

2007 DRIVELINE/AXLES**Automatic Transmission (RE0F09B) - Altima****BASIC INSPECTION****DIAGNOSIS AND REPAIR WORKFLOW****Work Flow****INTRODUCTION**

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

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

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

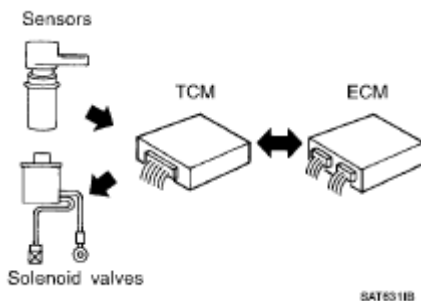


Fig. 1: Identifying TCM Communication

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

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



Fig. 2: Causes Of Information

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

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

Also check related Service bulletins.

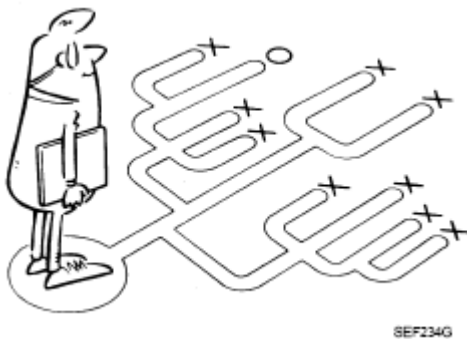


Fig. 3: Checking Correct Diagnosis Path

DETAILED FLOW

1. COLLECT THE INFORMATION FROM THE CUSTOMER

Get the detailed information from the customer about the symptom (the condition and the environment when the incident/malfunction occurred) using diagnosis worksheet. Refer to "**DIAGNOSTIC WORK SHEET**".

: GO TO 2.

2. CHECK SYMPTOM 1

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

- Fail-safe. Refer to "**FAIL-SAFE**".
- CVT fluid inspection. Refer to "**INSPECTION**".
- Line pressure test. Refer to "**INSPECTION AND JUDGMENT**".
- Stall test. Refer to "**INSPECTION AND JUDGMENT**".

: GO TO 3.

3. CHECK DTC

1. Check DTC.
2. Perform the following procedure if DTC is detected.
 - Record DTC.
 - Erase DTC. Refer to "**DIAGNOSIS DESCRIPTION**".

Is any DTC detected?

YES: GO TO 4.

NO: GO TO 5.

4. PERFORM DIAGNOSTIC PROCEDURE

Perform "Diagnostic Procedure" for the displayed DTC.

: GO TO 5.

5. CHECK SYMPTOM 2

Try to confirm the symptom described by the customer.

Is any malfunction present?

YES: GO TO 6.

NO: **INSPECTION END**

6. RODE TEST

1. Perform "RODE TEST". Refer to "**DESCRIPTION**".

: GO TO 7.

7. CHECK SYMPTOM 3

Try to confirm the symptom described by the customer.

Is any malfunction present?

YES: GO TO 2.

NO: INSPECTION END

Diagnostic Work Sheet

INFORMATION FROM CUSTOMER

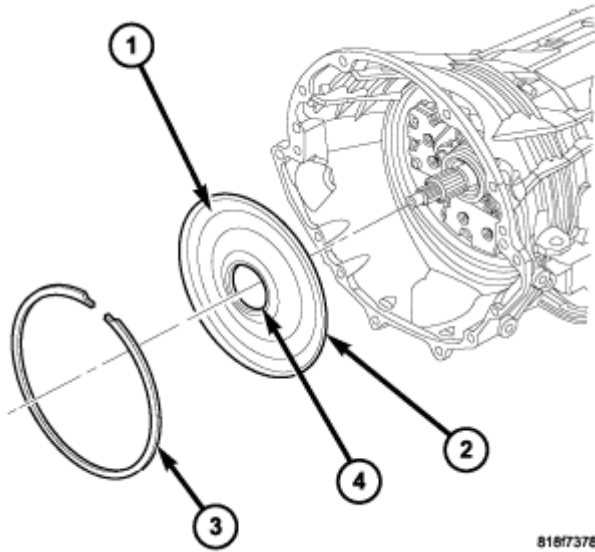


Fig. 4: Diagnostic Work Sheet - Information From Customer (1 Of 2)

DIAGNOSTIC WORK SHEET

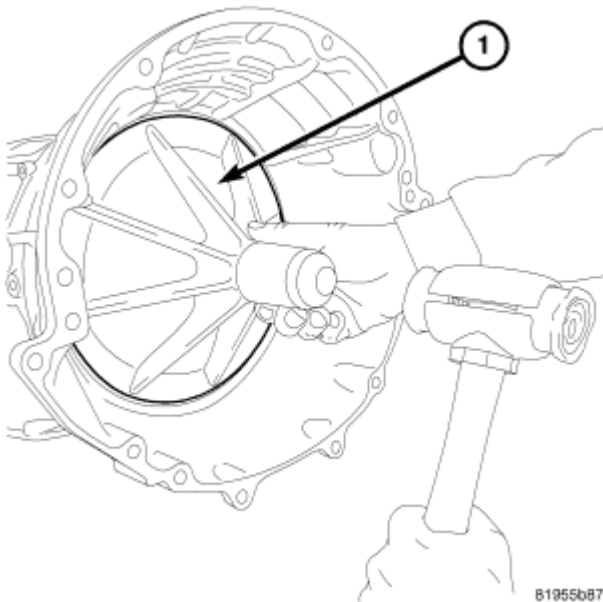


Fig. 5: Diagnostic Work Sheet - Information From Customer (2 Of 2)

INSPECTION AND ADJUSTMENT

ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT

ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT: Precaution for TCM and CVT Assembly Replacement

- CAUTION:**
- Check if new data (Unit ID) are entered correctly after replacing CVT assembly and erasing data in TCM. (Connect CONSULT-III, and then turn ignition switch OFF.)
 - When replacing CVT assembly or TCM, refer to the pattern table below and erase the EEPROM in the TCM if necessary.

EEPROM ERASING PATTERNS

EEPROM ERASING PATTERNS

CVT assembly	TCM	Erasing EEPROM in TCM	Remarks
Replaced	Replaced	Not required	Not required because the EEPROM in the TCM is in the default state. (CVT assembly must be replaced first.)
Not replaced	Replaced	Not required	Not required because the EEPROM in the TCM is in the default state.
Replaced	Not replaced	Required	Required because data has been written in the EEPROM in the TCM and because the TCM cannot write data from the ROM assembly in the transmission.

METHOD FOR ERASING THE EEPROM IN THE TCM

1. Turn ignition switch ON. Confirm that CONSULT-III is turned ON.
2. Move selector lever to "R" position.
3. Select "SELF-DIAG RESULTS".
4. Press the brake pedal and turn the brake switch ON.
5. Press the accelerator pedal (0.5/8-4/8 throttle) not to exceed the half, and hold it in the half or less open position. (This will set the closed throttle position signal to OFF and the wide open throttle position signal to OFF.)
6. Touch "ERASE" on CONSULT-III, and then touch "YES".
7. Wait 3 seconds and then release the accelerator pedal.
8. Turn ignition switch OFF.

METHOD FOR WRITING DATA FROM THE ROM ASSEMBLY IN THE TRANSAXLE

In the following procedure, the TCM reads data from the ROM assembly and writes it to the EEPROM in the TCM.

1. Erase the EEPROM in the TCM.
2. Move selector lever to "P" position.
3. Turn ignition switch ON.

CHECK METHOD

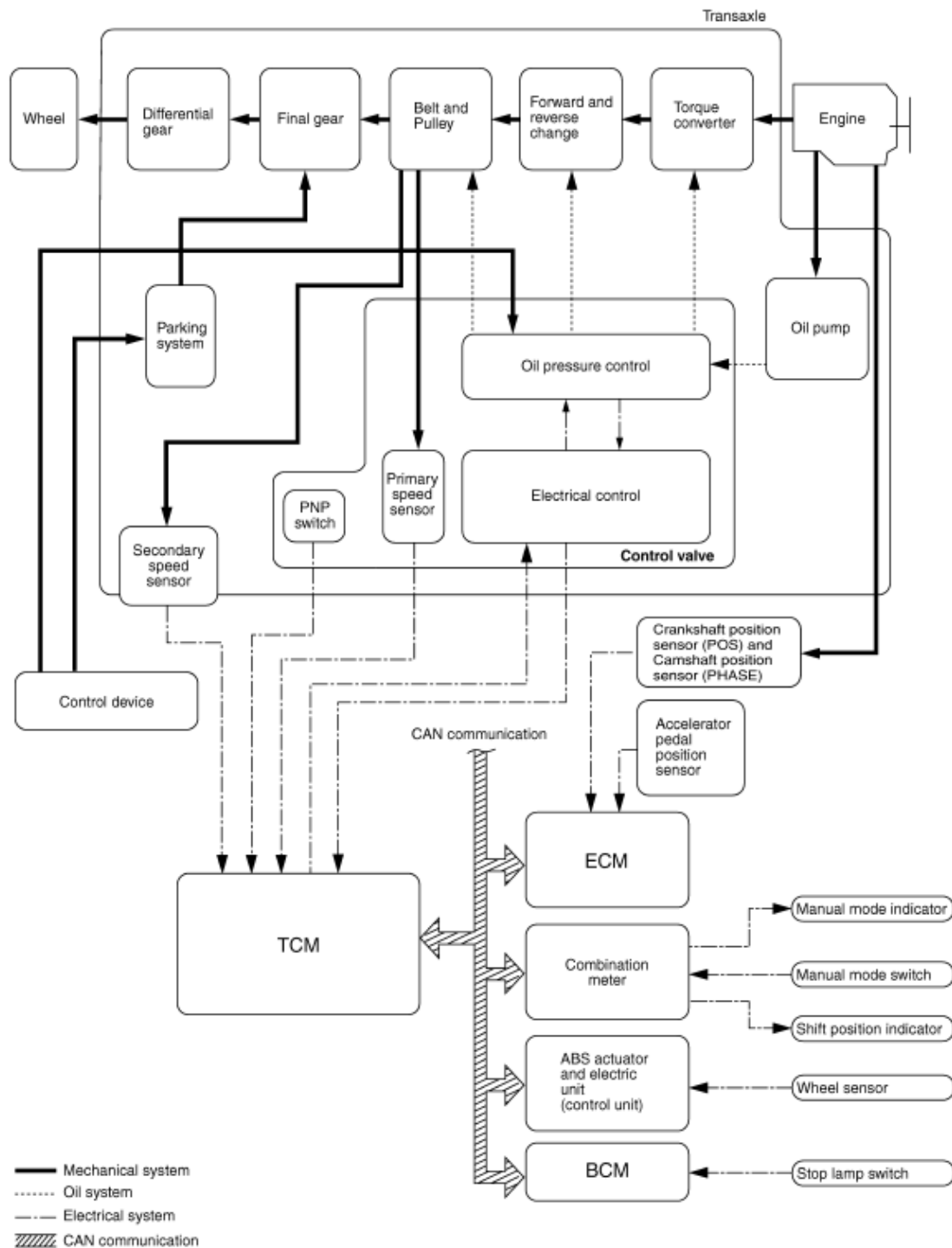
- Standard: About 2 seconds after the ignition switch ON, the CVT indicator lamp lights up for 2 seconds.
- Non-standard: Even after the ignition switch ON, the CVT indicator lamp does not light up after 2 seconds or illuminates immediately.

CAUTION: Perform in the "P" or "N" position.

Action for Non-standard

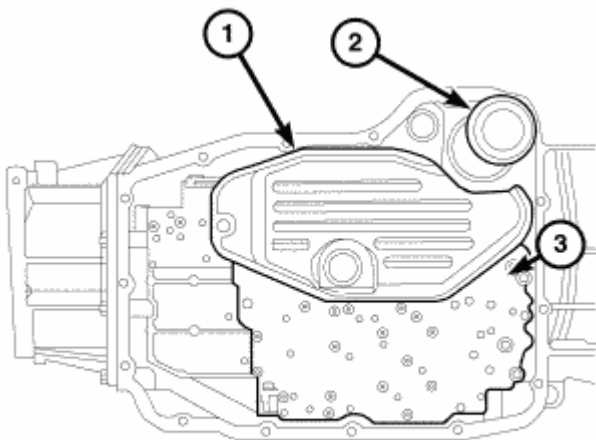
- Replace the CVT assembly.
- Replace the TCM.

FUNCTION DIAGNOSIS**CVT SYSTEM****System Diagram**



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Fig. 6: CVT System - Block Diagram**Component Parts Location**

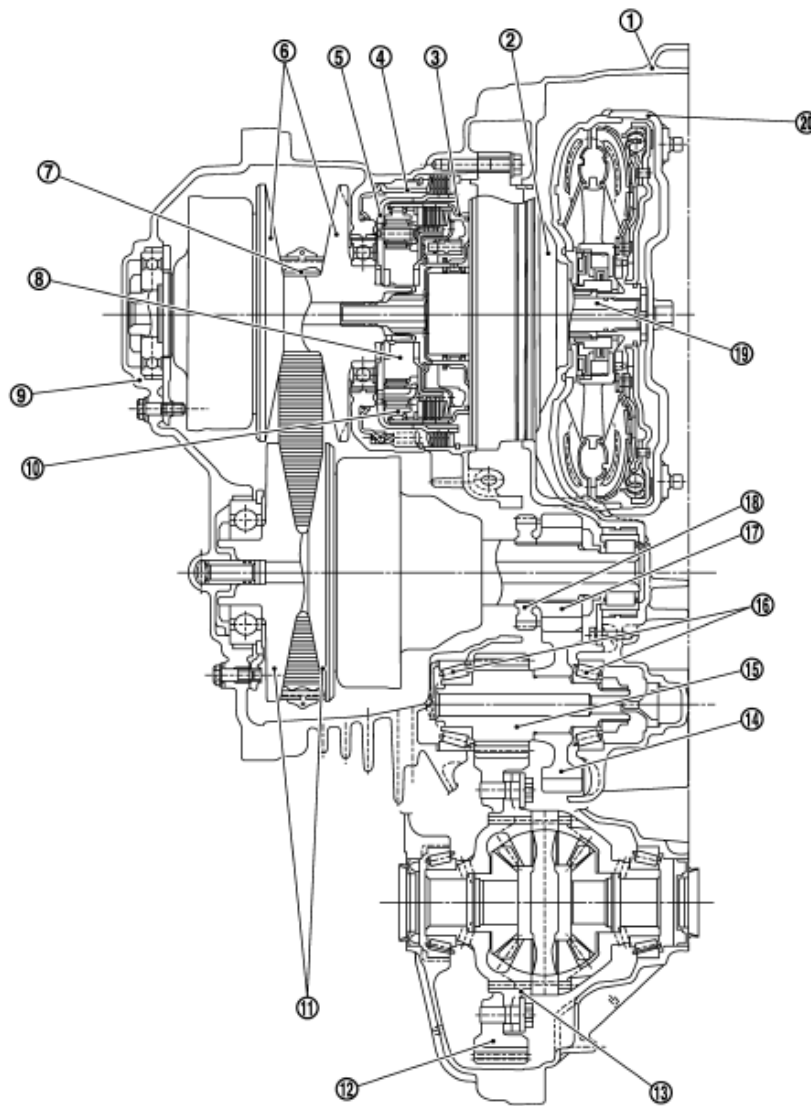


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Fig. 7: Identifying Transaxle And Transmission Component Parts Location

MECHANICAL SYSTEM

Cross-Sectional View

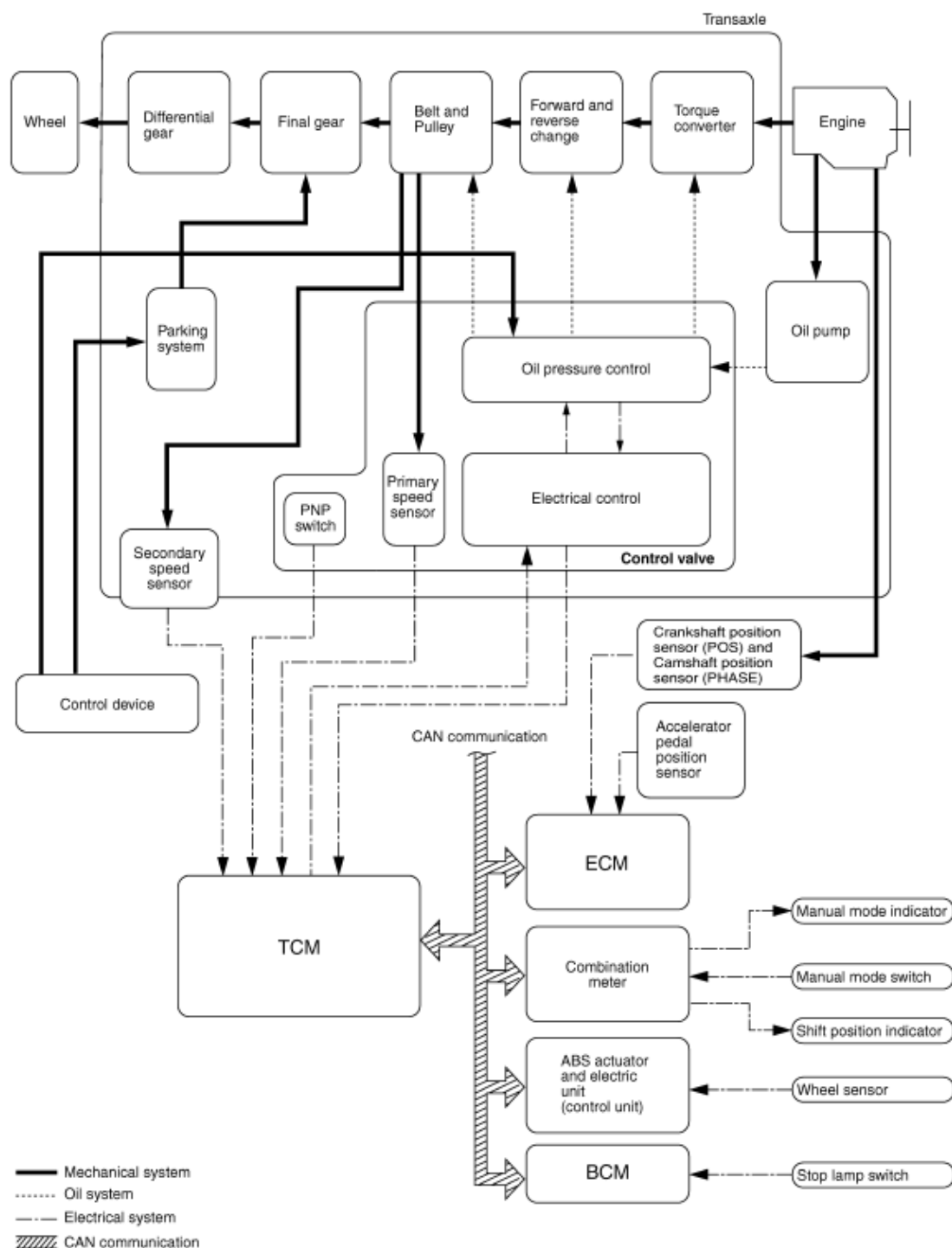


SCIA7855E

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

Fig. 8: Cross-Sectional View Of Torque Converter

System Diagram

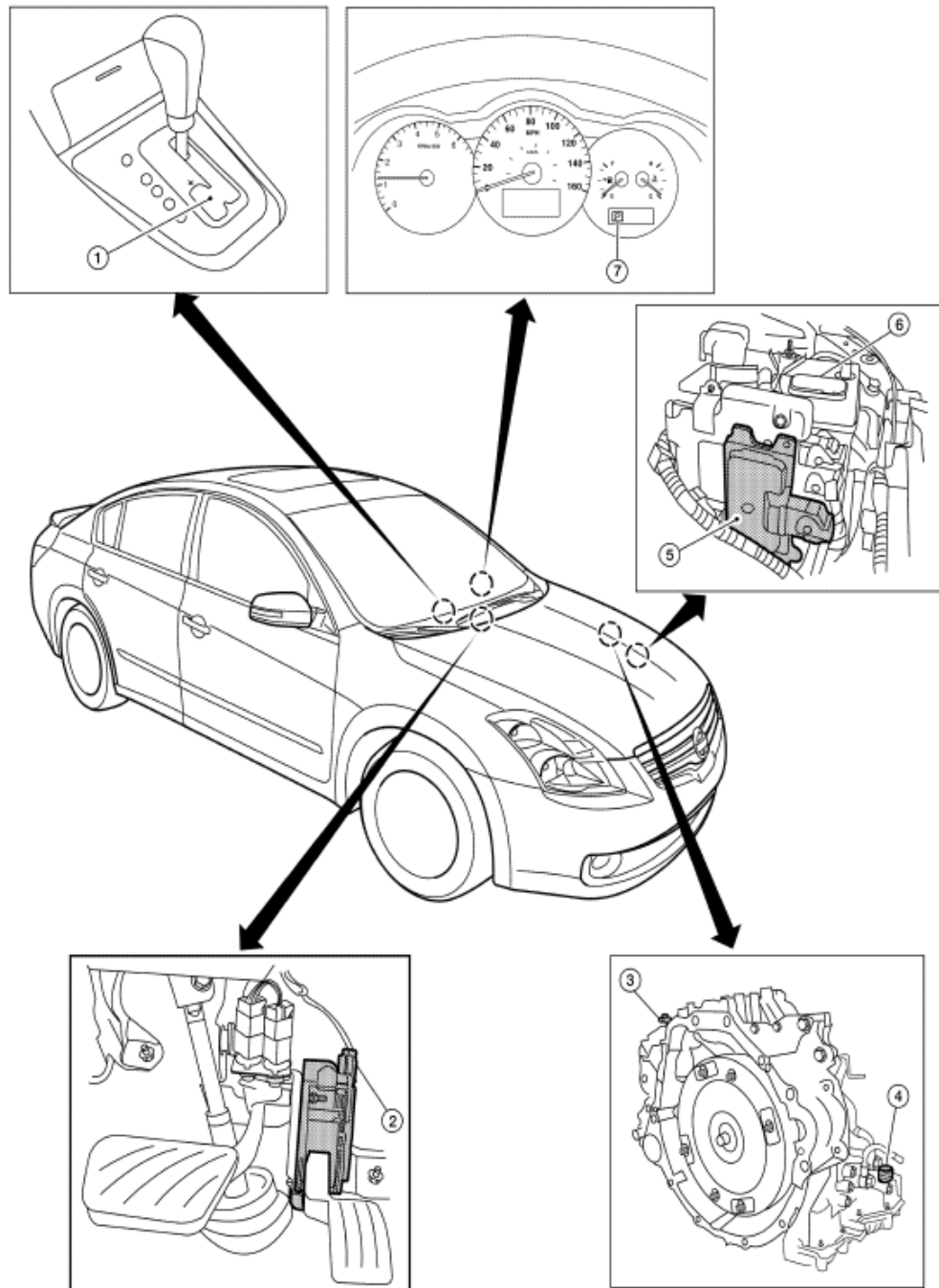


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Fig. 9: CVT System - Block Diagram**System Description**

Transmits the power from the engine to the drive wheel.

Component Parts Location



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- | | | |
|---|--|---------------------------|
| 1. Control device assembly (Manual mode select switch and manual mode position select switch) | 2. Accelerator pedal position (APP) sensor | 3. Secondary speed sensor |
| 4. CVT unit harness connector | 5. TCM | 6. Battery |
| 7. Shift position indicator | | |

Fig. 10: Identifying Transaxle And Transmission Component Parts Location

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Component Description

ITEM FUNCTION CHART

Item	Function
Torque converter	The torque converter is the device that increases the engine torque as well as the conventional A/T and transmits it to the transaxle.
Oil pump	It is a parachoid type oil pump with the flow control valve directly controlled by the engine. Discharged oil from oil pump is transmitted to the control valve. It is used as the oil of primary and secondary pulley operation and the oil of clutch operation and the lubricant for each part.
Planetary gear	Perform the transmission of drive power and the switching of forward/ backward movement.
Forward clutch	
Reverse brake	
Primary pulley	It is composed of a pair of pulleys (the groove width is changed freely in the axial direction) and the steel belt (the steel star wheels are placed continuously and the belt is guided with the multi-layer steel rings on both sides). The groove width changes according to wrapping radius of steel belt and pulley from low status to overdrive status continuously with non-step. It is controlled with the oil pressures of primary pulley and secondary pulley.
Secondary pulley	
Steel belt	
Output gear	
Idler gear	The drive power from the secondary pulley returns the deceleration gears [primary deceleration (output gear/idler gear pair) and secondary deceleration (reduction gear/final gear pair)]. It is transmitted from differential to drive wheel.
Reduction gear	
Final gear	
Differential	
Manual shaft	The parking rod rotates the parking pole and the parking pole engages with the parking gear when the manual shaft is in P position. As a result the parking gear and the output axis are fixed.
Parking rod	
Parking pawl	
Parking gear	

HYDRAULIC CONTROL SYSTEM

System Diagram

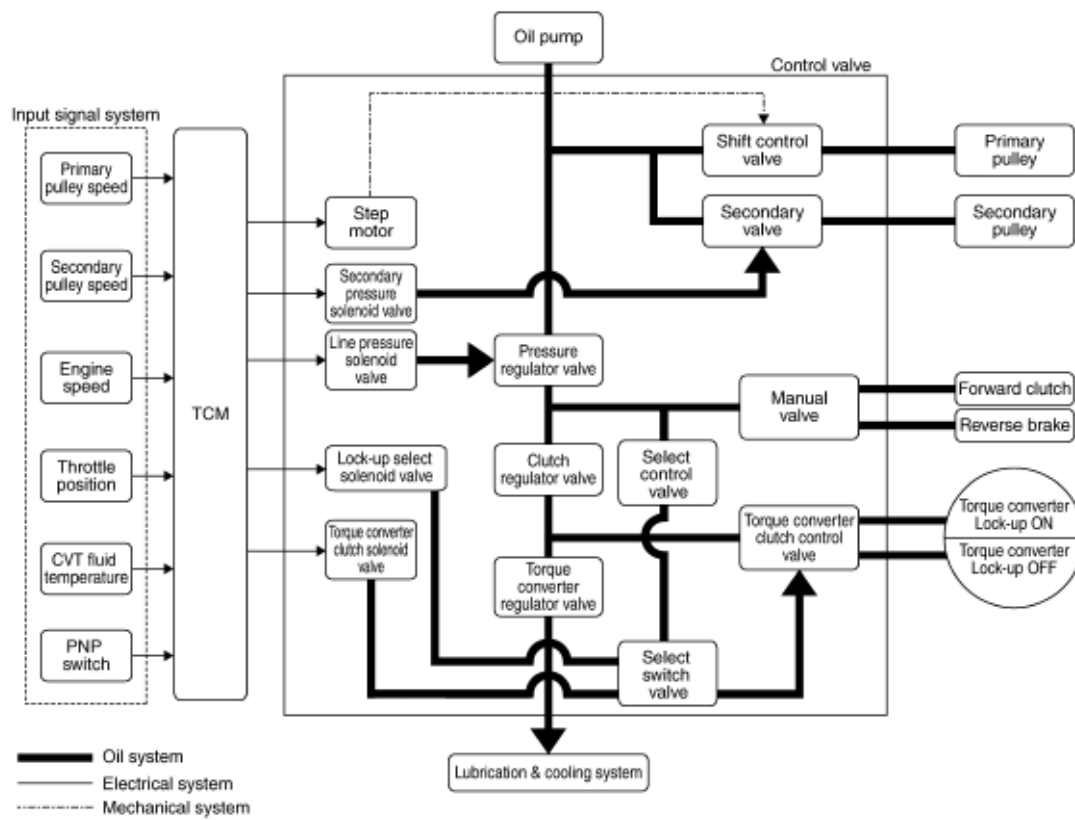


Fig. 11: Hydraulic Control System - Block Diagram

System Description

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

LINE PRESSURE AND SECONDARY PRESSURE CONTROL

- When an input torque signal equivalent to the engine drive force is sent from the ECM to the TCM, the TCM controls the line pressure solenoid valve and secondary pressure solenoid valve.
- This line pressure solenoid controls the pressure regulator valve as the signal pressure and adjusts the pressure of the operating oil discharged from the oil pump to the line pressure most appropriate to the driving state. Secondary pressure is controlled by decreasing line pressure.

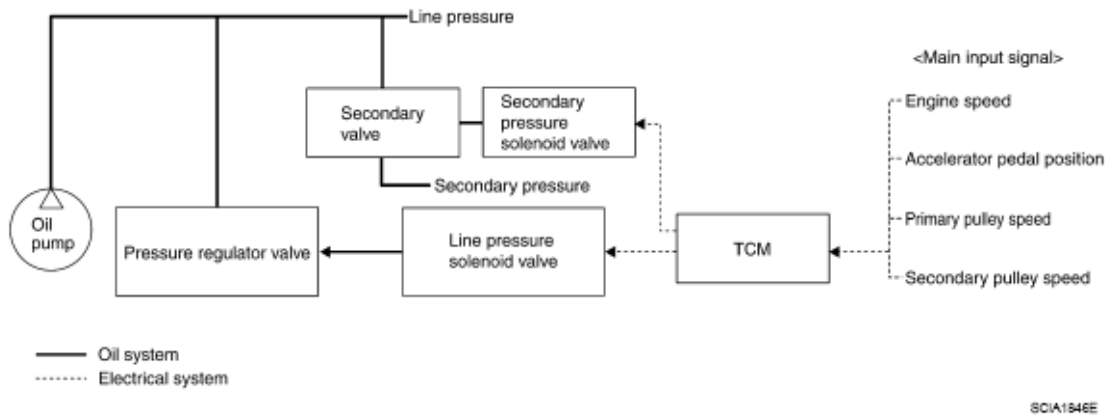


Fig. 12: Line Pressure And Secondary Pressure Control Flow Diagram

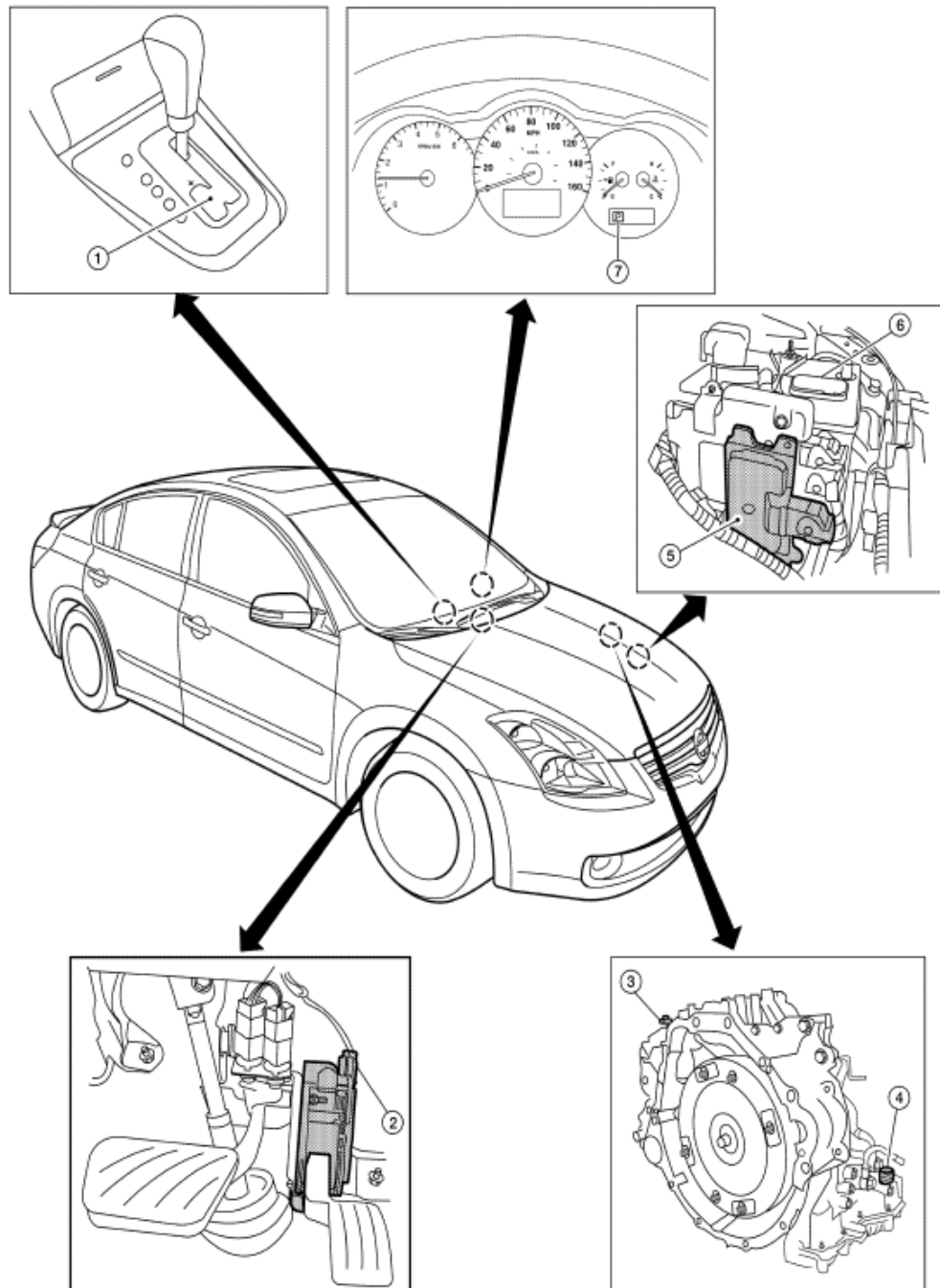
Normal Control

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

Feedback Control

When controlling the normal fluid pressure or the selected fluid pressure, the secondary pressure can be set more accurately by using the fluid pressure sensor to detect the secondary pressure and controlling the feedback.

Component Parts Location



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- | | | |
|---|--|---------------------------|
| 1. Control device assembly (Manual mode select switch and manual mode position select switch) | 2. Accelerator pedal position (APP) sensor | 3. Secondary speed sensor |
| 4. CVT unit harness connector | 5. TCM | 6. Battery |
| 7. Shift position indicator | | |

Fig. 13: Identifying Transaxle And Transmission Component Parts Location

Component Description

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TRANSAXLE ASSEMBLY**TRANSAXLE ASSEMBLY FUNCTION CHART**

Name	Function
Torque converter regulator valve	Optimizes the supply pressure for the torque converter depending on driving conditions.
Pressure regulator valve	Optimizes the discharge pressure from the oil pump depending on driving conditions.
TCC control valve	• Activates or deactivate the lock up. • Lock up smoothly by opening lock up operation excessively.
<u>TCC SOLENOID VALVE</u>	
Shift control valve	Controls flow-in/out of line pressure from the primary pulley depending on the stroke difference between the stepping motor and the primary pulley.
Secondary valve	Controls the line pressure from the secondary pulley depending on operating conditions.
Clutch regulator valve	Adjusts the clutch operating pressure depending on operating conditions.
<u>SECONDARY PRESSURE SOLENOID VALVE</u>	
<u>LINE PRESSURE SOLENOID VALVE</u>	
<u>STEP MOTOR</u>	
Manual valve	Transmits the clutch operating pressure to each circuit in accordance with the selected position.
Select control valve	Engages forward clutch, reverse brake smoothly depending on select operation.
Select switch valve	Switches torque converter clutch solenoid valve control pressure use to torque converter clutch control valve or select control valve.
<u>LOCK-UP SELECT SOLENOID VALVE</u>	
<u>PRIMARY SPEED SENSOR</u>	
<u>SECONDARY SPEED SENSOR</u>	
<u>PNP SWITCH</u>	
<u>PRIMARY PULLEY</u>	
Secondary pulley	
Forward clutch	
Torque converter	

EXCEPT TRANSAXLE ASSEMBLY**EXCEPT TRANSAXLE ASSEMBLY FUNCTION CHART**

Name	Function
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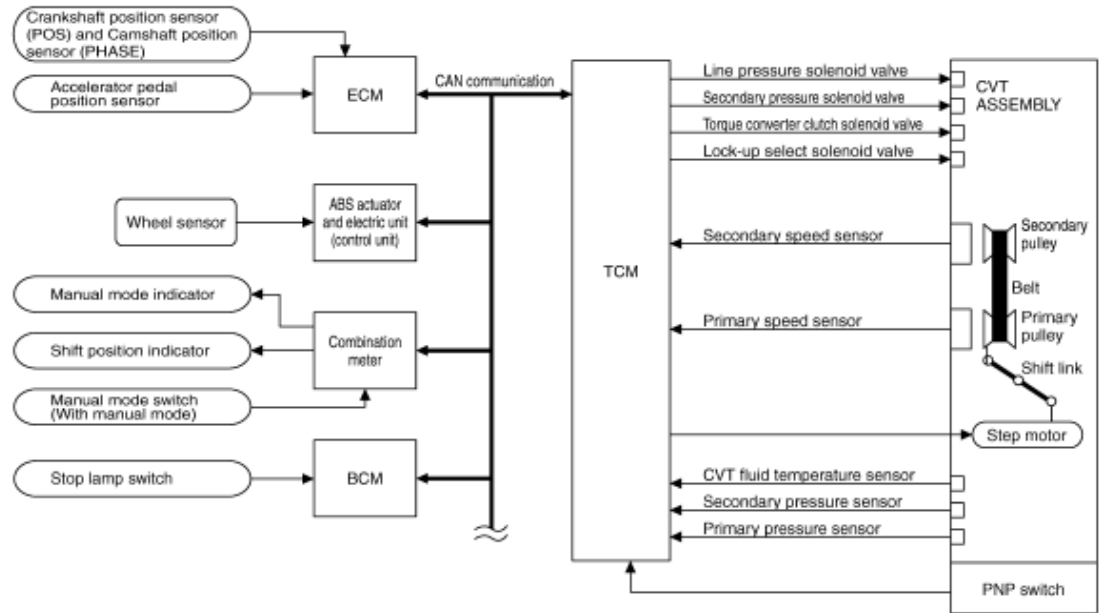
TCM

Judges the vehicle driving status according to the signal from each sensor and controls the non-step transmission mechanism properly.

ACCELERATOR PEDAL POSITION SENSOR

CONTROL SYSTEM

System Diagram



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Fig. 14: CAN Communication - System Diagram

System Description

The function of the TCM is to:

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

CONTROL SYSTEM OUTLINE

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

TCM SIGNAL REFERENCE CHART

SENSORS (or SIGNAL)	TCM	ACTUATORS
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PNP switch		Shift control		Step motor
Accelerator pedal position signal		Line pressure control		Torque converter clutch solenoid valve
Closed throttle position signal		Primary pressure control		Lock up select solenoid valve
Engine speed signal		Secondary pressure control		Line pressure solenoid valve
CVT fluid temperature sensor	==>	Lock up control	==>	Secondary pressure solenoid valve
Vehicle speed signal		Engine brake control		Manual mode indicator
Manual mode signal		Vehicle speed control		Shift position indicator
Stop lamp switch signal		Fail-safe control		CVT indicator lamp
Primary speed sensor		Self-diagnosis		Starter relay
Secondary speed sensor		CONSULT-III communication line		
Primary pressure sensor		Duet-EA control		
Secondary pressure sensor		CAN system		
		On board diagnosis		

INPUT/OUTPUT SIGNAL OF TCM

INPUT/OUTPUT SIGNAL OF TCM

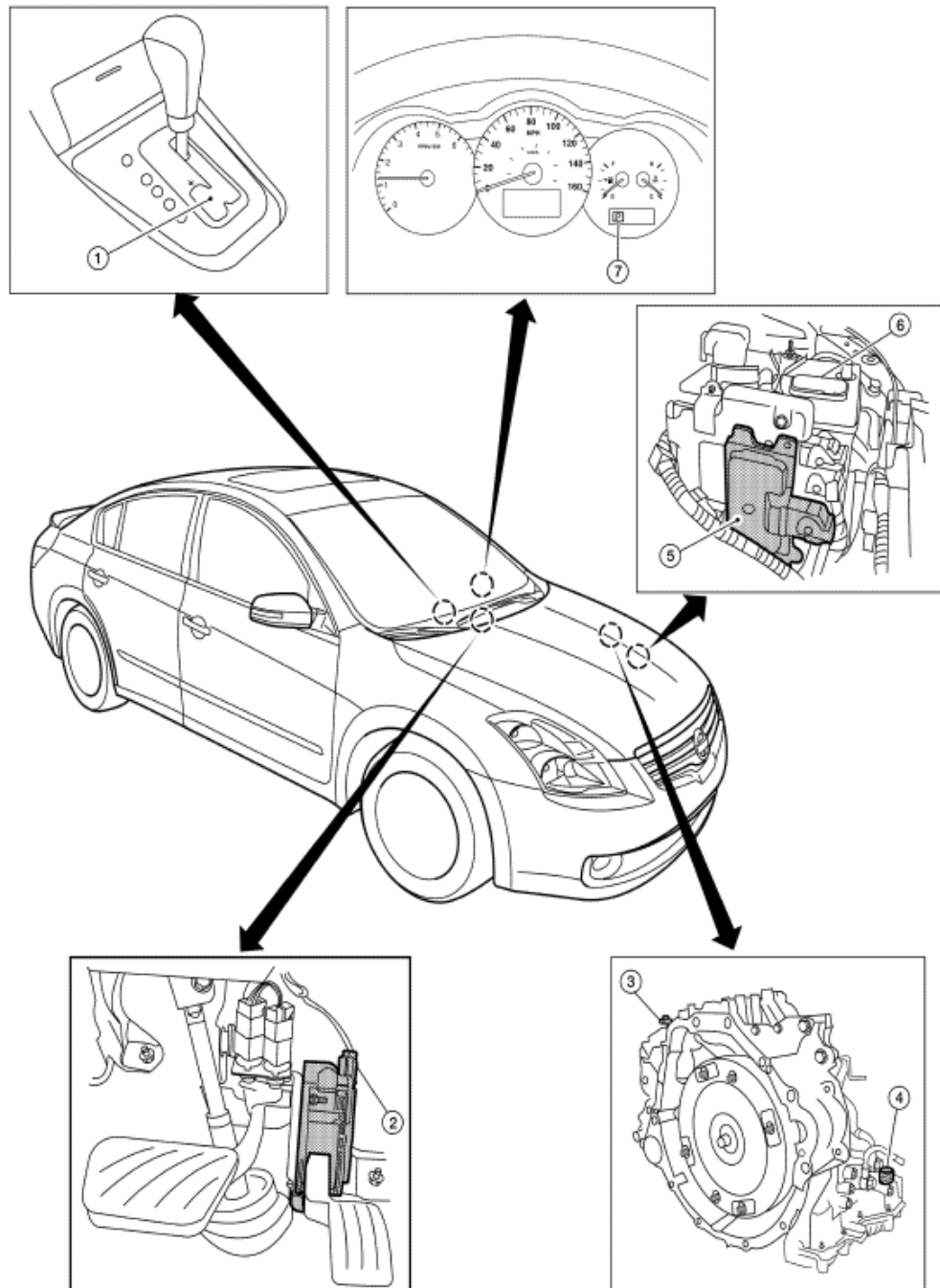
		Fluid pressure control	Select control	Shift control	Lock up control	CAN communication control	Fail-safe function (1)
Input	PNP switch	X	X	X	X	X	X
	Accelerator pedal position signal (2)	X	X	X	X	X	X
	Closed throttle position signal (2)	X		X	X	X	
	Engine speed signal (2)	X	X		X	X	X
	CVT fluid temperature sensor	X	X	X	X		X
	Manual mode signal (2)	X		X	X	X	X
	Stop lamp switch signal (2)	X		X	X	X	
	Primary speed sensor	X		X	X	X	X
	Secondary speed sensor	X	X	X	X	X	X
	Primary pressure sensor	X		X			
	Secondary pressure sensor	X		X			X
	TCM power supply voltage signal	X	X	X	X	X	X

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Output	Step motor			X			X
	TCC solenoid valve		X		X		X
	Lock up select solenoid valve		X		X		X
	Line pressure solenoid valve	X	X	X			X
	Secondary pressure solenoid valve	X		X			X
(1) If these input and output signals are different, the TCM triggers the fail-safe function. (2) Input by CAN communications.							

Component Parts Location



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- | | | |
|---|--|---------------------------|
| 1. Control device assembly (Manual mode select switch and manual mode position select switch) | 2. Accelerator pedal position (APP) sensor | 3. Secondary speed sensor |
| 4. CVT unit harness connector | 5. TCM | 6. Battery |
| 7. Shift position indicator | | |

Fig. 15: Identifying Transaxle And Transmission Component Parts Location

Component Description

TRANSAXLE ASSEMBLY

TRANSAXLE ASSEMBLY FUNCTION CHART

Name
<u>PNP SWITCH</u>
<u>CVT FLUID TEMPERATURE SENSOR</u>
<u>PRIMARY SPEED SENSOR</u>
<u>SECONDARY SPEED SENSOR</u>
<u>PRIMARY PRESSURE SENSOR</u>
<u>SECONDARY PRESSURE SENSOR</u>
<u>STEP MOTOR</u>
<u>TCC SOLENOID VALVE</u>
<u>LOCK-UP SELECT SOLENOID VALVE</u>
<u>LINE PRESSURE SOLENOID VALVE</u>
<u>SECONDARY PRESSURE SOLENOID VALVE</u>

EXCEPT TRANSAXLE ASSEMBLY

EXCEPT TRANSAXLE ASSEMBLY FUNCTION CHART

Name	Function
TCM	Optimally controls continuously variable transmission system by judging driving conditions based on signals from each sensor.
<u>STOP LAMP SWITCH</u>	

LOCK-UP AND SELECT CONTROL SYSTEM

System Diagram

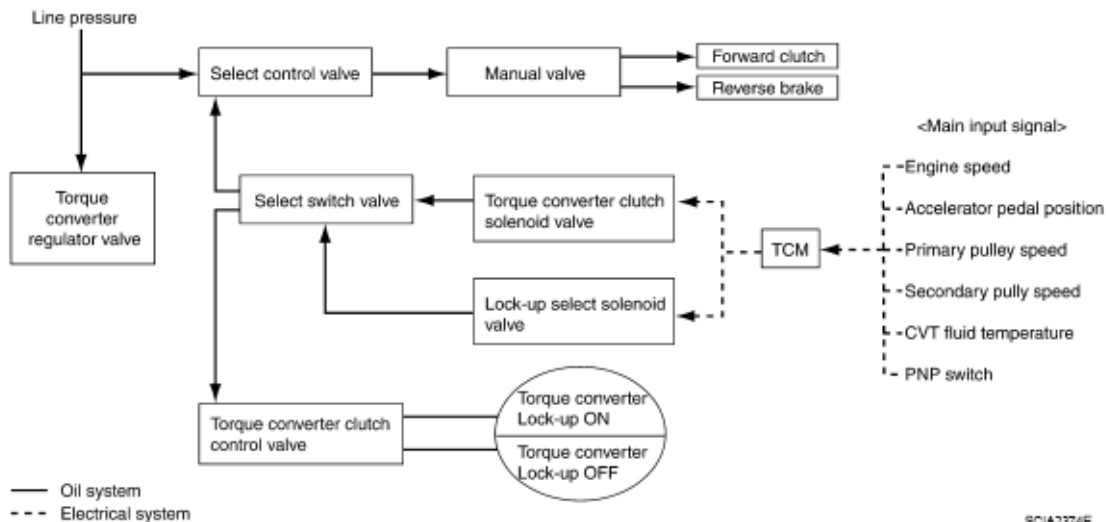


Fig. 16: Lock-Up And Select Control - System Diagram

System Description

- The torque converter clutch piston in the torque converter is engaged to eliminate torque converter slip to increase power transmission efficiency.
- The torque converter clutch control valve operation is controlled by the torque converter clutch solenoid valve, which is controlled by a signal from TCM. The torque converter clutch control valve engages or releases the torque converter clutch piston.
- When shifting between "N" ("P") <==> "D" ("R"), torque converter clutch solenoid controls engagement power of forward clutch and reverse brake.
- The lock up applied gear range was expanded by locking up the torque converter at a lower vehicle speed than conventional CVT models.

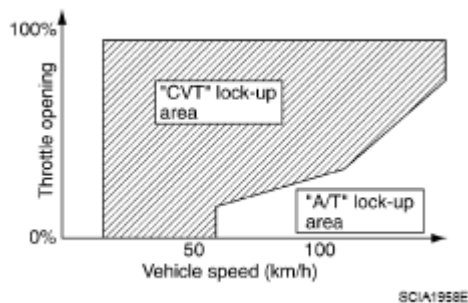


Fig. 17: Throttle Opening And Vehicle Speed Graph

TORQUE CONVERTER CLUTCH AND SELECT CONTROL VALVE CONTROL

Lock up Released

In the lock up released state, the torque converter clutch control valve is set into the unlocked state by the torque converter clutch solenoid and the lock up pressure is drained.

In this way, the torque converter clutch piston is not coupled.

Lock up Applied

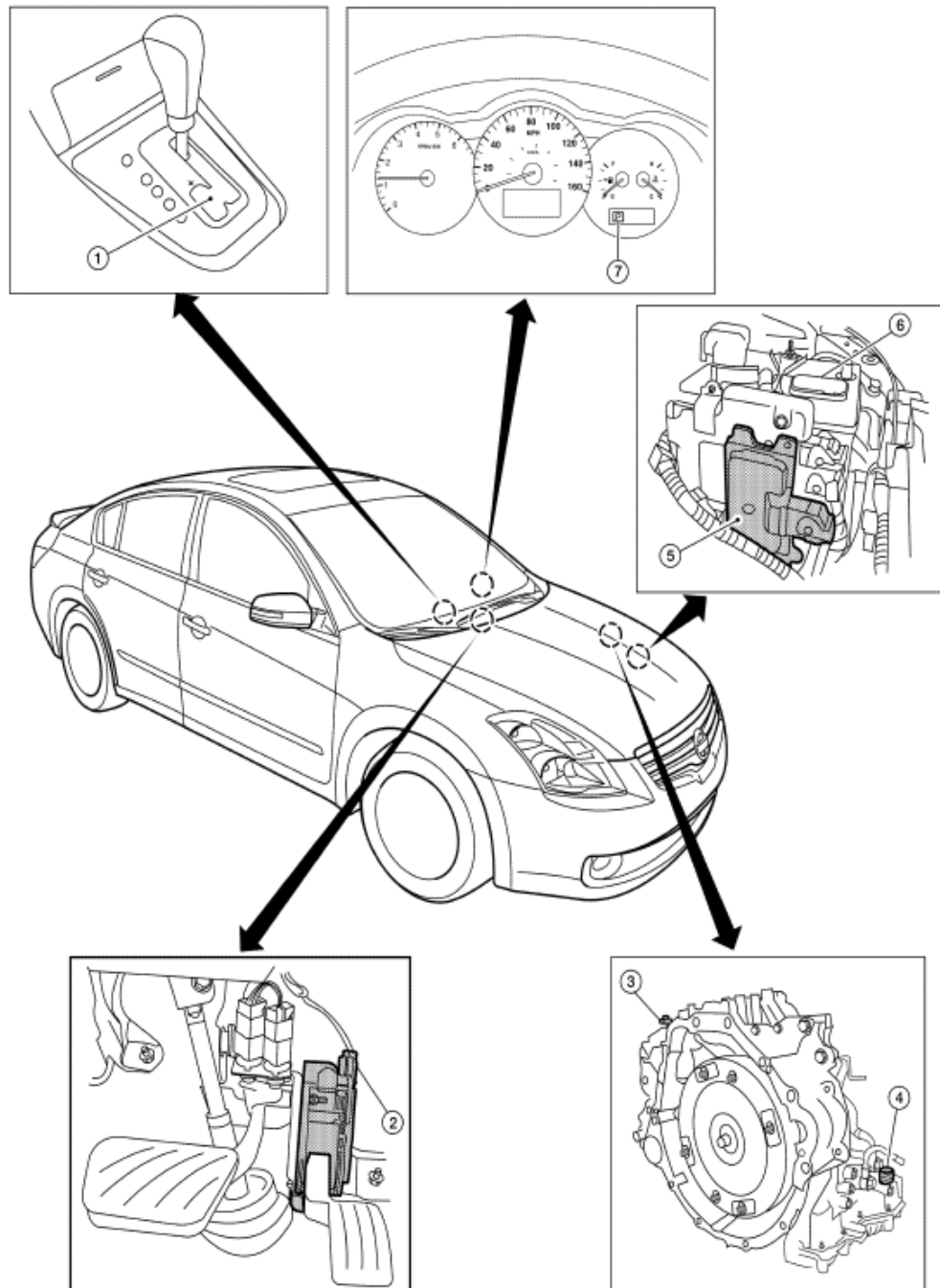
In the lock up applied state, the torque converter clutch control valve is set into the locked state by the torque converter clutch solenoid and lock up apply pressure is generated.

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

Select Control

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

Component Parts Location



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- | | | |
|---|--|---------------------------|
| 1. Control device assembly (Manual mode select switch and manual mode position select switch) | 2. Accelerator pedal position (APP) sensor | 3. Secondary speed sensor |
| 4. CVT unit harness connector | 5. TCM | 6. Battery |
| 7. Shift position indicator | | |

Fig. 18: Identifying Transaxle And Transmission Component Parts Location

Component Description

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TRANSAXLE ASSEMBLY

TRANSAXLE ASSEMBLY FUNCTION CHART

Name
<u>TORQUE CONVERTER REGULATOR VALVE</u>
TCC control valve
Select control valve
Select switch valve
Manual valve
<u>TCC SOLENOID VALVE</u>
<u>LOCK-UP SELECT SOLENOID VALVE</u>
<u>PRIMARY SPEED SENSOR</u>
<u>SECONDARY SPEED SENSOR</u>
<u>CVT FLUID TEMPERATURE SENSOR</u>
<u>PNP SWITCH</u>
<u>FORWARD CLUTCH</u>
Reverse brake
Torque converter

EXCEPT TRANSAXLE ASSEMBLY

EXCEPT TRANSAXLE ASSEMBLY FUNCTION CHART

Name
<u>TCM</u>
<u>ACCELERATOR PEDAL POSITION SENSOR</u>

SHIFT MECHANISM

System Diagram

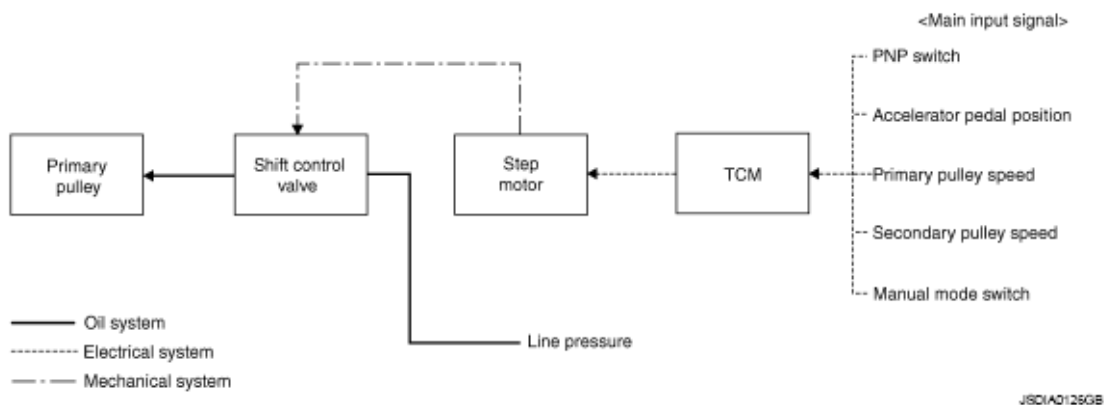


Fig. 19: Shift Mechanism - Block Diagram

NOTE: The gear ratio is set for every position separately.

System Description

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

"D" POSITION

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

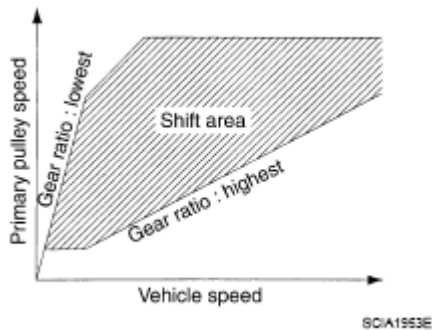
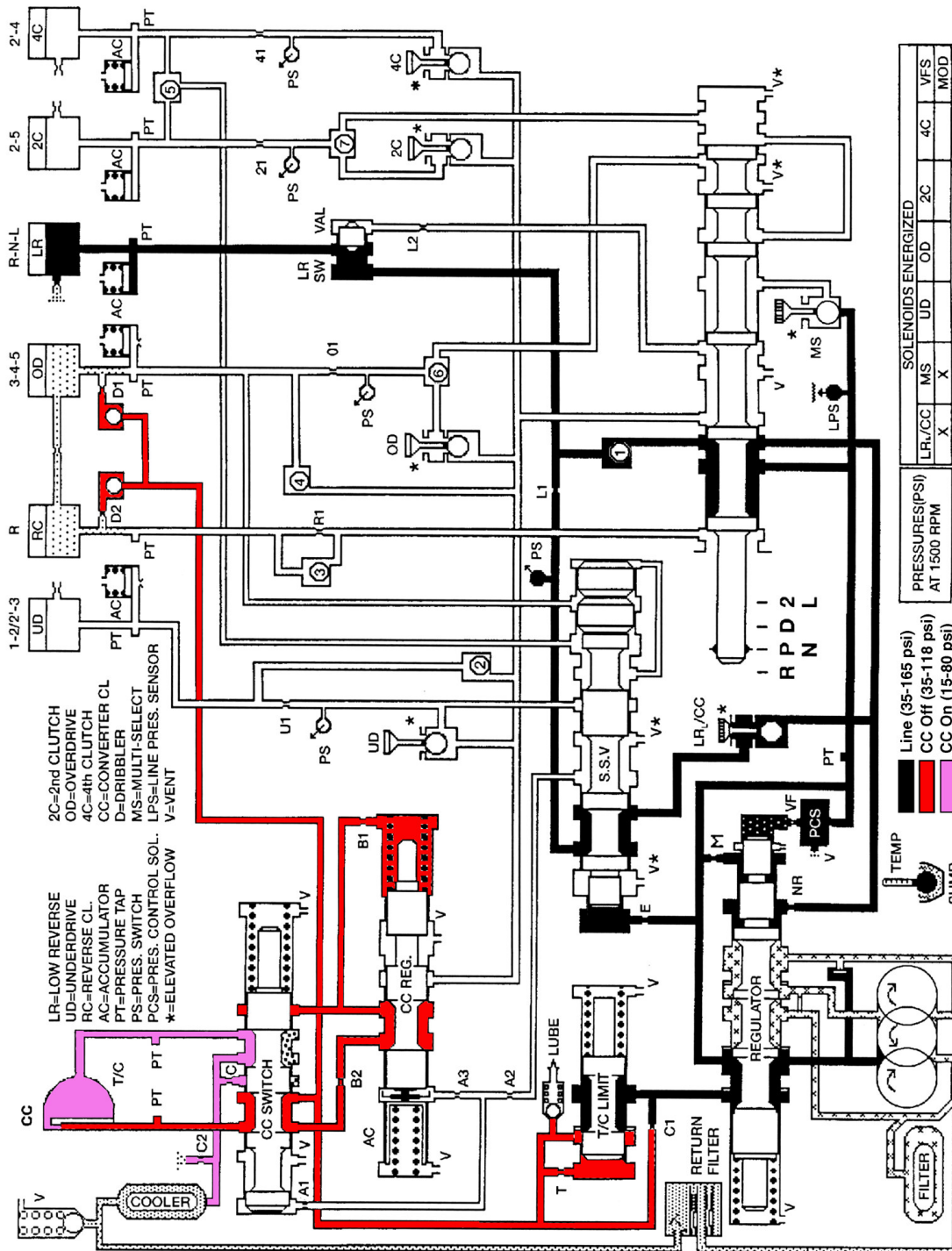


Fig. 20: Gear Ratio (D) Position Graph

"M" POSITION

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

545RFE Park/Neutral Speed Under 8 MPH



GC0005226

Fig. 21: Gear Ratio (M) Position Graph

DOWNHILL ENGINE BRAKE CONTROL (AUTO ENGINE BRAKE CONTROL)

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

ACCELERATION CONTROL

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

Component Parts Location

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TRANSAXLE ASSEMBLY

TRANSAXLE ASSEMBLY FUNCTION CHART

Item
<u>PNP SWITCH</u>
<u>PRIMARY SPEED SENSOR</u>
<u>SECONDARY SPEED SENSOR</u>
<u>STEP MOTOR</u>
<u>SHIFT CONTROL VALVE</u>
<u>PRIMARY PULLEY</u>
<u>SECONDARY PULLEY</u>

EXCEPT TRANSAXLE ASSEMBLY

EXCEPT TRANSAXLE ASSEMBLY FUNCTION CHART

Item
<u>TCM</u>

SHIFT LOCK SYSTEM

System Diagram



System Description

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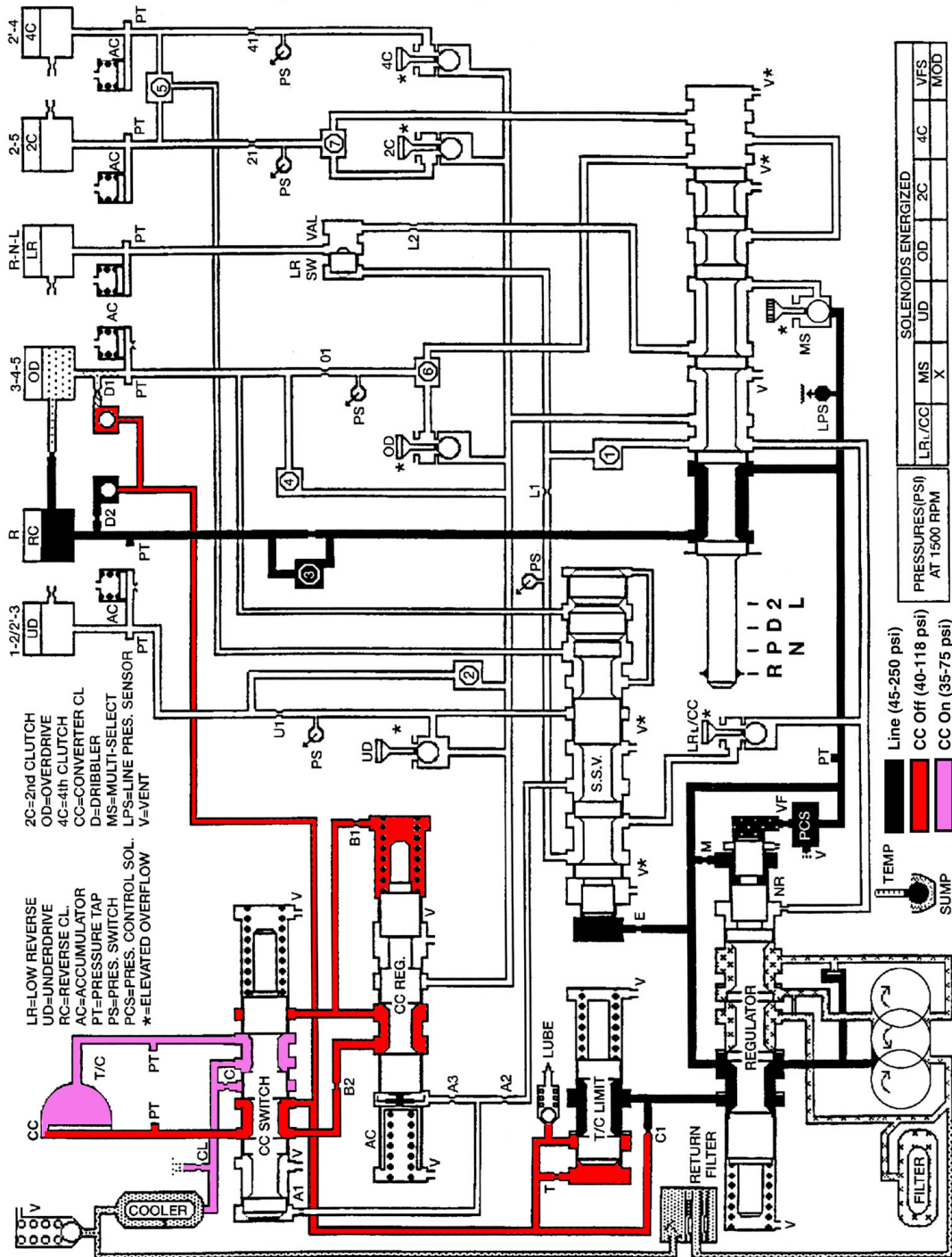
The selector lever cannot be shifted from "P" position to any other position unless the ignition switch is in the ON position and the brake pedal is depressed.

Component Parts Location

545RFE

Reverse Block

(Shift To Rev. W/Speed Over 8 MPH)



GC0005229

Fig. 24: Identifying Shift Lock System Component Parts Location

Component Description

COMPONENT FUNCTION CHART

Component			Function
CVT device	Shift lock solenoid	Shift lock solenoid	" <u>SYSTEM DESCRIPTION</u> "
		Lock plate	The lock plate restricts the position pin stroke by selector button operation according to the shift lock unit status.
		Position pin	The position pin, linking with the selector button, restricts the selector lever movement.
	Shift lock release button		Pressing the shift lock release button cancels the shift lock forcibly.
Stop lamp switch			" <u>DESCRIPTION</u> "

ON BOARD DIAGNOSTIC (OBD) SYSTEM

Diagnosis Description

DESCRIPTION

The CVT system has two self-diagnostic systems.

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

The second is the TCM original self-diagnosis performed by the TCM. The malfunction is stored in the TCM memory. The detected items are overlapped with OBD-II self-diagnostic items. For detail, refer to "**CONSULT-III Function (TRANSMISSION)**".

OBD-II FUNCTION

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

The MIL automatically illuminates in "One or Two Trip Detection Logic" when a malfunction is sensed in relation to CVT system parts.

ONE OR TWO TRIP DETECTION LOGIC OF OBD-II

One Trip Detection Logic

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

Two Trip Detection Logic

When a malfunction is sensed during the first test drive, it is stored in the ECM memory as a 1st trip DTC (diagnostic trouble code) or 1st trip freeze frame data. At this point, the MIL will not illuminate. - 1st trip If the same malfunction as that experienced during the first test drive is sensed during the second test drive, the MIL will illuminate. - 2nd trip

The "trip" in the "One or Two Trip Detection Logic" means a driving mode in which self-diagnosis is performed during vehicle operation.

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

How to Read DTC and 1st Trip DTC

DTC and 1st trip DTC can be read by the following methods.

(**with CONSULT-III or GST**) CONSULT-III or GST (Generic Scan Tool) Examples: P0705, P0720 etc.

These DTC are prescribed by SAE J2012.

(CONSULT-III also displays the malfunctioning component or system.)

- **1st trip DTC No. is the same as DTC No.**
- **Output of the diagnostic trouble code indicates that the indicated circuit has a malfunction. However, in case of the Mode II and GST, they do not indicate whether the malfunction is still occurring or occurred in the past and returned to normal.**

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

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

Freeze Frame Data and 1st Trip Freeze Frame Data

- The ECM has a memory function, which stores the driving condition such as fuel system status, calculated load value, engine coolant temperature, short term fuel trim, long term fuel trim, engine speed and vehicle speed at the moment the ECM detects a malfunction.

Data which are stored in the ECM memory, along with the 1st trip DTC, are called 1st trip freeze frame data, and the data, stored together with the DTC data, are called freeze frame data and displayed on CONSULT-III or GST. The 1st trip freeze frame data can only be displayed on the CONSULT-III screen, not on the GST. For details, refer to "**CONSULT-III FUNCTION**".

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

ITEMS CHART

Priority	Items	
1	Freeze frame data	Misfire - DTC: P0300-P0306
2		Fuel Injection System Function - DTC: P0171, P0172, P0174, P0175
		Except the above items (Includes CVT related items)
3	1st trip freeze frame data	

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

How to Erase DTC

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

How to Erase DTC (With CONSULT-III)

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

How to Erase DTC (With GST)

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

MALFUNCTION INDICATOR LAMP (MIL)

Description

The MIL is located on the instrument panel.

1. The MIL will light up when the ignition switch is turned ON without the engine running. This is a bulb check.
 - If the MIL does not light up, refer to "**WARNING LAMPS/INDICATOR LAMPS: SYSTEM DIAGRAM**".
2. When the engine is started, the MIL should go off. If the MIL remains on, the on board diagnostic system has detected an engine system malfunction.

545RFE
First Gear(From N Or CD) #

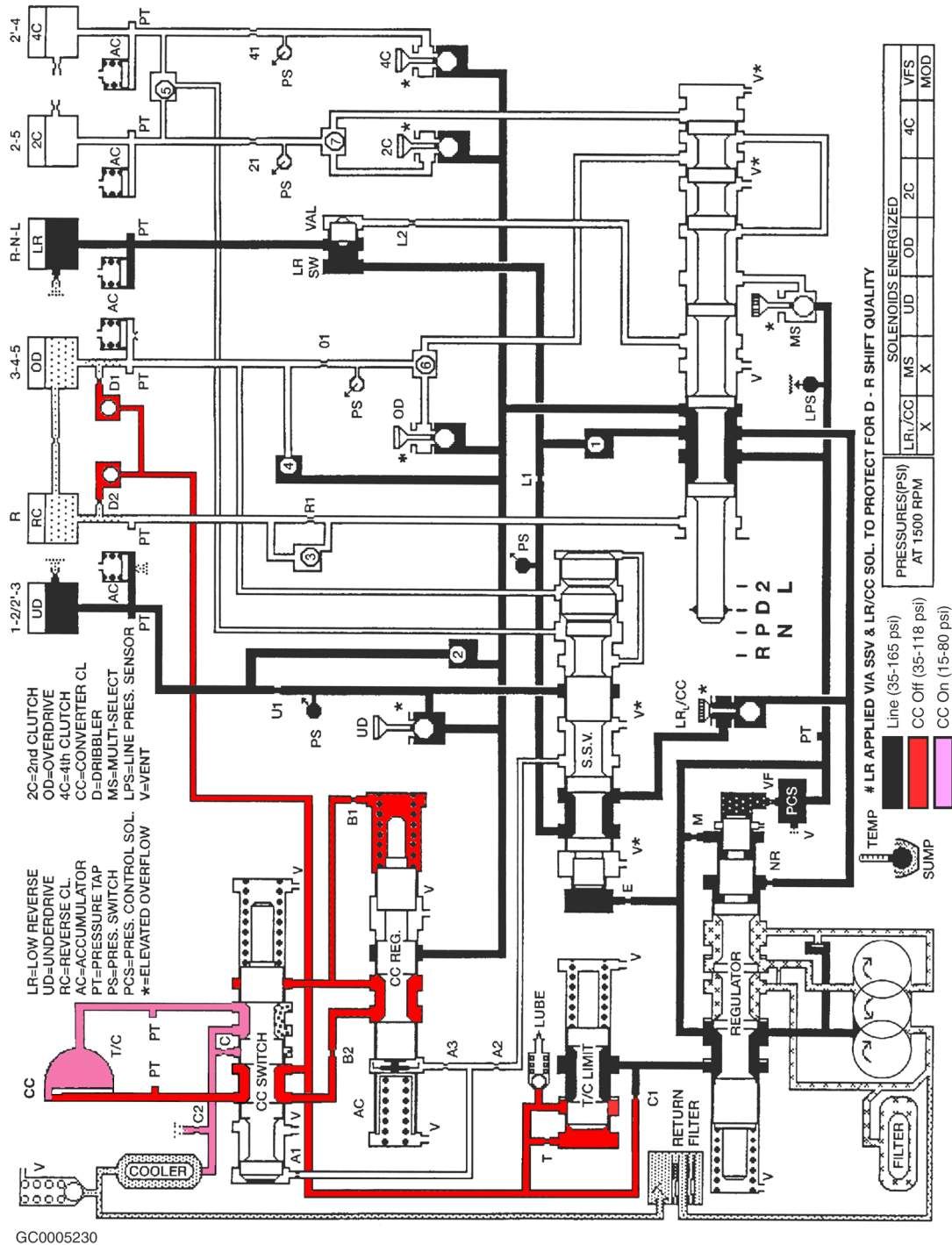


Fig. 25: Malfunction Indicator Light

DIAGNOSIS SYSTEM (TCM)

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CONSULT-III Function (TRANSMISSION)

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

FUNCTION

FUNCTION CHART

Diagnostic test mode	Function
Work support	This mode enables a technician to adjust some devices faster and more accurately by following the indications on CONSULT-III.
Self-diagnostic results	Self-diagnostic results can be read and erased quickly.
Data monitor	Input/Output data in the TCM can be read.
CAN diagnostic support monitor	The results of transmit/receive diagnosis of CAN communication can be read.
CALIB data	Characteristic information for TCM and CVT assembly can be read. Do not use, but displayed.
Function test	Performed by CONSULT-III instead of a technician to determine whether each system is "OK" or "NG".
ECU part number	TCM part number can be read.

WORK SUPPORT MODE

Display Item List

DISPLAY ITEM LIST

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

Engine Brake Adjustment

"ENGINE BRAKE LEVEL"

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

OFF :Engine brake level control is deactivated.

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

Check CVT Fluid Deterioration Date

"CVTF DETERIORATION DATE"

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More than 210000 :It is necessary to change CVT fluid.

Less than 210000 :It is not necessary to change CVT fluid.

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

SELF-DIAGNOSTIC RESULT MODE

After performing self-diagnosis, place check marks for results on the "**DIAGNOSTIC WORK SHEET**".
Reference pages are provided following the items.

Display Items List

DISPLAY ITEMS LIST

X: Applicable -: Not applicable			
Items (CONSULT-III screen terms)	Malfunction is detected when...	TCM self-diagnosis	OBD-II (DTC)
		"TRANSMISSION" with CONSULT-III	MIL⁽¹⁾, "ENGINE" with CONSULT-III or GST
CAN COMM CIRCUIT	When TCM is not transmitting or receiving CAN communication signal for 2 seconds or more.	<u>U1000</u>	U1000
STARTER RELAY/CIRC	If this signal is ON other than in "P" or "N" position, this is judged to be a malfunction. (And if it is OFF in "P" or "N" position, this is judged to be a malfunction too.)	<u>P0615</u>	-
BRAKE SW/CIRC	When the brake switch does not switch to ON or OFF.	<u>P0703</u>	-
PNP SW/CIRC	• PNP switch 1-4 signals input with impossible pattern. • PNP switch 3 monitor terminal open or short circuit.	<u>P0705</u>	P0705
ATF TEMP SEN/ CIRC	During running, the CVT fluid temperature sensor signal voltage is excessively high or low.	<u>P0710</u>	P0710
INPUT SPD SEN/ CIRC	• Input speed sensor (primary speed sensor) signal is not input due to an open circuit. • An unexpected signal is	<u>P0715</u>	P0715

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	input when vehicle is being driven.		
VEH SPD SEN/CIR AT	- Signal from vehicle speed sensor CVT [Output speed sensor (Secondary speed sensor)] not input due to open or short circuit. - Unexpected signal input during running.	<u>P0720</u>	P0720
ENGINE SPEED SIG	TCM does not receive the CAN communication signal from the ECM.	<u>P0725</u>	-
BELT DAMG	Unexpected gear ratio detected.	<u>P0730</u>	-
TCC SOLENOID/CIRC	Normal voltage not applied to solenoid due to open or short circuit.	<u>P0740</u>	P0740
A/T TCC S/V FNCTN	- CVT cannot perform lock up even if electrical circuit is good. - TCM detects as irregular by comparing difference value with slip rotation. - There is a great difference between engine speed and primary speed when TCM lock up signal is on.	<u>P0744</u>	P0744
L/PRESS SOL/CIRC	- Normal voltage not applied to solenoid due to open or short circuit. - TCM detects as irregular by comparing target value with monitor value.	<u>P0745</u>	P0745
PRS CNT SOL/A FCTN	Unexpected gear ratio was detected in the LOW side due to excessively low line pressure.	<u>P0746</u>	P0746
PRS CNT SOL/B FCTN	Secondary pressure is too high or too low compared with the commanded value while driving.	<u>P0776</u>	P0776
PRS CNT SOL/B CIRC	- Normal voltage not applied to solenoid due to cut line, short, or the like. - TCM detects as irregular by comparing target value with monitor value.	<u>P0778</u>	P0778

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MANUAL MODE SWITCH	When an impossible pattern of switch signals is detected, a malfunction is detected.	<u>P0826</u>	-
TR PRS SENS/A CIRC	Signal voltage of the transmission fluid pressure sensor A (secondary pressure sensor) is too high or too low while driving.	<u>P0840</u>	P0840
PRESS SEN/FNCTN	Correlation between the values of the transmission fluid pressure sensor A (secondary pressure sensor) and the transmission fluid pressure sensor B (primary pressure sensor) is out of specification.	<u>P0841</u>	-
TR PRS SENS/B CIRC	Signal voltage of the transmission fluid pressure sensor B (primary pressure sensor) is too high or too low while driving.	<u>P0845</u>	P0845
SEC/PRESS DOWN	Secondary fluid pressure is too low compared with the commanded value while driving.	<u>P0868</u>	-
TCM-POWER SUPPLY	• When the power supply to the TCM is cut OFF, for example because the battery is removed, and the self-diagnosis memory function stops. • This is not a malfunction message (Whenever shutting OFF a power supply to the TCM, this message appears on the screen).	<u>P1701</u>	-
TP SEN/CIRC A/T	TCM does not receive the proper accelerator pedal position signals (input by CAN communication) from ECM.	<u>P1705</u>	-
ESTM VEH SPD SIG	• CAN communication with the ABS actuator and the electric unit (control unit) is malfunctioning. • There is a great difference between the vehicle speed signal from the ABS actuator and the electric unit (control unit), and the	<u>P1722</u>	-

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	vehicle speed sensor signal.		
CVT SPD SEN/ FNCTN	A rotation sensor error is detected because the gear does not change in accordance with the position of the stepping motor. CAUTION: One of the "P0720 VEH SPD SEN/CIR AT", the "P0715 INPUT SPD SEN/CIRC" or the "P0725 ENGINE SPEED SIG" is displayed with the DTC at the same time.	<u>P1723</u>	-
ELEC TH CONTROL	The electronically controlled throttle for ECM is malfunctioning.	<u>P1726</u>	-
LU-SLCT SOL/ CIRC	- Normal voltage not applied to solenoid due to cut line, short, or the like. - TCM detects as irregular by comparing target value with monitor value.	<u>P1740</u>	P1740
L/PRESS CONTROL	TCM detects the unexpected line pressure.	<u>P1745</u>	-
STEP MOTR CIRC	Each coil of the step motor is not energized properly due to an open or a short.	<u>P1777</u>	P1777
STEP MOTR/FNC	There is a great difference between the number of steps for the stepping motor and for the actual gear ratio.	<u>P1778</u>	P1778
NO DTC IS DETECTED: FURTHER TESTING MAY BE REQUIRED	No NG item has been detected.	X	X
(1) Refer to " <u>DIAGNOSIS DESCRIPTION</u> ".			

DATA MONITOR MODE

Display Items List

DISPLAY ITEMS LIST

X: Standard, -: Not applicable,: Option		
Monitored item	Monitor item selection	

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(Unit)	ECU IN-PUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	Remarks
VSP SENSOR (km/h)	X	-	x	Output speed sensor (secondary speed sensor)
ESTM VSP SIG (km/h)	X	-	x	-
PRI SPEED SEN (RPM)	X	-	x	-
ENG SPEED SIG (RPM)	X	-	x	-
SEC HYDR SEN (V)	X	-	x	-
PRI HYDR SEN (V)	X	-	x	-
ATF TEMP SEN (V)	X	-	x	CVT fluid temperature sensor
VIGN SEN (V)	X	-	x	-
VEHICLE SPEED (km/h)	-	X	x	Vehicle speed recognized by the TCM.
PRI SPEED (RPM)	-	X	x	Primary pulley speed
SEC SPEED (RPM)	-	-	x	Secondary pulley speed
ENG SPEED (RPM)	-	X	x	-
SLIP REV (RPM)	-	X	x	Difference between engine speed and primary pulley speed.
GEAR RATIO	-	X	x	-
G SPEED (G)	-	-	x	-
ACC PEDAL OPEN (0.0/8)	X	X	x	Degree of opening for accelerator recognized by the TCM. For fail-safe operation, the specific value used for control is displayed.
TRQ RTO	-	-	x	-
SEC PRESS (MPa)	-	X	x	-
PRI PRESS (MPa)	-	X	x	-
ATF TEMP	-	X	x	-
DSR REV (RPM)	-	-	x	-
DGEAR RATIO	-	-	x	-
DSTM STEP (step)	-	-	x	-
STM STEP (step)	-	X	x	-
LU PRS (MPa)	-	-	x	-
LINE PRS (MPa)	-	-	x	-
TGT SEC PRESS (MPa)	-	-	x	-
ISOLT1 (A)	-	X	x	Torque converter clutch solenoid valve output current

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ISOLT2 (A)	-	X	x	Pressure control solenoid valve A (line pressure solenoid valve) output current
ISOLT3 (A)	-	X	x	Pressure control solenoid valve B (secondary pressure solenoid valve) output current
SOLMON1 (A)	X	X	x	Torque converter clutch solenoid valve monitor current
SOLMON2 (A)	X	X	x	Pressure control solenoid valve A (line pressure solenoid valve) monitor current
SOLMON3 (A)	X	X	x	Pressure control solenoid valve B (secondary pressure solenoid valve) monitor current
INH SW3M (ON/OFF)	X	-	x	PNP switch 3 ON-OFF status monitor
INH SW4 (ON/OFF)	X	-	x	PNP switch 4 ON-OFF status
INH SW3 (ON/OFF)	X	-	x	PNP switch 3 ON-OFF status
INH SW2 (ON/OFF)	X	-	x	PNP switch 2 ON-OFF status
INH SW1 (ON/OFF)	X	-	x	PNP switch 1 ON-OFF status
BRAKE SW (ON/OFF)	X	X	x	Stop lamp switch (Signal input with CAN communications)
FULL SW (ON/OFF)	X	X	x	Signal input with CAN communications
IDLE SW (ON/OFF)	X	X	x	
SPORT MODE SW (ON/OFF)	X	X	x	
STRDWSW (ON/OFF)	X	-	x	Not mounted but displayed.
STRUPSW (ON/OFF)	X	-	x	
DOWNLVR (ON/OFF)	X	-	x	
UPLVR (ON/OFF)	X	-	x	-
NONMMODE (ON/OFF)	X	-	x	-
MMODE (ON/OFF)	X	-	x	-
INDLRNG (ON/OFF)	-	-	x	Not mounted but displayed.
INDDRNG (ON/OFF)	-	-	x	"D" position indicator output
INDNRNG (ON/OFF)	-	-	x	"N" position indicator output
INDRRNG	-	-	x	"R" position indicator output

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(ON/OFF)				
INDPRNG (ON/OFF)	-	-	x	"P" position indicator output
CVT LAMP (ON/OFF)	-	-	x	-
SPORT MODE IND (ON/OFF)	-	-	x	Not mounted but displayed.
MMODE IND (ON/OFF)	-	-	x	-
SMCOIL D (ON/OFF)	-	-	x	Step motor coil "D" energizing status
SMCOIL C (ON/OFF)	-	-	x	Step motor coil "C" energizing status
SMCOIL B (ON/OFF)	-	-	x	Step motor coil "B" energizing status
SMCOIL A (ON/OFF)	-	-	x	Step motor coil "A" energizing status
LUSEL SOL OUT (ON/OFF)	-	-	x	-
REV LAMP (ON/OFF)	-	X	x	-
STRTR RLY OUT (ON/OFF)	-	-	x	Starter relay
LUSEL SOL MON (ON/OFF)	-	-	x	-
STRTR RLY MON (ON/OFF)	-	-	x	Starter relay
VDC ON (ON/OFF)	X	-	x	-
TCS ON (ON/OFF)	X	-	x	-
ABS ON (ON/OFF)	X	-	x	-
ACC ON (ON/OFF)	X	-	x	Not mounted but displayed.
RANGE	-	X	x	Indicates position is recognized by TCM. Indicates a specific value required for control when fail-safe function is activated.
M GEAR POS	-	X	x	-
Voltage (V)	-	-	x	Displays the value measured by the voltage probe.
Frequency (Hz)	-	-	x	The value measured by the pulse probe is displayed.
DUTY-HI (high) (%)	-	-	x	
DUTY-LOW (low) (%)	-	-	x	
PLS WIDTH-HI	-	-	x	

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(ms)				
PLS WIDTH-LOW (ms)	-	-	x	

Diagnostic Tool Function

OBD-II SELF-DIAGNOSTIC PROCEDURE (WITH GST)

Refer to "**DIAGNOSIS DESCRIPTION**".

COMPONENT DIAGNOSIS

U1000 CAN COMM CIRCUIT

Description

CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent malfunction detection ability. Many electronic control units are equipped onto a vehicle, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with 2 communication lines (CAN-H 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

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "U1000 CAN COMM CIRCUIT" with CONSULT-III is detected when TCM cannot communicate to other control units.

Possible Cause

- Harness or connectors

(CAN communication line is open or shorted.)

DTC CONFIRMATION PROCEDURE

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

After the repair, touch "ERASE" on "SELF-DIAG RESULTS" and then perform the following procedure to confirm the malfunction is eliminated.

1. CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Start engine and wait for at least 6 seconds.
3. Perform "SELF-DIAG RESULTS". Refer to "**CONSULT-III Function (TRANSMISSION)**".

With GST

Follow the procedure "WITH CONSULT-III".

Is "U1000 CAN COMM CIRCUIT" detected?

YES: Go to "**DIAGNOSIS PROCEDURE**".

NO: Check intermittent incident. Refer to "**INTERMITTENT INCIDENT** "

Diagnosis Procedure

1. CHECK CAN COMMUNICATION CIRCUIT

With CONSULT-III

1. Turn ignition switch ON and start engine.
2. Select "SELF-DIAG RESULTS".

Is any malfunction of the "U1000 CAN COMM CIRCUIT" indicated?

YES: Go to LAN section. Refer to "**CAN SYSTEM SPECIFICATION CHART** ".

NO: Check intermittent incident. Refer to "**INTERMITTENT INCIDENT** ".

P0615 START SIGNAL**Description**

- TCM controls starter relay in IPDM E/R.
- TCM switches starter relay ON at "P" or "N" position and allows to crank engine.
- Then it prohibits cranking other than at "P" or "N" position.

DTC Logic**DTC DETECTION LOGIC**

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code "P0615 STARTER RELAY/CIRC" with CONSULT-III is detected when starter relay switched ON other than at "P" or "N" position. (Or when switched OFF at "P" or "N" position).

Possible Cause

- Harness or connectors

(Starter relay and TCM circuit is open or shorted.)

- Starter relay

DTC CONFIRMATION PROCEDURE

CAUTION: Always drive vehicle at a safe speed.

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

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

1. CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Perform "SELF-DIAG RESULTS". Refer to "CONSULT-III Function (TRANSMISSION)".

Is "P0615 STARTER RELAY/CIRC" detected?

YES: Go to "DIAGNOSIS PROCEDURE".

NO: Check intermittent incident. Refer to "INTERMITTENT INCIDENT".

Diagnosis Procedure

1. CHECK STARTER RELAY SIGNAL

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

VOLTAGE CONDITION CHART

TCM connector		Ground	Condition	Data (Approx.)
Connector	Terminal		Selector lever in "N" and "P" positions	Battery voltage
F16	20		Selector lever in other positions	0 V

Is the inspection result normal?

YES: GO TO 2.

NO: GO TO 4.

2. CHECK HARNESS BETWEEN TCM AND IPDM E/R

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

TERMINALS CONTINUITY REFERENCE CHART

TCM connector		IPDM E/R harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F16	20	F10	72	Existed

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

Is the inspection result normal?

YES: GO TO 3.

NO: Repair or replace damaged parts.

3. CHECK STARTER RELAY

Starter relay. Refer to "**DESCRIPTION**".

Is the inspection result normal?

YES: Check intermittent incident. Refer to "**INTERMITTENT INCIDENT**".

NO: Repair or replace damaged parts.

4. CHECK TCM

Check TCM input/output signals. Refer to "**REFERENCE VALUE**".

Is the inspection result normal?

YES: Check intermittent incident. Refer to "**INTERMITTENT INCIDENT**".

NO: Replace TCM. Refer to "**EXPLODED VIEW**".

P0703 STOP LAMP SWITCH

Description

ON, OFF status of the stop lamp switch is sent via the CAN communication from the BCM to TCM using the signal.

DTC Logic**DTC DETECTION LOGIC**

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code "P0703 BRAKE SW/CIRC" with CONSULT-III is detected when the stop lamp switch does not switch to ON and OFF.
 - The stop lamp switch does not switch to ON, OFF.

Possible Cause

- Harness or connectors
(Stop lamp switch, and BCM circuit are open or shorted.)
(CAN communication line is open or shorted.)
- Stop lamp switch

DTC CONFIRMATION PROCEDURE

CAUTION: Always drive vehicle at a safe speed.

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

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

1. CHECK DTC DETECTION**With CONSULT-III**

1. Turn ignition switch ON.
2. Start engine.
3. Start vehicle for at least 3 consecutive seconds.
4. Perform "SELF-DIAG RESULTS". Refer to "**CONSULT-III Function (TRANSMISSION)**".

Is "P0703 BRAKE SW/CIRC" detected?

YES: Go to "**DIAGNOSIS PROCEDURE**".

NO: Check intermittent incident. Refer to "**INTERMITTENT INCIDENT**".

Diagnosis Procedure

1. CHECK STOP LAMP SWITCH

Check stop lamp switch. Refer to "**COMPONENT INSPECTION**".

Is the inspection result normal?

YES: Check the following. If NG, repair or replace damaged parts.

- Harness for short or open between battery and stop lamp switch.
- Harness for short or open between stop lamp switch and BCM.
- 10A fuse (No.7, located in fuse block).

NO: Repair or replace the stop lamp switch. Refer to "**EXPLODED VIEW**".

Component Inspection

1. CHECK STOP LAMP SWITCH

Check continuity between stop lamp switch connector terminals.

TERMINALS CONTINUITY REFERENCE CHART

Stop lamp switch		Condition	Continuity
Connector	Terminal		
E38	1	2 When brake pedal is depressed	Existed
		When brake pedal is released	Not existed

Check stop lamp switch after adjusting brake pedal - refer to "**INSPECTION AND ADJUSTMENT**".

Is the inspection result normal?

YES: Check the following. If NG, repair or replace damaged parts.

- Harness for short or open between battery and stop lamp switch.
- Harness for short or open between stop lamp switch and BCM.
- 10A fuse (No.7, located in fuse block).

NO: Repair or replace the stop lamp switch. Refer to "**EXPLODED VIEW**".

P0705 PARK/NEUTRAL POSITION SWITCH

Description

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- The PNP switch is included in the control valve assembly.
- The PNP switch includes 4 transmission position switches.
- TCM judges the selector lever position by the PNP switch signal.

PNP SWITCH REFERENCE

Shift position	PNP switch 1	PNP switch 2	PNP switch 3	PNP switch 4	PNP switch 3 (monitor)
P	OFF	OFF	OFF	OFF	OFF
R	ON	OFF	OFF	ON	OFF
N	ON	ON	OFF	OFF	OFF
D	ON	ON	ON	ON	ON

DTC Logic

DTC DETECTION LOGIC

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "P0705 PNP SW/CIRC" with CONSULT-III is detected under the following conditions.
 - When TCM does not receive the correct voltage signal from the PNP switches 1, 2, 3 and 4 based on the gear position.
 - When the signal from monitor terminal of PNP switch 3 is different from PNP switch 3.

Possible Cause

- Harness or connectors
(PNP switches 1, 2, 3, 4 and TCM circuit is open or shorted.)
- PNP switches 1, 2, 3, 4
- PNP switch 3 monitor terminal is open or shorted

DTC CONFIRMATION PROCEDURE

CAUTION: Always drive vehicle at a safe speed.

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

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

1. CHECK DTC DETECTION

With CONSULT-III

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

VEHICLE SPEED: More than 10 km/h (6 MPH)

ENG SPEED: More than 450 RPM

ACC PEDAL OPEN: More than 1.0/8

With GST

Follow the procedure "With CONSULT-III".

Is "P0705 PNP SW/CIRC" detected?

YES: Go to "**DIAGNOSIS PROCEDURE**".

NO: Check intermittent incident. Refer to "**INTERMITTENT INCIDENT**".

Diagnosis Procedure**1. CHECK HARNESS BETWEEN TCM AND PNP SWITCH**

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

TERMINALS CONTINUITY REFERENCE CHART

TCM connector		CVT unit harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F16	1	F46	5	Existed
	2		14	Existed
	3		15	Existed
	4		18	Existed
	11		4	Existed

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

Is the inspection result normal?

OK: GO TO 2.

NG: Repair or replace damaged parts.

2. DETECT MALFUNCTIONING ITEM

Check PNP switch. Refer to "**COMPONENT INSPECTION**".

Is the inspection result normal?

OK: GO TO 3.

NG: Repair or replace damaged parts.

3. CHECK TCM

Check TCM input/output signals. Refer to "**REFERENCE VALUE**".

Is the inspection result normal?

OK: Check intermittent incident. Refer to "**INTERMITTENT INCIDENT**".

NG: Replace the TCM. Refer to "**EXPLODED VIEW**".

Component Inspection

1. CHECK PNP SWITCH

Change selector lever to various positions to check the continuity between terminals on the PNP switch and ground.

TERMINALS CONTINUITY REFERENCE CHART

SW No.	Shift position	PNP SW			Continuity
		Connector	Terminal		
SW 1	"R", "N", "D"	F46	4	Ground	Existed
	Other positions				Not existed
SW 2	"N", "D"		5		Existed
	Other positions				Not existed
SW 3	"D"		14		Existed
	Other positions				Not existed
SW 4	"R", "D"		15		Existed
	Other positions				Not existed
SW 3 Monitor	"D"		18		Existed
	Other positions				Not existed

Is the inspection result normal?

YES: INSPECTION END

NO: GO TO 2

2. CHECK CVT POSITION

Check continuity with control cable disconnected. (Refer to step 1 above.)

Is the inspection result normal?YES: Adjust CVT position. Refer to "**INSPECTION AND ADJUSTMENT**".NO: Replace transaxle assembly. Refer to "**EXPLODED VIEW**".**P0710 CVT FLUID TEMPERATURE SENSOR****Description**

The CVT fluid temperature sensor detects the CVT fluid temperature and sends a signal to the TCM.

DTC Logic**DTC DETECTION LOGIC**

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "P0710 ATF TEMP SEN/CIRC" with CONSULT-III is detected when TCM receives an excessively low or high voltage from the sensor.

Possible Cause

- Harness or connectors
(Sensor circuit is open or shorted.)
- CVT fluid temperature sensor

DTC CONFIRMATION PROCEDURE**CAUTION: Always drive vehicle at a safe speed.**

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

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

1. CHECK DTC DETECTION

With CONSULT-III

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

VEHICLE SPEED: 10 km/h (6 MPH) or more

ENG SPEED: 450 RPM more than

ACC PEDAL OPEN: More than 1.0/8

RANGE: "D" position

With GST

Follow the procedure "With CONSULT-III".

Is "P0710 ATF TEMP SEN/CIRC" detected?

YES: Go to "**DIAGNOSIS PROCEDURE**".

NO: Check intermittent incident. Refer to "**INTERMITTENT INCIDENT**".

Diagnosis Procedure

1. CHECK CVT FLUID TEMPERATURE SENSOR CIRCUIT

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

TEMPERATURE RESISTANCE SPECIFICATION

CVT fluid temperature sensor			Temperature °C (°F)	Resistance (Approx.)
Connector	Terminal	Terminal		
F16	13	25	20 (68)	6.5 kohms
			80 (176)	0.9 kohms

Is the inspection result normal?

YES: GO TO 4.

NO: GO TO 2.

2. CHECK CVT FLUID TEMPERATURE SENSOR

Check CVT fluid temperature sensor. Refer to "**COMPONENT INSPECTION**".

Is the inspection result normal?

YES: GO TO 3.

NO: Replace the transaxle assembly. Refer to "**EXPLODED VIEW**".

3. CHECK HARNESS BETWEEN TCM AND CVT FLUID TEMPERATURE SENSOR

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

TERMINALS CONTINUITY REFERENCE CHART

TCM connector		CVT unit harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F16	13	F46	17	Existed
	25		19	Existed

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

Is the inspection result normal?

OK: GO TO 4.

NG: Repair or replace damaged parts.

4. CHECK TCM

Check TCM input/output signals. Refer to "**REFERENCE VALUE**".

Is the inspection result normal?

YES: Check intermittent incident. Refer to "**INTERMITTENT INCIDENT**".

NO: Replace the TCM. Refer to "**EXPLODED VIEW**".

Component Inspection

CVT FLUID TEMPERATURE SENSOR

1. CHECK CVT FLUID TEMPERATURE SENSOR

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

TEMPERATURE RESISTANCE SPECIFICATION

CVT fluid temperature sensor			Temperature °C (°F)	Resistance (Approx.)
Connector	Terminal	Terminal		
F46	17	19	20 (68)	6.5 kohms
			80 (176)	0.9 kohms

Is the inspection result normal?

YES: INSPECTION END

NO: Replace transaxle assembly. Refer to "**EXPLODED VIEW**".

P0715 INPUT SPEED SENSOR (PRI SPEED SENSOR)**Description**

The input speed sensor (primary speed sensor) detects the primary pulley revolution speed and sends a signal to the TCM.

DTC Logic**DTC DETECTION LOGIC**

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "P0715 INPUT SPD SEN/CIRC" with CONSULT-III is detected when TCM does not receive the proper signal from the sensor.

Possible Cause

- Harness or connectors
(Sensor circuit is open or shorted.)
- Input speed sensor (Primary speed sensor)

DTC CONFIRMATION PROCEDURE

CAUTION: Always drive vehicle at a safe speed.

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

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

1. CHECK DTC DETECTION

With CONSULT-III

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

VEHICLE SPEED: 10 km/h (6 MPH) or more

ACC PEDAL OPEN: More than 1.0/8

RANGE: "D" position

ENG SPEED: 450 RPM or more

Driving location: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.

With GST

Follow the procedure "With CONSULT-III".

Is "P0715 INPUT SPD SEN/CIRC" detected?

YES: Go to "**DIAGNOSIS PROCEDURE**".

NO: Check intermittent incident. Refer to "**INTERMITTENT INCIDENT**".

Diagnosis Procedure

1. CHECK INPUT SPEED SENSOR (PRIMARY SPEED SENSOR)

1. Start engine.
2. Check voltage between TCM connector terminals.

VOLTAGE REFERENCE CHART

TCM connector			Data (Approx.)
Connector	Terminal		
F16	25	26	5.0 V

3. Check the pulse with CONSULT-III or oscilloscope, when vehicle cruises.

TCM CONNECTOR CONDITION CHART

TCM connector		Condition	Data (Approx.)
Connector	Terminal		
F16	33	When running at 20 km/h (12 MPH) in "M1" position with the closed throttle position signal OFF, use the CONSULT-III pulse frequency measuring function. CAUTION: Connect the data link connector to the vehicle-side diagnosis connector.	660 Hz

Is the inspection result normal?

OK: GO TO 5.

NG-1: Battery voltage is not supplied: GO TO 2.

NG-2: Battery voltage is supplied, but there is a malfunction in the frequency: GO TO 3.

2. CHECK HARNESS BETWEEN TCM AND CVT UNIT HARNESS CONNECTOR (SENSOR POWER AND SENSOR GROUND)
 1. Turn ignition switch OFF.
 2. Disconnect TCM connector and CVT unit harness connector.
 3. Check continuity between TCM connector terminals and CVT unit harness connector terminals.

TERMINALS CONTINUITY REFERENCE CHART

TCM connector		CVT unit harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F16	25	F46	19	Existed
	26		20	Existed

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

Is the inspection result normal?

YES: GO TO 5.

NO: Repair open circuit or short to ground or short to power in harness or connectors.

3. CHECK HARNESS BETWEEN TCM AND CVT UNIT HARNESS CONNECTOR [INPUT SPEED SENSOR (PRIMARY SPEED SENSOR)]

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

TERMINALS CONTINUITY REFERENCE CHART

TCM connector		CVT unit harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F16	33	F46	22	Existed

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

Is the inspection result normal?

YES: GO TO 4.

NO: Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK THE TCM SHORT

Replace same type TCM, perform self-diagnosis check. Erase self-diagnostic results and then drive the vehicle [10 km/h (6 MPH) or more], perform self-diagnosis check. Refer to "**DTC LOGIC**".

Is the "P0715 INPUT SPD SEN/CIRC" detected again?

YES: Replace the transaxle assembly. Refer to "**EXPLODED VIEW**".

NO: Replace TCM. Refer to "**EXPLODED VIEW**".

5. CHECK TCM

Check TCM input/output signals. Refer to "**REFERENCE VALUE**".

Is the inspection result normal?

YES: Check intermittent incident. Refer to "**INTERMITTENT INCIDENT**".

NO: Replace TCM. Refer to "**EXPLODED VIEW**".

P0720 VEHICLE SPEED SENSOR CVT (SECONDARY SPEED SENSOR)**Description**

The vehicle speed sensor CVT [output speed sensor (secondary speed sensor)] detects the revolution of the CVT output shaft and emits a pulse signal. The pulse signal is sent to the TCM, which converts it into vehicle speed.

DTC Logic**DTC DETECTION LOGIC**

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "P0720 VEH SPD SEN/CIR AT" with CONSULT-III is detected TCM does not receive the proper signal from the sensor.

Possible Cause

- Harness or connectors
(Sensor circuit is open or shorted.)
- Output speed sensor (Secondary speed sensor)

DTC CONFIRMATION PROCEDURE

CAUTION: Always drive vehicle at a safe speed.

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

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

1. CHECK DTC DETECTION**With CONSULT-III**

1. Turn ignition switch ON.
2. Select "DATA MONITOR".
3. Start engine and maintain the following conditions for at least 12 consecutive seconds.

ACC PEDAL OPEN: More than 1.0/8

RANGE: "D" position

Driving location: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.

4. If DTC is detected,

With GST

Follow the procedure "With CONSULT-III".

Is "P0720 VEH SPD SEN/CIR AT" detected?

YES: Go to "**DIAGNOSIS PROCEDURE**".

NO: Check intermittent incident. Refer to "**INTERMITTENT INCIDENT**".

Diagnosis Procedure

1. CHECK SECONDARY SPEED SENSOR

With CONSULT-III

1. Start engine.
2. Check power supply to output speed sensor (secondary speed sensor) by voltage between TCM connector terminals.

VOLTAGE CHART

TCM connector		Data (Approx.)
Connector	Terminal	
F16	45	7 Battery voltage
	48	

3. If OK, check the pulse when vehicle cruises.

VOLTAGE CHART

TCM connector		Condition	Data (Approx.)
Connector	Terminal		
F16	34	When running at 20 km/h (12 MPH) in "D" position, use the CONSULT-III pulse frequency measuring function. CAUTION: Connect the data link connector to the vehicle-side diagnosis connector.	400 Hz

Is the inspection result normal?

YES: GO TO 7.

NO: GO TO 2.

2. CHECK POWER AND SENSOR GROUND

1. Turn ignition switch OFF.
2. Disconnect the output speed sensor (secondary speed sensor) harness connector.

3. Turn ignition switch ON.
4. Check voltage between output speed sensor (secondary speed sensor) harness connector terminals.

VOLTAGE CHART

Output speed sensor (Secondary speed sensor) harness connector			Data (Approx.)
Connector	Terminal	Terminal	
F23	1	3	Battery voltage

5. Check voltage between output speed sensor (secondary speed sensor) harness connector terminal and ground.

VOLTAGE CHART

Output speed sensor (Secondary speed sensor) harness connector		Ground	Data (Approx.)
Connector	Terminal		
F23	3		Battery voltage

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

Is the inspection result normal?

YES: GO TO 3.

NO-1: Battery voltage is not supplied between terminals 1 and 3, terminals 3 and ground: GO TO 5.

NO-2: Battery voltage is not supplied between terminals 1 and 3 only: GO TO 6.

3. CHECK HARNESS BETWEEN TCM AND OUTPUT SPEED SENSOR (SECONDARY SPEED SENSOR)
 1. Turn ignition switch OFF.
 2. Disconnect TCM connector and output speed sensor (secondary speed sensor) harness connector.
 3. Check continuity between TCM connector terminal and output speed sensor (secondary speed sensor) harness connector terminal.

TERMINALS CONTINUITY REFERENCE CHART

TCM connector		Output speed sensor (Secondary speed sensor) harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F16	34	F23	2	Existed

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

Is the inspection result normal?

YES: GO TO 4.

NO: Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK THE TCM SHORT

Replace same type TCM, perform self-diagnosis check. Erase self-diagnostic results and then drive the vehicle [more than 40 km/h (25 MPH)], perform self-diagnosis check. Refer to "**DTC LOGIC**".

Is "P0720 VEH SPD SEN/CIR AT" detected again?

YES: Replace the transaxle assembly. Refer to "**EXPLODED VIEW**".

NO: Replace the TCM. Refer to "**EXPLODED VIEW**".

5. CHECK HARNESS BETWEEN TCM AND OUTPUT SPEED SENSOR (SECONDARY SPEED SENSOR) (POWER)

1. Turn ignition switch OFF.
2. Disconnect TCM connector and output speed sensor (secondary speed sensor) harness connector.
3. Check continuity between TCM connector terminals and output speed sensor (secondary speed sensor) harness connector terminal.

TERMINALS CONTINUITY REFERENCE CHART

TCM connector		Output speed sensor (Secondary speed sensor) harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F16	46	F23	3	Existed
	48			

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

Is the inspection result normal?

YES: 10 A fuse (No. 34, located in the IPDM E/R) or ignition switch are malfunctioning.

NO: Repair open circuit or short to ground or short to power in harness or connectors.

6. CHECK HARNESS BETWEEN TCM AND OUTPUT SPEED SENSOR (SECONDARY SPEED SENSOR) (SENSOR GROUND)

1. Turn ignition switch OFF.
2. Disconnect TCM connector and output speed sensor (secondary speed sensor) harness connector.
3. Check continuity between TCM connector terminal and output speed sensor (secondary speed sensor) harness connector terminal.

TERMINALS CONTINUITY REFERENCE CHART

TCM connector		Output speed sensor (Secondary speed sensor) harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F16	7	F23	1	Existed

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

Is the inspection result normal?

YES: GO TO 7.

NO: Repair open circuit or short to ground or short to power in harness or connectors.

7. CHECK TCM

Check TCM input/output signals. Refer to "REFERENCE VALUE".

Is the inspection result normal?

YES: Check intermittent incident. Refer to "INTERMITTENT INCIDENT".

NO: Replace TCM. Refer to "EXPLODED VIEW".

P0725 ENGINE SPEED SIGNAL

Description

The engine speed signal is sent from the ECM to the TCM.

DTC Logic

DTC DETECTION LOGIC

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code "P0725 ENGINE SPEED SIG" with CONSULT-III is detected when TCM does not receive the engine speed signal (input by CAN communication) from ECM.

Possible Cause

Harness or connectors

(The ECM to the TCM circuit is open or shorted.)

DTC CONFIRMATION PROCEDURE

CAUTION: Be careful not to rev engine into the red zone on the tachometer.

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

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

1. CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Select "DATA MONITOR".
3. Start engine and maintain the following conditions for at least 10 consecutive seconds.

PRI SPEED SEN: More than 1000 RPM

"P0725 ENGINE SPEED SIG" detected?

YES: Go to "**DIAGNOSIS PROCEDURE**".

NO: Check intermittent incident. Refer to "**INTERMITTENT INCIDENT**".

Diagnosis Procedure

1. CHECK DTC WITH ECM

With CONSULT-III

1. Turn ignition switch ON.
2. Select "SELF-DIAG RESULTS" mode for "ENGINE" with CONSULT-III. Refer to "**CONSULT-III FUNCTION**".

Is the inspection result normal?

OK: GO TO 2.

NG: Check the DTC detected item. Refer to "**CONSULT-III FUNCTION**".

2. CHECK DTC WITH TCM

With CONSULT-III

1. Turn ignition switch ON.
2. Select "SELF-DIAG RESULTS" mode for "TRANSMISSION" with CONSULT-III. Refer to "**CONSULT-III Function (TRANSMISSION)**".

Is the inspection result normal?

OK: GO TO 3.

NG: Check the DTC detected item. Refer to "**CONSULT-III Function (TRANSMISSION)**".

3. CHECK INPUT SIGNALS

With CONSULT-III

1. Start engine.
2. Select "DATA MONITOR".
3. While monitoring "ENG SPEED SIG", check for engine speed change corresponding to "ACC PEDAL OPEN".

ITEM CONDITION CHART

Item name	Condition	Display value
ENG SPEED SIG	Engine running	Closely matches the tachometer reading.
ACC PEDAL OPEN	Released accelerator pedal - Fully depressed accelerator pedal	0.0/8-8.0/8

Is the inspection result normal?

OK: GO TO 4.

NG: Check ignition signal circuit. Refer to "**DESCRIPTION**".

4. CHECK TCM

Check TCM input/output signals. Refer to "**REFERENCE VALUE**".

Is the inspection result normal?

OK: Check intermittent incident. Refer to "**INTERMITTENT INCIDENT**".

NG: Replace the TCM. Refer to "**EXPLODED VIEW**".

P0730 BELT DAMAGE

Description

TCM selects the gear ratio using the engine load (throttle position), the primary pulley revolution speed, and the secondary pulley revolution speed as input signal. Then it changes the operating pressure of the primary pulley and the secondary pulley and changes the groove width of the pulley.

DTC Logic**DTC DETECTION LOGIC**

- This is not an OBD-II self-diagnostic item.
- TCM calculates the actual gear ratio with input speed sensor (primary speed sensor) and output speed sensor (secondary speed sensor).
- Diagnostic trouble code "P0730 BELT DAMG" with CONSULT-III is detected, when TCM receives an unexpected gear ratio signal.

Possible Cause

Transaxle assembly

DTC CONFIRMATION PROCEDURE

CAUTION: Always drive vehicle at a safe speed.

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

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

1. CHECK DTC DETECTION**With CONSULT-III**

1. Turn ignition switch ON.
2. Select "DATA MONITOR".
3. Make sure that output voltage of CVT fluid temperature sensor is within the range below.

ATF TEMP SEN: 1.0-2.0 V

If out of range, drive the vehicle to decrease the voltage (warm up the fluid) or stop engine to increase the voltage (cool down the fluid)

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

TEST START FROM 0 km/h (0 MPH)

CONSTANT ACCELERATION: Keep 30 sec or more

VEHICLE SPEED: 10 km/h (6 MPH) or more

ACC PEDAL OPEN: More than 1.0/8

RANGE: "D" position

ENG SPEED: 450 RPM or more

Is "P0730 BELT DAMG" detected?

YES: Go to "**DIAGNOSIS PROCEDURE**".

NO: Check intermittent incident. Refer to "**INTERMITTENT INCIDENT**".

Diagnosis Procedure

1. CHECK DTC

Perform "**DTC LOGIC**".

Are any DTC displayed?

YES-1: DTC except for "P0730 BELT DAMG" is displayed: Go to Check the DTC detected item. Refer to "**CONSULT-III Function (TRANSMISSION)**".

YES-2: DTC for "P0730 BELT DAMG" is displayed: Replace the transaxle assembly. Refer to "**EXPLODED VIEW**".

NO: Check intermittent incident. Refer to "**INTERMITTENT INCIDENT**".

P0740 TORQUE CONVERTER CLUTCH SOLENOID VALVE

Description

- The torque converter clutch solenoid valve is activated by the TCM in response to signals sent from the vehicle speed and accelerator pedal position sensors. Lock up piston operation will then be controlled.
- Lock up operation, however, is prohibited when CVT fluid temperature is too low.
- When the accelerator pedal is depressed (less than 2.0/8) in lock up condition, the engine speed should not change abruptly. If there is a big jump in engine speed, there is no lock up.

DTC Logic

DTC DETECTION LOGIC

- This is an OBD-II self-diagnostic item.

- Diagnostic trouble code "P0740 TCC SOLENOID/CIRC" with CONSULT-III is detected under the following conditions.
 - TCM detects an improper voltage drop when it tries to operate the solenoid valve.

Possible Cause

- Torque converter clutch solenoid valve
- Harness or connectors

(Solenoid circuit is open or shorted.)

DTC CONFIRMATION PROCEDURE

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

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

1. CHECK DTC DETECTION**With CONSULT-III**

1. Turn ignition switch ON.
2. Wait at least 10 consecutive seconds.
3. Perform "SELF-DIAG RESULTS". Refer to "**CONSULT-III Function (TRANSMISSION)**".

With GST

Follow the procedure "With CONSULT-III".

Is "P0740 TCC SOLENOID/CIRC" detected?

YES: Go to "**DIAGNOSIS PROCEDURE**".

NO: Check intermittent incident. Refer to "**INTERMITTENT INCIDENT**".

Diagnosis Procedure

1. CHECK TORQUE CONVERTER CLUTCH SOLENOID VALVE CIRCUIT
 1. Turn ignition switch OFF.
 2. Disconnect TCM connector.
 3. Check resistance between TCM connector terminal and ground.

RESISTANCE SPECIFICATION

TCM connector		Ground	Resistance (Approx.)
Connector	Terminal		
F16	38		3.0-9.0 ohms

Is the inspection result normal?

YES: GO TO 4.

NO: GO TO 2.

2. CHECK HARNESS BETWEEN TCM AND TORQUE CONVERTER CLUTCH SOLENOID VALVE

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

TERMINALS CONTINUITY REFERENCE CHART

TCM connector		CVT unit harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F16	38	F46	12	Existed

4. If OK, check harness for short to ground and short to power.
5. If OK, check continuity between ground and CVT assembly.
6. Reinstall any part removed.

Is the inspection result normal?

YES: GO TO 3.

NO: Repair or replace damaged parts.

3. CHECK TORQUE CONVERTER CLUTCH SOLENOID VALVE

Check torque converter clutch solenoid valve. Refer to "**COMPONENT INSPECTION**"

Is the inspection result normal?

YES: GO TO 4.

NO: Repair or replace damaged parts.

4. CHECK TCM

Check TCM input/output signals. Refer to "**REFERENCE VALUE**".

Is the inspection result normal?

YES: Check intermittent incident. Refer to "**INTERMITTENT INCIDENT**".

NO: Replace the TCM. Refer to "**EXPLODED VIEW**".

Component Inspection**TORQUE CONVERTER CLUTCH SOLENOID VALVE****1. TORQUE CONVERTER CLUTCH SOLENOID VALVE**

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

TERMINALS CONTINUITY REFERENCE CHART

CVT unit harness connector		Ground	Resistance (Approx.)
Connector	Terminal		
F46	12		3.0-9.0 ohms

Is the inspection result normal?

YES: **INSPECTION END**

NO: Replace the transaxle assembly. Refer to "**EXPLODED VIEW**".

P0744 A/T TCC S/V FUNCTION (LOCK - UP)**Description**

This malfunction is detected when the torque converter clutch does not lock up as instructed by the TCM. This is not only caused by electrical malfunction (circuits open or shorted), but also by mechanical malfunction such as control valve sticking, improper solenoid valve operation, etc.

DTC Logic**DTC DETECTION LOGIC**

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "P0744 A/T TCC S/V FNCTN" with CONSULT-III is detected under the following conditions.
 - When CVT cannot perform lock up even if electrical circuit is good.
 - When TCM compares difference value with slip revolution and detects an irregularity.

Possible Cause

- Torque converter clutch solenoid valve
- Hydraulic control circuit

DTC CONFIRMATION PROCEDURE

CAUTION: Always drive vehicle at a safe speed.

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

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

1. CHECK DTC DETECTION**With CONSULT-III**

1. Turn ignition switch ON.
2. Select "DATA MONITOR".
3. Start engine and maintain the following condition for at least 30 seconds.

ACC PEDAL OPEN: More than 1.0/8

RANGE: "D" position

VEHICLE SPEED: Constant speed of more than 40 km/h (25 MPH)

4. If DTC is detected

With GST

Follow the procedure "With CONSULT-III".

Is "P0744 A/T TCC S/V FNCTN" detected?

YES: Go to "**DIAGNOSIS PROCEDURE**".

NO: Check intermittent incident. Refer to "**INTERMITTENT INCIDENT**".

Diagnosis Procedure**1. CHECK LINE PRESSURE**

Perform line pressure test. Refer to "**INSPECTION AND JUDGMENT**".

Is the inspection result normal?

YES: GO TO 2.

NO: Repair or replace damaged parts. Refer to "**INSPECTION AND JUDGMENT**".

2. CHECK TORQUE CONVERTER CLUTCH SOLENOID VALVE

Check torque converter clutch solenoid valve. Refer to "**COMPONENT INSPECTION**".

Is the inspection result normal?

YES: GO TO 3.

NO: Repair or replace damaged parts.

3. CHECK LOCK-UP SELECT SOLENOID VALVE

Check lock up select solenoid valve. Refer to "**COMPONENT INSPECTION**".

Is the inspection result normal?

YES: GO TO 4.

NO: Repair or replace damaged parts.

4. CHECK OUTPUT SPEED SENSOR (SECONDARY SPEED SENSOR) SYSTEM

Check output speed sensor (secondary speed sensor) system. Refer to "**DTC LOGIC**".

Is the inspection result normal?

YES: GO TO 5.

NO: Repair or replace damaged parts.

5. CHECK INPUT SPEED SENSOR (PRIMARY SPEED SENSOR) SYSTEM

Check input speed sensor (primary speed sensor) system. Refer to "**DTC LOGIC**".

Is the inspection result normal?

YES: GO TO 6.

NO: Repair or replace damaged parts.

6. CHECK TCM

Check TCM input/output signals. Refer to "**REFERENCE VALUE**".

Is the inspection result normal?

YES: Check intermittent incident. Refer to "**INTERMITTENT INCIDENT**".

NO: Replace the TCM. Refer to "**EXPLODED VIEW**".

P0745 LINE PRESSURE SOLENOID VALVE

Description

The pressure control solenoid valve A (line pressure solenoid valve) regulates the oil pump discharge pressure to suit the driving condition in response to a signal sent from the TCM.

DTC Logic

DTC DETECTION LOGIC

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "P0745 L/PRESS SOL/CIRC" with CONSULT-III is detected under the following conditions.
 - TCM detects an improper voltage drop when it tries to operate the solenoid valve.
 - When TCM compares target value with monitor value and detects an irregularity.

Possible Cause

- Harness or connectors

(Solenoid circuit is open or shorted.)
- Pressure control solenoid valve A (Line pressure solenoid valve)

DTC CONFIRMATION PROCEDURE

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

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

1. CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.

2. Start engine and wait at least 5 seconds.
3. Perform "SELF-DIAG RESULTS". Refer to "**CONSULT-III Function (TRANSMISSION)**".

With GST

Follow the procedure "With CONSULT-III".

Is "P0745 L/PRESS SOL/CIRC" detected?

YES: Go to "**DIAGNOSIS PROCEDURE**".

NO: Check intermittent incident. Refer to "**INTERMITTENT INCIDENT**".

Diagnosis Procedure

1. CHECK PRESSURE CONTROL SOLENOID VALVE A (LINE PRESSURE SOLENOID VALVE) CIRCUIT
 1. Turn ignition switch OFF.
 2. Disconnect TCM connector.
 3. Check resistance between TCM connector terminal and ground.

RESISTANCE SPECIFICATION CHART

TCM connector		Ground	Resistance (Approx.)
Connector	Terminal		
F16	40		3.0-9.0 ohms

Is the inspection result normal?

YES: GO TO 4.

NO: GO TO 2.

2. CHECK PRESSURE CONTROL SOLENOID VALVE A (LINE PRESSURE SOLENOID VALVE)

Check pressure control solenoid valve A (Line pressure solenoid valve). Refer to "**COMPONENT INSPECTION**".

Is the inspection result normal?

YES: GO TO 3.

NO: Replace the transaxle assembly. Refer to "**EXPLODED VIEW**".

3. CHECK HARNESS BETWEEN TCM AND PRESSURE CONTROL SOLENOID VALVE A (LINE PRESSURE SOLENOID VALVE)

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

TERMINALS CONTINUITY REFERENCE CHART

TCM connector		CVT unit harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F16	40	F46	2	Existed

4. If OK, check harness for short to ground and short to power.
5. If OK, check continuity between ground and CVT assembly.
6. Reinstall any part removed.

Is the inspection result normal?

YES: GO TO 4.

NO: Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK TCM

Check TCM input/output signals. Refer to "**REFERENCE VALUE**".

Is the inspection result normal?

YES: Check intermittent incident. Refer to "**INTERMITTENT INCIDENT**".

NO: Replace the TCM. Refer to "**EXPLODED VIEW**".

Component Inspection

PRESSURE CONTROL SOLENOID VALVE A (LINE PRESSURE SOLENOID VALVE)

1. PRESSURE CONTROL SOLENOID VALVE A (LINE PRESSURE SOLENOID VALVE)
 1. Turn ignition switch OFF.
 2. Disconnect CVT unit harness connector.
 3. Check resistance between CVT unit harness connector terminal and ground.

TERMINALS CONTINUITY REFERENCE CHART

CVT unit harness connector		Ground	Resistance (Approx.)
Connector	Terminal		
F46	2		3.0-9.0 ohms

Is the inspection result normal?

YES: INSPECTION END

NO: Replace the transaxle assembly. Refer to "**EXPLODED VIEW**".

P0746 PRESSURE CONTROL SOLENOID A PERFORMANCE (LINE PRESSURE SOLENOID VALVE)

Description

The pressure control solenoid valve A (line pressure solenoid valve) regulates the oil pump discharge pressure to suit the driving condition in response to a signal sent from the TCM.

DTC Logic

DTC DETECTION LOGIC

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "P0746 PRS CNT SOL/A FCTN" with CONSULT-III is detected under the following conditions.
 - Unexpected gear ratio was detected in the LOW side due to excessively low line pressure.

Possible Cause

- Line pressure control system
- Output speed sensor (Secondary speed sensor)
- Input speed sensor (Primary speed sensor)

DTC CONFIRMATION PROCEDURE

CAUTION: Always drive vehicle at a safe speed.

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

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

1. CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Select "DATA MONITOR".

3. Start engine and maintain the following conditions for at least 10 consecutive seconds. Test start from 0 km/h (0 MPH).

ATF TEMP SEN: 1.0-2.0 V

ACC PEDAL OPEN: More than 1.0/8

RANGE: "D" position

VEHICLE SPEED: 10 km/h (6 MPH) More than

Driving location: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.

With GST

Follow the procedure "With CONSULT-III".

Is "P0746 PRS CNT SOL/A FCTN" detected?

YES: Go to "**DIAGNOSIS PROCEDURE**".

NO: Check intermittent incident. Refer to "**INTERMITTENT INCIDENT**".

Diagnosis Procedure

1. CHECK LINE PRESSURE

Perform line pressure test. Refer to "**INSPECTION AND JUDGMENT**".

Is the inspection result normal?

YES: GO TO 2.

NO: Repair or replace damaged parts. Refer to "**INSPECTION AND JUDGMENT**".

2. CHECK PRESSURE CONTROL SOLENOID VALVE A (LINE PRESSURE SOLENOID VALVE)

Check pressure control solenoid valve A (line pressure solenoid valve). Refer to "**COMPONENT INSPECTION**".

Is the inspection result normal?

YES: GO TO 3.

NO: Repair or replace damaged parts.

3. CHECK OUTPUT SPEED SENSOR (SECONDARY SPEED SENSOR) SYSTEM

Check output speed sensor (secondary speed sensor) system. Refer to "**DTC LOGIC**".

Is the inspection result normal?

YES: GO TO 4.

NO: Repair or replace damaged parts.

4. CHECK INPUT SPEED SENSOR (PRIMARY SPEED SENSOR) SYSTEM

Check input speed sensor (primary speed sensor) system. Refer to "**DTC LOGIC**".

Is the inspection result normal?

YES: GO TO 5.

NO: Repair or replace damaged parts.

5. CHECK TCM

Check TCM input/output signals. Refer to "**REFERENCE VALUE**".

Is the inspection result normal?

YES: Check intermittent incident. Refer to "**INTERMITTENT INCIDENT**".

NO: Replace the TCM. Refer to "**EXPLODED VIEW**".

P0776 PRESSURE CONTROL SOLENOID B PERFORMANCE (SEC PRESSURE SOLENOID VALVE)**Description**

The pressure control solenoid valve B (secondary pressure solenoid valve) regulates the secondary pressure to suit the driving condition in response to a signal sent from the TCM.

DTC Logic**DTC DETECTION LOGIC**

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "P0776 PRS CNT SOL/B FCTN" with CONSULT-III is detected when secondary pressure is too high or too low compared with the commanded value while driving.

Possible Cause

- Harness or connectors

(Solenoid circuit is open or shorted.)

- Pressure control solenoid valve B (Secondary pressure solenoid valve system)
- Transmission fluid pressure sensor A (Secondary pressure sensor)
- Line pressure control system

DTC CONFIRMATION PROCEDURE

CAUTION: Always drive vehicle at a safe speed.

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

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

1. CHECK DTC DETECTION**With CONSULT-III**

1. Turn ignition switch ON.
2. Select "DATA MONITOR".
3. Start engine and maintain the following conditions for at least 30 consecutive seconds.

ATF TEMP SEN: 1.0-2.0 V

ACC PEDAL OPEN: More than 1.0/8

RANGE: "D" position

VEHICLE SPEED: 10 km/h (6 MPH) More than

Driving location: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.

With GST

Follow the procedure "With CONSULT-III".

Is "P0776 PRS CNT SOL/B FCTN" detected?

YES: Go to "DIAGNOSIS PROCEDURE".

NO: Check intermittent incident. Refer to "**INTERMITTENT INCIDENT**".

Diagnosis Procedure**1. CHECK LINE PRESSURE**

Perform line pressure test. Refer to "**INSPECTION AND JUDGMENT**".

Is the inspection result normal?

YES: GO TO 2.

NO: Repair or replace damaged parts. Refer to "**INSPECTION AND JUDGMENT**".

2. CHECK PRESSURE CONTROL SOLENOID VALVE B (SECONDARY PRESSURE SOLENOID VALVE)

Check pressure control solenoid valve B (Secondary pressure solenoid valve). Refer to "**COMPONENT INSPECTION**".

Is the inspection result normal?

YES: GO TO 3.

NO: Repair or replace damaged parts.

3. CHECK PRESSURE CONTROL SOLENOID VALVE A (LINE PRESSURE SOLENOID VALVE)

Check pressure control solenoid valve A (Line pressure solenoid valve). Refer to "**COMPONENT INSPECTION**".

Is the inspection result normal?

YES: GO TO 4.

NO: Repair or replace damaged parts.

4. CHECK TRANSMISSION FLUID PRESSURE SENSOR A (SECONDARY PRESSURE SENSOR) SYSTEM

Check transmission fluid pressure sensor A (secondary pressure sensor) system. Refer to "**DTC LOGIC**".

Is the inspection result normal?

YES: GO TO 5.

NO: Repair or replace damaged parts.

5. CHECK TCM

Check TCM input/output signals. Refer to "**REFERENCE VALUE**".

Is the inspection result normal?

YES: Check intermittent incident. Refer to "**INTERMITTENT INCIDENT**".

NO: Replace the TCM. Refer to "**EXPLODED VIEW**".

P0778 PRESSURE CONTROL SOLENOID B ELECTRICAL (SEC PRESSURE SOLENOID VALVE)**Description**

The pressure control solenoid valve B (secondary pressure solenoid valve) regulates the oil pump discharge pressure to suit the driving condition in response to a signal sent from the TCM.

DTC Logic**DTC DETECTION LOGIC**

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "P0778 PRS CNT SOL/B CIRC" with CONSULT-III is detected under the following conditions.
 - TCM detects an improper voltage drop when it tries to operate the solenoid valve.
 - When TCM compares target value with monitor value and detects an irregularity.

Possible Cause

- Harness or connectors
(Solenoid circuit is open or shorted.)
- Pressure control solenoid valve B (Secondary pressure solenoid valve)

DTC CONFIRMATION PROCEDURE

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

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

1. CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Start engine.
3. Drive vehicle and maintain the following conditions for at least 5 consecutive seconds.
4. Perform "SELF-DIAG RESULTS". Refer to "**CONSULT-III Function (TRANSMISSION)**".

With GST

Follow the procedure "With CONSULT-III".

Is "P0778 PRS CNT SOL/B CIRC" detected?

YES: Go to "**DIAGNOSIS PROCEDURE**".

NO: Check intermittent incident. Refer to "**INTERMITTENT INCIDENT**".

Diagnosis Procedure

1. CHECK PRESSURE CONTROL SOLENOID VALVE B (SECONDARY PRESSURE SOLENOID VALVE) CIRCUIT
 1. Turn ignition switch OFF.
 2. Disconnect TCM connector.
 3. Check resistance between TCM connector terminal and ground.

RESISTANCE SPECIFICATION CHART

TCM connector		Ground	Resistance (Approx.)
Connector	Terminal		
F16	39		3.0-9.0 ohms

Is the inspection result normal?

YES: GO TO 4.

NO: GO TO 2.

2. CHECK PRESSURE CONTROL SOLENOID VALVE B (SECONDARY PRESSURE SOLENOID VALVE)

Check pressure control solenoid valve B (secondary pressure solenoid valve). Refer to "**COMPONENT INSPECTION**".

Is the inspection result normal?

YES: GO TO 3.

NO: Repair or replace damaged parts.

3. CHECK HARNESS BETWEEN TCM AND PRESSURE CONTROL SOLENOID VALVE B (SECONDARY PRESSURE SOLENOID VALVE)

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

TERMINALS CONTINUITY REFERENCE CHART

TCM connector		CVT unit harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F16	39	F46	3	Existed

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

Is the inspection result normal?

YES: GO TO 4.

NO: Repair or replace damaged parts.

4. CHECK TCM

Check TCM input/output signals. Refer to "**REFERENCE VALUE**".

Is the inspection result normal?

YES: Check intermittent incident. Refer to "**INTERMITTENT INCIDENT**".

NO: Replace the TCM. Refer to "**EXPLODED VIEW**".

Component Inspection

PRESSURE CONTROL SOLENOID VALVE B (SECONDARY PRESSURE SOLENOID VALVE)

1. PRESSURE CONTROL SOLENOID VALVE B (SECONDARY PRESSURE SOLENOID VALVE)

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

RESISTANCE SPECIFICATION CHART

CVT unit harness connector		Ground	Resistance (Approx.)
Connector	Terminal		
F46	3		3.0-9.0 ohms

Is the inspection result normal?**YES: INSPECTION END****NO:** Replace the transaxle assembly. Refer to "**EXPLODED VIEW**".**P0826 MANUAL MODE SWITCH****Description**

Manual mode switch is installed in CVT control device. The manual mode switch sends shift up and shift down switch signals to TCM.

TCM sends the switch signals to combination meter via CAN communication line. Then manual mode switch position is indicated on the CVT position indicator.

DTC Logic**DTC DETECTION LOGIC**

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code "P0826 MANUAL MODE SWITCH" with CONSULT-III is detected when TCM monitors Manual mode, Non manual mode, Up or Down switch signal, and then detects irregular with impossible input pattern for 1 second or more.

Possible Cause

- Harness or connectors

(These switches circuit is open or shorted.)

(TCM, and combination meter circuit are open or shorted.)

(CAN communication line is open or shorted.)

- Manual mode select switch (Built into CVT control device)
- Manual mode position select switch (Built into CVT control device)

DTC CONFIRMATION PROCEDURE**CAUTION: Always drive vehicle at a safe speed.**

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

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

1. CHECK DTC DETECTION

With CONSULT-III

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

MMODE: ON

Is "P0826 MANUAL MODE SWITCH" detected?

YES: Go to "**DIAGNOSIS PROCEDURE**".

NO: Check intermittent incident. Refer to "**INTERMITTENT INCIDENT**".

Diagnosis Procedure

1. CHECK MANUAL MODE SWITCH SIGNALS

With CONSULT-III

1. Turn ignition switch ON.
2. Select "DATA MONITOR".
3. Read out ON/OFF switching action of the "MMODE", "NON M-MODE", "UPLVR", "DOWNLVR".

ITEM CONDITION CHART

Item name	Condition	Display value
MMODE	Manual shift gate position (neutral)	ON
	Other than the above	OFF
NON MMODE	Manual shift gate position (neutral, +side, - side)	OFF
	Other than the above	ON
UPLVR	Selector lever: + side	ON
	Other than the above	OFF
DOWNLVR	Selector lever: - side	ON
	Other than the above	OFF

Without CONSULT-III

Drive vehicle in the manual mode, and confirm that the actual gear position and the meter's indication of the position mutually coincide when the selector lever is shifted to the "+ (up)" or "- (down)" side (1st

<==> 6th gear).

Is the inspection result normal?

YES: GO TO 5.

NO: GO TO 2.

2. CHECK MANUAL MODE SWITCH

Check manual mode switch. Refer to "**COMPONENT INSPECTION**".

Is the inspection result normal?

YES: GO TO 3.

NO: Repair or replace damaged parts.

3. CHECK SELF-DIAGNOSTIC RESULTS (COMBINATION METER)

Perform self-diagnosis check. Refer to "**CONSULT-III FUNCTION (METER)**".

Is any malfunction detected by self-diagnosis?

YES: Check the malfunctioning system.

NO: GO TO 4.

4. CHECK MANUAL MODE SWITCH CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect CVT device connector and combination meter connector.
3. Check continuity between CVT device harness connector terminals and combination meter harness connector terminals.

TERMINALS CONTINUITY REFERENCE CHART

CVT device harness connector		Combination meter harness connector		Continuity
Connector	Terminal	Connector	Terminal	
M23	1	M24	40	Existed
	2		38	Existed
	3		39	Existed
	5		37	Existed

4. Check continuity between CVT device harness connector terminal and ground.

TERMINALS CONTINUITY REFERENCE CHART

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CVT device harness connector		Ground	Continuity
Connector	Terminal		
M23	4		Existed

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

6. Reinstall any part removed.

Is the inspection result normal?

YES: GO TO 5.

NO: Repair open circuit or short to ground or short to power in harness or connectors.

5. CHECK TCM

Check TCM input/output signals. Refer to "**REFERENCE VALUE**".

Is the inspection result normal?

YES: Check intermittent incident. Refer to "**INTERMITTENT INCIDENT**".

NO: Replace the TCM. Refer to "**EXPLODED VIEW**".

Component Inspection**MANUAL MODE SWITCH****1. MANUAL MODE SWITCH**

Check continuity between CVT device harness connector terminals.

TERMINALS CONTINUITY REFERENCE CHART

Item	Position	CVT device harness connector			Continuity
		Connector	Terminal	Terminal	
Manual mode select switch	Auto	M23	4	5	Existed
	Manual		1	4	Existed
Manual mode position select switch	Up		3	4	Existed
	Down		2	4	Existed

Is the inspection result normal?

YES: **INSPECTION END**

NO: Repair or replace damaged parts.

P0840 TRANSMISSION FLUID PRESSURE SENSOR A (SEC PRESSURE SENSOR)**Description**

The transmission fluid pressure sensor A (secondary pressure sensor) detects secondary pressure of CVT and sends TCM the signal.

DTC Logic**DTC DETECTION LOGIC**

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "P0840 TR PRS SENS/A CIRC" with CONSULT-III is detected when TCM detects an improper voltage drop when it receives the sensor signal.

Possible Cause

- Transmission fluid pressure sensor A (Secondary pressure sensor)
- Harness or connectors

(Switch circuit is open or shorted.)

DTC CONFIRMATION PROCEDURE

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

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

1. CHECK DTC DETECTION**WITH CONSULT-III**

1. Turn ignition switch ON.
2. Select "DATA MONITOR".
3. Make sure that output voltage of line temperature sensor is within the range below.

ATF TEMP SEN: 1.0-2.0 V

If out of range, drive the vehicle to decrease the voltage (warm up the fluid) or stop engine to increase the voltage (cool down the fluid)

4. Start engine and wait for at least 5 consecutive seconds.

With GST

Follow the procedure "WITH CONSULT-III".

Is "P0840 TR PRS SENS/A CIRC" detected?

YES: Go to "**DIAGNOSIS PROCEDURE**".

NO: Check intermittent incident. Refer to "**INTERMITTENT INCIDENT**".

Diagnosis Procedure

1. CHECK INPUT SIGNAL

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

VOLTAGE CHART

TCM connector		Ground	Condition	Data (Approx.)
Connector	Terminal			
F16	15		"N" position idle	1.0 V

Is the inspection result normal?

YES: GO TO 5.

NO: GO TO 2.

2. CHECK HARNESS BETWEEN TCM AND TRANSMISSION FLUID PRESSURE SENSOR A (SECONDARY PRESSURE SENSOR)

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

TERMINALS CONTINUITY REFERENCE CHART

TCM connector		CVT unit harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F16	15	F46	23	Existed

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

Is the inspection result normal?

YES: GO TO 3.

NO: Repair open circuit or short to ground or short to power in harness or connectors.

3. CHECK HARNESS BETWEEN TCM AND CVT UNIT HARNESS CONNECTOR (SENSOR POWER AND SENSOR GROUND)

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

TERMINALS CONTINUITY REFERENCE CHART

TCM connector		CVT unit harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F16	25	F46	19	Existed

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

Is the inspection result normal?

YES: GO TO 4.

NO: Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK SENSOR POWER AND SENSOR GROUND

1. Turn ignition switch ON.
2. Disconnect CVT unit harness connector.
3. Check voltage between CVT unit harness connector terminals.

VOLTAGE CHART

CVT unit harness connector			Data (Approx.)
Connector	Terminal	Terminal	
F46	19	20	5.0 V

4. Reinstall any part removed.

Is the inspection result normal?

YES: Replace the transaxle assembly. Refer to "**EXPLODED VIEW**".

NO: GO TO 5.

5. CHECK TCM

Check TCM input/output signals. Refer to "**REFERENCE VALUE**".

Is the inspection result normal?

YES: Check intermittent incident. Refer to "**INTERMITTENT INCIDENT**".

NO: Replace TCM. Refer to "**EXPLODED VIEW**".

P0841 PRESSURE SENSOR FUNCTION

Description

Using the engine load (throttle position), the primary pulley revolution speed, and the secondary pulley revolution speed as input signal, TCM changes the operating pressure of the primary pulley and the secondary pulley and changes the groove width of the pulley to control the gear ratio.

DTC Logic

DTC DETECTION LOGIC

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code "P0841 PRESS SEN/FNCTN" with CONSULT-III is detected when correlation between the values of the secondary pressure sensor and the primary pressure sensor is out of specification.

Possible Cause

- Transmission fluid pressure sensor A (Secondary pressure sensor)
- Transmission fluid pressure sensor B (Primary pressure sensor)
- Harness or connectors

(Sensor circuit is open or shorted.)

DTC CONFIRMATION PROCEDURE

CAUTION: Always drive vehicle at a safe speed.

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

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

1. CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Select "DATA MONITOR".

3. Start engine and maintain the following conditions for at least 12 consecutive seconds.

VEHICLE SPEED: 40 km/h (25 MPH) More than

RANGE: "D" position

Is "P0841 PRESS SEN/FNCTN" detected?

YES: Go to "**DIAGNOSIS PROCEDURE**".

NO: Check intermittent incident. Refer to "**INTERMITTENT INCIDENT**".

Diagnosis Procedure

1. CHECK LINE PRESSURE

Perform line pressure test. Refer to "**INSPECTION AND JUDGMENT**".

Is the inspection result normal?

YES: GO TO 2.

NO: Repair or replace damaged parts. Refer to "**INSPECTION AND JUDGMENT**".

2. CHECK TRANSMISSION FLUID PRESSURE SENSOR A (SECONDARY PRESSURE SENSOR) SYSTEM

Check transmission fluid pressure sensor A (secondary pressure sensor) system. Refer to "**DTC LOGIC**".

Is the inspection result normal?

YES: GO TO 3.

NO: Repair or replace damaged parts.

3. CHECK TRANSMISSION FLUID PRESSURE SENSOR B (PRIMARY PRESSURE SENSOR) SYSTEM

Check transmission fluid pressure sensor B (primary pressure sensor) system. Refer to "**DTC LOGIC**".

Is the inspection result normal?

YES: GO TO 4.

NO: Repair or replace damaged parts.

4. CHECK LINE PRESSURE SOLENOID VALVE

Check line pressure solenoid valve. Refer to "**COMPONENT INSPECTION**".

Is the inspection result normal?

YES: GO TO 5.

NO: Repair or replace damaged parts.

5. CHECK SECONDARY PRESSURE SOLENOID VALVE

Check secondary pressure solenoid valve. Refer to "**COMPONENT INSPECTION**".

Is the inspection result normal?

YES: GO TO 6.

NO: Repair or replace damaged parts.

6. CHECK STEP MOTOR

Step motor. Refer to "**COMPONENT INSPECTION**".

Is the inspection result normal?

YES: GO TO 7.

NO: Repair or replace damaged parts.

7. CHECK TCM

Check input /output signals. Refer to "**REFERENCE VALUE**".

Is the inspection result normal?

YES: Check intermittent incident. Refer to "**INTERMITTENT INCIDENT**".

NO: Repair or replace damaged parts.

P0845 TRANSMISSION FLUID PRESSURE SENSOR B (PRI PRESSURE SENSOR)

Description

The transmission fluid pressure sensor B (primary pressure sensor) detects primary pressure of CVT and sends TCM the signal.

DTC Logic

DTC DETECTION LOGIC

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "P0845 TR PRS SENS/B CIRC" with CONSULT-III is detected under the following conditions.
 - When TCM detects an improper voltage drop when it receives the sensor signal.
 - When TCM compares target value with monitor value and detects an irregularity.

Possible Cause

- Transmission fluid pressure sensor B (Primary pressure sensor)
- Harness or connectors

(Sensor circuit is open or shorted.)

DTC CONFIRMATION PROCEDURE

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

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

1. CHECK DTC DETECTION**With CONSULT-III**

1. Turn ignition switch ON.
2. Select "DATA MONITOR".
3. Make sure that output voltage of line temperature sensor is within the range below.

ATF TEMP SEN: 1.0-2.0 V

If out of range, drive the vehicle to decrease the voltage (warm up the fluid) or stop engine to increase the voltage (cool down the fluid)

4. Start engine and wait for at least 5 consecutive seconds.

With GST

Follow the procedure "WITH CONSULT-III".

Is "P0845 TR PRS SENS/B CIRC" detected?

YES: Go to "**DIAGNOSIS PROCEDURE**".

NO: Check intermittent incident. Refer to "**INTERMITTENT INCIDENT**".

Diagnosis Procedure

1. CHECK INPUT SIGNAL

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

VOLTAGE CHART

TCM connector		Ground	Condition	Data (Approx.)
Connector	Terminal			
F16	14		"N" position idle	0.7-3.5 V

Is the inspection result normal?

YES: GO TO 5.

NO: GO TO 2.

2. CHECK HARNESS BETWEEN TCM AND TRANSMISSION FLUID PRESSURE SENSOR B (PRIMARY PRESSURE SENSOR)

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

TERMINALS CONTINUITY REFERENCE CHART

TCM connector		CVT unit harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F16	14	F46	25	Existed

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

Is the inspection result normal?

YES: GO TO 3.

NO: Repair open circuit or short to ground or short to power in harness or connectors.

3. CHECK HARNESS BETWEEN TCM AND CVT UNIT HARNESS CONNECTOR (SENSOR POWER AND SENSOR GROUND)

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

TERMINALS CONTINUITY REFERENCE CHART

TCM connector		CVT unit harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F16	25	F46	19	Existed
	26		20	Existed

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

Is the inspection result normal?

YES: GO TO 4.

NO: Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK SENSOR POWER AND SENSOR GROUND

1. Turn ignition switch ON.
2. Disconnect CVT unit harness connector.
3. Check voltage between CVT unit harness connector terminals.

VOLTAGE CHART

CVT unit harness connector			Data (Approx.)
Connector	Terminal	Terminal	
F46	19	20	5.0 V

4. Reinstall any part removed.

Is the inspection result normal?

YES: Replace the transaxle assembly. Refer to "**EXPLODED VIEW**".

NO: GO TO 5.

5. CHECK TCM

Check TCM input/output signals. Refer to "**REFERENCE VALUE**".

Is the inspection result normal?

YES: Check intermittent incident. Refer to "**INTERMITTENT INCIDENT**".

NO: Replace TCM. Refer to "**EXPLODED VIEW**".

P0868 SECONDARY PRESSURE DOWN

Description

The pressure control solenoid valve B (secondary pressure solenoid valve) regulates the secondary pressure to suit the driving condition in response to a signal sent from the TCM.

DTC Logic**DTC DETECTION LOGIC**

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code "P0868 SEC/PRESS DOWN" with CONSULT-III is detected when secondary fluid pressure is too low compared with the commanded value while driving.

Possible Cause

- Harness or connectors

(Solenoid circuit is open or shorted.)
- Pressure control solenoid valve B (Secondary pressure solenoid valve) system
- Transmission fluid pressure sensor A (Secondary pressure sensor)
- Line pressure control system

DTC CONFIRMATION PROCEDURE

CAUTION: Always drive vehicle at a safe speed.

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

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

1. CHECK DTC DETECTION**With CONSULT-III**

1. Turn ignition switch ON.
2. Select "DATA MONITOR".
3. Make sure that output voltage of CVT fluid temperature sensor is within the range below.

ATF TEMP SEN: 1.0-2.0 V

If out of range, drive the vehicle to decrease the voltage (warm up the fluid) or stop engine to

increase the voltage (cool down the fluid)

4. Start engine and maintain the following conditions for at least 10 consecutive seconds.

VEHICLE SPEED (accelerate slowly): 0 --> 50 km/h (31 MPH)

ACC PEDAL OPEN: 0.5/8-1.0/8

RANGE: "D" position

Is "P0868 SEC/PRESS DOWN" detected?

YES: Go to "**DIAGNOSIS PROCEDURE**".

NO: Check intermittent incident. Refer to "**INTERMITTENT INCIDENT**".

Diagnosis Procedure

1. CHECK LINE PRESSURE

Perform line pressure test. Refer to "**INSPECTION AND JUDGMENT**".

Is the inspection result normal?

YES: GO TO 2.

NO: Repair or replace damaged parts. Refer to "**INSPECTION AND JUDGMENT**".

2. CHECK PRESSURE CONTROL SOLENOID VALVE B (SECONDARY PRESSURE SOLENOID VALVE)

Check pressure control solenoid valve B (Secondary pressure solenoid valve). Refer to "**COMPONENT INSPECTION**".

Is the inspection result normal?

YES: GO TO 3.

NO: Repair or replace damaged parts.

3. CHECK PRESSURE CONTROL SOLENOID VALVE A (LINE PRESSURE SOLENOID VALVE)

Check pressure control solenoid valve A (Line pressure solenoid valve). Refer to "**COMPONENT INSPECTION**".

Is the inspection result normal?

YES: GO TO 4.

NO: Repair or replace damaged parts.

4. CHECK TRANSMISSION FLUID PRESSURE SENSOR A (SECONDARY PRESSURE SENSOR) SYSTEM

Check transmission fluid pressure sensor A (secondary pressure sensor) system. Refer to "**DTC LOGIC**".

Is the inspection result normal?

YES: GO TO 5.

NO: Repair or replace damaged parts.

5. CHECK TCM

Check input/output signal. Refer to "**REFERENCE VALUE**".

Is the inspection result normal?

YES: Check intermittent incident. Refer to "**INTERMITTENT INCIDENT**".

NO: Replace TCM. Refer to "**EXPLODED VIEW**".

P1701 TRANSMISSION CONTROL MODULE (POWER SUPPLY)

Description

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

NOTE: Since "P1701 TCM-POWER SUPPLY" will be indicated when replacing TCM, perform diagnosis after erasing "SELF-DIAG RESULTS"

DTC Logic

DTC DETECTION LOGIC

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code "P1701 TCM-POWER SUPPLY" with CONSULT-III is detected when TCM does not receive the voltage signal from the battery power supply.
- This is not a malfunction message. (Whenever shutting OFF a power supply to the TCM, this message appears on the screen.)

Possible Cause

Harness or connectors

(Battery or ignition switch and TCM circuit is open or shorted.)

DTC CONFIRMATION PROCEDURE

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

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

1. CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Wait for at least 2 consecutive seconds.
3. Perform "SELF-DIAG RESULTS". Refer to "**CONSULT-III Function (TRANSMISSION)**".

Is "P1701 TCM-POWER SUPPLY" detected?

YES: Go to "**DIAGNOSIS PROCEDURE**".

NO: Check intermittent incident. Refer to "**INTERMITTENT INCIDENT**".

Diagnosis Procedure

1. CHECK TCM POWER SOURCE

Check voltage between TCM connector terminals and ground.

VOLTAGE CHART

Name	TCM connector			Condition	Data (Approx.)
	Connector	Terminal			
Power supply	F16	46	Ground	Ignition switch ON	Battery voltage
				Ignition switch OFF	0 V
		48		Ignition switch ON	Battery voltage
				Ignition switch OFF	0 V
Power supply (memory back-up)		45		Always	Battery voltage
		47			

Is the inspection result normal?

YES: GO TO 4.

NO: GO TO 2.

2. DETECT MALFUNCTIONING ITEM

Check the following.

- Harness for short or open between battery and TCM connector terminal 45, 47
- Harness for short or open between ignition switch and TCM connector terminal 46, 48
- 10 A fuse (No. 34, located in the IPDM E/R)
- 10 A fuse (No. 11, located in the J/B)
- Ignition switch. Refer to **COMPONENT DIAGNOSIS** .

Is the inspection result normal?

YES: GO TO 3.

NO: Repair or replace damaged parts.

3. CHECK TCM GROUND CIRCUIT

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

TERMINALS CONTINUITY REFERENCE CHART

TCM Connector		Ground	Continuity
Connector	Terminal		
F16	5		Existed
	42		Existed

Is the inspection result normal?

YES: GO TO 4.

NO: Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK TCM

1. Check TCM input/output signals. Refer to "**REFERENCE VALUE**".

Is the inspection result normal?

YES: Check intermittent incident. Refer to "**INTERMITTENT INCIDENT**".

NO: Replace the TCM. Refer to "**EXPLODED VIEW**".

P1705 THROTTLE POSITION SENSOR**Description**

Electric throttle control actuator consists of throttle control motor, accelerator pedal position sensor, throttle position sensor etc. The actuator sends a signal to the ECM, and ECM sends the signal to TCM with CAN communication.

DTC Logic**DTC DETECTION LOGIC**

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code "P1705 TP SEN/CIRC A/T" with CONSULT-III is detected when TCM does not receive the proper accelerator pedal position signals (input by CAN communication) from ECM.

Possible Cause

- ECM
- Harness or connectors

(CAN communication line is open or shorted.)

DTC CONFIRMATION PROCEDURE

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

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

1. CHECK DTC DETECTION**With CONSULT-III**

1. Turn ignition switch ON.
2. Depress accelerator pedal fully and release it, then wait for 5 seconds.
3. Perform "SELF-DIAG RESULTS". Refer to "**CONSULT-III Function (TRANSMISSION)**".

Is "P1705 TP SEN/CIRC A/T" detected?

YES: Go to "**DIAGNOSIS PROCEDURE**".

NO: Check intermittent incident. Refer to "**INTERMITTENT INCIDENT**".

Diagnosis Procedure

1. CHECK INPUT SIGNAL

With CONSULT-III

1. Turn ignition switch ON.
2. Select "DATA MONITOR".
3. Read out the value of "ACC PEDAL OPEN".

ITEM CONDITION CHART

Item name	Condition	Display value (Approx.)
ACC PEDAL OPEN	Release accelerator pedal. ? Fully depressed accelerator pedal	0.0/8 ? 8.0/8

OK or NG

OK: Check intermittent incident. Refer to "**INTERMITTENT INCIDENT**".

NG: GO TO 2.

2. CHECK DTC WITH ECM

With CONSULT-III

1. Turn ignition switch ON.
2. Select "SELF-DIAG RESULTS" mode for "ENGINE" with CONSULT-III. Refer to "**CONSULT-III FUNCTION**".

OK or NG

OK: Check intermittent incident. Refer to "**INTERMITTENT INCIDENT**".

NG: Check the DTC Detected Item. Go to "**CONSULT-III FUNCTION**".

P1722 ESTM VEHICLE SPEED SIGNAL**Description**

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

DTC Logic**DTC DETECTION LOGIC**

- This is not an OBD-II self-diagnostic item.

- Diagnostic trouble code "P1722 ESTM VEH SPD SIG" with CONSULT-III is detected when TCM does not receive the proper vehicle speed signal (input by CAN communication) from ABS actuator and electric unit (control unit).

Possible Cause

- Harness or connectors
(Sensor circuit is open or shorted.)
- ABS actuator and electric unit (control unit)

DTC CONFIRMATION PROCEDURE

CAUTION: Always drive vehicle at a safe speed.

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

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

1. CHECK DTC DETECTION**With CONSULT-III**

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

ACC PEDAL OPEN: 1.0/8 or less

VEHICLE SPEED: 30 km/h (19 MPH) or more

Is "P1722 ESTM VEH SPD SIG" detected?

YES: Go to "**DIAGNOSIS PROCEDURE**".

NO: Check intermittent incident. Refer to "**INTERMITTENT INCIDENT**".

Diagnosis Procedure**1. CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)**

Perform "SELF-DIAG RESULTS". Refer to "**CONSULT-III FUNCTION (ABS)**" (TCS/ABS models),

"CONSULT-III FUNCTION (ABS) " (VDC/TCS/ABS models).

Is the inspection result normal?

YES: GO TO 2.

NO: Repair or replace damaged parts.

2. CHECK INPUT SIGNALS

With CONSULT-III

1. Start engine.
2. Select "DATA MONITOR".
3. Drive vehicle and read out the value of "VEHICLE SPEED" and "ESTM VSP SIG".

ITEM CONDITION CHART

Item name	Condition	Display value
ESTM VSP SIG	During driving	Approximately matches the speedometer reading.
VEHICLE SPEED		

4. Check if there is a great difference between the two values.

Is the inspection result normal?

YES: Check intermittent incident. Refer to "**INTERMITTENT INCIDENT**".

NO: GO TO 3.

3. CHECK TCM

Check TCM input/output signals. Refer to "**REFERENCE VALUE**".

Is the inspection result normal?

YES: Check intermittent incident. Refer to "**INTERMITTENT INCIDENT**".

NO: Replace the TCM. Refer to "**EXPLODED VIEW**".

P1723 CVT SPEED SENSOR FUNCTION

Description

The vehicle speed sensor CVT [output speed sensor (secondary speed sensor)] detects the revolution of parking gear and generates a pulse signal. The pulse signal is sent to the TCM, which converts it into vehicle speed.

The input speed sensor (primary speed sensor) detects the primary pulley revolution speed and sends a signal to the TCM.

DTC Logic**DTC DETECTION LOGIC**

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code "P1723 CVT SPD SEN/FNCTN" with CONSULT-III is detected when there is a great difference between the vehicle speed signal and the secondary speed sensor signal.

CAUTION: One of the "P0720 VEH SPD SEN/CIR AT", the "P0715 INPUT SPD SEN/CIRC" or the "P0725 ENGINE SPEED SIG" is displayed with the DTC at the same time.

NOTE: When the vehicle is driven fixed in 2nd gear, a turbine revolution sensor malfunction is displayed, but this is not a turbine revolution sensor malfunction.

Possible Cause

- Harness or connectors
(Sensor circuit is open or shorted.)
- Output speed sensor (Secondary speed sensor)
- Input speed sensor (Primary speed sensor)
- Engine speed signal system

DTC CONFIRMATION PROCEDURE

CAUTION: Always drive vehicle at a safe speed.

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

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

1. CHECK DTC DETECTION**With CONSULT-III**

1. Turn ignition switch ON.

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

VEHICLE SPEED SE: 10 km/h (6 MPH) or more

ACC PEDAL OPEN: More than 1.0/8

RANGE: "D" position

ENG SPEED: 450 RPM or more

Driving location: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.

Is "P1723 CVT SPD SEN/FNCTN" detected?

YES: Go to "**DIAGNOSIS PROCEDURE**".

NO: Check intermittent incident. Refer to "**INTERMITTENT INCIDENT**".

Diagnosis Procedure

1. CHECK STEP MOTOR FUNCTION

Perform the self-diagnosis check. Refer to "**CONSULT-III Function (TRANSMISSION)**".

Is a malfunction in the step motor function indicated in the results?

YES: Repair or replace damaged parts. (Check the step motor function. Refer to "**DTC LOGIC**".)

NO: GO TO 2.

2. CHECK OUTPUT SPEED SENSOR (SECONDARY SPEED SENSOR) SYSTEM

Check output speed sensor (secondary speed sensor) system. Refer to "**DTC LOGIC**".

Is the inspection result normal?

OK: GO TO 3.

NG: Repair or replace damaged parts.

3. CHECK INPUT SPEED SENSOR (PRIMARY SPEED SENSOR) SYSTEM

Check input speed sensor (primary speed sensor) system. Refer to "**DTC LOGIC**".

Is the inspection result normal?

OK: GO TO 4.

NG: Repair or replace damaged parts.

4. CHECK ENGINE SPEED SIGNAL SYSTEM

Check engine speed signal system. Refer to "**DTC LOGIC**".

Is the inspection result normal?

OK: GO TO 5.

NG: Repair or replace damaged parts. Refer to "**DESCRIPTION**".

5. CHECK TCM

Check TCM input/output signals.

Is the inspection result normal?

OK: Check intermittent incident. Refer to "**INTERMITTENT INCIDENT**".

NG: Replace the TCM. Refer to "**EXPLODED VIEW**".

P1726 ELECTRIC THROTTLE CONTROL SYSTEM

Description

Electric throttle control actuator consists of throttle control motor, accelerator pedal position sensor, throttle position sensor etc. The actuator sends a signal to the ECM, and ECM sends the signal to TCM with CAN communication.

DTC Logic

DTC DETECTION LOGIC

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code "P1726 ELEC TH CONTROL" with CONSULT-III is detected when the electronically controlled throttle for ECM is malfunctioning.

Possible Cause

Harness or connectors

(Sensor circuit is open or shorted.)

DTC CONFIRMATION PROCEDURE

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

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

1. CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Start engine and let it idle for 5 seconds.
3. Perform "SELF-DIAG RESULTS". Refer to "**CONSULT-III Function (TRANSMISSION)**".

Is "P1726 ELEC TH CONTROL" detected?

YES: Go to "**DIAGNOSIS PROCEDURE**".

NO: Check intermittent incident. Refer to "**INTERMITTENT INCIDENT**".

Diagnosis Procedure

1. CHECK DTC WITH ECM

With CONSULT-III

1. Turn ignition switch ON.
2. Select "SELF-DIAG RESULTS" mode for "ENGINE" with CONSULT-III. Refer to "**CONSULT-III FUNCTION**".

Is the inspection result normal?

YES: GO TO 2.

NO: Check the DTC Detected Item. Go to "**CONSULT-III FUNCTION**".

2. CHECK TCM

Check TCM input/output signals. Refer to "**REFERENCE VALUE**".

Is the inspection result normal?

YES: Check intermittent incident. Refer to "**INTERMITTENT INCIDENT**".

NO: Replace TCM. Refer to "**EXPLODED VIEW**".

P1740 LOCK-UP SELECT SOLENOID VALVE**Description**

- Lock up select solenoid valve controls lock up clutch pressure or forward clutch pressure (reverse brake pressure).
- When controlling lock up clutch, the valve is turned OFF. When controlling forward clutch, it is turned ON.

DTC Logic**DTC DETECTION LOGIC**

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "P1740 LU-SLCT SOL/CIRC" with CONSULT-III is detected under the following conditions.
 - When TCM compares target value with monitor value and detects an irregularity.

Possible Cause

- Lock up select solenoid valve
- Harness or connectors

(Solenoid circuit is open or shorted.)

DTC CONFIRMATION PROCEDURE

CAUTION: Always drive vehicle at a safe speed.

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

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

1. CHECK DTC DETECTION**With CONSULT-III**

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

RANGE: "D" position and "N" position

(At each time, wait for 5 seconds.)

With GST

Follow the procedure "With CONSULT-III".

Is "P1740 LU-SLCT SOL/CIRC" detected?

YES: Go to "**DIAGNOSIS PROCEDURE**".

NO: Check intermittent incident. Refer to "**INTERMITTENT INCIDENT**".

Diagnosis Procedure

1. CHECK LOCK-UP SELECT SOLENOID VALVE CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect TCM connector.
3. Check resistance between TCM connector terminal and ground.

RESISTANCE SPECIFICATION CHART

TCM connector		Ground	Resistance (Approx.)
Connector	Terminal		
F16	37		6-19 ohms

Is the inspection result normal?

YES: GO TO 4.

NO: GO TO 2.

2. CHECK LOCK-UP SELECT SOLENOID VALVE

Check lock up select solenoid valve.

Is the inspection result normal?

YES: GO TO 3.

NO: Replace the transaxle assembly. Refer to "**REMOVAL AND INSTALLATION**".

3. CHECK HARNESS BETWEEN TCM AND LOCK-UP SELECT SOLENOID VALVE

1. Turn ignition switch OFF.
2. Disconnect TCM connector.

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

TERMINALS CONTINUITY REFERENCE CHART

TCM connector		CVT unit harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F16	37	F46	13	Existed

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

Is the inspection result normal?

YES: GO TO 4.

NO: Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK TCM

Check TCM input/output signals. Refer to "REFERENCE VALUE".

Is the inspection result normal?

YES: Check intermittent incident. Refer to "INTERMITTENT INCIDENT".

NO: Replace TCM. Refer to "EXPLODED VIEW".

Component Inspection**LOCK-UP SELECT SOLENOID VALVE****1. LOCK-UP SELECT SOLENOID VALVE**

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

RESISTANCE SPECIFICATION CHART

CVT unit harness connector		Ground	Resistance (Approx.)
Connector	Terminal		
F46	13		6-19 ohms

Is the inspection result normal?

YES: **INSPECTION END**

NO: Replace the transaxle assembly. Refer to "EXPLODED VIEW".

P1745 LINE PRESSURE CONTROL**Description**

The pressure control solenoid valve A (line pressure solenoid valve) regulates the oil pump discharge pressure to suit the driving condition in response to a signal sent from the TCM.

DTC Logic**DTC DETECTION LOGIC**

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code "P1745 L/PRESS CONTROL" with CONSULT-III is detected when TCM detects the unexpected line pressure.

Possible Cause**TCM****DTC CONFIRMATION PROCEDURE**

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

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

1. CHECK DTC DETECTION**With CONSULT-III**

1. Turn ignition switch ON
2. Select "DATA MONITOR".
3. Make sure that output voltage of CVT fluid temperature sensor is within the range below.

ATF TEMP SEN: 1.0-2.0 V

If out of range, drive the vehicle to decrease the voltage (warm up the fluid) or stop engine to increase the voltage (cool down the fluid)

Is "P1745 L/PRESS CONTROL" detected?

YES: Go to "**DIAGNOSIS PROCEDURE**".

NO: Check intermittent incident. Refer to "**INTERMITTENT INCIDENT**".

Diagnosis Procedure

1. CHECK DTC**With CONSULT-III**

1. Turn ignition switch ON.
2. Select "SELF-DIAG RESULTS".
3. Erase self-diagnostic results. Refer to "CONSULT-III Function (TRANSMISSION)".
4. Turn ignition switch OFF, and wait for 10 seconds or more.
5. Start engine.
6. Perform "SELF-DIAG RESULTS". Refer to "CONSULT-III Function (TRANSMISSION)".

Is the "P1745 L/PRESS CONTROL" displayed?

YES: Replace TCM. Refer to "EXPLODED VIEW".

NO: Check intermittent incident. Refer to "INTERMITTENT INCIDENT".

P1777 STEP MOTOR**Description**

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

DTC Logic**DTC DETECTION LOGIC**

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "P1777 STEP MOTR CIRC" with CONSULT-III is detected under the following conditions.
 - When operating step motor ON and OFF, there is no proper change in the voltage of TCM terminal which corresponds to it.

Possible Cause

- Step motor
- Harness or connectors

(Step motor circuit is open or shorted.)

DTC CONFIRMATION PROCEDURE

CAUTION: Always drive vehicle at a safe speed.

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

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

1. CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Drive vehicle for at least 5 consecutive seconds.
3. Perform "SELF-DIAG RESULTS". Refer to "**CONSULT-III Function (TRANSMISSION)**".

With GST

Follow the procedure "With CONSULT-III".

Is "P1777 STEP MOTR CIRC" detected?

YES: Go to "**DIAGNOSIS PROCEDURE**".

NO: Check intermittent incident. Refer to "**INTERMITTENT INCIDENT**".

Diagnosis Procedure

1. CHECK INPUT SIGNALS

With CONSULT-III

1. Start engine.
2. Select "DATA MONITOR".
3. Start vehicle and read out the value of "STM STEP", "SMCOIL A", "SMCOIL B", "SMCOIL C", and "SMCOIL D".

ITEM CONDITION CHART

Item name	Condition	Display value (Approx.)
STM STEP	During driving	-20 step-190 step
SMCOIL A		Changes ON <==> OFF.
SMCOIL B		
SMCOIL C		
SMCOIL D		

Is the inspection result normal?

YES: GO TO 4.

NO: GO TO 2.

2. CHECK HARNESS BETWEEN TCM AND STEP MOTOR

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

TERMINALS CONTINUITY REFERENCE CHART

TCM connector		CVT unit harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F16	27	F46	9	Existed
	28		8	
	29		7	
	30		6	

4. If OK, check harness for short to ground and short to power.
5. If OK, check continuity between body ground and CVT assembly.
6. Reinstall any part removed.

Is the inspection result normal?

YES: GO TO 3.

NO: Repair open circuit or short to ground or short to power in harness or connectors.

3. CHECK STEP MOTORCheck step motor. Refer to "**COMPONENT INSPECTION**".**Is the inspection result normal?**

YES: GO TO 4.

NO: Repair or replace damaged parts.

4. CHECK TCMCheck TCM input/output signals. Refer to "**REFERENCE VALUE**".**Is the inspection result normal?**

YES: Check intermittent incident. Refer to "**INTERMITTENT INCIDENT**".

NO: Replace the TCM. Refer to "**EXPLODED VIEW**".

Component Inspection

STEP MOTOR

1. STEP MOTOR

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

RESISTANCE SPECIFICATION CHART

CVT unit harness connector			Resistance (Approx.)
Connector	Terminal	Terminal	
F46	6	7	30 ohms
	8	9	

RESISTANCE SPECIFICATION CHART

CVT unit harness connector			Resistance (Approx.)
Connector	Terminal		
F46	6	Ground	15 ohms
	7		
	8		
	9		

Is the inspection result normal?

YES: **INSPECTION END**

NO: Transaxle assembly. Refer to "**EXPLODED VIEW**".

P1778 STEP MOTOR-FUNCTION

Description

- The step motor's 4 aspects of ON/OFF change according to the signal from TCM. As a result, the flow of line pressure to primary pulley is changed and pulley ratio is controlled.
- This diagnosis item is detected when electrical system is OK, but mechanical system is NG.
- This diagnosis item is detected when the state of the changing the speed mechanism in unit does not operate normally.

DTC Logic

DTC DETECTION LOGIC

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "P1778 STEP MOTR/FNC" with CONSULT-III is detected under the following conditions.
 - When not changing the pulley ratio according to the instruction of TCM.

Possible Cause

Step motor

DTC CONFIRMATION PROCEDURE**CAUTION:**

- Always drive vehicle at a safe speed.
- Before starting "DTC CONFIRMATION PROCEDURE", confirm "Hi" or "Mid" or "Low" fixation by "PRI SPEED" and "VEHICLE SPEED" on "DATA MONITOR MODE".
- If hi-gear fixation occurred, go to "DIAGNOSIS PROCEDURE".

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

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

1. CHECK DTC DETECTION**With CONSULT-III**

1. Turn ignition switch ON.
2. Select "DATA MONITOR".
3. Make sure that output voltage of CVT fluid temperature sensor is within the range below.

ATF TEMP SEN: 1.0-2.0 V

If out of range, drive the vehicle to decrease the voltage (warm up the fluid) or stop engine to increase the voltage (cool down the fluid)

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

TEST START FROM 0 km/h (0 MPH)

CONSTANT ACCELERATION: Keep 30 sec or more

VEHICLE SPEED: 10 km/h (6 MPH) or more

ACC PEDAL OPEN: More than 1.0/8

RANGE: "D" position

ENG SPEED: 450 RPM or more

With GST

Follow the procedure "With CONSULT-III".

Is "P1778 STEP MOTR/FNC" detected?

YES: Go to "**DIAGNOSIS PROCEDURE**".

NO: Check intermittent incident. Refer to "**INTERMITTENT INCIDENT**".

Diagnosis Procedure

1. CHECK STEP MOTOR

With CONSULT-III

It is monitoring whether "GEAR RATIO: 2.37 - 0.43" changes similarly to "STM STEP: -20 - 190" by "DATA MONITOR" mode. Refer to "**CONSULT-III FUNCTION (TRANSMISSION)**".

Without CONSULT-III

Inspect the engine speed (rise and descend), vehicle speed, throttle position, and check shift change. Refer to "**VEHICLE SPEED WHEN SHIFTING GEARS**".

OK or NG

OK: Check intermittent incident. Refer to "**INTERMITTENT INCIDENT**".

NG: Replace the transaxle assembly. Refer to "**EXPLODED VIEW**".

SHIFT LOCK SYSTEM

Description

The selector lever cannot be shifted from "P" position to any other position unless the ignition switch is in the ON position and the brake pedal is depressed.

Wiring Diagram

[illegible]

Diagnosis Procedure

DIAGNOSTIC PROCEDURE**SYMPTOM 1:**

- **Selector lever cannot be moved from "P" position with ignition switch in ON position and brake pedal depressed.**

SYMPTOM 2:

- **Selector lever can be moved from "P" position with ignition key in ON position and brake pedal released.**

1. CHECK POWER SOURCE

1. Disconnect CVT device harness connector.
2. Turn ignition switch ON (Do not start engine).
3. Check voltage between CVT device harness connector M23 terminal 6 and ground.

Voltage:**Brake pedal depressed: Battery voltage****Brake pedal released: 0V****OK or NG****OK: GO TO 4.****NG: GO TO 2.**

2. Disconnect stop lamp switch harness connector.
3. Turn ignition switch ON (Do not start engine).
4. Check voltage between stop lamp switch harness connector E38 terminal 3 and ground.

Voltage: Battery voltage

OK or NG

OK: GO TO 3.

NG: Check the following items for damage, repair or replace damaged parts:

- 10A fuse [No. 3, located in the fuse block (J/B)].
- Harness for open between ignition switch and stop lamp switch harness connector.
- Ignition switch, refer to **POWER SUPPLY, GROUND & CIRCUIT ELEMENTS** .

545RFE
Second Gear EMCC

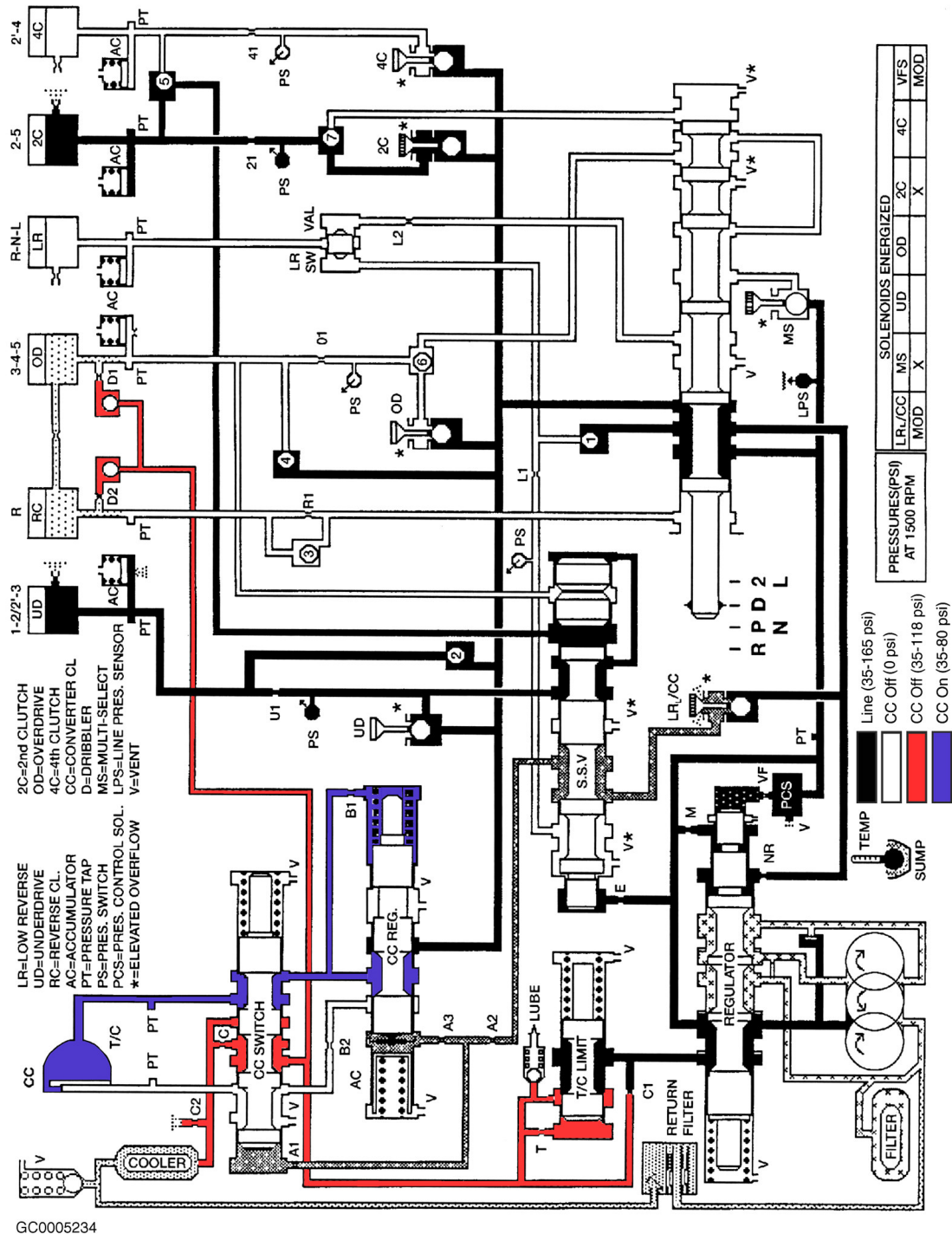


Fig. 29: Checking Voltage Between Stop Lamp Switch Harness Connector E38 Terminal 3 And Ground

3. CHECK STOP LAMP SWITCH

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1. Turn ignition switch OFF.
2. Disconnect stop lamp switch harness connector E38.
3. Check continuity between stop lamp switch terminals 3 and 4.

TERMINALS CONTINUITY REFERENCE CHART

Condition	Continuity
Manually depress stop lamp switch	YES
Stop lamp switch released	NO

OK or NG

OK: Adjust stop lamp switch.

NG: Replace stop lamp switch.

2. Check continuity between CVT device harness connector M23 terminal 6 and ground.

Continuity should exist.

OK or NG

OK: Replace shift lock solenoid and park position switch assembly.

NG: Repair open circuit in harness or connectors.

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TCM**Reference Value****VALUES ON THE DIAGNOSIS TOOL****ITEM CONDITION CHART**

Item name	Condition	Display value (Approx.)
VSP SENSOR	During driving	Approximately matches the speedometer reading.
ESTM VSP SIG	During driving	Approximately matches the speedometer reading.
PRI SPEED SEN	During driving (lock up ON)	Approximately matches the engine speed.
ENG SPEED SIG	Engine running	Closely matches the tachometer reading.
SEC HYDR SEN	"N" position idle	0.8-1.0 V
PRI HYDR SEN	"N" position idle	0.7-3.5 V
ATF TEMP SEN	When CVT fluid temperature is 20°C (68°F).	1.8-2.0 V
	When CVT fluid temperature is 80°C (176°F).	0.6-1.0 V
VIGN SEN	Ignition switch: ON	Battery voltage
VEHICLE SPEED	During driving	Approximately matches the speedometer reading.
PRI SPEED	During driving (lock up ON)	Approximately matches the engine speed.
SEC SPEED	During driving	45 X Approximately matches the speedometer reading.
ENG SPEED	Engine running	Closely matches the tachometer reading.
GEAR RATIO	During driving	2.37-0.43
ACC PEDAL OPEN	Released accelerator pedal-Fully depressed accelerator pedal	0.0/8-8.0/8
SEC PRESS	"N" position idle	0.5-0.9 MPa
PRI PRESS	"N" position idle	0.3-0.9 MPa
STM STEP	During driving	-20 step-190 step
ISOLT1	Lock up OFF	0.0 A
	Lock up ON	0.7 A
ISOLT2	Release your foot from the accelerator pedal.	0.8 A
	Press the accelerator pedal all the way down.	0.0 A
ISOLT3	Secondary pressure low-Secondary pressure high.	0.8-0.0 A
SOLMON1	Lock up OFF	0.0 A
	Lock up ON	0.6-0.7 A
	"N" position idle	0.8 A

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SOLMON2	When stalled	0.3-0.6 A
SOLMON3	"N" position idle	0.6-0.7 A
	When stalled	0.4-0.6 A
INH SW3M	Selector lever in "D" position	ON
	Selector lever in "P", "R" and "N" positions	OFF
INH SW4	Selector lever in "R" and "D" positions	ON
	Selector lever in "P" and "N" positions	OFF
INH SW3	Selector lever in "D" position	ON
	Selector lever in "P", "R" and "N" positions	OFF
INH SW2	Selector lever in "N" and "D" positions	ON
	Selector lever in "P" and "R" positions	OFF
INH SW1	Selector lever in "R", "N" and "D" positions	ON
	Selector lever in "P" position	OFF
BRAKE SW	Depressed brake pedal	ON
	Released brake pedal	OFF
FULL SW	Fully depressed accelerator pedal	ON
	Released accelerator pedal	OFF
IDLE SW	Released accelerator pedal	ON
	Fully depressed accelerator pedal	OFF
DOWNLVR	Selector lever: - side	ON
	Other than the above	OFF
UPLVR	Selector lever: + side	ON
	Other than the above	OFF
NONMMODE	Manual shift gate position (neutral, +side, -side)	OFF
	Other than the above	ON
MMODE	Manual shift gate position (neutral)	ON
	Other than the above	OFF
INDDRNG	Selector lever in "D" position	ON
	Selector lever in other positions	OFF
INDNRNG	Selector lever in "N" position	ON
	Selector lever in other positions	OFF
INDRRNG	Selector lever in "R" position	ON
	Selector lever in other positions	OFF
INDPRNG	Selector lever in "P" position	ON
	Selector lever in other positions	OFF
SMCOIL D	During driving	Changes ON <==> OFF.
SMCOIL C	During driving	Changes ON <==> OFF.

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SMCOIL B	During driving	Changes ON <==> OFF.
SMCOIL A	During driving	Changes ON <==> OFF.
LUSEL SOL OUT	Selector lever in "P" and "N" positions	ON
	Wait at least for 5 seconds with the selector lever in "R" and "D" positions	OFF
STRTR RLY OUT	Selector lever in "P" and "N" positions	ON
	Selector lever in other positions	OFF
STRTR RLY MON	Selector lever in "P" and "N" positions	ON
	Selector lever in other positions	OFF
VDC ON	VDC operate	ON
	Other conditions	OFF
TCS ON	TCS operate	ON
	Other conditions	OFF
ABS ON	ABS operate	ON
	Other conditions	OFF
RANGE	Selector lever in "N" and "P" position.	N.P
	Selector lever in "R" position.	R
	Selector lever in "D" position.	D
M GEAR POS	During driving	1, 2, 3, 4, 5, 6

TERMINAL LAYOUT



TERMINALS VOLTAGE CONDITION CHART

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Terminal No.		Description		Condition		Value (Approx.)
+	-	Signal name	Input/Output			
1 (P/B)	Ground	PNP switch 2	Output	Ignition switch ON	Selector lever in "N", "D" positions	0 V
					Selector lever in other positions	10.0 V-Battery voltage
2 (P/L)	Ground	PNP switch 3	Output		Selector lever in "D" position	0 V
					Selector lever in other positions	8.0 V-Battery voltage
3 (G/O)	Ground	PNP switch 4	Output		Selector lever in "R", "D" positions	0 V
					Selector lever in other positions	10.0 V-Battery voltage
4 (GR)	Ground	PNP switch 3 (monitor)	Output		Selector lever in "D" position	0 V
					Selector lever in other positions	8.0 V-Battery voltage
5 (B)	Ground	Ground	Output	Always	0 V	
6 (O)	Ground	K-LINE	Inout/Output	-	-	
7 (W)	Ground	Sensor ground	Input	Always	0 V	
8 (G/W)	-	CLOCK	-	-	-	
9 (L/R)	-	CHIP SELECT	-	-	-	
10 (BR/R)	-	DATA I/O	-	-	-	
11 (BR/W)	Ground	PNP switch 1	Output	Ignition switch ON	Selector lever in "R", "N", "D" positions	0 V
					Selector lever in other position	Battery voltage
13 (V)	Ground	CVT fluid temperature sensor	Output	Ignition switch ON	When CVT fluid temperature is 20°C (68° F)	2.0 V
					When CVT fluid temperature is 80°C (176°F)	1.0 V
14 (R/W)	Ground	Transmission fluid pressure sensor B (Primary pressure sensor)	Input	"N" position idle		0.7-3.5 V
15 (V/W)	Ground	Transmission fluid pressure	Input			1.0 V

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		sensor A (Secondary pressure sensor)				
19 (SB)	Ground	Back-up lamp relay	Input	Ignition switch ON	Selector lever in "R" position	0 V
					Selector lever in other positions	Battery voltage
20 (R/B)	Ground	Starter relay	Input	Ignition switch ON	Selector lever in "N", "P" positions	Battery voltage
					Selector lever in other positions	0 V
25 (W/R)	Ground	Sensor ground	Input	Always		0 V
26 (L/O)	Ground	Sensor power	Input	Ignition switch ON	-	5.0 V
				Ignition switch OFF	-	0 V
27 (R/G)	Ground	Step motor D	Input	Within 2 seconds after ignition switch ON, the time measurement by using the pulse width measurement function (Hi level) of CONSULT-III. ⁽¹⁾ CAUTION: Connect the diagnosis data link cable to the vehicle diagnosis connector.		10.0 msec
28 (R)	Ground	Step motor C	Input			30.0 msec
29 (O/B)	Ground	Step motor B	Input			10.0 msec
30 (G/R)	Ground	Step motor A	Input			30.0 msec
31 (P)	-	CAN-L	Inout/Output	-		-
32 (L)	-	CAN-H	Inout/Output	-		-
33 (LG)	Ground	Input speed sensor (Primary speed sensor)	Input	When driving ["M1" position, 20 km/h (12 MPH)]		660 Hz
34 (LG/R)	Ground	Output speed sensor (Secondary speed sensor)	Input	When driving ["D" position, 20 km/h (12 MPH)]		400 Hz
37 (L/B)	Ground	Lock up select solenoid valve	Output	Ignition switch ON	Selector lever in "P", "N" positions	Battery voltage
					Wait at least for 5 seconds with the selector lever in "R", "D"	0 V

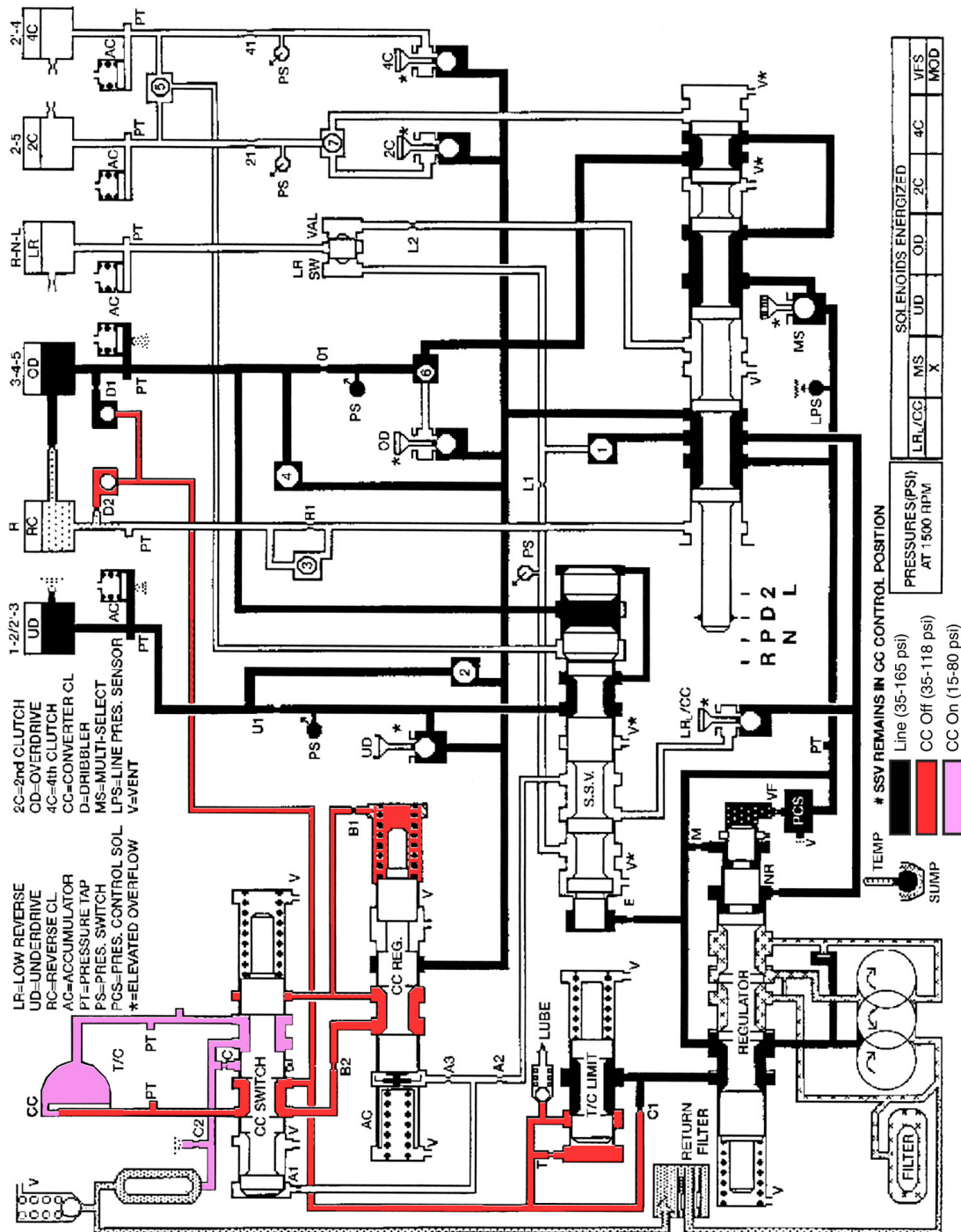
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					positions.	
38 (L/W)	Ground	Torque converter clutch solenoid valve	Output	When vehicle cruises in "D" position	When CVT performs lock up	6.0 V
					When CVT does not perform lock up	1.0 V
39 (W/B)	Ground	Pressure control solenoid valve B (Secondary pressure solenoid valve)	Output	"P", "N" position idle	Release your foot from the accelerator pedal.	5.0-7.0 V
					Press the accelerator pedal all the way down.	3.0-4.0 V
40 (R/Y)	Ground	Pressure control solenoid valve A (Line pressure solenoid valve)	Output		Release your foot from the accelerator pedal.	5.0-7.0 V
					Press the accelerator pedal all the way down.	1.0-3.0 V
42 (B)	Ground	Ground	Output	Always		0 V
45 (L/R)	Ground	Power supply (memory back-up)	Input	Always		Battery voltage
46 (Y)	Ground	Power supply	Input	Ignition switch ON	-	Battery voltage
				Ignition switch OFF	-	0 V
47 (L/R)	Ground	Power supply (memory back-up)	Input	Always		Battery voltage
48 (Y)	Ground	Power supply	Input	Ignition switch ON	-	Battery voltage
				Ignition switch OFF	-	0 V
(1) A circuit tester cannot be used to test this item.						

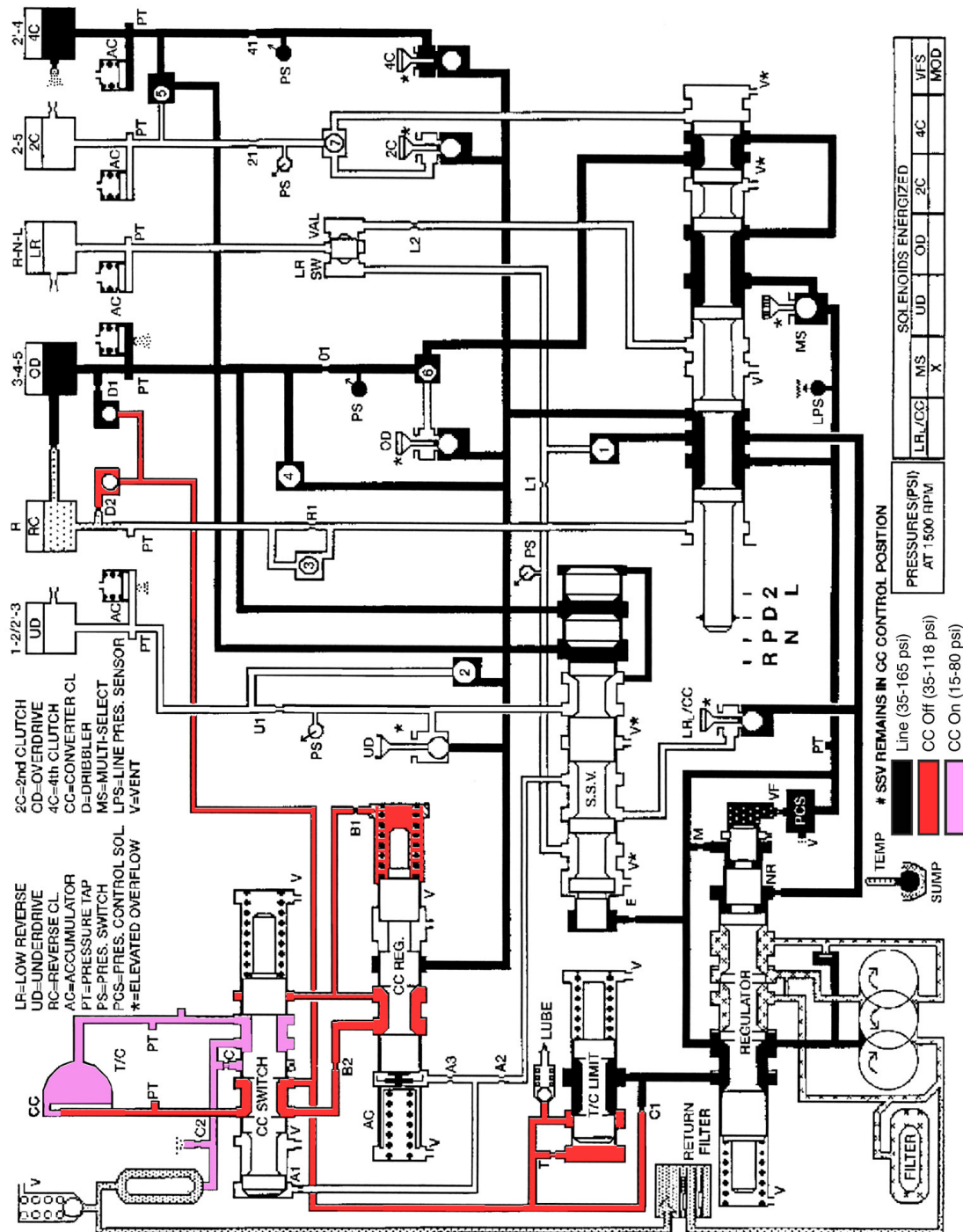
Wiring Diagram - CVT CONTROL SYSTEM -

545RFE Direct Gear (Failsafe)



GC0005238

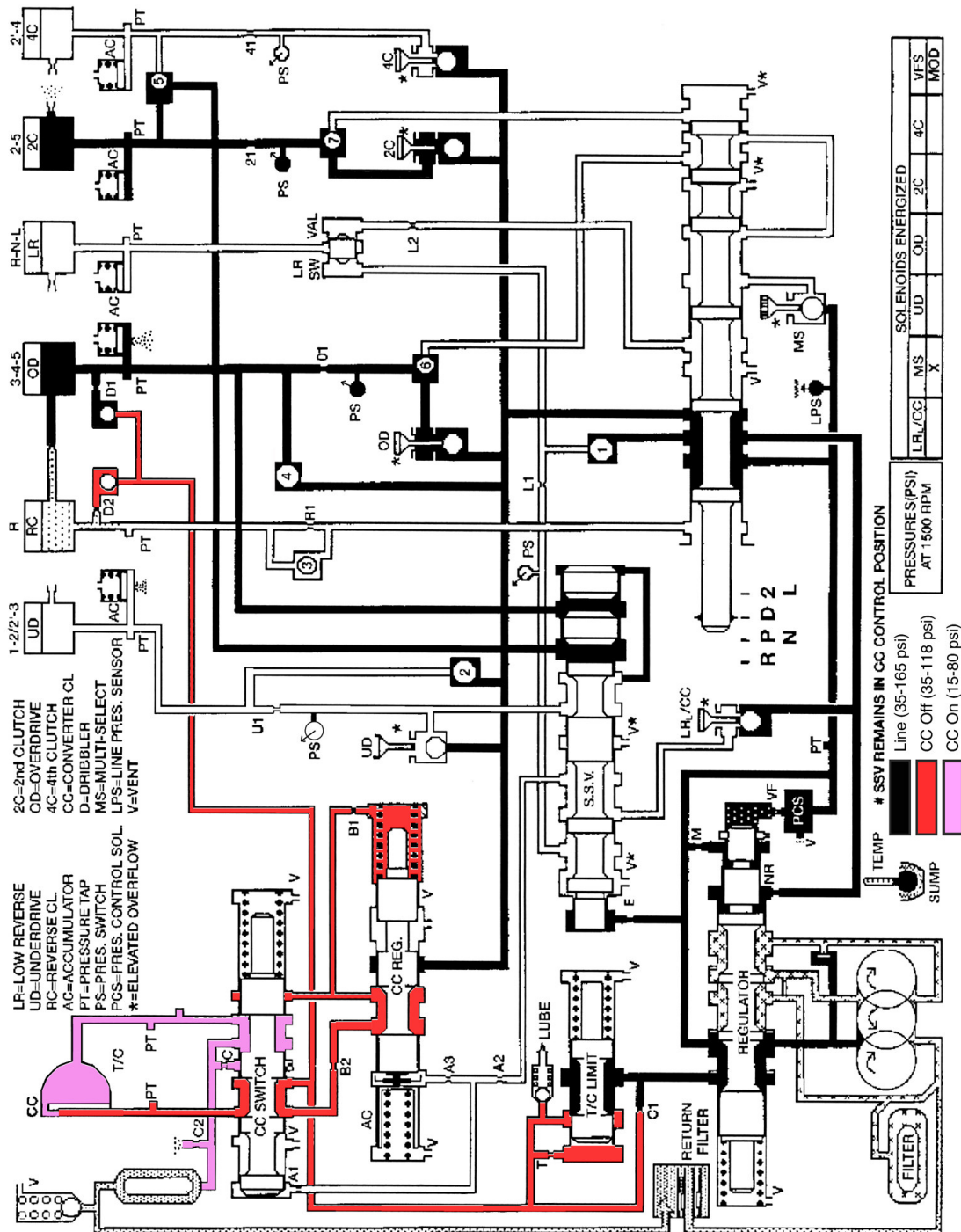
Fig. 33: CVT Control System - Wiring Diagram (1 Of 2)

545RFE
Fourth

GC0005240

Fig. 35: CVT Control System (VQ35DE) Connectors (1 Of 6)

545RFE Fifth Gear



GC0005242

Fig. 37: CVT Control System (VQ35DE) Connectors (3 Of 6)

545RFE
Fifth Gear EMCC

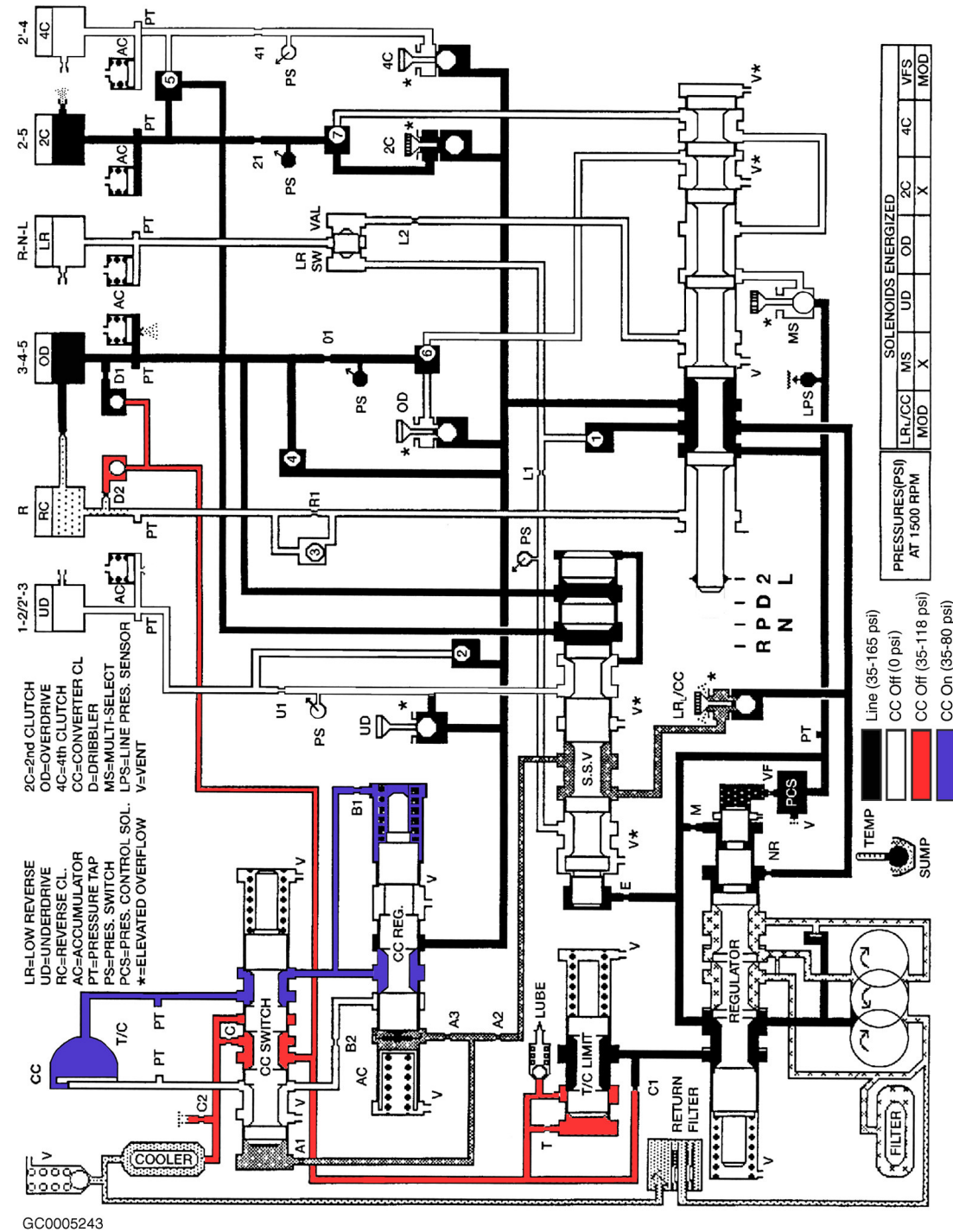
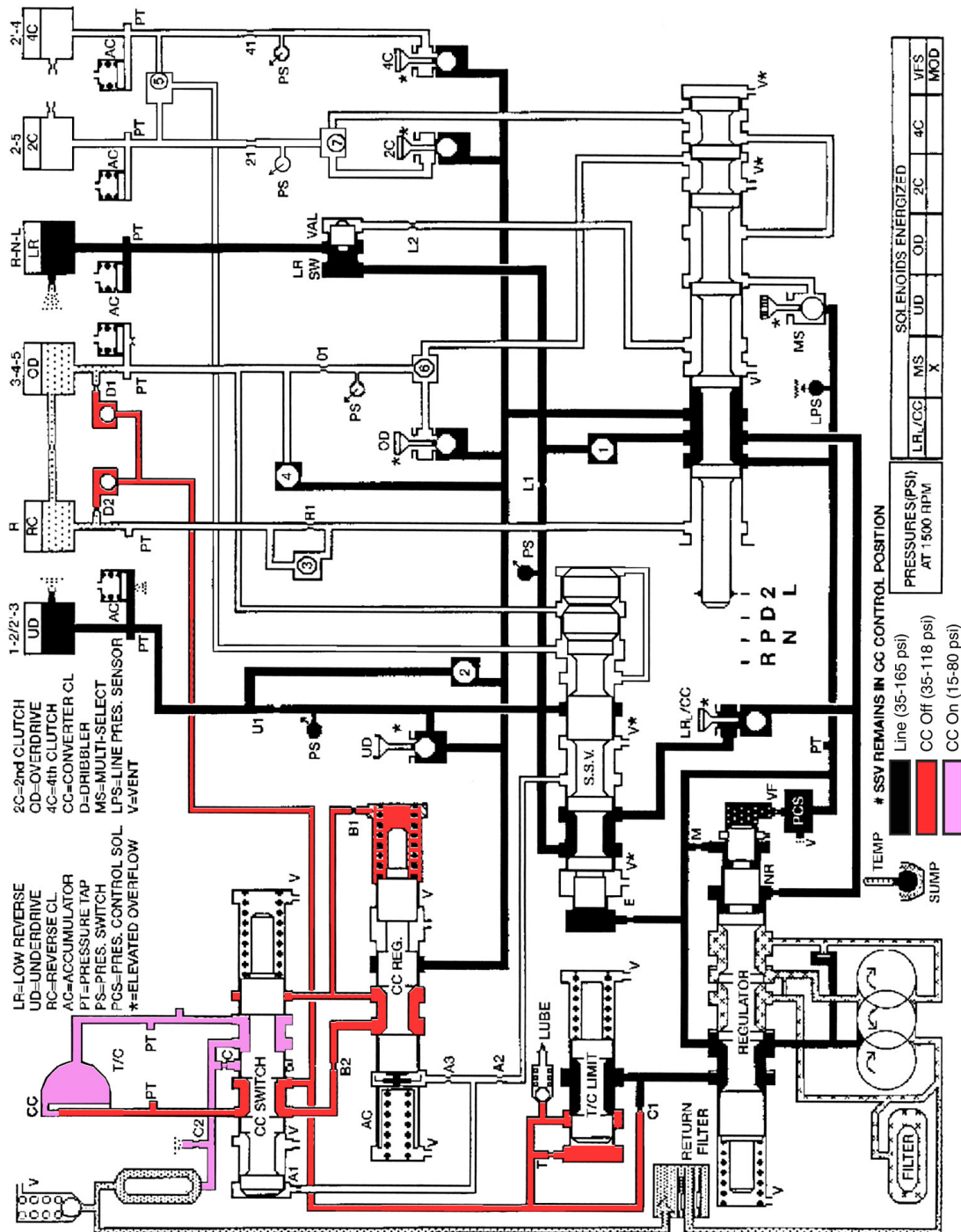


Fig. 38: CVT Control System (VQ35DE) Connectors (4 Of 6)

545RFE Manual Low Or Autostick 1st



GC0005244

Fig. 39: CVT Control System (VQ35DE) Connectors (5 Of 6)

The TCM has an electrical fail-safe mode. This mode makes it possible to operate even if there is an error in a main electronic control input/output signal circuit.

FAIL-SAFE FUNCTION

If any malfunction occurs in a sensor or solenoid, this function controls the CVT to make driving possible.

Output Speed Sensor (Secondary Speed Sensor)

The shift pattern is changed in accordance with throttle position when an unexpected signal is sent from the output speed sensor (secondary speed sensor) to the TCM. The manual mode position is inhibited, and the transaxle is put in "D".

Input Speed Sensor (Primary Speed Sensor)

The shift pattern is changed in accordance with throttle position and secondary speed (vehicle speed) when an unexpected signal is sent from the input speed sensor (primary speed sensor) to the TCM. The manual mode position is inhibited, and the transaxle is put in "D".

PNP Switch

If an unexpected signal is sent from the PNP switch to the TCM, the transaxle is put in "D".

Manual Mode Switch

If an unexpected signal is sent from the manual mode switch to the TCM, the transaxle is put in "D".

CVT Fluid Temperature Sensor

If an unexpected signal is sent from the CVT fluid temperature sensor to the TCM, the gear ratio in use before receiving the unexpected signal is maintained or the gear ratio is controlled to keep engine speed under 2,800 RPM.

Transmission Fluid Pressure Sensor A (Secondary Pressure Sensor)

- If an unexpected signal is sent from the transmission fluid pressure sensor A (secondary pressure sensor) to the TCM, the secondary pressure feedback control is stopped and the offset value obtained before the nonstandard condition occurs is used to control line pressure.
- If transmission fluid pressure sensor A (secondary pressure sensor) error signal is input to TCM, secondary pressure feedback control stops, but line pressure is controlled normally.

Pressure Control Solenoid A (Line Pressure Solenoid)

If an unexpected signal is sent from the solenoid to the TCM, the pressure control solenoid A (line pressure solenoid) is turned OFF to achieve the maximum fluid pressure.

Pressure Control Solenoid B (Secondary Pressure Solenoid)

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If an unexpected signal is sent from the solenoid to the TCM, the pressure control solenoid B (secondary pressure solenoid) is turned OFF to achieve the maximum fluid pressure.

Torque Converter Clutch Solenoid

If an unexpected signal is sent from the solenoid to the TCM, the torque converter clutch solenoid is turned OFF to cancel the lock up.

Step Motor

If an unexpected signal is sent from the step motor to the TCM, the step motor coil phases "A" through "D" are all turned OFF to hold the gear ratio used right before the non-standard condition occurred.

CVT Lock up Select Solenoid

If an unexpected signal is sent from the solenoid to the TCM, the CVT lock up select solenoid is turned OFF to cancel the lock up.

TCM Power Supply (Memory Back-up)

Transaxle assembly is protected by limiting the engine torque when the memory back-up power supply (for controlling) from the battery is not supplied to TCM. Normal status is restored when turning the ignition switch OFF to ON after the normal power supply.

DTC Inspection Priority Chart

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

NOTE: If DTC "U1000 CAN COMM CIRCUIT" is displayed with other DTCs, first perform the trouble diagnosis for "DTC U1000 CAN COMMUNICATION LINE". Refer to U1000 CAN COMM CIRCUIT.

DTC INSPECTION PRIORITY CHART

Priority	Detected items (DTC)
1	U1000 CAN communication line
2	Except above

DTC Index

NOTE: If DTC "U1000 CAN COMM CIRCUIT" is displayed with other DTCs, first perform the trouble diagnosis for "DTC U1000 CAN COMMUNICATION LINE". Refer to U1000 CAN COMM CIRCUIT.

DTC INDEX

DTC	

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2007 DRIVELINE/AXLES Automatic Transmission (RE0F09B) - Altima

OBD-II	Except OBD-II	Items (CONSULT-III screen terms)
CONSULT-III GST ⁽¹⁾	CONSULT-III only "TRANSMISSION"	
-	<u>P0615</u>	STARTER RELAY/CIRC
-	<u>P0703</u>	BRAKE SW/CIRC
<u>P0705</u>	P0705	PNP SW/CIRC
<u>P0710</u>	P0710	ATF TEMP SEN/CIRC
<u>P0715</u>	P0715	INPUT SPD SEN/CIRC
<u>P0720</u>	P0720	VEH SPD SEN/CIR AT
-	<u>P0725</u>	ENGINE SPEED SIG
-	<u>P0730</u>	BELT DAMG
<u>P0740</u>	P0740	TCC SOLENOID/CIRC
<u>P0744</u>	P0744	A/T TCC S/V FNCTN
<u>P0745</u>	P0745	L/PRESS SOL/CIRC
<u>P0746</u>	P0746	PRS CNT SOL/A FCTN
<u>P0776</u>	P0776	PRS CNT SOL/B FCTN
<u>P0778</u>	P0778	PRS CNT SOL/B CIRC
-	<u>P0826</u>	MANUAL MODE SWITCH
<u>P0840</u>	P0840	TR PRS SENS/A CIRC
-	<u>P0841</u>	PRESS SEN/FNCTN
<u>P0845</u>	P0845	TR PRS SENS/B CIRC
-	<u>P0868</u>	SEC/PRESS DOWN
-	<u>P1701</u>	TCM-POWER SUPPLY
-	<u>P1705</u>	TP SEN/CIRC A/T
-	<u>P1722</u>	ESTM VEH SPD SIG
-	<u>P1723</u>	CVT SPD SEN/FNCTN
-	<u>P1726</u>	ELEC TH CONTROL
<u>P1740</u>	P1740	LU-SLCT SOL/CIRC
-	<u>P1745</u>	L/PRESS CONTROL
<u>P1777</u>	P1777	STEP MOTR CIRC
<u>P1778</u>	P1778	STEP MOTR/FNC
<u>U1000</u>	U1000	CAN COMM CIRCUIT

(1) These numbers are prescribed by SAE J2012.

SYMPTOM DIAGNOSIS

SYSTEM SYMPTOM

Symptom Table

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

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SYMPTOM CHART

No.	Item	Symptom	Condition	Diagnostic Item
1	Shift Shock	Large shock. ("N"--> "D" position)	ON vehicle	1. Engine <u>IDLE SPEED</u>
				2. <u>ENGINE SPEED SIGNAL</u>
				3. <u>ACCELERATOR PEDAL POSITION SENSOR</u>
				4. <u>CVT POSITION</u>
				5. <u>CVT FLUID TEMPERATURE SENSOR</u>
				6. <u>CAN COMMUNICATION LINE</u>
				7. <u>CVT FLUID LEVEL AND STATE</u>
				8. <u>LINE PRESSURE TEST</u>
				9. <u>TORQUE CONVERTER CLUTCH SOLENOID VALVE</u>
				10. <u>LOCK-UP SELECT SOLENOID VALVE</u>
				11. <u>PNP SWITCH</u>
2	Shift Shock	Large shock. ("N"--> "R" position)	OFF vehicle	12. <u>FORWARD CLUTCH</u>
				13. Control valve
			ON vehicle	1. Engine <u>IDLE SPEED</u>
				2. <u>ENGINE SPEED SIGNAL</u>
				3. <u>ACCELERATOR PEDAL POSITION SENSOR</u>
				4. <u>CVT POSITION</u>
				5. <u>CVT FLUID TEMPERATURE SENSOR</u>
				6. <u>CAN COMMUNICATION LINE</u>
				7. <u>CVT FLUID LEVEL AND STATE</u>
				8. <u>LINE PRESSURE TEST</u>
				9. <u>TORQUE CONVERTER CLUTCH SOLENOID VALVE</u>
				10. <u>LOCK-UP SELECT SOLENOID VALVE</u>
3	Shift Shock	Shock is too large for lock up.	OFF vehicle	11. <u>PNP SWITCH</u>
				12. <u>REVERSE BRAKE</u>
				13. Control valve
			ON vehicle	1. <u>CVT POSITION</u>
				2. <u>ENGINE SPEED SIGNAL</u>
				3. <u>CAN COMMUNICATION LINE</u>
				4. <u>CVT FLUID LEVEL AND STATE</u>
				5. <u>TORQUE CONVERTER</u>
				6. Control valve
				1. <u>CVT FLUID LEVEL AND STATE</u>
				2. <u>CVT POSITION</u>
				3. <u>CAN COMMUNICATION LINE</u>
				4. <u>LINE PRESSURE TEST</u>

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4		Vehicle cannot be started from "D" position.	ON vehicle	5. <u>STALL TEST</u>
				6. <u>STEP MOTOR</u>
				7. <u>PRIMARY SPEED SENSOR</u>
				8. <u>SECONDARY SPEED SENSOR</u>
				9. <u>ACCELERATOR PEDAL POSITION SENSOR</u>
				10. <u>CVT FLUID TEMPERATURE SENSOR</u>
			OFF vehicle	11. <u>SECONDARY PRESSURE SENSOR</u>
				12. <u>POWER SUPPLY</u>
				13. <u>OIL PUMP ASSEMBLY</u>
				14. Forward clutch
				15. Control valve
				16. Parking components
5	Slips/Will Not Engage	Vehicle cannot be started from "R" position.	ON vehicle	1. <u>CVT FLUID LEVEL AND STATE</u>
				2. <u>CVT POSITION</u>
				3. <u>CAN COMMUNICATION LINE</u>
				4. <u>LINE PRESSURE TEST</u>
				5. <u>STALL TEST</u>
				6. <u>STEP MOTOR</u>
				7. <u>PRIMARY SPEED SENSOR</u>
				8. <u>SECONDARY SPEED SENSOR</u>
				9. <u>ACCELERATOR PEDAL POSITION SENSOR</u>
				10. <u>CVT FLUID TEMPERATURE SENSOR</u>
				11. <u>SECONDARY PRESSURE SENSOR</u>
				12. <u>POWER SUPPLY</u>
6		Does not lock up.	ON vehicle	13. <u>OIL PUMP ASSEMBLY</u>
				14. Reverse brake
				15. Control valve
				16. Parking components
				1. <u>CVT FLUID LEVEL AND STATE</u>
				2. <u>LINE PRESSURE TEST</u>
				3. <u>ENGINE SPEED SIGNAL</u>
				4. <u>PRIMARY SPEED SENSOR</u>
				5. <u>TORQUE CONVERTER CLUTCH SOLENOID VALVE</u>
				6. <u>CAN COMMUNICATION LINE</u>
				7. <u>STALL TEST</u>
				8. <u>STEP MOTOR</u>
				9. <u>PNP SWITCH</u>
				10. <u>LOCK-UP SELECT SOLENOID VALVE</u>
				11. <u>CVT FLUID TEMPERATURE SENSOR</u>

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7	Slips/Will Not Engage	Does not hold lockup condition.	OFF vehicle	12. <u>SECONDARY SPEED SENSOR</u>
				13. <u>SECONDARY PRESSURE SENSOR</u>
				14. <u>TORQUE CONVERTER</u>
				15. Oil pump assembly
			ON vehicle	16. Control valve
				1. <u>CVT FLUID LEVEL AND STATE</u>
				2. <u>LINE PRESSURE TEST</u>
				3. <u>ENGINE SPEED SIGNAL</u>
				4. <u>PRIMARY SPEED SENSOR</u>
				5. <u>TORQUE CONVERTER CLUTCH SOLENOID VALVE</u>
				6. <u>CAN COMMUNICATION LINE</u>
				7. <u>STALL TEST</u>
				8. <u>STEP MOTOR</u>
				9. <u>PNP SWITCH</u>
				10. <u>LOCK-UP SELECT SOLENOID VALVE</u>
				11. <u>CVT FLUID TEMPERATURE SENSOR</u>
			OFF vehicle	12. <u>SECONDARY SPEED SENSOR</u>
				13. <u>SECONDARY PRESSURE SENSOR</u>
				14. <u>TORQUE CONVERTER</u>
				15. Oil pump assembly
				16. Control valve
8	Slips/Will Not Engage	Lock up is not released.	ON vehicle	1. <u>CVT FLUID LEVEL AND STATE</u>
				2. <u>LINE PRESSURE TEST</u>
				3. <u>ENGINE SPEED SIGNAL</u>
				4. <u>PRIMARY SPEED SENSOR</u>
				5. <u>TORQUE CONVERTER CLUTCH SOLENOID VALVE</u>
				6. <u>CAN COMMUNICATION LINE</u>
				7. <u>STALL TEST</u>
			OFF vehicle	8. <u>TORQUE CONVERTER</u>
				9. Oil pump assembly
				10. Control valve
			ON vehicle	1. <u>CVT FLUID LEVEL AND STATE</u>
				2. <u>LINE PRESSURE TEST</u>
				3. <u>STALL TEST</u>
				4. <u>ACCELERATOR PEDAL POSITION SENSOR</u>
				5. <u>CAN COMMUNICATION LINE</u>
				6. <u>PNP SWITCH</u>
				7. <u>CVT POSITION</u>
				8. <u>STEP MOTOR</u>

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9		With selector lever in "D" position, acceleration is extremely poor.		<u>9. PRIMARY SPEED SENSOR</u>
				<u>10. SECONDARY SPEED SENSOR</u>
				<u>11. ACCELERATOR PEDAL POSITION SENSOR</u>
				<u>12. PRIMARY PRESSURE SENSOR</u>
				<u>13. SECONDARY PRESSURE SENSOR</u>
10	Slips/Will Not Engage	With selector lever in "R" position, acceleration is extremely poor.	OFF vehicle	<u>14. CVT FLUID TEMPERATURE SENSOR</u>
				<u>15. POWER SUPPLY</u>
				<u>16. TORQUE CONVERTER</u>
				17. Oil pump assembly
				18. Forward clutch
				19. Control valve
			ON vehicle	<u>1. CVT FLUID LEVEL AND STATE</u>
				<u>2. LINE PRESSURE TEST</u>
				<u>3. STALL TEST</u>
				<u>4. ACCELERATOR PEDAL POSITION SENSOR</u>
				<u>5. CAN COMMUNICATION LINE</u>
11		Slips at lock up.	OFF vehicle	<u>6. PNP SWITCH</u>
				<u>7. CVT POSITION</u>
				<u>8. STEP MOTOR</u>
				<u>9. PRIMARY SPEED SENSOR</u>
				<u>10. SECONDARY SPEED SENSOR</u>
			ON vehicle	<u>11. ACCELERATOR PEDAL POSITION SENSOR</u>
				<u>12. PRIMARY PRESSURE SENSOR</u>
				<u>13. SECONDARY PRESSURE SENSOR</u>
				<u>14. CVT FLUID TEMPERATURE SENSOR</u>
				<u>15. POWER SUPPLY</u>
			OFF vehicle	<u>16. TORQUE CONVERTER</u>
				17. Oil pump assembly
				18. Reverse brake
				19. Control valve
			ON vehicle	<u>1. CVT FLUID LEVEL AND STATE</u>
				<u>2. LINE PRESSURE TEST</u>
				<u>3. ENGINE SPEED SIGNAL</u>
				<u>4. PRIMARY SPEED SENSOR</u>
			ON vehicle	<u>5. TORQUE CONVERTER CLUTCH SOLENOID VALVE</u>
				<u>6. CAN COMMUNICATION LINE</u>
				<u>7. STALL TEST</u>
				<u>8. STEP MOTOR</u>

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12	Other	No creep at all.	OFF vehicle	9. <u>PNP SWITCH</u>
				10. <u>LOCK-UP SELECT SOLENOID VALVE</u>
				11. <u>CVT FLUID TEMPERATURE SENSOR</u>
				12. <u>SECONDARY SPEED SENSOR</u>
				13. <u>SECONDARY PRESSURE SENSOR</u>
				14. <u>TORQUE CONVERTER</u>
			ON vehicle	15. Oil pump assembly
				16. Control valve
				1. <u>CVT FLUID LEVEL AND STATE</u>
				2. <u>LINE PRESSURE TEST</u>
				3. <u>ACCELERATOR PEDAL POSITION SENSOR</u>
				4. <u>PNP SWITCH</u>
				5. <u>CAN COMMUNICATION LINE</u>
				6. <u>STALL TEST</u>
				7. <u>CVT POSITION</u>
				8. <u>STEP MOTOR</u>
				9. <u>PRIMARY SPEED SENSOR</u>
				10. <u>SECONDARY SPEED SENSOR</u>
				11. <u>ACCELERATOR PEDAL POSITION SENSOR</u>
				12. <u>CVT FLUID TEMPERATURE SENSOR</u>
				13. <u>PRIMARY PRESSURE SENSOR</u>
				14. <u>SECONDARY PRESSURE SENSOR</u>
13	Other	Vehicle cannot run in all	OFF vehicle	15. <u>POWER SUPPLY</u>
				16. <u>TORQUE CONVERTER</u>
				17. Oil pump assembly
				18. Gear system
				19. Forward clutch
			ON vehicle	20. Reverse brake
				21. Control valve
				1. <u>CVT FLUID LEVEL AND STATE</u>
				2. <u>LINE PRESSURE TEST</u>
				3. <u>PNP SWITCH</u>
				4. <u>STALL TEST</u>
				5. <u>CVT POSITION</u>
				6. <u>STEP MOTOR</u>
				7. <u>PRIMARY SPEED SENSOR</u>
				8. <u>SECONDARY SPEED SENSOR</u>
				9. <u>ACCELERATOR PEDAL POSITION SENSOR</u>
				10. <u>CVT FLUID TEMPERATURE SENSOR</u>

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		positions.		11. <u>SECONDARY PRESSURE SENSOR</u>
				12. <u>POWER SUPPLY</u>
			OFF vehicle	13. <u>TORQUE CONVERTER</u>
				14. Oil pump assembly
				15. Gear system
				16. Forward clutch
				17. Reverse brake
				18. Control valve
				19. Parking components
14	Other	With selector lever in "D" position, driving is not possible.	ON vehicle	1. <u>CVT FLUID LEVEL AND STATE</u>
				2. <u>LINE PRESSURE TEST</u>
				3. <u>PNP SWITCH</u>
				4. <u>STALL TEST</u>
				5. <u>CVT POSITION</u>
				6. <u>STEP MOTOR</u>
				7. <u>PRIMARY SPEED SENSOR</u>
				8. <u>SECONDARY SPEED SENSOR</u>
				9. <u>ACCELERATOR PEDAL POSITION SENSOR</u>
				10. <u>CVT FLUID TEMPERATURE SENSOR</u>
				11. <u>SECONDARY PRESSURE SENSOR</u>
				12. <u>POWER SUPPLY</u>
			OFF vehicle	13. <u>TORQUE CONVERTER</u>
				14. Oil pump assembly
				15. Gear system
				16. Forward clutch
				17. Control valve
				18. Parking components
15		With selector lever in "R" position, driving is not possible.	ON vehicle	1. <u>CVT FLUID LEVEL AND STATE</u>
				2. <u>LINE PRESSURE TEST</u>
				3. <u>PNP SWITCH</u>
				4. <u>STALL TEST</u>
				5. <u>CVT POSITION</u>
				6. <u>STEP MOTOR</u>
				7. <u>PRIMARY SPEED SENSOR</u>
				8. <u>SECONDARY SPEED SENSOR</u>
				9. <u>ACCELERATOR PEDAL POSITION SENSOR</u>
				10. <u>CVT FLUID TEMPERATURE SENSOR</u>
				11. <u>SECONDARY PRESSURE SENSOR</u>
				12. <u>POWER SUPPLY</u>

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			OFF vehicle	13. <u>TORQUE CONVERTER</u> 14. Oil pump assembly 15. Gear system 16. Reverse brake 17. Control valve 18. Parking components
16	Other	Judder occurs during lock up.	ON vehicle	1. <u>CVT FLUID LEVEL AND STATE</u> 2. <u>ENGINE SPEED SIGNAL</u> 3. <u>PRIMARY SPEED SENSOR</u> 4. <u>SECONDARY SPEED SENSOR</u> 5. <u>ACCELERATOR PEDAL POSITION SENSOR</u> 6. <u>CAN COMMUNICATION LINE</u> 7. <u>TORQUE CONVERTER CLUTCH SOLENOID VALVE</u>
			OFF vehicle	8. <u>TORQUE CONVERTER</u> 9. Control valve
17		Strange noise in "D" position.	ON vehicle	1. <u>CVT FLUID LEVEL AND STATE</u> 2. <u>ENGINE SPEED SIGNAL</u> 3. <u>CAN COMMUNICATION LINE</u>
			OFF vehicle	4. <u>TORQUE CONVERTER</u> 5. Oil pump assembly 6. Gear system 7. Forward clutch 8. Control valve 9. Bearing
18		Strange noise in "R" position.	ON vehicle	1. <u>CVT FLUID LEVEL AND STATE</u> 2. <u>ENGINE SPEED SIGNAL</u> 3. <u>CAN COMMUNICATION LINE</u>
			OFF vehicle	4. <u>TORQUE CONVERTER</u> 5. Oil pump assembly 6. Gear system 7. Reverse brake 8. Control valve
19		Strange noise in "N" position.	ON vehicle	1. <u>CVT FLUID LEVEL AND STATE</u> 2. <u>ENGINE SPEED SIGNAL</u> 3. <u>CAN COMMUNICATION LINE</u>
			OFF vehicle	4. <u>TORQUE CONVERTER</u> 5. Oil pump assembly 6. Gear system 7. Control valve

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20	Other	Vehicle does not decelerate by engine brake.	ON vehicle	1. <u>CVT FLUID LEVEL AND STATE</u> 2. <u>CVT POSITION</u> 3. <u>CAN COMMUNICATION LINE</u> 4. <u>STEP MOTOR</u> 5. <u>PRIMARY SPEED SENSOR</u> 6. <u>SECONDARY SPEED SENSOR</u> 7. <u>LINE PRESSURE TEST</u> 8. <u>ENGINE SPEED SIGNAL</u> 9. <u>ACCELERATOR PEDAL POSITION SENSOR</u>				
			OFF vehicle	10. <u>CONTROL VALVE</u>				
21		Maximum speed low.	ON vehicle	1. <u>CVT FLUID LEVEL AND STATE</u> 2. <u>LINE PRESSURE TEST</u> 3. <u>ACCELERATOR PEDAL POSITION SENSOR</u> 4. <u>CAN COMMUNICATION LINE</u> 5. <u>STALL TEST</u> 6. <u>STEP MOTOR</u> 7. <u>PRIMARY SPEED SENSOR</u> 8. <u>SECONDARY SPEED SENSOR</u> 9. <u>PRIMARY PRESSURE SENSOR</u> 10. <u>SECONDARY PRESSURE SENSOR</u> 11. <u>CVT FLUID TEMPERATURE SENSOR</u>				
				OFF vehicle	12. <u>TORQUE CONVERTER</u> 13. Oil pump assembly 14. Gear system 15. Forward clutch 16. Control valve			
					22	With selector lever in "P" position, vehicle does not enter parking condition or, with selector lever in another position, parking condition is not cancelled.	ON vehicle	1. <u>PNP SWITCH</u> 2. <u>CVT POSITION</u>
							OFF vehicle	3. <u>PARKING COMPONENTS</u>
					23	Vehicle runs with CVT in "P" position.	ON vehicle	1. <u>PNP SWITCH</u> 2. <u>CVT FLUID LEVEL AND STATE</u> 3. <u>CVT POSITION</u>
				OFF vehicle			4. <u>PARKING COMPONENTS</u> 5. Gear system	

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				6. Control valve	
24	Other	Vehicle runs with CVT in "N" position.	ON vehicle	1. <u>PNP SWITCH</u>	
				2. <u>CVT FLUID LEVEL AND STATE</u>	
				3. <u>CVT POSITION</u>	
			OFF vehicle	4. <u>GEAR SYSTEM</u>	
				5. Forward clutch	
				6. Reverse brake	
					7. Control valve
25		Other	Engine stall.	ON vehicle	1. <u>CVT FLUID LEVEL AND STATE</u>
					2. <u>ENGINE SPEED SIGNAL</u>
					3. <u>PRIMARY SPEED SENSOR</u>
					4. <u>TORQUE CONVERTER CLUTCH SOLENOID VALVE</u>
					5. <u>CAN COMMUNICATION LINE</u>
					6. <u>STALL TEST</u>
					7. <u>SECONDARY PRESSURE SENSOR</u>
OFF vehicle	8. <u>TORQUE CONVERTER</u>				
	9. Control valve				
26	Other		Engine stalls when selector lever shifted "N"->"D"or "R".	ON vehicle	1. <u>CVT FLUID LEVEL AND STATE</u>
					2. <u>ENGINE SPEED SIGNAL</u>
					3. <u>PRIMARY SPEED SENSOR</u>
					4. <u>TORQUE CONVERTER CLUTCH SOLENOID VALVE</u>
					5. <u>CAN COMMUNICATION LINE</u>
		6. <u>STALL TEST</u>			
		OFF vehicle	7. <u>TORQUE CONVERTER</u>		
		8. Control valve			
27		Other	Engine speed does not return to idle.	ON vehicle	1. <u>CVT FLUID LEVEL AND STATE</u>
					2. <u>ACCELERATOR PEDAL POSITION SENSOR</u>
					3. <u>SECONDARY SPEED SENSOR</u>
					4. <u>CAN COMMUNICATION LINE</u>
			OFF vehicle	5. <u>CONTROL VALVE</u>	
28			Other	CVT does not shift.	ON vehicle
	2. <u>CVT POSITION</u>				
	3. <u>LINE PRESSURE TEST</u>				
	4. <u>ENGINE SPEED SIGNAL</u>				
	5. <u>ACCELERATOR PEDAL POSITION SENSOR</u>				
	6. <u>CAN COMMUNICATION LINE</u>				
	7. <u>PRIMARY SPEED SENSOR</u>				
	8. <u>SECONDARY SPEED SENSOR</u>				

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				9. <u>STEP MOTOR</u>
			OFF vehicle	10. <u>CONTROL VALVE</u>
				11. Oil pump assembly
29	Other	Engine does not start in "N" or "P" position.	ON vehicle	1. Ignition switch and starter. See <u>COMPONENT DIAGNOSIS</u> and <u>BASIC INSPECTION</u> .
				2. <u>CVT POSITION</u>
				3. <u>PNP SWITCH</u>
30		Engine starts in positions other than "N" or "P".	ON vehicle	1. Ignition switch and starter. See <u>COMPONENT DIAGNOSIS</u> and <u>BASIC INSPECTION</u> .
				2. <u>CVT POSITION</u>
				3. <u>PNP SWITCH</u>

PRECAUTION

PRECAUTIONS

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

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

Information necessary to service the system safely is included in **SRS AIRBAG** and **SEAT BELTS** of this article.

WARNING:

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

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.

NOTE:

- This Procedure is applied only to models with Intelligent Key system and NVIS/IVIS (NISSAN/INFINITI VEHICLE IMMOBILIZER SYSTEM-NATS).
- Remove and install all control units after disconnecting both battery cables with the ignition knob in the "LOCK" position.
- Always use CONSULT-II to perform self-diagnosis as a part of each function inspection after finishing work. If DTC is detected, perform trouble diagnosis according to self-diagnostic results.

For models equipped with the Intelligent Key system and NVIS/IVIS, an electrically controlled steering lock mechanism is adopted on the key cylinder.

For this reason, if the battery is disconnected or if the battery is discharged, the steering wheel will lock and steering wheel rotation will become impossible.

If steering wheel rotation is required when battery power is interrupted, follow the procedure below before starting the repair operation.

OPERATION PROCEDURE

1. Connect both battery cables.

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

2. Use the Intelligent Key or mechanical key to turn the ignition switch to the "ACC" position. At this time, the steering lock will be released.
3. Disconnect both battery cables. The steering lock will remain released and the steering wheel can be rotated.
4. Perform the necessary repair operation.
5. When the repair work is completed, return the ignition switch to the "LOCK" position before connecting the battery cables. (At this time, the steering lock mechanism will engage.)
6. Perform a self-diagnosis check of all control units using CONSULT-II.

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

The ECM has an on board diagnostic system. It will light up the malfunction indicator 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 EVAP system or fuel injection system, etc.
- Be sure to erase the unnecessary malfunction information (repairs completed) from the TCM and ECM before returning the vehicle to the customer.

Precaution for TCM and CVT Assembly Replacement

CAUTION:

- Check if new data (Unit ID) are entered correctly after replacing CVT assembly and erasing data in TCM. (Connect CONSULT-III, and then turn ignition switch OFF.)
- When replacing CVT assembly or TCM, refer to below and erase the EEPROM in the TCM if necessary.

EEPROM ERASING PATTERNS

EEPROM ERASING PATTERNS

CVT assembly	TCM	Erasing EEPROM in TCM	Remarks
Replaced	Replaced	Not required	Not required because the EEPROM in the TCM is in the default state. (CVT assembly must be replaced first.)
Not replaced	Replaced	Not required	Not required because the EEPROM in the TCM is in the default state.
Replaced	Not replaced	Required	Required because data has been written in the EEPROM in the TCM and because the TCM cannot write data from the ROM assembly in the transmission.

Removal and Installation Procedure for CVT Unit Connector

REMOVAL

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

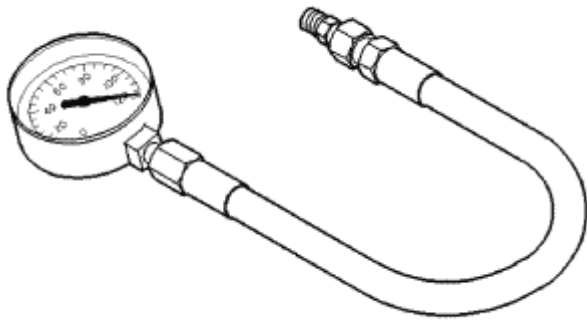


Fig. 42: Rotating Bayonet Ring

INSTALLATION

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

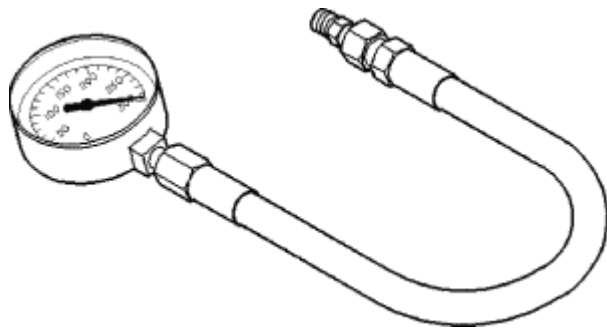


Fig. 43: Rotating Bayonet Ring

2. Rotate bayonet ring clockwise until CVT unit harness connector terminal body marking is aligned with the bayonet ring marking (linear slit) as shown.

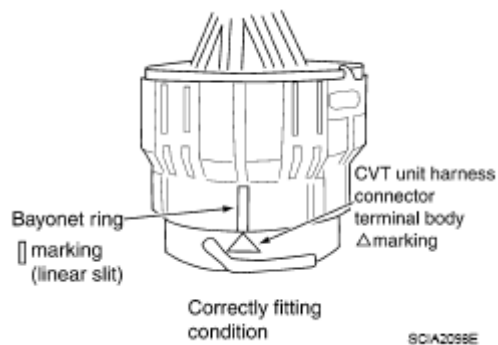


Fig. 44: Identifying Bayonet Ring - Correctly Fitting Condition

CAUTION: • Securely align delta marking on CVT unit harness connector terminal

body with bayonet ring slit. Then, be careful not to make a half fit condition as shown in the figure.

- Do not mistake the slit of bayonet ring for other dent portion.

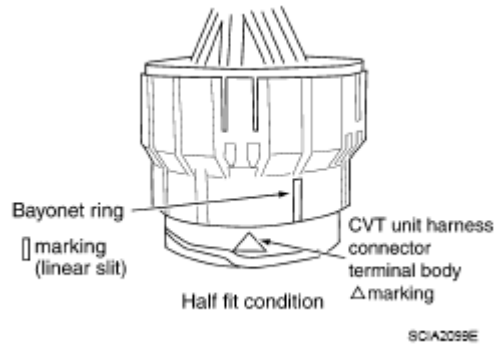


Fig. 45: Identifying Bayonet Ring - Half Fit Condition

Precaution

NOTE: If any malfunction occurs in the RE0F09A model transaxle, replace the entire transaxle assembly.

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

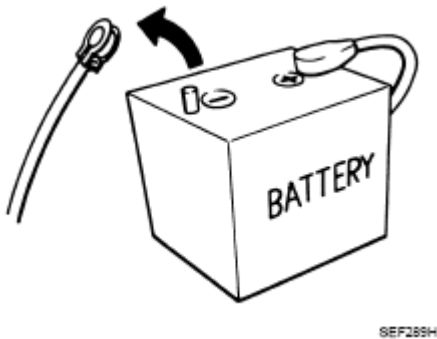


Fig. 46: Identifying Negative Battery Terminal

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

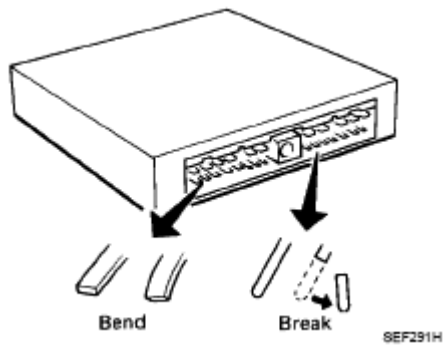


Fig. 47: Locating Damage Pin Terminals

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

- Before replacing TCM, perform TCM input/output signal inspection and make sure whether TCM functions properly or not. "REFERENCE VALUE".

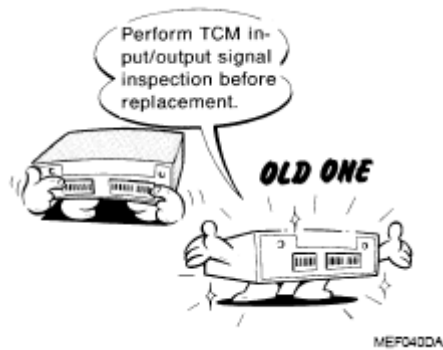


Fig. 48: TCM Input/Output Signal

- After performing each TROUBLE DIAGNOSIS, perform "DTC Confirmation Procedure".

If the repair is completed the DTC should not be displayed in the "DTC Confirmation Procedure".

- Always use the specified brand of CVT fluid. Refer to "GENERAL SPECIFICATION".
- Use lint-free paper, not cloth rags, during work.
- After replacing the CVT fluid, dispose of the waste oil using the methods prescribed by law, ordinance, etc.



Fig. 49: Malfunction Indicator Light

Service Notice or Precaution

CVT FLUID COOLER SERVICE

If CVT fluid contains friction material (clutches, brakes, etc.), or if a CVT is replaced, inspect and clean the CVT fluid cooler mounted in the radiator or replace the radiator. Flush cooler lines using cleaning solvent and compressed air after repair. For CVT fluid cooler cleaning procedure, refer to "**CLEANING**". For radiator replacement, refer to "**REMOVAL AND INSTALLATION**".

OBD-II SELF-DIAGNOSIS

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

Always perform the procedure on "DIAGNOSIS DESCRIPTION" to complete the repair and avoid unnecessary blinking of the MIL.

For details of OBD-II, refer to "**DIAGNOSIS DESCRIPTION**".

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

PREPARATION

PREPARATION

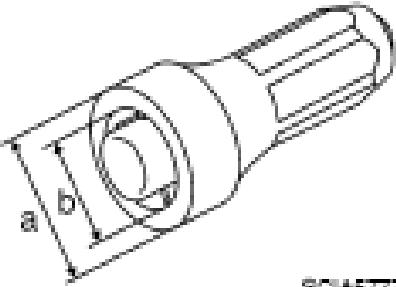
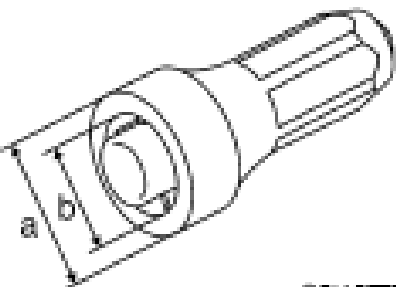
Special Service Tool

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

SPECIAL SERVICE TOOL

2007 Nissan Altima

2007 DRIVELINE/AXLES Automatic Transmission (RE0F09B) - Altima

Tool number (Kent-Moore No.) Tool name	Description
- (OTC3492) Oil pressure gauge set  8C1A7531E	Measuring line pressure
- (J-47244) Drift a: 65.83 mm (2.59 in) dia. b: 53.85 mm (2.12 in) dia.  8C1A5777E	Installing differential side oil seal • Transaxle case side (left)
ST33400001 (J-47005) Drift a: 69.85 mm (2.75 in) dia. b: 49.53 mm (1.95 in) dia.  8C1A5777E	Installing differential side oil seal • Converter housing side (right)

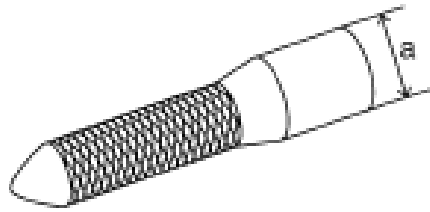
Commercial Service Tool

COMMERCIAL SERVICE TOOL

Tool number Tool name	Description
31197CA000 Drive plate location guide a: 14 mm (0.55 in) dia.	Installing transaxle assembly

2007 Nissan Altima

2007 DRIVELINE/AXLES Automatic Transmission (RE0F09B) - Altima



SCIA2013E

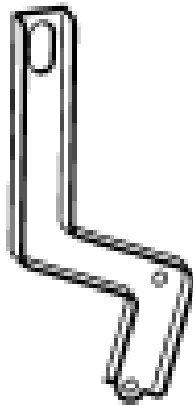
31093CA000
Slinger



SCIA2014E

Removing and installing transaxle
assembly

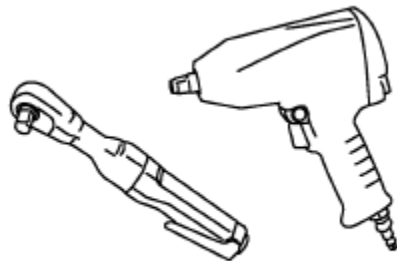
31092CA000
Slinger



SCIA2015E

Removing and installing transaxle
assembly

Power tool



PSIC0150E

Loosening nuts and bolts

ON-VEHICLE MAINTENANCE

CVT FLUID

Inspection

CHECKING CVT FLUID

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

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

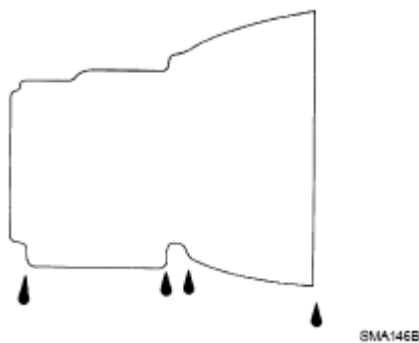


Fig. 50: Checking Fluid Leakage

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

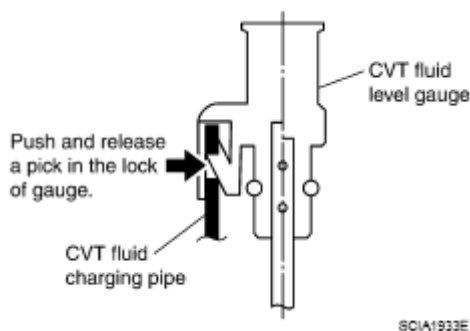


Fig. 51: Identifying CVT Fluid Level Gauge And CVT Fluid Charging Pipe

7. Wipe fluid off the CVT fluid level gauge. Insert the CVT fluid level gauge rotating 180° from the originally installed position, then securely push the CVT fluid level gauge until it meets the top end of the CVT fluid charging pipe.

CAUTION: When wiping away the CVT fluid level gauge, always use lint-free paper, not a cloth rag.

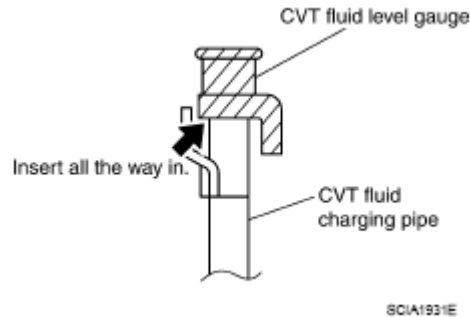


Fig. 52: Identifying CVT Fluid Level Gauge And CVT Fluid Charging Pipe

8. Place the selector lever in "P" or "N" and make sure the fluid level is within the specified range.

CAUTION: When reinstalling CVT fluid level gauge, insert it into the CVT fluid charging pipe and rotate it to the original installation position until it is securely locked.

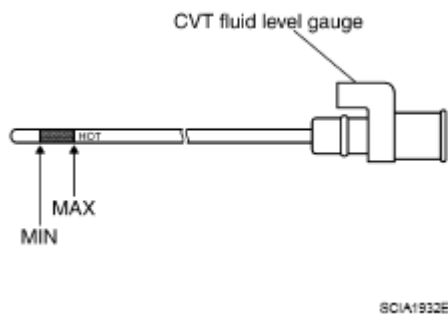


Fig. 53: Identifying CVT Fluid Level Gauge

CVT FLUID CONDITION

Check CVT fluid condition.

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

FLUID STATUS REFERENCE

Fluid status	Conceivable cause	Required operation
Varnished (viscous)		Replace the CVT fluid and check the CVT main unit

varnish state)	Clutch, brake scorched	and the vehicle for malfunctions (wire harnesses, cooler pipes, etc.)
Milky white or cloudy	Water in the fluid	Replace the CVT fluid and check for places where water is getting in.
Large amount of metal powder mixed in	Unusual wear of sliding parts within CVT	Replace the CVT fluid and check for improper operation of the CVT.



Fig. 54: Checking Fluid

Changing

1. Warm up CVT fluid by driving the vehicle for 10 minutes.
 - <=: Vehicle front
 - Radiator (2)
 - CVT fluid cooler hose (inlet side) (3)
 - Transaxle assembly (4)
2. Drain CVT fluid from CVT fluid cooler hose (outlet side) (1) and refill with new CVT fluid at CVT fluid charging pipe with the engine running at idle speed.
3. Refill until new CVT fluid comes out from CVT fluid cooler hose (outlet side) (1).

About 30 to 50% extra fluid will be required for this procedure.

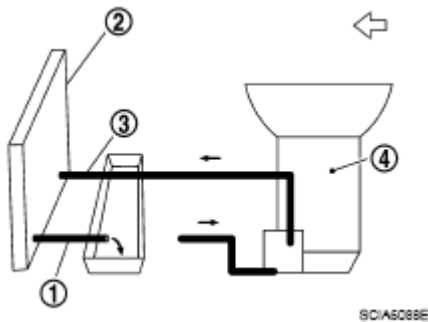


Fig. 55: Identifying CVT Fluid Cooler Hose (Outlet Side), CVT Fluid Cooler Hose (Inlet Side) And Radiator

CVT fluid:**Genuine NISSAN CVT Fluid NS-2****Fluid capacity:****Approx. 10.2 (10-6/8 US qt, 9 Imp qt)****CAUTION:**

- **Use only Genuine NISSAN CVT Fluid NS-2. Do not mix with other fluid.**
- **Using CVT fluid other than Genuine NISSAN CVT Fluid NS-2 will deteriorate in driveability and CVT durability, and may damage the CVT, which is not covered by the warranty.**
- **When filling CVT fluid, take care not to scatter heat generating parts such as exhaust.**
- **Delete CVT fluid deterioration date with CONSULT-III after changing CVT fluid. Refer to "CONSULT-III FUNCTION (TRANSMISSION)".**

4. Check fluid level and condition. Refer to "INSPECTION".

FLUID COOLER CLEANING**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 become deposit 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.

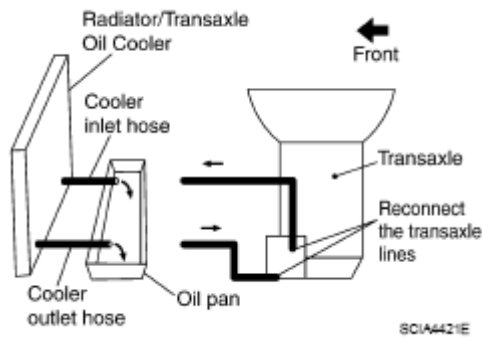


Fig. 56: CVT Fluid Cooler Cleaning Procedure (1 Of 3)

5. Insert the extension adapter hose of a can of Transmission Cooler Cleaner (Nissan P/N 999MP-AM006) 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.**
- **Do not breath vapors or spray mist.**

6. Hold the hose and can as high as possible and spray Transmission Cooler Cleaner in a continuous stream into the cooler outlet hose until CVT fluid flows out of the cooler inlet hose for 5 seconds.
7. Insert the tip of an air gun into the end of the cooler outlet hose.
8. Wrap a shop rag around the air gun tip and end of the cooler outlet hose.

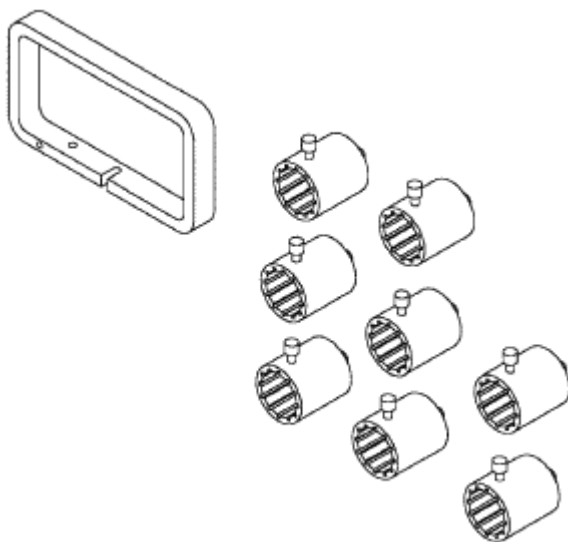


Fig. 57: CVT Fluid Cooler Cleaning Procedure (2 Of 3)

9. Blow compressed air regulated to 5 to 9 kg/cm² (70 to 130 psi) through the cooler outlet hose for 10 seconds to force out any remaining CVT fluid.
10. Repeat steps 5 through 9 three additional times.
11. Position an oil pan under the banjo bolts that connect the CVT fluid cooler steel lines to the transaxle.
12. Remove the banjo bolts.
13. Flush each steel line from the cooler side back toward the transaxle by spraying Transmission Cooler Cleaner in a continuous stream for 5 seconds.
14. Blow compressed air regulated to 5 to 9 kg/cm² (70 to 130 psi) through each steel line from the cooler side back toward the transaxle for 10 seconds to force out any remaining CVT fluid.
15. Ensure all debris is removed from the steel cooler lines.
16. Ensure all debris is removed from the banjo bolts and fittings.

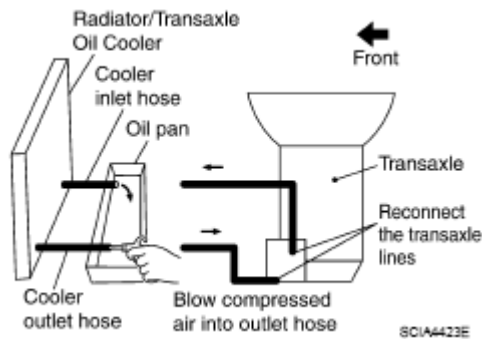


Fig. 58: CVT Fluid Cooler Cleaning Procedure (3 Of 3)

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 (Nissan P/N 999MP-AM006) 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.
- Do not breath vapors or spray mist.

4. 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.

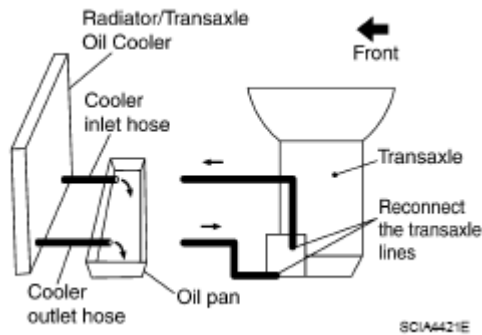


Fig. 59: CVT Fluid Cooler Diagnosis Procedure (1 Of 3)

5. Tie a common white, basket-type coffee filter to the end of the cooler inlet hose.

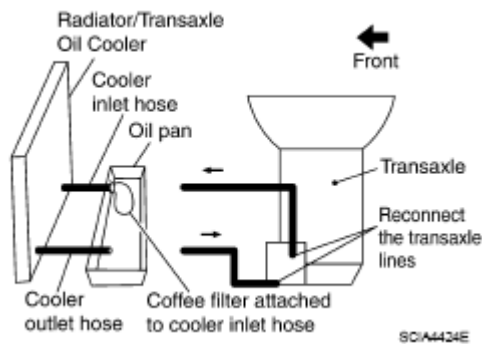


Fig. 60: CVT Fluid Cooler Diagnosis Procedure (2 Of 3)

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

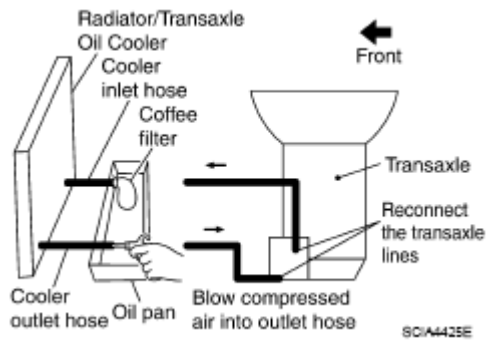


Fig. 61: CVT Fluid Cooler Diagnosis Procedure (3 Of 3)

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 re-used and the procedure is ended.



Fig. 62: Identifying Debris And Coffee Filter

- 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.

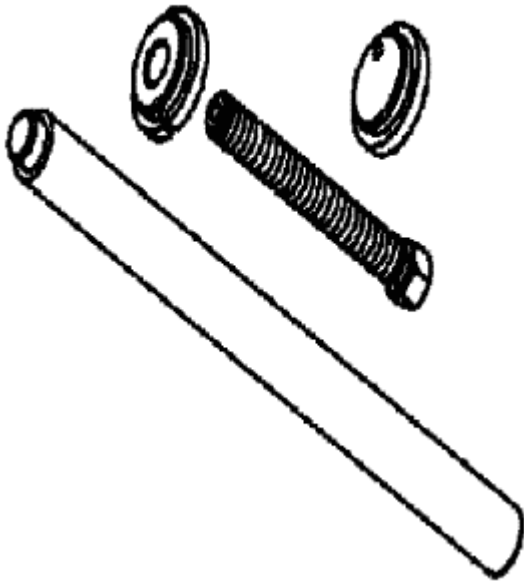


Fig. 63: Identifying Debris Over Size Specification

CVT FLUID COOLER FINAL INSPECTION

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

STALL TEST

Inspection and Judgment

INSPECTION

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

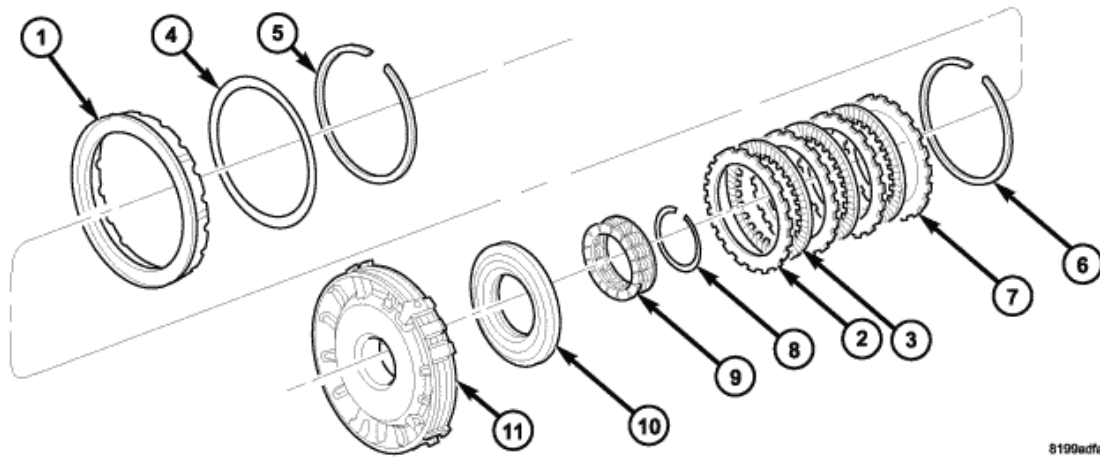


Fig. 64: Checking A/T Fluid Temperature

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

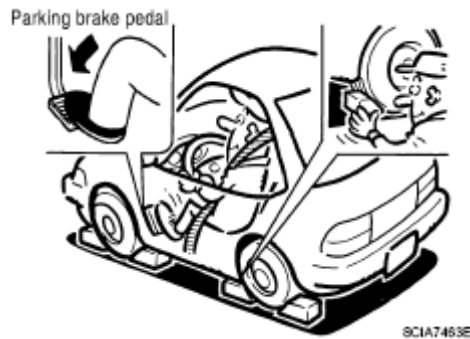


Fig. 65: Engaging Parking Brake

6. While holding down the foot brake, gradually press down the accelerator pedal.
7. Quickly read off the stall speed, and then quickly remove your foot from the accelerator pedal.

CAUTION: Do not hold down the accelerator pedal for more than 5 seconds during this test.

Stall speed: 2,700-3,250 RPM

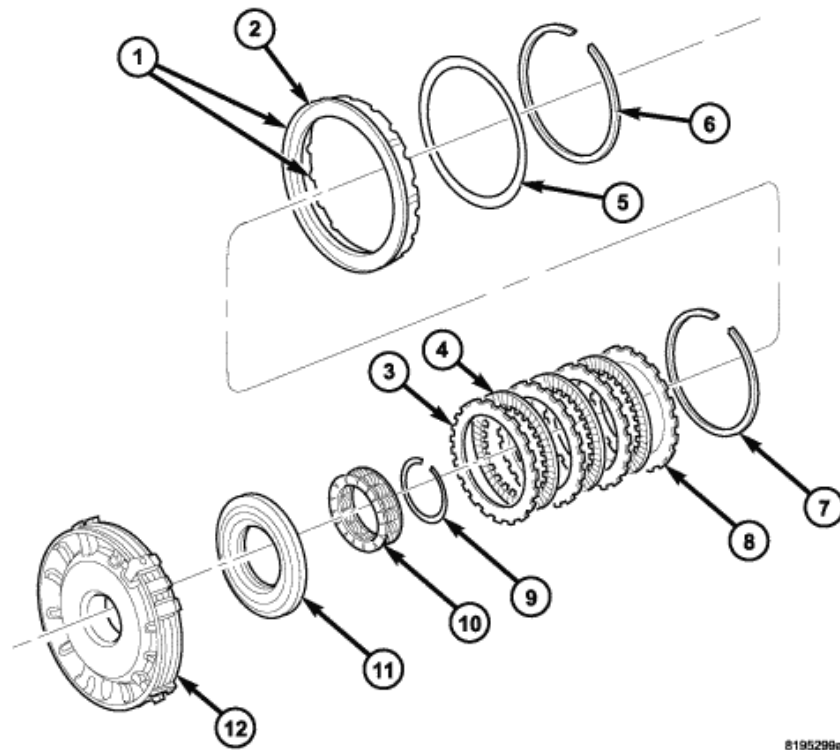


Fig. 66: Identifying Accelerator Pedal Position

8. Move the selector lever to the "N" position.
9. Cool down the CVT fluid.

CAUTION: Run the engine at idle for at least 1 minute.

10. Repeat steps 6 through 9 with selector lever in "R" position.

JUDGMENT

SELECTOR LEVER POSITION JUDGMENT CHART

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

O: Stall speed within standard value position.

H: Stall speed is higher than standard value.

L: Stall speed is lower than standard value.

LINE PRESSURE TEST

Inspection and Judgment

INSPECTION

Line Pressure Test Port

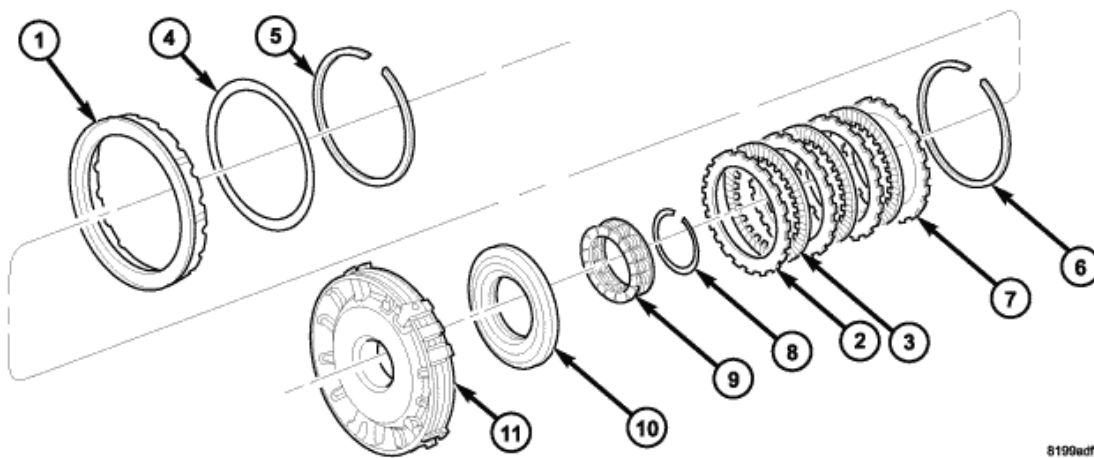


Fig. 67: Identifying Line Pressure Test Port

Line Pressure Test Procedure

1. Inspect the amount of engine oil and replenish if necessary.
2. Drive the car for about 10 minutes to warm it up so that the CVT fluid reaches in the range of 50 to 80°C (122 to 176°F), then inspect the amount of CVT fluid and replenish if necessary.

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

3. After warming up CVT, remove the oil pressure detection plug and install the oil pressure gauge [special service tool: - (OTC3492)].

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

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

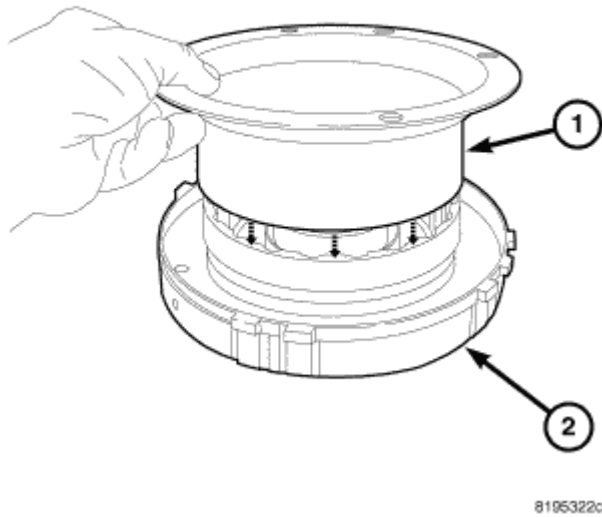


Fig. 68: Engaging Parking Brake

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

CAUTION:

- Keep the brake pedal pressed all the way down during measurement.
- When measuring the line pressure at the stall speed, refer to "STALL TEST".

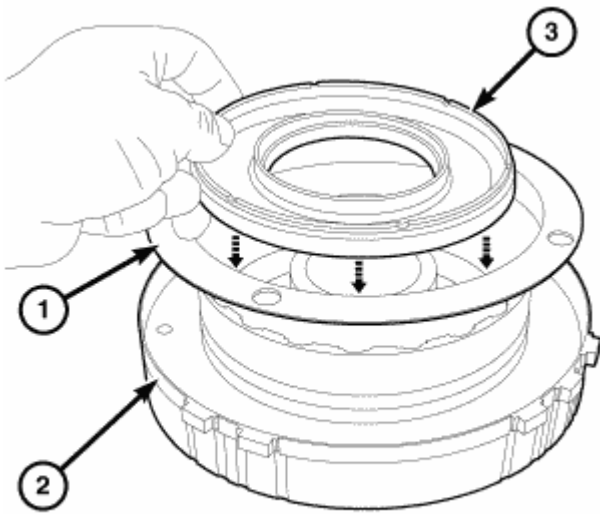
6. After the measurements are complete, install the oil pressure detection plug and tighten to the specified torque below.

: 7.5 N.m (0.77 kg-m, 66 in-lb)

CAUTION:

- Do not reuse O-ring.
- Apply CVT fluid to O-ring.

Line Pressure



8195325e

Fig. 69: Checking Stall Revolution**JUDGMENT POSSIBLE CAUSE**

Engine speed	Line pressure kPa (kg/cm ² , psi)
	"R", "D" positions
At idle	750 (7.65, 108.8)
At stall	5,700 (58.14, 826.5) ⁽¹⁾
(1) Reference values	

JUDGMENT**JUDGMENT POSSIBLE CAUSE**

Judgment		Possible cause
Idle speed	Low for all positions ("P", "R", "N", "D")	Possible causes include malfunctions in the pressure supply system and low oil pump output. For example • Oil pump wear • Pressure regulator valve or plug sticking or spring fatigue • Oil strainer => oil pump => pressure regulator valve passage oil leak • Engine idle speed too low
	Only low for a specific position	Possible causes include an oil pressure leak in a passage or device related to the position after the pressure is distributed by the manual valve.
		Possible causes include a sensor malfunction or malfunction in the line pressure adjustment function.

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

ROAD TEST

Description

DESCRIPTION

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

1. "Check Before Engine Is Started" **ROAD TEST**.
2. "Check at Idle" **CHECK AT IDLE**.
3. "Cruise Test" **CRUISE TEST**.

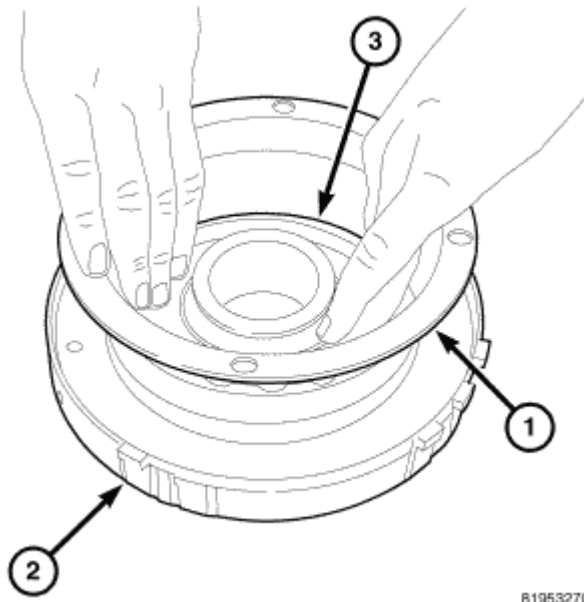


Fig. 70: Road Test Procedure - Screen Display

- Before road test, familiarize yourself with all test procedures and items to check.
- Perform tests on all items until specified symptom is found. Troubleshoot items which check out No Good after road test.

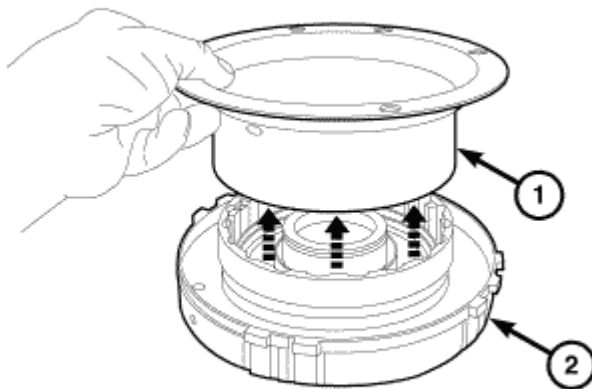


Fig. 71: Checking Road Test Items Before Road Test

CONSULT-III SETTING PROCEDURE

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

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

Check before Engine Is Started

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

Does shift position indicator come on for about 2 seconds?

YES:

1. Turn ignition switch OFF.
2. Perform self-diagnosis and note NG items.

Refer to "**CONSULT-III FUNCTION (TRANSMISSION)**".

3. Go to "**CHECK AT IDLE**".

NO: Stop "Road Test". Refer to "**SYMPTOM TABLE**".

Check at Idle

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

Is engine started?

YES: GO TO 2.

NO: Stop "Road Test". Refer to "**SYMPTOM TABLE**".

2. CHECK STARTING THE ENGINE

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

Is engine started?

YES: Stop "Road Test". Refer to "**SYMPTOM TABLE**".

NO: GO TO 3.

3. CHECK "P" POSITION FUNCTION

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

Does vehicle move when it is pushed forward or backward?

YES: Refer to "**SYMPTOM TABLE**". Continue "**ROAD TEST**".

NO: GO TO 4.

4. CHECK "N" POSITION FUNCTION

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

Does vehicle move forward or backward?

YES: Refer to "**SYMPTOM TABLE**". Continue "**ROAD TEST**".

NO: GO TO 5.

5. CHECK SHIFT SHOCK

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

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

YES: Refer to "**SYMPTOM TABLE**". Continue "**ROAD TEST**".

NO: GO TO 6.

6. CHECK "R" POSITION FUNCTION

Release foot brake for several seconds.

Does vehicle creep backward when foot brake is released?

YES: GO TO 7.

NO: Refer to "**SYMPTOM TABLE**". Continue "**ROAD TEST**".

7. CHECK "D" POSITION FUNCTION

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

Does vehicle creep forward in all positions?

YES: Go to "**CRUISE TEST**".

NO: Stop "Road Test". Refer to "**SYMPTOM TABLE**".

Cruise Test

1. CHECK VEHICLE SPEED WHEN SHIFTING GEARS-PART 1

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

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

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

Read vehicle speed and engine speed. refer to "VEHICLE SPEED WHEN SHIFTING GEARS**".**

OK or NG

OK: GO TO 2.

NG: Refer to "**SYMPTOM TABLE**". Continue "**ROAD TEST**".

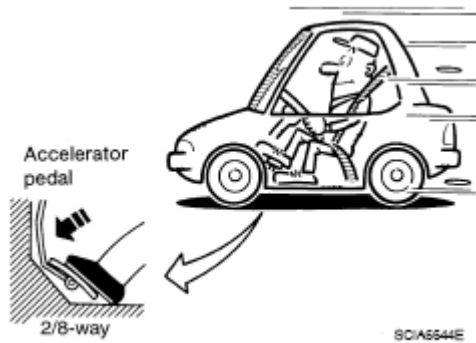


Fig. 72: Depressing Accelerator Pedal Constantly

2. CHECK VEHICLE SPEED WHEN SHIFTING GEARS-PART 2

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

Read vehicle speed and engine speed. refer to "VEHICLE SPEED WHEN SHIFTING GEARS".

OK or NG

OK: GO TO 3.

NG: Refer to "SYMPTOM TABLE". Continue "ROAD TEST".

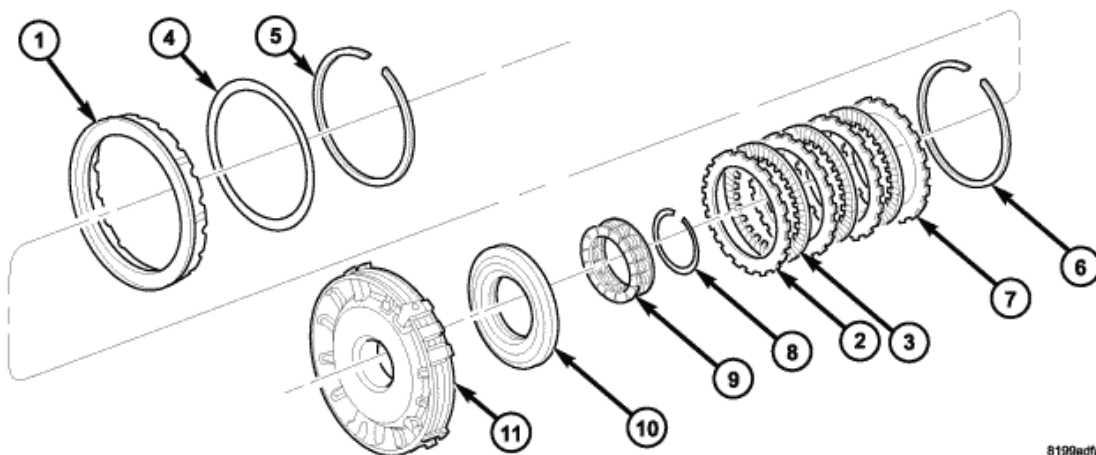


Fig. 73: Accelerator Pedal Fully Depressed

3. CHECK MANUAL MODE FUNCTION

Move to manual mode from "D" position.

Does it switch to manual mode?

YES: GO TO 4.

NO: Refer to "**SYMPTOM TABLE**". Continue "**ROAD TEST**".

4. CHECK SHIFT-UP FUNCTION

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

Read the gear position. refer to "**CONSULT-III FUNCTION (TRANSMISSION)**".

Is up shifting correctly performed?

YES: GO TO 5.

NO: Refer to "**SYMPTOM TABLE**". Continue "**ROAD TEST**".

5. CHECK SHIFT-DOWN FUNCTION

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

Read the gear position. refer to "**CONSULT-III FUNCTION (TRANSMISSION)**".

Is downshifting correctly performed?

YES: GO TO 6.

NO: Refer to "**SYMPTOM TABLE**". Continue "**ROAD TEST**".

6. CHECK ENGINE BRAKE FUNCTION

Check engine brake.

Does engine braking effectively reduce speed in M1 position?

YES:

1. Stop the vehicle.
2. Perform self-diagnosis. Refer to "**CONSULT-III FUNCTION (TRANSMISSION)**".

NO: Refer to "**SYMPTOM TABLE**". then continue trouble diagnosis.

CVT POSITION

Inspection and Adjustment

INSPECTION

1. Place selector lever in "P" position, and turn ignition switch ON (engine stop).
2. Make sure that selector lever can be shifted to other than "P" position when brake pedal is depressed.

Also make sure that selector lever can be shifted from "P" position only when brake pedal is depressed.

3. Move the selector lever and check for excessive effort, sticking, noise or rattle.
4. Confirm the selector lever stops at each position with the feel of engagement when it is moved through all the positions. Check that the actual position of the selector lever matches the position shown by the shift position indicator and the manual lever on the transaxle.
5. The method of operating the selector lever to individual positions correctly should be as shown.
6. When selector button is pressed in "P", "R", or "N" position without applying forward/backward force to selector lever, check button operation for sticking.
7. Confirm the back-up lamps illuminate only when selector lever is placed in the "R" position. Confirm the back-up lamps do not illuminate when the selector lever is pushed toward the "R" position when in the "P" or "N" position.

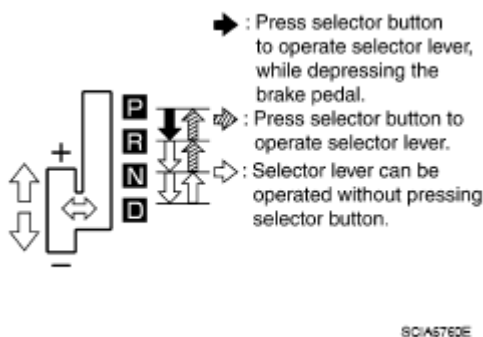


Fig. 74: Identifying Selector Lever Matches Position

8. Confirm the engine can only be started with the selector lever in the "P" and "N" positions.
9. Make sure transaxle is locked completely in "P" position.
10. When selector lever is set to manual shift gate, make sure that manual mode is displayed on combination meter.

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

ADJUSTMENT

CAUTION: Apply parking brake before adjustment.

1. Loosen the control cable nut.
2. Place the manual lever and the selector lever in "P" position.
3. Tighten control cable nut to specified torque.

Control cable nut: Refer to "EXPLODED VIEW".

CAUTION: Secure the manual lever when tightening control cable nut. Make sure the manual lever stays in the "P" position.

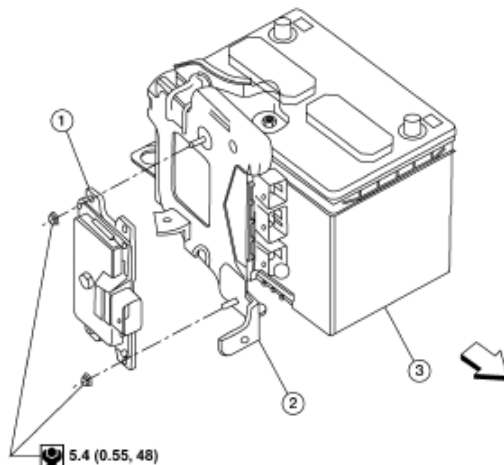
4. Check the operation of the CVT.

ON-VEHICLE REPAIR

TRANSMISSION CONTROL MODULE

Exploded View

Symbol	Description
	N·m (kg-m, ft-lb)
	N·m (kg-m, in-lb)
	Always replace after disassembly.



ALDIA0033GB

1. TCM

2. Bracket

3. Battery

⇐: Front

Fig. 75: Identifying Transmission Control Module Components With Torque Specification

Removal and Installation

REMOVAL

1. Disconnect the battery negative terminal. Refer to "REMOVAL AND INSTALLATION".
2. Remove the fresh air intake tube (upper) "REMOVAL AND INSTALLATION".
3. Disconnect the TCM harness connector.
4. Remove the TCM (1) from the bracket (2).

- ⇐: Front

- Battery (3)

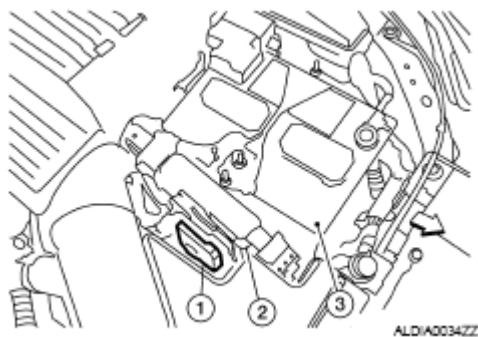


Fig. 76: Identifying TCM And Bracket

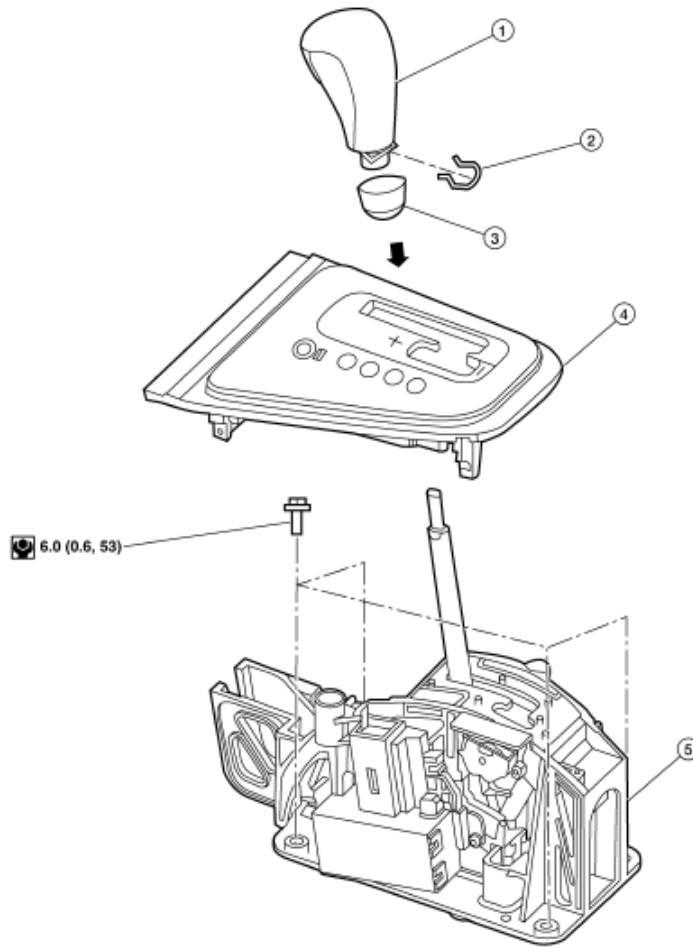
INSTALLATION

Installation is in the reverse order of removal.

CONTROL DEVICE

Exploded View

Symbol	Description
	N·m (kg-m, ft-lb)
	N·m (kg-m, in-lb)
	Always replace after disassembly.



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- | | | |
|----------------------------------|----------------------------|---------------|
| 1. Control lever knob | 2. Lock pin | 3. Knob cover |
| 4. Control device selector plate | 5. Control device assembly | |

Fig. 77: Identifying Control Device Assembly Components With Torque Specification

Removal and Installation

REMOVAL

1. Remove the center console assembly. Refer to "**DISASSEMBLY AND ASSEMBLY**".
2. Disconnect the control cable from the control device assembly.
3. Disconnect the CVT device harness connector from the control device assembly.
4. Remove the control device assembly bolts and the control device assembly.

INSTALLATION

Installation is in the reverse order of removal.

- When installing the control cable to the control device assembly, make sure that the control cable is fully pressed in with the ribbed surface facing upward.
- After installation is completed, adjust and check CVT position. Refer to "**INSPECTION AND ADJUSTMENT**".

CONTROL CABLE

Exploded View

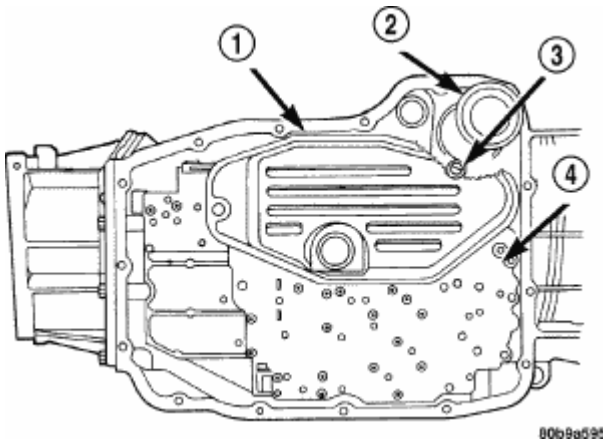


Fig. 78: Identifying Control Cable Components With Torque Specifications

Removal and Installation

REMOVAL

1. Shift control lever to "P".
2. Remove the air filter assembly. Refer to "**REMOVAL AND INSTALLATION**".
3. Remove the control cable nut and control cable from the manual lever.
4. Remove the lock plate and the control cable from the bracket.
5. Remove the center console. Refer to "**DISASSEMBLY AND ASSEMBLY**".
6. Remove the bracket covering the retainer grommet.
7. Remove the retainer grommet bolts and the retainer grommet.
8. Remove the control cable from the control device assembly.
9. Remove the control cable from the vehicle.

INSTALLATION

Installation is in the reverse order of removal.

- When installing the control cable to the control device assembly, make sure that the control cable socket is fully pressed into the control device assembly, and the control cable end is fully pressed in with the

ribbed surface facing upward.

- After installation is complete, adjust and check the CVT position. Refer to "**INSPECTION AND ADJUSTMENT**".

AIR BREATHER HOSE

Exploded View

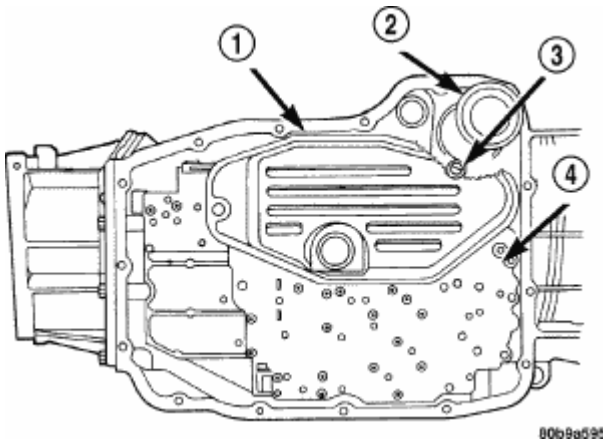


Fig. 79: Identifying Air Breather Hose Components With Torque Specification

Removal and Installation

CAUTION:

- Install air breather hose with paint mark facing front.
- Insert air breather hose onto air breather tube until overlap area reaches the spool.
- Install air breather hose to heater pipe and air cleaner case by fully inserting the clip.
- Make sure there are no pinched or restricted areas on air breather hose caused by bending or winding when installing it.

DIFFERENTIAL SIDE OIL SEAL

Exploded View

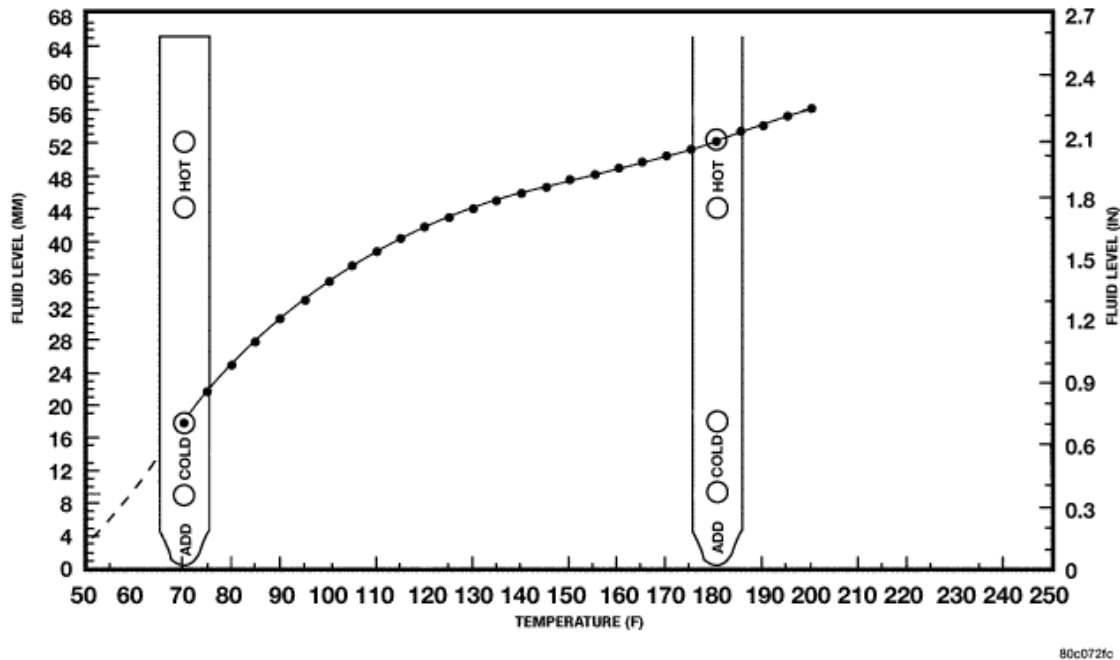


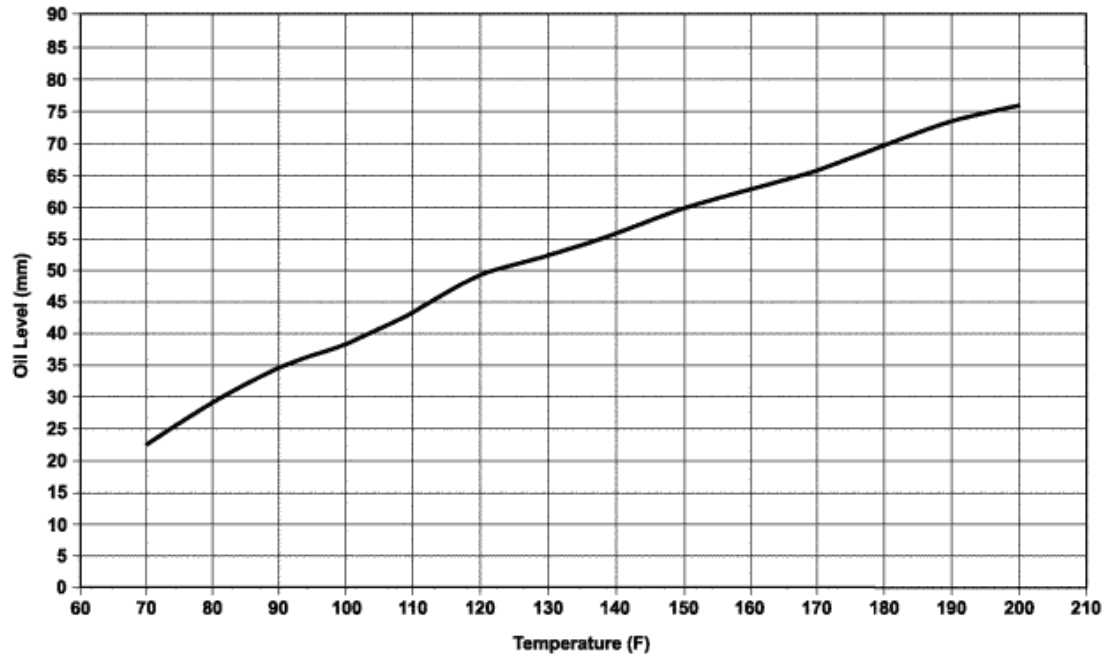
Fig. 80: Identifying Differential Side Oil Seal

Removal and Installation

REMOVAL

1. Remove drive shaft assembly. Refer to "**REMOVAL AND INSTALLATION (LEFT SIDE)**" and "**REMOVAL AND INSTALLATION (RIGHT SIDE)**".
2. Remove the differential side oil seal using suitable tool

CAUTION: Do not scratch transaxle case or converter housing.



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Fig. 81: Removing Differential Side Oil Seal**INSTALLATION**

1. Drive the new differential side oil seal into the transaxle case side (B) and converter housing side (C) until it is flush using suitable tool.

Dimension A: 0 ± 0.5 (0 ± 0.02)**CAUTION:**

- Do not reuse differential side oil seals.
- Apply specified NISSAN CVT fluid to side oil seals.

2. Install drive shaft assembly. Refer to "**REMOVAL AND INSTALLATION (LEFT SIDE)**" and "**REMOVAL AND INSTALLATION (RIGHT SIDE)**".
3. Check CVT fluid level. Refer to "**INSPECTION**".

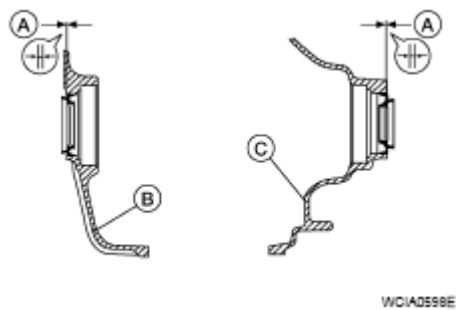


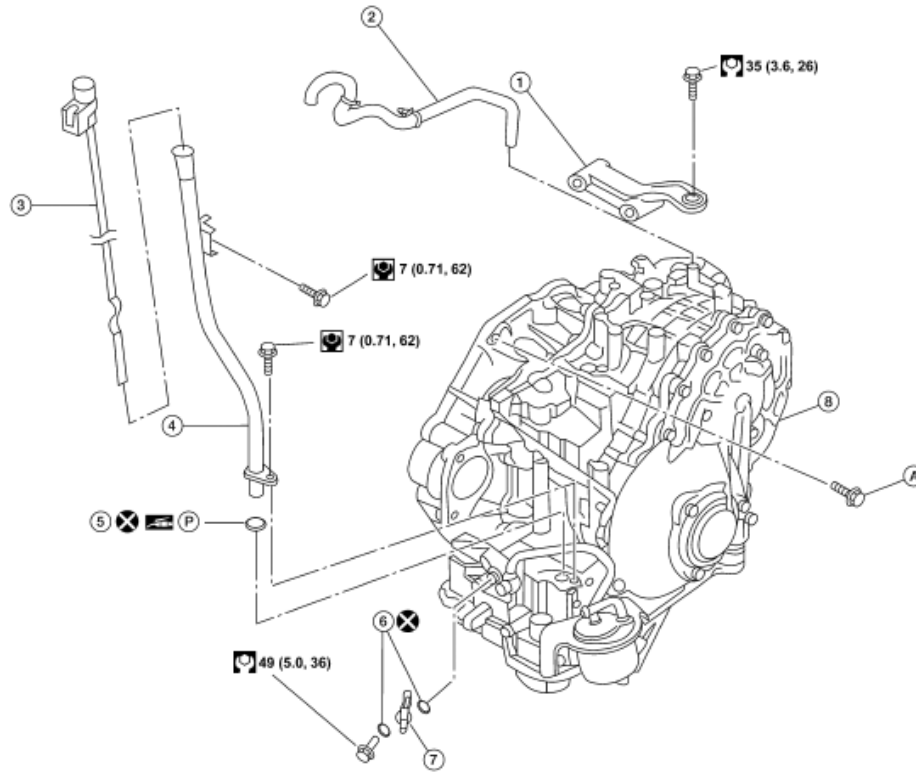
Fig. 82: Identifying Converter Housing Side Dimension

REMOVAL AND INSTALLATION

TRANSAXLE ASSEMBLY

Exploded View

Symbol	Description
	N·m (kg-m, ft-lb)
	N·m (kg-m, in-lb)
	Always replace after disassembly.



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- | | | |
|----------------------------|-----------------------|---|
| 1. Rear gusset | 2. Air breather hose | 3. CVT fluid level gauge |
| 4. CVT fluid charging pipe | 5. O-ring | 6. Copper washer |
| 7. Fluid cooler tube | 8. Transaxle assembly | A. Refer to "Removal and Installation". |

Fig. 83: Identifying Transaxle Assembly Components With Torque Specifications

Removal and Installation

REMOVAL

1. Remove the engine and transaxle as an assembly. Refer to "**REMOVAL AND INSTALLATION**".

NOTE: Using paint, put matching marks on the drive plate and torque converter when removing the torque converter to drive plate nuts.

2. Disconnect the electrical connectors from the following:
 - CVT unit harness connector. Refer to "**REMOVAL AND INSTALLATION PROCEDURE FOR CVT UNIT CONNECTOR**".

- Secondary speed sensor
- 3. Remove the harness from the transaxle.
- 4. Remove the transaxle to engine and engine to transaxle bolts.
- 5. Remove the CVT fluid charging pipe.
- 6. Separate the transaxle from the engine.
- 7. If necessary, remove the following from the CVT:
 - Fluid cooler tube
 - Air breather hose
 - Brackets

INSTALLATION

Installation is in the reverse order of removal.

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.
- 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 "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 SPECIFICATION CHART

Bolt No.	1	2	3	4
Number of bolts	1	2	2	4
Bolt length "l"mm (in)	55 (2.17)	34 (1.54)	108 (4.25)	45 (1.77)
Tightening torque N.m (kg-m, ft-lb)	75 (7.7, 55)			43 (4.4, 32)

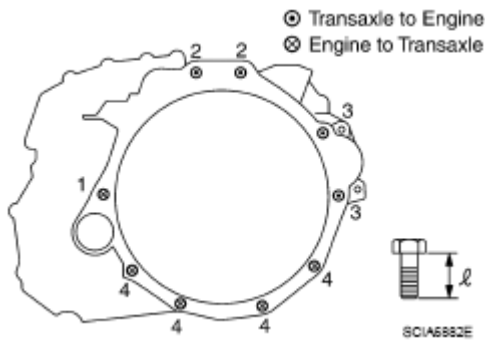


Fig. 84: Identifying CVT Assembly Bolts

- When installing the drive plate to torque converter nuts, tighten them temporarily. then tighten the nuts to the specified torque.
- After completing installation, check for fluid leakage, fluid level, and the positions of CVT. Refer to "**INSPECTION**" and "**INSPECTION AND ADJUSTMENT**".
- When replacing the CVT assembly, erase EEP ROM in TCM.

Inspection

Installation and Inspection of Torque Converter

- After inserting the torque converter to the CVT, be sure to check distance "A" to ensure it is within specifications.

Distance "A": 14.0 mm (0.55 in) or more

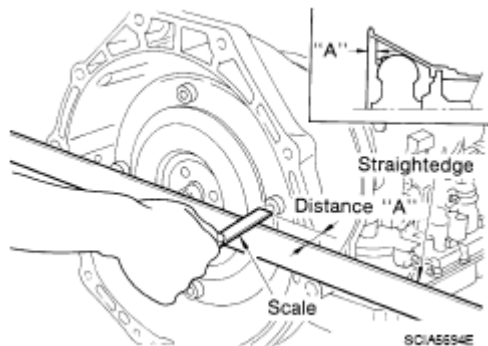


Fig. 85: Checking Torque Converter Distance A

SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

General Specification

GENERAL SPECIFICATION

2007 Nissan Altima

2007 DRIVELINE/AXLES Automatic Transmission (RE0F09B) - Altima

Applied model		VQ35DE engine
		2WD
CVT model		RE0F09B
CVT assembly	Model code number	1XE0A
Transmission gear ratio	D position	Variable
	Reverse	1.766
	Final drive	5.173
Recommended fluid		NISSAN CVT Fluid NS-2 ⁽¹⁾
Fluid capacity		10.2 liter (10-6/8 US qt, 9 Imp qt)
CAUTION: • Use only Genuine NISSAN CVT Fluid NS-2. Do not mix with other fluid. • Using CVT fluid other than Genuine NISSAN CVT Fluid NS-2 will deteriorate in driveability and CVT durability, and may damage the CVT, which is not covered by the warranty.		
(1) Refer to " FLUIDS AND LUBRICANTS ".		

Vehicle Speed When Shifting Gears

Numerical value data are reference values.

NUMERICAL VALUE DATA REFERENCE VALUES CHART

Engine type	Throttle position	Shift pattern	Engine speed (RPM)	
			At 40 km/h (25 MPH)	At 60 km/h (37 MPH)
VQ35DE	8/8	"D" position	2,900-4,100	3,900-5,600
	2/8		900-2,000	1,000-2,000

CAUTION: Lock up clutch is engaged when vehicle speed is approximately 18 km/h (11 MPH) to 90 km/h (56 MPH).

Stall Speed**STALL SPEED SPECIFICATION**

Stall speed	2,700-3,250 RPM
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Line Pressure**LINE PRESSURE LINE PRESSURE**

Engine speed	Line pressure kPa (kg/cm ² , psi)
	"R", "D" positions
At idle	750 (7.65, 108.8)
At stall	5,700 (58.14, 826.5) ⁽¹⁾

(1) Reference values

2007 Nissan Altima

2007 DRIVELINE/AXLES Automatic Transmission (RE0F09B) - Altima

Solenoid Valves

SOLENOID VALVES SPECIFICATION

Name	Resistance (Approx.)	Terminal
Pressure control solenoid valve B (secondary pressure solenoid valve)	3.0-9.0 ohms	3
Pressure control solenoid valve A (line pressure solenoid valve)		2
Torque converter clutch solenoid valve		12
Lock up select solenoid valve	6-19 ohms	13

CVT Fluid Temperature Sensor

CVT FLUID TEMPERATURE SENSOR SPECIFICATION

Name	Condition	CONSULT-III "DATA MONITOR" (Approx.)	Resistance (Approx.)
ATF TEMP SEN	20°C (68°F)	1.8-2.0 V	6.5 kohms
	80°C (176°F)	0.6-1.0 V	0.9 kohms

Primary Speed Sensor

PRIMARY SPEED SENSOR SPECIFICATION

Name	Condition	Data (Approx.)
Primary speed sensor	When driving ["M1" position, 20 km/h (12 MPH)]	660 Hz

Secondary Speed Sensor

SECONDARY SPEED SENSOR SPECIFICATION

Name	Condition	Data (Approx.)
Secondary speed sensor	When driving ["D" position, 20 km/h (12 MPH)]	400 Hz

Removal and Installation

CONVERTER HOUSING AND TORQUE CONVERTER SPECIFICATION

Distance between end of converter housing and torque converter	14.0 mm (0.55 in) or more
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