outlet
- A. : For the tightening torque, refer to TM-227, "Removal and Installation".
- O-ring 3.
- CVT fluid charging pipe cap

#### 4WD Models



1. Gusset

Transaxle assembly

O-ring

4. CVT fluid charging pipe

5. Water outlet

6. CVT fluid charging pipe cap

For the tightening torque, refer to <u>TM-227, "Removal and Installation"</u>.

#### Removal and Installation

#### REMOVAL

#### **WARNING:**

Do not remove the radiator cap when the engine is hot. Serious burns could occur from high pressure coolant escaping from the radiator. Wrap a thick cloth around the cap. Slowly turn it a quarter turn to allow built-up pressure to escape. Carefully remove the cap by turning it all the way.

CAUTION:

- · Perform when the engine is cold.
- When replacing TCM and transaxle assembly simultaneously, perform "ADDITIONAL SERVICE WHEN REPLACING TCM AND TRANSAXLE ASSEMBLY". Refer to <a href="Mailto:TM-88">TM-88</a>, "Description".
- When replacing the transaxle, perform "ADDITIONAL SERVICE WHEN REPLACING TRANSAXLE ASSEMBLY". Refer to TM-86, "Description".

#### NOTE:

When removing components such as hoses, tubes/lines, etc., cap or plug openings to prevent fluid from spilling.

- 1. Remove the engine and transaxle with the front suspension member as a unit. Refer to <u>EM-107</u>, "2WD : <u>Removal and Installation"</u> (2WD) or <u>EM-112</u>, "4WD : <u>Removal and Installation"</u> (4WD).
- 2. Disconnect the transaxle harness connectors.
- Disconnect the CVT oil warmer water hoses from engine side. Refer to <u>TM-220, "Removal and Installation".</u>
- Remove the CVT fluid charging pipe.
- 5. Remove the transaxle to engine and engine to transaxle bolts.
- Separate the engine from the transaxle and remove the engine from the front suspension member. Refer to <u>EM-107</u>, "2WD: Removal and Installation" (2WD) or <u>EM-112</u>, "4WD: Removal and Installation" (4WD). NOTE:

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[CVT: RE0F10E]

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2016 Pathfinder

Using paint, put matching marks on the drive plate and torque converter when removing the torque converter to drive plate nuts.

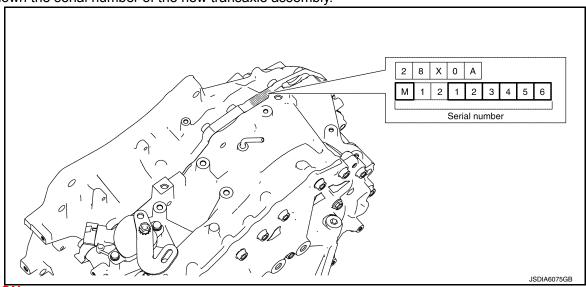
- 7. Remove transmission bracket.
- 8. Lift the transaxle from the front suspension member.

#### INSTALLATION

Installation is in the reverse order of removal.

#### NOTE:

Write down the serial number of the new transaxle assembly.



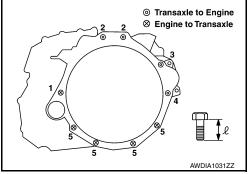
#### **CAUTION:**

- When replacing an engine or transaxle you must make sure any dowels are installed correctly during re-assembly
- Improper alignment caused by missing dowels may cause vibration, oil leaks or breakage of drive train components.
- Do not reuse O-rings or copper sealing washers.
- · When turning crankshaft, turn it clockwise as viewed from the front of the engine.
- When tightening the nuts for the torque converter while securing the crankshaft pulley bolt, be sure
  to confirm the tightening torque of the crankshaft pulley bolt. Refer to <a href="EM-67">EM-67</a>, "Removal and Installation".
- After converter is installed to drive plate, rotate crankshaft several turns to check that CVT rotates freely without binding.
- When installing the CVT to the engine, align the matching mark on the drive plate with the matching mark on the torque converter.

When installing CVT assembly to the engine assembly, attach the bolts in accordance with the following standard.

Bolt No.	1	2	3	4	5
Number of bolts	1	2	1	1	4
Bolt length "ℓ"mm (in)	55 (2.17)	39 (1.54)	35 (1.38)	50 (1.97)	45 (1.77)
Tightening torque N·m (kg-m, ft-lb)	74.5 (7.6, 55)			50.0 (5.1, 37)	

- When installing the drive plate to torque converter nuts, tighten them temporarily, then tighten the nuts to the specified torque.
- When replacing the transaxle, perform "ADDITIONAL SERVICE"
   WHEN REPLACING TRANSAXLE ASSEMBLY". Refer to TM-86, "Description".



# Inspection and Adjustment

INFOID:0000000012552406

[CVT: RE0F10E]

INSPECTION BEFORE INSTALLATION

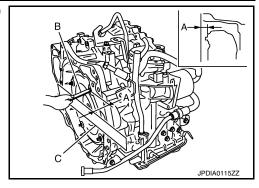
# TRANSMISSION ASSEMBLY

#### < UNIT REMOVAL AND INSTALLATION >

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

B : ScaleC : Straightedge

Dimension (A) : Refer to TM-232, "Torque Converter".



[CVT: RE0F10E]

#### INSPECTION AFTER INSTALLATION

Check the following items:

- CVT fluid leakage, refer to TM-194, "Inspection".
- For CVT position, refer to TM-96, "Inspection and Adjustment".
- Start the engine and check for coolant leakage from the parts which are removed and reinstalled.

#### ADJUSTMENT AFTER INSTALLATION

- Adjust the CVT fluid level. Refer to <u>TM-196, "Adjustment"</u>.
- Perform "ADDITIONAL SERVICE WHEN REPLACE TRANSAXLE ASSEMBLY". Refer to <u>TM-86</u>, "<u>Description</u>".

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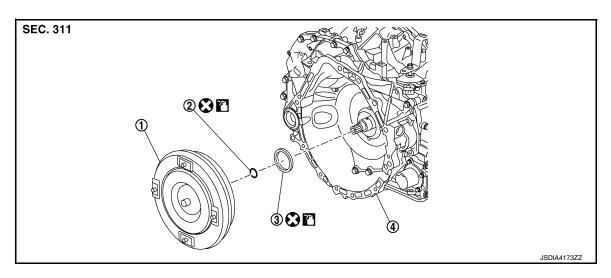
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# UNIT DISASSEMBLY AND ASSEMBLY

# TORQUE CONVERTER AND CONVERTER HOUSING OIL SEAL

Exploded View



- Torque converter
- 2. O-ring

3. Converter housing oil seal

[CVT: RE0F10E]

4. Transaxle assembly

Disassembly INFOID:000000012552408

- 1. Remove transaxle assembly. Refer to TM-227, "Removal and Installation".
- Remove torque converter from transaxle assembly.

#### **CAUTION:**

Do not damage the bushing on the inside of torque converter sleeve when removing torque converter.

3. Remove converter housing oil seal using suitable tool.

#### **CAUTION:**

Be careful not to scratch converter housing.

Assembly INFOID:000000012552409

Assembly is in the reverse order of disassembly.

# **CAUTION:**

Do not reuse converter housing oil seal.

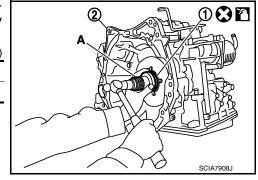
#### NOTE:

Lubricate converter housing oil seal prior to installation.

• Drive converter housing oil seal (1) evenly using a drift (A) (commercial service tool) so that converter housing oil seal protrudes by the dimension (B) respectively.

	Unit: mm (in)
Commercial service tool: (A)	Outer diameter: 65 (2.56)
	Inner diameter: 60 (2.36)

(2) : Transaxle assembly



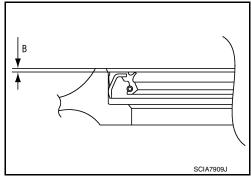
# TORQUE CONVERTER AND CONVERTER HOUSING OIL SEAL

< UNIT DISASSEMBLY AND ASSEMBLY >

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

NOTE:

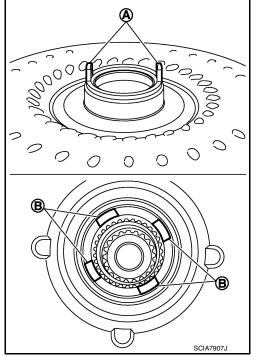
Converter housing oil seal pulling direction is used as the reference



[CVT: RE0F10E]

 Attach the pawl (A) of the torque converter to the drive sprocket hole (B) on the transaxle assembly side.
 CAUTION:

- Rotate the torque converter for installing torque converter.
- Do not damage the bushing inside the torque converter sleeve when installing the converter housing oil seal.



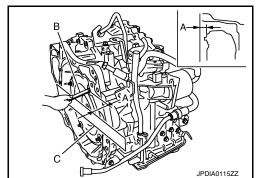
Inspection INFOID:000000012552410

## INSPECTION AFTER INSTALLATION

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

B : ScaleC : Straightedge

Dimension (A) : Refer to <u>TM-232, "Torque Converter"</u>.



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

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# SERVICE DATA AND SPECIFICATIONS (SDS)

# SERVICE DATA AND SPECIFICATIONS (SDS)

# **General Specification**

INFOID:0000000012552411

[CVT: RE0F10E]

Engine model		VQ	VQ35DE	
Drive type		2WD	4WD	
Transaxle model		RE0F10E		
	D position	2.413	2.413 – 0.383	
Transaxle gear ratio	R position	1.798		
	Final drive	5.577		
Recommended fluid	,	Refer to MA-17, "FOR USA AND CANADA: Fluids and Lub		
Fluid capacity liter			MEXICO: Fluids and Lubricants" (for (ICO)	

# **Shift Characteristics**

INFOID:0000000012552412

Unit: rpm

Throttle position	Shift pattern	CVT input speed		
		At 40 km/h (25 MPH)	At 60 km/h (37 MPH)	
	"D" position (Normal)	1,570–1,730	1,710–1,890	
2/8	"D" position (OD OFF)	1,690–1,870	2,180–2,420	
	"L" position	2,030–2,250	2,860–3,180	
8/8	"D" position (Normal)	3,620-4,020	4,750–5,250	
	"D" position (OD OFF)	3,620-4,020	4,750–5,250	
	"L" position	3,620-4,020	4,750–5,250	

## NOTE:

Lock-up is engaged at the vehicle speed of approximately 18 km/h (12 MPH) to 40 km/h (24 MPH).

Stall Speed

INFOID:0000000012552413

Unit: rpm

Stall speed	2,400 – 2,700
Torque Converter	INFOID:000000012552414
	Unit: mm (in)
Distance "A" between the converter housing and torque converter	14.0 (0.55)

# **Heater Thermostat**

INFOID:0000000012552415

Valve lift	More than 5.0 mm (0.197 in)
Valve opening temperature	Approx. 71°C (160°F)
Minimum valve lift	5.0 mm/Approx. 85°C (0.197 in/Approx. 203°F)

# **PRECAUTIONS**

< PRECAUTION > [CVT: RE0F10J]

# **PRECAUTION**

# **PRECAUTIONS**

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

The Supplemental Restraint System such as "AIR BAG" and "SEAT BELT PRE-TENSIONER", used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. Information necessary to service the system safely is included in the SR and SB section of this Service Manual.

#### **WARNING:**

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

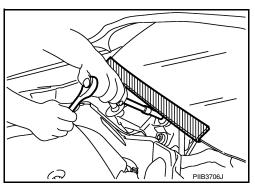
PRECAUTIONS WHEN USING POWER TOOLS (AIR OR ELECTRIC) AND HAMMERS

#### **WARNING:**

- When working near the 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 or batteries, and wait at least three minutes before performing any service.

Precaution for Procedure without Cowl Top Cover

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



Precaution for TCM and Transaxle Assembly Replacement

#### **CAUTION:**

- To replace TCM, refer to TM-306, "Description".
- To replace transaxle assembly, refer to <u>TM-307, "Description"</u>.

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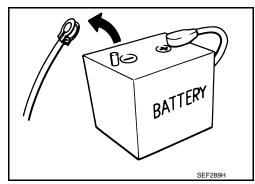
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< PRECAUTION > [CVT: RE0F10J]

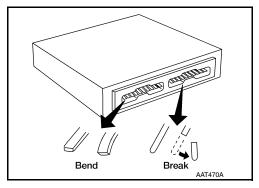
# **General Precautions**

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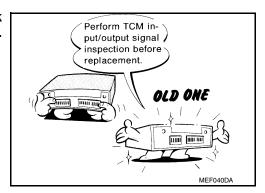
 Turn ignition switch OFF and disconnect the battery cable from the negative terminal before connecting or disconnecting the CVT assembly harness connector. Because battery voltage is applied to TCM even if ignition switch is turned OFF.



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

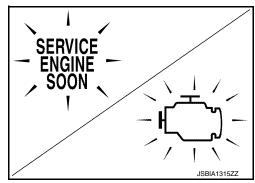


 Perform TCM input/output signal inspection and check whether TCM functions normally or not before replacing TCM. Refer to <u>TM-275</u>, "<u>Reference Value</u>".



 Perform "DTC (Diagnostic Trouble Code) CONFIRMATION PROCEDURE".

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



- Always use the specified brand of CVT fluid. Refer to MA-17, "FOR USA AND CANADA: 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.

# **PRECAUTIONS**

< PRECAUTION > [CVT: RE0F10J]

# On Board Diagnosis (OBD) System of CVT and Engine

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

**CAUTION:** 

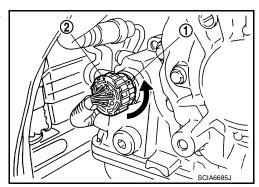
- Be sure to turn the ignition switch OFF and disconnect the battery cable from the negative terminal before any repair or inspection work. The open/short circuit of related switches, sensors, solenoid valves, etc. will cause the MIL to light up.
- Be sure to connect and lock the connectors securely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

# Removal and Installation Procedure for CVT Unit Connector

# INFOID:0000000012552421

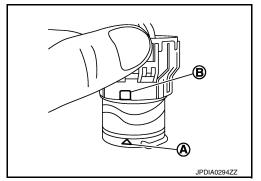
#### REMOVAL

Rotate bayonet ring ① counterclockwise. Pull out CVT unit harness connector ② upward and remove it.

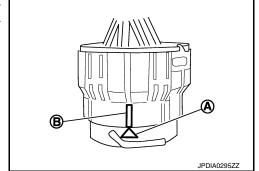


## **INSTALLATION**

- Rotate bayonet ring clockwise.



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



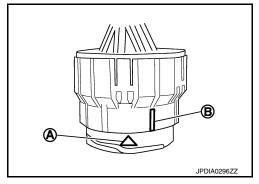
#### **CAUTION:**

# **PRECAUTIONS**

< PRECAUTION > [CVT: RE0F10J]

• Securely align marking (A) on CVT unit harness connector terminal body with bayonet ring slit (B). Then, be careful not to make a half fit condition as shown in the figure.

Never mistake the slit of bayonet ring for other dent portion.



# **PREPARATION**

< PREPARATION > [CVT: RE0F10J]

# **PREPARATION**

# **PREPARATION**

# Special Service Tools

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Tool number (TechMate No.) Tool name		Description	
1. KV311039S0 ( — ) Charging pipe set 2. KV31103920* ( — ) O-ring	JSDIA1844ZZ	CVT fluid changing and adjustment	
KV38107900 ( — ) Differential side oil seal protector	PDIA1183J	Installing drive shaft a: 32 mm (1.26 in) dia.	

<sup>\*:</sup> The O-ring as a unit part is set as a SST.

# **Commercial Service Tools**

INFOID:0000000012552423

Tool name		Description	
Power tool		Loosening nuts, screws and bolts	
			ŀ
	PIIB1407E		L
Drift		Installing differential side oil seal a: 56 mm (2.20 in) dia. b: 50 mm (1.97 in) dia.	1
	a b		١
	NT115		
Drift		Installing converter housing oil seal a: 65 mm (2.56 in) dia.	
	a b	b: 60 mm (2.36 in) dia.	F
	NT115		

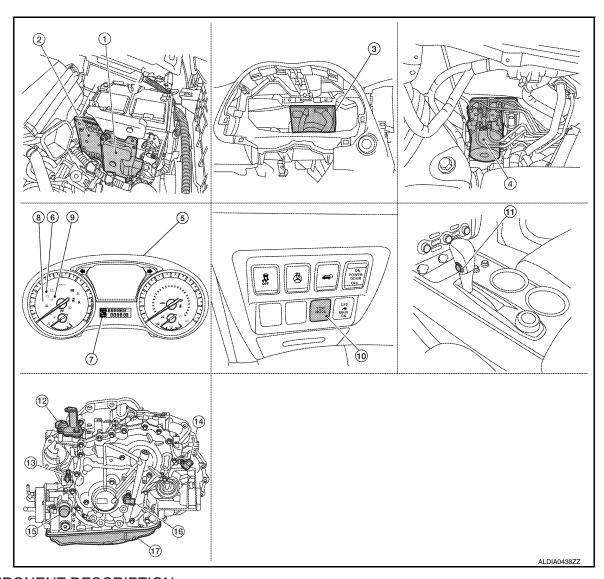
# SYSTEM DESCRIPTION

COMPONENT PARTS CVT CONTROL SYSTEM

CVT CONTROL SYSTEM: Component Parts Location

INFOID:0000000012552424

[CVT: RE0F10J]



**COMPONENT DESCRIPTION** 

# **COMPONENT PARTS**

[CVT: RE0F10J]

# < SYSTEM DESCRIPTION >

NO.	Component	Function
1	тсм	TM-240. "CVT CONTROL SYSTEM: TCM"
2	ECM	<ul> <li>Mainly transmits the following signal to TCM via CAN communication.</li> <li>Engine and CVT integrated control signal NOTE:  General term for the communication (torque-down permission, torque-down request, etc.) exchanged between the ECM and TCM.</li> <li>Engine speed signal</li> <li>Engine coolant temperature signal</li> <li>Accelerator pedal position signal</li> <li>Closed throttle position signal</li> <li>Mainly receives the following signals from TCM via CAN communication.</li> <li>Malfunction indicator lamp (MIL) signal</li> <li>Refer to EC-20, "ENGINE CONTROL SYSTEM: Component Parts Location" for detailed installation location.</li> </ul>
3	ВСМ	Mainly transmits the following signal to TCM via CAN communication.  • Stop lamp switch signal Refer to BCS-4, "BODY CONTROL SYSTEM: Component Parts Location" for detailed installation location.
4	ABS actuator and electric unit (control unit)	Mainly transmits the following signal to TCM via CAN communication.  • Vehicle speed signal (ABS)  • ABS operation signal  • TCS operation signal  • VDC operation signal  • ABS malfunction signal  Refer to BRC-11, "Component Parts Location" (TYPE 1) or BRC-169, "Component Parts Location" (TYPE 2) for detailed installation location.
(5)	Combination meter	Mainly transmits the following signal to TCM via CAN communication.  Overdrive control switch signal Tow mode switch signal Mainly receives the following signals from TCM via CAN communication. Shift position indicator signal OD OFF indicator lamp signal Tow mode indicator lamp signal Refer to MWI-6, "METER SYSTEM: Component Parts Location" for detailed installation location.
6	Malfunction indicator lamp (MIL)	TM-246, "CVT CONTROL SYSTEM : Malfunction Indicator Lamp (MIL)"
7	Shift position indicator	TM-246. "CVT CONTROL SYSTEM : Shift Position Indicator"
8	OD OFF indicator lamp	TM-245, "CVT CONTROL SYSTEM : OD OFF Indicator Lamp"
9	Tow mode indicator lamp	TM-246, "CVT CONTROL SYSTEM: TOW Mode Indicator Lamp"
10	Tow mode switch	TM-245, "CVT CONTROL SYSTEM : Tow Mode Switch"
11)	Overdrive control switch	TM-245, "CVT CONTROL SYSTEM : Overdrive Control Switch"
12	Transmission range switch	TM-240, "CVT CONTROL SYSTEM : Transmission Range Switch"
13	Input speed sensor	TM-240, "CVT CONTROL SYSTEM: Input Speed Sensor"
14)	Output speed sensor	TM-242, "CVT CONTROL SYSTEM : Output Speed Sensor"
15)	CVT unit connector	_
16	Primary speed sensor	TM-241, "CVT CONTROL SYSTEM : Primary Speed Sensor"

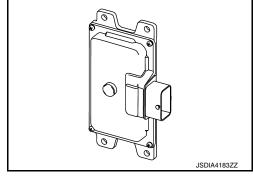
NO. Component **Function** TM-242, "CVT CONTROL SYSTEM: CVT Fluid Temperature Sensor" CVT fluid temperature sensor\* TM-243, "CVT CONTROL SYSTEM: Primary Pressure Sensor" Primary pressure sensor\* TM-243, "CVT CONTROL SYSTEM: Secondary Pressure Sensor" Secondary pressure sensor\* Line pressure solenoid valve\* TM-243, "CVT CONTROL SYSTEM: Line Pressure Solenoid Valve" Control (17)Primary pressure solenoid valve\* TM-244, "CVT CONTROL SYSTEM: Primary Pressure Solenoid Valve" valve TM-244, "CVT CONTROL SYSTEM: Secondary Pressure Solenoid Valve" Secondary pressure solenoid valve\* Torque converter clutch solenoid TM-244, "CVT CONTROL SYSTEM: Torque Converter Clutch Solenoid valve\* Valve" TM-245, "CVT CONTROL SYSTEM: Select Solenoid Valve" Select solenoid valve\*

# CVT CONTROL SYSTEM: TCM

INFOID:0000000012552425

[CVT: RE0F10J]

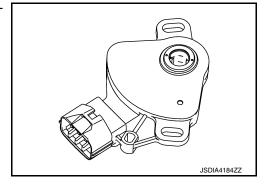
- The TCM consists of a microcomputer and connectors for signal input and output and for power supply.
- The vehicle driving status is judged based on the signals from the sensors, switches, and other control units, and the optimal transaxle control is performed.
- For TCM control items, refer to <u>TM-257</u>, "CVT CONTROL SYS-TEM: System Description".



# CVT CONTROL SYSTEM: Transmission Range Switch

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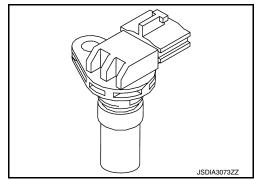
- The transmission range switch is installed to upper part of transaxle case.
- The transmission range switch detects the selector lever position.



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# CVT CONTROL SYSTEM: Input Speed Sensor

- The input speed sensor is installed to the front side of transaxle case.
- The input speed sensor detects input shaft speed.

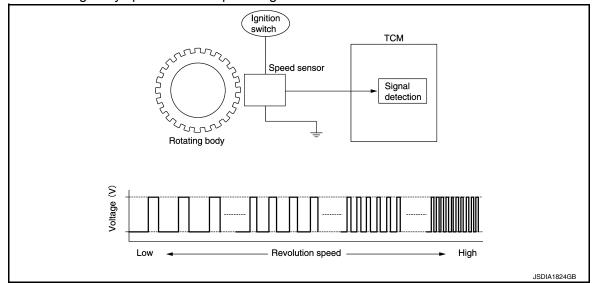


<sup>\*:</sup> These components are included in control valve assembly.

# **COMPONENT PARTS**

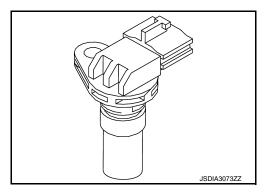
# < SYSTEM DESCRIPTION >

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

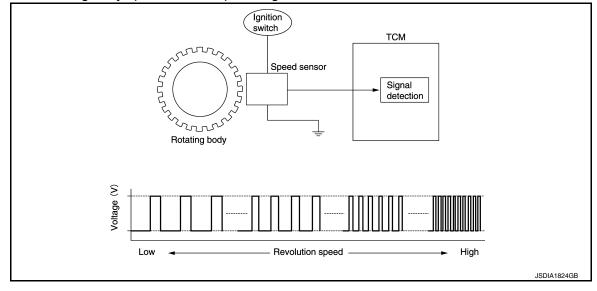


# CVT CONTROL SYSTEM: Primary Speed Sensor

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



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



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[CVT: RE0F10J]

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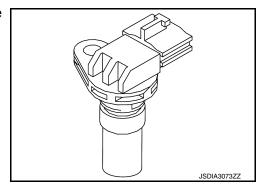
# CVT CONTROL SYSTEM : Output Speed Sensor

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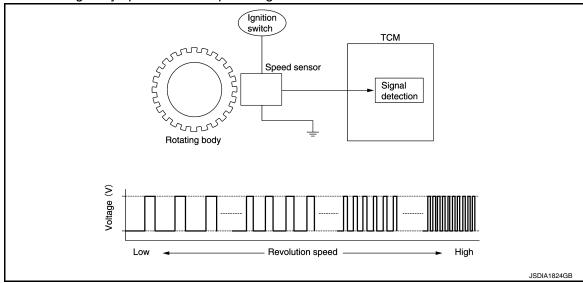
[CVT: RE0F10J]

- The output speed sensor is installed to the back side of transaxle case.
- The output speed sensor detects final gear speed.

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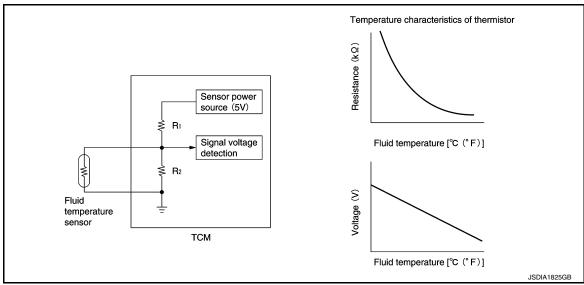
The output speed sensor generates an ON-OFF pulse signal according to the rotating body speed. TCM judges the rotating body speed from the pulse signal.



# CVT CONTROL SYSTEM: CVT Fluid Temperature Sensor

INFOID:0000000012552430

- The CVT fluid temperature sensor is installed to control valve.
- The CVT fluid temperature sensor detects CVT fluid temperature in oil pan.
- The fluid temperature sensor uses a thermistor, and changes the signal voltage by converting changes in the CVT fluid temperature to a resistance value. TCM evaluates the CVT fluid temperature from the signal voltage value.



# **COMPONENT PARTS**

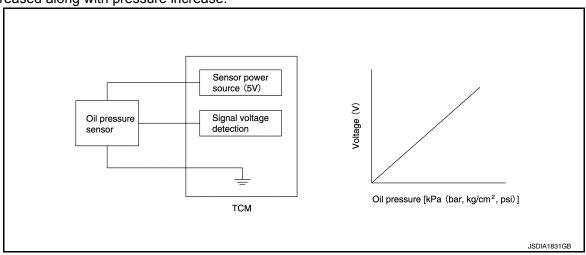
< SYSTEM DESCRIPTION >

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

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[CVT: RE0F10J]

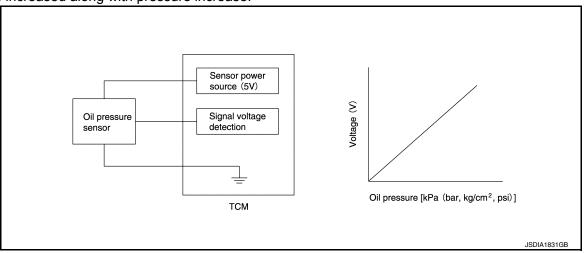
- · The primary pressure sensor is installed to control valve.
- The primary pressure sensor detects the pressure applied to the primary pulley.
- When pressure is applied to the ceramic device in the primary pressure sensor, the ceramic device is deformed, resulting in voltage change. TCM evaluates the primary pressure from its voltage change. Voltage is increased along with pressure increase.



# CVT CONTROL SYSTEM: Secondary Pressure Sensor

INFOID:0000000012552432

- The secondary pressure sensor is installed to control valve.
- The secondary pressure sensor detects the pressure applied to the secondary pulley.
- When pressure is applied to the metal diaphragm in the secondary pressure sensor, the metal diaphragm is deformed, resulting in voltage change. TCM evaluates the secondary pressure from its voltage change. Voltage is increased along with pressure increase.



#### CVT CONTROL SYSTEM: Line Pressure Solenoid Valve

INFOID:0000000012552433

- The line pressure solenoid valve is installed to control valve.
- The line pressure solenoid valve controls the pressure regulator valve. For information about the pressure regulator valve, refer to <a href="https://doi.org/10.150/j.ncm/">TM-252</a>, "TRANSAXLE: Component Description".

Revision: November 2015 TM-243 2016 Pathfinder

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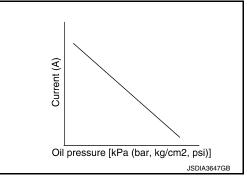
# **COMPONENT PARTS**

#### < SYSTEM DESCRIPTION >

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

#### NOTE:

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



# CVT CONTROL SYSTEM: Primary Pressure Solenoid Valve

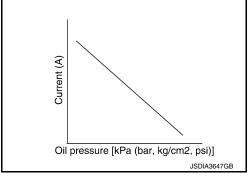
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[CVT: RE0F10J]

- The primary pressure solenoid valve is installed to control valve.
- The primary pressure solenoid valve controls the primary reducing valve. For information about the primary reducing valve, refer to <a href="https://example.com/TM-252">TM-252</a>, "TRANSAXLE: Component Description".
- The primary pressure solenoid valve uses the linear solenoid valve [N/H (normal high) type].

#### NOTE:

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



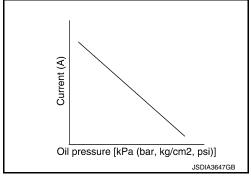
# CVT CONTROL SYSTEM : Secondary Pressure Solenoid Valve

INFOID:0000000012552435

- The secondary pressure solenoid valve is installed to control valve.
- The secondary pressure solenoid valve uses the linear solenoid valve [N/H (normal high) type].

#### NOTE:

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



# CVT CONTROL SYSTEM: Torque Converter Clutch Solenoid Valve

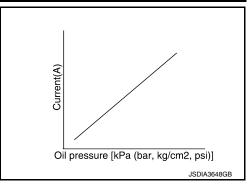
INFOID:0000000012552436

- The torque converter clutch solenoid valve is installed to control valve.
- The torque converter clutch solenoid valve controls the torque converter clutch control valve. For information about the torque converter clutch control valve, refer to <a href="https://example.com/nc-university-control-

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

#### NOTE:

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



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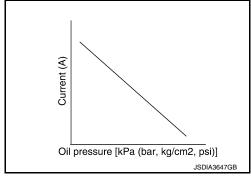
[CVT: RE0F10J]

# CVT CONTROL SYSTEM: Select Solenoid Valve

- The select solenoid valve is installed to control valve.
- The select solenoid valve adjusts the forward clutch engaging pressure and the reverse brake engaging pressure.
- The select solenoid valve uses the linear solenoid valve [N/H (normal high) type].

#### NOTE:

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



# CVT CONTROL SYSTEM: Overdrive Control Switch

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

# CVT CONTROL SYSTEM: Tow Mode Switch

- The Tow mode switch is installed to instrument lower panel (LH).
- When the Tow mode indicator lamp on the combination meter is OFF and the Tow mode switch is pressed, the Tow mode is active and the Tow mode indicator lamp is ON.
- When the Tow mode indicator lamp on the combination meter is ON and the Tow mode switch is pressed, the Tow mode is cancelled and the Tow mode indicator lamp is OFF.

# CVT CONTROL SYSTEM: OD OFF Indicator Lamp

OD OFF indicator lamp is positioned on the combination meter.

- OD OFF indicator lamp is ON when set to the overdrive OFF.
- OD OFF indicator lamp turns on for a certain period of time when the ignition switch turns ON, and then turns OFF.

Condition (status)	OD OFF indicator lamp	
Ignition switch OFF.	OFF	
Ignition switch ON.	ON (Approx. 2 sec.)	
Overdrive control switch is pressed when the selector lever is in the "D" position and the OD OFF indicator lamp is OFF	ON	



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## < SYSTEM DESCRIPTION >

Condition (status)	OD OFF indicator lamp
Overdrive control switch is pressed when the selector lever is in the "D" position and the OD OFF indicator lamp is ON.	OFF
Selector lever is shifted to other position when the selector lever is at "D" position and the OD OFF indicator lamp is ON.	OFF

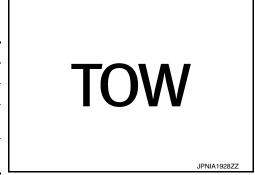
# CVT CONTROL SYSTEM: TOW Mode Indicator Lamp

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[CVT: RE0F10J]

- TOW mode indicator lamp is positioned on the combination meter.
- TOW mode indicator lamp is ON when set to the tow mode.

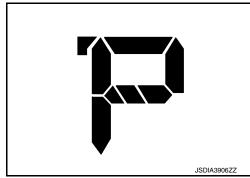
Condition (status)	Tow mode indicator lamp		
Ignition switch OFF.	OFF		
Ignition switch ON.	OFF		
Tow mode switch is pressed when the TOW mode indicator lamp is OFF	ON		
Tow mode switch is pressed when the TOW mode indicator lamp is ON.	OFF		



# CVT CONTROL SYSTEM: Shift Position Indicator

INFOID:0000000012552442 TCM transmits shift position signal to combination meter via CAN

communication. The actual shift position is displayed on combination meter according to the signal.



# CVT CONTROL SYSTEM: Malfunction Indicator Lamp (MIL)

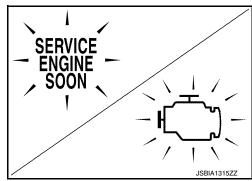
INFOID:0000000012552443

The malfunction indicator lamp (MIL) is located on the combination meter.

The MIL will illuminate when the ignition switch is turned ON without the engine running. This is a bulb check.

When the engine is started, the MIL should turn off. If the MIL remains illuminated, the on board diagnostic system has detected an engine system malfunction.

For details, refer to EC-32, "Malfunction Indicator Lamp (MIL)".



# SHIFT LOCK SYSTEM

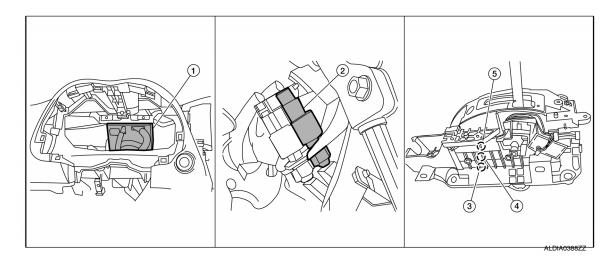
# **COMPONENT PARTS**

< SYSTEM DESCRIPTION >

# SHIFT LOCK SYSTEM : Component Parts Location

INFOID:0000000012552444

[CVT: RE0F10J]



- BCM (view with combination meter removed)
- 4. Shift lock solenoid (view with center 5. console removed)
- Stop lamp switch
  - Park position switch (view with center console removed)
- 3. Shift lock release button (view with center console removed)

# COMPONENT DESCRIPTION

Component	Function		
Stop lamp switch	<ul> <li>The stop lamp switch turns ON when the brake pedal is depressed.</li> <li>When the stop lamp switch turns ON, the shift lock solenoid is energized.</li> </ul>		
Shift lock release button	Forcibly releases the shift lock when pressed.		
Shift lock solenoid	It operates according to the signal from the stop lamp switch and moves the lock lever.		
Park position switch	It detects that the selector lever is in "P" position.		

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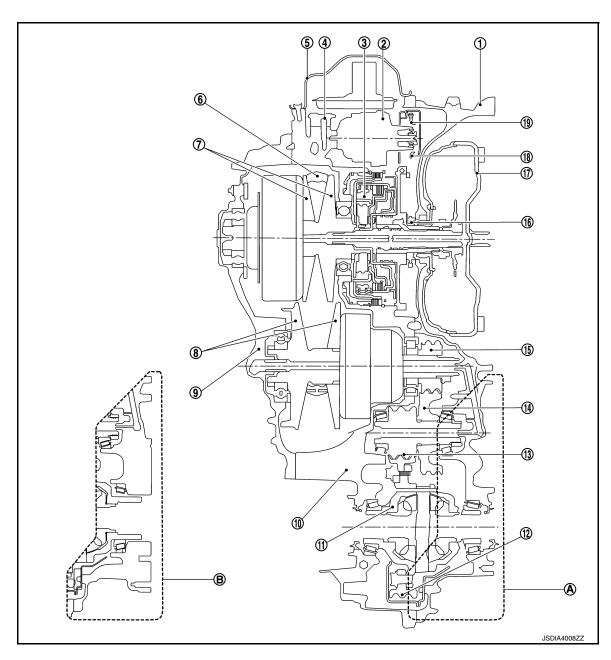
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# STRUCTURE AND OPERATION TRANSAXLE

TRANSAXLE: Cross-Sectional View

INFOID:0000000012552445



- Converter housing
- Control valve
- Planetary pulley
- 10 Transaxle case
- Reduction gear
- 6 Drive sprocket
- Oil pump chain
- (A) 2WD models

- Oil pump
- Oil pan
- Secondary pulley
- ① Differential case
- 14 Idler gear
- Torque converter
- 4WD models

- 3) Planetary gear
- 6 Chain belt
- Side cover
- Final gear
- (15) Output gear
- Driven sprocket

# STRUCTURE AND OPERATION

< SYSTEM DESCRIPTION >

# TRANSAXLE: Transaxle Mechanism

INFOID:0000000012552446

[CVT: RE0F10J]

# TORQUE CONVERTER (WITH LOCK-UP FUNCTION)

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

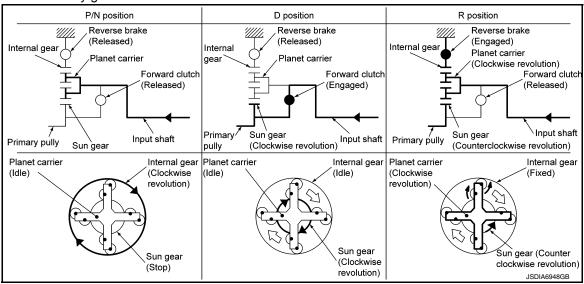
#### OIL PUMP

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

#### PLANETARY GEAR

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

Operation of Planetary gear

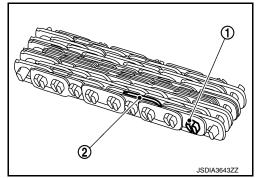


#### **BELT & PULLEY**

It is composed of a pair of pulleys (the groove width is changed freely in the axial direction) and the chain belt .The groove width changes according to wrapping radius of chain 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.

#### Chain belt

The chain belt consists of approximately 150 locker pins ① and 1,000 link plates ②. Chains are rotated by locker pins sandwiched by pulleys. This produces tension difference in chains among pulleys. Accordingly, the power is transferred by the tension.



#### Pulley

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

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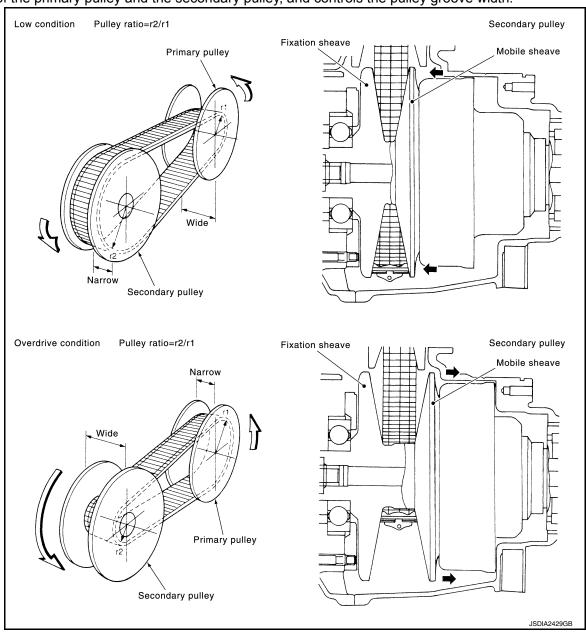
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[CVT: RE0F10J]

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



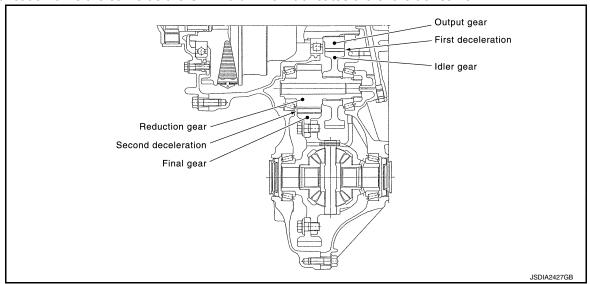
## FINAL DRIVE AND DIFFERENTIAL

The deceleration gears are composed of 2 stages: primary deceleration (output gear, idler gear pair) and secondary deceleration (reduction gear, final gear pair). All of these gears are helical gears.

# STRUCTURE AND OPERATION

# < SYSTEM DESCRIPTION >

The lubrication oil is the same as the CVT fluid which lubricates the entire transaxle.



TRANSAXLE : Operation Status

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×: Engaged or applied.

[CVT: RE0F10J]

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Selector lever position	Parking mech- anism	Forward clutch	Reverse brake	Primary pulley	Secondary pulley	Chain belt	Final drive
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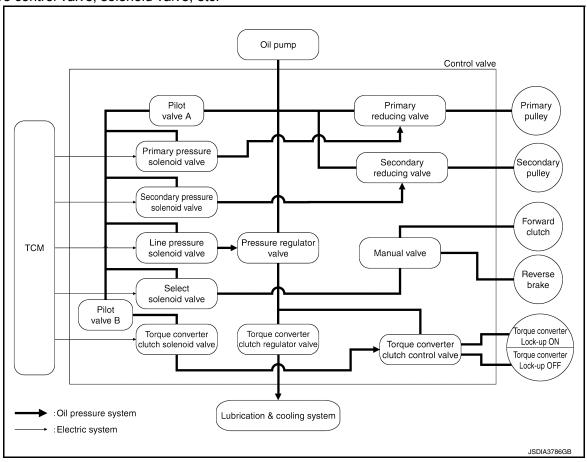
# STRUCTURE AND OPERATION

# TRANSAXLE : Oil Pressure System

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[CVT: RE0F10J]

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



# TRANSAXLE: Component Description

INFOID:0000000012552449

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

### < SYSTEM DESCRIPTION >

Part name	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 lockup ON/OFF.				
Primary pulley	t is composed of a pair of pulleys (the groove width is changed freely in the axial direction) and the chain				
Secondary pulley	belt. The groove width changes according to wrapping radius of steel belt and pulley from low status to overdrive status continuously with non-step. It is controlled with the oil pressures of primary pulley and				
Chain belt	secondary pulley.				
Manual shaft					
Parking rod	When the manual shaft is in the P position, the parking rod that is linked to the manual shaft rotates the				
Parking pawl	parking pole. When the parking pole rotates, it engages with the parking gear, fixing the parking gear. As a result, the secondary pulley that is integrated with the parking gear is fixed.				
Parking gear					
Output gear					
Idler gear	The deceleration gears are composed of 2 stages: primary deceleration (output gear, idler gear pair)				
Reduction gear	secondary deceleration (reduction gear, final gear pair). All of these gears are helical gears.				
Differential					
Torque converter regulator valve	Adjusts the feed pressure to the torque converter to the optimum pressure corresponding to the driving condition.				
Pressure regulator valve	Adjusts the discharge pressure from the oil pump to the optimum pressure (line pressure) corresponding to the driving condition.				
Torque converter clutch control valve	Adjusts the torque converter engage and disengage pressures.				
Manual valve	Distributes the clutch operation pressure to each circuit according to the selector lever position.				
Secondary reducing valve	Reduces line pressure and adjusts secondary pressure.				
Primary reducing valve	Reduces line pressure and adjusts primary pressure.				
Pilot valve A	Reduces line pressure and adjusts pilot pressure to the solenoid valves listed below.  Primary pressure solenoid valve Secondary pressure solenoid valve Select solenoid valve Line pressure solenoid valve				
Pilot valve B	Reduces pilot pressure and adjusts pilot pressure to the torque converter clutch solenoid valve.				

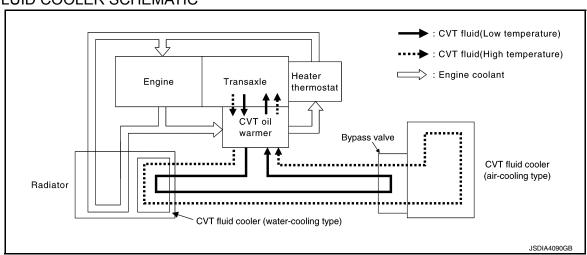
# FLUID COOLER & FLUID WARMER SYSTEM

# FLUID COOLER & FLUID WARMER SYSTEM: System Description

INFOID:0000000012552450

[CVT: RE0F10J]

## CVT FLUID COOLER SCHEMATIC



# COMPONENT DESCRIPTION

**CVT Oil Warmer** 

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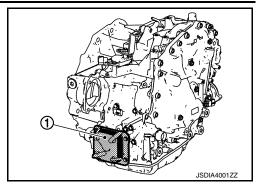
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#### < SYSTEM DESCRIPTION >

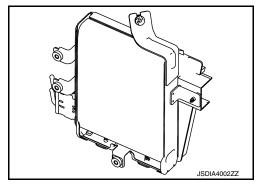
- The CVT oil warmer ① is installed on the front part of transaxle assembly.
- When engine is started while engine and CVT are cold, engine coolant temperature rises more quickly than CVT fluid temperature. CVT oil warmer is provided with two circuits for CVT and engine coolant respectively so that warmed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



[CVT: RE0F10J]

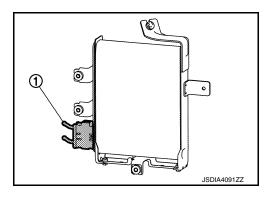
#### **CVT Fluid Cooler**

- The CVT fluid cooler is installed to the vehicle front LH.
- The CVT fluid cooler prevents CVT fluid temperature from an abnormal increase while driving the vehicle. When flowing into the CVT fluid cooler, CVT fluid is cooled by driving blast while driving the vehicle.

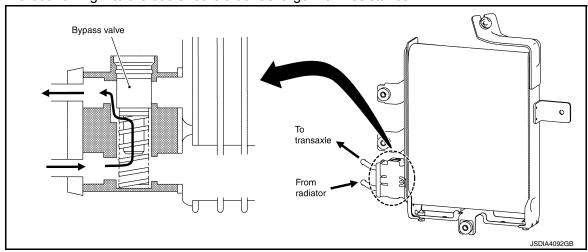


#### Bypass Valve

- The bypass valve ① is installed to the CVT fluid cooler.
- Bypass valve controls CVT fluid flow.

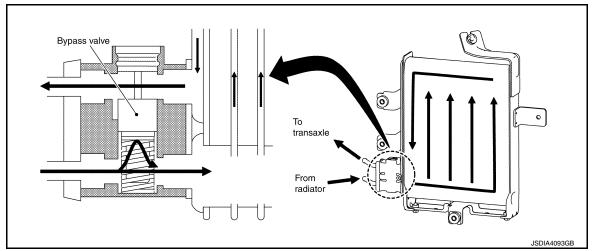


• When CVT fluid temperature is low, the bypass valve is open. Most of CVT fluid therefore returns to the transaxle without flowing into the cooler core that has larger flow resistance.



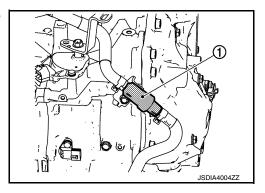
### < SYSTEM DESCRIPTION >

 When CVT fluid temperature rises [to approximately 65°C (149°F)], bypass valve fully closes and allows CVT fluid to flow into cooler core. CVT fluid flowing into cooler core is cooled by air stream caused by vehicle travel and returned to transaxle.



Heater Thermostat

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



# SHIFT LOCK SYSTEM

# SHIFT LOCK SYSTEM: System Description

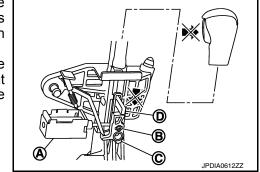
The shift lever cannot be shifted from the "P" position unless the brake pedal is depressed while the ignition switch is set to ON. The shift lock is unlocked by turning the shift lock solenoid ON when the ignition switch is set to ON, the park position switch is turned ON (selector lever is in "P" position), 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 detent rod (D). For these reasons, the selector lever cannot be shifted from the "P" position.



When Brake Pedal Is Depressed (Shift Operation Allowed)

Revision: November 2015 TM-255 2016 Pathfinder

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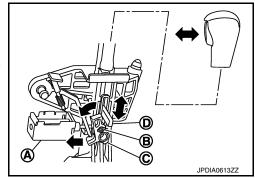
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#### < SYSTEM DESCRIPTION >

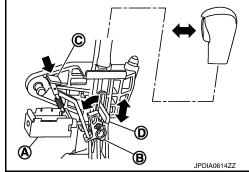
[CVT: RE0F10J]

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 detent rod (D) can be moved. For these reasons, the selector lever can be shifted to other positions.



### "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 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.



D : Detent rod

#### **CAUTION:**

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

# **SYSTEM**

# CVT CONTROL SYSTEM

# CVT CONTROL SYSTEM: System Description

#### INFOID:0000000012552452

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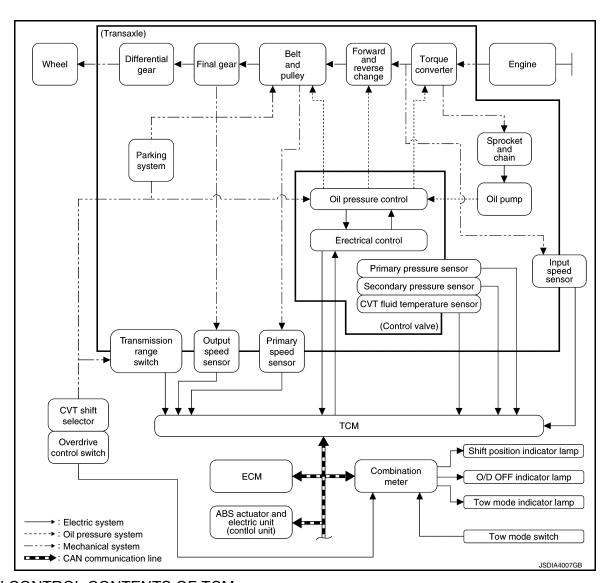
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[CVT: RE0F10J]

#### SYSTEM DIAGRAM



# MAIN CONTROL CONTENTS OF TCM

Controls	Reference
Line pressure control	TM-262, "LINE PRESSURE CONTROL : System Description"
Shift control	TM-263, "SHIFT CONTROL : System Description"
Select control	TM-265, "SELECT CONTROL : System Description"
Lock-up control	TM-266, "LOCK-UP CONTROL : System Description"
Fail-safe	TM-281, "Fail-safe"
Self-diagnosis function	TM-270, "CONSULT Function"
Communication function with CONSULT	TM-270, "CONSULT Function"

### LIST OF CONTROL ITEMS AND INPUT/OUTPUT

Shift control

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Line pressure

control

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Control Item

Accelerator pedal position signal

Closed throttle position signal

Engine torque signal

(CAN communication)
Engine speed signal
(CAN communication)

(CAN communication)

(CAN communication)

Stop lamp switch signal

(CAN communication)

Primary speed sensor

Output speed sensor

Transmission range switch

Primary pressure solenoid valve

Torque converter clutch solenoid

Secondary pressure solenoid valve

Overdrive control switch

(CAN communication)
Line pressure solenoid valve

Select solenoid valve

Shift position indicator (CAN communication)

Overdrive control switch (CAN communication)

valve

Output

Input speed sensor

Primary pressure sensor

Secondary pressure sensor

CVT fluid temperature sensor

Input

[CVT: RE0F10J] Lock-up con-Fail-safe func-Select control trol tion\* × X × × × × X X × × × × × × × × × × × × × × × ×

### CVT CONTROL SYSTEM: Fail-safe

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TCM has a fail-safe mode. The mode functions so that operation can be continued even if the signal circuit of the main electronically controlled input/output parts is damaged.

If the vehicle shows following behaviors including "poor acceleration", a malfunction of the applicable system is detected by TCM and the vehicle may be in a fail-safe mode. At this time, check the DTC code and perform inspection and repair according to the malfunction diagnosis procedures.

# Fail-safe function

DTC	Vehicle behavior	Conditions of vehicle
P062F	Not changed from normal driving	_
P0705	Shift position indicator on combination meter is not displayed Selector shock is large Start is slow Acceleration is slow Lock-up is not performed	_

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

# **SYSTEM**

DTC	Vehicle behavior	Conditions of vehicle
) I C		Conditions of vehicle
0706	<ul> <li>Shift position indicator on combination meter is not displayed</li> <li>Selector shock is large</li> <li>Start is slow</li> <li>Acceleration is slow</li> <li>Lock-up is not performed</li> </ul>	_
	Start is slow     Acceleration is slow	Engine coolant temperature when engine start: Temp. ≥ 10°C (50°F)
0711	<ul><li>Selector shock is large</li><li>Start is slow</li><li>Acceleration is slow</li></ul>	Engine coolant temperature when engine start: -35°C (-31°F) ≤ Temp. < 10°C (50°F)
	<ul><li>Selector shock is large</li><li>Start is slow</li><li>Acceleration is slow</li></ul>	Engine coolant temperature when engine star: Temp. < -35°C (-31°F)
	Start is slow     Acceleration is slow	Engine coolant temperature when engine start: Temp. ≥ 10°C (50°F)
0712	Selector shock is large     Start is slow     Acceleration is slow	Engine coolant temperature when engine start: -35°C (-31°F) ≤ Temp. < 10°C (50°F)
	<ul><li>Selector shock is large</li><li>Start is slow</li><li>Acceleration is slow</li></ul>	Engine coolant temperature when engine star: Temp. < -35°C (-31°F)
	Start is slow     Acceleration is slow	Engine coolant temperature when engine start: Temp. ≥ 10°C (50°F)
0713	<ul><li>Selector shock is large</li><li>Start is slow</li><li>Acceleration is slow</li></ul>	Engine coolant temperature when engine start: -35°C (-31°F) ≤ Temp. < 10°C (50°F)
<ul><li>Selector shock is large</li><li>Start is slow</li><li>Acceleration is slow</li></ul>	Start is slow	Engine coolant temperature when engine star: Temp. < -35°C (-31°F)
0715	<ul><li>Start is slow</li><li>Acceleration is slow</li><li>Lock-up is not performed</li></ul>	_
0717	Start is slow     Acceleration is slow     Lock-up is not performed	_
0740	Start is slow     Acceleration is slow     Lock-up is not performed	_
0743	Start is slow     Acceleration is slow     Lock-up is not performed	_
0744	Start is slow     Acceleration is slow     Lock-up is not performed	_
0746	Selector shock is large     Start is slow     Acceleration is slow	_

DTC	Vehicle behavior	Conditions of vehicle
P0776	Selector shock is large     Start is slow     Acceleration is slow     Lock-up is not performed     Vehicle speed is not increased	When a malfunction occurs on the low oil pressure side
	Selector shock is large     Start is slow     Acceleration is slow     Lock-up is not performed	When a malfunction occurs on the high oil pressure side
P0778	<ul><li>Selector shock is large</li><li>Start is slow</li><li>Acceleration is slow</li><li>Lock-up is not performed</li></ul>	_
P0779	Selector shock is large     Start is slow     Acceleration is slow     Lock-up is not performed	
P0841	Not changed from normal driving	
P0847	Not changed from normal driving	_
P0848	Not changed from normal driving	_
P084C	Not changed from normal driving	
P084D	Not changed from normal driving	
P0863	Selector shock is large     Start is slow     Acceleration is slow     Lock-up is not performed	_
P0890	<ul> <li>Selector shock is large</li> <li>Start is slow</li> <li>Acceleration is slow</li> <li>Lock-up is not performed</li> <li>Vehicle speed is not increased</li> </ul>	
P0962	Selector shock is large     Start is slow     Acceleration is slow     Lock-up is not performed	_
P0963	<ul><li>Selector shock is large</li><li>Start is slow</li><li>Acceleration is slow</li><li>Lock-up is not performed</li></ul>	_
P0965	Selector shock is large     Start is slow     Acceleration is slow     Lock-up is not performed	When a malfunction occurs on the low oil pressure side
	Selector shock is large     Lock-up is not performed	When a malfunction occurs on the high oil pressure sid
P0966	Selector shock is large     Start is slow     Acceleration is slow     Lock-up is not performed	_
P0967	Selector shock is large     Start is slow     Acceleration is slow     Lock-up is not performed	_
P2765	Start is slow     Acceleration is slow     Lock-up is not performed	_

# **SYSTEM**

[CVT: RE0F10J]

# < SYSTEM DESCRIPTION >

Control

CONTROL WHEN FLUID TEMPERATURE IS HIGH

DTC	Vehicle behavior	Conditions of vehicle	
P2813	Selector shock is large     Start is slow     Acceleration is slow     Vehicle speed is not increased	When a malfunction occurs on the low oil pressure side	
•	Selector shock is large	When a malfunction occurs on the high oil pressure side	
P2814	Selector shock is large	_	
P2815	Selector shock is large	_	
U0073	<ul><li>Selector shock is large</li><li>Start is slow</li><li>Acceleration is slow</li><li>Lock-up is not performed</li></ul>	_	
U0100	<ul><li>Selector shock is large</li><li>Start is slow</li><li>Acceleration is slow</li><li>Lock-up is not performed</li></ul>	_	
U0102	Not changed from normal driving	_	
U0140	Not changed from normal driving	_	
U0141	Not changed from normal driving	_	
U0155	Not changed from normal driving	_	
U0300	<ul><li>Selector shock is large</li><li>Start is slow</li><li>Acceleration is slow</li><li>Lock-up is not performed</li></ul>	_	
U1000	Not changed from normal driving	_	
U1117	Not changed from normal driving	_	
CVT COI	NTROL SYSTEM : Protection Control	INFOID:000000013297562	
transmissio The TCM h	ecomes the protection control status temporarily in is lost. It automatically returns to the normal states the following protection control.  FOR WHEEL SPIN	to protect the safety when the safety of TCM and atus if the safety is secured.	
Control	When a wheel spin is detected, the engine output and gear ratio are limited and the line pressure is increase Limits engine output when a wheel spin occurs in any of right and left drive wheels.		
Vehicle beha control			
Normal retur	n condi- Wheel spin convergence returns the control to th	e normal control.	
TORQUE	IS REDUCED WHEN DRIVING WITH THE F	REVERSE GEAR	
Control	Engine output is controlled according to a vehicle	speed while reversing the vehicle.	
Vehicle beha	Power performance may be lowered while revers	ing the vehicle.	
Normal return	n condi- Torque returns to normal by positioning the selec	tor lever in a range other than "R" position.	

torque are reduced than usual to prevent increase of the oil temperature.

When the CVT fluid temperature is high, the gear shift permission maximum revolution and the maximum

Vehicle behavior in control	Power performance may be lowered, compared to normal control.
Normal return condition	The control returns to the normal control when CVT fluid temperature is lowered.

#### REVERSE PROHIBIT CONTROL

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

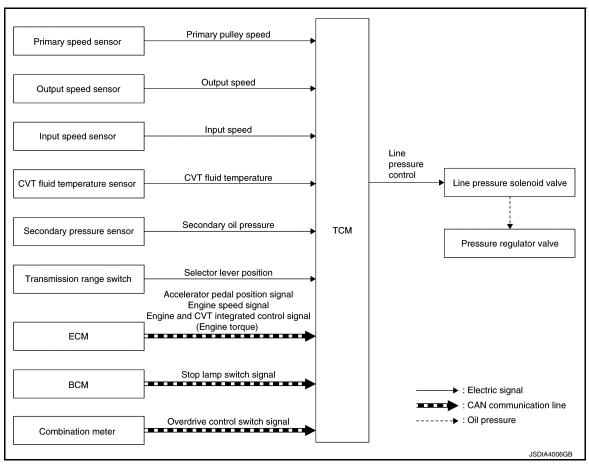
# LINE PRESSURE CONTROL

# LINE PRESSURE CONTROL: System Description

INFOID:0000000012552455

[CVT: RE0F10J]

#### SYSTEM DIAGRAM



#### **DESCRIPTION**

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

#### Normal Oil Pressure Control

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

Secondary Pressure Feedback Control

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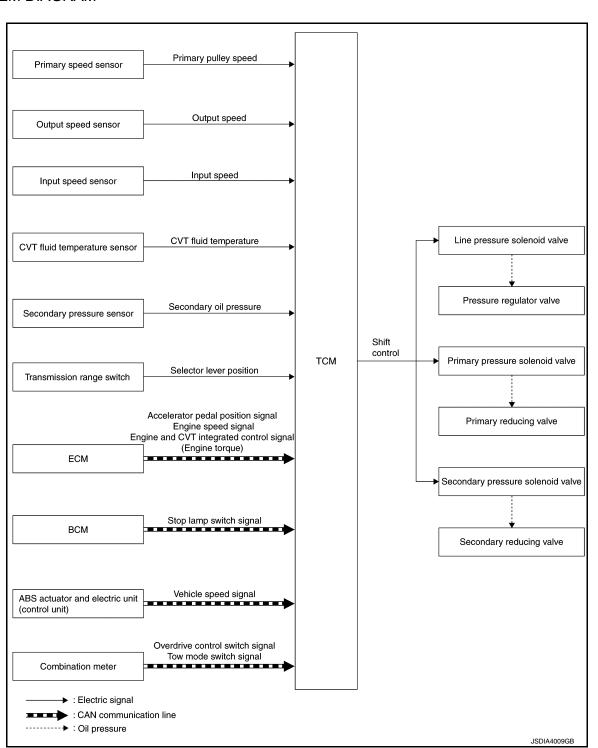
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In normal oil pressure control and oil pressure control in shifting, highly accurate secondary pressure is determined by detecting the secondary pressure using an oil pressure sensor and by feedback control.

### SHIFT CONTROL

# SHIFT CONTROL: System Description

#### SYSTEM DIAGRAM



#### DESCRIPTION

To select the gear ratio that can give the driving force to meet driver's intent or vehicle situation, the vehicle driving condition such as vehicle speed or accelerator pedal position is detected and the most appropriate gear ratio is selected and the shifting method before reaching the speed is determined. The information is out-

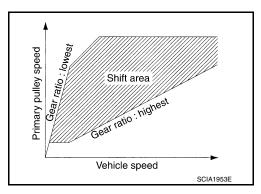
[CVT: RE0F10J] put to the primary pressure solenoid valve and secondary pressure solenoid valve to control the line pressure

input/output to the pulley, to determine the pulley (movable pulley) position and to control the gear position.

Shift Position Function

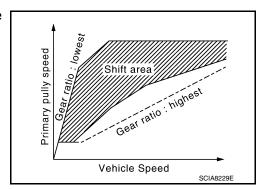
· D Position (Normal)

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



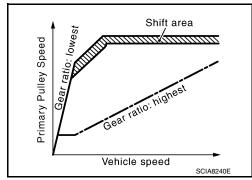
• D Position (OD OFF)

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



· L Position

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

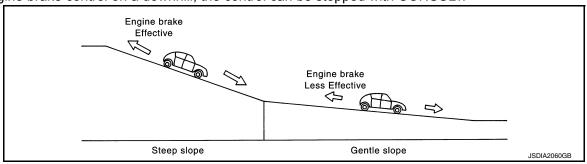


Hill Climbing And Descending Control

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

NOTE:

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



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#### Control In Acceleration

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

#### Tow Mode

- In tow mode, sluggish acceleration and insufficient engine brake output resulting from towing are assisted and improved by CVT gear shifting.
- When all of the following conditions are satisfied, CVT goes into tow mode.
- Tow mode switch is ON
- When CVT judges a towing condition from vehicle behavior.

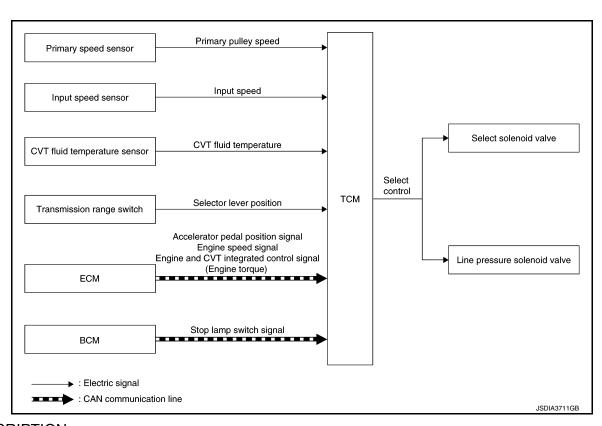
#### Tow Mode Function

Situation		Operation			
Road condition	Brake pedal operation	Operation			
Flat road	Depressed	To assist deceleration resulting from brake operation, the tow mode function increases engine revolution by shifting down and makes the engine brake effective.			
Uphill	_	In tow mode, the shift range on the HIGH side is limited more than that of normal mode and uphill driving control is improved.			
Downhill	Depressed	To assist deceleration resulting from brake operation, the tow mode function increases engine revolution by shifting down more than the time when driving on flat roads and makes the engine brake effective.			

# SELECT CONTROL

# **SELECT CONTROL**: System Description

#### SYSTEM DIAGRAM



### DESCRIPTION

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

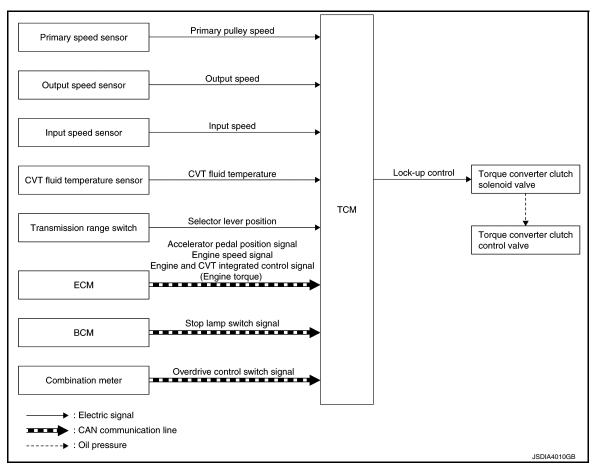
# LOCK-UP CONTROL

# LOCK-UP CONTROL: System Description

INFOID:0000000012552458

[CVT: RE0F10J]

#### SYSTEM DIAGRAM



#### DESCRIPTION

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

#### Lock-up engagement

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

### Lock-up release condition

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

# ON BOARD DIAGNOSTIC (OBD) SYSTEM

< SYSTEM DESCRIPTION >

# ON BOARD DIAGNOSTIC (OBD) SYSTEM

Description INFOID:000000012552459

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

Function of OBD

The GST is connected to the diagnosis connector on the vehicle and communicates with the on-board control units to perform diagnosis. The diagnosis connector is the same as for CONSULT. Refer to GI-55, "Description".

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#### < SYSTEM DESCRIPTION >

# DIAGNOSIS SYSTEM (TCM) DIAGNOSIS DESCRIPTION

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

#### NOTE:

"Start the engine and turn OFF the ignition switch after warm-up." This is defined as 1 trip.

#### 1 TRIP DETECTION DIAGNOSIS

When initial malfunction is detected, TCM memorizes DTC. In these diagnoses, some illuminate MIL and some do not. Refer to TM-286, "DTC Index".

#### 2 TRIP DETECTION DIAGNOSIS

When initial malfunction is detected, TCM memorizes DTC of the 1st trip. MIL does not light at this stage. <1 trip>

If the same malfunction is detected again in next driving, TCM memorizes DTC. When DTC is memorized, MIL lights. <2 trip>

"Trip" of the "2 trip detection diagnosis" indicates the driving mode that executes self-diagnosis during driving.

x: Check possible —: Check not possible

	DTC at the 1st trip		DTC		MIL	
ltem	Display at the 1st trip	Display at the 2nd trip	Display at the 1st trip	Display at the 2nd trip	Illumination at the 1st trip	Illumination at the 2nd trip
1 trip detection diagnosis (Refer to TM-286, "DTC Index")	_	_	×	_	×	_
2 trip detection diagnosis (Refer to TM-286, "DTC Index")	×	_	_	×	_	×

# DIAGNOSIS DESCRIPTION: DTC and DTC of 1st Trip

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#### 2 TRIP DETECTION DIAGNOSIS THAT ILLUMINATES MIL

- The DTC number of the 1st trip is the same as the DTC number.
- When a malfunction is detected at the 1st trip, TCM memorizes DTC of the 1st trip. MIL does not light at this stage. If the same malfunction is not detected at the 2nd trip (conforming to necessary driving conditions), DTC at the 1st trip is erased from TCM. If the same malfunction is detected at the 2nd trip, TCM memorizes DTC and MIL lights at the same time.
- The DTC of the 1st trip is specified in Service \$01 of SAE J1979/ISO 15031-5. Since detection of DTC at the 1st trip does not illuminate MIL, warning for a problem is not given to a driver.
- For procedure to delete DTC and 1st trip DTC from TCM, refer to TM-270, "CONSULT Function".
- If DTC of the 1st trip is detected, it is necessary to check the cause according to the "Diagnosis flow". Refer to TM-303, "Work Flow".

# DIAGNOSIS DESCRIPTION: Malfunction Indicator Lamp (MIL)

INFOID:0000000012552463

- TCM not only detects DTC, but also sends the MIL signal to ECM through CAN communication. ECM sends
  the MIL signal to the combination meter through CAN communication according to the signal, and illuminates MIL.
- For malfunction indicator lamp (MIL) description, refer to EC-32, "Malfunction Indicator Lamp (MIL)".

# **DIAGNOSIS DESCRIPTION: Counter System**

INFOID:0000000012552464

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

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

#### < SYSTEM DESCRIPTION >

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

#### COUNTER SYSTEM LIST

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

DRIVING CONDITION

Driving condition A

Driving condition A is the driving condition that provides warm-up.

In specific, count-up is performed when all of the following conditions are satisfied.

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

#### NOTE:

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

### Driving condition B

Driving condition B is the driving condition that performs all diagnoses once.

In specific, count-up is performed when all of the following conditions are satisfied.

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

#### NOTE:

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

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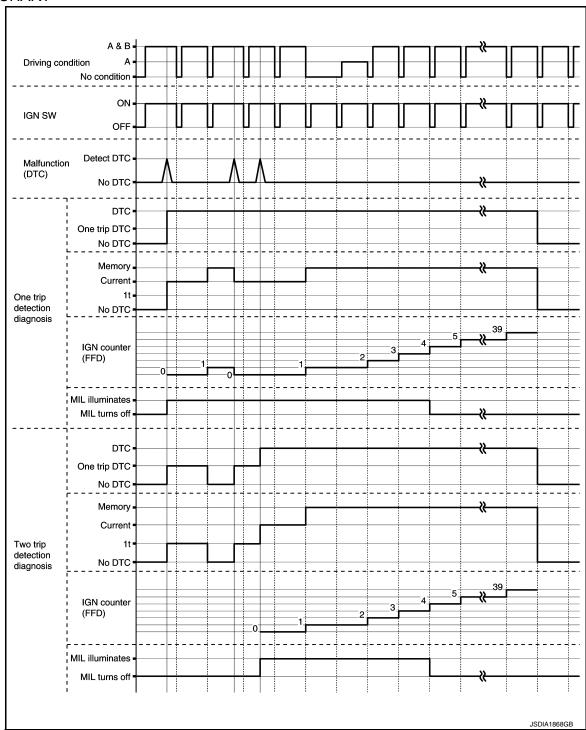
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#### TIME CHART



# **CONSULT Function**

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#### **CAUTION:**

After disconnecting the CONSULT vehicle interface (VI) from the data link connector, the ignition must be cycled OFF  $\rightarrow$  ON (for at least 5 seconds)  $\rightarrow$  OFF. If this step is not performed, the BCM may not go to "sleep mode", potentially causing a discharged battery and a no-start condition.

APPLICABLE ITEM

#### < SYSTEM DESCRIPTION >

Conditions	Function	
Work Support	The settings for ECU functions can be changed.	
Self Diagnostic Results	The ECU self diagnostic results are displayed.	
Data Monitor	The ECU input/output data is displayed in real time.	
CAN Diagnosis Support Monitor	The result of transmit/receive diagnosis of CAN communication is displayed.	
ECU Identification	The ECU part number is displayed.	
CALIB DATA	The calibration data status of TCM can be checked.	

#### SELF DIAGNOSTIC RESULTS

Refer to TM-286, "DTC Index".

DTC at 1st trip and method to read DTC

- DTC (P0705, P0711, P0720, etc.) is specified by SAE J2012/ISO 15031-6.
- DTC and DTC at 1st trip are displayed on "Self Diagnostic results" of CONSULT. When DTC is currently detected, "CRNT" is displayed. If "PAST" is displayed, it shows a malfunction occurred in the past. The trip number of drive without malfunction of concerned DTC can be confirmed with "IGN counter" inside "FFD".
- When the DTC at the 1st trip is detected, "1t" is displayed.

### DTC deletion method

#### NOTE:

If the ignition switch is left ON after repair, turn OFF the ignition switch and wait for 10 seconds or more. Then, turn the ignition ON again. (Engine stop)

- Touch "TRANSMISSION" of CONSULT.
- Touch "Self Diagnostic Result".
- Touch "Erase". (DTC memorized in TCM is erased.)

#### IGN counter

The ignition counter is displayed in "FFD" and the number of times of satisfied "Driving condition A" is displayed after normal recovery of DTC. Refer to TM-268, "DIAGNOSIS DESCRIPTION: Counter System".

- If malfunction (DTC) is currently detected, "0" is displayed.
- After normal recovery, every time "Driving condition A" is satisfied, the display value increases from  $1 \to 2 \to$  $3...38 \rightarrow 39.$
- When MIL turns OFF due to the malfunction and the counter reaches 40, the DTC is erased.

#### NOTE:

The counter display of "40" cannot be checked.

#### DATA MONITOR

#### NOTE:

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

Monitored item	(Unit)	Remarks	
VSP SENSOR (km/h or mph)		Displays the vehicle speed calculated from the CVT output shaft speed.	
ESTM VSP SIG  (km/h or mph)  • Displays the vehicle speed signal (ABS) received throwards are displayed.		<ul> <li>Displays the vehicle speed signal (ABS) received through CAN communication.</li> <li>Models with ABS are displayed.</li> </ul>	
INPUT SPEED SENSOR	(rpm)	Displays the input speed calculated from the pulse signal of the input speed sensor.	
PRI SPEED SEN	(rpm)	Displays the primary pulley speed calculated from the pulse signal of the primary speed sensor.	
SEC REV SENSOR	(rpm)	Displays the secondary pulley speed calculated from the pulse signal of the output speed sensor.	
ENG SPEED SIG	(rpm)	Displays the engine speed received through CAN communication.	
SEC PRESSURE SEN	(V)	Displays the signal voltage of the secondary pressure sensor.	
PRI PRESSURE SEN	(V)	Displays the signal voltage of the primary pressure sensor.	
ATF TEMP SEN	(V)	Displays the signal voltage of the CVT fluid temperature sensor.	
G SENSOR*	(G)	Displays the signal voltage of the G sensor.	

TM-271 Revision: November 2015 2016 Pathfinder TM

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[CVT: RE0F10J]

# < SYSTEM DESCRIPTION >

Monitored item	(Unit)	Remarks			
VIGN SEN	(V)	Displays the battery voltage applied to TCM.			
PVING VOLT	(V)	Displays the backup voltage of TCM.			
VEHICLE SPEED	(km/h or mph)	Displays the vehicle speed recognized by TCM.			
INPUT REV	(rpm)	Displays the input shaft speed of CVT recognized by TCM.			
PRI SPEED	(rpm)	Displays the primary pulley speed recognized by TCM.			
SEC SPEED	(rpm)	Displays the secondary pulley speed recognized by TCM.			
ENG SPEED	(rpm)	Displays the engine speed recognized by TCM.			
SLIP REV	(rpm)	Displays the speed difference between the input shaft speed of CVT and the engine speed.			
PULLEY GEAR RATIO		Displays the pulley gear ratio calculated from primary pulley speed/secondary pulley speed.			
G SPEED	(G)	Displays the acceleration and deceleration speed of the vehicle calculated from vehicle speed change.			
ACCEL POSI SEN 1	(deg)	Displays the estimated throttle position received through CAN communication.			
VENG TRQ	(Nm)	Display the engine torque recognized by TCM.			
PRI TRQ	(Nm)	Display the input shaft torque of CVT.			
TRQ RTO		Display the torque ratio of torque converter.			
SEC PRESSURE	(MPa)	Displays the secondary pressure calculated from the signal voltage of the secondary pressure sensor.			
PRI PRESSURE	(MPa)	Displays the primary pressure calculated from the signal voltage of the primary pressure sensor.			
FLUID TEMP	(°C or °F)	Displays the CVT fluid temperature calculated from the signal voltage of the CVT fluid temperature sensor.			
DSR REV	(rpm)	Displays the target primary pulley speed calculated from processing of gear sh control.			
TGT PLLY GR RATIO		Displays the target gear ratio of the pulley from processing of gear shift control.			
LU PRS	(MPa)	Displays the target oil pressure of the torque converter clutch solenoid valve calculated from oil pressure processing of gear shift control.			
LINE PRS	(MPa)	Displays the target oil pressure of the line pressure solenoid valve calculated from oil pressure processing of gear shift control.			
TRGT PRI PRESSURE	(MPa)	Displays the target oil pressure of the primary pressure solenoid valve calculated from oil pressure processing of gear shift control.			
TRGT SELECT PRESSURE	(MPa)	Displays the target oil pressure of the select solenoid valve calculated from oil pressure processing of gear shift control.			
TRGT SEC PRESSURE	(MPa)	Displays the target oil pressure of the secondary pressure solenoid valve calculated from oil pressure processing of gear shift control.			
ISOLT1	(A)	Displays the command current from TCM to the torque converter clutch solenoid valve.			
ISOLT2	(A)	Displays the command current from TCM to the line pressure solenoid valve.			
PRI SOLENOID	(A)	Displays the command current from TCM to the primary pressure solenoid valve.			
SEC SOLENOID CURRENT	(A)	Displays the command current from TCM to the secondary pressure solenoid			
SELECT SOLENOID CUR- RENT	(A)	Displays the command current from TCM to the select solenoid valve.			
SOLMON1	(A)	Monitors the command current from TCM to the torque converter clutch solenoid valve and displays the monitored value.			
SOLMON2	(A)	Monitors the command current from TCM to the line pressure solenoid valve and displays the monitored value.			
PRI SOL MON	(A)	Monitors the command current from TCM to the primary pressure solenoid valve and displays the monitored value.			

[CVT: RE0F10J]

# < SYSTEM DESCRIPTION >

Monitored item	(Unit)	Remarks		
SEC SOL MON CURRENT	(A)	Monitors the command current from TCM to the secondary pressure solenoid valve and displays the monitored value.		
SELECT SOL MON CURRENT	(A)	Monitors the command current from TCM to the select solenoid valve and displays the monitored value.		
D POSITION SW	(On/Off)	Displays the operation status of the transmission range switch (D position).		
N POSITION SW	(On/Off)	Displays the operation status of the transmission range switch (N position).		
R POSITION SW	(On/Off)	Displays the operation status of the transmission range switch (R position).		
P POSITION SW	(On/Off)	Displays the operation status of the transmission range switch (P position).		
L POSITION SW	(On/Off)	Displays the operation status of the transmission range switch (L position).		
DS RANGE SW*	(On/Off)	Displays the operation status of the transmission range switch (Ds position).		
BRAKESW	(On/Off)	Displays the reception status of the stop lamp switch signal received through CAN communication.		
IDLE SW	(On/Off)	Displays the reception status of the closed throttle position signal received through CAN communication.		
SPORT MODE SW	(On/Off)	Displays the reception status of the overdrive control switch signal received through CAN communication.		
ECO MODE SW*	(On/Off)	Displays the reception status of the ECO mode switch signal received through CAN communication.		
STRDWNSW*	(On/Off)	Displays the operation status of the paddle shifter (down switch).		
STRUPSW*	(On/Off)	Displays the operation status of the paddle shifter (up switch).		
DOWNLVR*	(On/Off)	Displays the operation status of the selector lever (down switch).		
UPLVR*	(On/Off)	Displays the operation status of the selector lever (up switch).		
NONMMODE*	(On/Off)	Displays if the selector lever position is not at the manual shift gate.		
MMODE*	(On/Off)	Displays if the selector lever position is at the manual shift gate.		
TOW MODE SW	(On/Off)	Displays the reception status of the TOW mode switch signal received through 0 communication.		
SHIFT IND SIGNAL		Displays the transaxle value of shift position signal transmitted via CAN communication.		
CVT LAMP*	(On/Off)	Displays the transaxle status of the CVT warning lamp signal transmitted through CAN communication.		
SPORT MODE IND	(On/Off)	Displays the transaxle status of the O/D OFF indicator lamp signal transmitted through CAN communication.		
MANU MODE SIGNAL*	(On/Off)	Displays the transaxle status of the manual mode signal transmitted through CAN communication.		
DS RANGE SIGNAL*	(On/Off)	Displays the shift position signal status from transmission range switch (Ds position).		
ECO MODE SIGNAL*	(On/Off)	Displays the transaxle status of the ECO mode signal transmitted through CAN communication.		
VDC ON	(On/Off)	Displays the reception status of the VDC operation signal received through CAN communication.		
TCS ON	(On/Off)	Displays the reception status of the TCS operation signal received through CAN communication.		
ABS FAIL SIGNAL	(On/Off)	Displays the reception status of the ABS malfunction signal received through CAN communication.		
ABS ON	(On/Off)	Displays the reception status of the ABS operation signal received through CAN communication.		
RANGE		Displays the gear position recognized by TCM.		
M GEAR POS*		Display the target gear of manual mode		
G SEN SLOPE*	(%)	Displays the gradient angle calculated from the G sensor signal voltage.		
G SEN CALIBRATION*	(YET/DONE)	Displays the status of "G SENSOR CALIBRATION" in "Work Support".		

[CVT: RE0F10J]

### < SYSTEM DESCRIPTION >

Monitored item	(Unit)	Remarks	
N IDLE STATUS*	(On/Off)	Displays idle neutral status.	
ENGBRKLVL	(On/Off)	Displays the setting of "ENGINE BRAKE ADJ" in "Work Support".	
DRIVE MODE STATS*		Displays the drive mode status recognized by TCM.	
SNOW MODE*	(On/Off)	Displays whether it is the SNOW mode.	
ECO MODE*	(On/Off)	Displays whether it is the ECO mode.	
NORMAL MODE*	(On/Off)	Displays whether it is the NORMAL mode.	
SPORT MODE*	(On/Off)	Displays whether it is the SPORT mode.	
AIR BLDING STATE*	(INCOMP/ COMP)	Displays the status of "ELECTRIC O.P. AIR BLEEDING" in "Work Support".	
ELECTRIC OP DUTY*	(%)	Displays the command signal value (duty) of the electric oil pump transmitted from TCM.	
E-OP DUTY MON*	(%)	Monitors the status signal value (duty) transmitted from the electric oil pump and displays the monitored value.	
ELECTRIC OP RELAY*	(On/Off)	Displays the command status from TCM to the electric oil pump relay.	
E-OP RELAY MON*	(On/Off)	Monitors the command status from TCM to the oil pump relay and displays the monitored value.	
CVT-B		Displays CVT fluid temperature count.     This monitor item does not use.	
CVT-A	(On/Off)	Displays CVT fluid temperature count.     This monitor item does not use.	

<sup>\*:</sup> Not applicable but displayed.

# **WORK SUPPORT**

Item name	Description	
CONFORM CVTF DETERIORTN	Checks the degradation level of the CVT fluid under severe conditions.	
ERASE MEMORY DATA	Performs "erasing of the calibration data" and "erasing of the learned value" at the same time.	
G SENSOR CALIBRATION	Compensates the G sensor.	
ERASE LEARNING VALUE	Erases learning value memorized by TCM.	
ENGINE BRAKE ADJ.	Although there is no malfunction on the transaxle and the CVT system, if a customer make a complaint like "I do not feel comfortable with automatic operation of the engine brake on downhill", the engine brake may be cancelled with "engine brake adjustment".	
ERASE CALIBRATION DATA	Erases calibration data memorized by TCM.	
WRITE IP CHARA - REPLACEMENT AT/CVT	Writes IP characteristics when transaxle assembly is replaced.	
READ IP CHARA - REPLACEMENT TCM	Reads IP characteristics when TCM is replaced.	
WRITE IP CHARA - REPLACEMENT TCM	Writes IP characteristics when TCM is replaced.	

### Engine brake adjustment

ENGINE BRAKE LEVEL

ON : Turn ON the engine brake control.
OFF : Turn OFF the engine brake control.

Check the degradation level of the CVT fluid.

CVTF degradation level data

210,000 or more : Replacement of the CVT fluid is required.

Less than 210,000 : Replacement of the CVT fluid is not required.

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# **ECU DIAGNOSIS INFORMATION**

# **TCM**

Reference Value

### CONSULT DATA MONITOR STANDARD VALUE

- In CONSULT, electric shift timing or lock-up timing, i.e. operation timing of each solenoid valve, is displayed.
  Therefore, if there is an obvious difference between the shift timing estimated from a shift shock (or engine
  speed variations) and that shown on the CONSULT, the mechanism parts (including the hydraulic circuit)
  excluding the solenoids and sensors may be malfunctioning. In this case, check the mechanical parts following the appropriate diagnosis procedure.
- Shift point (gear position) displayed on CONSULT slightly differs from shift pattern described in Service Manual. This is due to the following reasons.
- Actual shift pattern may vary slightly within specified tolerances.
- While shift pattern described in Service Manual indicates start of each shift, CONSULT shows gear position at end of shift.
- The solenoid display (ON/OFF) on CONSULT is changed at the start of gear shifting. In contrast, the gear
  position display is changed at the time when gear shifting calculated in the control unit is completed.

#### NOTE:

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

Monitor item	Condition	Value/Status (Approx.)
VSP SENSOR	While driving	Almost same as the speedometer display.
ESTM VSP SIG	While driving	Almost same as the speedometer display.
INPUT SPEED SENSOR	In driving (lock-up ON)	Approximately matches the engine speed.
PRI SPEED SEN	In driving (lock-up ON)	Approximately matches the engine speed.
SEC REV SENSOR	While driving	VSP SENSOR × 40
ENG SPEED SIG	Engine running	Almost same reading as tachometer
SEC PRESSURE SEN	<ul><li>After engine warm up</li><li>Selector lever: "N" position</li><li>At idle</li></ul>	1.7 V
PRI PRESSURE SEN	<ul><li>After engine warm up</li><li>Selector lever: "N" position</li><li>At idle</li></ul>	1.23 V
	CVT fluid: Approx. 20°C (68°F)	2.01 – 2.05 V
ATF TEMP SEN	CVT fluid: Approx. 50°C (122°F)	1.45 – 1.50 V
	CVT fluid: Approx. 80°C (176°F)	0.90 – 0.94 V
G SENSOR	Always	0 V
VIGN SEN	Ignition switch: ON	10.0 – 16.0 V
PVIGN VOLT	Ignition switch: ON	10.0 – 16.0 V
VEHICLE SPEED	While driving	Almost same as the speedometer display.
INPUT REV	In driving (lock-up ON)	Almost same as the engine speed.
PRI SPEED	In driving (lock-up ON)	Approximately matches the engine speed.
SEC SPEED	While driving	VSP SENSOR × 40
ENG SPEED Engine running		Almost same reading as tachometer
SLIP REV	While driving	Engine speed – Input speed
	In driving (forward)	2.43 – 0.38
PULLEY GEAR RATIO	In driving (reverse)	2.43

PRI SOL MON

Monitor item	Condition	Value/Status (Approx.)
Monitor Rom	Vehicle stopped	0.00 G
G SPEED	During acceleration	The value changes to the positive side along with acceleration.
	During deceleration	The value changes to the positive side along with deceleration.
ACCEL DOCLOEN 4	Accelerator pedal released	0.00 deg
ACCEL POSI SEN 1	Accelerator pedal fully depressed	80.00 deg
VENG TRQ	While driving	The value changes along with acceleration deceleration.
PRI TRQ	While driving	The value changes along with acceleration deceleration.
TRQ RTO	While driving	The value changes along with acceleration deceleration.
SEC PRESSURE	<ul><li>After engine warm up</li><li>Selector lever: "N" position</li><li>At idle</li></ul>	1.800 MPa
PRI PRESSURE	<ul><li>After engine warm up</li><li>Selector lever: "N" position</li><li>At idle</li></ul>	1.100 MPa
FLUID TEMP	Ignition switch ON.	Displays the CVT fluid temperature.
DSR REV	While driving	It varies along with the driving condition.
TGT PLLY GR RATIO	In driving (forward)	2.43 – 0.38
TOTT LET GRIVATIO	In driving (reverse)	2.43
	<ul><li>Engine started</li><li>Vehicle is stopped.</li></ul>	−0.50 MPa
LU PRS	<ul> <li>Selector lever: "D" position</li> <li>Accelerator pedal position: 1/8 or less</li> <li>Vehicle speed: 20 km/h (12 MPH) or more</li> </ul>	0.45 MPa
LINE PRS	<ul><li>After engine warm up</li><li>Selector lever: "N" position</li><li>At idle</li></ul>	1.800 MPa
	<ul> <li>After engine warm up</li> <li>Selector lever: "N" position</li> <li>Depress the accelerator pedal fully</li> </ul>	4.930 – 5.430 MPa
TRGT PRI PRESSURE	<ul><li>After engine warm up</li><li>Selector lever: "N" position</li><li>At idle</li></ul>	1.100 MPa
TARGET SELECT PRESSURE	<ul><li>After engine warm up</li><li>Selector lever: "N" position</li><li>At idle</li></ul>	0.000 MPa
After engine warm up     Selector lever: "N" position     At idle		1.800 MPa
ISOLT1		
ISOLT2	_	_
PRI SOLENOID		
SEC SOLENOID CURRENT	_	_
SELECT SOLENOID CURRENT	_	
SOLMON1 —		
SOLMON2		_

# **TCM**

[CVT: RE0F10J]

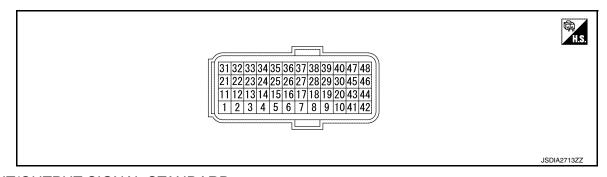
# < ECU DIAGNOSIS INFORMATION >

Monitor item	Condition	Value/Status (Approx.)	=
SEC SOL MON CURRENT	_	<del>-</del>	– A
SELECT SOL MON CURRENT	_	_	_
D DOOLTION OW	Selector lever: "D" position	On	В
D POSITION SW	Other than the above	Off	_
N BOOKTION ON	Selector lever: "N" position	On	_
N POSITION SW	Other than the above	Off	С
	Selector lever: "R" position	On	
R POSITION SW	Other than the above	Off	TM
D DOOLTION OW	Selector lever: "P" position	On	1101
P POSITION SW	Other than the above	Off	_
	Selector lever: "L" position	On	Е
L POSITION SW	Other than the above	Off	_
DS RANGE SW	Always	Off	
	Brake pedal is depressed	On	_  -
BRAKESW	Brake pedal is released	Off	<u> </u>
	Accelerator pedal is released	On	G
IDLE SW	Accelerator pedal is fully depressed	Off	<del>_</del>
	Press the overdrive control switch	On	_
SPORT MODE SW	Release the overdrive control switch	Off	— Н
ECO MODE SW	Always	Off	_
STRDWNSW	Always	Off	_
STRUPSW	Always	Off	_
DOWNLVR	Always	Off	<u> </u>
UPLVR	Always	Off	J
NONMMODE	Always	On	<del>_</del>
MMODE	Always	Off	K
	In tow mode	On	
TOW MODE SW	Other than above	Off	<del>-</del>
	When the selector lever is positioned in be-	OFF	L
	tween each position.	OFF	_
	Selector lever: P position	Р	- 1./
SHIFT IND SIGNAL	Selector lever: R position	R	M
	Selector lever: N position	N	
	Selector lever: D position	D	N
	Selector lever: L position	L	
CVT LAMP	Approx. 2 seconds after ignition switch ON	On	
OVI EXIVI	Other than the above	Off	0
SPORT MODE IND	In OD OFF	On	
SI SIXI MODE IND	Other than the above	Off	P
MANU MODE SIGNAL	Always	Off	_ '
DS RANGE SIGNAL	Always	Off	_
ECO MODE SIGNAL	Always	Off	_
VDC ON	VDC is activated	On	_
VDC ON	Other than the above	Off	<u> </u>

Monitor item	Condition	Value/Status (Approx.)
TCS ON	TCS is activated	On
ICS ON	Other than the above	Off
ABS FAIL SIGNAL	When ABS malfunction signal is received	On
ABS FAIL SIGNAL	Other than the above	Off
ABS ON	ABS is activated	On
ABS ON	Other than the above	Off
	Selector lever: P and N positions	N/P
	Selector lever: R position	R
RANGE	Selector lever: D position	D
	Selector lever: D position (in OD OFF)	S
	Selector lever: L position	L
M GEAR POS	Always	1
G SEN SLOPE	Always	0%
C CEN CALIBRATION	When G sensor calibration is completed	DONE
G SEN CALIBRATION	When G sensor calibration is not completed	YET
N IDLE STATUS	Always	Off
ENGBRKLVL	When the engine brake level of "ENGINE BRAKE ADJ". in "Work Support" is ON	On
ENGDRALVL	When the engine brake level of "ENGINE BRAKE ADJ". in "Work Support" is OFF	Off
DRIVE MODE STATS	Always	NOMAL
SNOW MODE	Always	Off
ECO MODE	Always	Off
NORMAL MODE	Always	Off
SPORT MODE	Always	Off
AIR BLDING STATE	Always	COMP
ELECTRIC OP DUTY	Always	0%
E-OP DUTY MON	Always	0%
ELECTRIC OP RELAY	Always	Off
E-OP RELAY MON	Always	Off
CVT-A*	_	_
CVT-B*	_	_

<sup>\*:</sup> These monitor items do not use.

# **TERMINAL LAYOUT**



# INPUT/OUTPUT SIGNAL STANDARD

	nal No. e color)	Description			Condition	Value (Approx.)	
+	_	Signal	Input/ Output	Condition		value (Approx.)	
2	Ground	L position switch	Input		Selector lever: "L" position	10 – 16 V	
(SB)	Giodila	L position switch	iriput		Other than the above	0 V	
4	Ground	D position switch	Input		Selector lever: "D" position	10 – 16 V	
(Y)	Oround	D position switch	mpat		Other than the above	0 V	
5	Ground	N position switch	Input	Ignition switch	Selector lever: "N" position	10 – 16 V	
(L)	Oround	Tr poolaon ownon	mpat	ON	Other than the above	0 V	
6	Ground	R position switch	Input		Selector lever: "R" position	10 – 16 V	
(BR)	Oroana	Tr poolaon ownon	mpat		Other than the above	0 V	
7	Ground	P position switch	Input		Selector lever: "P" position	10 – 16 V	
(V)	0.000	. position sinten			Other than the above	0 V	
11 (Y)	Ground	Sensor ground	_		Always	0 V	
		CVT fluid tempera- ture sensor	Output	ON	CVT fluid: Approx. 20°C (68°F)	2.01 – 2.05 V	
12 (LG)	Ground				CVT fluid: Approx. 50°C (122°F)	1.45 – 1.50 V	
					CVT fluid: Approx. 80°C 176°F)	0.90 – 0.94 V	
16 (Y)	Ground	Secondary pres- sure sensor	Input	Selector lever: "N" position     At idle		1.67 – 1.69 V	
17 (LG)	Ground	Primary pressure sensor	Input	Selector     At idle	or lever: "N" position	0.90 – 0.92 V	
23 (P)	_	CAN-L	Input/ Output		_	_	
24 (LG)	Ground	Input speed sensor	Input	<ul> <li>Selector lever: "L" position</li> <li>Vehicle speed: 20 km/h (12 MPH)</li> </ul>		800 Hz 1mSec/div 5V/div JSDIA3770GB	
26	Ground	Sensor power sup-	Output	Ignition switch: ON		5.0 V	
(LG)		ply	·	Ignition switch: OFF		0 V	
27 <sup>*</sup> (G)	_	_	_				

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ue (Approx.)	

Terminal No. (Wire color)		Description		Condition	Value (Approx.)	
+	_	Signal	Input/ Output	Condition	value (Applox.)	
30		Line pressure sole- noid valve	e- Output	<ul><li> After engine warming up</li><li> Selector lever: "N" position</li><li> At idle</li></ul>	2.5mSec/div 2.5mSec/div 5V/div JSDIA1897GB	
(SB)				<ul> <li>After engine warming up</li> <li>Selector lever: "N" position</li> <li>Depress the accelerator pedal fully</li> </ul>	2.5mSec/div 5V/div JSDIA1898GB	
33 (L)	_	CAN-H	Input/ Output	<u> </u>	_	
34 (BR)	Ground	Output speed sensor	Input	<ul> <li>Selector lever: "L" position</li> <li>Vehicle speed: 20 km/h (12 MPH)</li> </ul>	200 Hz 2.5mSec/div 5V/div JSDIA1897GB	
35 (LG)	Ground	Primary speed sensor	Input	<ul> <li>Selector lever: "L" position</li> <li>Vehicle speed: 20 km/h (12 MPH)</li> </ul>	600 Hz  1mSec/div  5V/div  JSDIA3770GB	
37 (BR)	Ground	Select solenoid valve	Output	<ul> <li>Engine started</li> <li>Vehicle is stopped</li> <li>Selector lever: "N" position</li> </ul>	2.5mSec/div 2.5mSec/div 5V/div JSDIA1897GB	

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	inal No. e color)	Description		Condition	Value (Approx.)		
+	_	Signal	Input/ Output	Condition	value (Approx.)		
38	Ground	Torque converter clutch solenoid	Output	Selector lever: "D" position     Accelerator pedal position: 1/8 or less     Vehicle speed: 20 km/h (12 MPH) or more	1mSec/div 5V/div JSDIA1900GB	B C	
(Y)	Ground	valve	Cuput	Engine started     Vehicle is stopped	2.5mSec/div 2.5mSec/div 5V/div JSDIA1903GB	E F	
39 (L)	Ground	Secondary pressure solenoid valve	Output	<ul> <li>Selector lever: "L" position</li> <li>Vehicle speed: 20 km/h (12 MPH)</li> </ul>	2.5mSec/div 5V/div JSDIA1897GB	G H	
40 (V)	Ground	Primary pressure solenoid valve	Output	<ul> <li>Selector lever: "L" position</li> <li>Vehicle speed: 20 km/h (12 MPH)</li> </ul>	2.5mSec/div 5V/div JSDIA1897GB	J	
41 (B)	Ground	Ground	Output	Always	0 V	L	
42 (B)	Ground	Ground	Output	Always	0 V		
45 (LG)	Ground	Power (backup)	Input	Always	10 – 16 V	M	
46 (LG)	Ground	Power (backup)	Input	Always	10 – 16 V	Ν	
47 (Y)	Ground	Power supply	Input	Ignition switch: ON Ignition switch: OFF	10 – 16 V 0 V	. 4	
48 Cround				Ignition switch: ON	10 – 16 V	0	
46 (Y)	Ground	Power supply	Input	Ignition switch: OFF	0 V	_	

<sup>\*:</sup> This harness does not use.

Fail-safe

TCM has a fail-safe mode. The mode functions so that operation can be continued even if the signal circuit of the main electronically controlled input/output parts is damaged.

If the vehicle shows following behaviors including "poor acceleration", a malfunction of the applicable system is detected by TCM and the vehicle may be in a fail-safe mode. At this time, check the DTC code and perform inspection and repair according to the malfunction diagnosis procedures.

# Fail-safe function

DTC	Vehicle behavior	Conditions of vehicle
P062F	Not changed from normal driving	_
P0705	Shift position indicator on combination meter is not displayed     Selector shock is large     Start is slow     Acceleration is slow     Lock-up is not performed	_
P0706	Shift position indicator on combination meter is not displayed     Selector shock is large     Start is slow     Acceleration is slow     Lock-up is not performed	_
P0711	Start is slow     Acceleration is slow     Selector shock is large     Start is slow     Acceleration is slow	Engine coolant temperature when engine start: Temp. $\geq 10^{\circ}\text{C} \ (50^{\circ}\text{F})$ Engine coolant temperature when engine start: $-35^{\circ}\text{C} \ (-31^{\circ}\text{F}) \leq \text{Temp.} < 10^{\circ}\text{C} \ (50^{\circ}\text{F})$
	Selector shock is large     Start is slow     Acceleration is slow	Engine coolant temperature when engine star: Temp. < -35°C (-31°F)
	Start is slow     Acceleration is slow	Engine coolant temperature when engine start: Temp. ≥ 10°C (50°F)
P0712	Selector shock is large     Start is slow     Acceleration is slow	Engine coolant temperature when engine start: -35°C (-31°F) ≤ Temp. < 10°C (50°F)
	Selector shock is large     Start is slow     Acceleration is slow	Engine coolant temperature when engine star: Temp. < -35°C (-31°F)
	Start is slow     Acceleration is slow	Engine coolant temperature when engine start: Temp. ≥ 10°C (50°F)
P0713	Selector shock is large     Start is slow     Acceleration is slow	Engine coolant temperature when engine start: -35°C (-31°F) ≤ Temp. < 10°C (50°F)
	Selector shock is large     Start is slow     Acceleration is slow	Engine coolant temperature when engine star: Temp. < -35°C (-31°F)
P0715	Start is slow     Acceleration is slow     Lock-up is not performed	_
P0717	Start is slow     Acceleration is slow     Lock-up is not performed	_
P0740	Start is slow     Acceleration is slow     Lock-up is not performed	_
P0743	Start is slow     Acceleration is slow     Lock-up is not performed	_
P0744	Start is slow     Acceleration is slow     Lock-up is not performed	_

DTC	Vehicle behavior	Conditions of vehicle
P0746	<ul> <li>Selector shock is large</li> <li>Start is slow</li> <li>Acceleration is slow</li> <li>Lock-up is not performed</li> </ul>	
P0776	<ul> <li>Selector shock is large</li> <li>Start is slow</li> <li>Acceleration is slow</li> <li>Lock-up is not performed</li> <li>Vehicle speed is not increased</li> </ul>	When a malfunction occurs on the low oil pressure side
	<ul><li>Selector shock is large</li><li>Start is slow</li><li>Acceleration is slow</li><li>Lock-up is not performed</li></ul>	When a malfunction occurs on the high oil pressure side
P0778	<ul> <li>Selector shock is large</li> <li>Start is slow</li> <li>Acceleration is slow</li> <li>Lock-up is not performed</li> </ul>	E
P0779	<ul> <li>Selector shock is large</li> <li>Start is slow</li> <li>Acceleration is slow</li> <li>Lock-up is not performed</li> </ul>	
P0841	Not changed from normal driving	
P0847	Not changed from normal driving	_
P0848	Not changed from normal driving	_
P084C	Not changed from normal driving	
P084D	Not changed from normal driving	
P0863	<ul><li>Selector shock is large</li><li>Start is slow</li><li>Acceleration is slow</li><li>Lock-up is not performed</li></ul>	
P0890	<ul> <li>Selector shock is large</li> <li>Start is slow</li> <li>Acceleration is slow</li> <li>Lock-up is not performed</li> <li>Vehicle speed is not increased</li> </ul>	ŀ
P0962	<ul><li>Selector shock is large</li><li>Start is slow</li><li>Acceleration is slow</li><li>Lock-up is not performed</li></ul>	_
P0963	<ul> <li>Selector shock is large</li> <li>Start is slow</li> <li>Acceleration is slow</li> <li>Lock-up is not performed</li> </ul>	
P0965	<ul><li>Selector shock is large</li><li>Start is slow</li><li>Acceleration is slow</li><li>Lock-up is not performed</li></ul>	When a malfunction occurs on the low oil pressure side
	Selector shock is large     Lock-up is not performed	When a malfunction occurs on the high oil pressure side
P0966	<ul> <li>Selector shock is large</li> <li>Start is slow</li> <li>Acceleration is slow</li> <li>Lock-up is not performed</li> </ul>	
P0967	<ul> <li>Selector shock is large</li> <li>Start is slow</li> <li>Acceleration is slow</li> <li>Lock-up is not performed</li> </ul>	_

DTC	Vehicle behavior	Conditions of vehicle
P2765	Start is slow     Acceleration is slow     Lock-up is not performed	_
P2813	Selector shock is large     Start is slow     Acceleration is slow     Vehicle speed is not increased	When a malfunction occurs on the low oil pressure side
	Selector shock is large	When a malfunction occurs on the high oil pressure side
P2814	Selector shock is large	_
P2815	Selector shock is large	_
U0073	<ul><li>Selector shock is large</li><li>Start is slow</li><li>Acceleration is slow</li><li>Lock-up is not performed</li></ul>	_
U0100	Selector shock is large     Start is slow     Acceleration is slow     Lock-up is not performed	_
U0102	Not changed from normal driving	_
U0140	Not changed from normal driving	_
U0141	Not changed from normal driving	_
U0155	Not changed from normal driving	_
U0300	Selector shock is large     Start is slow     Acceleration is slow     Lock-up is not performed	_
U1000	Not changed from normal driving	_
U1117	Not changed from normal driving	_

Protection Control

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

### CONTROL FOR WHEEL SPIN

Control	When a wheel spin is detected, the engine output and gear ratio are limited and the line pressure is increased. Limits engine output when a wheel spin occurs in any of right and left drive wheels.		
Vehicle behavior in control	If the accelerator is kept depressing during wheel spin, the engine revolution and vehicle speed are limited to a certain degree.		
Normal return condition	Wheel spin convergence returns the control to the normal control.		

# TORQUE IS REDUCED WHEN DRIVING WITH THE REVERSE GEAR

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

#### CONTROL WHEN FLUID TEMPERATURE IS HIGH

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

# REVERSE PROHIBIT CONTROL

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

# **DTC Inspection Priority Chart**

INFOID:0000000012552469

[CVT: RE0F10J]

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

Priority	DTC (Diagnostic Trouble Code)	Reference
	P0863 CONTROL UNIT (CAN)	TM-372, "DTC Logic"
	U0073 COMM BUS A OFF	TM-317, "DTC Logic"
	U0100 LOST COMM (ECM A)	TM-318, "DTC Logic"
	U0102 LOST COMM (TRANSFER)	TM-319, "DTC Logic"
4	U0140 LOST COMM (BCM)	TM-320, "DTC Logic"
1	U0141 LOST COMM (BCM A)	TM-321, "DTC Logic"
	U0155 LOST COMM (IPC)	TM-322, "DTC Logic"
	U0300 CAN COMM DATA	TM-323, "DTC Logic"
	U1000 CAN COMM CIRC	TM-324, "DTC Logic"
	U1117 LOST COMM (ABS)	TM-325, "DTC Logic"
	P0740 TORQUE CONVERTER	TM-349, "DTC Logic"
	P0743 TORQUE CONVERTER	TM-351, "DTC Logic"
	P0778 PC SOLENOID B	TM-359, "DTC Logic"
	P0779 PC SOLENOID B	TM-361, "DTC Logic"
2	P0962 PC SOLENOID A	TM-375, "DTC Logic"
2	P0963 PC SOLENOID A	TM-377, "DTC Logic"
	P0966 PC SOLENOID B	TM-381, "DTC Logic"
	P0967 PC SOLENOID B	TM-383, "DTC Logic"
	P2814 SELECT SOLENOID	TM-390, "DTC Logic"
	P2815 SELECT SOLENOID	TM-392, "DTC Logic"

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Priority	DTC (Diagnostic Trouble Code)	Reference
	P062F EEPROM	TM-326, "DTC Logic"
	P0705 T/M RANGE SENSOR A	TM-327, "DTC Logic"
	P0706 T/M RANGE SENSOR A	TM-333, "DTC Logic"
	P0711 FLUID TEMP SENSOR A	TM-336, "DTC Logic"
	P0712 FLUID TEMP SENSOR A	TM-339, "DTC Logic"
	P0713 FLUID TEMP SENSOR A	TM-341, "DTC Logic"
	P0715 INPUT SPEED SENSOR A	TM-343, "DTC Logic"
3	P0717 INPUT SPEED SENSOR A	TM-346, "DTC Logic"
	P0841 FLUID PRESS SEN/SW A	TM-363, "DTC Logic"
	P0847 FLUID PRESS SEN/SW B	TM-364, "DTC Logic"
	P0848 FLUID PRESS SEN/SW B	TM-366, "DTC Logic"
	P084C FLUID PRESS SEN/SW H	TM-368, "DTC Logic"
	P084D FLUID PRESS SEN/SW H	TM-370, "DTC Logic"
	P0890 TCM	TM-373, "DTC Logic"
	P2765 INPUT SPEED SENSOR B	TM-385, "DTC Logic"
	P0744 TORQUE CONVERTER	TM-353, "DTC Logic"
	P0746 PC SOLENOID A	TM-355, "DTC Logic"
4	P0776 PC SOLENOID B	TM-357, "DTC Logic"
	P0965 PC SOLENOID B	TM-379, "DTC Logic"
	P2813 SELECT SOLENOID	TM-388, "DTC Logic"

DTC Index

#### NOTE:

• If multiple malfunction codes are detected at the same time, check each code according to the "DTC check priority list". TM-285, "DTC Inspection Priority Chart".

• The ignition counter is displayed in "FFD". Refer to TM-270, "CONSULT Function".

DT	C*1, *2				Permanent	
GST	CONSULT (TRANSMIS- SION)	Items (CONSULT screen terms)	Trip	MIL	DTC group*3	Reference
P062F	P062F	EEPROM	1	ON	В	TM-326
P0705	P0705	T/M RANGE SENSOR A	2	ON	В	TM-327
P0706	P0706	T/M RANGE SENSOR A	2	ON	В	TM-333
P0711	P0711	FLUID TEMP SENSOR A	2	ON	Α	TM-336
P0712	P0712	FLUID TEMP SENSOR A	2	ON	В	TM-339
P0713	P0713	FLUID TEMP SENSOR A	2	ON	В	TM-341
P0715	P0715	INPUT SPEED SENSOR A	2	ON	В	TM-343
P0717	P0717	INPUT SPEED SENSOR A	2	ON	В	TM-346
P0740	P0740	TORQUE CONVERTER	2	ON	В	TM-349
P0743	P0743	TORQUE CONVERTER	2	ON	В	TM-351
P0744	P0744	TORQUE CONVERTER	2	ON	В	TM-353
P0746	P0746	PC SOLENOID A	2	ON	В	TM-355
P0776	P0776	PC SOLENOID B	2	ON	В	TM-357
P0778	P0778	PC SOLENOID B	2	ON	В	TM-359
P0779	P0779	PC SOLENOID B	2	ON	В	TM-361

GST	CONSULT (TRANSMIS- SION)	Items (CONSULT screen terms)	Trip	MIL	Permanent DTC group*3	Reference
P0841	P0841	FLUID PRESS SEN/SW A	2	ON	В	TM-363
P0847	P0847	FLUID PRESS SEN/SW B	2	ON	В	TM-364
P0848	P0848	FLUID PRESS SEN/SW B	2	ON	В	TM-366
P084C	P084C	FLUID PRESS SEN/SW H	2	ON	В	TM-368
P084D	P084D	FLUID PRESS SEN/SW H	2	ON	В	TM-370
P0863	P0863	CONTROL UNIT (CAN)	1	ON	В	TM-372
P0890	P0890	TCM	1	ON	В	TM-373
P0962	P0962	PC SOLENOID A	2	ON	В	TM-375
P0963	P0963	PC SOLENOID A	2	ON	В	TM-377
P0965	P0965	PC SOLENOID B	2	ON	В	TM-379
P0966	P0966	PC SOLENOID B	2	ON	В	TM-381
P0967	P0967	PC SOLENOID B	2	ON	В	TM-383
P2765	P2765	INPUT SPEED SENSOR B	2	ON	В	TM-385
P2813	P2813	SELECT SOLENOID	2	ON	В	TM-388
P2814	P2814	SELECT SOLENOID	2	ON	В	TM-390
P2815	P2815	SELECT SOLENOID	2	ON	В	TM-392
U0073	U0073	COMM BUS A OFF	1	ON	В	TM-317
U0100	U0100	LOST COMM (ECM A)	1	ON	В	TM-318
_	U0102	LOST COMM (TRANSFER)	1	_	_	TM-319
	U0140	LOST COMM (BCM)	1	_	_	TM-320
	U0141	LOST COMM (BCM A)	1	_	_	TM-321
_	U0155	LOST COMM (IPC)	1	_	_	TM-322
	U0300	CAN COMM DATA	1	_	_	TM-323
_	U1000	CAN COMM CIRC	1	_	_	TM-324
	U1117	LOST COMM (ABS)	1	_	_	TM-325

<sup>\*1:</sup> These numbers are specified by SAE J2012/ISO 15031-6.

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[CVT: RE0F10J]

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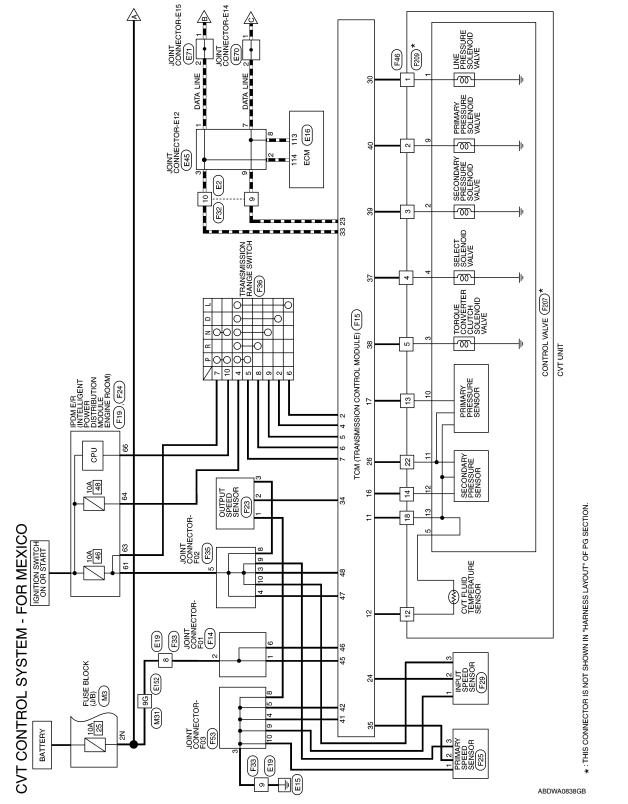
<sup>\*2:</sup> The DTC number of the 1st trip is the same as the DTC number. \*3: Refer to <a href="mailto:TM-316">TM-316</a>, "Description".

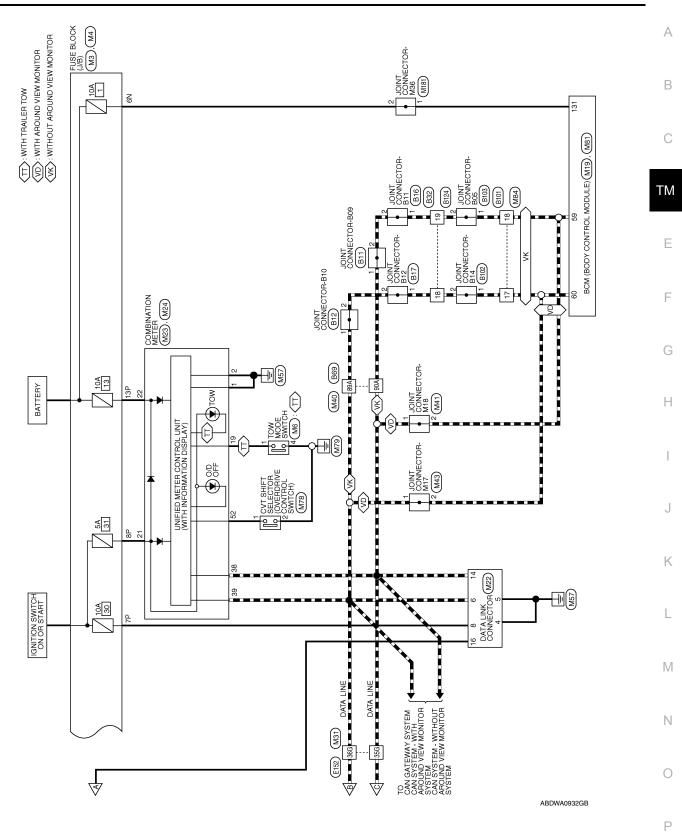
< WIRING DIAGRAM > [CVT: RE0F10J]

# WIRING DIAGRAM

# **CVT CONTROL SYSTEM**

Wiring diagram





Connector Name TOW MODE SWITCH

M6

Connector No.

Connector Color GRAY

[CVT: RE0F10J]

# CVT CONTROL SYSTEM CONNECTORS - FOR MEXICO

M4	FUSE BLOCK (J/B)	WHITE
Connector No.	Connector Name	Connector Color
M3	FUSE BLOCK (J/B)	WHITE
	ame	olor

	OCK (J/B)		2N 1N 5N 4N
M3	FUSE BLO	WHITE	3N 2N 1N 8N 7N 6N 5N 4N
tor No.	tor Name FUSE BLOCK (J/B)	tor Color WHITE	

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

3N 2N 1N 8N 7N 6N 5N 4N	Signal Nan	I
<u>K</u> <u>K</u>	Color of Wire	BG
S.	erminal No.	2N

	Wire W	Perminal No. 2N 6N
1 1	BG ×	2N 6N
ı	BG	2N
Signal Nam	Color of Wire	erminal No.

Signal Name	ı	ı
Color of Wire	SB	В
erminal No.	1	4

Color of Wire	$\sqrt{}$	7
۱	25 "	נ
Terminal No.		t

nal No.	Color of Wire	Signal Name
7P	bЛ	ı
<u>۳</u>	BG	ı
3Р	Μ	Ι

Signal Nam	I	I	_
Color of Wire	Ыl	BG	W
Terminal No.	42	8P	13P

Connector No. M23

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	ヺ			۱ŀ	_	_	
	١Ž				16	- 00	1
	Connector Name DATA LINK CONNE				10 11 12 13 14 15 16	7	1
	≚				14	9	1
	=				13	Ŋ	1
	<u> </u>	Connector Color WHITE			12	2 3 4 5 6	
M22	ΑT	Ī			11	c	]
Σ	ď	>			10	2	
	e	7			6	-	
Connector No.	al	ĕ		Ĺ	_	_	_
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욙	유	용	Ι.				
ĕ	ĕ	ĕ		`	◂	H.S.	ı
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<u>്</u>	ŏ	ŏ		7	<u>写</u>		Į

BCM (BODY CONTROL MODULE)

Connector Name Connector Color

M19

Connector No.

BLACK

H.S.			Terminal No.	4	9
_	.2 41 32 61				
	80 59 58 57 56 55 54 53 22 71 70 69 68 67 66 65 64 63 62 61 61 62 61		Signal Name	CAN-L	CAN-H
	55 54 53 57 74 73 7		Color of Wire	Ь	٦
H.S.	60 59 58 57 56 80 79 78 77 76	,	Terminal No. Wire	29	09

Signal Name

Color of Wire

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4 16

BG

	Connector Name COMBINATION METER	ПЕ	46 45 44 42 42 41 42 42 41 42 42 41 42 42 41 42 42 41 42 42 41 42 42 41 42 42 41 42 42 42 42 42 42 42 42 42 42 42 42 42	Signal Name	We also d/O
_	me cor	lor WH	52 46	Color of Wire	۵
	Connector Na	Connector Color WHITE	是 H.S.	Terminal No.	2

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## **CVT CONTROL SYSTEM**

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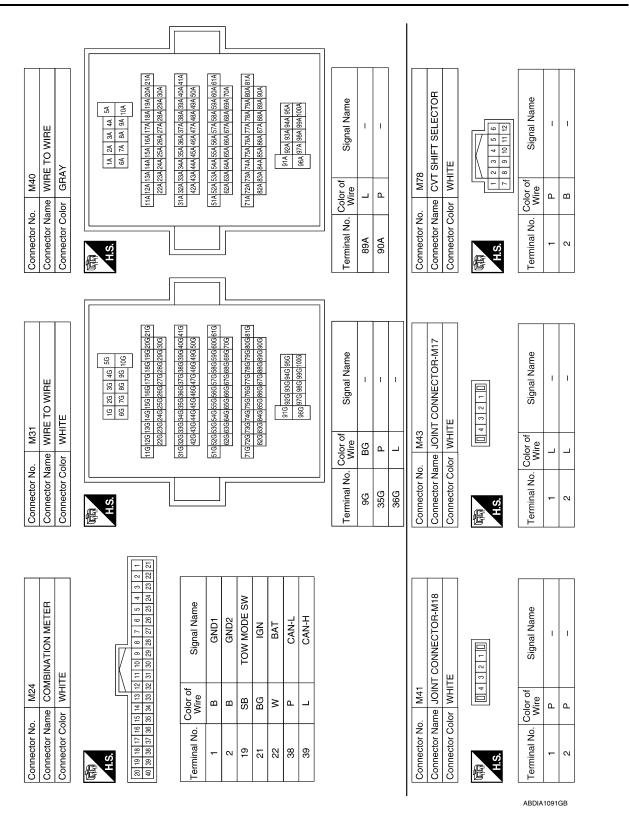
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WIRE TO WIRE

Connector No.

Connector Name | ECM (FOR MEXICO)

WIRE TO WIRE WHITE

Connector Name Connector Color

E2

Connector No.

E16

Connector No.

GRAY

Connector Color

E19

Connector Color WHITE

[CVT: RE0F10J]

Signal Name

Color of Wire LG

Terminal No.

Signal Name

Color of Wire P

Terminal No. 113 114

Signal Name

Color of Wire

Terminal No.

9 5

CAN-L

	Connector Name JOINT CONNECTOR-M36 Connector Color WHITE		4 3 2 1 0	Signal Name	ı	1	
M181	TIMM TO		4	color of Wire	>	W	
Connector No.	Connector Name JOINT (		师 H.S.	Terminal No. Wire	-	2	
	TO WIRE		13 12 11 10 9 8 7 6 5 4 3 2 2 2 2 2 1 20 19 18 18	Signal Name	ı	1	
M84	e WIRE		16 15 14 13 12 11 10 32 31 30 29 28 27 26	olor of Wire	_	Ь	
Connector No.	Connector Name WIRE TO WIRE		H.S. 16 15 14 32 31 30	Terminal No. Wire	17	18	
		_					
	BODY CONTROL JLE)	111	157   168	Signal Name	BAT BCM FUSE		
M81	BCM (	r WHITE	137   136   135   134   142   14	color of Wire	8		
Connector No.	Connector Name BCM (BODY CONT MODULE)	Connector Color WHITE	高 H.S.	Terminal No. Wire	131		

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# **CVT CONTROL SYSTEM**

< WIRING DIAGRAM > [CVT: RE0F10J]

Connector No.   E45   Connector No.   E45   Connector Name JOINT CONNECTOR-E12   Connector Color   BLUE	Connector No.         E70           Connector Name         JOINT CONNECTOR-E15           Connector Color         BLACK           A.S.         (6 5 4 3 2 1)           Terminal No.         Color of Wire         Signal Name           1         P         -           2         P         -           2         P         -           2         L         L           2         L         -           2         L         -           2         L         -	Connector No.   F14   Connector No.   F14   Connector Name   Joint CONNECTOR-F01   Connector Name   Joint CONNECTOR-F01   Connector Color   BLACK   Signal Name   Terminal No.   Color of   Signal Name   Terminal Name   Te	A B C TM E F G H I J
ADDIA 1000CD	E45   JOINT CONNECTOR-E12	### TE TO WIRE  WHITE  ###################################	L M

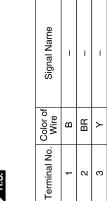
Revision: November 2015 TM-293 2016 Pathfinder

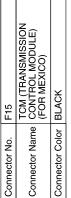
[CVT: RE0F10J]

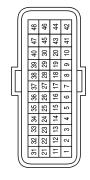
Signal Name	ı	CAN-H	OUTPUT SPEED SENS	PRI SPEED SENS	ı	SELECT SOL VALVE	TCC SOLE VALVE	SEC PRESS SOLE VALVE	PRI PRESS SOLE VALVE	GND	GND	I	1	BATT	BATT	VIGN	VIGN
Color of Wire	1	٦	BB	re	ı	BR	>	٦	>	В	В	-	-	FG	ГG	<b>\</b>	<b>&gt;</b>
Terminal No.	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48

Signal Name	SENSOR GND	CVT FLUID TEMP SENS	-	1	_	SEC PRESS SENS	PRI PRESS SENS	_	_	1	1	ı	CAN-L	INPUT SPEED SENS	-	SENS PWR SUPPLY	ı	-	-	LINE PRESS SOL VALVE	I
Color of Wire	Υ	LG	1	1	I	У	LG	ı	1	-	ı	_	Ь	ΓG	1	LG	1	-	-	SB	ı
Terminal No.	11	12	13	14	15	16	11	18	19	50	21	72	23	24	25	26	27	28	59	30	31

F23	Connector Name OUTPUT SPEED SENSOR	LACK	
Connector No.	Connector Name	Connector Color BLACK	







Signal Name	-	L RANGE SW	ı	D RANGE SW	N RANGE SW	R RANGE SW	P RANGE SW	I	-	ı
Color of Wire	1	SB	1	Υ	٦	BR	^	_	-	ı
Terminal No. Wire	-	2	က	4	5	9	7	8	6	10

Connector No.   F19	Connector Name POWER DISTRIBUTION MODULE ENGINE ROOM)	Connector Color WHITE	
Connector	Connector	Connector	

58 59 60 61	Signal Name	AT ECU
52 53 56 57	Color of Wire	>
	al No.	



Color of Wire	Υ	
Terminal No.	61	

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# **CVT CONTROL SYSTEM**

< WIRING DIAGRAM > [CVT: RE0F10J]

Connector No. F29 Connector Name INPUT SPEED SENSOR Connector Color BLACK  A.S.	Signal Name	F35 JOINT CONNECTOR-F02 BLACK 5 4 3 2 1 10 9 8 7 6	Signal Name
mme INPUT:	Color of Wire B B LG		Color of Wire V Y Y Y Y
Connector No. Connector Color Connector Color	Terminal No.	Connector No. Connector Color	Terminal No. 3 3 6 9 9 9 10 10 10 10 10 10 10 10 10 10 10 10 10
Connector No. F25 Connector Name PRIMARY SPEED SENSOR Connector Color BLACK  (3 2 1)	Terminal No. Color of Wire Signal Name  1 B	Connector No. F33 Connector Name WIRE TO WIRE Connector Color WHITE	Terminal No. Color of Signal Name  8 LG - 9 B -
Connector No. F24  IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)  Connector Color WHITE  Connector Color WHITE  EST ST S	Terminal No.         Color of Wire         Signal Name           63         L         INHIBIT SW           64         LG         START IG EGI           66         G         NP SW	Connector No. F32  Connector Name WIRE TO WIRE  Connector Color WHITE  M.S. R 7 6 5 4 3 2 1  16 15 14 13 12 11 10 9	Terminal No. Color of Signal Name 9 P – 10 L –

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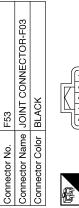
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[CVT: RE0F10J]

Signal Name	ı	-	I	I	-	ı	ı	ı
Color of Wire	<b>&gt;</b>	ГG	^	SB	٦	BR	_	g
Terminal No. Wire	2	4	5	9	7	8	6	10

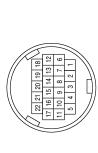




8 8 9 7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Signal Name	1	ı	ı	ı	ı	
	Color of Wire	В	В	В	В	В	۵
所 H.S.	Terminal No.	က	4	5	8	0	ç

Signal Name	ı	ı	1	1	1	1	ı	ı	ı	1	1	1	1	ı	I	1
Color of Wire	ı	-	_	1	_	ГG	LG	>	ı	1	I	٨	1	-	_	LG
Terminal No.	7	8	6	10	11	12	13	14	15	16	17	18	19	20	21	22

F46	VT UNIT	RAY	
Connector No. F.	Connector Name CVT UNIT	Connector Color GRAY	Ą



	Signal Name	_	-	_	_	-	ı
"	Color of Wire	SB	^	٦	BB	٨	1
	Terminal No. Color of Wire	ı	2	3	4	2	9

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## **CVT CONTROL SYSTEM**

< WIRING DIAGRAM >

Signal Name

Terminal No. Color of Wire

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Connector Name CONTROL VALVE

Connector Color

Connector No. | F207

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Signal Name

Color of Wire

Terminal No.

[CVT: RE0F10J] Α В Connector Name JOINT CONNECTOR-B09 Signal Name ı 
 4
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 2
 1
 Connector Color | WHITE Color of Wire Connector No. B11 TM Д ۵ Terminal No. Е N F G Signal Name Н Color of Wire ₽ 2 r D 1 > > ı 1 Terminal No. 9 Ξ 7 13 4 15 16 17 8 19 8 2 8 ω 6 13 4 J K Signal Name L 1 ı 13 14 15 16 17 7 8 9 10 11 1 2 3 4 5 M Connector Name CVT UNIT Connector Color BLACK Connector No. F209 Color of Wire BR g BB GR HH HH > 1 Ф m > Terminal No. က 2 9 Ø 4 2  $^{\circ}$ က 4

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[CVT: RE0F10J]

Connector No.   B17	Terminal No. Color of Signal Name  89A L - 90A P -
Connector No.   B16	Connector No.   B69
Connector No.   B12	Connector No.   B32   Connector Name   WIRE TO WIRE   Connector Color   WHITE   Connector Color   WHITE   Signal Name   Signal

## **CVT CONTROL SYSTEM**

< WIRING DIAGRAM > [CVT: RE0F10J]

		А
B103 JOINT CONNECTOR-B05 WHITE  Old   3   2   1   0   Tof Signal Name Feb		В
No. B103  Name JOINT CON  Color WHITE  (		TM
Connector Name Connector Color H.S.  1 Color 1 F		E
NNECTOR-B14  Signal Name		G
B102 JOINT CO WHITE Or of fire L L L		H
Connector Name Connector Color H.S.  Terminal No. Col  1		J
11 12 13 14 15 16 12 28 28 28 30 31 32 Name	WIRE    10   11   12   13   14   15   16   16   16   16   16   16   16	K
Connector No.   B101	WHITE  WHITE  WHITE  Or of fire	M
Connector No.  Connector Name Connector Color H.S. [1 2 3 17 18 19 19 17 18 19 19 17 18 19 18 18 18 18 18 18 18 18 18 18 18 18 18	Connector No.  Connector Name Connector Color  H.S. 17 18 19 18 L 19 F	N 0

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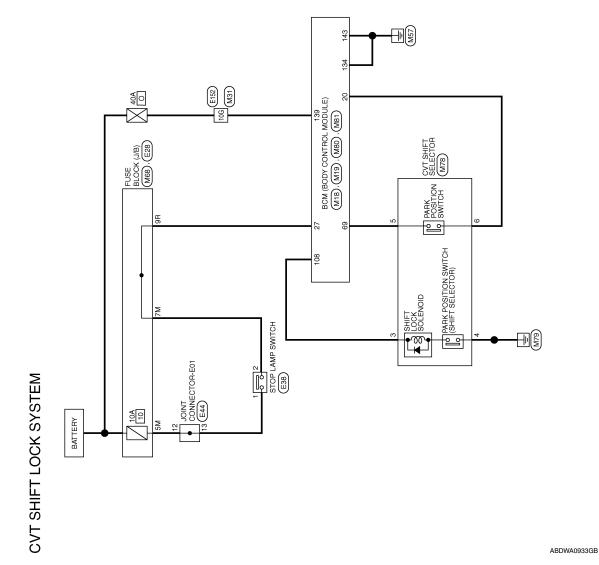
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Revision: November 2015 TM-299 2016 Pathfinder

< WIRING DIAGRAM > [CVT: RE0F10J]

# **CVT SHIFT LOCK SYSTEM**

Wiring diagram

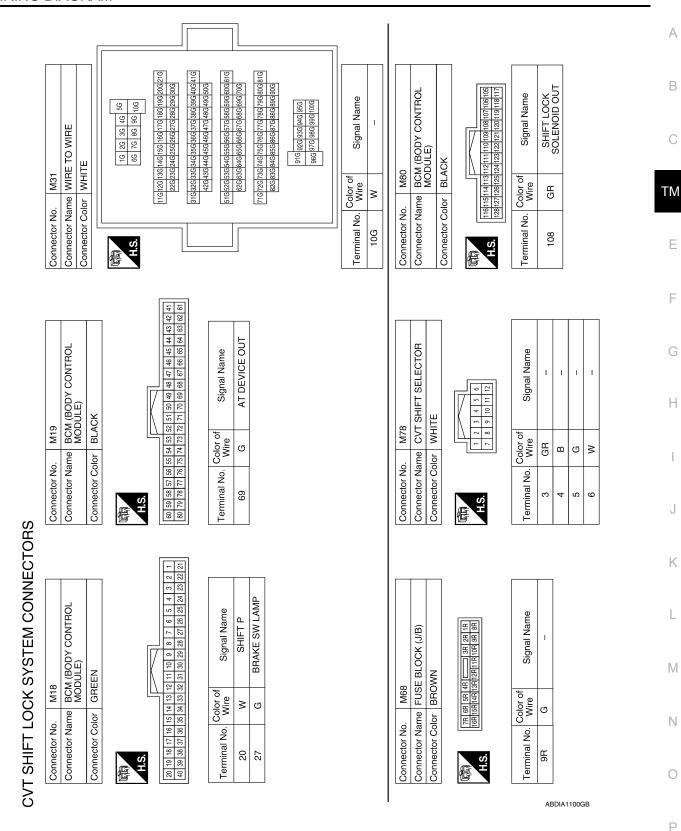


TM-300 2016 Pathfinder

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## **CVT SHIFT LOCK SYSTEM**

< WIRING DIAGRAM > [CVT: RE0F10J]



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# **CVT SHIFT LOCK SYSTEM**

< WIRING DIAGRAM > [CVT: RE0F10J]

	Connector No. E28 Connector Name FUSE BLOCK (J/B) Connector Color WHITE	Connector No. E38 Connector Name STOP LAMP SWITCH Connector Color WHITE
(Tatal 12 Int 140 IS IS	(新年) (4M 3M 2M 1M	(斯) (1 2 4 1 1 2 1 1 2 1 1 2 1 1 1 1 1 1 1 1
Terminal No.         Color of Wire         Signal Name           134         B         GND2           139         W         BAT POWER F/L           143         B         GND1	Terminal No. Color of Wire Signal Name  5M Y -	Terminal No. Color of Signal Name  1 Y
Connector No. E44  Connector Name JOINT CONNECTOR-E01  Connector Color WHITE  List 10 9 8 7 6 5 4 3 2 11  22 21 20 19 18 17 16 15 14 13 12  22 21 20 19 18 17 16 15 14 13 12  33 32 31 30 29 28 27 26 25 24 23  Terminal No. Wire Signal Name  12 Y	Connector No. E152 Connector Name WIRE TO WIRE Connector Color WHITE  56 44 36 26 16 100 90 80 76 66 100 90 80 76 66 100 90 80 76 66 100 90 80 76 66 100 90 80 76 66 100 90 80 76 66 100 90 80 76 66 100 90 80 76 66 100 90 80 76 66 100 90 80 76 66 100 90 80 77 660 100 90 80 80 77 660 100 80 80 80 77 660 100 80 80 80 77 660 100 80 80 80 80 76 60 80 80 80 80 80 80 80 80 80 80 80 80 80	Terminal No. Color of Signal Name

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DIAGNOSIS AND REPAIR WORK FLOW [CVT: RE0F10J] < BASIC INSPECTION > BASIC INSPECTION Α DIAGNOSIS AND REPAIR WORK FLOW Work Flow INFOID:0000000012552473 NOTE: "DTC" includes DTC at the 1st trip.  ${f 1}$  . OBTAIN INFORMATION ABOUT SYMPTOM Refer to TM-304, "Diagnostic Work Sheet" and interview the customer to obtain the malfunction information (conditions and environment when the malfunction occurred) as much as possible when the customer brings TM in the vehicle. >> GO TO 2. Е 2.CHECK DTC Before checking the malfunction, check whether any DTC exists. 2. If DTC exists, perform the following operations. Records the DTCs. (Print out using CONSULT and affix to the Work Order Sheet.) Erase DTCs. Check the relation between the cause found by DTC and the malfunction information from customer. TM-407, "Symptom Table" can be used effectively. 3. Check the relevant information including STI, etc. Do malfunction information and DTC exists? Н Malfunction information and DTC exists.>>GO TO 3. Malfunction information exists but no DTC.>>GO TO 4. No malfunction information, but DTC exists.>>GO TO 5.  $oldsymbol{3}.$ REPRODUCE MALFUCTION SYSTEM Check the malfunction described by the customer on the vehicle. Check if the behavior is fail safe or normal operation. Refer to TM-281, "Fail-safe". Interview sheet can be used effectively when reproduce malfunction conditions. Refer to TM-304, "Diagnostic Work Sheet". Verify the relationship between the symptom and the conditions in which the malfunction described by the customer occurs. >> GO TO 5. 4. REPRODUCE MALFUNCTION SYMPTOM Check the malfunction described by the customer on the vehicle. Check if the behavior is fail safe or normal operation. Refer to TM-281, "Fail-safe". Interview sheet can be used effectively when reproduce malfunction conditions. Refer to TM-304, "Diagnostic Work Sheet". Verify the relationship between the symptom and the conditions in which the malfunction described by the customer occurs. >> GO TO 6.  ${f 5}$  .PERFORM "DTC CONFIRMATION PROCEDURE" Perform "DTC CONFIRMATION PROCEDURE" of the appropriate DTC to check if DTC is detected again. Refer to TM-285, "DTC Inspection Priority Chart" when multiple DTCs are detected, and then determine the order for performing the diagnosis.

Is any DTC detected?
YES >> GO TO 7.

NO >> Follow GI-47, "Intermittent Incident" to check.

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

## **DIAGNOSIS AND REPAIR WORK FLOW**

< BASIC INSPECTION >

Use <u>TM-407</u>, "Symptom Table" from the symptom inspection result in step 4. Then identify where to start performing the diagnosis based on possible causes and symptoms.

>> GO TO 8.

# $7.\mathtt{REPAIR}$ OR REPLACE THE MALFUNCTIONING PARTS

Repair or replace the detected malfunctioning parts.

Reconnect parts or connector after repairing or replacing, and then erase DTC if necessary.

>> GO TO 8.

# 8. FINAL CHECK

Perform "DTC CONFIRMATION PROCEDURE" again to make sure that the repair is correctly performed. Check that malfunctions are not reproduced when obtaining the malfunction information from the customer, referring to the symptom inspection result in step 3 or 4.

## Is DTC or malfunction symptom reproduced?

YES-1 (DTC is reproduced.)>>GO TO 5.

YES-2 (Malfunction is reproduced.)>>GO TO 6.

NO >> Before delivering the vehicle to the customer, make sure that DTC is erased.

# Diagnostic Work Sheet

INFOID:0000000012552474

[CVT: RE0F10J]

## **DESCRIPTION**

There are many operating conditions that may cause a malfunction of the transmission parts. By understanding those conditions properly, a quick and exact diagnosis can be achieved.

In general, perception of a problem varies depending on individuals. Ask the customer about his/her concerns carefully. It is important to understand the phenomenon or status. To systemize all the information for the diagnosis, prepare the question sheet referring to the question points.

In some cases, multiple conditions that appear simultaneously may cause a DTC to be detected.

#### **KEY POINTS**

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

Symptoms

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## Worksheet Sample

			Question sheet		
Customer's	MR/MS	Registration number		Initial year registration	Year Month day
Harrie		Vehicle type		Chassis No.	
Storage date	Year Month day	Engine		Mileage	km/mile
Symptom		☐ Vehicle doe	es not start. (□ R position □	☐ D position ☐ L po	osition)
		☐ Upshifting of	does not occur.   Downs	shifting does not occu	r.
		☐ Lock-up ma	alfunction		
		☐ Shift point i	s too high. ☐ Shif	t point is too low.	
		☐ Shift shock	(□ N⇒D □ Lock-up □ F	R, D, and L position)	
		□ Slip (□ N⇒	D □ Lock-up □ R, D, an	d L position)	
		□ Noise	☐ Vibration		
		When selector	r lever position is shifted, shif	t pattern does not cha	inge.
		□ Other (			)
First occurrence	е	☐ Recently (a	s from month of year	)	
Frequency of c	ccurrence	☐ Always	☐ Under certain condition	s   Sometime	es ( time(s)/day)

## **DIAGNOSIS AND REPAIR WORK FLOW**

< BASIC INSPECTION > [CVT: RE0F10J]

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				Question s	sheet				
Customer's	1	MR/MS	Registration number				Initial year registration	Ye	ar Month day
name		•	Vehicle type				Chassis No.		
Storage date	Year	Month day	Engine				Mileage		km/mile
Climate con- ditions			Irrelevant						
	Weather		☐ Clear	☐ Cloud	□ Ra	in	□ Snow	☐ Others	)
	Temperature		□ Hot □	□ Warm	☐ Cool	☐ Col	d □ Temp	erature (Approx.	°C/°F)
	Relative humidity		☐ High	☐ Mode	erate	□ Low	I		
Transaxle condition ☐ In cold-start ☐ During warm-up (approx. °C/°F) ☐ Af ☐ Engine speed: rpm			) □ After warr	n-up					
Road conditio	ns		☐ Urban area☐ Mountainou		burb area hill or dowr	☐ Hig nhill)	hway		
Operating con	dition, etc.		Irrelevant  ☐ When enging  ☐ During according	eleration		onstant s	☐ During dr speed driving	riving □ During dece	eleration
Other conditio	ns								

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## ADDITIONAL SERVICE WHEN REPLACING TCM

< BASIC INSPECTION > [CVT: RE0F10J]

# ADDITIONAL SERVICE WHEN REPLACING TCM

Description INFOID:0000000012552475

Always perform the following items when the TCM is replaced.

SAVING AND WRITING OF TCM DATA

TCM performs accurate control by retrieving data (inherent characteristic value) of each solenoid. For this
reason, it is necessary to save data of current TCM in CONSULT before replacing the TCM. After this, the
saved data must be written in new TCM. Refer to TM-306, "Work Procedure".

Work Procedure

#### **CAUTION:**

When replacing TCM together with transaxle assembly, perform "ADDITIONAL SERVICE WHEN REPLACING TRANSAXLE ASSEMBLY". Refer to TM-307, "Description".

1. SAVE THE TCM DATA

#### NOTE:

Save necessary data stored in TCM in CONSULT according to the following instructions:

## (P)With CONSULT

- 1. Turn ignition switch OFF and wait for 10 seconds.
- Turn ignition switch ON.
- Select "Work Support" in "TRANSMISSION".
- Select "READ IP CHARA REPLACEMENT TCM".
- 5. Import data according to the instructions on the CONSULT screen.

>> GO TO 2.

# 2. REPLACE THE TCM

- 1. Turn ignition switch OFF and wait for 10 seconds.
- Replace the TCM. Refer to <u>TM-422</u>, "Removal and Installation".

>> GO TO 3.

# 3. WRITE THE TCM DATA

#### NOTE:

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

## (II) With CONSULT

- 1. Turn ignition switch OFF and wait for 10 seconds.
- Turn ignition switch ON.
- Select "Work Support" in "TRANSMISSION".
- Select "WRITE IP CHARA REPLACEMENT TCM".
- 5. Write data saved in CONSULT in TCM according to the instructions on the CONSULT screen.

>> WORK END

## ADDITIONAL SERVICE WHEN REPLACING TRANSAXLE ASSEMBLY

[CVT: RE0F10J] < BASIC INSPECTION >

# ADDITIONAL SERVICE WHEN REPLACING TRANSAXLE ASSEMBLY

Description INFOID:0000000012552477

Perform the following work after the transaxle assembly is replaced.

#### ERASING AND WRITING TCM DATA

 TCM performs accurate control by retrieving data (inherent characteristic value) of each solenoid. For this reason, after replacing transaxle assembly, it is necessary to erase data stored in TCM and write new data.

#### ERASING OF CVT FLUID DEGRADATION LEVEL DATA

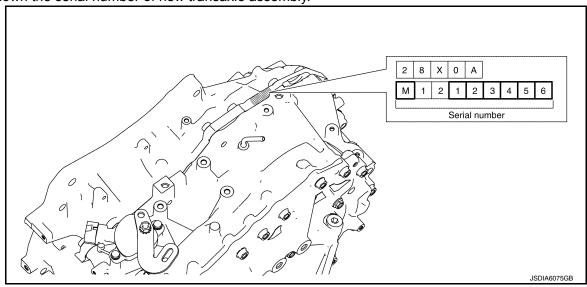
• TCM records the degradation level of the CVT fluid calculated from the vehicle driving status. Therefore, if the transaxle assembly is replaced, it is necessary to erase the CVT fluid degradation level data recorded by

Refer to TM-307, "Work Procedure".

Work Procedure INFOID:0000000012552478

# 1.CHECK THE SERIAL NUMBER (PART 1)

Write down the serial number of new transaxle assembly.



>> GO TO 2.

# 2.CHECK THE SERIAL NUMBER (PART 2)

#### (P)With CONSULT

- 1. Turn ignition switch ON.
- Insert the attached CD into CONSULT.
- Select "Work Support" in "TRANSMISSION"
- Select "WRITE IP CHARA REPLACEMENT AT/CVT".
- Check that the serial number displayed on CONSULT screen and those written in the memo agree. **CAUTION:**

## Never perform writing procedure.

Go back to MENU of "Work Support".

>> GO TO 3.

# 3. INITIALIZE TCM

## (P)With CONSULT

- Set parking brake.
- Select "ERASE MEMORY DATA".
- Touch "Start" according to the instructions on the CONSULT screen.

## Is "COMPLETED" displayed?

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## ADDITIONAL SERVICE WHEN REPLACING TRANSAXLE ASSEMBLY

< BASIC INSPECTION > [CVT: RE0F10J]

YES >> GO TO 4.

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

# 4. WRITE THE DATA

## NOTE:

Write data of new solenoid in TCM according to the following instructions:

#### (P)With CONSULT

- 1. Shift the selector lever to the P position.
- 2. Turn ignition switch OFF and wait for 10 seconds.
- 3. Turn ignition switch ON.
- 4. Select "Work Support" in "TRANSMISSION".
- 5. Select "WRITE IP CHARA REPLACEMENT AT/CVT".
- 6. Write data in TCM according to the instructions on the CONSULT screen.

## NOTE:

When writing is complete, the shift position indicator of the combination meter displays P.

>> GO TO 5.

# 5. ERASE CVT FLUID DEGRADATION LEVEL DATA

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

>> WORK END

# ADDITIONAL SERVICE WHEN REPLACING TCM AND TRANSAXLE ASSEM-

[CVT: RE0F10J] < BASIC INSPECTION >

# ADDITIONAL SERVICE WHEN REPLACING TCM AND TRANSAXLE AS-SEMBLY

Description INFOID:0000000012552479

When replacing TCM and transaxle assembly simultaneously, perform the following work.

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

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

#### WRITING TCM DATA

 TCM performs accurate control by retrieving data (inherent characteristic value) of each solenoid. For this reason, after replacing TCM and transaxle assembly, it is necessary to write new data in TCM. Refer to TM-309, "Work Procedure".

Work Procedure INFOID:0000000012552480

# 1. SAVE TCM DATA (VEHICLE SPECIFICATIONS)

## (P)With CONSULT

- Turn ignition switch OFF.
- Connect all of disconnected connectors.
- Turn ignition switch ON.
- Select "Re/programming, Configuration".
- Select "AT/CVT".

## NOTE:

If "AT/CVT" is not displayed and TCM data cannot be saved on CONSULT, GO TO 2.

- Select "Programming".
- Save TCM data on CONSULT according to the CONSULT display.

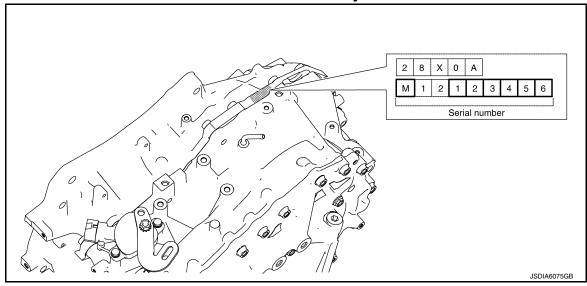
>> GO TO 2.

# 2.REPLACE TCM AND TRANSAXLE ASSEMBLY

- Turn ignition switch OFF and wait for 10 seconds.
- Replace TCM and transaxle assembly. Refer to TM-422, "Removal and Installation" (TCM), TM-444, "Removal and Installation" (Transaxle assembly).

#### CAUTION:

Write down the serial number of new transaxle assembly.



>> GO TO 3.

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# ADDITIONAL SERVICE WHEN REPLACING TCM AND TRANSAXLE ASSEMBLY

< BASIC INSPECTION > [CVT: RE0F10J]

# 3.write tcm data (vehicle specifications)

## NOTE:

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

## (P)With CONSULT

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

>> GO TO 4.

4. WRITE TCM DATA (IP CHARACTERISTICS VALUE)

#### NOTE

Write data of new solenoid in TCM according to the following instructions:

## (I) With CONSULT

#### **CAUTION:**

When the work is interrupted, obtain data again from the supplied CD.

- 1. Shift the selector lever to the P position.
- 2. Turn ignition switch OFF and wait for 10 seconds.
- 3. Turn ignition switch ON.
- Insert the supplied CD into CONSULT.
- 5. Select "Work Support" in "TRANSMISSION".
- Select "WRITE IP CHARA REPLACEMENT AT/CVT".
- 7. Check that the serial number displayed on CONSULT screen and those written in the memo agree.
- 8. Write data in TCM according to the instructions on the CONSULT screen.

#### NOTE:

When writing is complete, the shift position indicator of the combination meter displays P.

>> WORK END

## CVT FLUID COOLER SYSTEM

Cleaning INFOID:0000000012552481

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

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

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

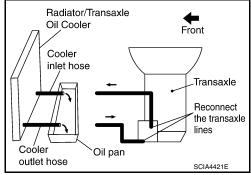
## CVT FLUID COOLER CLEANING PROCEDURE

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

#### NOTE:

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

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



[CVT: RE0F10J]

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Insert the extension adapter hose of a can of Transmission Cooler Cleaner into the cooler outlet hose.

## **CAUTION:**

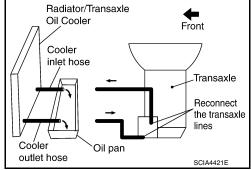
- Wear safety glasses and rubber gloves when spraying the **Transmission Cooler Cleaner.**
- · Spray Transmission Cooler Cleaner only with adequate ventilation.
- · Avoid contact with eyes and skin.
- Never breath vapors or spray mist.
- Hold the hose and can as high as possible and spray Transmission Cooler Cleaner in a continuous stream into the cooler outlet hose until CVT fluid flows out of the cooler inlet hose for 5 seconds.
- 7. Insert the tip of an air gun into the end of the cooler outlet hose.
- Wrap a shop rag around the air gun tip and end of the cooler outlet hose.
- 9. Blow compressed air regulated to 5 to 9 kg/cm<sup>2</sup> (70 to 130 psi) through the cooler outlet hose for 10 seconds to force out any remaining CVT fluid.
- 10. Repeat steps 5 through 9 three additional times.
- 11. Position an oil pan under the banjo bolts that connect the CVT fluid cooler steel lines to the transaxle.
- 12. Remove the banjo bolts.

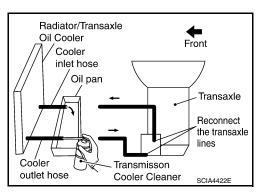
Revision: November 2015

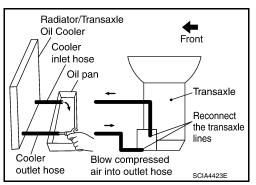
- 13. Flush each steel line from the cooler side back toward the transaxle by spraying Transmission Cooler Cleaner in a continuous stream for 5 seconds.
- 14. Blow compressed air regulated to 5 to 9 kg/cm<sup>2</sup> (70 to 130 psi) through each steel line from the cooler side back toward the transaxle for 10 seconds to force out any remaining CVT fluid.

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- 15. Ensure all debris is removed from the steel cooler lines.
- 16. Ensure all debris is removed from the banjo bolts and fittings.







2016 Pathfinder

< BASIC INSPECTION > [CVT: RE0F10J]

## 17. Perform "CVT FLUID COOLER DIAGNOSIS PROCEDURE".

## CVT FLUID COOLER DIAGNOSIS PROCEDURE

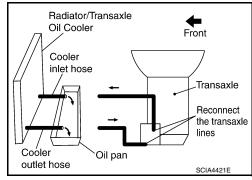
#### NOTE:

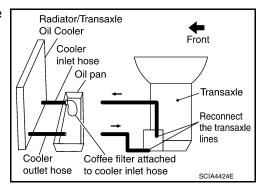
Insufficient cleaning of the cooler inlet hose exterior may lead to inaccurate debris identification.

- 1. Position an oil pan under the transaxle's inlet and outlet cooler hoses.
- 2. Clean the exterior and tip of the cooler inlet hose.
- 3. Insert the extension adapter hose of a can of Transmission Cooler Cleaner into the cooler outlet hose.

#### **CAUTION:**

- Wear safety glasses and rubber gloves when spraying the Transmission Cooler Cleaner.
- Spray Transmission Cooler Cleaner only with adequate ventilation.
- Avoid contact with eyes and skin.
- · Never breath vapors or spray mist.
- Hold the hose and can as high as possible and spray Transmission Cooler Cleaner in a continuous stream into the cooler outlet hose until CVT fluid flows out of the cooler inlet hose for 5 seconds.
- Tie a common white, basket-type coffee filter to the end of the cooler inlet hose.

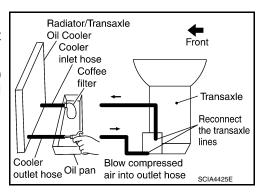


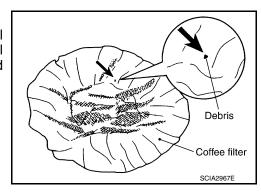


- 6. Insert the tip of an air gun into the end of the cooler outlet hose.
- 7. Wrap a shop rag around the air gun tip and end of cooler outlet hose.
- 8. Blow compressed air regulated to 5 to 9 kg/cm<sup>2</sup> (70 to 130 psi) through the cooler outlet hose to force any remaining CVT fluid into the coffee filter.
- 9. Remove the coffee filter from the end of the cooler inlet hose.
- 10. Perform "CVT FLUID COOLER INSPECTION PROCEDURE".

## CVT FLUID COOLER INSPECTION PROCEDURE

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

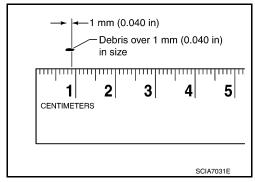




## **CVT FLUID COOLER SYSTEM**

< BASIC INSPECTION > [CVT: RE0F10J]

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



## CVT FLUID COOLER FINAL INSPECTION

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

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< BASIC INSPECTION > [CVT: RE0F10J]

## STALL TEST

Work Procedure

## **INSPECTION**

- 1. Check the engine oil level. Replenish if necessary. Refer to <u>LU-8</u>. "Inspection".
- 2. Check for leak of the CVT fluid. Refer to TM-412, "Inspection".
- 3. Drive for about 10 minutes to warm up the vehicle so that the CVT fluid temperature is 50 to 80°C (122 to 176°F).
- 4. Be sure to apply the parking brake and block the tires.
- 5. Start the engine, depress the brake pedal and shift the selector lever to "D" position.
- 6. While depressing the brake pedal, depress the accelerator pedal gradually.
- 7. Read the stall speed quickly and release your foot from the accelerator pedal quickly.

#### **CAUTION:**

Do not depress the accelerator pedal for 5 seconds or more during the test.

## Stall speed : Refer to TM-449, "Stall Speed".

- 8. Shift the selector lever to "N" position.
- 9. Cool the CVT fluid.

#### **CAUTION:**

Run the engine with the idle speed for at least 1 minute.

10. Put the selector lever to the R position and perform Step 6 to Step 9 again.

#### NARROWING-DOWN MALFUNCTIONING PARTS

	Selector le	ver position	Possible cause		
	D	R	Possible cause		
	Н	0	Forward clutch		
	0	Н	Reverse brake		
Stall speed	L	L	Engine     Torque converter one way clutch		
	Н	Н	Line pressure is low.     Primary pulley     Secondary pulley     Chain belt		

O: Within the stall speed standard value.

H: Stall speed is higher than the standard value.

L: Stall speed is lower than the standard value.

## CVT POSITION

# Inspection and Adjustment

INFOID:0000000012552483

[CVT: RE0F10J]

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## INSPECTION

- 1. Turn ON the ignition switch with the shift selector at the "P" position.
- Press the shift selector button with the brake pedal depressed, and confirm that the shift selector can be
  moved to positions other than "P". Also confirm that movement is not allowed from the "P" position to other
  position without depressing the brake pedal.
- 3. Move the shift selector and check for "excessive effort", "sticking", "noise" or "rattle".
- 4. Confirm that shift selector stops at each position with the feel of engagement when it is moved through all the positions. Check whether or not the actual position the shift selector is in matches the position shown by the transaxle body.
- 5. Make sure that the shift selector is moved to all the shift positions in the manner shown.
  - (A): Press shift selector button to operate shift selector, while depressing the brake pedal.
  - (B): Press shift selector button to operate shift selector.
  - (C): Shift selector can be operated without pressing the shift selector button.
- 6. When the shift selector button is pressed without applying forward/backward force to the shift selector at "P", "R", "N", "D" or "Ds" positions, there should be no "sticking" on the shift selector button operation.
- 7. Check that the back-up lamps do not illuminate when the shift selector is in the "P" position.
- 8. Check that the engine can be started with the shift selector in the "P" and "N" positions only.
- 9. Check that the transaxle is locked completely when the shift selector is in the "P" position.

## **ADJUSTMENT**

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

## **CAUTION:**

Rotate the wheels at least a quarter turn and be certain the Park position mechanism is fully engaged.

Loosen control cable nut (A) and set manual lever (B) to the "P" position.

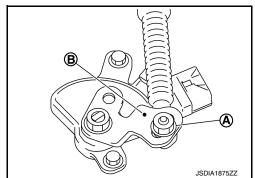
#### **CAUTION:**

Do not apply force to the manual lever.

3. Tighten control cable nut to the specified torque. Refer to <u>TM-418</u>, "Exploded View".

## **CAUTION:**

Hold the manual lever securely in the "P" position when tightening control cable nut.



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## **HOW TO ERASE PERMANENT DTC**

< BASIC INSPECTION > [CVT: RE0F10J]

# **HOW TO ERASE PERMANENT DTC**

Description INFOID:000000013296853

Permanent DTC can be erased by driving each driving pattern.

ECM recognizes each driving pattern; it transmits signals to each control module when the driving is complete. Each control module erases permanent DTC based on those signals. For details, refer to <a href="EC-174">EC-174</a>, "Description".

## **U0073 COMMUNICATION BUS A OFF**

< DTC/CIRCUIT DIAGNOSIS >

# DTC/CIRCUIT DIAGNOSIS

# U0073 COMMUNICATION BUS A OFF

DTC Logic

## DTC DETECTION LOGIC

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

DTC CONFIRMATION PROCEDURE

# 1. PREPARATION BEFORE WORK

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

>> GO TO 2.

# 2. PERFORM DTC CONFIRMATION PROCEDURE

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

#### Is "U0073" detected?

YES >> Go to TM-317, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

For the diagnosis procedure, refer to LAN-21, "Trouble Diagnosis Flow Chart".

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# **U0100 LOST COMMUNICATION (ECM A)**

< DTC/CIRCUIT DIAGNOSIS >

# U0100 LOST COMMUNICATION (ECM A)

DTC Logic

## DTC DETECTION LOGIC

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

## DTC CONFIRMATION PROCEDURE

# 1. PREPARATION BEFORE WORK

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

>> GO TO 2.

# 2. PERFORM DTC CONFIRMATION PROCEDURE

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

## Is "U0100" detected?

YES >> Go to TM-318, "Diagnosis Procedure".

NO >> INSPECTION END

# Diagnosis Procedure

For the diagnosis procedure, refer to LAN-21, "Trouble Diagnosis Flow Chart".

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# **U0102 LOST COMMUNICATION (TRANSFER)**

## < DTC/CIRCUIT DIAGNOSIS >

# U0102 LOST COMMUNICATION (TRANSFER)

DTC Logic

## DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
U0140	LOST COMM (TRANSFER) (Lost Communication With Transfer Case Control Mod- ule)	When the ignition switch is ON, TCM is unable to receive the CAN communications signal from 4WD control unit continuously for 2 seconds or more.	4WD control unit     Harness or connector     (CAN communication line is open or shorted)

## DTC CONFIRMATION PROCEDURE

# 1. PREPARATION BEFORE WORK

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

>> GO TO 2.

# 2. PERFORM DTC CONFIRMATION PROCEDURE

## (P)With CONSULT

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

## Is "U0102" detected?

YES >> Go to TM-319, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

For the diagnosis procedure, refer to LAN-21, "Trouble Diagnosis Flow Chart".

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# **U0140 LOST COMMUNICATION (BCM)**

< DTC/CIRCUIT DIAGNOSIS >

# U0140 LOST COMMUNICATION (BCM)

DTC Logic

## DTC DETECTION LOGIC

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

## DTC CONFIRMATION PROCEDURE

# 1. PREPARATION BEFORE WORK

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

>> GO TO 2.

# 2. PERFORM DTC CONFIRMATION PROCEDURE

## (P)With CONSULT

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

## Is "U0140" detected?

YES >> Go to TM-320, "Diagnosis Procedure".

NO >> INSPECTION END

# Diagnosis Procedure

For the diagnosis procedure, refer to LAN-21, "Trouble Diagnosis Flow Chart".

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[CVT: RE0F10J]

# **U0141 LOST COMMUNICATION (BCM A)**

## < DTC/CIRCUIT DIAGNOSIS >

# U0141 LOST COMMUNICATION (BCM A)

DTC Logic

## DTC DETECTION LOGIC

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

## DTC CONFIRMATION PROCEDURE

# 1. PREPARATION BEFORE WORK

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

>> GO TO 2.

# 2. PERFORM DTC CONFIRMATION PROCEDURE

## (P)With CONSULT

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

## Is "U0141" detected?

YES >> Go to TM-321, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

For the diagnosis procedure, refer to LAN-21, "Trouble Diagnosis Flow Chart".

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# **U0155 LOST COMMUNICATION (IPC)**

< DTC/CIRCUIT DIAGNOSIS >

# U0155 LOST COMMUNICATION (IPC)

DTC Logic

## DTC DETECTION LOGIC

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

## DTC CONFIRMATION PROCEDURE

# 1. PREPARATION BEFORE WORK

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

>> GO TO 2.

# 2. PERFORM DTC CONFIRMATION PROCEDURE

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

## Is "U0155" detected?

YES >> Go to TM-322, "Diagnosis Procedure".

NO >> INSPECTION END

# Diagnosis Procedure

For the diagnosis procedure, refer to LAN-21, "Trouble Diagnosis Flow Chart".

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## **U0300 CAN COMMUNICATION DATA**

< DTC/CIRCUIT DIAGNOSIS >

# U0300 CAN COMMUNICATION DATA

DTC Logic INFOID:0000000012552496

## DTC DETECTION LOGIC

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

## DTC CONFIRMATION PROCEDURE

# 1. PREPARATION BEFORE WORK

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

>> GO TO 2.

# 2.check dtc detection

# (P)With CONSULT

Start the engine and wait for 5 seconds or more.

Check the DTC.

## Is "U0300" detected?

YES >> Go to TM-323, "Diagnosis Procedure".

>> INSPECTION END NO

# Diagnosis Procedure

1. CONTROL UNIT CHECK Check the number of control units replaced before "U0300" is detected.

## Is one control unit replaced?

>> The specification of the control unit replaced may be incorrect. Check the part number and the YES specification.

NO >> GO TO 2.

# 2.control unit check

#### (P)With CONSULT

- Remove one of the control unit replaced.
- Assemble the old control unit before replacement.
- Turn ignition switch ON, and wait for 2 seconds or more.
- Select "Self Diagnostic Results" in "TRANSMISSION".

#### Is "U0300" detected?

YES >> Turn OFF the ignition switch and check other control units in the same manner.

NO >> The specification of the control unit removed may be incorrect. Check the part number and the specification.

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## **U1000 CAN COMM CIRCUIT**

< DTC/CIRCUIT DIAGNOSIS >

## U1000 CAN COMM CIRCUIT

Description INFOID:000000012552498

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

DTC Logic

#### DTC DETECTION LOGIC

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

## DTC CONFIRMATION PROCEDURE

## 1. PREPARATION BEFORE WORK

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

>> GO TO 2.

# 2. CHECK DTC DETECTION

## (P)With CONSULT

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

#### Is "U1000" detected?

YES >> Go to TM-324, "Diagnosis Procedure".

NO >> INSPECTION END

# Diagnosis Procedure

For the diagnosis procedure, refer to LAN-21, "Trouble Diagnosis Flow Chart".

INFOID:0000000012552500

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# **U1117 LOST COMMUNICATION (ABS)**

< DTC/CIRCUIT DIAGNOSIS >

# U1117 LOST COMMUNICATION (ABS)

DTC Logic

## DTC DETECTION LOGIC

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

# DTC CONFIRMATION PROCEDURE

# 1. PREPARATION BEFORE WORK

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

>> GO TO 2.

# 2. PERFORM DTC CONFIRMATION PROCEDURE

### (P)With CONSULT

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

#### Is "U1117" detected?

YES >> Go to TM-325, "Diagnosis Procedure".

NO >> INSPECTION END

# Diagnosis Procedure

For the diagnosis procedure, refer to LAN-21, "Trouble Diagnosis Flow Chart".

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## P062F EEPROM

## P062F EEPROM

Description INFOID:000000012552503

TCM compares the calculated value stored in the flash ROM with the value stored in TCM. If the calculated value does not agree with the stored value, TCM judges this as a malfunction.

DTC Logic

## DTC DETECTION LOGIC

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

### DTC CONFIRMATION PROCEDURE

# 1.PREPARATION BEFORE WORK

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

>> GO TO 2.

# 2. CHECK DTC DETECTION

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

#### Is "P062F" detected?

YES >> Go to TM-326, "Diagnosis Procedure".

NO >> INSPECTION END

# Diagnosis Procedure

INFOID:0000000012552505

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# 1. CHECK INTERMITTENT INCIDNT

Refer to GI-47, "Intermittent Incident".

### Is the inspection result normal?

YES >> Replace the TCM. Refer to TM-422, "Removal and Installation".

NO >> Repair or replace malfunctioning parts.

< DTC/CIRCUIT DIAGNOSIS >

# P0705 TRANSMISSION RANGE SENSOR A

DTC Logic INFOID:0000000012552506

#### DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P0705	T/M RANGE SENSOR A [Transmission Range Sensor A Circuit (PRNDL Input)]	<ul> <li>When all of the following conditions are satisfied and this state is maintained for 2 seconds:</li> <li>Two or more range signals simultaneously stay ON continuously</li> <li>TCM power supply voltage: More than 11 V</li> </ul>	Harness or connector     (Short circuit between transmission range switch and TCM)     Transmission range switch

# DTC CONFIRMATION PROCEDURE

# 1. PREPARATION BEFORE WORK

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

>> GO TO 2.

# 2.check dtc detection

Turn ignition switch ON.

- Shift the selector lever through entire positions from "P" to "L". (Hold the selector lever at each position for 5 seconds or more.)
- Check the first trip DTC.

#### Is "P0705" detected?

YES >> Go to TM-327, "Diagnosis Procedure".

NO >> INSPECTION END

# Diagnosis Procedure

# CHECK TCM INPUT SIGNALS

#### (P)With CONSULT

- Turn ignition switch ON.
- Select "Data Monitor" in "TRANSMISSION".
- Select "D POSITION SW", "N POSITION SW", "R POSITION SW", "P POSITION SW" and "L RANGE SW".
- Shift the selector lever through entire positions from "P" to "L" and check ON/OFF of each monitor item.

Monitor item	Condition	Condition
D POSITION SW	Selector lever: "D" position	On
D FOSITION SW	Other than the above	Off
N POSITION SW	Selector lever: "N" position	On
N FOSITION SW	Other than the above	Off
R POSITION SW	Selector lever: "R" position	On
KT OSITION SW	Other than the above	Off
P POSITION SW	Selector lever: "P" position	On
F FOSITION SW	Other than the above	Off
L POSITION SW	Selector lever: "L" position	On
LI COITION SW	Other than the above	Off

### **♥Without CONSULT**

- Turn ignition switch OFF.
- Disconnect TCM connector.

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### < DTC/CIRCUIT DIAGNOSIS >

- Turn ignition switch ON.
- 4. Shift the selector lever from "P" to "L" and check voltage between TCM harness connector terminals and ground.

+ TCM			Condition	Voltago	
			Condition	Voltage	
Connector	Terminal				
	2		Selector lever: "L" position	10 – 16 V	
	2		Other than the above	Approx. 0 V	
	4	Ground	Selector lever: "D" position	10 – 16 V	
			Other than the above	Approx. 0 V	
F89	5		Selector lever: "N" position	10 – 16 V	
1 09			Other than the above	Approx. 0 V	
	6		Selector lever: "R" position	10 – 16 V	
			Other than the above	Approx. 0 V	
	7		Selector lever: "P" position	10 – 16 V	
	,		Other than the above	Approx. 0 V	

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-47, "Intermittent Incident".

NO-1 ["D POSITION SW" is "ON" when selector is not in "D" position. (Or connector terminal 4 is at power voltage.)]>>GO TO 2.

NO-2 ["N POSITION SW" is "ON" when selector is not in "N" position. (Or connector terminal 5 is at power voltage.)]>>GO TO 4.

NO-3 ["R POSITION SW" is "ON" when selector is not in "R" position. (Or connector terminal 6 is at power voltage.)]>>GO TO 6.

NO-4 ["P POSITION SW" is "ON" when selector is not in "P" position. (Or connector terminal 7 is at power voltage.)]>>GO TO 8.

NO-5 ["L POSITION SW" is "ON" when selector is not in "L" position. (Or connector terminal 2 is at power voltage.)]>>GO TO 10.

# 2. CHECK D POSITION SW CIRCUIT (PART 1)

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

	Continuity		
Connector	Terr	minal	Continuity
	4	2	Not existed
F89		5	
F09		6	Not existed
		7	

## Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace malfunctioning parts.

## 3. CHECK D POSITION SW CIRCUIT (PART 2)

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

#### < DTC/CIRCUIT DIAGNOSIS >

	+		\/altaaa
TO	CM	_	Voltage (Approx.)
Connector Terminal			
F89	4	Ground	0 V

### Is the inspection result normal?

YES >> GO TO 12.

NO >> Repair or replace malfunctioning parts.

# 4. CHECK N POSITION SW CIRCUIT (PART 1)

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

	Continuity		
Connector	Terr	ninal	Continuity
		2	
F89	5	4	Not existed
1 09	5	6	Not existed
		7	

#### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace malfunctioning parts.

# 5.CHECK N POSITION SW CIRCUIT (PART 2)

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

	+		Voltage (Approx.)
TO	CM		
Connector Terminal			(
F89	5	Ground	0 V

### Is the inspection result normal?

YES >> GO TO 12.

NO >> Repair or replace malfunctioning parts.

# 6. CHECK P POSITION SW CIRCUIT (PART 1)

- Turn ignition switch OFF.
- Disconnect TCM connector.
- Check continuity between TCM harness connector terminals.

	Continuity		
Connector	Terminal		Continuity
	7	2	Not existed
F89		4	
F09		5	Not existed
		6	

#### Is the inspection result normal?

YES >> GO TO 7.

NO >> Repair or replace malfunctioning parts.

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## < DTC/CIRCUIT DIAGNOSIS >

# $\overline{7}$ . CHECK P POSITION SW CIRCUIT (PART 2)

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

	+		) / - I (
TO	CM		Voltage (Approx.)
Connector Terminal			, , ,
F89	7	Ground	0 V

#### Is the inspection result normal?

YES >> GO TO 12.

NO >> Repair or replace malfunctioning parts.

# 8. CHECK R POSITION SW CIRCUIT (PART1)

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

	Continuity		
Connector	Terr	minal	Continuity
	6	2	Not existed
F89		4	
109		5	Not existed
		7	

#### Is the inspection result normal?

YES >> GO TO 9.

NO >> Repair or replace malfunctioning parts.

# 9. CHECK R POSITION SW CIRCUIT (PART 2)

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

+ TCM			Voltage (Approx.)
		_	
Connector	Connector Terminal		, , ,
F89	6	Ground	0 V

#### Is the inspection result normal?

YES >> GO TO 12.

NO >> Repair or replace malfunctioning parts.

# 10. CHECK L POSITION SWITCH CIRCUIT (PART 1)

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

#### < DTC/CIRCUIT DIAGNOSIS >

 TCM
 Continuity

 Connector
 Terminal
 4
 5
 Not existed

 F89
 2
 6
 7
 Not existed

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#### Is the inspection result normal?

YES >> GO TO 11.

NO >> Repair or replace malfunctioning parts.

# 11. CHECK L POSITION SWITCH CIRCUIT (PART 2)

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

+ TCM Connector Terminal			Voltage (Approx.)
		_	
			, , ,
F89	2	Ground	0 V

#### Is the inspection result normal?

YES >> GO TO 12.

NO >> Repair or replace malfunctioning parts.

# 12. CHECK TRANSMISSION RANGE SWITCH

Check transmission range switch. Refer to TM-331, "Component Inspection".

#### Is the check result normal?

YES >> Check intermittent incident. Refer to GI-47, "Intermittent Incident".

NO >> Repair or replace malfunctioning parts.

# Component Inspection

Transmission range switch

# 1. CHECK TRANSMISSION RANGE SWITCH

Check continuity between transmission range switch connector terminals.

Transmission range switch	Condition	Continuity
Terminal	Condition	Continuity
7 – 10	Manual lever: "P" and "N" positions	Existed
7 – 10	Other than the above	Not existed
4 – 5	Manual lever: "P" position	Existed
4-5	Other than the above	Not existed
4 – 8	Manual lever: "R" position	Existed
4-0	Other than the above	Not existed
4 – 9	Manual lever: "N position	Existed
4-9	Other than the above	Not existed
4 – 2	Manual lever: "D" position	Existed
4-2	Other than the above	Not existed
4 – 6	Manual lever: "L" position	Existed
4-0	Other than the above	Not existed

#### Is the inspection result normal?

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YES >> INSPECTION END

NO >> There is a malfunction of transmission range switch. Replace transaxle assembly. Refer to TM-444. "Removal and Installation".

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< DTC/CIRCUIT DIAGNOSIS >

## P0706 TRANSMISSION RANGE SENSOR A

DTC Logic

#### DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P0706	T/M RANGE SENSOR A (Transmission Range Sensor A Circuit Range/Performance)	When all of the following conditions are satisfied and this state is maintained for 30 seconds:  • All range signals stay OFF  • TCM power supply voltage: More than 11 V	Harness or connector     (Open circuit between ignition switch and transmission range switch/open circuit between transmission range switch and TCM)     Transmission range switch     Control cable

### DTC CONFIRMATION PROCEDURE

# 1. PREPARATION BEFORE WORK

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

>> GO TO 2.

# 2.PERFORM DTC CONFIRMATION PROCEDURE

- 1. Turn ignition switch ON.
- 2. Shift the selector lever through entire positions from "P" to "L". (Hold the selector lever at each position for 40 seconds or more.)
- Check the first trip DTC.

### Is "P0706" detected?

YES >> Go to TM-333, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

#### 1.ADJUSTMENT OF CONTROL CABLE

Adjust control cable. Refer to TM-315, "Inspection and Adjustment".

>> GO TO 2.

# 2.PERFORM DTC CONFIRMATION PROCEDURE

## (P)With CONSULT

- 1. Turn ignition switch ON.
- Select "Self Diagnostic Results" in "TRANSMISSION".
- Touch "Erase".
- Perform "DTC CONFIRMATION PROCEDURE". Refer to TM-333, "DTC Logic".

#### Is "P0706" detected?

YES >> GO TO 3.

NO >> INSPECTION END

# 3. CHECK POWER CIRCUIT

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

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#### < DTC/CIRCUIT DIAGNOSIS >

+ Transmission range switch - Voltage

Connector Terminal

F36 4 Ground 10 – 16 V

#### Is the inspection result normal?

YES >> GO TO 4.

NO >> GO TO 7.

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

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

Transmission	range switch	TCM		Continuity
Connector	Terminal	Connector	Terminal	Continuity
	2		4	
	5		7	
F36	6	F89	2	Existed
	8		6	
	9		5	•

#### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace malfunctioning parts.

# ${f 5}.$ CHECK CIRCUIT BETWEEN TRANSMISSION RANGE SWITCH AND TCM (PART 2)

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

Transmission range switch			Continuity
Connector	Terminal	_	Continuity
	2		
F36	5		
	6	Ground Not exis	Not existed
	8		
	9		

#### Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace malfunctioning parts.

#### 6.CHECK TRANSMISSION RANGE SWITCH

Check transmission range switch. Refer to TM-335, "Component Inspection".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-47, "Intermittent Incident".

NO >> Repair or replace malfunctioning parts.

## /.DETECT MALFUNCTIONING ITEMS

### Check the following items:

- Open circuit or short circuit in harness between ignition switch and IPDM E/R. Refer to PG-28, "Wiring Diagram IGNITION POWER SUPPLY -".
- Open circuit or short circuit in harness between IPDM E/R harness connector terminal 64 and transmission range switch harness connector terminal 4.

### < DTC/CIRCUIT DIAGNOSIS >

[CVT: RE0F10J]

• 10A fuse (No. 48, located in the IPDM E/R). Refer to PG-83, "IPDM E/R Terminal Arrangement".

IPDM E/R

#### Is the check result normal?

YES >> Check intermittent incident. Refer to GI-47, "Intermittent Incident".

NO >> Repair or replace malfunctioning parts.

# Component Inspection

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# 1. CHECK TRANSMISSION RANGE SWITCH

Check continuity between transmission range switch connector terminals.

Transmission range switch	Condition	Continuity	
Terminal	Condition	Continuity	
7 – 10	Manual lever: "P" and "N" positions	Existed	
7 – 10	Other than the above	Not existed	
4 – 5	Manual lever: "P" position	Existed	
4 – 5	Other than the above	Not existed	
4 – 8	Manual lever: "R" position	Existed	
4 – 8	Other than the above	Not existed	
4 – 9	Manual lever: "N position	Existed	
4 – 9	Other than the above	Not existed	
4 – 2	Manual lever: "D" position	Existed	
4-2	Other than the above	Not existed	
4 – 6	Manual lever: "L" position	Existed	
4 – 0	Other than the above	Not existed	

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> There is a malfunction of transmission range switch. Replace transaxle assembly. Refer to <u>TM-444</u>, "Removal and Installation".

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## P0711 TRANSMISSION FLUID TEMPERATURE SENSOR A

[CVT: RE0F10J]

< DTC/CIRCUIT DIAGNOSIS >

# P0711 TRANSMISSION FLUID TEMPERATURE SENSOR A

DTC Logic

#### DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P0711	FLUID TEMP SENSOR A (Transmission Fluid Temperature Sensor A Circuit Range/Performance)	<ol> <li>When any of 1 or 2 is satisfied:</li> <li>Under the following diagnosis conditions, CVT fluid temperature does not rise to 10°C (50°F) after driving for a certain period of time with the TCM-received fluid temperature sensor value between – 40°C (-40°F) and 9°C (48.2°F).</li> <li>TCM power supply voltage: More than 11 V</li> <li>CAN communication is normal</li> <li>Engine speed: 450 rpm or more</li> <li>Accelerator pedal position: 3 deg. or more</li> <li>Vehicle speed: 10 km/h (7 MPH) or more</li> <li>U0100, P0705 and P0706 are not detected.</li> <li>Selector lever: "D" position</li> <li>When the condition of the final judgment is satisfied after satisfying that of the provisional judgment:</li> <li>Provisional judgment: All of the following conditions are satisfied within 2 seconds after the ignition switch is turned ON.</li> <li>U0073, U0100, P0712 and P0713 are not detected.</li> <li>CAN communication is normal.</li> <li>TCM power supply voltage: More than 11 V</li> <li>The difference between CVT fluid temperature and engine coolant temperature is 55°C (131°F) or more, or -27°C (-16°F) or less.</li> <li>Final judgment: When all of the following conditions are satisfied and this state is maintained for 300 seconds:</li> <li>ECM is normal.</li> <li>Provisional judgment is satisfied.</li> </ol>	CVT fluid temperature sensor

### DTC CONFIRMATION PROCEDURE

#### **CAUTION:**

Always drive vehicle at a safe speed.

1.PREPARATION BEFORE WORK

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

>> GO TO 2.

# 2. PERFORM DTC CONFIRMATION PROCEDURE

## **With CONSULT**

- 1. Turn ignition switch OFF and cool the engine.
- Turn ignition switch ON.

### **CAUTION:**

## Never start the engine.

- 3. Select "Data Monitor" in "TRANSMISSION".
- 4. Select "FLUID TEMP".
- 5. Record CVT fluid temperature.
- Start the engine and wait for at least 2 minutes.
- Drive the vehicle for the total minutes specified in the Driving time column below with the following conditions satisfied.

## P0711 TRANSMISSION FLUID TEMPERATURE SENSOR A

## < DTC/CIRCUIT DIAGNOSIS >

Selector lever : "D" position Accelerator pedal position : 1.0/8 or more

Vehicle speed : 10 km/h (7 MPH) or more

CVT fluid temperature before engine start	Driving time
-40°C (-40°F)31°C (-23.8°F)	20 minutes or more
-30°C (-22°F) − -21°C (-5.8°F)	18 minutes or more
–20°C (–4°F) – −11°C (–12.2°F)	14 minutes or more
-10°C (14°F)1°C (30.2°F)	10 minutes or more
0°C (32°F) – 9°C (48.2°F)	7 minutes or more
Other than the above	(Go to 3.)

Stop the vehicle.

Check the first trip DTC. 9.

### With GST

Turn ignition switch OFF and cool the engine.

Start the engine and wait for at least 2 minutes.

Drive the vehicle and maintain the following conditions for 20 minutes or more.

Selector lever : "D" position Accelerator pedal position : 1.0/8 or more

Vehicle speed : 10 km/h (7 MPH) or more

Stop the vehicle.

Check the first trip DTC.

#### Is "P0711" detected?

YES >> Go to TM-337, "Diagnosis Procedure".

NO >> GO TO 3.

# 3.CHECK CVT FLUID TEMPERATURE SENSOR

1. Turn ignition switch OFF.

Disconnect CVT unit connector.

Check resistance between CVT unit connector terminals.

CVT unit	Condition	Resistance (Approx.)
Terminal	Condition	
	CVT fluid temperature: 20°C (68°F)	6.5 kΩ
12 – 18	CVT fluid temperature: 50°C (122°F)	2.2 kΩ
	CVT fluid temperature: 80°C (176°F)	0.87 kΩ

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> There is a malfunction of CVT fluid temperature sensor. Replace transaxle assembly. Refer to TM-444, "Removal and Installation".

## Diagnosis Procedure

# 1. CHECK CVT FLUID TEMPERATURE SENSOR

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

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## P0711 TRANSMISSION FLUID TEMPERATURE SENSOR A

[CVT: RE0F10J]

< DTC/CIRCUIT DIAGNOSIS >

CV	Γunit	Condition	Resistance
Connector	Terminal	Condition	(Approx.)
		CVT fluid temperature: 20°C (68°F)	6.5 kΩ
F209	12 – 18	CVT fluid temperature: 50°C (122°F)	2.2 kΩ
		CVT fluid temperature: 80°C (176°F)	0.87 kΩ

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Replace transaxle assembly. Refer to TM-444, "Removal and Installation"

2. CHECK CIRCUIT BETWEEN TCM AND CVT UNIT (CVT FLUID TEMPERATURE SENSOR) (PART 1)

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

TO	CM	CVT unit		Continuity
Connector	Terminal	Connector	Terminal	Continuity
F89	11	F46	18	Existed
1 09	12	140	12	LAISIEU

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace damaged parts.

3. CHECK CIRCUIT BETWEEN TCM AND CVT UNIT (CVT FLUID TEMPERATURE SENSOR) (PART 2)

Check continuity between TCM harness connector terminals and ground.

TCM		Ground	Continuity
Connector Terminal		Ground	Continuity
F89	11	Ground	Not existed
1 09	12	Ground	Not existed

## Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-47, "Intermittent Incident".

NO >> Repair or replace damaged parts.

## P0712 TRANSMISSION FLUID TEMPERATURE SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

# P0712 TRANSMISSION FLUID TEMPERATURE SENSOR A

DTC Logic

#### DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P0712	FLUID TEMP SENSOR A (Transmission Fluid Tempera- ture Sensor A Circuit Low)	When all of the following conditions are satisfied and this state is maintained for 5 seconds:  TCM power supply voltage: More than 11 V Fluid temperature sensor detection voltage: 0.15 V or less	Harness or connector     (CVT fluid temperature sensor circuit is shorted to ground)     CVT fluid temperature sensor

## DTC CONFIRMATION PROCEDURE

# 1.PREPARATION BEFORE WORK

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

>> GO TO 2.

# 2. PERFORM DTC CONFIRMATION PROCEDURE

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

## Is "P0712" detected?

YES >> Go to TM-339, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

# 1. CHECK CIRCUIT BETWEEN TCM AND CVT UNIT

1. Turn ignition switch OFF.

- 2. Disconnect TCM connector and CVT unit connector.
- 3. Check continuity between TCM harness connector terminal and ground.

TCM		_	Continuity
Connector Terminal		_	Continuity
F89	12	Ground	Not existed

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace malfunctioning part.

# 2.CHECK TERMINAL CODE ASSEMBLY

Check continuity between CVT unit connector terminal and ground

CVT unit			Continuity
Connector	Terminal		Continuity
F209	12	Ground	Not existed

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Replace transaxle assembly. Refer to <u>TM-444, "Removal and Installation"</u>.

# 3. CHECK CVT FLUID TEMPERATURE SENSOR

Check resistance between CVT unit connector terminals.

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## P0712 TRANSMISSION FLUID TEMPERATURE SENSOR A

[CVT: RE0F10J]

< DTC/CIRCUIT DIAGNOSIS >

CVT unit Resistance Condition Terminal (Approx.) Connector CVT fluid temperature: 20°C (68°F)  $6.5~\text{k}\Omega$ F209 12 - 18CVT fluid temperature: 50°C (122°F)  $2.2~\text{k}\Omega$ CVT fluid temperature: 80°C (176°F)  $0.87~k\Omega$ 

## Is the inspection result normal?

YES

>> Check intermittent incident. Refer to <u>GI-47, "Intermittent Incident"</u>. >> Replace transaxle assembly. Refer to <u>TM-444, "Removal and Installation"</u>. NO

## P0713 TRANSMISSION FLUID TEMPERATURE SENSOR A

< DTC/CIRCUIT DIAGNOSIS >

## P0713 TRANSMISSION FLUID TEMPERATURE SENSOR A

DTC Logic

#### DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P0713	FLUID TEMP SENSOR A (Transmission Fluid Tempera- ture Sensor A Circuit High)	When all of the following conditions are satisfied and this state is maintained for 5 seconds:  TCM power supply voltage: More than 11 V  Vehicle speed: More than 10 km/h (7 MPH)  Fluid temperature sensor detection voltage: 2.48 V or more	Harness or connector     (CVT fluid temperature sensor circuit is open or shorted to power supply)     CVT fluid temperature sensor

## DTC CONFIRMATION PROCEDURE

# 1. PREPARATION BEFORE WORK

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

>> GO TO 2.

# 2.PERFORM DTC CONFIRMATION PROCEDURE

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

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

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

#### Is "P0713" detected?

YES >> Go to TM-341, "Diagnosis Procedure".

NO >> INSPECTION END

# Diagnosis Procedure

# $1.\mathsf{CHECK}$ CIRCUIT BETWEEN TCM AND CVT UNIT (PART 1)

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

TO	CM	CVT unit		Continuity
Connector	Terminal	Connector	Terminal	Continuity
F89	11	F46	18	Existed
1 03	12	1 40	12	LXISIEU

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace malfunctioning parts.

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

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

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## P0713 TRANSMISSION FLUID TEMPERATURE SENSOR A

[CVT: RE0F10J]

< DTC/CIRCUIT DIAGNOSIS >

+			Voltage
TCM		_	(Approx.)
Connector Terminal			, , , ,
F89	12	Ground	0 V

## Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace malfunctioning parts.

# 3.check cvt fluid temperature sensor

1. Turn ignition switch OFF.

2. Check resistance between CVT unit connector terminals.

CVT unit		Condition	Resistance
Connector	Terminal	Condition	(Approx.)
		CVT fluid temperature: 20°C (68°F)	6.5 kΩ
F209	12 – 18	CVT fluid temperature: 50°C (122°F)	2.2 kΩ
		CVT fluid temperature: 80°C (176°F)	0.87 kΩ

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-47, "Intermittent Incident".

NO >> There is malfunction of CVT fluid temperature sensor circuit. Replace transaxle assembly. Refer to TM-444, "Removal and Installation".

## **P0715 INPUT SPEED SENSOR A**

< DTC/CIRCUIT DIAGNOSIS >

# P0715 INPUT SPEED SENSOR A

**DTC Logic** INFOID:0000000012552518

#### DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes	С
		<ul> <li>When 1 is satisfied and any of 2, 3 or 4 is satisfied:</li> <li>1. When the following conditions are satisfied:</li> <li>TCM power supply voltage: More than 11 V</li> <li>After range change completion, it spends 2 seconds or more.</li> <li>2. When all of the following conditions are satisfied and this state is maintained for 5 seconds:</li> </ul>		TM
		<ul> <li>Primary pulley speed: Less than 150 rpm</li> <li>Secondary pulley speed: 500 rpm or more</li> <li>When all of the following conditions are satisfied and this state is maintained for 0.5 seconds:</li> <li>10-msec-ago primary pulley speed: 1,000 rpm or more</li> </ul>	Harness or connector	F
P0715	INPUT SPEED SEN- SOR A (Input/Turbine Speed Sensor A Circuit)	<ul> <li>Now primary pulley speed: 0 rpm</li> <li>When all of the following conditions are satisfied and this state is maintained for 5 seconds:</li> <li>Range: D or L</li> <li>Engine speed: 450 rpm or more</li> <li>Input peed: 300 rpm or more</li> </ul>	(Primary speed sensor circuit is open or shorted)  • Primary speed sensor	G H
		<ul> <li>Primary pulley speed: 300 rpm or more</li> <li>Secondary pulley seed: 300 rpm or more</li> <li>Differences between engine speed and primary pulley speed: More than 1,000 rpm</li> <li>Differences between primary pulley speed and in-</li> </ul>		I
		put speed: More than 1,000 rpm - Differences between engine speed and input speed: 1,000 rpm or less		J
		<ul> <li>Lock-up command is being given (except for slip lock-up)</li> <li>DTC other than the applicable DTC is not detected.</li> </ul>		K

### DTC CONFIRMATION PROCEDURE

#### **CAUTION:**

Be careful of the driving speed.

# 1.PREPARATION BEFORE WORK

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

>> GO TO 2.

# 2. CHECK DTC DETECTION

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

Selector lever : "D" position Engine speed : 1,200 rpm or more Vehicle speed : 40 km/h (25 MPH) or more

- Stop the vehicle.
- Check the first trip DTC.

Is "P0715" detected?

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## **P0715 INPUT SPEED SENSOR A**

#### < DTC/CIRCUIT DIAGNOSIS >

YES >> Go to TM-344, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012552519

[CVT: RE0F10J]

# 1. CHECK PRIMARY SPEED SENSOR POWER CIRCUIT

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

	+		
Primary speed sensor		_	Voltage
Connector Terminal			
F25	3	Ground	10 – 16 V

### Is the inspection result normal?

YES >> GO TO 2.

NO >> GO TO 6.

# 2. CHECK PRIMARY SPEED SENSOR GROUND CIRCUIT

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

Primary sp	eed sensor	_	Continuity
Connector	Terminal		Continuity
F25	1	Ground	Existed

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace malfunctioning parts.

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

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

Primary sp	eed sensor	TO	CM	Continuity
Connector	Terminal	Connector Terminal		Continuity
F25	2	F89	35	Existed

## Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace malfunctioning parts.

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

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

Primary sp	eed sensor	_	Continuity	
Connector	Terminal		Continuity	
F25	2	Ground	Not existed	

#### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace malfunctioning parts.

# 5. CHECK TCM INPUT SIGNALS

## **P0715 INPUT SPEED SENSOR A**

#### < DTC/CIRCUIT DIAGNOSIS >

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

+ TCM		_	Condition	Frequency (Approx.)
Connector	Terminal			
F89	35	Ground	<ul> <li>Selector lever: "L" position</li> <li>Vehicle speed: 20 km/h (12 MPH)</li> </ul>	700 Hz 1mSec/div 5V/div JSDIA1905GB

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-47, "Intermittent Incident".

NO >> Replace primary speed sensor. Refer to TM-433, "Removal and Installation".

# **6.**DETECT MALFUNCTIONING ITEMS

## Check the following items:

- Open circuit or short circuit in harness between ignition switch and IPDM E/R. Refer to <u>PG-28</u>, "Wiring <u>Diagram IGNITION POWER SUPPLY -"</u>.
- Open circuit or short circuit in harness between IPDM E/R harness connector terminal 61 and primary speed sensor harness connector terminal 3.
- 10A fuse (No.46, located in the IPDM E/R). Refer to PG-83, "IPDM E/R Terminal Arrangement".
- IPDM E/R

#### Is the check result normal?

YES >> Check intermittent incident. Refer to GI-47, "Intermittent Incident".

NO >> Repair or replace malfunctioning parts.

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[CVT: RE0F10J]

# P0717 INPUT SPEED SENSOR A

DTC Logic

## DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible cause
P0717	INPUT SPEED SENSOR A (Input/Turbine Speed Sensor "A" Circuit No Signal)	<ol> <li>When 1 is satisfied and any of 2, 3 or 4 is satisfied:         <ol> <li>When the following conditions are satisfied:</li> <li>TCM power supply voltage: More than 11 V</li> <li>After range change completion, it spends 2 seconds or more.</li> <li>When all of the following conditions are satisfied and this state is maintained for 5 seconds:</li></ol></li></ol>	Harness or connectors     (Input speed sensor circuit is open or shorted.)     Input speed sensor

## DTC CONFIRMATION PROCEDURE

## **CAUTION:**

Always drive vehicle at a safe speed.

1. PREPARATION BEFORE WORK

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

>> GO TO 2.

# 2. CHECK DTC DETECTION

## (I) With CONSULT

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

Selector lever : "D" position

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#### P0717 INPUT SPEED SENSOR A

# < DTC/CIRCUIT DIAGNOSIS > [CVT: RE0F10J]

Engine speed : 1,200 rpm or more

Vehicle speed : 40 km/h (25 MPH) or more

4. Stop the vehicle.

5. Check the first trip DTC.

## Is "P0717" detected?

YES >> Go to TM-347, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012552521

# 1. CHECK INPUT SPEED SENSOR POWER CIRCUIT

. Turn ignition switch OFF.

- Disconnect input speed sensor connector.
- Turn ignition switch ON.
- 4. Check voltage between input speed sensor harness connector terminal and ground.

	+		
Input spe	ed sensor	_	Voltage
Connector	Terminal		
F29	3	Ground	10 – 16 V

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> GO TO 6.

# 2.CHECK INPUT SPEED SENSOR GROUND CIRCUIT

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

Input spe	ed sensor		Continuity
Connector	Terminal		Continuity
F29	1	Ground	Existed

## Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace malfunctioning parts.

# ${f 3.}$ CHECK CIRCUIT BETWEEN INPUT SPEED SENSOR AND TCM (PART 1)

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

Input spe	ed sensor	TO	CM	Continuity
Connector	Terminal	Connector	Terminal	Continuity
F29	2	F89	24	Existed

### Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace malfunctioning parts.

# f 4.CHECK CIRCUIT BETWEEN INPUT SPEED SENSOR AND TCM (PART 2)

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

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## **P0717 INPUT SPEED SENSOR A**

[CVT: RE0F10J]

#### < DTC/CIRCUIT DIAGNOSIS >

Input speed sensor			Continuity
Connector	Terminal	_	Continuity
F29	2	Ground	Not existed

#### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace malfunctioning parts.

# 5. CHECK TCM INPUT SIGNALS

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

+ TCM		_	Condition	Frequency (Approx.)
Connector	Terminal			, , ,
F89	24	Ground	<ul> <li>Selector lever: "L" position</li> <li>Vehicle speed: 20 km/h (12 MPH)</li> </ul>	880 Hz 1mSec/div 5V/div JSDIA3769GB

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-47, "Intermittent Incident".

NO >> Replace input speed sensor. Refer to TM-432, "Removal and Installation".

## **6.**DETECT MALFUNCTIONING ITEMS

#### Check the following items:

- Open circuit or short circuit in harness between ignition switch and IPDM E/R. Refer to PG-28, "Wiring Diagram IGNITION POWER SUPPLY -".
- Open circuit or short circuit in harness between IPDM E/R harness connector terminal 61 and input speed sensor harness connector terminal 3.
- 10A fuse (No.46, located in the IPDM E/R). Refer to PG-83, "IPDM E/R Terminal Arrangement".
- IPDM E/R

## Is the check result normal?

YES >> Check intermittent incident. Refer to GI-47, "Intermittent Incident".

NO >> Repair or replace malfunctioning parts.

## P0740 TORQUE CONVERTER

< DTC/CIRCUIT DIAGNOSIS >

# P0740 TORQUE CONVERTER

DTC Logic INFOID:0000000012552522

#### DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P0740	TORQUE CONVERTER (Torque Converter Clutch Circuit/Open)	<ul> <li>When all of the following conditions are satisfied and this state is maintained for 5 seconds:</li> <li>TCM power supply voltage: More than 11 V</li> <li>P0743 is not detected.</li> <li>TCM judges that solenoid valve circuit is open.</li> </ul>	Harness or connector     (Torque converter clutch solenoid valve circuit is open or shorted to power supply)     Torque converter clutch solenoid valve

### DTC CONFIRMATION PROCEDURE

#### CAUTION:

## Be careful of the driving speed.

# 1. PREPARATION BEFORE WORK

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

>> GO TO 2.

# 2.PREPARATION BEFORE OPERATION

# (P)With CONSULT

- 1. Start the engine.
- Select "Data Monitor" in "TRANSMISSION".
- Select "FLUID TEMP".
- Confirm that the CVT fluid temperature is in the following range.

**FLUID TEMP** : 20°C (68°F) or more

### **With GST**

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

#### NOTE:

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

## Is the CVT fluid 20°C (68°F) or more?

YES >> GO TO 3.

NO >> 1. Warm the transaxle.

GO TO 3.

# 3. CHECK DTC DETECTION

Drive the vehicle.

Maintain the following conditions for 10 seconds or more. 2.

> Selector lever : "D" position

Vehicle speed : 40 km/h (25 MPH) or more

- Stop the vehicle.
- Check the first trip DTC.

Revision: November 2015

#### Is "P0740" detected?

YES >> Go to TM-350, "Diagnosis Procedure".

NO >> INSPECTION END

> TM-349 2016 Pathfinder

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[CVT: RE0F10J]

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## **P0740 TORQUE CONVERTER**

#### < DTC/CIRCUIT DIAGNOSIS >

# Diagnosis Procedure

INFOID:0000000012552523

[CVT: RE0F10J]

# 1. CHECK CIRCUIT BETWEEN TCM AND CVT UNIT

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

TO	CM	CVT	Γ unit	Continuity
Connector	Terminal	Connector	Terminal	Continuity
F89	38	F46	2	Existed

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace malfunctioning parts.

# 2.check torque converter clutch solenoid valve circuit

Check resistance between CVT unit harness connector terminal and ground.

CVT	unit	_	Condition	Resistance
Connector	Terminal	_	Condition	resistance
			CVT fluid temperature: 20°C (68°F)	5.5 – 7.0 Ω
F209	5	Ground	CVT fluid temperature: 50°C (122°F)	6.0 – 8.0 Ω
			CVT fluid temperature: 80°C (176°F)	$6.5 - 8.5 \Omega$

## Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-47, "Intermittent Incident".

NO >> There is malfunction of torque converter clutch solenoid valve circuit. Replace transaxle assembly. Refer to <a href="mailto:TM-444">TM-444</a>, "Removal and Installation".

## P0743 TORQUE CONVERTER

< DTC/CIRCUIT DIAGNOSIS >

# P0743 TORQUE CONVERTER

DTC Logic INFOID:0000000012552524

#### DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P0743	TORQUE CONVERTER (Torque Converter Clutch Circuit Electrical)	When all of the following conditions are satisfied and this state is maintained for 0.48 seconds:  TCM power supply voltage: More than 11 V  TCM judges that solenoid valve circuit is shorted to ground.	Harness or connector     (Torque converter clutch solenoid valve circuit is shorted to ground)     Torque converter clutch solenoid valve

### DTC CONFIRMATION PROCEDURE

#### **CAUTION:**

## Be careful of the driving speed.

# 1. PREPARATION BEFORE WORK

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

>> GO TO 2.

# 2.PREPARATION BEFORE OPERATION

## (P)With CONSULT

- 1. Start the engine.
- Select "Data Monitor" in "TRANSMISSION".
- Select "FLUID TEMP".
- Confirm that the CVT fluid temperature is in the following range.

**FLUID TEMP** : 20°C (68°F) or more

### **With GST**

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

#### NOTE:

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

#### Is the CVT fluid 20°C (68°F) or more?

YES >> GO TO 3.

NO >> 1. Warm the transaxle.

GO TO 3.

# 3. CHECK DTC DETECTION

Drive the vehicle.

Maintain the following conditions for 10 seconds or more. 2.

> Selector lever : "D" position

Vehicle speed : 40 km/h (25 MPH) or more

- Stop the vehicle.
- Check the first trip DTC.

#### Is "P0743" detected?

YES >> Go to TM-352, "Diagnosis Procedure".

NO >> INSPECTION END

TM-351 Revision: November 2015 2016 Pathfinder TΜ

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## **P0743 TORQUE CONVERTER**

#### < DTC/CIRCUIT DIAGNOSIS >

## Diagnosis Procedure

INFOID:0000000012552525

[CVT: RE0F10J]

# 1. CHECK CIRCUIT BETWEEN TCM AND CVT UNIT

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

T	CM	_	Continuity
Connector	Terminal	_	Continuity
F89	38	Ground	Not existed

## Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace malfunctioning parts.

# 2.check torque converter clutch solenoid valve circuit

Check resistance between CVT unit harness connector terminal and ground.

CVT unit			Condition	Resistance	
Connector	Terminal	_	Condition	1/6919(d)11Ce	
			CVT fluid temperature: 20°C (68°F)	5.5 – 7.0 Ω	
F209	5 Groun	Ground	CVT fluid temperature: 50°C (122°F)	6.0 – 8.0 Ω	
			CVT fluid temperature: 80°C (176°F)	6.5 – 8.5 Ω	

## Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-47, "Intermittent Incident".

NO >> There is malfunction of torque converter clutch solenoid valve circuit. Replace transaxle assembly. Refer to <a href="https://doi.org/10.1007/jwish.com/">There is malfunction of torque converter clutch solenoid valve circuit. Replace transaxle assembly. Refer to <a href="https://doi.org/10.1007/jwish.com/">There is malfunction of torque converter clutch solenoid valve circuit. Replace transaxle assembly. Refer to <a href="https://doi.org/10.1007/jwish.com/">TIM-4444, "Removal and Installation"</a>.

## **P0744 TORQUE CONVERTER**

< DTC/CIRCUIT DIAGNOSIS >

# P0744 TORQUE CONVERTER

DTC Logic INFOID:0000000012552526

#### DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P0744	TORQUE CONVERTER (Torque converter clutch circuit intermittent)	When all of the following conditions are satisfied and this state is maintained for 30 seconds:  TCM power supply voltage: More than 11 V  P0717 is not detected.  CAN communication is normal  Torque converter slip speed: (40+vihicle speed/2) rpm  LU pressure: More than 0.2 MPa	Torque converter clutch solenoid valve     Control valve assembly     Torque converter

#### DTC CONFIRMATION PROCEDURE

#### **CAUTION:**

## Be careful of the driving speed.

# 1. PREPARATION BEFORE WORK

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

>> GO TO 2.

# 2.PREPARATION BEFORE OPERATION

### (P)With CONSULT

- Start the engine.
- Select "Data Monitor" in "TRANSMISSION".
- Select "FLUID TEMP".
- 4. Confirm that the CVT fluid temperature is in the following range.

: 20°C (68°F) or more FLUID TEMP

#### **With GST**

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

#### NOTE:

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

Is the CVT fluid 20°C (68°F) or more?

YES >> GO TO 3.

NO >> 1. Warm the transaxle.

GO TO 3.

# 3.check dtc detection

Drive the vehicle.

2. Maintain the following conditions for 10 seconds or more.

> Selector lever : "D" position Accelerator pedal position : 0.5/8 or more

: 40 km/h (25 MPH) or more Vehicle speed

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

#### Is "P0744" detected?

YES >> Go to TM-354. "Diagnosis Procedure".

TM-353 Revision: November 2015 2016 Pathfinder

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## **P0744 TORQUE CONVERTER**

## < DTC/CIRCUIT DIAGNOSIS >

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000012552527

[CVT: RE0F10J]

# 1. CHECK INTERMITTENT INCIDNT

Refer to GI-47, "Intermittent Incident".

## Is the inspection result normal?

YES >> Replace transaxle assembly. Refer to TM-444, "Removal and Installation".

NO >> Repair or replace the malfunction items.

## P0746 PRESSURE CONTROL SOLENOID A

< DTC/CIRCUIT DIAGNOSIS >

# P0746 PRESSURE CONTROL SOLENOID A

**DTC Logic** INFOID:0000000012552528

#### DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes	С
P0746	PC SOLENOID A (Pressure Control Solenoid A Performance/Stuck Off)	The detecting condition A or detection condition B is detected twice or more (1 second or more later after detection of the first) in the same DC under the following diagnosis conditions:  • Diagnosis conditions  • Diagnosis conditions  • Engine speed: More than 600 rpm  • Primary pulley speed: More than 450 rpm  • Idle is not being detected.  • Acceleration/deceleration speed: –0.49 m/ s² (–0.05 G) or more  • The primary pulley speed experienced 300 rpm or more and the secondary pulley speed experienced 250 rpm or more at least once.  • Secondary pulley speed: More than 150 rpm  • TCM power supply voltage: More than 11 V  • Detection condition A  • Status with the shifting ratio of the primary pulley speed/secondary pulley ratio exceeding 2.825 is 0.2 sec or more continuously.  • Detection condition B  • Status with the shifting ratio of the primary pulley speed/secondary pulley ratio exceeding 3.625 is 0.1 sec or more continuously.	Line pressure solenoid valve     Control valve assembly	TM E F G

## NOTE:

DC stands for "DRIVING CYCLE" and indicates a series of driving cycle of "Ignition switch OFF  $\rightarrow$  ON  $\rightarrow$  driving  $\rightarrow$  OFF".

#### DTC CONFIRMATION PROCEDURE

#### **CAUTION:**

## Be careful of the driving speed.

# 1.PREPARATION BEFORE WORK

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

>> GO TO 2.

# 2.check dtc detection

- Start the engine.
- Drive the vehicle.
- Maintain the following conditions for 10 seconds or more.

Selector lever : "D" position Accelerator pedal position : 0.5/8 or more

Vehicle speed : 40 km/h (25 MPH) or more

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

#### Is "P0746" detected?

YES >> Go to TM-356, "Diagnosis Procedure".

TM-355 Revision: November 2015 2016 Pathfinder Ν

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[CVT: RE0F10J]

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## P0746 PRESSURE CONTROL SOLENOID A

## < DTC/CIRCUIT DIAGNOSIS >

NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000012552529

[CVT: RE0F10J]

# 1. CHECK INTERMITTENT INCIDNT

Refer to GI-47, "Intermittent Incident".

## Is the inspection result normal?

YES >> Replace transaxle assembly. Refer to TM-444, "Removal and Installation".

NO >> Repair or replace the malfunction items.

## P0776 PRESSURE CONTROL SOLENOID B

< DTC/CIRCUIT DIAGNOSIS >

# P0776 PRESSURE CONTROL SOLENOID B

DTC Logic

[CVT: RE0F10J]

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# DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible cause	С
P0776		When any of 1 or 2 is satisfied and this state is maintained for 10 seconds:  1. When all of the following conditions are satisfied:  - DTC other than the applicable DTC is not detected.  - Engine speed: More than 625 rpm  - Selector lever: Other than P/N position  - CVT fluid temperature: More than - 20°C (-4°F)  - TCM power supply: More than 11 V  - The difference between instruction pressure of secondary pressure and 10-msec-ago instruction secondary pressure: 0 MPa or more  - Instruction pressure of secondary pressure: 0 MPa or more  - Instruction pressure of secondary pressure - secondary pressure: More than 1.2 MPa  - When all of the following conditions are satisfied and this state is maintained for 5.5 seconds:  - DTC other than the applicable DTC is not detected.  - CVT fluid temperature: More than - 20°C (-4°F)  - Selector lever: Other than P/N position  - Secondary pressure - instruction pressure of secondary pressure: 1.2 MPa or more  2. When all of the following conditions are satisfied:  - DTC other than the applicable DTC is not detected.  - CVT fluid temperature: More than - 20°C (-4°F)  - Selector lever: Other than P/N position  - TCM power supply: More than 11 V  - When all of the following conditions are satisfied and this state is maintained for 5.5 seconds:  - DTC other than the applicable DTC is not detected.  - CVT fluid temperature: More than - 20°C (-4°F)  - Selector lever: Other than P/N position  - TCM power supply: More than 11 V  - When all of the following conditions are satisfied and this state is maintained for 5.5 seconds:  - DTC other than the applicable DTC is not detected.  - CVT fluid temperature: More than - 20°C (-4°F)  - Selector lever: Other than P/N position  - Secondary pressure - instruction pressure of secondary pressure and 10-msec-ago instruction secondary	Secondary pressure solenoid valve	C TM E F G H I J K L M N O P

## P0776 PRESSURE CONTROL SOLENOID B

### < DTC/CIRCUIT DIAGNOSIS >

### DTC CONFIRMATION PROCEDURE

#### **CAUTION:**

Always drive vehicle at a safe speed.

1. PREPARATION BEFORE WORK

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

>> GO TO 2.

# 2. CHECK DTC DETECTION

- 1. Start the engine.
- Drive the vehicle.
- 3. Maintain the following condition for 20 seconds or more.

Selector lever : "D" position

Vehicle speed : 40 km/h (25 MPH) or more

Accelerator pedal position : 1.0/8 or more

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

### Is "P0776" detected?

YES >> Go to TM-358, "Diagnosis Procedure".

NO >> INSPECTION END

# Diagnosis Procedure

INFOID:0000000012552531

[CVT: RE0F10J]

# 1. CHECK INTERMITTENT INCIDNT

Refer to GI-47, "Intermittent Incident".

## Is the inspection result normal?

YES >> Replace transaxle assembly. Refer to TM-444, "Removal and Installation".

NO >> Repair or replace the malfunction items.

## P0778 PRESSURE CONTROL SOLENOID B

< DTC/CIRCUIT DIAGNOSIS >

# P0778 PRESSURE CONTROL SOLENOID B

DTC Logic INFOID:0000000012552532

#### DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible cause
P0778	PC SOLENOID B (Pressure Control Solenoid "B" Electrical)	When all of the following conditions are satisfied and this state is maintained for 0.48 seconds: TCM power supply voltage: More than 11 V TCM judges that solenoid valve circuit is shorted to ground.	Harness or connectors     (Secondary pressure solenoid valve circuit is shorted to ground.)     Secondary pressure solenoid valve

## DTC CONFIRMATION PROCEDURE

#### **CAUTION:**

Always drive vehicle at a safe speed.

1.PREPARATION BEFORE WORK

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

>> GO TO 2.

# 2.check dtc detection

- Start the engine and wait for 5 seconds or more.
- Check the first trip DTC.

### Is "P0778" detected?

YES >> Go to TM-359, "Diagnosis Procedure".

>> INSPECTION END NO

# Diagnosis Procedure

# 1. CHECK CIRCUIT BETWEEN TCM AND CVT UNIT

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

TCM			Continuity
Connector	Terminal		Continuity
F89	39	Ground	Not existed

## Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace damaged parts.

# 2.CHECK SECONDARY PRESSURE SOLENOID VALVE CIRCUIT

Check continuity between CVT unit harness connector terminal and ground.

CVT unit			Condition	Resistance
Connector	Terminal	_	Condition	Resistance
			CVT fluid temperature: 20°C (68°F)	5.5 – 7.0 Ω
F209	3	Ground	CVT fluid temperature: 50°C (122°F)	$6.0 - 8.0 \Omega$
			CVT fluid temperature: 80°C (176°F)	$6.5 - 8.5 \Omega$

#### Is the inspection result normal?

>> Check intermittent incident. Refer to GI-47, "Intermittent Incident". YES

TM-359 Revision: November 2015 2016 Pathfinder TM

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# P0778 PRESSURE CONTROL SOLENOID B

< DTC/CIRCUIT DIAGNOSIS >

[CVT: RE0F10J]

NO >> There is malfunction of secondary pressure solenoid valve circuit. Replace transaxle assembly. Refer to <a href="mailto:TM-444">TM-444</a>, "Removal and Installation".

### P0779 PRESSURE CONTROL SOLENOID B

< DTC/CIRCUIT DIAGNOSIS >

### P0779 PRESSURE CONTROL SOLENOID B

DTC Logic

#### DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC detection condition	Possible causes
P0779	Pressure control solenoid B Intermittent	When all of the following conditions are satisfied and this state is maintained for 0.2 seconds:  TCM power supply voltage: More than 11 V  P0778 is not detected  TCM judges that solenoid valve circuit is open or shorted to power supply.	Harness or connector     (Secondary pressure solenoid valve circuit open or shorted to power supply)     Secondary pressure solenoid valve

### DTC CONFIRMATION PROCEDURE

### 1. PREPARATION BEFORE WORK

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

>> GO TO 2.

### 2. CHECK DTC DETECTION

Start the engine.

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

Selector lever : "D" position

Vehicle speed : 40 km/h (25 MPH) or more

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

#### Is "P0779" detected?

YES >> Go to TM-361, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

1. CHECK CIRCUIT BETWEEN TCM AND CVT UNIT

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

TCM		CVT unit		Continuity
Connector	Terminal	Connector	Terminal	Continuity
F89	39	F46	3	Existed

### Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace damaged parts.

### 2.CHECK SECONDARY PRESSURE SOLENOID VALVE CIRCUIT

Check continuity between CVT unit harness connector terminal and ground.

[CVT: RE0F10J]

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### P0779 PRESSURE CONTROL SOLENOID B

[CVT: RE0F10J]

### < DTC/CIRCUIT DIAGNOSIS >

CVT unit			Condition	Resistance	
Connector	Terminal	_	Condition	Resistance	
			CVT fluid temperature: 20°C (68°F)	5.5 – 7.0 Ω	
F209	3	Ground	CVT fluid temperature: 50°C (122°F)	6.0 – 8.0 Ω	
			CVT fluid temperature: 80°C (176°F)	6.5 – 8.5 Ω	

### Is the inspection result normal?

- YES
- >> Check intermittent incident. Refer to <u>GI-47, "Intermittent Incident"</u>.
  >> There is malfunction of secondary pressure solenoid valve circuit. Replace transaxle assembly. NO Refer to TM-444, "Removal and Installation".

### P0841 TRANSMISSION FLUID PRESSURE SEN/SW A

< DTC/CIRCUIT DIAGNOSIS > [CVT: RE0F10J]

### P0841 TRANSMISSION FLUID PRESSURE SEN/SW A

DTC Logic

#### DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible cause
P0841	FLUID PRESS SEN/SW A (Transmission Fluid Pressure Sensor/Switch "A" Circuit Range/Performance)	<ul> <li>When all of the following conditions are satisfied and this state is maintained for 5 seconds:</li> <li>TCM power supply voltage: More than 11 V</li> <li>DTC other than the applicable DTC is not detected.</li> <li>Primary pulley speed: 300 rpm or more</li> <li>Secondary pulley speed: 250 rpm or more</li> <li>Target speed for shifting: Less than 0.1 seconds</li> <li>Primary pulley pressure is outside the specified value.</li> </ul>	Harness or connectors     (Secondary pressure sensor circuit is open or shorted.)     Harness or connectors     (Primary pressure sensor circuit is open or shorted.)     Secondary pressure sensor

#### DTC CONFIRMATION PROCEDURE

#### **CAUTION:**

Always drive vehicle at a safe speed.

1. PREPARATION BEFORE WORK

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

>> GO TO 2.

## 2. CHECK DTC DETECTION

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

Selector lever : "D" position

Vehicle speed : Constant speed of 40 km/h (25 MPH)

#### **CAUTION:**

Also keep the accelerator pedal position constant.

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

#### Is "P0841" detected?

YES >> Go to TM-363, "Diagnosis Procedure".

NO >> INSPECTION END

### Diagnosis Procedure

1. CHECK INTERMITTENT INCIDENT

Refer to GI-47, "Intermittent Incident".

#### Is the inspection result normal?

YES >> Replace the transaxle assembly. Refer to TM-444, "Removal and Installation".

TM-363

NO >> Repair or replace damaged parts.

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INFOID:0000000012552537

### P0847 TRANSMISSION FLUID PRESSURE SEN/SW B

< DTC/CIRCUIT DIAGNOSIS >

### P0847 TRANSMISSION FLUID PRESSURE SEN/SW B

DTC Logic

#### DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P0847	FLUID PRESS SEN/SW B (Transmission Fluid Pressure Sensor/Switch B Circuit Low)	When all of the following conditions are satisfied and this state is maintained for 5 seconds:  • CVT fluid temperature: More than –20°C (–4°F)  • TCM power supply voltage: 11 V or more  • Secondary pressure sensor voltage: 0.09 V or less	Harness or connector     (Secondary pressure sensor circuit is open or shorted to ground)     Secondary pressure sensor     Control valve assembly

### DTC CONFIRMATION PROCEDURE

### 1. PREPARATION BEFORE WORK

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

>> GO TO 2.

### 2. CHECK DTC DETECTION

#### (P)With CONSULT

- 1. Start the engine.
- Select "Data Monitor" in "TRANSMISSION".
- 3. Select "FLUID TEMP".
- 4. Maintain the following conditions for 10 seconds or more.

FLUID TEMP : -20°C (-4°F)

5. Check the first trip DTC.

### **With GST**

1. Start the engine and wait for at least 10 seconds.

#### **CAUTION:**

When the ambient temperature is less than  $-20^{\circ}$ C ( $-4^{\circ}$ F) and the engine is cold, warm up the engine for approximately 5 minutes.

2. Check the first trip DTC.

#### Is "P0847" detected?

YES >> Go to TM-364, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012552539

[CVT: RE0F10J]

### 1. CHECK TCM INPUT SIGNALS

- Turn ignition switch OFF.
- Start the engine.
- 3. Check voltage between TCM harness connector terminals.

	+			
ТС	CM	_	Condition	Voltage
Connector	Terminal			
F89	16	Ground	Selector lever: "N" position     At idle	1.67 – 1.69 V

#### Is the inspection result normal?

### P0847 TRANSMISSION FLUID PRESSURE SEN/SW B

< DTC/CIRCUIT DIAGNOSIS >

YES >> Check intermittent incident. Refer to GI-47, "Intermittent Incident".

NO >> GO TO 2.

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

1. Turn ignition switch OFF.

- 2. Disconnect TCM connector and CVT unit connector.
- 3. Check continuity between TCM harness connector terminals and CVT unit harness connector terminals.

TO	TCM		CVT unit	
Connector	Terminal	Connector	Terminal	Continuity
	11		18	
F89	16	F46	14	Existed
	26		22	

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace malfunctioning parts.

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

Check continuity between TCM harness connector terminals and ground.

TCM			Continuity
Connector	Terminal		Continuity
F89	16	Ground	Not existed
FOS	26	Ground	Not existed

#### Is the inspection result normal?

YES >> There is malfunction of secondary pressure sensor circuit. Replace transaxle assembly. Refer to TM-444, "Removal and Installation".

NO >> Repair or replace malfunctioning parts.

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### P0848 TRANSMISSION FLUID PRESSURE SEN/SW B

< DTC/CIRCUIT DIAGNOSIS >

### P0848 TRANSMISSION FLUID PRESSURE SEN/SW B

DTC Logic

#### DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P0848	FLUID PRESS SEN/SW B (Transmission Fluid Pressure Sensor/Switch B Circuit Low)	<ul> <li>When all of the following conditions are satisfied and this state is maintained for 5 seconds:</li> <li>CVT fluid temperature: More than -20°C (-4°F)</li> <li>TCM power supply voltage: More than 11 V</li> <li>Instruction secondary pressure: 5.7 MPa or less</li> <li>Secondary pressure sensor voltage: 4.7 V or more</li> </ul>	Harness or connector     (Secondary pressure sensor circuit is

#### DTC CONFIRMATION PROCEDURE

### 1. PREPARATION BEFORE WORK

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

>> GO TO 2.

## 2. CHECK DTC DETECTION

#### (P)With CONSULT

- Start the engine.
- Select "Data Monitor" in "TRANSMISSION".
- 3. Select "FLUID TEMP".
- 4. Maintain the following conditions for 10 seconds or more.

FLUID TEMP : More than -20°C (-4°F)

5. Check the first trip DTC.

#### **With GST**

1. Start the engine and wait for at least 10 seconds.

#### **CAUTION:**

When the ambient temperature is less than  $-20^{\circ}$ C ( $-4^{\circ}$ F) and the engine is cold, warm up the engine for approximately 5 minutes.

2. Check the first trip DTC.

### Is "P0848" detected?

YES >> Go to TM-366, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012552541

[CVT: RE0F10J]

## 1. CHECK TCM INPUT SIGNALS

- 1. Turn ignition switch OFF.
- Start the engine.
- 3. Check voltage between TCM harness connector terminals.

+ TCM		_	Condition	Voltage
Connector	Terminal			
F89	16	Ground	Selector lever: "N" position     At idle	1.67 – 1.69 V

### P0848 TRANSMISSION FLUID PRESSURE SEN/SW B

## [CVT: RE0F10J] < DTC/CIRCUIT DIAGNOSIS > Is the inspection result normal?

>> Check intermittent incident. Refer to GI-47, "Intermittent Incident".

NO >> GO TO 2.

# 2.CHECK SECONDARY PRESSURE SENSOR POWER CIRCUIT

- Turn ignition switch OFF.
- 2. Connect TCM connector.
- 3. Disconnect CVT unit connector.
- 4. Turn ignition switch ON.
- Check voltage between CVT unit harness connector terminal and ground.

+			Voltago
CVT	CVT unit		Voltage (Approx.)
Connector	Connector Terminal		, , ,
F46	22	Ground	5.0 V

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace malfunctioning parts.

## 3.CHECK SECONDARY PRESSURE SENSOR SIGNAL CIRCUIT

Check voltage between CVT unit harness connector terminal and ground.

CVT	+ unit	_	Voltage (Approx.)
Connector	Connector Terminal		(дриох.)
F46	14	Ground	0 V

#### Is the inspection result normal?

YES >> There is malfunction of secondary pressure sensor circuit. Replace transaxle assembly. Refer to TM-444, "Removal and Installation".

NO >> Repair or replace malfunctioning parts. TM

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### P084C TRANSMISSION FLUID PRESSURE SEN/SW H

< DTC/CIRCUIT DIAGNOSIS >

### P084C TRANSMISSION FLUID PRESSURE SEN/SW H

DTC Logic

#### DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P084C	FLUID PRESS SEN/SW H (Transmission Fluid Pressure Sensor/Switch H Circuit Low)	When all of the following conditions are satisfied and this state is maintained for 5 seconds:  • CVT fluid temperature: More than –20°C (–4°F)  • TCM power supply voltage: More than 11 V  • Primary pressure sensor voltage: 0.09 V or less	Harness or connector     (Primary pressure sensor circuit is open or shorted to ground)     Primary pressure sensor     Control valve assembly

### DTC CONFIRMATION PROCEDURE

### 1. PREPARATION BEFORE WORK

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

>> GO TO 2.

### 2. CHECK DTC DETECTION

#### (P)With CONSULT

- 1. Start the engine.
- Select "Data Monitor" in "TRANSMISSION".
- 3. Select "FLUID TEMP".
- 4. Maintain the following conditions for 10 seconds or more.

FLUID TEMP : More than  $-20^{\circ}$ C ( $-4^{\circ}$ F)

5. Check the first trip DTC.

### **With GST**

1. Start the engine and wait for at least 10 seconds.

#### **CAUTION:**

When the ambient temperature is less than  $-20^{\circ}\text{C}$  ( $-4^{\circ}\text{F}$ ) and the engine is cold, warm up the engine for approximately 5 minutes.

2. Check the first trip DTC.

#### Is "P084C" detected?

YES >> Go to TM-368, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012552543

[CVT: RE0F10J]

### 1. CHECK TCM INPUT SIGNALS

- Turn ignition switch OFF.
- Start the engine.
- 3. Check voltage between TCM harness connector terminals.

	+			
TCM		_	Condition	Voltage
Connector	Terminal			
F89	17	Ground	Selector lever: "N" position     At idle	0.90 – 0.92 V

### Is the inspection result normal?

### P084C TRANSMISSION FLUID PRESSURE SEN/SW H

< DTC/CIRCUIT DIAGNOSIS >

YES >> Check intermittent incident. Refer to GI-47, "Intermittent Incident".

NO >> GO TO 2.

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

1. Turn ignition switch OFF.

- 2. Disconnect TCM connector and CVT unit connector.
- 3. Check continuity between TCM harness connector terminals and CVT unit harness connector terminals.

TCM		CVT unit		Continuity
Connector	Terminal	Connector	Terminal	Continuity
	11		18	
F89	17	F46	13	Existed
	26		22	

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace malfunctioning parts.

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

Check continuity between TCM harness connector terminals and ground.

TO	CM		Continuity	
Connector Termina		<u> </u>	Continuity	
F89	17	Ground	Not existed	
1.09	26	Giodila	INOL EXISTED	

#### Is the inspection result normal?

YES >> There is malfunction of primary pressure sensor circuit. Replace transaxle assembly. Refer to <u>TM-444</u>, "Removal and Installation".

NO >> Repair or replace malfunctioning parts.

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### P084D TRANSMISSION FLUID PRESSURE SEN/SW H

< DTC/CIRCUIT DIAGNOSIS >

### P084D TRANSMISSION FLUID PRESSURE SEN/SW H

DTC Logic

#### DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P084D	FLUID PRESS SEN/SW H (Transmission Fluid Pressure Sensor/Switch "H" Circuit High)	<ul> <li>When all of the following conditions are satisfied and this state is maintained for 5 seconds:</li> <li>CVT fluid temperature: More than -20°C (-4°F)</li> <li>TCM power supply voltage: More than 11 V</li> <li>Primary pressure sensor voltage: 4.7 V or more</li> </ul>	<ul> <li>Harness or connector (Primary pressure sensor circuit is open or shorted to ground)</li> <li>Primary pressure sensor</li> <li>Control valve assembly</li> </ul>

### DTC CONFIRMATION PROCEDURE

### 1. PREPARATION BEFORE WORK

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

>> GO TO 2.

### 2. CHECK DTC DETECTION

#### (P)With CONSULT

- 1. Start the engine.
- Select "Data Monitor" in "TRANSMISSION".
- 3. Select "FLUID TEMP".
- 4. Maintain the following conditions for 10 seconds or more.

FLUID TEMP : More than  $-20^{\circ}$ C ( $-4^{\circ}$ F)

5. Check the first trip DTC.

### **With GST**

1. Start the engine and wait for at least 10 seconds.

#### **CAUTION:**

When the ambient temperature is less than  $-20^{\circ}$ C ( $-4^{\circ}$ F) and the engine is cold, warm up the engine for approximately 5 minutes.

2. Check the first trip DTC.

#### Is "P084D" detected?

YES >> Go to TM-370, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012552545

[CVT: RE0F10J]

## 1. CHECK TCM INPUT SIGNALS

- Turn ignition switch OFF.
- Start the engine.
- Check voltage between TCM harness connector terminals.

To	+ CM	_	Condition	Voltage
Connector	Terminal			
F89	17	Ground	Selector lever: "N" position     At idle	0.90 – 0.92 V

### Is the inspection result normal?

	P084D	TRANS	MISSION FL	LUID PRESSURE SEN/SW H
< DTC/CIRC				[CVT: RE0F10J]
	Check intermi 30 TO 2.	ttent inciden	t. Refer to GI-4	7. "Intermittent Incident".
_		ESSURE SE	NSOR POWER	RCIRCUIT
1. Turn ignit 2. Connect 3. Disconne	tion switch O TCM connec ect CVT unit o	FF. tor. connector.		
1. Turn ignit 5. Check vo	tion switch O oltage betwee	N. en CVT unit h	narness connec	ctor terminal and ground.
+	+			
CVT	unit	_	Voltage (Approx.)	
Connector	Terminal		(трргох.)	
F46	22	Ground	5.0 V	
-	tion result nor	rmal?		
NO >> F	GO TO 3. Repair or repla RIMARY PRE		tioning parts. NSOR SIGNAL	_ CIRCUIT
				erminal and ground.
	+		Voltage	
CVT	unit Terminal	_	(Approx.)	
F46	13	Ground	0 V	
the inspect	tion result nor	rmal?		
YES >> T	here is malfu	ınction of priı	mary pressure	sensor circuit. Replace transaxle assembly. Refer to $\overline{ ext{TM-}}$
	<u>l44, "Remova</u> Repair or repla			

### P0863 TCM COMMUNICATION

[CVT: RE0F10J]

< DTC/CIRCUIT DIAGNOSIS >

### P0863 TCM COMMUNICATION

**DTC Logic** INFOID:0000000012552546

#### DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P0863	CONTROL UNIT (CAN) (TCM Communication Circuit)	An error is detected at the initial CAN diagnosis of TCM.	TCM

#### DTC CONFIRMATION PROCEDURE

## 1. PREPARATION BEFORE WORK

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

>> GO TO 2.

## 2. CHECK DTC DETECTION

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

#### Is "P0863" detected?

>> Go to TM-372, "Diagnosis Procedure". YES

>> INSPECTION END NO

### Diagnosis Procedure

INFOID:0000000012552547

## 1. CHECK INTERMITTENT INCIDNT

Refer to GI-47, "Intermittent Incident".

### Is the inspection result normal?

>> Replace TCM. Refer to TM-422, "Removal and Installation". YES

>> Repair or replace malfunctioning parts. NO

### P0890 TCM

**DTC Logic** INFOID:0000000012552548

### DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P0890	TCM (Transmission Control Module Power Relay Sense Circuit Low)	When all of the following conditions are satisfied and this state is maintained for 0.2 seconds:  • TCM power supply voltage: More than 11 V  • Battery voltage: Less than 8.4 V	Harness or connector     (TCM power supply (back-up) circuit is open or shorted.)     TCM

### DTC CONFIRMATION PROCEDURE

### 1.PREPARATION BEFORE WORK

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

>> GO TO 2.

### 2.check dtc detection

- Start the engine and wait for 5 seconds or more.
- Check the DTC. 2.

#### Is "P0890" detected?

YES >> Go to TM-373, "Diagnosis Procedure".

>> INSPECTION END NO

### Diagnosis Procedure

## 1. CHECK TCM POWER SUPPLY (BACK-UP) CIRCUIT

- Turn ignition switch OFF.
- Disconnect TCM connector.
- Check voltage between TCM harness connector terminals and ground.

TO	CM	Ground	Voltage	
Connector Terminal		Ground	voltage	
F89	45	Ground	10 – 16 V	
1 09	46	Giodila	10 – 10 V	

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> GO TO 2.

## 2. DETECT MALFUNCTIONING ITEMS

### Check the following items:

- · Open circuit or short circuit in harness between battery positive terminal and TCM harness connector terminals 45, and 46.
- 10A fuse [No.25, located in the fuse block (J/B)]. Refer to PG-78, "Terminal Arrangement".

### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-47, "Intermittent Incident".

NO >> Repair or replace malfunctioning parts.

### 3. CHECK INTERMITTENT INCIDENT

Refer to GI-47, "Intermittent Incident".

### Is the inspection result normal?

TM-373 Revision: November 2015 2016 Pathfinder TM

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### **P0890 TCM**

[CVT: RE0F10J]

>> Replace the TCM. Refer to <u>TM-422, "Removal and Installation"</u>. >> Repair or replace malfunctioning parts. YES

NO

### P0962 PRESSURE CONTROL SOLENOID A

< DTC/CIRCUIT DIAGNOSIS >

### P0962 PRESSURE CONTROL SOLENOID A

DTC Logic INFOID:0000000012552550

#### DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P0962	PC SOLENOID A (Pressure Control Solenoid A Control Circuit Low)	When all of the following conditions are satisfied and this state is maintained for 0.2 seconds:  TCM power supply voltage: More than 11 V  TCM judges that solenoid valve circuit is shorted to ground.	Harness or connector     (Line pressure solenoid valve circuit is shorted to ground)     Line pressure solenoid valve

### DTC CONFIRMATION PROCEDURE

### 1. PREPARATION BEFORE WORK

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

>> GO TO 2.

### 2.CHECK DTC DETECTION

Start the engine and wait for 5 seconds or more.

Check the first trip DTC.

### Is "P0962" detected?

YES >> Go to TM-375, "Diagnosis Procedure".

>> INSPECTION END NO

### Diagnosis Procedure

## 1. CHECK CIRCUIT BETWEEN TCM AND CVT UNIT

Turn ignition switch OFF.

Disconnect TCM connector and CVT unit connector.

Check continuity between TCM harness connector terminal and ground.

TO	CM	_	Continuity
Connector Terminal			Continuity
F89	30	Ground	Not existed

### Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace damaged parts.

### 2.CHECK LINE PRESSURE SOLENOID VALVE CIRCUIT

Check continuity between CVT unit harness connector terminal and ground.

CVT unit			Condition	Resistance	
Connector	Terminal	_	Condition	Resistance	
			CVT fluid temperature: 20°C (68°F)	5.5 – 7.0 Ω	
F209	1	Ground	CVT fluid temperature: 50°C (122°F)	6.0 – 8.0 Ω	
			CVT fluid temperature: 80°C (176°F)	$6.5 - 8.5 \Omega$	

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-47, "Intermittent Incident".

TM-375 Revision: November 2015 2016 Pathfinder TM

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### P0962 PRESSURE CONTROL SOLENOID A

< DTC/CIRCUIT DIAGNOSIS >

[CVT: RE0F10J]

NO >> There is malfunction of line pressure solenoid valve circuit. Replace transaxle assembly. Refer to <a href="https://doi.org/10.1007/jwa.2007/

### P0963 PRESSURE CONTROL SOLENOID A

< DTC/CIRCUIT DIAGNOSIS >

### P0963 PRESSURE CONTROL SOLENOID A

DTC Logic

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#### DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P0963	PC SOLENOID A (Pressure Control Solenoid A Control Circuit High)	When all of the following conditions are satisfied and this state is maintained for 0.2 seconds:  TCM power supply voltage: More than 11 V  P0962 is not detected  TCM judges that solenoid valve circuit is open.	<ul> <li>Harness or connector (Line pressure solenoid valve circuit is open or shorted to power supply)</li> <li>Line pressure solenoid valve</li> </ul>

### DTC CONFIRMATION PROCEDURE

### 1. PREPARATION BEFORE WORK

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

>> GO TO 2.

### 2. CHECK DTC DETECTION

- 1. Start the engine and wait for 5 seconds or more.
- 2. Check the first trip DTC.

### Is "P0963" detected?

YES >> Go to TM-377, "Diagnosis Procedure".

NO >> INSPECTION END

### Diagnosis Procedure

## 1. CHECK CIRCUIT BETWEEN TCM AND CVT UNIT

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

TCM		CV	Continuity	
Connector	Terminal	Connector	Terminal	Continuity
F89	30	F46	1	Existed

### Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace damaged parts.

### 2.CHECK LINE PRESSURE SOLENOID VALVE CIRCUIT

Check continuity between CVT unit harness connector terminal and ground.

CVT unit			Condition	Resistance	
Connector	Terminal	_	Condition	Resistance	
			CVT fluid temperature: 20°C (68°F)	5.5 – 7.0 Ω	
F209	F209 1 G	Ground	CVT fluid temperature: 50°C (122°F)	6.0 – 8.0 Ω	
			CVT fluid temperature: 80°C (176°F)	$6.5 - 8.5 \Omega$	

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-47, "Intermittent Incident".

### P0963 PRESSURE CONTROL SOLENOID A

< DTC/CIRCUIT DIAGNOSIS >

[CVT: RE0F10J]

NO >> There is malfunction of line pressure solenoid valve circuit. Replace transaxle assembly. Refer to <a href="https://doi.org/10.1007/jwa.2007/

### P0965 PRESSURE CONTROL SOLENOID B

< DTC/CIRCUIT DIAGNOSIS >

### P0965 PRESSURE CONTROL SOLENOID B

DTC Logic

[CVT: RE0F10J]

В

### DTC DETECTION LOGIC

### P0965 PRESSURE CONTROL SOLENOID B

#### < DTC/CIRCUIT DIAGNOSIS >

## 1. PREPARATION BEFORE WORK

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

>> GO TO 2.

## 2. CHECK DTC DETECTION

- 1. Start the engine.
- Drive the vehicle.
- 3. Maintain the following conditions for 20 seconds or more.

Vehicle speed : 40 km/h (25 MPH) or more

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

### Is "P0965" detected?

YES >> Go to TM-380, "Diagnosis Procedure".

NO >> INSPECTION END

### Diagnosis Procedure

INFOID:0000000012552555

[CVT: RE0F10J]

### 1. CHECK INTERMITTENT INCIDENT

Refer to GI-47, "Intermittent Incident".

#### Is the inspection result normal?

YES >> Replace transaxle assembly. Refer to TM-444, "Removal and Installation".

NO >> Repair or replace malfunctioning parts.

### P0966 PRESSURE CONTROL SOLENOID B

< DTC/CIRCUIT DIAGNOSIS >

### P0966 PRESSURE CONTROL SOLENOID B

DTC Logic INFOID:0000000012552556

#### DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P0966	PC SOLENOID B (Pressure Control Solenoid B Control Circuit Low)	<ul> <li>When all of the following conditions are satisfied and this state is maintained for 0.48 seconds:</li> <li>TCM power supply voltage: More than 11 V</li> <li>TCM judges that solenoid valve circuit is shorted to ground.</li> </ul>	Harness or connector     (Primary pressure solenoid valve circuit shorted to ground)     Primary pressure solenoid valve

### DTC CONFIRMATION PROCEDURE

### 1. PREPARATION BEFORE WORK

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

>> GO TO 2.

### 2.CHECK DTC DETECTION

Start the engine and wait for 5 seconds or more.

Check the first trip DTC.

### Is "P0966" detected?

YES >> Go to TM-381, "Diagnosis Procedure".

>> INSPECTION END NO

### Diagnosis Procedure

## 1. CHECK CIRCUIT BETWEEN TCM AND CVT UNIT

Turn ignition switch OFF.

Disconnect TCM connector and CVT unit connector.

Check continuity between TCM harness connector terminal and ground.

TO	CM	_	Continuity
Connector	Terminal		Continuity
F89	40	Ground	Not existed

### Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace damaged parts.

### 2.CHECK PRIMARY PRESSURE SOLENOID VLAVE CIRCUIT

Check continuity between CVT unit harness connector terminal and ground.

CVT unit			Condition	Resistance	
Connector	Terminal	_	Condition	Resistance	
			CVT fluid temperature: 20°C (68°F)	5.5 – 7.0 Ω	
F209	2	Ground	CVT fluid temperature: 50°C (122°F)	6.0 – 8.0 Ω	
			CVT fluid temperature: 80°C (176°F)	$6.5 - 8.5 \Omega$	

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-47, "Intermittent Incident".

TM-381 Revision: November 2015 2016 Pathfinder TM

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INFOID:0000000012552557

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### P0966 PRESSURE CONTROL SOLENOID B

< DTC/CIRCUIT DIAGNOSIS >

[CVT: RE0F10J]

NO >> There is malfunction of primary pressure solenoid valve circuit. Replace transaxle assembly. Refer to <a href="mailto:TM-444">TM-444</a>, "Removal and Installation".

### P0967 PRESSURE CONTROL SOLENOID B

< DTC/CIRCUIT DIAGNOSIS >

### P0967 PRESSURE CONTROL SOLENOID B

DTC Logic

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#### DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P0967	PC SOLENOID B (Pressure Control Solenoid B Control Circuit High)	<ul> <li>When all of the following conditions are satisfied and this state is maintained for 0.2 seconds:</li> <li>TCM power supply voltage: More than 11 V</li> <li>P0966 is not detected</li> <li>TCM judges that solenoid valve circuit is open.</li> </ul>	Harness or connector     (Primary pressure solenoid valve circuit open or shorted to power supply)     Primary pressure solenoid valve

### DTC CONFIRMATION PROCEDURE

## 1. PREPARATION BEFORE WORK

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

>> GO TO 2.

### 2. CHECK DTC DETECTION

- 1. Start the engine and wait for 5 seconds or more.
- 2. Check the first trip DTC.

### Is "P0967" detected?

YES >> Go to TM-383, "Diagnosis Procedure".

NO >> INSPECTION END

### Diagnosis Procedure

## 1. CHECK CIRCUIT BETWEEN TCM AND CVT UNIT

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

TCM		CVT	Continuity	
Connector	Terminal	Connector	Terminal	Continuity
F89	40	F46	2	Existed

### Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace damaged parts.

### 2.CHECK PRIMARY PRESSURE SOLENOID VALVE CIRCUIT

Check continuity between CVT unit harness connector terminal and ground.

CVT unit			Condition	Resistance	
Connector	Terminal	_	Condition	Resistance	
			CVT fluid temperature: 20°C (68°F)	5.5 – 7.0 Ω	
F209	2 Ground		CVT fluid temperature: 50°C (122°F)	6.0 – 8.0 Ω	
			CVT fluid temperature: 80°C (176°F)	$6.5 - 8.5 \Omega$	

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-47, "Intermittent Incident".

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### P0967 PRESSURE CONTROL SOLENOID B

< DTC/CIRCUIT DIAGNOSIS >

[CVT: RE0F10J]

NO >> There is malfunction of primary pressure solenoid valve circuit. Replace transaxle assembly. Refer to <a href="mailto:TM-444">TM-444</a>, "Removal and Installation".

### **P2765 INPUT SPEED SENSOR B**

< DTC/CIRCUIT DIAGNOSIS >

### P2765 INPUT SPEED SENSOR B

DTC Logic

[CVT: RE0F10J]

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### DTC DETECTION LOGIC

OTC CONSULT screen terms (Trouble diagnosis content)	dition	Possible causes
(Trouble diagnosis content)	dition  2, 3 or 4 is saided for 5 secconditions are: More than a detion, it spend conditions are maintained for Less than 14 1000 rpm or more conditions are maintained for more or mo	Harness or connector (Output speed sensor circuit is open or shorted)     Output speed sensor

DTC CONFIRMATION PROCEDURE

#### CAUTION:

Be careful of the driving speed.

1. PREPARATION BEFORE WORK

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

### P2765 INPUT SPEED SENSOR B

>> GO TO 2.

## 2. CHECK DTC DETECTION

1. Start the engine.

2. Drive the vehicle.

3. Maintain the following conditions for 10 seconds or more.

Selector lever : "D" position

Engine speed : 1,200 rpm or more

Vehicle speed : 55 km/h (34 MPH) or more

4. Stop the vehicle.

5. Check the first trip DTC.

#### Is "P2765" detected?

YES >> Go to TM-386, "Diagnosis Procedure".

NO >> INSPECTION END

### Diagnosis Procedure

INFOID:0000000012552561

[CVT: RE0F10J]

## 1. CHECK OUTPUT SPEED SENSOR POWER CIRCUIT

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

	+		
Output speed sensor		_	Voltage
Connector Terminal			
F23	3	Ground	10 – 16 V

#### Is the inspection result normal?

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

## 2.check output speed sensor ground circuit

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

Output sp	eed sensor		Continuity
Connector	Terminal		Continuity
F23	1	Ground	Existed

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> Repair or replace malfunctioning parts.

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

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

Output speed sensor		TCM		Continuity
Connector	Terminal	Connector Terminal		Continuity
F23	2	F89	34	Existed

#### Is the inspection result normal?

#### P2765 INPUT SPEED SENSOR B

#### < DTC/CIRCUIT DIAGNOSIS >

YES >> GO TO 4.

NO >> Repair or replace malfunctioning parts.

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

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

Output sp	eed sensor		Continuity
Connector	Terminal		Continuity
F23	2	Ground	Not existed

#### Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace malfunctioning parts.

### 5. CHECK TCM INPUT SIGNALS

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

+ TCM		_	Condition	Frequency (Approx.)
Connector	Terminal			, <i>,</i>
F89	34	Ground	Selector lever: "L" position     Vehicle speed: 20 km/h (12 MPH)	200 Hz 2.5mSec/div 5V/div JSDIA1904GB

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-47, "Intermittent Incident".

NO >> Replace output speed sensor. Refer to TM-434, "Removal and Installation".

### 6. DETECT MALFUNCTIONING ITEMS

### Check the following items:

- Open circuit or short circuit in harness between ignition switch and IPDM E/R. Refer to PG-28, "Wiring Diagram IGNITION POWER SUPPLY -".
- Open circuit or short circuit in harness between IPDM E/R harness connector terminal 61 and output speed sensor harness connector terminal 3.
- 10A fuse (No.46, located in the IPDM E/R). Refer to PG-78, "Terminal Arrangement".
- IPDM E/R

#### Is the check result normal?

YES >> Check intermittent incident. Refer to GI-47, "Intermittent Incident".

NO >> Repair or replace malfunctioning parts.

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### P2813 SELECT SOLENOID

DTC Logic

### DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P2813	SELECT SOLENOID (Select solenoid)	<ul> <li>When any of 1, or 2 is satisfied:</li> <li>1. When all the following conditions are established three times in 1DC</li> <li>Precondition</li> <li>DTC other than the applicable DTC is not detected.</li> <li>Throttle position: More than 6.27 deg.</li> <li>Vehicle speed: Less than 3 km/h (1 MPH)</li> <li>CVT fluid temperature: More than 20°C (68°F)</li> <li>Selector lever: Other than P, N</li> <li>Turbine speed when performed N → D, N (P) → R: More than 500 rpm</li> <li>TCM power supply voltage: More than 11 V</li> <li>Detection time</li> <li>N → D: 0.4 seconds</li> <li>N → R: 0.3 seconds</li> <li>P → R: 0.3 seconds</li> <li>P → R: 0.3 seconds</li> <li>P → Re ounting of time continues while all of the following conditions are satisfied and this state is maintained for 30 seconds:</li> <li>The counting of time continues while all of the following conditions are satisfied and stops when the conditions become unsatisfied (the count is maintained). When accumulated time reaches 30 seconds (Clutch is judged as engaged and the count is reset.)</li> <li>Selector lever: Other than P, N</li> <li>Vehicle speed: Less than 3 km/h (1 MPH)</li> <li>Differences between primary pulley speed and secondary speed: Less than 120 rpm</li> <li>Clutch instructions pressure: 0.95 MPa or more</li> <li>Differences between turbine speed and input speed: Less than 200 rpm</li> <li>Turbine speed – speed: More than 450 rpm</li> <li>DTC other than the applicable DTC is not detected.</li> <li>TCM power supply voltage: More than 11 V</li> </ul>	Select solenoid valve

### NOTE:

DC stands for "DRIVING CYCLE" and indicates a series of driving cycle of "Ignition switch OFF  $\rightarrow$  ON  $\rightarrow$  driving  $\rightarrow$  OFF".

### DTC CONFIRMATION PROCEDURE

#### **CAUTION:**

Be careful of the driving speed.

1.PREPARATION BEFORE WORK

### **P2813 SELECT SOLENOID**

[CVT: RE0F10J] < DTC/CIRCUIT DIAGNOSIS >

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

>> GO TO 2.

## 2. CHECK DTC DETECTION 1

Start the engine.

Maintain the following conditions. (Keep 30seconds or more after the selector lever shifted.)

 $: N \rightarrow D, \, N \rightarrow R, \, P \rightarrow R$ Selector lever

3. Check the first trip DTC.

#### Is "P2813" detected?

>> Go to TM-389, "Diagnosis Procedure". YES

>> INSPECTION END NO

### Diagnosis Procedure

1. CHECK INTERMITTENT INCIDENT

Refer to GI-47, "Intermittent Incident".

#### Is the inspection result normal?

YES >> Replace transaxle assembly. Refer to TM-444, "Removal and Installation".

NO >> Repair or replace malfunctioning parts.

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### **P2814 SELECT SOLENOID**

[CVT: RE0F10J]

< DTC/CIRCUIT DIAGNOSIS >

### P2814 SELECT SOLENOID

**DTC** Logic INFOID:0000000012552564

#### DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P2814	SELECT SOLENOID (Select solenoid)	<ul> <li>When all of the following conditions are satisfied and this state is maintained for 0.48 seconds:</li> <li>TCM power supply voltage: 11 V or more</li> <li>TCM judges that solenoid valve circuit is shorted to ground.</li> </ul>	Harness or connector     (Select solenoid valve circuit shorted to ground)     Select solenoid valve

#### DTC CONFIRMATION PROCEDURE

Be careful of the driving speed.

1.PREPARATION BEFORE WORK

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

>> GO TO 2.

## 2. CHECK DTC DETECTION

- Start the engine.
- Maintain the following conditions. (Keep 5 seconds or more after the selector lever shifted.)

Selector lever  $: N \rightarrow D, N \rightarrow R, P \rightarrow R$ 

3. Check the first trip DTC.

#### Is "P2814" detected?

YES >> Go to TM-390, "Diagnosis Procedure".

>> INSPECTION END NO

## Diagnosis Procedure

INFOID:0000000012552565

## 1. CHECK CIRCUIT BETWEEN TCM AND CVT UNIT

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

TO	CM		Continuity
Connector	Connector Terminal		Continuity
F89	37	Ground	Not existed

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace damaged parts.

2.CHECK SELECT SOLENOID VALVE CIRCUIT

Check continuity between CVT unit harness connector terminal and ground.

### **P2814 SELECT SOLENOID**

### < DTC/CIRCUIT DIAGNOSIS >

CVT	unit		Condition	Resistance	
Connector	Terminal	_	Condition	Resistance	
			CVT fluid temperature: 20°C (68°F)	5.5 – 7.0 Ω	
F209	4	Ground	CVT fluid temperature: 50°C (122°F)	$6.0 - 8.0 \Omega$	
			CVT fluid temperature: 80°C (176°F)	$6.5 - 8.5 \Omega$	

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### Is the inspection result normal?

- YES >> Check intermittent incident. Refer to GI-47, "Intermittent Incident".
- NO >> There is malfunction of select solenoid valve circuit. Replace transaxle assembly. Refer to TM-444, "Removal and Installation".

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### **P2815 SELECT SOLENOID**

< DTC/CIRCUIT DIAGNOSIS >

### P2815 SELECT SOLENOID

DTC Logic

#### DTC DETECTION LOGIC

DTC	CONSULT screen terms (Trouble diagnosis content)	DTC detection condition	Possible causes
P2815	SELECT SOLENOID (Select solenoid)	<ul> <li>When all of the following conditions are satisfied and this state is maintained for 0.2 seconds:</li> <li>TCM power supply voltage: More than 11 V</li> <li>TCM judges that solenoid valve circuit is open.</li> <li>P2814 is not detected.</li> </ul>	Harness or connector     (Select solenoid valve circuit open or shorted to power supply)     Select solenoid valve

### DTC CONFIRMATION PROCEDURE

### 1. PREPARATION BEFORE WORK

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

>> GO TO 2.

### 2. CHECK DTC DETECTION

- 1. Start the engine.
- 2. Maintain the following conditions. (Keep 5 seconds or more after the selector lever shifted.)

Selector lever :  $N \rightarrow D$ ,  $N \rightarrow R$ ,  $P \rightarrow R$ 

3. Check the first trip DTC.

#### Is "P2815" detected?

YES >> Go to TM-392, "Diagnosis Procedure".

NO >> INSPECTION END

## Diagnosis Procedure

INFOID:0000000012552567

[CVT: RE0F10J]

## 1. CHECK CIRCUIT BETWEEN TCM AND CVT UNIT

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

ТС	TCM		CVT unit	
Connector	Terminal	Connector Terminal		Continuity
F89	37	F46	4	Existed

#### Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace damaged parts.

### 2.CHECK SELECT SOLENOID VALVE CIRCUIT

Check continuity between CVT unit harness connector terminal and ground.

### **P2815 SELECT SOLENOID**

### < DTC/CIRCUIT DIAGNOSIS >

CVT	unit		Condition	Resistance
Connector	Terminal	_	Condition	Resistance
			CVT fluid temperature: 20°C (68°F)	5.5 – 7.0 Ω
F209	4	Ground	CVT fluid temperature: 50°C (122°F)	6.0 – 8.0 Ω
			CVT fluid temperature: 80°C (176°F)	$6.5 - 8.5 \Omega$

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[CVT: RE0F10J]

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### Is the inspection result normal?

- YES >> Check intermittent incident. Refer to GI-47, "Intermittent Incident".
- NO >> There is malfunction of select solenoid valve circuit. Replace transaxle assembly. Refer to TM-444, "Removal and Installation".

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### MAIN POWER SUPPLY AND GROUND CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

### MAIN POWER SUPPLY AND GROUND CIRCUIT

### Diagnosis Procedure

INFOID:0000000012552568

[CVT: RE0F10J]

## 1. CHECK TCM POWER CIRCUIT (PART 1)

- 1. Turn ignition switch OFF.
- 2. Disconnect TCM connector.
- 3. Check voltage between TCM harness connector terminals and ground.

+			
TCM		_	Voltage
Connector	Terminal		
F89	45	Ground	10 – 16 V
	46	Giouna	

### Is the inspection result normal?

YES >> GO TO 2.

NO >> GO TO 4.

### 2.CHECK TCM POWER CIRCUIT (PART 2)

Check voltage between TCM harness connector terminals and ground.

+		_	Condition	Voltage
TCM				
Connector	Terminal			
F89 –	47	- Ground	Ignition switch ON	10 – 16 V
			Ignition switch OFF	Approx. 0 V
	48		Ignition switch ON	10 – 16 V
			Ignition switch OFF	Approx. 0 V

#### Is the inspection result normal?

YES >> GO TO 3.

NO >> GO TO 5.

## 3. CHECK TCM GROUND CIRCUIT

Check continuity between TCM harness connector terminals and ground.

TCM			Continuity
Connector	Terminal	_	Continuity
F89	41	Ground	Existed
	42	Ground	

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to <a href="GI-47">GI-47</a>, "Intermittent Incident".

NO >> Repair or replace malfunctioning parts.

### **4.** DETECT MALFUNCTION ITEMS (PART 1)

#### Check the following items:

- Open circuit or short circuit in harness between battery positive terminal and fuse block (J/B). Refer to PG-28, "Wiring Diagram - IGNITION POWER SUPPLY -".
- Open circuit or short circuit in harness between fuse block (J/B) harness connector terminal 2N and TCM harness connector terminal 45, and 46.
- 10A fuse [No.25, located in the fuse block (J/B)]. Refer to PG-78, "Terminal Arrangement".

#### Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-47, "Intermittent Incident".

# MAIN POWER SUPPLY AND GROUND CIRCUIT [CVT: RE0F10J] < DTC/CIRCUIT DIAGNOSIS > NO >> Repair or replace malfunctioning parts. 5. DETECT MALFUNCTIONING ITEMS (PART 2) Α Check the following items: Open circuit or short circuit in harness between ignition switch and IPDM E/R. Refer to PG-28, "Wiring Diagram - IGNITION POWER SUPPLY -". • Open circuit or short circuit in harness between IPDM E/R harness connector terminal 61 and TCM harness connector terminal 47, and 48. • 10A fuse (No.46, located in the IPDM E/R). Refer to PG-78, "Terminal Arrangement". C IPDM E/R Is the check result normal? YES $\mathsf{TM}$ >> Check intermittent incident. Refer to GI-47, "Intermittent Incident". NO >> Repair or replace malfunctioning parts. Е F Н K L

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### SHIFT POSITION INDICATOR CIRCUIT

< DTC/CIRCUIT DIAGNOSIS >

### SHIFT POSITION INDICATOR CIRCUIT

### Component Parts Function Inspection

INFOID:0000000012552569

[CVT: RE0F10J]

## 1. CHECK SHIFT POSITION INDICATOR

- 1. Start the engine.
- Shift selector lever.
- Check that the selector lever position and the shift position indicator on the combination meter are identical.

#### Is the inspection result normal?

YES >> INSPECTION END

NO >> Go to TM-396, "Diagnosis Procedure".

### Diagnosis Procedure

INFOID:0000000012552570

## 1. CHECK TCM INPUT/OUTPUT SIGNAL

### (P)With CONSULT

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

#### Is the check result normal?

YES >> INSPECTION END

- NO-1 ("RANGE" is changed but is not displayed on shift position indicator.>>Check "Self Diagnostic Result" in "TRANSMISSION".
- NO-2 ("RANGE" and shift position indicator are different.)>>Check "Self Diagnostic Result" in "TRANSMIS-SION".
- NO-3 (Specific "RANGE" is not displayed on shift position indicator.)>>Check "Self Diagnostic Result" in "METER/M&A".

## **OVERDRIVE CONTROL SWITCH**

### < DTC/CIRCUIT DIAGNOSIS >

## OVERDRIVE CONTROL SWITCH

## Component Function Check

# $oldsymbol{1}$ . CHECK OD OFF INDICATOR LAMP FUNCTION

Check OD OFF indicator lamp turns ON for approx. 2 seconds when ignition switch turns ON.

### Is the inspection results normal?

YES >> GO TO 2.

NO >> Go to TM-400, "Diagnosis Procedure".

## 2.check overdrive control switch function

Shift the selector lever to "D" position.

Check that OD OFF indicator lamp turns ON/OFF when overdrive control switch is operated.

## Is the inspection results normal?

YES >> INSPECTION END

>> Go to TM-397, "Diagnosis Procedure". NO

## Diagnosis Procedure

## $oldsymbol{1}$ . CHECK OVERDRIVE CONTROL SWITCH CIRCUIT

- Turn ignition switch OFF.
- 2. Disconnect CVT shift selector connector.
- Turn ignition switch ON.
- Check voltage between CVT shift selector harness connector terminals.

	V-11		
Connector	Voltage (Approx.)		
Connector	Terr	<b>、</b> 11	
M78	1	2	Battery voltage

### Is the inspection result normal?

YES >> GO TO 2.

NO >> GO TO 4.

## 2.CHECK CVT SHIFT SELECTOR ASSEMBLY

Check continuity between CVT shift selector connector terminals.

CVT shift selector	Condition	Continuity	
Terminal	Gondinon	Continuity	
1 – 2	Overdrive control switch is depressed.	Existed	
1-2	Overdrive control switch is released.	Not existed	

## Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-47, "Intermittent Incident".

NO >> GO TO 3.

## 3.CHECK OVERDRIVE CONTROL SWITCH

- Remove shift selector handle. Refer to TM-416, "Exploded View".
- Check overdrive control switch. Refer to TM-398, "Component Inspection".

## Is the inspection result normal?

YES >> Replace CVT shift selector assembly. Refer to TM-416, "Removal and Installation".

NO >> Repair or replace malfunctioning parts.

## CHECK GROUND CIRCUIT

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

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## **OVERDRIVE CONTROL SWITCH**

#### < DTC/CIRCUIT DIAGNOSIS >

CVT shif	CVT shift selector		Continuity
Connector Terminal		_	Continuity
M78	2	Ground	Existed

## Is the inspection result normal?

YES >> GO TO 5.

NO >> Repair or replace malfunctioning parts.

# ${f 5.}$ CHECK CIRCUIT BETWEEN CVT SHIFT SELECTOR AND COMBINATION METER (PART 1)

- Turn ignition switch OFF.
- 2. Disconnect combination meter connector.
- Check continuity between CVT shift selector harness connector terminal and combination meter harness connector terminal.

CVT shift selector		Combination meter		Continuity
Connector	Terminal	Connector	Terminal	Continuity
M78	1	M24	52	Existed

### Is the inspection result normal?

YES >> GO TO 6.

NO >> Repair or replace malfunctioning parts.

## 6.CHECK CIRCUIT BETWEEN CVT SHIFT SELECTOR AND COMBINATION METER (PART 2)

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

CVT shift selector			Continuity
Connector	Connector Terminal		Continuity
M78	1	Ground	Not existed

### Is the inspection result normal?

YES >> GO TO 7.

NO >> Repair or replace malfunctioning parts.

# 7.CHECK COMBINATION METER INPUT SIGNAL

- Connect all of disconnected connectors.
- Turn ignition switch ON.
- 3. Select "Data Monitor" in "METER/M&A".
- Select "O/D OFF SW".
- Check that "O/D OFF SW" turns ON/OFF when overdrive control switch is operated. Refer to <u>MWI-23</u>.
   "Reference Value".

## Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-47, "Intermittent Incident".

NO >> Replace combination meter. Refer to MWI-85, "Removal and Installation".

## Component Inspection

INFOID:0000000012552573

[CVT: RE0F10J]

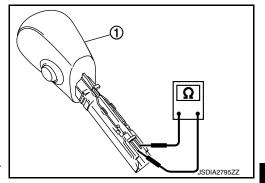
1. CHECK OVERDRIVE CONTROL SWITCH

## **OVERDRIVE CONTROL SWITCH**

## < DTC/CIRCUIT DIAGNOSIS >

Check continuity between wires of shift selector handle ①.

Condition	Continuity
Overdrive control switch is depressed	Existed
Overdrive control switch is released	Not existed



[CVT: RE0F10J]

## Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace shift selector handle. Refer to <u>TM-416</u>, <u>"Exploded View"</u>.

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## OD OFF INDICATOR LAMP

### < DTC/CIRCUIT DIAGNOSIS >

## OD OFF INDICATOR LAMP

## Component Function Check

INFOID:0000000012552574

[CVT: RE0F10J]

## 1. CHECK OD OFF INDICATOR LAMP FUNCTION

Check OD OFF indicator lamp turns ON for approx. 2 seconds when ignition switch turns ON.

## Is the inspection results normal?

YES >> INSPECTION END

NO >> Go to TM-400, "Diagnosis Procedure".

## Diagnosis Procedure

INFOID:0000000012552575

## 1. CHECK DTC (TCM)

## (P)With CONSULT

- 1. Turn ignition switch ON.
- Check "Self Diagnostic Results" in "TRANSMISSION".

### Is any DTC detected?

YES >> Check DTC detected item. Refer to TM-286, "DTC Index".

NO >> GO TO 2.

# 2.CHECK DTC (COMBINATION METER)

#### (P)With CONSULT

Check "Self Diagnostic Results" in "METER/M&A".

### Is any DTC detected?

YES >> Check DTC detected item. Refer to TM-286, "DTC Index".

NO >> GO TO 3.

## 3. CHECK COMBINATION METER INPUT/OUTPUT SIGNAL

## (P)With CONSULT

- 1. Shift the selector lever to "D" position.
- 2. Select "Data Monitor" in "METER/M&A".
- Select "O/D OFF IND".
- Check that "O/D OFF IND" turns ON/OFF when overdrive control switch is operated. Refer to <u>MWI-23</u>, <u>"Reference Value"</u>.

#### Is the inspection result normal?

YES >> Replace combination meter. Refer to <a href="MWI-85">MWI-85</a>, "Removal and Installation".

NO >> GO TO 4.

## 4. CHECK TCM INPUT/OUTPUT SIGNAL

#### (P)With CONSULT

- Select "Data Monitor" in "TCM".
- Select "SPORT MODE IND".
- Check that "SPORT MODE IND" turns ON/OFF when overdrive control switch is operated. Refer to <u>TM-</u> 275, "Reference Value".

### Is the inspection result normal?

YES >> Replace combination meter. Refer to MWI-85, "Removal and Installation".

NO >> Check overdrive control switch circuit. Refer to TM-397, "Diagnosis Procedure".

### TOW MODE SYSTEM

### [CVT: RE0F10J] < DTC/CIRCUIT DIAGNOSIS > TOW MODE SYSTEM Α Component Function Check INFOID:0000000012552576 ${f 1}$ . CHECK TOW MODE SWITCH FUNCTION В Check that TOW mode indicator lamp turns ON/OFF when tow mode switch is operated. Is the inspection results normal? YES >> INSPECTION END NO >> Go to TM-401, "Diagnosis Procedure". Diagnosis Procedure INFOID:0000000012552577 TM 1. CHECK DTC (TCM) (P)With CONSULT Start the engine. Check "Self Diagnostic Results" in "TRANSMISSION". Is any DTC detected? YES >> Check DTC detected item. Refer to TM-286, "DTC Index". NO >> GO TO 2. 2.CHECK DTC (COMBINATION METER) (P)With CONSULT Check "Self Diagnostic Results" in "METER/M&A". Is any DTC detected? YES >> Check DTC detected item. Refer to MWI-29, "DTC Index". NO >> GO TO 3. 3.CHECK COMBINATION METER INPUT/OUTPUT SIGNAL (P)With CONSULT Select "Data Monitor" in "METER/M&A". Select "TOW MODE IND". Check that "TOW MODE IND" turns ON/OFF when tow mode switch is operated. Refer to MWI-23, "Reference Value". Is the inspection result normal? >> Replace the combination meter. Refer to MWI-85, "Removal and Installation". NO >> GO TO 4. 4. CHECK TOW MODE SWITCH CIRCUIT Turn ignition switch OFF. Disconnect tow mode switch connector. 2. 3. Turn ignition switch ON. Check voltage between tow mode switch harness connector terminals. N Tow mode switch Voltage (Approx.) Connector Terminal 4 Battery voltage Is the inspection result normal? Р YES >> GO TO 5. NO >> GO TO 6. 5. CHECK TOW MODE SWITCH Check tow mode switch. Refer to TM-402, "Component Inspection".

>> Check intermittent incident. Refer to GI-47, "Intermittent Incident".

Is the inspection result normal?

## TOW MODE SYSTEM

### < DTC/CIRCUIT DIAGNOSIS >

NO >> Repair or replace malfunctioning parts.

## 6.CHECK TOW MODE SWITCH GROUND CIRCUIT

- 1. Turn ignition switch OFF.
- Check continuity between tow mode switch harness connector terminal and ground.

Tow mod	Tow mode switch  Connector Terminal		Continuity
Connector			Continuity
M6	4	Ground	Existed

#### Is the inspection result normal?

YES >> GO TO 7.

NO >> Repair or replace malfunctioning parts.

# 7.check circuit between combination meter and tow mode switch (part 1)

- 1. Disconnect combination meter connector.
- Check continuity between combination meter harness connector terminal and tow mode switch harness connector terminal.

Combination meter		Tow mode switch		Continuity
Connector	Terminal	Connector	Terminal	Continuity
M24	19	M6	1	Existed

### Is the inspection result normal?

YES >> GO TO 8.

NO >> Repair or replace malfunctioning parts.

## 8.CHECK CIRCUIT BETWEEN COMBINATION METER AND TOW MODE SWITCH (PART 2)

Check continuity between combination meter harness connector terminal and ground.

Combina	tion meter	_	Continuity	
Connector	Terminal		Continuity	
M24	19	Ground	Not existed	

#### Is the inspection result normal?

YES >> GO TO 9.

NO

>> Repair or replace malfunctioning parts.

# 9.CHECK COMBINATION METER INPUT/OUTPUT SIGNAL (PART 3)

- Connect combination meter connector.
- 2. Turn ignition switch ON.
- 3. Check voltage between combination meter harness connector terminal and ground.

+			
Combination meter		_	Voltage
Connector	Terminal		
M24	19	Ground	Battery voltage

## Is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-47, "Intermittent Incident".

NO >> Replace the combination meter. Refer to MWI-85, "Removal and Installation".

## Component Inspection

INFOID:0000000012552578

[CVT: RE0F10J]

## 1. CHECK TOW MODE SWITCH

Check continuity between tow mode switch connector terminals.

## **TOW MODE SYSTEM**

## < DTC/CIRCUIT DIAGNOSIS >

TOW mode switch	Condition	Continuity
Terminal	Condition	
1 – 4	Tow mode switch is depressed.	Existed
	Tow mode switch is released.	Not existed

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## Is the inspection result normal?

YES >> INSPECTION END

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### SHIFT LOCK SYSTEM

< DTC/CIRCUIT DIAGNOSIS >

## SHIFT LOCK SYSTEM

## Component Function Check

INFOID:0000000012552579

[CVT: RE0F10J]

# 1.CHECK SHIFT LOCK OPERATION (PART 1)

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

### Can the selector lever be shifted to any other position?

YES >> Go to TM-404, "Diagnosis Procedure".

NO >> GO TO 2.

## 2.CHECK SHIFT LOCK OPERATION (PART 2)

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

## Can the selector lever be shifted to any other position?

YES >> Inspection End.

NO >> Go to TM-404, "Diagnosis Procedure".

## Diagnosis Procedure

INFOID:0000000012552580

Regarding Wiring Diagram information, refer to TM-300, "Wiring diagram".

## 1. CHECK POWER SOURCE

- 1. Turn ignition switch OFF.
- Disconnect BCM connector M18.
- Check voltage between BCM connector M18 terminal 27 and ground while pressing the brake pedal.

В	СМ		Condition	Voltage
Connector	Terminal	Ground	Brake pedal de-	Battery voltage
M18	27		pressed	Dattery voltage

## Is the inspection result normal?

YES >> GO TO 3.

NO >> GO TO 2.

## 2.CHECK STOP LAMPS

Do the stop lamps operate normally?

### Is the inspection result normal?

YES >> Check the following:

- Harness between fuse block (J/B) and BCM.
- Fuse block (J/B).

NO >> Refer to TM-300, "Wiring diagram".

# 3.CHECK HARNESS BETWEEN BCM AND CVT SHIFT SELECTOR

- Disconnect CVT shift selector connector.
- Check continuity between BCM connector M80 terminal 108 and CVT shift selector connector M78 terminal 3.

В	CM	CVT shif	Continuity	
Connector	Terminal	Connector	Terminal	Continuity
M80	108	M78	3	Yes

3. Check continuity between BCM connector M80 terminal 108 and ground.

## SHIFT LOCK SYSTEM

#### < DTC/CIRCUIT DIAGNOSIS >

В	СМ		Continuity
Connector	Terminal	Ground	Continuity
M80	108		No

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[CVT: RE0F10J]

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## Is the inspection result normal?

YES >> GO TO 4.

NO >> Repair or replace harness or connector.

4. CHECK GROUND CIRCUIT (CVT SHIFT SELECTOR)

Check continuity between CVT shift selector connector M78 terminal 4 and ground.

CVT shit	ft selector		Continuity
Connector	Terminal	Ground	Continuity
M78	4		Yes

#### Is the inspection result normal?

YES >> Replace CVT shift selector. Refer to TM-416, "Removal and Installation".

NO >> Repair or replace harness or connector.

## Component Inspection (Shift Lock Solenoid)

## 1. CHECK SHIFT LOCK SOLENOID

Apply voltage to terminals of shift lock solenoid and park position switch (shift selector) connector and check that shift lock solenoid is activated.

#### **CAUTION:**

- Connect the fuse between the terminals when applying the voltage.
- Never cause shorting between terminals.

+ (fuse)	-		
Shift lock	solenoid	Condition	Status
Terr	minal		
3	4	Apply 12 V between terminals 3 and 4 with the park position switch (shift selector) in the "P" (park) position.	Shift lock solenoid operates

### Is the inspection result normal?

YES >> Inspection End.

NO >> Replace CVT shift selector. Refer to TM-416, "Removal and Installation".

## Component Inspection (Park Position Switch)

## 1. CHECK PARK POSITION SWITCH (SHIFT SELECTOR)

Apply voltage to terminals of shift lock solenoid and park position switch (shift selector) connector and check that shift lock solenoid is activated.

### **CAUTION:**

- · Connect the fuse between the terminals when applying the voltage.
- Never cause shorting between terminals.

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## SHIFT LOCK SYSTEM

## < DTC/CIRCUIT DIAGNOSIS >

+ (fuse)	-		
Shift lock	solenoid	Condition	Status
Terr	minal		
3	4	Apply 12 V between terminals 3 and 4 with the park position switch (shift selector) in the "P" (park) position.	Shift lock solenoid operates

## Is the inspection result normal?

YES >> Inspection End.

NO >> Replace CVT shift selector. Refer to <a href="mailto:TM-416">TM-416</a>, "Removal and Installation".

## Component Inspection (Stop Lamp Switch)

INFOID:0000000012552583

[CVT: RE0F10J]

## 1. CHECK STOP LAMP SWITCH

Check the continuity between the stop lamp switch connector terminals.

Stop lan	np switch	Condition	Continuity
Terr	minal	Condition	Continuity
1	2	Depressed brake pedal	Yes
1	2	Released brake pedal	No

## Is the inspection result normal?

YES >> Inspection End.

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

## **CVT CONTROL SYSTEM**

[CVT: RE0F10J]

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< SYMPTOM DIAGNOSIS >

# SYMPTOM DIAGNOSIS

## **CVT CONTROL SYSTEM**

Symptom Table INFOID:0000000012552584

- The diagnosis item number indicates the order of check. Start checking in the order from 1.
- Perform diagnoses of symptom table 1 before symptom table 2.

Symptom Table 1

											(144)							TM
	Symptom	Engine system	CAN communication line	Transmission range switch (P0705, P0706)	Input speed sensor (P0717)	Primary speed sensor (P0715)	Secondary speed sensor (P2765)	CVT fluid temperature sensor (P0711, P0712, P0713)	Primary pressure sensor (P084C, P084D)	Secondary pressure sensor (P0841, P0847, P0848)	Torque converter clutch solenoid valve (P0740, P0743, P0744)	Stall test	CVT position	Power supply	Control valve	CVT fluid level and state	Ignition switch and starter	E F G H
		EC-148				]	ΓM-28	<u>36</u>				TM-314	TM-315	TM-394	TM-444	TM-412	PG-28, STR-5	J K
-	Large shock (N→ D position)	1	4	8				3			6		2		9	5		
Shift Shock	Large shock (N→ R position)	1	4	8				3			6		2		9	5		L
	Shock is too large for lock-up.	2	3								6		1		5	4		
	Vehicle cannot be started from D position.	8	3		5	6	7	9	10	11		4	2	12	13	1		M
	Vehicle cannot be started from R position.	8	3		5	6	7	9	10	11		4	2	12	13	1		
	Does not lock-up.	2	6	8	3	4	10	9	11	12	5	7			13	1		Ν
Slips/Will Not	Does not hold lock-up condition.	2	6	8	3	4	10	9	11	12	5	7			13	1		
Engage	Lock-up is not released.	2	6		3	4					5	7			8	1		0
	With selector lever in D position, acceleration is extremely poor.	3	4	5	7	8	9	12	10	11		2	6	13	14	1		
	With selector lever in R position, acceleration is extremely poor.	3	4	5	7	8	9	12	10	11		2	6	13	14	1		Р
	Slips at lock-up.	2	6	8	3	4	10	9	11	12	5	7			13	1		

[CVT: RE0F10J]

P0744) P0743, P0713) , P0848) (P0740, CVT fluid temperature sensor (P0711, P0712, sensor (P0841, P0847, P0706) Primary pressure sensor (P084C, P084D) clutch solenoid valve Transmission range switch (P0705, Secondary speed sensor (P2765) Primary speed sensor (P0715) nput speed sensor (P0717) Ignition switch and starter CAN communication line CVT fluid level and state Symptom Secondary pressure Torque converter Engine system Power supply Control valve CVT position test Stall STR-5 TM-315 TM-412 TM-314 TM-444 TM-394 TM-286 PG-28, No creep at all. Vehicle cannot run in all positions. With selector lever in D position, driving is not possible. With selector lever in R position, driving is not possible. Judder occurs during lock-up. Strange noise in D position. Strange noise in R position. Strange noise in N position. Vehicle does not decelerate by en-gine brake. Other Maximum speed low. With selector lever in P position, vehicle does not enter parking condition or, with selector lever in another position, parking condition is not cancelled. Vehicle runs with CVT in P position. Vehicle runs with CVT in N position. Engine stall. Engine stalls when selector lever shifted  $N \rightarrow D$  or R. Engine speed does not return to Does not shift 

## **CVT CONTROL SYSTEM**

< SYMPTO	OM DIAGNOSIS >												[0	CVT	: RE	:0F	10J]	
	Symptom	Enrine system	CAN communication line	Transmission range switch (P0705, P0706)	Input speed sensor (P0717)	Primary speed sensor (P0715)	Secondary speed sensor (P2765)	CVT fluid temperature sensor (P0711, P0712, P0713)	Primary pressure sensor (P084C, P084D)	Secondary pressure sensor (P0841, P0847, P0848)	Torque converter clutch solenoid valve (P0740, P0743, P0744)	Stall test	CVT position	Power supply	Control valve	CVT fluid level and state	Ignition switch and starter	E E
		FC-148		<u>·</u>			ΓM-2				<u> </u>	TM-314	TM-315	TM-394	TM-444	TM-412	PG-28, STR-5	(
Other	Engine does not start in N or P postion.	si-		3									2				1	
Other	Engine starts in positions other tha N or P.	n		3									2				1	
Symptom	Table 2																	
	Symptom	Torque converter	Transmission range switch	i i	diring iiO	Forward clutch		Reverse brake	Planetary gear		Bearings	Parking mechanism		Stop lamp switch	Shift lock solenoid		CVT shift selector	L
		TM-447					TN	1-443		1				TM-406	TM-404		TM-416	
	Large shock (N→ D position)		2			1												
Shift Shock	Large shock (N→ R position)		2	$\perp$	$ \rightarrow $			1								$\perp$		
	Shock is too large for lock-up.	1																

Revision: November 2015 TM-409 2016 Pathfinder

[CVT: RE0F10J]

		JWI DIAGNOSIS >											
Vehicle cannot be started from D position.		Symptom	Torque converter	Transmission range switch	Oil pump	Forward clutch	Reverse brake	Planetary gear	Bearings	Parking mechanism	Stop lamp switch	Shift lock solenoid	CVT shift selector
Does not lock-up.   1   3   2   2   3   3   3   3   3   3   3			TM-447				TM-443	<u>3</u>			TM-406	TM-404	TM-416
Does not lock-up.   1   3   2   2   3   3   3   3   3   3   3				3	1	2							
Does not hold lock-up condition.				4	1		2			3			
Not Engage   Lock-up is not released.   1		Does not lock-up.	1	3	2								
Not Engage   Lock-up is not released.   1	Slips/Will	Does not hold lock-up condition.	1	3	2								
acceleration is extremely poor.   1		Lock-up is not released.	1		2								
Slips at lock-up.   1			1	3		2							
No creep at all.  Vehicle cannot run in all positions.  1 2 4 5 3 6  With selector lever in D position, driving is not possible.  With selector lever in R position, driving is not possible.  1 2 4 3 5  With selector lever in R position, driving is not possible.  Judder occurs during lock-up.  Strange noise in D position.  1 2 4 3 5  Strange noise in R position.  1 2 4 3 5			1	4	2		3						
Vehicle cannot run in all positions.  1 2 4 5 3 6  With selector lever in D position, driving is not possible.  With selector lever in R position, driving is not possible.  1 2 4 3 5  With selector lever in R position, driving is not possible.  1 2 4 3 5  Strange noise in D position.  1 2 4 3 5  Strange noise in R position.  1 2 4 3 5		Slips at lock-up.	1		2								
tions.  With selector lever in D position, driving is not possible.  With selector lever in R position, driving is not possible.  Judder occurs during lock-up.  Strange noise in D position.  Strange noise in R position.		No creep at all.	1	6	2	4	5	3					
driving is not possible.  With selector lever in R position, driving is not possible.  Judder occurs during lock-up.  Strange noise in D position.  Strange noise in R position.  1 2 4 3 5  Strange noise in R position.  1 2 4 3 5			1		2	4	5	3		6			
driving is not possible.  Judder occurs during lock-up.  Strange noise in D position.  1 2 4 3 5  Strange noise in R position.  1 2 4 3 5			1		2	4		3		5			
Strange noise in D position. 1 2 4 3 5 Strange noise in R position. 1 2 4 3			1		2		4	3		5			
Strange noise in R position. 1 2 4 3		Judder occurs during lock-up.	1										
		Strange noise in D position.	1		2	4		3	5				
Strange noise in N position. 1 2 3		Strange noise in R position.	1		2		4	3					
		Strange noise in N position.	1		2			3					
Other Maximum speed low. 1 5 2 4 3	Other	Maximum speed low.	1	5	2	4		3					
With selector lever in P position, vehicle does not enter parking condition or, with selector lever in another position, parking condition is not cancelled.		vehicle does not enter parking condition or, with selector lever in another position, parking condi-								1			
Vehicle runs with CVT in P position.		T						2		1			
Vehicle runs with CVT in N position.						2	3	1					
Engine stall. 1		Engine stall.	1										
Engine stalls when selector lever shifted N $\rightarrow$ D or R.			1										
Does not shift 1		Does not shift			1								

## **CVT CONTROL SYSTEM**

< SYMPTOM DIAGNOSIS > [CVT: RE0F10J]

<u> </u>	JIVI DIAGNOSIS >											
	Symptom	Torque converter	Transmission range switch	Oil pump	Forward clutch	Reverse brake	Planetary gear	Bearings	Parking mechanism	Stop lamp switch	Shift lock solenoid	CVT shift selector
		TM-447				TM-443	3			TM-406	TM-404	TM-416
Other	When brake pedal is depressed with ignition switch ON, selector lever cannot be shifted from P position to other position.									1	2	3
Otriei	When brake pedal is not depressed with ignition switch ON, selector lever can be shifted from P position to other position.									1	2	3

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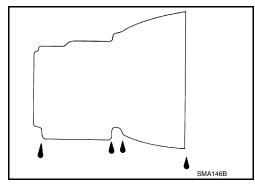
# PERIODIC MAINTENANCE

## **CVT FLUID**

Inspection INFOID:0000000012552585

#### **FLUID LEAKAGE**

- Check transaxle surrounding area (oil seal and plug etc.) for fluid leakage.
- If anything is found, repair or replace damaged parts and adjust CVT fluid level. Refer to TM-414, "Adjustment".



[CVT: RE0F10J]

INFOID:0000000012552586

Replacement

CVT fluid : Refer to TM-449, "General Specification".

Fluid capacity : Refer to TM-449, "General Specification".

#### **CAUTION:**

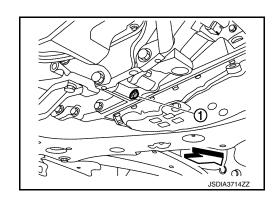
- Always use shop paper. Never use shop cloth.
- Replace a drain plug gasket with new ones at the final stage of the operation when installing.
- Use caution when looking into the drain hole as there is a risk of dripping fluid entering the eye.
- After replacement, always perform CVT fluid leakage check.
- 1. Select "Data Monitor" in "TRANSMISSION" using CONSULT.
- 2. Select "FLUID TEMP" and confirm that the CVT fluid temperature is 40°C (104°F) or less.
- 3. Check that the selector lever is in the "P" position, then completely engage the parking brake.
- 4. Lift up the vehicle.
- 5. Remove the drain plug and drain the CVT fluid from the oil pan. Refer to TM-424, "Exploded View".
- 6. Install the drain plug to oil pan.

### **CAUTION:**

## Drain plug gasket use the old one.

7. Remove the overflow plug ① from converter housing.

<□ : Vehicle front



## CVT FLUID

### < PERIODIC MAINTENANCE >

Install the charging pipe set (KV311039S0) (A) into the overflow plug hole.

## **CAUTION:**

Tighten the charging pipe by hand.

9. Install the ATF changer hose (B) to the charging pipe.

Press the ATF changer hose all the way onto the charging pipe until it stops.

- 10. Fill approximately 3 liter (3-1/8 US qt, 2-5/8 lmp qt) of the CVT
- 11. Remove the ATF changer hose and charging pipe, then install the overflow plug.

#### NOTE:

Perform this work quickly because CVT fluid leaks.

- 12. Lift down the vehicle.
- 13. Start the engine.
- 14. While depressing the brake pedal, shift the selector lever to the entire position from "P" to "L", and shift it to the "P" position.

#### NOTE:

Hold the lever at each position for 5 seconds.

- 15. Check that the CONSULT "Data Monitor" in "FLUID TEMP" is 35°C (95°F) to 45°C (113°F).
- 16. Stop the engine.
- 17. Lift up the vehicle.
- 18. Remove the drain plug, and then drain CVT fluid from oil pan.
- 19. Repeat steps 8 to 18 (one time).
- Tighten the drain plug to the specified torque. Refer to <u>TM-424, "Exploded View"</u>.
- 21. Remove the overflow plug.
- 22. Install the charging pipe set (KV311039S0) into the overflow plug hole.

#### **CAUTION:**

Tighten the charging pipe by hand.

23. Install the ATF changer hose to the charging pipe.

#### **CAUTION:**

Press the ATF changer hose all the way onto the charging pipe until it stops.

- 24. Fill approximately 3 liter (3-1/8 US gt, 2-5/8 lmp gt) of the CVT fluid.
- 25. Remove the ATF changer hose and charging pipe, then install the overflow plug.

### NOTE:

Perform this work quickly because CVT fluid leaks.

- 26. Lift down the vehicle.
- Start the engine.
- 28. While depressing the brake pedal, shift the selector lever to the entire position from "P" to "L", and shift it to the "P" position.

#### NOTE:

Hold the lever at each position for 5 seconds.

- 29. Check that the CONSULT "Data Monitor" in "FLUID TEMP" is 35°C (95°F) to 45°C (113°F).
- 30. Lift up the vehicle.
- 31. Remove the overflow plug and confirm that the CVT fluid is drained from the overflow plug hole.

#### CAUTION:

### Perform this work with the vehicle idling. NOTE:

If the CVT fluid is not drained, refer to "Adjustment" and refill with the CVT fluid.

32. When the flow of CVT fluid slows to a drip, tighten the overflow plug to the specified torque. Refer to TM-424, "Exploded View".

#### **CAUTION:**

Never reuse O-ring.

Lift down the vehicle.

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[CVT: RE0F10J]

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2016 Pathfinder

## CVT FLUID

### < PERIODIC MAINTENANCE >

- 34. Select "Data Monitor" in "TRANSMISSION" using CONSULT.
- Select "CONFORM CVTF DETERIORTN".
- 36. Select "Erase".
- 37. Stop the engine.

Adjustment INFOID:0000000012552587

**CVT fluid** : Refer to TM-449, "General Specification". : Refer to TM-449, "General Specification". Fluid capacity

#### **CAUTION:**

- During adjustment of the CVT fluid level, check CONSULT so that the oil temperature may be maintained from 35 to 45°C (95 to 113°F).
- Maintain specified engine idle speed during CVT fluid level adjustment. Refer to EC-509, "Idle Speed".
- Use caution when looking into the drain hole as there is a risk of dripping fluid entering the eye.
- 1. Check that the selector lever is in the "P" position, then completely engage the parking brake.
- Start the engine.
- 3. Adjust the CVT fluid temperature to be approximately 40°C (104°F).

#### NOTE:

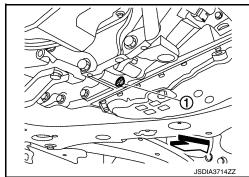
The CVT fluid is largely affected by temperature. Therefore be sure to use CONSULT and check the "FLUID TEMP" under "TRANSMISSION" in "Data Monitor" while adjusting.

4. While depressing the brake pedal, shift the selector lever to the entire position from "P" to "L", and shift it to the "P" position.

#### NOTE:

Hold the lever at each position for 5 seconds.

- Lift up the vehicle.
- Check that there is no CVT fluid leakage.
- 7. Remove the overflow plug (1) from converter housing.
  - $\langle \neg$ : Vehicle front



[CVT: RE0F10J]

8. Install the charging pipe set (KV311039S0) (A) into the overflow plug hole.

#### **CAUTION:**

Tighten the charging pipe by hand.

9. Install the ATF changer hose (B) to the charging pipe.

#### **CAUTION:**

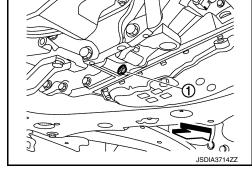
Press the ATF changer hose all the way onto the charging pipe until it stops.

- 10. Fill approximately 0.5 liter (1/2 US qt, 1/2 Imp qt) of the CVT
- 11. Remove the ATF changer hose from the charging pipe, and check that the CVT fluid drains out from the charging pipe. If it does not drain out, perform charging again.

#### CAUTION:

### Perform this work with the vehicle idling.

- Tighten the overflow plug to the specified torque. Refer to TM-424. "Exploded View".



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## **CVT FLUID**

< PERIODIC MAINTENANCE > [CVT: RE0F10J]

**CAUTION:** 

Never reuse O-ring.

14. Lift down the vehicle.

15. Stop the engine.

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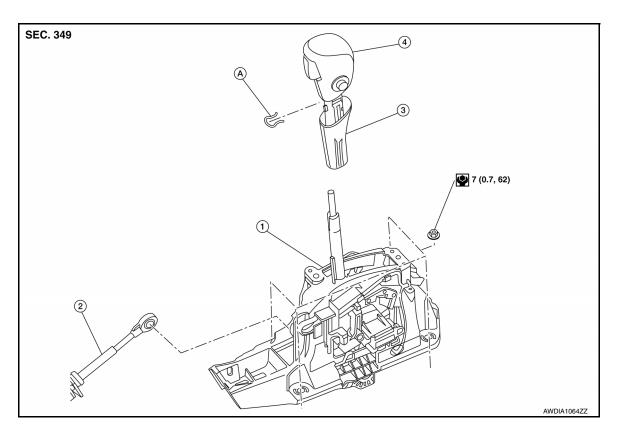
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# REMOVAL AND INSTALLATION

## **CVT SHIFT SELECTOR**

Exploded View



- 1. CVT shift selector assembly
- 4 Shift selector handle
- 2. Control cable
- A. Shift selector handle clip
- 3. Shift selector handle cover

INFOID:0000000012552589

[CVT: RE0F10J]

## Removal and Installation

### **REMOVAL**

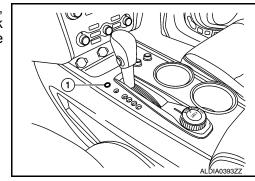
Apply the parking brake.

### **CAUTION:**

Make sure the vehicle cannot move with the parking brake applied.

 Remove shift lock override button cover (1) using suitable tool, and insert suitable tool into opening to depress the shift lock override button. Move shift selector to "N" position while depressing shift lock override button.

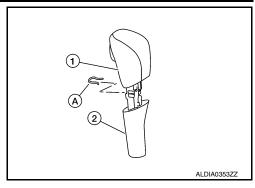
<⊃: Front



## **CVT SHIFT SELECTOR**

#### < REMOVAL AND INSTALLATION >

- Remove the shift selector handle (1).
- a. Release the shift selector handle cover (2) using a suitable tool from the base of the shift selector handle (1).
- b. Remove the shift selector handle clip (A).
- c. Pull upward and remove the shift selector handle (1).



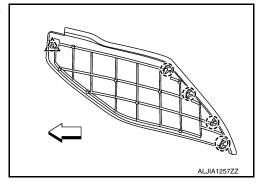
[CVT: RE0F10J]

Remove center console upper side finisher (LH). Refer to <u>IP-18. "Exploded View"</u>.

5. Release center console side finisher (LH/RH) clip and pawls using a suitable tool and remove.



⟨□: Front



6. Release shift selector finisher clips and pawls using a suitable tool, disconnect the harness connectors and remove. Refer to <a href="IP-18">IP-18</a>, "Exploded View".

- 7. Release the harness clip, then disconnect the harness connector from shift selector.
- 8. Remove the control cable from the shift selector assembly. Refer to TM-418, "Removal and Installation".
- 9. Remove the four shift selector assembly nuts and the shift selector assembly from the vehicle.

#### INSTALLATION

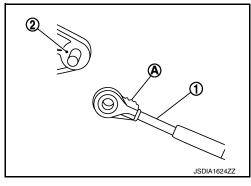
Installation is in the reverse order of removal.

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

#### NOTE:

Apply multi-purpose grease to control cable eye before installation.

Adjust control cable as necessary. Refer to <u>TM-419</u>, "<u>Inspection</u> and Adjustment".



Inspection

INFOID:0000000012552590

## **INSPECTION**

Check the CVT position. If a malfunction is found, adjust the CVT position. Refer to <u>TM-315, "Inspection and Adjustment"</u>.

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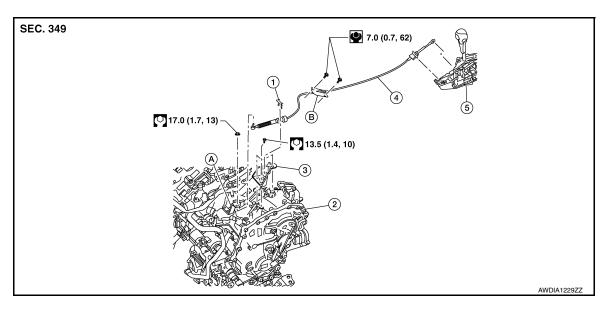
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## **CONTROL CABLE**

Exploded View



- 1. Bracket B
- 4. Bracket A
- A: Manual lever

- 2. Lock plate
- 5. Control cable
- B: Grommet

- 3. Transaxle assembly
- 6. CVT shift selector assembly

## Removal and Installation

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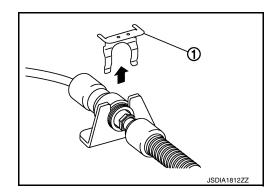
[CVT: RE0F10J]

## INSTALLATION

## **CAUTION:**

## Always apply the parking brake before performing removal and installation.

- Remove the front air duct and air cleaner case assembly. Refer to <u>EM-24, "Removal and Installation"</u>.
- 2. Remove the control cable nut from the manual lever.
- 3. Remove the lock plate (1).



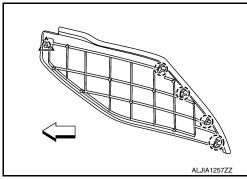
4. Remove center console upper side finisher (LH). Refer to IP-18, "Exploded View".

[CVT: RE0F10J] < REMOVAL AND INSTALLATION >

Release center console side finisher (LH/RH) clip and pawls using a suitable tool and remove.

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□: Front



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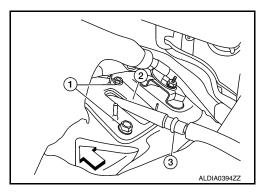
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6. Release shift selector finisher clips and pawls using a suitable tool, disconnect the harness connectors and remove. Refer to IP-18, "Exploded View".

7. Remove the control cable from the CVT shift selector assembly.

8. Remove the bolts (1) from the grommet (2).

(3) : Control cable ⟨⇒ : Front



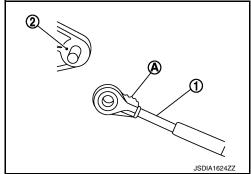
9. Remove the control cable from the vehicle.

#### INSTALLATION

Installation is in the reverse order of removal.

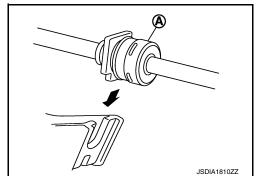
Pay attention to the following when connecting the control cable to the CVT shift selector.

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



Install the socket (A) onto the CVT shift selector. **CAUTION:** 

- Place the socket onto the CVT shift lever, then fasten it in place from above.
- · Check that pulling on the socket does not disconnect it.



Inspection and Adjustment

Revision: November 2015

INFOID:0000000012552593

INSPECTION AFTER INSTALLATION

## **CONTROL CABLE**

[CVT: RE0F10J]

Check the CVT position. If a malfunction is found, adjust the CVT position. Refer to TM-417, "Inspection".

## **TOW MODE SWITCH**

## < REMOVAL AND INSTALLATION >

## **TOW MODE SWITCH**

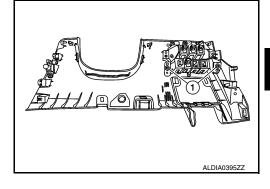
## Removal and Installation

#### INFOID:0000000012552594

[CVT: RE0F10J]

## **REMOVAL**

- 1. Remove instrument lower panel (LH). Refer to <a href="IP-25">IP-25</a>, "Removal and Installation".
- 2. Remove screws (1) from the bracket.
- 3. Remove tow mode switch.



## **INSTALLATION**

Installation is in the reverse order of removal.

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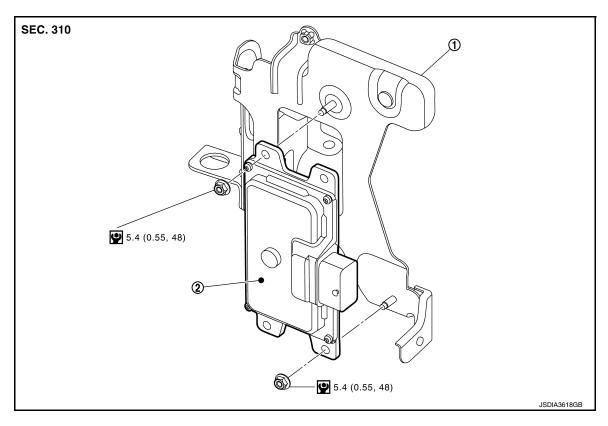
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[CVT: RE0F10J]

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**TCM** 

Exploded View



1. Bracket 2. TCM

### Removal and Installation

### **CAUTION:**

- To replace TCM, perform "WRITE IP CHARA REPLACEMENT TCM" of the CONSULT Work Support before removing TCM and save TCM data in CONSULT. Refer to TM-306, "Description".
- When replacing TCM, note the "CVTF DETERIORATION DATE" value displayed on CONSULT "CON-FORM CVTF DETERIORATION" in MAINTENANCE BOOKLET, before start the operation.
- When replacing TCM, perform "ADDITIONAL SERVICE WHEN REPLACING TCM". Refer to <u>TM-306</u>, "<u>Description</u>".
- When replacing TCM and transaxle assembly simultaneously, perform "ADDITIONAL SERVIE WHEN REPLACING TCM AND TRANSAXLE ASSEMBLY". Refer to <u>TM-309</u>, "<u>Description</u>".

#### REMOVAL

- 1. Remove the front air duct. Refer to EM-24, "Exploded View".
- 2. Disconnect the negative battery terminal. Refer to PG-93, "Removal and Installation".
- 3. Disconnect the TCM harness connector.
- 4. Remove the TCM and bracket as a set.
- Remove the TCM from the bracket.

#### INSTALLATION

Installation is the reverse order of removal.

Adjustment

## ADJUSTMENT AFTER INSTALLATION

Perform "ADDITIONAL SERVICE WHEN REPLACING TCM". Refer to TM-306, "Description".

## **AIR BREATHER HOSE**

### < REMOVAL AND INSTALLATION >

## AIR BREATHER HOSE

## Removal and Installation

REMOVAL

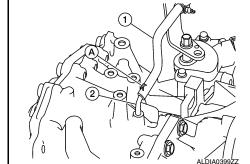
- 1. Remove the front air duct and air cleaner case assembly. Refer to EM-24. "Removal and Installation".
- 2. Remove air breather hose.

## **INSTALLATION**

Installation is in the reverse order of removal.

#### **CAUTION:**

- · Check that air breather hose is not collapsed or blocked due to folding or bending when installed.
- Insert air breather hose (1) to air breather tube (2) all the way to the curve of the tube.
- Insert air breather hose to air breather tube so that the paint mark (A) is facing upward.



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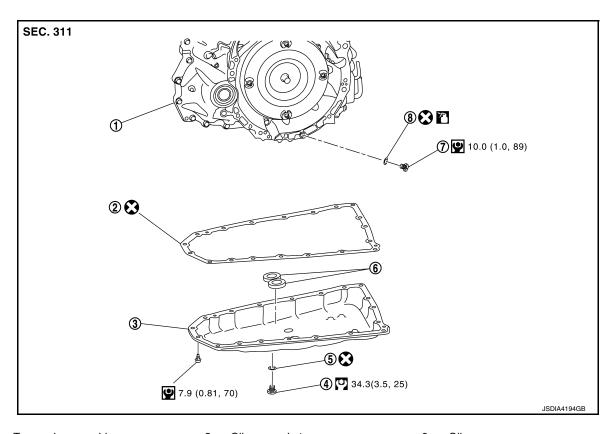
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## OIL PAN

Exploded View



- 1. Transaxle assembly
- 4. Drain plug
- 7. Overflow plug

- 2. Oil pan gasket
- 5. Drain plug gasket
- 8. O-ring

3. Oil pan

[CVT: RE0F10J]

INFOID:0000000012552600

6. Magnet

## Removal and Installation

**REMOVAL** 

- Remove drain plug from oil pan and then drain the CVT fluid.
- Remove drain plug gasket.

**CAUTION:** 

Do not reuse drain plug gasket.

3. Remove the oil pan bolts, and then remove the oil pan and oil pan gasket.

**CAUTION:** 

Do not reuse oil pan gasket.

4. Remove the magnets from the oil pan.

### INSTALLATION

Installation is in the reverse order of removal.

#### **CAUTION:**

- Do not reuse oil pan gasket.
- Do not reuse drain plug gasket.
- Do not reuse O-ring.
- Completely clean the iron powder from the magnet area of oil pan and the magnets.

Install the oil pan to the transaxle case with the following procedure.

1. Install the oil pan gasket to the oil pan.

#### CAUTION:

Completely wipe out any moisture, oil, and old gasket from the oil pan gasket surface and bolt hole of oil pan and transaxle case.

Revision: November 2015 TM-424 2016 Pathfinder

## **OIL PAN**

### < REMOVAL AND INSTALLATION >

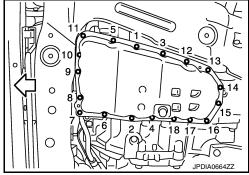
2. Install the oil pan assembly to the transaxle case, and then temporarily tighten the oil pan bolt.

3. Tighten the oil pan bolts in the order shown to the specified torque.

⟨⇒ : Front

4.

Tighten the oil pan bolts again clockwise from (1) shown to the specified torque.



## Inspection and Adjustment

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[CVT: RE0F10J]

### INSPECTION AFTER REMOVAL

Check oil pan for foreign material.

- If a large amount of worn material is found, clutch plate may be worn.
- If iron powder is found, bearings, gears, or clutch plates may be worn.
- If aluminum powder is found, bushing may be worn, or chips or burrs of aluminum casting parts may enter. Check points where wear is found in all cases.

### INSPECTION AFTER INSTALLATION

Check for CVT fluid leakage. Refer to TM-412, "Inspection".

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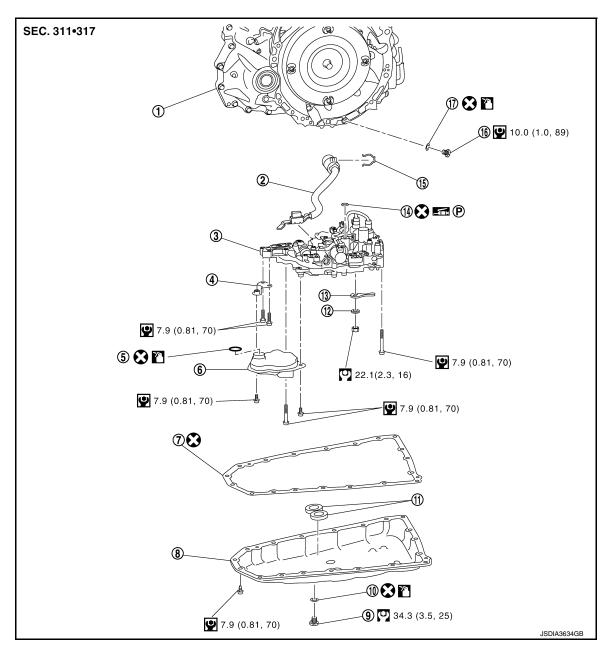
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## **CONTROL VALVE**

Exploded View

## COMPONENT PARTS LOCATION



- Transaxle assembly
- Bracket
- Oil pan gasket
- Drain plug gasket
- Manual plate
- (16) Overflow plug

- (2) Terminal cord assembly
- O-ring
- Oil pan
- 1 Magnet
- (14) Lip seal
- (17) O-ring

- 3 Control valve
- Oil strainer assembly

[CVT: RE0F10J]

- 9 Drain plug
- Spring washer
- Snap ring

: Always replace after every disassembly.

: N·m (kg-m, ft-lb)

: N·m (kg-m, in-lb)

## **CONTROL VALVE**

### < REMOVAL AND INSTALLATION >

■ Apply petroleum jelly

: Apply CVT fluid

## Removal and Installation

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[CVT: RE0F10J]

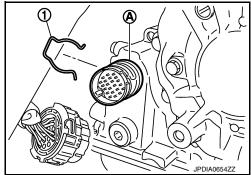
### **REMOVAL**

- 1. Disconnect battery negative terminal. Refer to PG-93, "Removal and Installation".
- 2. Remove drain plug from oil pan and then drain the CVT fluid.
- 3. Remove drain plug gasket.

#### **CAUTION:**

### Do not reuse drain plug gasket.

- 4. Remove the front fender side protector (LH). Refer to EXT-28, "FENDER PROTECTOR: Exploded View".
- Disconnect the CVT unit harness connector.
- 6. Remove the snap ring (1) from the CVT unit harness connector (A).

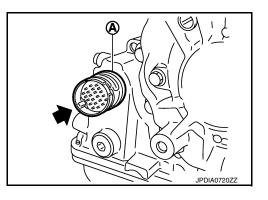


7. Press the CVT unit harness connector (A) into the transaxle case.

#### **CAUTION:**

# Do not damage the CVT unit harness connector. NOTE:

Clean around the harness connector to prevent foreign materials from entering into the transaxle case.

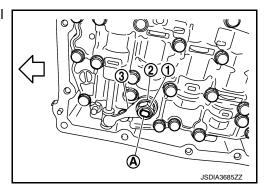


8. Remove the oil pan bolts, and then remove the oil pan and oil pan gasket.

## CAUTION:

#### Do not reuse oil pan gasket.

- 9. Remove the magnets from the oil pan.
- 10. Remove the lock nut (1) and spring washer (2), and manual plate (3) from manual shaft (A).
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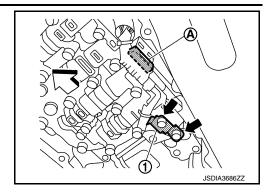
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[CVT: RE0F10J]

11. Remove CVT fluid temperature sensor bracket (1).

12. Disconnect control valve harness connector (A).



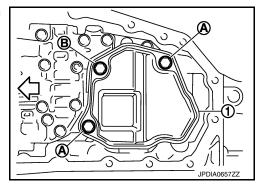
13. Remove the oil strainer assembly bolts (A) and (B), and then remove the oil strainer assembly (1).

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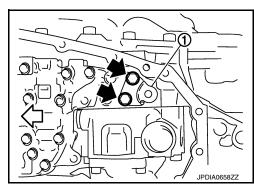
14. Remove O-ring from oil strainer assembly.

**CAUTION:** 

Do not reuse O-ring.



15. Remove the bracket (1).

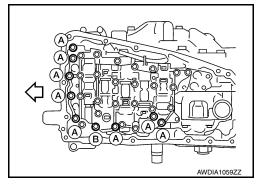


16. Remove the control valve bolts (A) and (B), and then remove the control valve from the transaxle case.

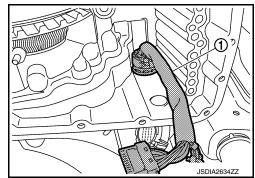
 $\triangleleft$  : Front

### **CAUTION:**

Do not drop the control valve, ratio control valve and manual shaft.



17. Remove terminal cord assembly (1) from inside the transaxle case.



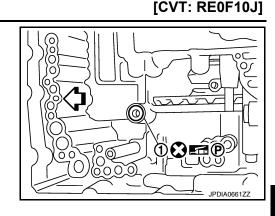
## **CONTROL VALVE**

### < REMOVAL AND INSTALLATION >

18. Remove the lip seal (1) from the transaxle case. **CAUTION:** 

Do not reuse lip seal.

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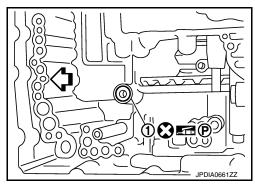


### **INSTALLATION**

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

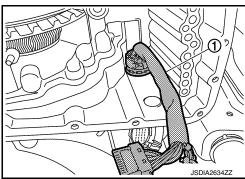
**CAUTION:** 

Do not reuse lip seal.



2. Install terminal cord assembly (1) to the transaxle case. **CAUTION:** 

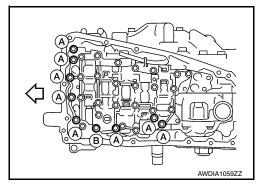
Connect the CVT unit connector with the stopper facing up, and then press in until it clicks.



- 3. Install the control valve to the transaxle case.
  - **CAUTION:**
  - Do not pinch the harness between the control valve and the transaxle case.
  - Do not drop the control valve, ratio control valve and manual shaft.
- 4. Secure the control valve using the control valve bolts (A) and (B).

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⇒ : Front

Bolt	Bolt length (mm)	Number of bolts
А	54	8
В	44	1



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[CVT: RE0F10J] < REMOVAL AND INSTALLATION >

Connect the control valve harness connectors (A).

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#### **CAUTION:**

- · Do not pinch the harness between the control valve and the transaxle case.
- · Securely insert the harness connector until it clicks and
- 6. Install CVT fluid temperature sensor bracket (1).

: Bolt

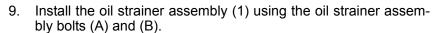
7. Install the bracket (1).

: Bolt : Front

Install O-ring to oil strainer assembly.

#### **CAUTION:**

- · Do not reuse O-ring.
- Apply CVT fluid NS-3 to O-ring.





Bolt	Bolt length (mm)	Number of bolts
А	12	2
В	44	1

#### NOTE:

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

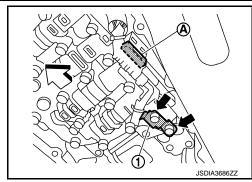
10. Install the manual plate (1) while aligning with the groove (A) of the manual valve.

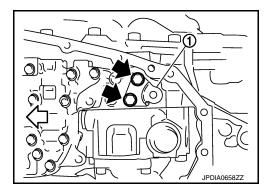
#### **CAUTION:**

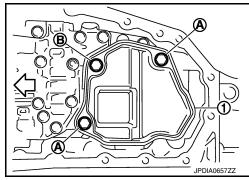
Assemble the manual plate while aligning its end with the cutout ( ) of the manual valve.

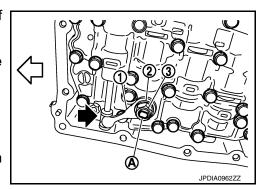
(A) : Manual shaft  $\langle \neg$ : Front

11. Install the spring washer (2) and the lock-nut (3), and then tighten to the specified torque.









### CONTROL VALVE

### < REMOVAL AND INSTALLATION >

- 12. Install the snap ring (1) to the CVT unit harness connector (A).
- 13. Connect the CVT unit harness connector.
- 14. Install fender protector side cover (LH).
- 15. Install the magnet while aligning it with the convex side of oil pan.

#### **CAUTION:**

Completely clean the iron powder from the magnet area of oil pan and the magnet.

- 16. Install the oil pan to the transaxle case with the following procedure.
  - 1. Install the oil pan gasket to the oil pan.

#### **CAUTION:**

- Completely wipe out any moisture, oil, and old gasket from the oil pan gasket surface and bolt hole of oil pan and transaxle case.
- · Do not reuse oil pan gasket.
- 2. Install the oil pan assembly to the transaxle case, and then temporarily tighten the oil pan bolt.
- 3. Tighten the oil pan bolts in the order shown to the specified torque.



- 4. Tighten the oil pan bolts again clockwise from (1) shown to the specified torque.
- 17. Install drain plug gasket to drain plug.

#### CAUTION:

Do not reuse drain plug gasket.

- 18. Install drain plug to oil pan.
- 19. Connect battery negative terminal. Refer to PG-93, "Removal and Installation".
- Fill with CVT fluid to transaxle assembly. Refer to <u>TM-412</u>, "Inspection".

## Inspection and Adjustment

## INSPECTION AFTER REMOVAL

Check oil pan for foreign material.

- If a large amount of worn material is found, clutch plate may be worn.
- If iron powder is found, bearings, gears, or clutch plates may be worn.
- If aluminum powder is found, bushing may be worn, or chips or burrs of aluminum casting parts may enter. Check points where wear is found in all cases.

### INSPECTION AFTER INSTALLATION

Check the CVT fluid level and leakage. Refer to MA-33, "CVT FLUID: Inspection".

#### ADJUSTMENT AFTER INSTALLATION

Perform "ADDITIONAL SERVICE WHEN REPLACING TRANSAXLE ASSEMBLY OR CONTROL VALVE ASSEMBLY". Refer to TM-307, "Description".

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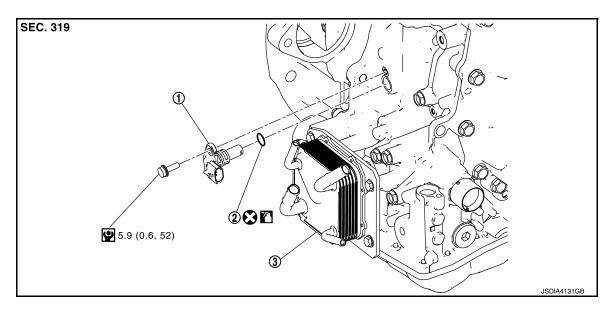
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## INPUT SPEED SENSOR

Exploded View



1. Input speed sensor

2. O-ring

3. Transaxle assembly

## Removal and Installation

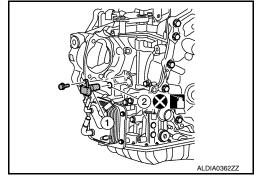
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[CVT: RE0F10J]

## **REMOVAL**

- 1. Remove the battery tray. Refer to PG-93, "Removal and Installation".
- 2. Remove the starter motor. Refer to STR-20, "Removal and Installation".
- 3. Disconnect the harness connector from the input speed sensor (1).
- 4. Remove the input speed sensor bolt, then the input speed sensor (1).
- 5. Remove the O-ring (2) from the input speed sensor (1). **CAUTION:**

Do not reuse O-ring.



### **INSTALLATION**

Installation is in the reverse order of removal.

#### **CAUTION:**

- Do not reuse O-ring.
- Apply Genuine NISSAN CVT Fluid NS-3 to the O-ring.

Inspection and Adjustment

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### INSPECTION AFTER INSTALLATION

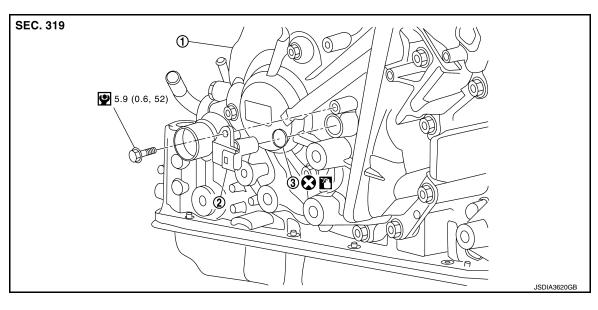
Check for CVT fluid leakage. Refer to TM-412. "Inspection".

### ADJUSTMENT AFTER INSTALLATION

Adjust CVT fluid level. Refer to TM-414, "Adjustment".

# PRIMARY SPEED SENSOR

#### **Exploded View** INFOID:0000000012552605



Transaxle assembly

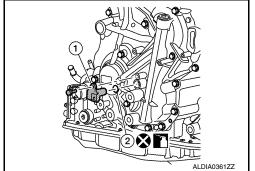
2. Primary speed sensor 3. O-ring

# Removal and Installation

**REMOVAL** 

- Disconnect the negative battery terminal. Refer to PG-93, "Removal and Installation".
- Remove the front fender protector side cover (LH). Refer to EXT-28, "FENDER PROTECTOR: Removal and Installation".
- Disconnect the harness connector from primary speed sensor
- 4. Remove the primary speed sensor bolt, then the primary speed sensor (1).
- Remove the O-ring (2) from the primary speed sensor (1). **CAUTION:**

Do not reuse O-ring.



### INSTALLATION

Installation is in the reverse order of removal.

#### **CAUTION:**

- Do not reuse O-ring.
- Apply Genuine NISSAN CVT Fluid NS-3 to the O-ring.

# Inspection and Adjustment

INSPECTION AFTER INSTALLATION

Check for CVT fluid leakage. Refer to TM-412, "Inspection".

ADJUSTMENT AFTER INSTALLATION

Adjust CVT fluid level. Refer to <a href="mailto:TM-414">TM-414</a>, "Adjustment".

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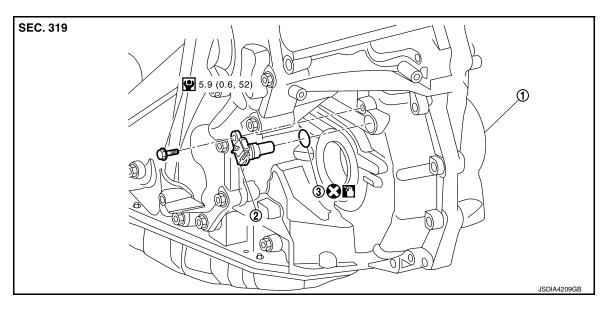
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# **OUTPUT SPEED SENSOR**

Exploded View



- 1. Transaxle assembly
- 2. Output speed sensor
- 3. O-ring

#### Removal and Installation

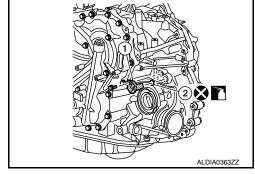
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[CVT: RE0F10J]

#### **REMOVAL**

- Disconnect the battery negative terminal. Refer to <u>PG-93, "Removal and Installation"</u>.
- 2. Disconnect the harness connector from output speed sensor (1).
- 3. Remove the output speed sensor bolt, then the output speed sensor (1).
- 4. Remove the O-ring (2) from the output speed sensor (1). **CAUTION:**

Do not reuse O-ring.



#### INSTALLATION

Installation is in the reverse order of removal.

#### **CAUTION:**

- Do not reuse O-ring.
- Apply Genuine NISSAN CVT Fluid NS-3 to the O-ring.

# Inspection and Adjustment

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INSPECTION AFTER INSTALLATION

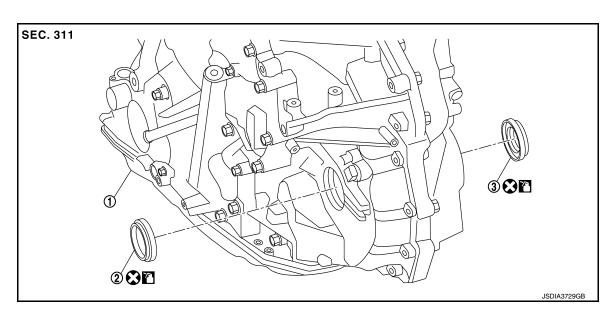
Check for CVT fluid leakage. Refer to TM-412, "Inspection".

#### ADJUSTMENT AFTER INSTALLATION

Adjust CVT fluid level. Refer to TM-414, "Adjustment".

# DIFFERENTIAL SIDE OIL SEAL

Exploded View



- 1. Transaxle assembly
- 2. Differential side oil seal (left side)
- Differential side oil seal (right side)
   (2WD models only)

Removal and Installation

INFOID:0000000012552612

#### **REMOVAL**

- 1. Remove front drive shaft. Refer to <u>FAX-15</u>, "Removal and <u>Installation (LH)"</u> (LH) or <u>FAX-18</u>, "Removal and <u>Installation (RH)"</u> (RH).
- Use oil seal remover or a similar means and remove the differential side oil seal. CAUTION:

When removing the differential side oil seal, be careful not to scratch the oil seal mounting surfaces of the transaxle case and converter housing.

#### **INSTALLATION**

Installation is in the reverse order of removal.

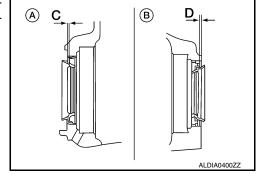
### **CAUTION:**

- Do not reuse differential side oil seal.
- Apply Genuine NISSAN CVT Fluid NS-3 to differential side oil seals.
- · When inserting the drive shaft, be sure to use Tool.

Tool number : KV38107900 ( — )

Install each differential side oil seal evenly using Tool so that differential side oil seal protrudes by the dimension (C) and (D) respectfully.

- (A) : Differential side oil seal (LH)
- (B) : Differential side oil seal (RH)(2WD models only)



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# **DIFFERENTIAL SIDE OIL SEAL**

#### < REMOVAL AND INSTALLATION >

Dimension (C) : Height difference from case end surface is within  $0 \pm 0.5$  mm  $(0.00 \pm 0.020$ 

in).

Dimension (D) : Height difference from case end surface is within  $0 \pm 0.5$  mm ( $0.00 \pm 0.020$ 

in).

#### NOTE:

The reference is the installation direction of the differential side oil seal.

#### Drift to be used:

Location	Commercial Service Tools
Transaxle case side	Commercial service tool with outer dia. 56 mm (2.20 in) and in-
Converter housing side	ner dia. 50 mm (1.97 in)

# Inspection and Adjustment

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[CVT: RE0F10J]

# INSPECTION AFTER INSTALLATION

Check for CVT fluid leakage. Refer to TM-412, "Inspection".

#### ADJUSTMENT AFTER INSTALLATION

Adjust CVT fluid level. Refer to TM-414. "Adjustment".

# WATER HOSE

**Exploded View** 

SEC. 310  $\oplus$ **①**  $\bigcirc$ 18 (1.8, 13)  $\bigcirc$ JSDIA3630GB

- 1. Hose clamp
- CVT water hose B
- Transaxle assembly
- 2. CVT water hose A
- Heater thermostat
- Water outlet

- Transaxle assembly
- 6. CVT water hose C

### Removal and Installation

REMOVAL M

#### **WARNING:**

Do not remove the radiator cap when the engine is hot. Serious burns could occur from high pressure engine coolant escaping from the radiator. Wrap a thick cloth around the cap. Slowly turn it a quarter turn to allow built-up pressure to escape. Carefully remove the cap by turning it all the way. **CAUTION:** 

Perform this step engine is cold.

When removing components such as hoses, tubes/lines, etc., cap or plug openings to prevent fluid from spilling.

- Drain engine coolant from radiator. Refer to <u>CO-12, "Changing Engine Coolant"</u>.
- Remove front air duct. Refer to EM-24, "Exploded View".
- 3. Remove hose clamps, and remove CVT water hose A.
- 4. Remove hose clamps, and remove CVT water hose B.
- 5. Remove hose clamps, and remove CVT water hose C.
- Remove CVT water tube.

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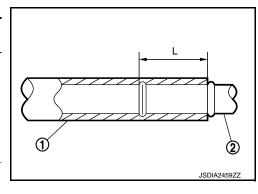
#### **INSTALLATION**

Installation is in the reverse order of removal.

#### **CAUTION:**

- · Do not reuse hose clamp.
- Hose clamp should not interfere with the spool or bulge.

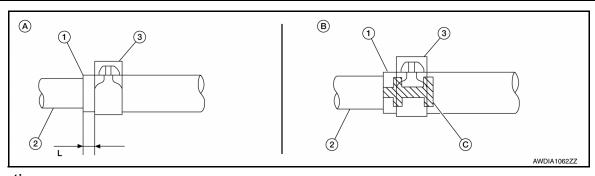
Water hose (1)  Installation side tube (2)  Output  Direction of paint mark  Direction of paint dept  Water outlet  Upward  CVT oil warmer  CVT oil warmer  Frontward  End reache	
CVT water hose A CVT oil warmer Frontward  CVT oil warmer Frontward End reache	
CVT oil warmer Frontward  CVT oil warmer Frontward End reache	
CVI oli walifiei   Floritwald = 1.13 1.5351.15	
ctago bulgo	
CVT water hose B  Heater thermostat  Align with the mark on the heater thermostat side	·•
Heater thermostat Align with the mark on the heater thermostat side End reache pansion part	
Water outlet Upward End reache stage bulge	



[CVT: RE0F10J]

\*Refer to the following when installing hose clamps.

Water been (4)	Materia (4)	Hose clamp (3)		
Water hose (1)	Installation side tube (2)	Direction of tab	Clamping position*	
Water hose A	Water outlet	Downward and 45° rightward	A: 5-7 mm (0.20 - 0.28 in) (L)	
water nose A	CVT oil warmer	Downward	from hose end.	
Water hose B	CVT oil warmer	Forward and 45° downward		
Water nose b	Heater thermostat	Downward	B: Align with the paint mark (C	
Water hose C	Heater thermostat	Downward	as shown.	
vvaler nose C	Water outlet	Upward		



Inspection INFOID:0000000012552616

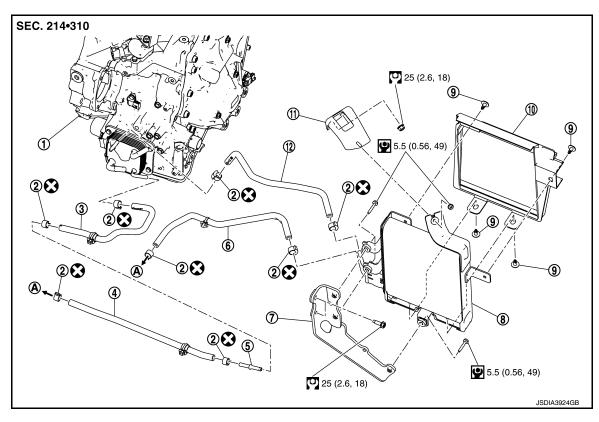
#### INSPECTION AFTER INSTALLATION

Start and warm up the engine. Visually check that there is no leakage of engine coolant and CVT fluid.

# **CVT FLUID COOLER SYSTEM**

Exploded View

#### COMPONENT PARTS LOCATION



- 1. Transaxle assembly
- 4. CVT fluid cooler hose B
- 7. Bracket
- 10. Air guide
- A. To radiator

- 2. Hose clamp
- 5. Connector tube
- 8. CVT fluid cooler
- 11. Bracket

- CVT fluid cooler hose A
- 6. CVT fluid cooler hose C
- 9. Clip
- 12. CVT fluid cooler hose D

#### Removal and Installation

REMOVAL

#### NOTE:

When removing components such as hoses, tubes/lines, etc., cap or plug openings to prevent fluid from spilling.

- Drain engine coolant from radiator. Refer to <u>CO-12, "Changing Engine Coolant"</u>.
- 2. Remove front air duct. Refer to EM-24, "Exploded View".
- 3. Remove hose clamps, and remove CVT fluid cooler hose A.
- 4. Remove hose clamps, and remove CVT fluid cooler hose B.
- 5. Remove CVT fluid cooler tube A and CVT fluid cooler tube B.

#### **INSTALLATION**

Installation is in the reverse order of removal.

#### **CAUTION:**

- Do not reuse hose clamps.
- Hose clamps should not interfere with the spool or bulge.

Revision: November 2015 TM-439 2016 Pathfinder

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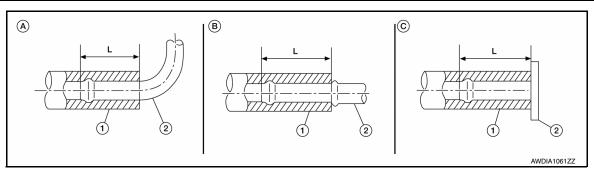
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# **CVT FLUID COOLER SYSTEM**

[CVT: RE0F10J]

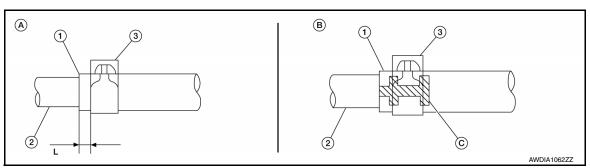
#### < REMOVAL AND INSTALLATION >

*Refer to the following when installing CVT fluid cooler hoses				
Hose name (1)	Installation side tube (2)	Direction of paint mark	Hose insertion depth (L)	
CVT fluid cooler hose A	CVT oil warmer	Downward	B: End reaches the 2-step bulge.	
CV Filala coolei fiose A	Connector tube	Upward	B: End reaches the spool.	
CVT fluid cooler hose B	Connector tube	Upward	B. Lifu feaches the spool.	
CVT IIIIII COOIEI IIOSE D	Radiator	Upward	A: End reaches the radius curve end.	
CVT fluid cooler hose C	Radiator	Downward	C: Insert the hose until hose touches the radiator.	
CV Filala coolei fiose C	CVT fluid cooler	Leftward	A: End reaches the radius curve end.	
CVT fluid cooler hose D	CVT fluid cooler	Leftward	A. Life reacties the radius curve end.	
CVT IIdid Coolei 1103e D	CVT oil warmer	Frontward	B: End reaches the 2-step bulge	



\*Refer to the following when installing CVT fluid cooler hoses

Hose name (1)	Installation side tube (2)		Hose clamp (3)	
riose name (1)	Direction of tab		Clamping position	
CVT fluid cooler hose A	CVT oil warmer	Downward	B: Align with the paint mark (C) as shown in the figure.	
	Connector tube	Downward and 35° backward		
CVT fluid cooler hose B	Connector tube	Downward and 35° backward	A: 3 - 7 mm (0.12 - 0.28 in) (L) from hose end	
CVT lidid coolei flose B	Radiator	Upward	A. 3 - 7 mm (0.12 - 0.20 m) (2) nom nose end	
CVT fluid cooler hose C	Radiator	Downward		
CVT lidia coolei fiose C	CVT fluid cooler	Leftward		
CVT fluid cooler hose D	CVT fluid cooler	Leftward	B: Align with the paint mark (C) as shown in the figure.	
CVT fluid cooler flose D	CVT oil warmer	Frontward		



Inspection INFOID:000000012552619

# INSPECTION AFTER INSTALLATION

Check for CVT fluid leakage. Refer to TM-412, "Inspection".

# ADJUSTMENT AFTER INSTALLATION

Adjust CVT fluid level. Refer to TM-414. "Adjustment".

[CVT: RE0F10J]

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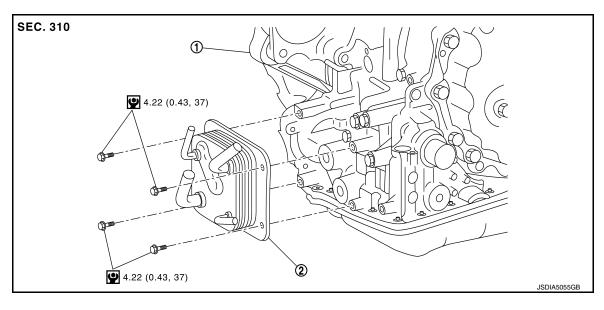
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# **CVT OIL WARMER**

Exploded View



1. Transaxle assembly

2. CVT oil warmer

#### Removal and Installation

REMOVAL

#### **WARNING:**

Do not remove the radiator cap when the engine is hot. Serious burns could occur from high pressure coolant escaping from the radiator. Wrap a thick cloth around the cap. Slowly turn it a quarter turn to allow built-up pressure to escape. Carefully remove the cap by turning it all the way.

CAUTION:

Perform this step engine is cold.

#### NOTE:

When removing components such as hoses, tubes/lines, etc., cap or plug openings to prevent fluid from spilling.

- Drain engine coolant from radiator. Refer to <u>CO-12, "Changing Engine Coolant"</u>.
- 2. Remove CVT water hose from CVT oil warmer. Refer to TM-437, "Exploded View".
- 3. Remove CVT fluid cooler hose from CVT oil warmer. Refer to TM-439, "Exploded View".
- 4. Remove CVT oil warmer.
- Remove bracket.

#### **INSTALLATION**

Installation is in the reverse order of removal.

Inspection

#### INSPECTION AFTER INSTALLATION

- Check for CVT fluid leakage. Refer to TM-412, "Inspection".
- Start and warm up the engine. Visually check that there is no leakage of engine coolant and CVT fluid.

### ADJUSTMENT AFTER INSTALLATION

Adjust CVT fluid level. Refer to TM-414, "Adjustment".

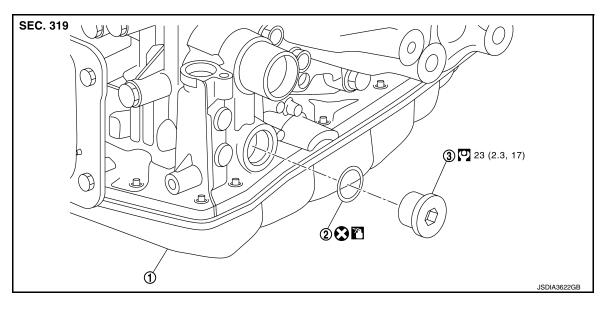
Revision: November 2015 TM-441 2016 Pathfinder

**PLUG** 

Description INFOID:0000000012552623

Replace the O-ring if oil leaks from the plug.

Exploded View



1. Transaxle assembly 2. O-ring 3. Plug

#### Removal and Installation

INFOID:0000000012552625

[CVT: RE0F10J]

#### NOTE:

Replace the O-rings if oil leaks from the plugs.

**REMOVAL** 

Remove the plugs and O-rings.

INSTALLATION

Installation is in the reverse order of removal.

**CAUTION:** 

- Do not reuse O-ring.
- Apply Genuine NISSAN CVT Fluid NS-3 to O-ring.

Inspection and Adjustment

INFOID:0000000012552626

INSPECTION AFTER INSTALLATION

Check for CVT fluid leakage. Refer to TM-412, "Inspection".

ADJUSTMENT AFTER INSTALLATION

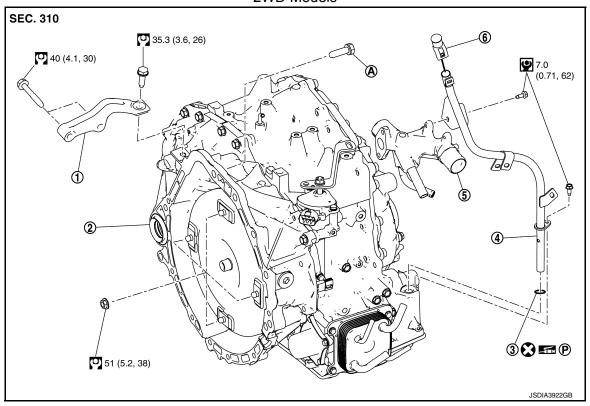
Adjust CVT fluid level. Refer to TM-414, "Adjustment".

# **UNIT REMOVAL AND INSTALLATION**

# TRANSMISSION ASSEMBLY

Exploded View

#### 2WD Models



1. Gusset

CVT fluid charging pipe

4.

- 2. Transaxle assembly
- 5. Water outlet
- A. : For the tightening torque, refer to TM-444, "Removal and Installation".
- 3. O-ring
- 6. CVT fluid charging pipe cap

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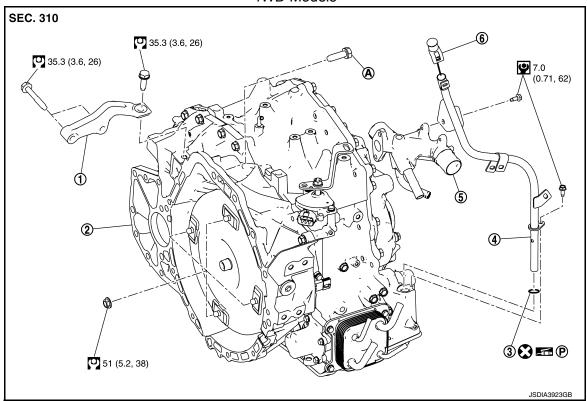
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#### **4WD Models**



Gusset

- Transaxle assembly
- 3. O-ring

- 4. CVT fluid charging pipe
- 5. Water outlet

- 6. CVT fluid charging pipe cap
- For the tightening torque, refer to <u>TM-444, "Removal and Installation"</u>.

#### Removal and Installation

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#### REMOVAL

#### **WARNING:**

Do not remove the radiator cap when the engine is hot. Serious burns could occur from high pressure coolant escaping from the radiator. Wrap a thick cloth around the cap. Slowly turn it a quarter turn to allow built-up pressure to escape. Carefully remove the cap by turning it all the way.

CAUTION:

- · Perform when the engine is cold.
- When replacing TCM and transaxle assembly simultaneously, peform "ADDITIONAL SERVICE WHEN REPLACING TCM AND TRANSAXLE ASSEMBLY". Refer to <u>TM-309</u>, "<u>Description</u>".
- When replacing the transaxle, peform "ADDITIONAL SERVICE WHEN REPLACING TRANSAXLE ASSEMBLY". Refer to <u>TM-307</u>, "<u>Description</u>".

#### NOTE

When removing components such as hoses, tubes/lines, etc., cap or plug openings to prevent fluid from spilling.

- 1. Remove the engine and transaxle with the front suspension member as a unit. Refer to <u>EM-107</u>, "2WD : <u>Removal and Installation</u>" (2WD) or <u>EM-112</u>, "4WD : <u>Removal and Installation</u>" (4WD).
- 2. Disconnect the transaxle harness connectors.
- 3. Disconnect the CVT oil warmer water hoses from engine side. Refer to <a href="Mailto:TM-437">TM-437</a>, "Removal and Installation".
- Remove the CVT fluid charging pipe.
- 5. Remove the transaxle to engine and engine to transaxle bolts.
- 6. Separate the engine from the transaxle and remove the engine from the front suspension member. Refer to <a href="EM-107">EM-107</a>, "2WD : Removal and Installation" (2WD) or <a href="EM-112">EM-112</a>, "4WD : Removal and Installation" (4WD). **NOTE:**

#### TRANSMISSION ASSEMBLY

#### < UNIT REMOVAL AND INSTALLATION >

Using paint, put matching marks on the drive plate and torque converter when removing the torque converter to drive plate nuts.

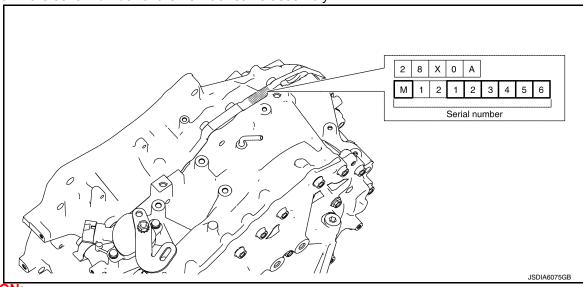
- 7. Remove transmission bracket.
- 8. Lift the transaxle from the front suspension member.

#### INSTALLATION

Installation is in the reverse order of removal.

#### NOTE:

Write down the serial number of the new transaxle assembly.



#### **CAUTION:**

- When replacing an engine or transaxle you must make sure any dowels are installed correctly during re-assembly
- Improper alignment caused by missing dowels may cause vibration, oil leaks or breakage of drive train components.
- Do not reuse O-rings or copper sealing washers.
- When turning crankshaft, turn it clockwise as viewed from the front of the engine.
- When tightening the nuts for the torque converter while securing the crankshaft pulley bolt, be sure
  to confirm the tightening torque of the crankshaft pulley bolt. Refer to <a href="EM-67">EM-67</a>, "Removal and Installation".
- After converter is installed to drive plate, rotate crankshaft several turns to check that CVT rotates freely without binding.
- When installing the CVT to the engine, align the matching mark on the drive plate with the matching mark on the torque converter.

When installing CVT assembly to the engine assembly, attach the bolts in accordance with the following standard.

Bolt No.	1	2	3	4	5
Number of bolts	1	2	1	1	4
Bolt length " $\ell$ "mm (in)	55 (2.17)	39 (1.54)	35 (1.38)	50 (1.97)	45 (1.77)
Tightening torque N·m (kg-m, ft-lb)	74.5 (7.6, 55)		50.0 (5.1, 37)		

WHEN REPLACING TRANSAXLE ASSEMBLY". Refer to TM-307, "Description".

When installing the drive plate to torque converter nuts, tighten them temporarily then tighten the nuts to the specified torque.
When replacing the transaxle, peform "ADDITIONAL SERVICE

© Transaxle to Engine

© Engine to Transaxle

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Inspection and Adjustment

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INSPECTION BEFORE INSTALLATION

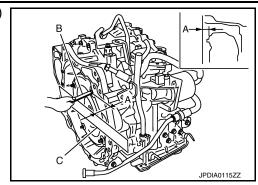
# TRANSMISSION ASSEMBLY

#### < UNIT REMOVAL AND INSTALLATION >

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

B : ScaleC : Straightedge

Dimension (A) : Refer to TM-449, "Torque Converter".



[CVT: RE0F10J]

#### **INSPECTION AFTER INSTALLATION**

Check the following items:

- CVT fluid leakage, refer to TM-412, "Inspection".
- For CVT position, refer to TM-315, "Inspection and Adjustment".
- Start the engine and check for coolant leakage from the parts which are removed and reinstalled.

#### ADJUSTMENT AFTER INSTALLATION

- Adjust the CVT fluid level. Refer to TM-414, "Adjustment".
- Perform "ADDITIONAL SERVICE WHEN REPLACE TRANSAXLE ASSEMBLY". Refer to <a href="mailto:TM-307">TM-307</a>, "Description".

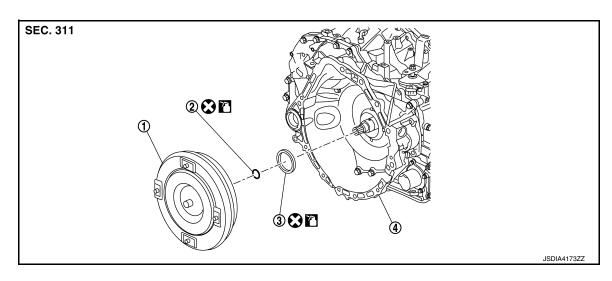
# TORQUE CONVERTER AND CONVERTER HOUSING OIL SEAL

< UNIT DISASSEMBLY AND ASSEMBLY >

# UNIT DISASSEMBLY AND ASSEMBLY

# TORQUE CONVERTER AND CONVERTER HOUSING OIL SEAL

Exploded View



- Torque converter
- . Transaxle assembly
- 2. O-ring

3. Converter housing oil seal

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Disassembly INFOID:000000012552631

- 1. Remove transaxle assembly. Refer to TM-444, "Removal and Installation".
- Remove torque converter from transaxle assembly.

#### **CAUTION:**

Do not damage the bushing on the inside of torque converter sleeve when removing torque converter.

3. Remove converter housing oil seal using suitable tool.

**CAUTION:** 

Be careful not to scratch converter housing.

Assembly

Assembly is in the reverse order of disassembly.

#### **CAUTION:**

Do not reuse converter housing oil seal.

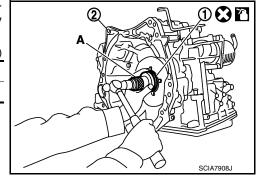
#### NOTE:

Lubricate converter housing oil seal prior to installation.

Drive converter housing oil seal (1) evenly using a drift (A) (commercial service tool) so that converter housing oil seal protrudes by the dimension (B) respectively.

	Unit: mm	(in)
Commercial service tool: (A)	Outer diameter: 65 (2.56)	
Commercial service tool. (A)	Inner diameter: 60 (2.36)	

(2) : Transaxle assembly



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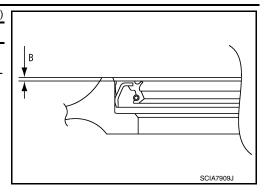
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# TORQUE CONVERTER AND CONVERTER HOUSING OIL SEAL

< UNIT DISASSEMBLY AND ASSEMBLY >

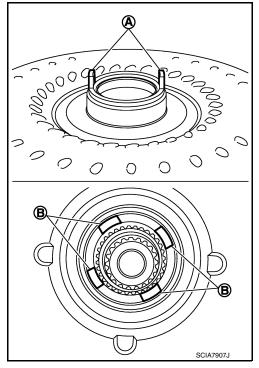
NOTE:

Converter housing oil seal pulling direction is used as the reference



[CVT: RE0F10J]

- Attach the pawl (A) of the torque converter to the drive sprocket hole (B) on the transaxle assembly side.
   CAUTION:
  - Rotate the torque converter for installing torque converter.
  - Do not damage the bushing inside the torque converter sleeve when installing the converter housing oil seal.



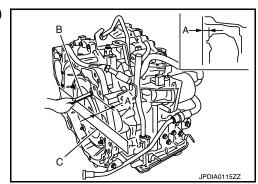
Inspection INFOID:000000012552633

### INSPECTION AFTER INSTALLATION

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

B : ScaleC : Straightedge

Dimension (A) : Refer to TM-449, "Torque Converter".



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

< SERVICE DATA AND SPECIFICATIONS (SDS)

# SERVICE DATA AND SPECIFICATIONS (SDS)

# SERVICE DATA AND SPECIFICATIONS (SDS)

# **General Specification**

Engine model		VQ35DE	
Drive type 2WD		4WD	
Transaxle model		REC	F10J
	D position	2.413 – 0.383	
Transaxle gear ratio	R position	2.:	312
	Final drive	5	250
Recommended fluid		Defer to MA 17 "FOR USA AND	CANADA : Eluido and Lubricanto"
Fluid capacity liter		Refer to MA-17, "FOR USA AND CANADA: Fluids and Lub	

# Shift Characteristics

Unit: rpm

[CVT: RE0F10J]

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Throttle position	Throttle position Shift pattern	CVT input speed		
Throttle position		At 40 km/h (25 MPH)	At 60 km/h (37 MPH)	
	"D" position (Normal)	1,570 – 1,730	1,710 – 1,890	
2/8	"D" position (OD OFF)	1,690 – 1,870	2,180 – 2,420	
	"L" position	2,030 – 2,250	2,860 - 3,180	
	"D" position (Normal)	3,570 – 3,970	4,570 – 5,070	
8/8	"D" position (OD OFF)	3,570 – 3,970	4,570 – 5,070	
	"L" position	3,570 – 3,970	4,570 – 5,070	

#### NOTE

Lock-up is engaged at the vehicle speed of approximately 18 km/h (12 MPH) to 40 km/h (24 MPH).

# Stall Speed

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Stall speed	2,400 – 2,700	
Torque Converter	INFOID:000000012552637	
	Unit: mm (in)	

# **Heater Thermostat**

Distance "A" between the converter housing and torque converter

INFOID:0000000012552638	

14.0 (0.55)

Valve lift	More than 5.0 mm (0.197 in)	
Valve opening temperature	Approx. 71°C (160°F)	
Minimum valve lift	5.0 mm/Approx. 85°C (0.197 in/Approx. 203°F)	

Revision: November 2015 TM-449 2016 Pathfinder

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Unit: rpm

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