SECTION TM

TRANSAXLE & TRANSMISSION

CONTENTS

CVT: RE0F09B

BASIC INSPECTION

DIAGNOSIS AND REPAIR WORK FLOW

Work Flow

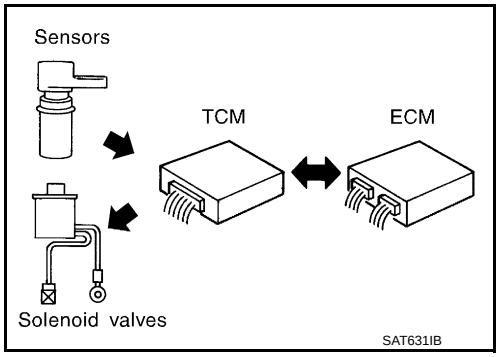
INFOID:0000000006260040

INTRODUCTION

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

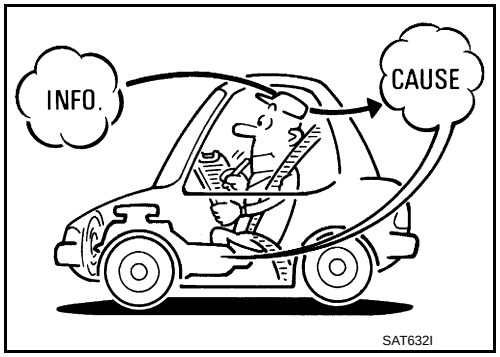
The TCM also communicates with the ECM by means of a signal sent from sensing elements used with the OBD-related parts of the CVT system for malfunction-diagnostic purposes. The TCM is capable of diagnosing malfunctioning parts while the ECM can store malfunctions in its memory.

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



It is much more difficult to diagnose a malfunction that occurs intermittently rather than continuously. Most intermittent malfunctions 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.

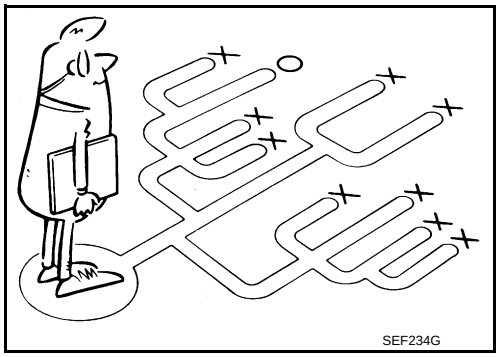
A visual check only may not find the cause of the malfunctions. A road test with CONSULT-III (or GST) or a circuit tester connected should be performed. Follow the “DETAILED FLOW”.



Before undertaking actual checks, take a few minutes to talk with a customer who approaches with a driveability complaint. The customer can supply good information about such malfunctions, especially intermittent ones. Find out what symptoms are present and under what conditions they occur. A “Diagnostic Work Sheet” as shown on the example (Refer to TM-6) should be used.

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

Also check related Service Bulletins.



DETAILED FLOW

1.COLLECT THE INFORMATION FROM THE CUSTOMER

Get the detailed information from the customer about the symptom (the condition and the environment when the incident/malfunction occurred) using the diagnosis work sheet. Refer to TM-6, "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 TM-123, "Fail-safe".
- CVT fluid inspection. Refer to TM-147, "Inspection".
- Line pressure test. Refer to TM-154, "Inspection and Judgment".

• Stall test. Refer to TM-152, "Inspection and Judgment".

>> GO TO 3.

3.CHECK DTC

1. Check DTC.
2. Perform the following procedure if DTC is detected.

• Record DTC.
• Erase DTC. Refer to TM-35, "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. Repair detected items.

>> GO TO 5.

5.PERFORM DTC CONFIRMATION PROCEDURE

Perform “DTC CONFIRMATION PROCEDURE” for the displayed DTC.

Is DTC detected?

YES >> GO TO 4.
NO >> GO TO 6.

6.CHECK SYMPTOM 2

Confirm the symptom described by the customer.

Is any malfunction present?

YES >> GO TO 7.
NO >> INSPECTION END

7.ROAD TEST

Perform “ROAD TEST”. Refer to TM-156, "Description".

>> GO TO 8.

8.CHECK SYMPTOM 3

Confirm the symptom described by the customer.

Is any malfunction present?

YES >> GO TO 2.
NO >> INSPECTION END

Diagnostic Work Sheet

INFOID:0000000006260041

INFORMATION FROM CUSTOMER

KEY POINTS

• **WHAT**..... Vehicle & CVT model
• **WHEN**..... Date, Frequencies
• **WHERE**..... Road conditions
• **HOW**..... Operating conditions, Symptoms

Customer name MR/MS	Model & Year	VIN
Trans. Model	Engine	Mileage
Malfunction Date	Manuf. Date	In Service Date
Frequency	☐ Continuous ☐ Intermittent (times a day)	

Symptoms	☐ Vehicle does not move. (☐ Any position ☐ Particular position)	
	☐ No shift	
	☐ Lock-up malfunction	
	☐ Shift shock or slip (☐ N → D ☐ N → R ☐ Lock-up ☐ Any drive position)	
	☐ Noise or vibration	
	☐ No pattern select	
	☐ Others ( )	
Malfunction Indicator Lamp (MIL)	☐ Continuously lit	☐ Not lit

DIAGNOSTIC WORK SHEET

1	☐ Read the item on cautions concerning fail-safe and understand the customer's complaint.			TM-123
2	☐ CVT fluid inspection, stall test and line pressure test			
		☐ CVT fluid inspection		TM-147
			☐ Leak (Repair leak location.) ☐ State ☐ Amount	
		☐ Stall test		TM-152 TM-154
			☐ Torque converter one-way clutch ☐ Reverse brake ☐ Forward clutch ☐ Steel belt	☐ Engine ☐ Line pressure low ☐ Primary pulley ☐ Secondary pulley
		☐ Line pressure inspection - Suspected part:		
3	☐ Perform self-diagnosis.			TM-37
		Enter checks for detected items.		
4	☐ Perform road test.			TM-156
	4-1.	Check before engine is started		TM-156
	4-2.	Check at idle		TM-156
	4-3.	Cruise test		TM-157
	☐ Check malfunction phenomena to repair or replace malfunctioning part after completing all road tests.			TM-126
5	☐ Drive vehicle to check that the malfunction phenomenon has been resolved.			
6	☐ Erase the results of the self-diagnosis from the TCM and the ECM.			

ADDITIONAL SERVICE WHEN REPLACING TCM

Description

INFOID:0000000007958485

When replacing the TCM, perform the following work.

LOADING AND STORING OF CALIBRATION DATA
- The TCM acquires calibration data (individual characteristic value) of each solenoid that is stored in the ROM assembly (in the control valve). This enables the TCM to perform accurate control. After the TCM is replaced, check that the calibration data is correctly loaded and stored.

CAUTION:
When replacing TCM and transaxle assembly as a set, replace transaxle assembly first and then replace TCM.
If the TCM is replaced in advance, perform "ADDITIONAL SERVICE WHEN REPLACING TRANSAXLE ASSEMBLY". Refer to TM-9, "Description".

Procedure

INFOID:0000000007958486

CAUTION:
Immediately after TCM is replaced or after transaxle assembly is replaced (after TCM initialization is complete), self-diagnosis result of "P1701", "P1709" may be displayed. In this case, erase self-diagnosis result using CONSULT. After erasing self-diagnosis result, perform DTC "P1701", "P1709" reproduction procedure and check that malfunction is not detected. Refer to TM-85, "DTC Logic" (P1701), TM-89, "DTC Logic" (P1709).

1. LOAD CALIBRATION DATA

1. Shift the selector lever to the "P" position.
2. Turn ignition switch ON.
3. Check that "P" is displayed on shift position indicator on combination meter.
   NOTE:
   Displayed approximately 1 – 2 seconds after the selector lever is moved to the "P" position.

Does the shift position indicator display "P"?

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

2. DETECT MALFUNCTIONING ITEM

Check the following items:
- Harness between the TCM and the ROM assembly inside the transaxle assembly is open or shorted.
- Disconnected, loose, bent, collapsed, or otherwise abnormal connector housing terminals

Is the inspection result normal?

YES >> GO TO 1.
NO >> Repair or replace the malfunctioning parts.

3. STORE CALIBRATION DATA

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

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

YES >> WORK END
NO >> Check harness between battery and TCM harness connector terminal. Refer to TM-85, "Diagnosis Procedure".

ADDITIONAL SERVICE WHEN REPLACING TRANSAXLE ASSEMBLY

Description

INFOID:0000000007958487

When replacing the transaxle assembly, perform the following work.

ERASING, LOADING AND STORING OF CALIBRATION DATA
- The TCM acquires calibration data (individual characteristic value) of each solenoid that is stored in the ROM assembly (in the control valve). This enables the TCM to perform accurate control. For this reason, after the transaxle assembly/control valve is replaced, it is necessary to erase the calibration data previously stored in TCM, to load new calibration data, and to store them.

ERASING OF CVT FLUID DEGRADATION LEVEL DATA
- TCM records the degradation level of the CVT fluid calculated from the vehicle driving status. Therefore, if the transaxle assembly/control valve is replaced, it is necessary to erase the CVT fluid degradation level data recorded by TCM.

Procedure

INFOID:0000000007958488

CAUTION:
Immediately after TCM is replaced or after transaxle assembly is replaced (after TCM initialization is complete), self-diagnosis result of “P1701“, “P1709” may be displayed. In this case, erase self-diagnosis result using CONSULT. After erasing self-diagnosis result, perform DTC “P1701“, “P1709” reproduction procedure and check that malfunction is not detected. Refer to TM-85, "DTC Logic" (P1701), TM-89, "DTC Logic" (P1709).

1. PREPARATION BEFORE WORK

With CONSULT
1. Start the engine.
   CAUTION:
   Never drive the vehicle.
2. Select “Data Monitor” in “TRANSMISSION”.
3. Select “ATFTEMP COUNT”.

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

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

2. PERFORM TCM INITIALIZATION

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

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

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

Is “CALIB DATA” value it?

YES >> GO TO 3.
NO >> GO TO 1.

3. LOAD CALIBRATION DATA

1. Shift selector lever to “P” position.
2. Check that “P” is displayed on shift position indicator on combination meter.
   NOTE:
   It indicates approximately 1 – 2 seconds after shifting the selector lever to “P” position.

Does shift position indicator display “P”?

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

4. DETECT MALFUNCTIONING ITEM

Check the following items:
- Harness between the TCM and the ROM assembly inside the transaxle assembly is open or shorted.
- Disconnected, loose, bent, collapsed, or otherwise abnormal connector housing terminals
- Power supply and ground of TCM. (Refer to TM-85, "Diagnosis Procedure".)

Is the inspection result normal?

YES >> GO TO 1.
NO >> Repair or replace the malfunctioning parts.

5. STORE CALIBRATION DATA

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

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

YES >> GO TO 6.
NO >> Check harness between battery and TCM harness connector terminal. Refer to TM-85, "Diagnosis Procedure".

6. ERASE CVT FLUID DEGRADATION LEVEL DATA

With CONSULT
1. Select “WORK SUPPORT” in “TRANSMISSION”.
2. Select “CONFORM CVTF DETERIORTN”.
3. Touch “Clear”.

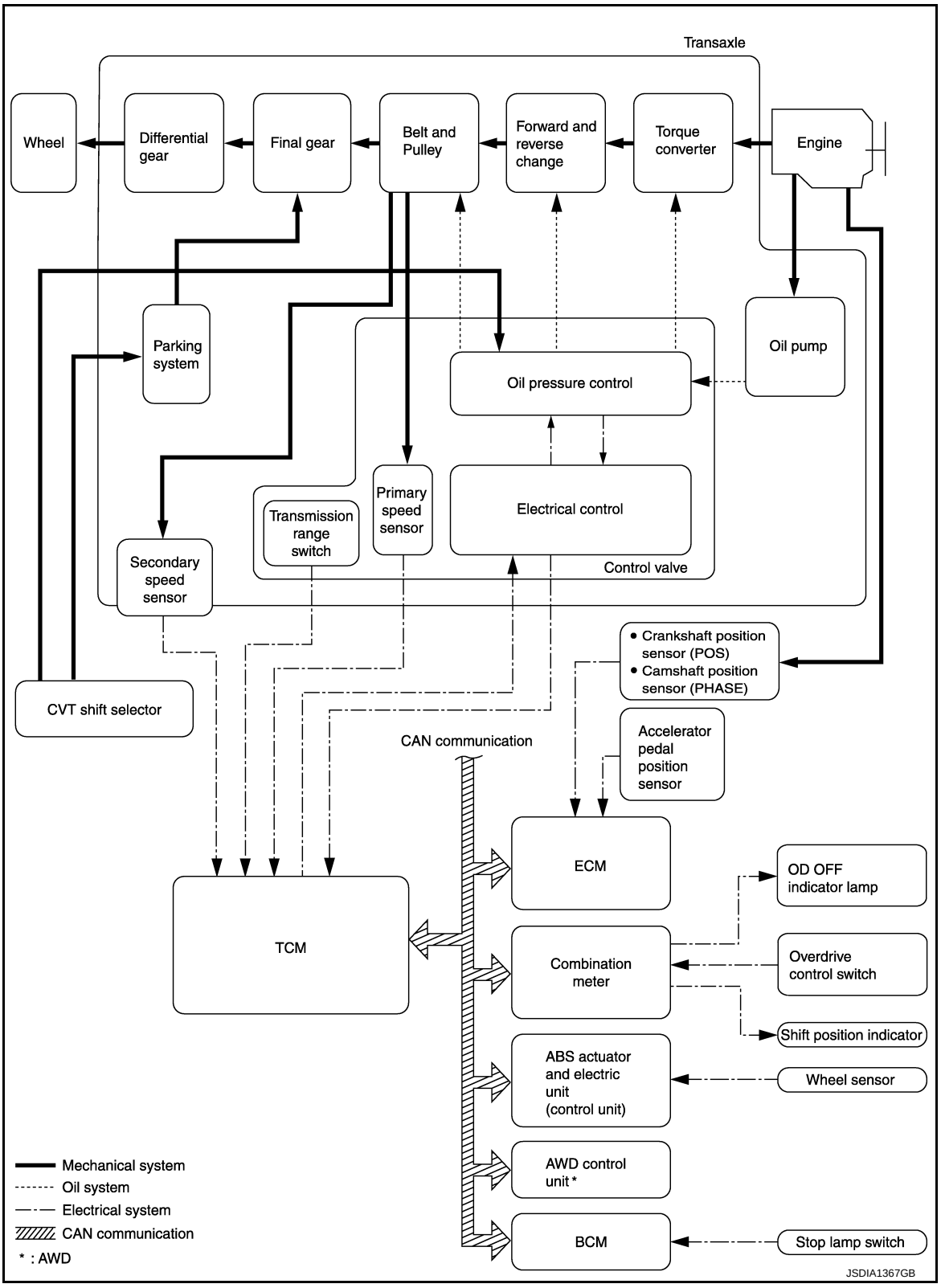
>> WORK END

SYSTEM DESCRIPTION

CVT SYSTEM

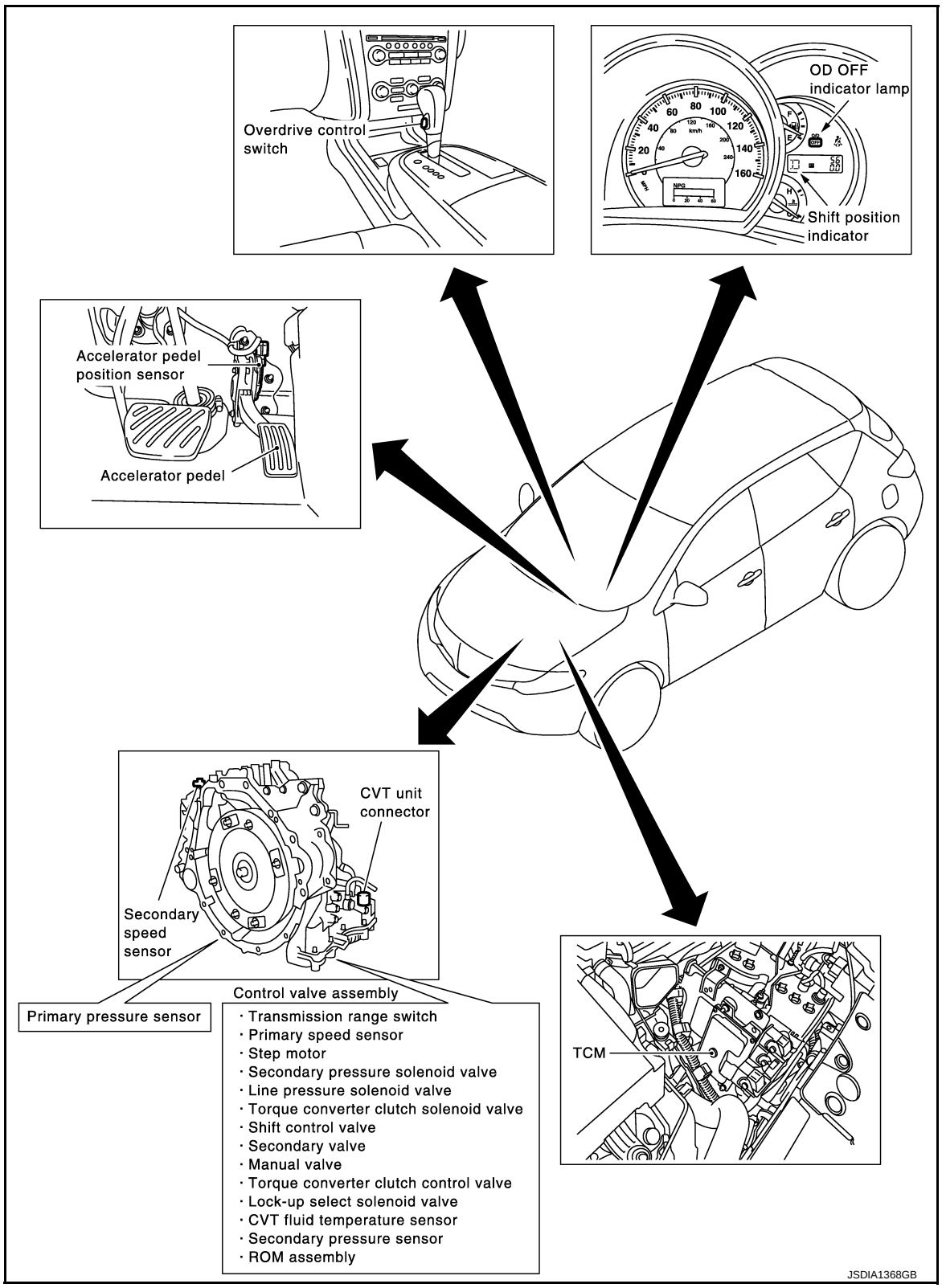
System Diagram

INFOID:0000000006260043



Component Parts Location

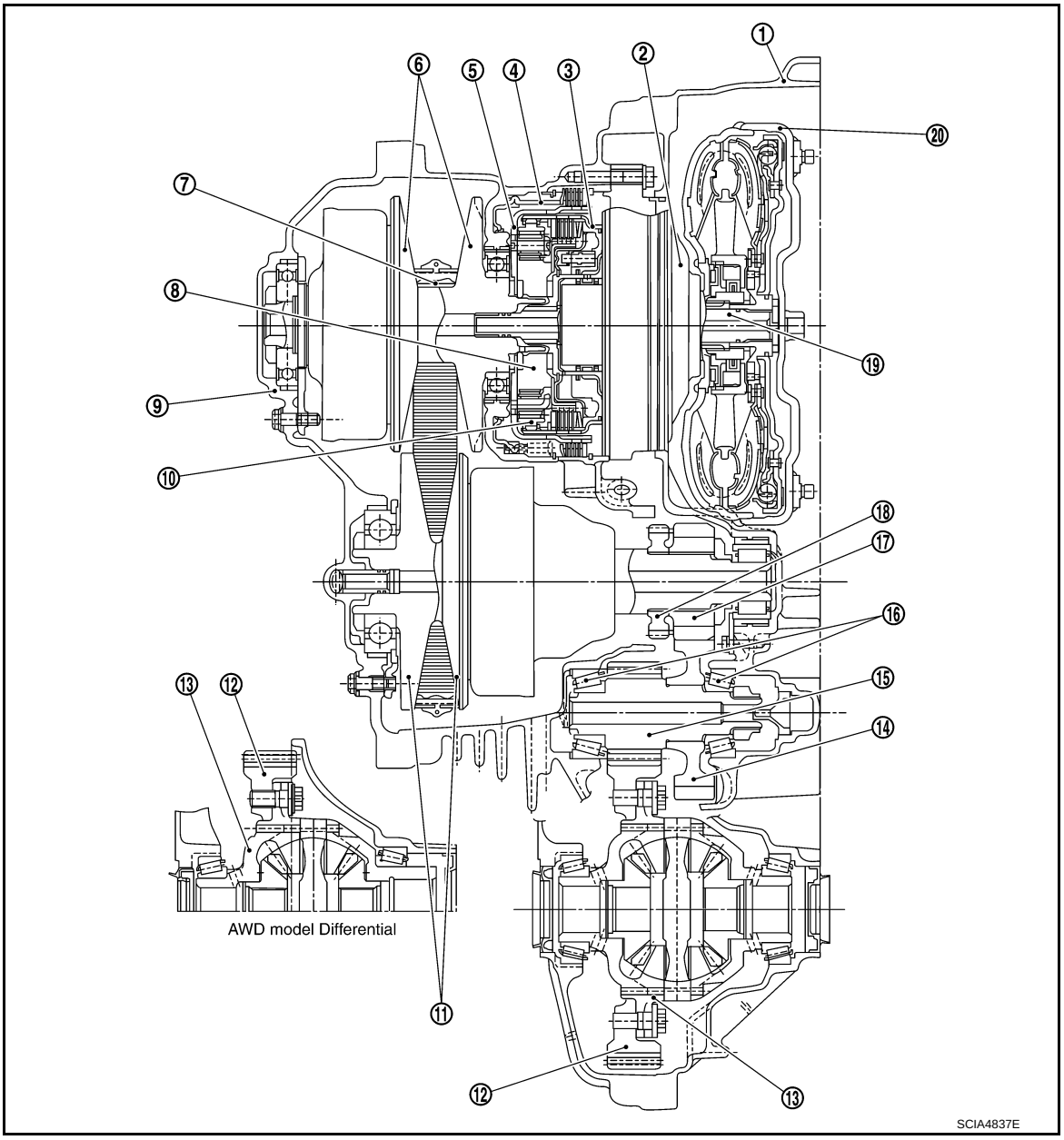
INFOID:0000000006260044



MECHANICAL SYSTEM

Cross-Sectional View

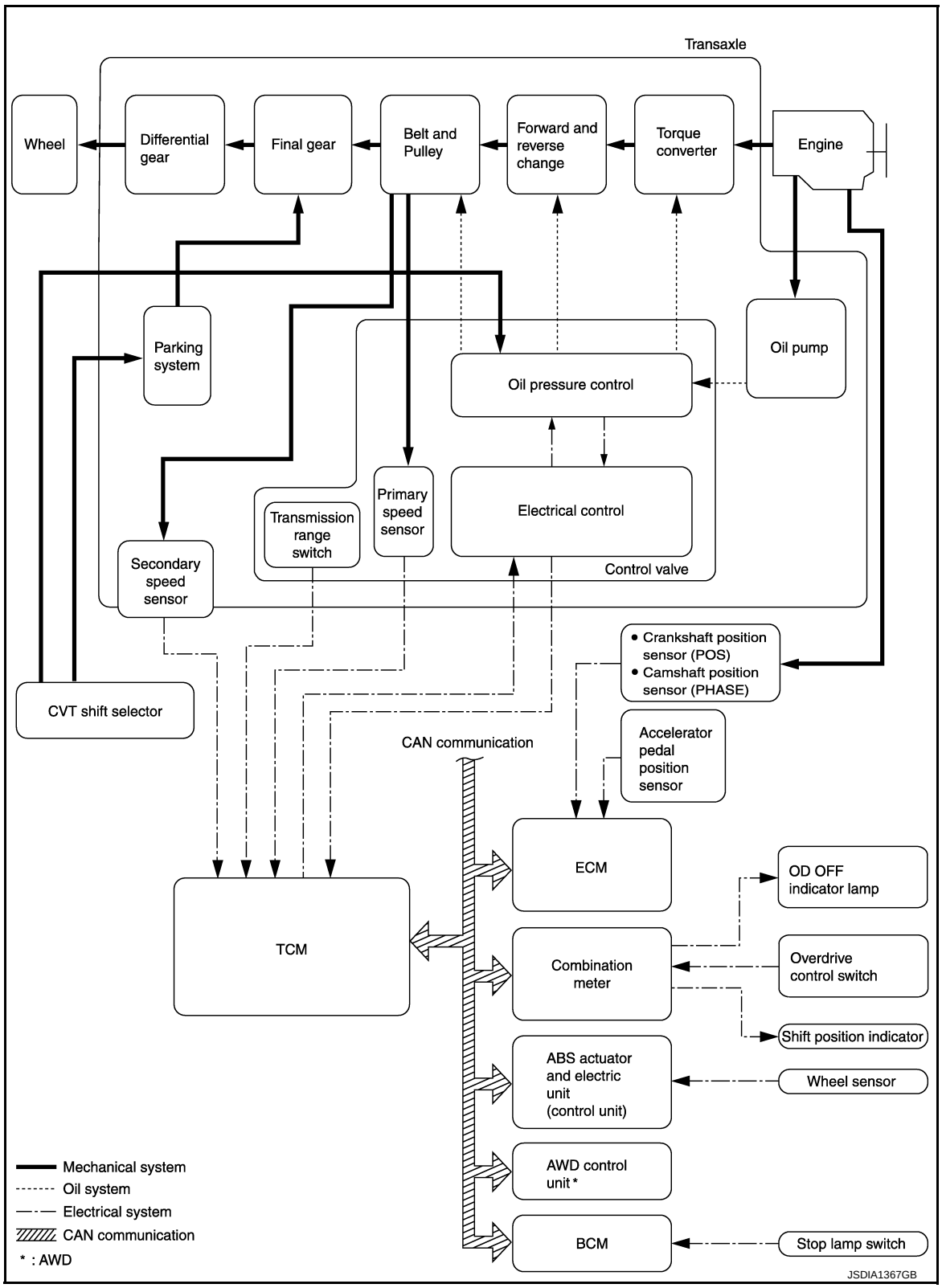
INFOID:0000000006260045



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

System Diagram

INFOID:0000000006260046



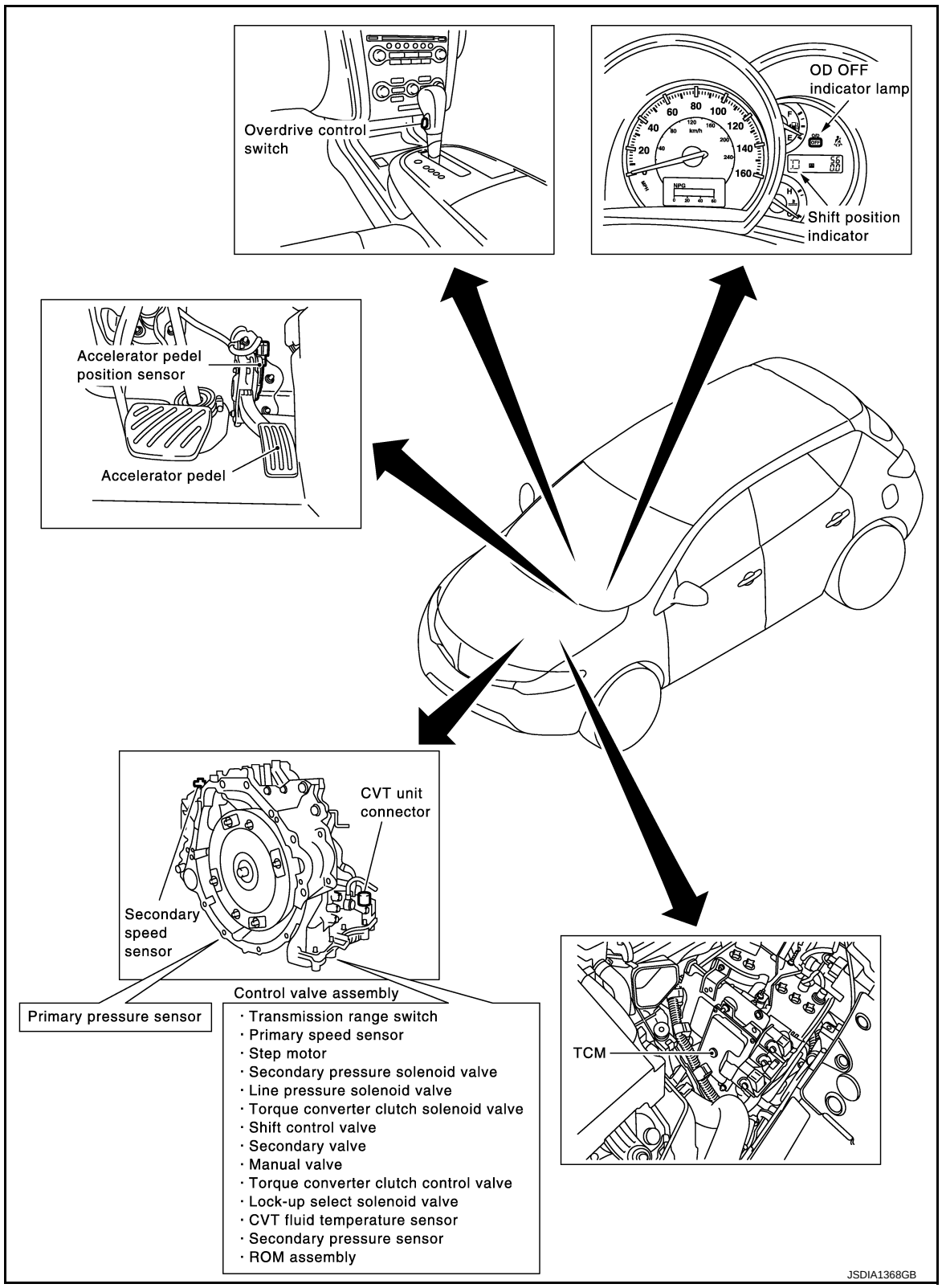
System Description

INFOID:0000000006260047

Transmits the power from the engine to the drive wheel.

Component Parts Location

INFOID:0000000006260048



Component Description

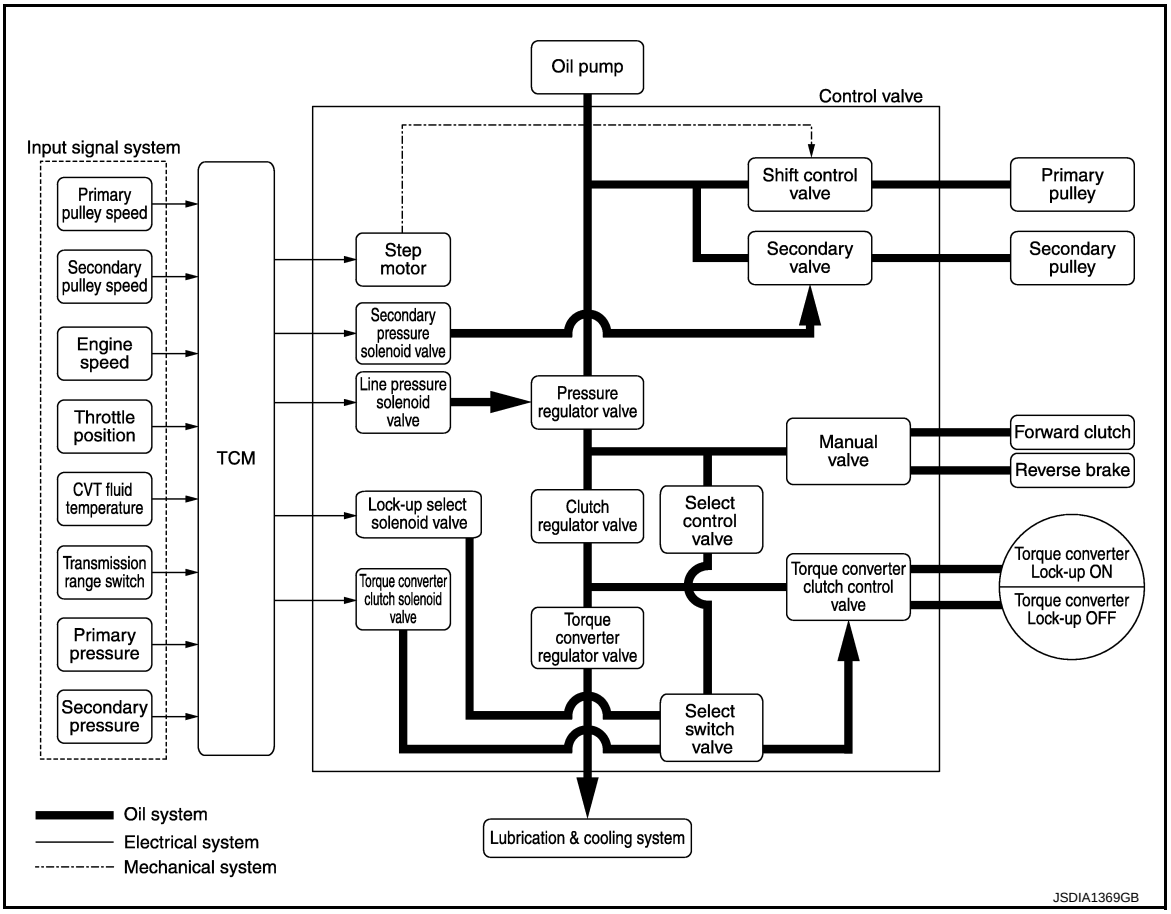
INFOID:0000000006260049

Item	Function
Torque converter	The torque converter is the device that increases the engine torque as well as the conventional AT and transmits it to the transaxle.
Oil pump	The adoption of a trochoidal oil pump with a flow control valve actuated directly by the engine enables the sufficient discharge from an oil pump in the low-rpm range and the adequate discharge adjustments in the high-rpm range.
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 multilayer steel rings on both sides). The groove width changes according to wrapping radius of steel belt and pulley from low status to overdrive status continuously with non-step. It is controlled with the oil pressures of primary pulley and secondary pulley.
Secondary pulley	
Steel belt	
Output gear	Reduction gear consists of primary deceleration (output gear and idler gear in pair) and secondary deceleration (reduction gear and final gear in pair). Each of them uses a helical gear.
Idler gear	
Reduction gear	
Final gear	
Differential	
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

INFOID:0000000006260050



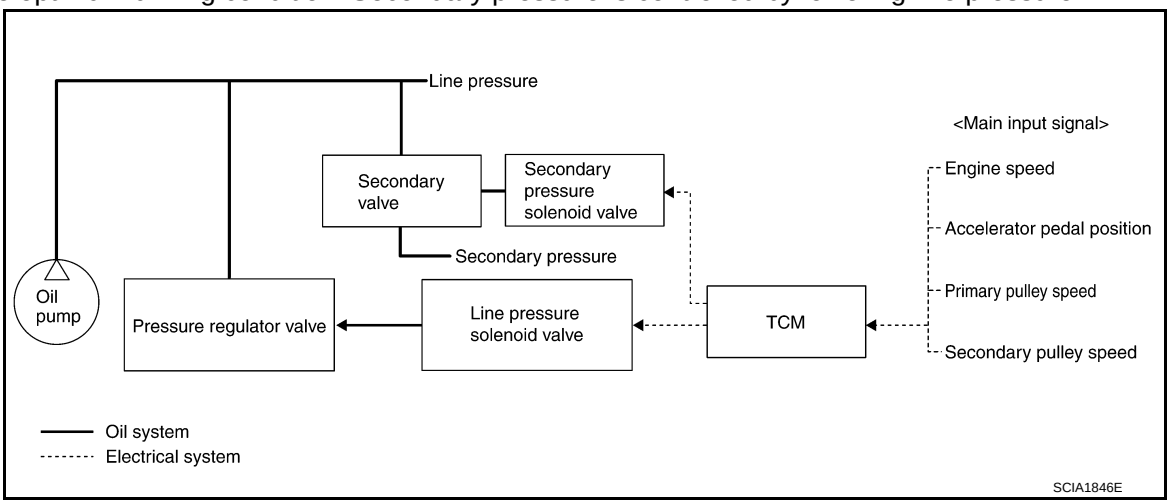
System Description

INFOID:0000000006260051

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

LINE PRESSURE AND SECONDARY PRESSURE CONTROL

- When an input torque signal equivalent to the engine driving force is transmitted from the ECM to the TCM, the TCM controls the line pressure solenoid valve and secondary pressure solenoid valve.
- Line pressure solenoid valve activates pressure regulator valve, and line pressure from oil pump is adjusted for the optimum driving condition. Secondary pressure is controlled by lowering line pressure.



Normal Control

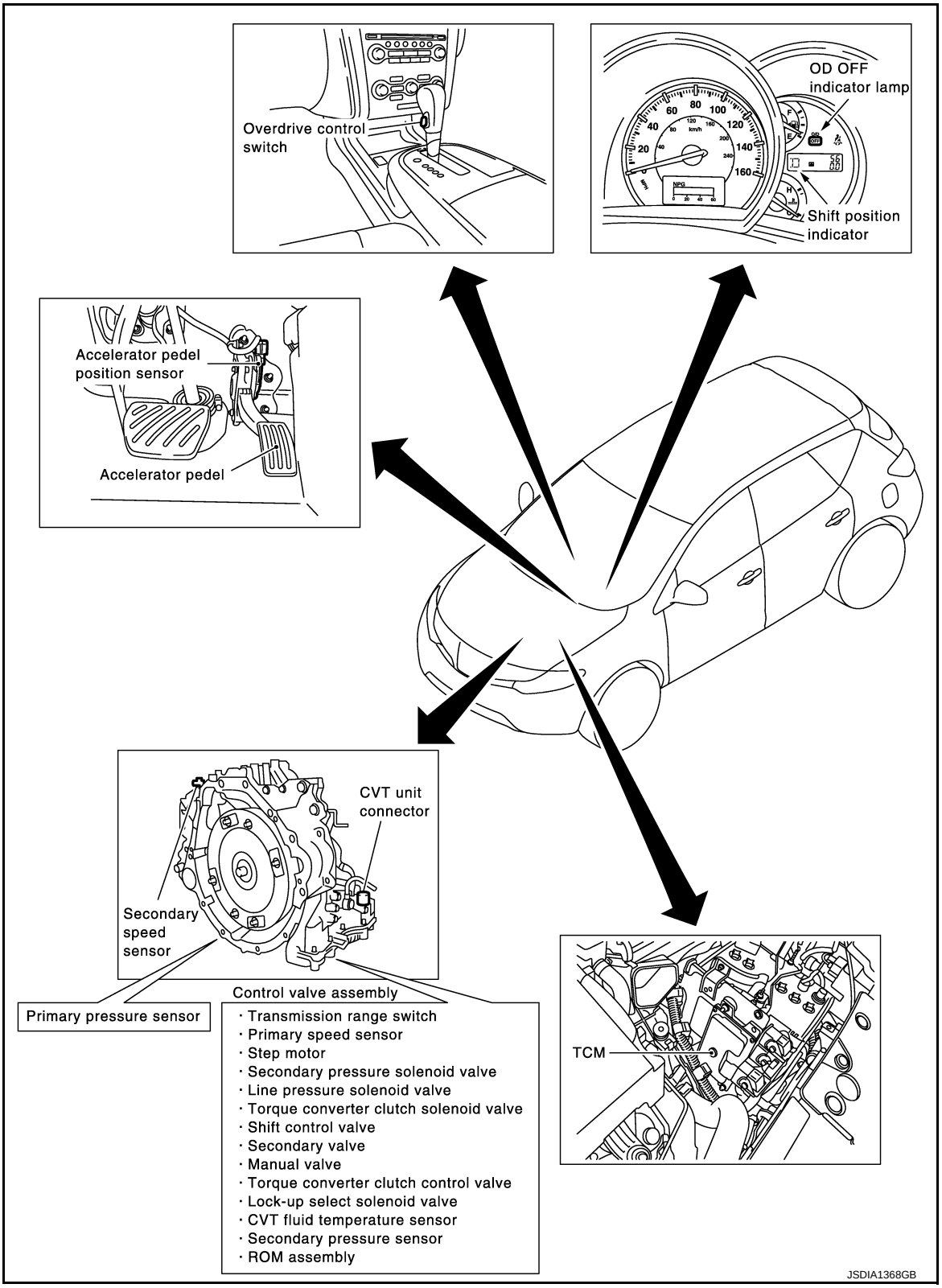
Optimize the line pressure and secondary pressure, depending on driving conditions, on the basis of the throttle position, the engine speed, the primary pulley (input) revolution speed, the secondary pulley (output) revolution speed, the brake signal, the transmission range switch signal, the lock-up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

Feedback Control

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

Component Parts Location

INFOID:0000000006260052



Component Description

INFOID:0000000006260053

TRANSAXLE ASSEMBLY

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 deactivates the lock-up. • Locks up smoothly by opening lock-up operation excessively.
Shift control valve	Controls inflow/outflow of line pressure from the primary pulley depending on the stroke difference between the stepping motor and the primary pulley.
Secondary valve	Controls the line pressure from the secondary pulley depending on operating conditions.
Clutch regulator valve	Adjusts the clutch operating pressure depending on operating conditions.
Manual valve	Transmits the clutch operating pressure to each circuit in accordance with the selected position.
Select control valve	Engages forward clutch, reverse brake smoothly depending on select operation.
Select switch valve	The select switch valve enables to select engagement/disengagement of lock-up clutch and that of forward clutch and reverse clutch.
TCC solenoid valve	TM-63, "Description"
Secondary pressure solenoid valve	TM-73, "Description"
Line pressure solenoid valve	TM-67, "Description"
Step motor	TM-99, "Description"
Lock-up select solenoid valve	TM-96, "Description"
Primary speed sensor	TM-53, "Description"
Secondary speed sensor	TM-56, "Description"
Transmission range switch	TM-47, "Description"
Primary pulley	TM-15, "Component Description"
Secondary pulley	
Forward clutch	
Torque converter	

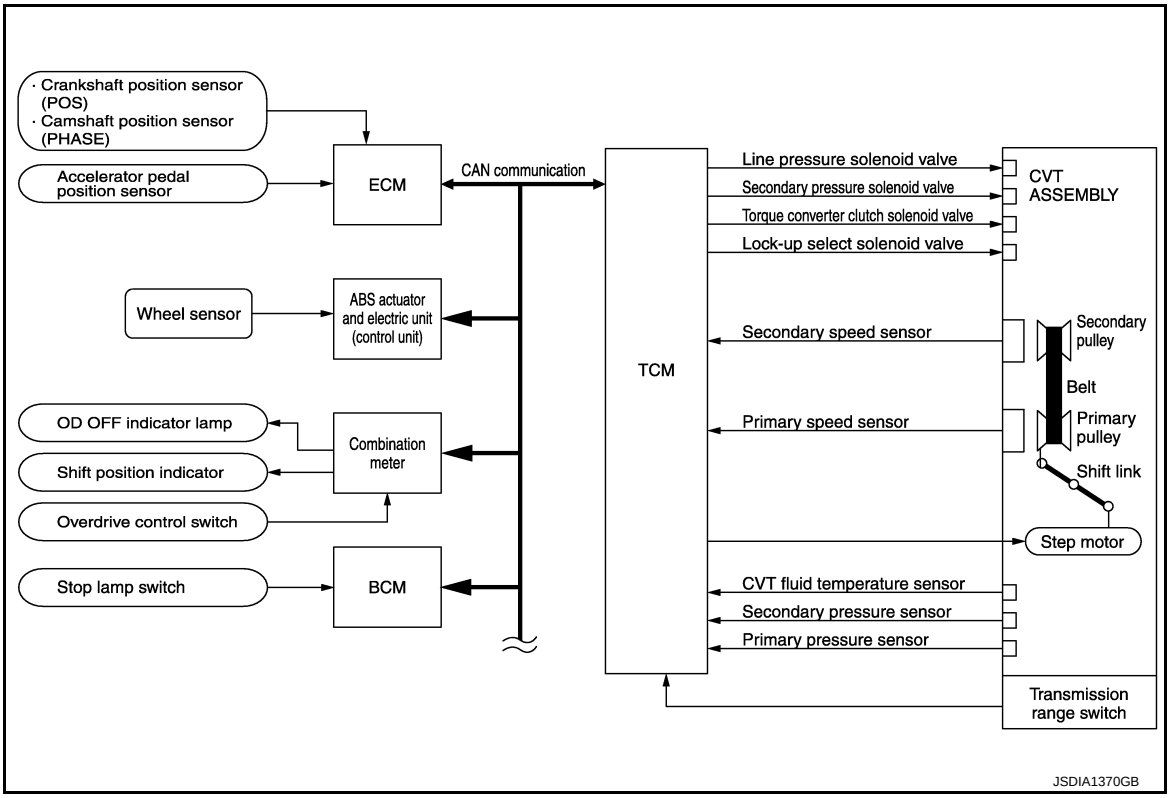
EXCEPT TRANSAXLE ASSEMBLY

Name	Function
TCM	Judges driving condition according to signals from each sensor, and optimally controls variable speed mechanism.
Accelerator pedal position sensor	TM-88, "Description"

CONTROL SYSTEM

System Diagram

INFOID:0000000006260054



System Description

INFOID:0000000006260055

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

TCM FUNCTION

The function of the TCM is to:

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

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

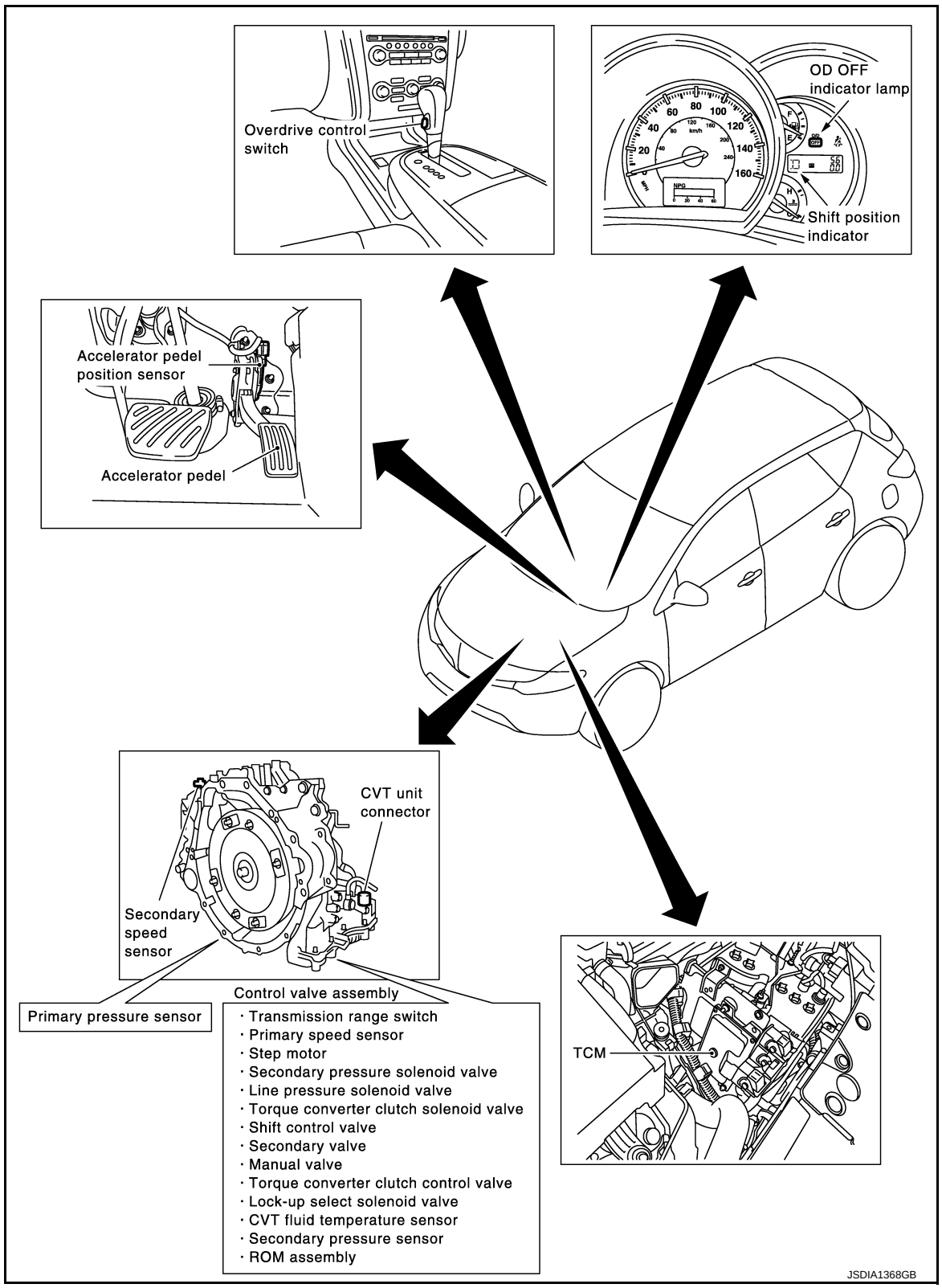
INPUT/OUTPUT SIGNAL OF TCM

Control item		Fluid pressure control	Select control	Shift control	Lock-up control	CAN communication control	Fail-safe function*3
Input	Transmission range switch	X	X	X	X	X	X
	Accelerator pedal position signal*1	X	X	X	X	X	X
	Closed throttle position signal*1	X		X	X	X	
	Engine speed signal*1	X	X		X	X	X
	CVT fluid temperature sensor	X	X	X	X		X
	Overdrive control switch signal*1	X		X	X	X	
	Stop lamp switch signal*1	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
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
	OD OFF indicator signal*2			X		X	

- *1: Input by CAN communications.
- *2: Output by CAN communications.
- *3: If these input and output signals are different, the TCM triggers the fail-safe function.

Component Parts Location

INFOID:0000000006260056



Component Description

INFOID:0000000006260057

TRANSAXLE ASSEMBLY

Name	Function
Transmission range switch	TM-47, "Description"
CVT fluid temperature sensor	TM-50, "Description"
Primary speed sensor	TM-53, "Description"
Secondary speed sensor	TM-56, "Description"
Primary pressure sensor	TM-80, "Description"
Secondary pressure sensor	TM-75, "Description"
Step motor	TM-99, "Description"
TCC solenoid valve	TM-63, "Description"
Lock-up select solenoid valve	TM-96, "Description"
Line pressure solenoid valve	TM-67, "Description"
Secondary pressure solenoid valve	TM-73, "Description"

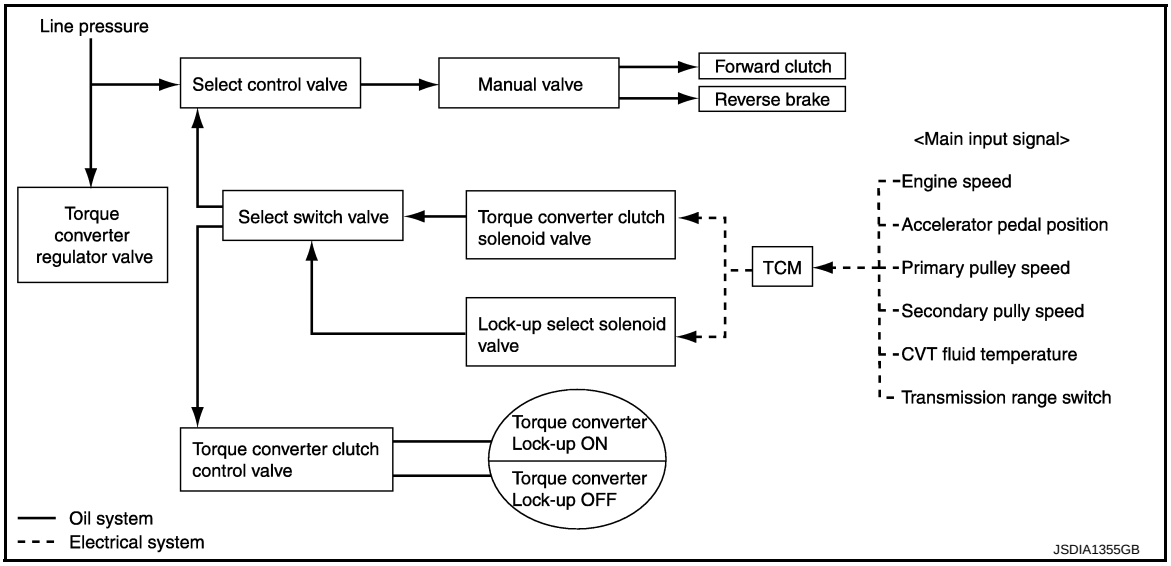
EXCEPT TRANSAXLE ASSEMBLY

Name	Function
TCM	TM-19, "Component Description"
Stop lamp switch	TM-44, "Description"

LOCK-UP AND SELECT CONTROL SYSTEM

System Diagram

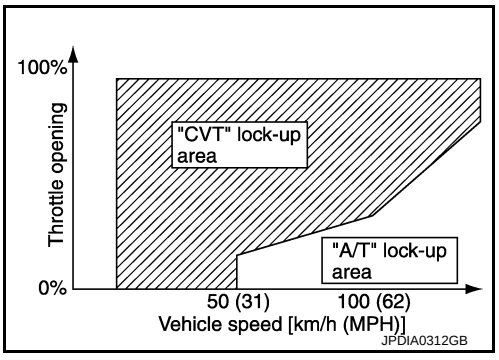
INFOID:0000000006260058



System Description

INFOID:0000000006260059

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



TORQUE CONVERTER CLUTCH AND SELECT CONTROL VALVE CONTROL

Lock-up Released

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

Lock-up Applied

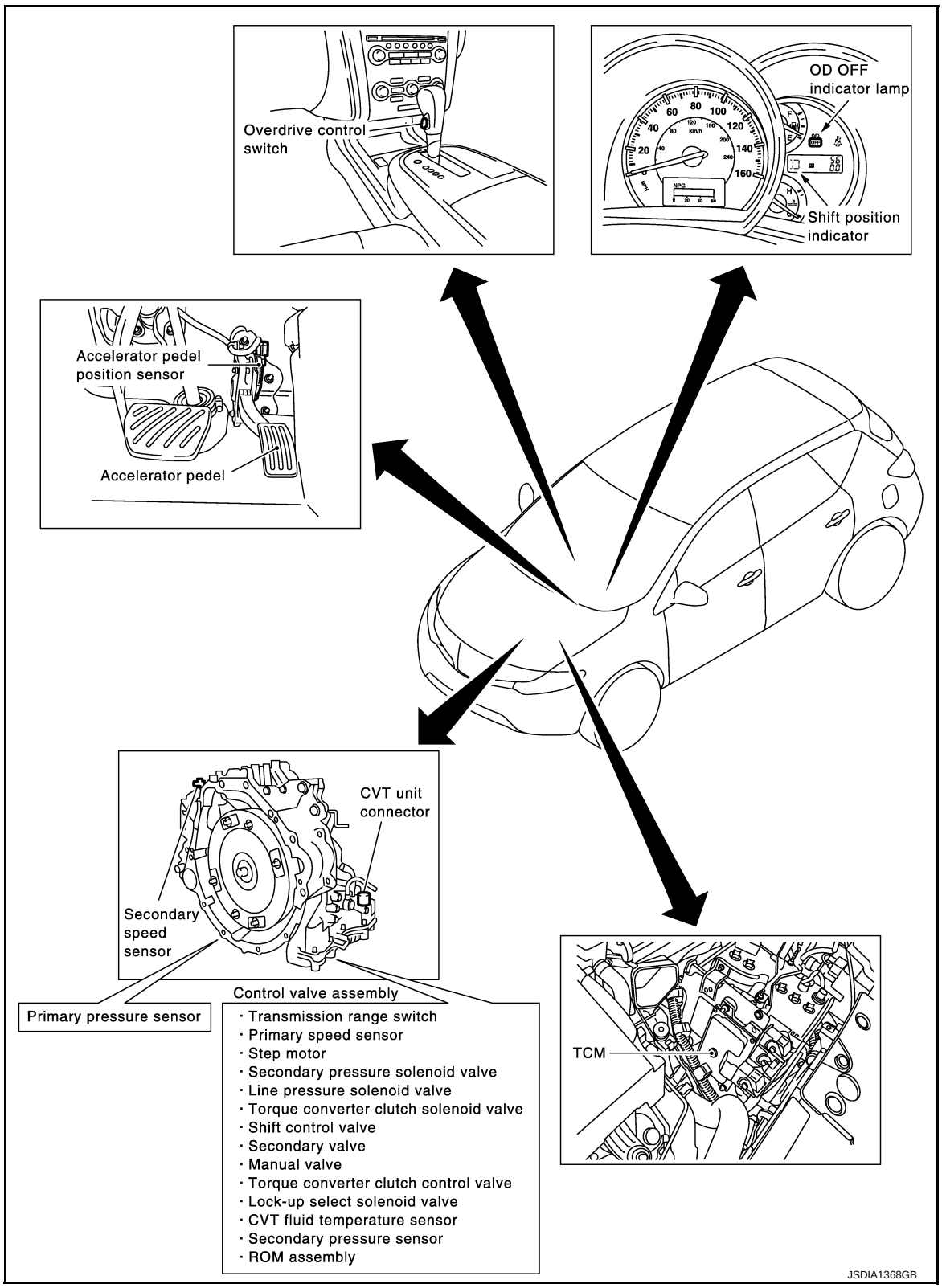
In the lock-up applied state, the torque converter clutch control valve is set into the locked state by the torque converter clutch solenoid valve and lock-up apply pressure is generated.
In this way, the torque converter clutch piston is pressed and coupled.

Select Control

When shifting between “N” (“P”) ⇒“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

INFOID:0000000006260060



Component Description

INFOID:0000000006260061

TRANSAXLE ASSEMBLY

Name	Function
Torque converter regulator valve	TM-19, "Component Description"
TCC control valve	
Select control valve	
Select switch valve	
Manual valve	
TCC solenoid valve	TM-63, "Description"
Lock-up select solenoid valve	TM-96, "Description"
Primary speed sensor	TM-53, "Description"
Secondary speed sensor	TM-56, "Description"
CVT fluid temperature sensor	TM-50, "Description"
Transmission range switch	TM-47, "Description"
Forward clutch	TM-15, "Component Description"
Reverse brake	
Torque converter	

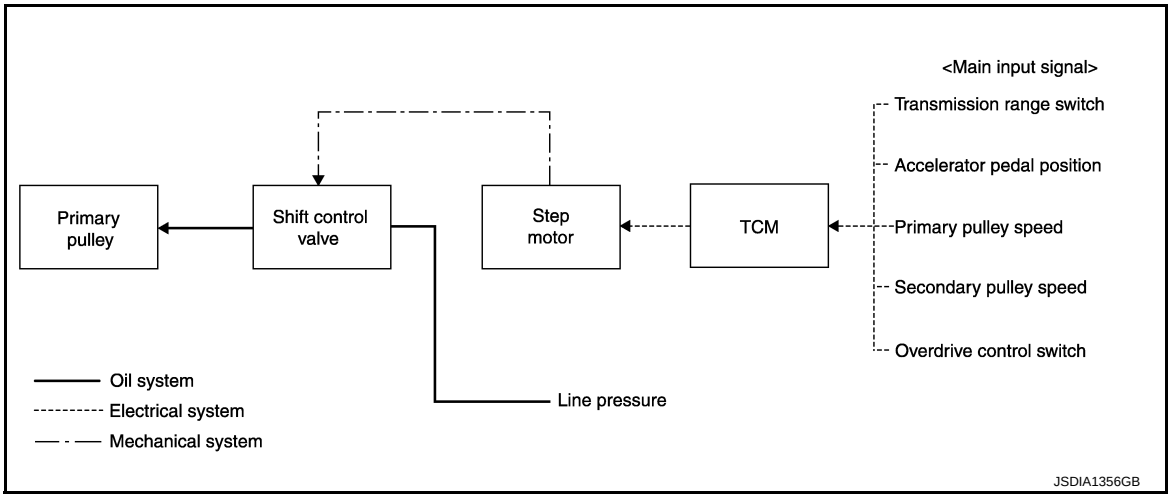
EXCEPT TRANSAXLE ASSEMBLY

Name	Function
TCM	TM-19, "Component Description"
Accelerator pedal position sensor	TM-88, "Description"

SHIFT CONTROL SYSTEM

System Diagram

INFOID:0000000006260062



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

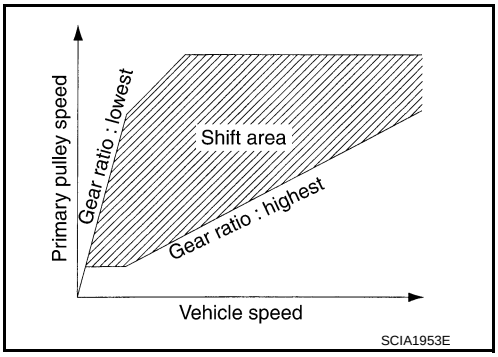
System Description

INFOID:0000000006260063

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

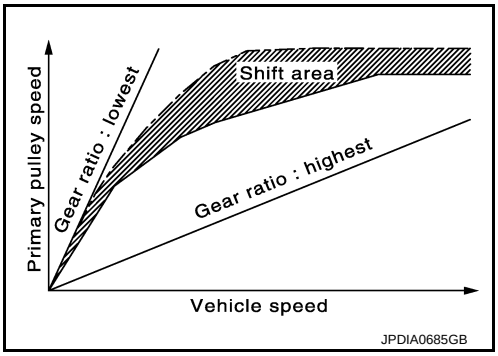
"D" POSITION

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



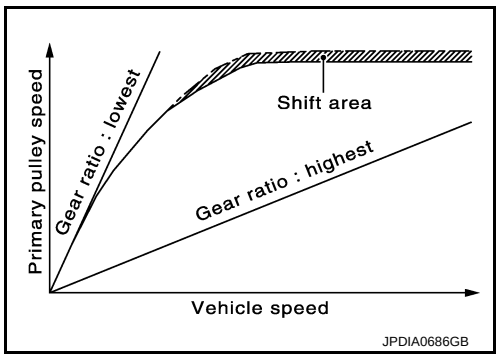
OVERDRIVE OFF CONDITION

Use this position for improved engine braking.



"L" POSITION

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



DOWNHILL ENGINE BRAKE CONTROL (AUTO ENGINE BRAKE CONTROL)

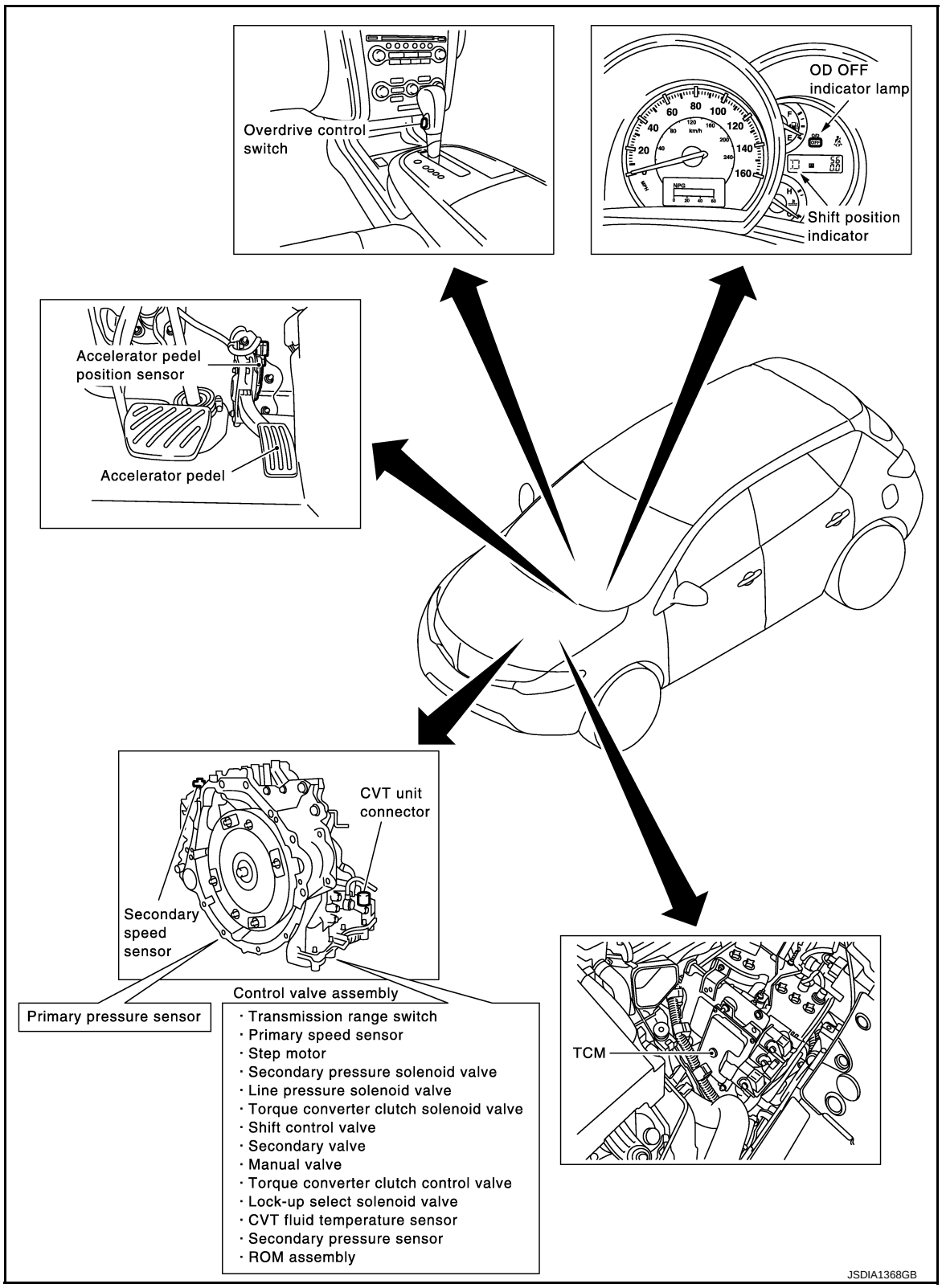
When a downhill slope is detected with the accelerator pedal released, the engine brake will be strengthened up by downshifting so as not to accelerate the vehicle more than necessary.

ACCELERATION CONTROL

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

Component Parts Location

INFOID:0000000006260064



Component Description

INFOID:0000000006260065

TRANSAXLE ASSEMBLY

Item	Function
Transmission range switch	TM-47, "Description"
Primary speed sensor	TM-53, "Description"
Secondary speed sensor	TM-56, "Description"
Step motor	TM-99, "Description"
Shift control valve	TM-19, "Component Description"
Primary pulley	TM-15, "Component Description"
Secondary pulley	TM-15, "Component Description"

EXCEPT TRANSAXLE ASSEMBLY

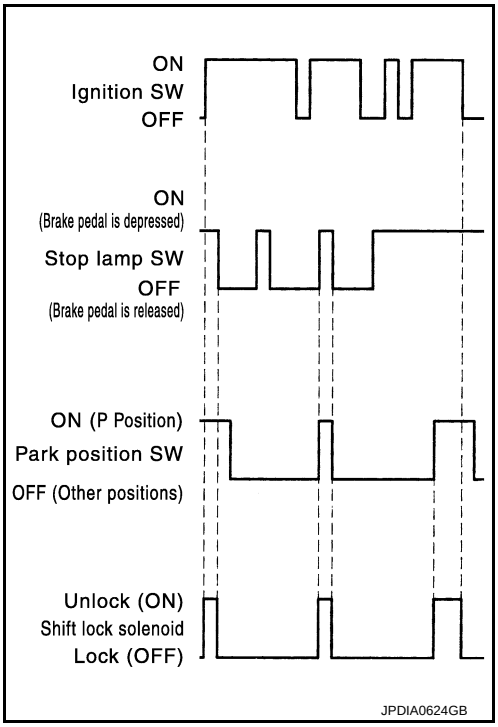
Item	Function
TCM	TM-19, "Component Description"

SHIFT LOCK SYSTEM

System Description

INFOID:0000000006260066

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

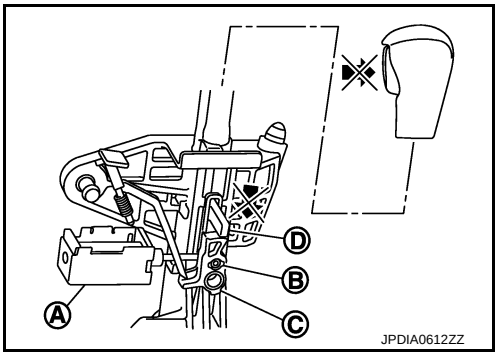


SHIFT LOCK OPERATION AT “P” POSITION

When Brake Pedal Is Not Depressed (No Selector Operation Allowed)

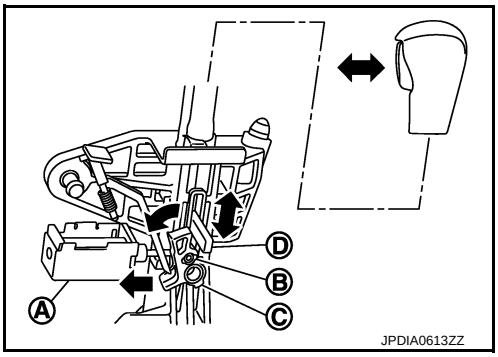
The shift lock solenoid (A) is turned OFF (not energized) and the solenoid rod (B) is extended with the spring when the brake pedal is not depressed (no selector operation allowed) with the ignition switch ON.

The connecting lock lever (C) is located at the position shown in the figure when the solenoid rod is extended. It prevents the movement of the detent rod (D). For these reasons, the selector lever cannot be shifted from the “P” position.



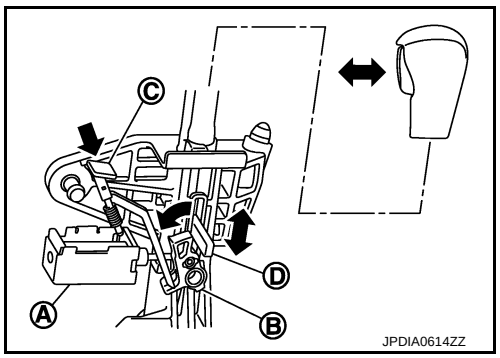
When Brake Pedal Is Depressed (Shift Operation Allowed)

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



“P” POSITION HOLD MECHANISM (IGNITION SWITCH LOCK)

The shift lock solenoid (A) is not energized when the ignition switch is in any position other than ON. In this condition, the shift mechanism is locked and “P” position is held. The operation cannot be performed from “P” position if the brake pedal is depressed with the ignition switch ON when the operation system of shift lock solenoid is malfunctioning. However, the lock lever (B) is forcibly rotated and the shift lock is released when the shift lock release button (C) is pressed from above. Then the selector operation from “P” position can be performed.

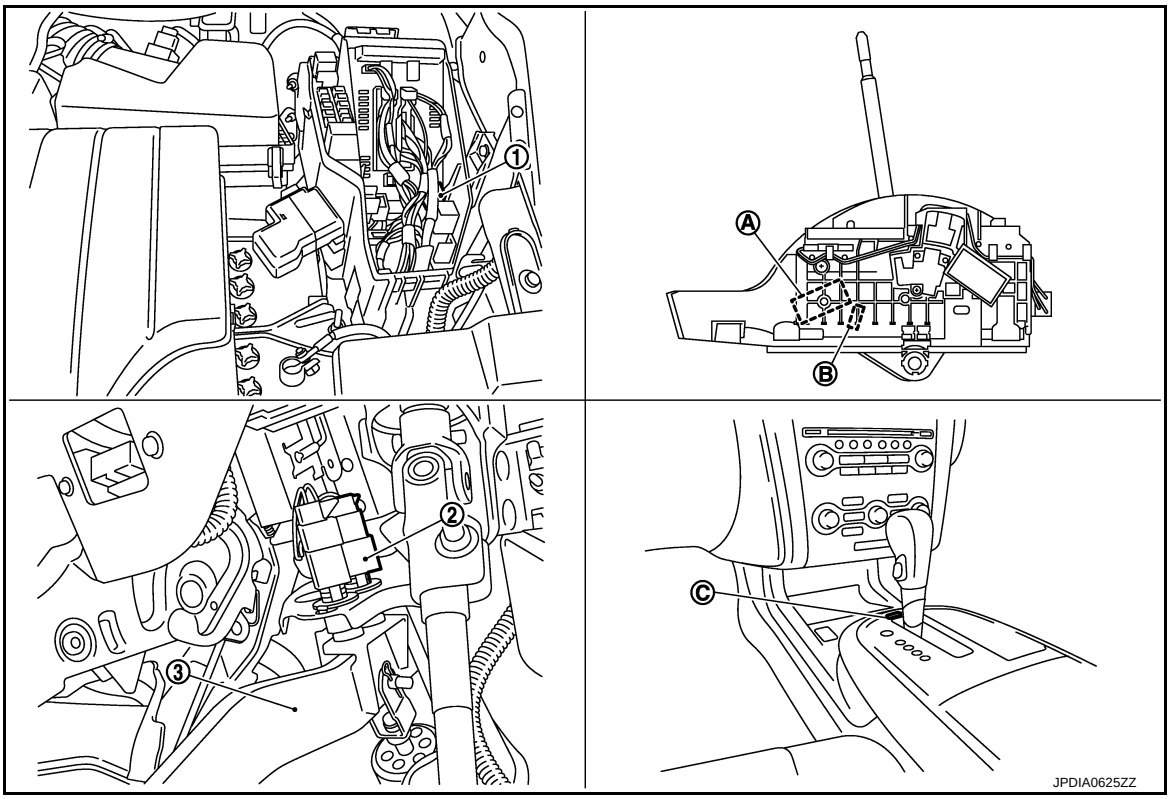


D : Detent rod

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

Component Parts Location

INFOID:0000000006260067



1. Shift lock relay
2. Stop lamp switch
3. Brake pedal
A. Shift lock solenoid
B. Park position switch
C. Shift lock release button cover

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

Component Description

INFOID:0000000006260068

SHIFT LOCK

Component	Function
Shift lock solenoid	TM-105
Lock lever	
Detent rod	
Park position switch	
Shift lock release button	

ON BOARD DIAGNOSTIC (OBD) SYSTEM

Diagnosis Description

INFOID:0000000006260069

DESCRIPTION

The CVT system has two self-diagnostic systems.
The first is the emission-related on board diagnostic system (OBD-II) performed by the TCM in combination with the ECM. A malfunction is indicated by the MIL (Malfunction Indicator Lamp) and is stored as a DTC in the ECM memory and in the TCM memory.
The second is the TCM original self-diagnosis performed by the TCM. A malfunction history is stored in the TCM memory. The detected items are overlapped with OBD-II self-diagnostic items. For details, refer to TM-124, "DTC Index".

OBD-II FUNCTION

The ECM provides emission-related on board diagnostic (OBD-II) functions for the CVT system. One function is to receive a signal from the TCM used with OBD-related parts of the CVT system. The signal is sent to the ECM when a malfunction occurs in the corresponding OBD-related part. The other function is to indicate a diagnostic result by means of the MIL (Malfunction Indicator Lamp) on the instrument panel. Sensors, switches and solenoid valves are used as sensing elements.
The MIL automatically illuminates in “One or Two Trip Detection Logic” when a malfunction is sensed in relation to CVT system parts.

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 illuminates and the ECM memory stores the malfunction 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 does 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 it occurred in the past and has 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 in “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 conditions 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 that 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 EC-129, "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.

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

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

How to Erase DTC

- The diagnostic trouble code can be erased by CONSULT-III, GST or ECM DIAGNOSTIC TEST MODE as described below.
- **If the battery cable is disconnected, the diagnostic trouble code will be lost within 24 hours.**
- **When erasing 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 EC-519, "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)

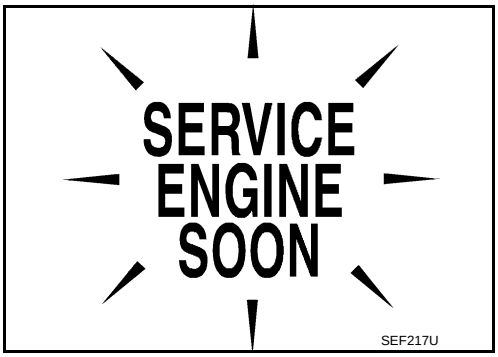
1. If the ignition switch stays ON after repair work, be sure to turn ignition switch OFF once. Wait at least 10 seconds and then turn it ON (engine stopped) again.
2. Select Mode 4 with GST (Generic Scan Tool). For details, refer to EC-129, "CONSULT-III Function".

MALFUNCTION INDICATOR LAMP (MIL)

Description

The MIL is located on the instrument panel.

1. The MIL is turned ON when the ignition switch is turned ON without the engine running. This is a bulb check.
   - If the MIL is not turned ON, refer to EC-471, "Component Function Check".
2. Turn OFF the MIL when the engine is started.
   If the MIL remains ON, the on board diagnostic system has detected an engine system malfunction.



DIAGNOSIS SYSTEM (TCM)

CONSULT-III Function (TRANSMISSION)

INFOID:0000000006260070

FUNCTION

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

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

WORK SUPPORT MODE

Display Item List

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

Engine Brake Adjustment

“ENGINE BRAKE LEVEL”

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

OFF **: Engine brake level control is deactivated.**

CAUTION:

Mode of “+1”“0”“–1”“–2”“OFF” can be selected by touching “UP”or “DOWN” on CONSULT-III screen. However, do not select a mode other than “0” and “OFF”. Selecting “+1” or “–1” or “–2” may cause irregular driveability.

Check CVT Fluid Deterioration Date

“CVTF DETERIORATION DATE”

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 RESULTS MODE

Refer to TM-124, "DTC Index".

DATA MONITOR MODE

Display Items List

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

Monitored item (Unit)	Monitor item selection			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	
VSP SENSOR (km/h)	X	—	▼	Secondary speed sensor
ESTM VSP SIG (km/h)	X	—	▼	—
PRI SPEED SEN (rpm)	X	—	▼	—
ENG SPEED SIG (rpm)	X	—	▼	—
SEC HYDR SEN (V)	X	—	▼	—
PRI HYDR SEN (V)	X	—	▼	—
ATF TEMP SEN (V)	X	—	▼	CVT fluid temperature sensor
VIGN SEN (V)	X	—	▼	—
VEHICLE SPEED (km/h or mph)	—	X	▼	Vehicle speed recognized by the TCM.
PRI SPEED (rpm)	—	X	▼	Primary pulley speed
SEC SPEED (rpm)	—	—	▼	Secondary pulley speed
ENG SPEED (rpm)	—	X	▼	—
SLIP REV (rpm)	—	X	▼	Difference between engine speed and primary pulley speed.
GEAR RATIO	—	X	▼	—
G SPEED (G)	—	—	▼	—
ACC PEDAL OPEN (0.0/8)	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	—	—	▼	—
SEC PRESS (MPa)	—	X	▼	—
PRI PRESS (MPa)	—	X	▼	—
ATFTEMP COUNT	—	X	▼	Means CVT fluid temperature. Actual oil temperature °C (°F) cannot be checked unless a numeric value is converted. Refer to TM-141 (FOR USA AND CANADA), TM-145 (FOR MEXICO).
DSR REV (rpm)	—	—	▼	—
DGEAR RATIO	—	—	▼	—
DSTM STEP (step)	—	—	▼	—
STM STEP (step)	—	X	▼	—
LU PRS (MPa)	—	—	▼	—
LINE PRS (MPa)	—	—	▼	—
TGT SEC PRESS (MPa)	—	—	▼	—
ISOLT1 (A)	—	X	▼	Torque converter clutch solenoid valve output current
ISOLT2 (A)	—	X	▼	Line pressure solenoid valve output current
ISOLT3 (A)	—	X	▼	Secondary pressure solenoid valve output current

Monitored item (Unit)	Monitor item selection			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	
SOLMON1 (A)	X	X	▼	Torque converter clutch solenoid valve monitor current
SOLMON2 (A)	X	X	▼	Line pressure solenoid valve monitor current
SOLMON3 (A)	X	X	▼	Secondary pressure solenoid valve monitor current
RANGE SW3M (On/Off)	X	—	▼	Transmission range switch 3 ON-OFF status monitor
RANGE SW4 (On/Off)	X	—	▼	Transmission range switch 4 ON-OFF status
RANGE SW3 (On/Off)	X	—	▼	Transmission range switch 3 ON-OFF status
RANGE SW2 (On/Off)	X	—	▼	Transmission range switch 2 ON-OFF status
RANGE SW1 (On/Off)	X	—	▼	Transmission range switch 1 ON-OFF status
BRAKE SW (On/Off)	X	X	▼	Stop lamp switch (signal input via CAN communications)
FULL SW (On/Off)	X	X	▼	Not mounted but displayed.
IDLE SW (On/Off)	X	X	▼	Signal input via CAN communications
SPORT MODE SW (On/Off)	X	X	▼	Overdrive control switch (signal input via CAN communications)
STRDWNSW (On/Off)	X	—	▼	Not mounted but displayed.
STRUPSW (On/Off)	X	—	▼	
DOWNLVR (On/Off)	X	—	▼	
UPLVR (On/Off)	X	—	▼	
NONMMODE (On/Off)	X	—	▼	
MMODE (On/Off)	X	—	▼	
INDLRNG (On/Off)	—	—	▼	“L” position indicator output
INDDRNG (On/Off)	—	—	▼	“D” position indicator output
INDNRNG (On/Off)	—	—	▼	“N” position indicator output
INDRRNG (On/Off)	—	—	▼	“R” position indicator output
INDPRNG (On/Off)	—	—	▼	“P” position indicator output
CVT LAMP (On/Off)	—	—	▼	—
SPORT MODE IND (On/Off)	—	—	▼	OD OFF indicator lamp
MMODE IND (On/Off)	—	—	▼	Not mounted but displayed.
SMCOIL D (On/Off)	—	—	▼	Step motor coil “D” energizing status
SMCOIL C (On/Off)	—	—	▼	Step motor coil “C” energizing status
SMCOIL B (On/Off)	—	—	▼	Step motor coil “B” energizing status
SMCOIL A (On/Off)	—	—	▼	Step motor coil “A” energizing status
LUSEL SOL OUT (On/Off)	—	—	▼	—
REV LAMP (On/Off)	—	X	▼	—
STRTR RLY OUT (On/Off)	—	—	▼	Starter relay

Monitored item (Unit)	Monitor item selection			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	
LUSEL SOL MON (On/Off)	—	—	▼	—
STRTR RLY MON (On/Off)	—	—	▼	Starter relay monitor
VDC ON (On/Off)	X	—	▼	—
TCS ON (On/Off)	X	—	▼	—
ABS ON (On/Off)	X	—	▼	—
ACC ON (On/Off)	X	—	▼	Not mounted but displayed.
RANGE	—	X	▼	Indicates position is recognized by TCM. Indicates a specific value required for control when fail-safe function is activated.
M GEAR POS	—	X	▼	Not mounted but displayed.

Diagnostic Tool Function

INFOID:0000000006260071

GST OBD-II SELF-DIAGNOSTIC PROCEDURE (WITH GST)
Refer to EC-118, "GST (Generic Scan Tool)".

DTC/CIRCUIT DIAGNOSIS

U1000 CAN COMM CIRCUIT

Description

INFOID:0000000006260072

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

DTC Logic

INFOID:0000000006260073

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
U1000	CAN Communication Line	When TCM is not transmitting or receiving CAN communication signal for 2 seconds or more.	Harness or connectors (CAN communication line is open or shorted.)

DTC CONFIRMATION PROCEDURE

NOTE:

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

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 Diagnostic Results” in “TRANSMISSION”.

With GST

Follow the procedure “With CONSULT-III”.

Is “U1000” detected?

YES >> Go to TM-41, "Diagnosis Procedure".

NO >> Check intermittent incident. Refer to GI-44, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000006260074

Go to LAN-25, "CAN System Specification Chart".

P0615 STARTER RELAY

Description

INFOID:0000000006260075

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

DTC Logic

INFOID:0000000006260076

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P0615	Starter Relay Circuit	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 too is judged to be a malfunction.)	• Harness or connectors (Starter relay and TCM circuit is open or shorted.) • Starter relay circuit

DTC CONFIRMATION PROCEDURE

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

1.CHECK DTC DETECTION

With CONSULT-III
1. Turn ignition switch ON.
2. Perform “Self Diagnostic Results” in “TRANSMISSION”.

Is “P0615” detected?

YES >> Go to TM-42, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-44, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000006260077

1.CHECK STARTER RELAY SIGNAL

1. Turn ignition switch OFF.
2. Disconnect IPDM E/R connector.
3. Turn ignition switch ON.
4. Check voltage between IPDM E/R vehicle side harness connector terminal and ground.

IPDM E/R vehicle side harness connector		Ground	Condition	Voltage (Approx.)
Connector	Terminal			
F12	72		Selector lever in “P” and “N” positions	Battery voltage
			Selector lever in other positions	0 V

Is the inspection result normal?

YES >> Check starter relay and starter control relay. Refer to PCS-10, "Diagnosis Description".
NO >> GO TO 2.

2.CHECK HARNESS BETWEEN TCM AND IPDM E/R (PART 1)

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

TCM vehicle side harness connector		IPDM E/R vehicle side harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F23	20	F12	72	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair or replace damaged parts.

3. CHECK HARNESS BETWEEN TCM AND IPDM E/R (PART 2)

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

TCM vehicle side harness connector		Ground	Continuity
Connector	Terminal		
F23	20		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair or replace damaged parts.

4. DETECT MALFUNCTIONING ITEMS

Check TCM connector pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> Replace TCM. Refer to TM-161, "Exploded View".
NO >> Repair or replace damaged parts.

P0703 BRAKE SWITCH B

Description

INFOID:0000000006260078

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

DTC Logic

INFOID:0000000006260079

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P0703	Brake Switch B Circuit	When the brake switch does not switch to ON or OFF.	• 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:

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

1.CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Start engine.
3. Drive vehicle for at least 3 consecutive seconds.
4. Perform “Self Diagnostic Results” in “TRANSMISSION”.

Is “P0703” detected?

YES >> Go to TM-44, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-44, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000006260080

1.CHECK STOP LAMP SWITCH CIRCUIT

1. Turn ignition switch OFF.
2. Check and adjust the installation position of stop lamp switch. Refer to BR-8, "Inspection and Adjustment".
3. Disconnect BCM connector.
4. Turn ignition switch ON.
5. Check voltage between BCM vehicle side harness connector terminal and ground.

BCM vehicle side harness connector		Ground	Condition	Voltage (Approx.)
Connector	Terminal			
M123	118		Depressed brake pedal	Battery voltage
			Released brake pedal	0 V

Is the inspection result normal?

YES >> GO TO 5.
NO >> GO TO 2.

2.CHECK HARNESS BETWEEN STOP LAMP SWITCH AND BCM (PART 1)

1. Turn ignition switch OFF.
2. Disconnect stop lamp switch connector.
3. Check continuity between stop lamp switch vehicle side harness connector terminal and BCM vehicle side harness connector terminal.

Stop lamp switch vehicle side harness connector		BCM vehicle side harness connector		Continuity
Connector	Terminal	Connector	Terminal	
E116	2	M123	118	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair or replace damaged parts.

3. CHECK HARNESS BETWEEN STOP LAMP SWITCH AND BCM (PART 2)

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

BCM vehicle side harness connector		Ground	Continuity
Connector	Terminal		
M123	118		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair or replace damaged parts.

4. CHECK STOP LAMP SWITCH

Check stop lamp switch. Refer to TM-45, "Component Inspection (Stop Lamp Switch)".

Is the inspection result normal?

YES >> Check the following.
- Harness for short or open between battery and stop lamp switch
- 10A fuse [No. 7, located in fuse block (J/B)]

NO >> Repair or replace stop lamp switch.

5. CHECK BCM

With CONSULT-III
1. Turn ignition switch OFF.
2. Connect BCM connector.
3. Turn ignition switch ON.
4. Select “BRAKE SW 1” in “Data Monitor” in “BCM” and verify the proper operation of ON/OFF. Refer to BCS-47, "Reference Value".

Is the inspection result normal?

YES >> GO TO 6.
NO >> Replace BCM. Refer to BCS-85, "Removal and Installation".

6. DETECT MALFUNCTIONING ITEMS

Check TCM connector pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> Replace TCM. Refer to TM-161, "Exploded View".
NO >> Repair or replace damaged parts.

Component Inspection (Stop Lamp Switch)

INFOID:0000000006260081

1. CHECK STOP LAMP SWITCH

Check continuity between stop lamp switch connector terminals.

Stop lamp switch connector			Condition	Continuity
Connector	Terminal			
E116	1	2	Depressed brake pedal	Existed
			Released brake pedal	Not existed

Is the inspection result normal?

YES >> INSPECTION END

NO >> Replace stop lamp switch. Refer to BR-19, "Exploded View".

P0705 TRANSMISSION RANGE SWITCH A

Description

INFOID:0000000006260082

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

Shift position	Transmission range switch 1	Transmission range switch 2	Transmission range switch 3	Transmission range switch 4	Transmission range 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
L	OFF	ON	ON	OFF	ON

DTC Logic

INFOID:0000000006260083

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P0705	Transmission Range Sensor A Circuit (PRNDL Input)	TCM does not receive the correct voltage signal (based on the gear position) from the switch.	• Harness or connectors (Transmission range switches circuit is open or shorted.) • Transmission range switch

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

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

1.CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Select “Data Monitor” in “TRANSMISSION”.
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 SIG	: More than 450 rpm
ACC PEDAL OPEN	: More than 1.0/8

With GST

Follow the procedure “With CONSULT-III”.

Is “P0705” detected?

YES >> Go to TM-47, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-44, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000006260084

1.CHECK CVT POSITION

1. Disconnect CVT unit connector.
2. Remove control cable from manual lever. Refer toTM-165, "Exploded View".
3. Check transmission range switch. Refer to TM-48, "Component Inspection".

Is the inspection result normal?

YES >> Adjust CVT position. Refer to TM-160, "Inspection and Adjustment".
NO >> GO TO 2.

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

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

TCM vehicle side harness connector		CVT unit vehicle side harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F23	1	F24	5	Existed
	2		14	
	3		15	
	4		18	
	11		4	

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair or replace damaged parts.

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

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

TCM vehicle side harness connector			Continuity
Connector	Terminal		
F23	1	Ground	Not existed
	2		
	3		
	4		
	11		

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair or replace damaged parts.

4. DETECT MALFUNCTIONING ITEMS

Check TCM connector pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> Replace TCM. Refer to TM-161, "Exploded View".
NO >> Repair or replace damaged parts.

Component Inspection

INFOID:0000000006260085

1. CHECK TRANSMISSION RANGE SWITCH

Check the continuity of the transmission range switch by changing selector lever to various positions and checking continuity between CVT unit terminals and ground.

Shift position	CVT unit connector			Continuity
	Connector	Terminal		
P	F24	4, 5, 14, 15, 18	Ground	Not existed
R		4, 15		Existed
		5, 14, 18		Not existed
N		4, 5		Existed
		14, 15, 18		Not existed
D		4, 5, 14, 15, 18		Existed
L		5, 14, 18		Existed
		4, 15		Not existed

Is the inspection result normal?

YES >> **INSPECTION END**

NO >> Replace transaxle assembly. Refer to TM-174, "Exploded View".

P0710 TRANSMISSION FLUID TEMPERATURE SENSOR A

Description

INFOID:0000000006260086

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

DTC Logic

INFOID:0000000006260087

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P0710	Transmission Fluid Temperature Sensor A Circuit	During running, the CVT fluid temperature sensor signal voltage is excessively high or low.	• 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:

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

1.CHECK DTC DETECTION (PART 1)

With CONSULT-III

1. Turn ignition switch ON.
2. Select “DATA MONITOR”.
3. Check that output voltage of CVT fluid temperature sensor is within the range specified below.

ATF TEMP SEN	: 0.16 – 2.03 V

is the inspection result normal?

YES >> Check intermittent incident. Refer to GI-44, "Intermittent Incident".
NO-1 (“ATF TEMP SEN” indicates 0.15 or less.)>>Refer to TM-50, "Diagnosis Procedure".
NO-2 (“ATF TEMP SEN” indicates 2.04 or more.)>>GO TO 2.

2.CHECK DTC DETECTION (PART 2)

With CONSULT-III

1. Turn ignition switch ON.
2. Select “DATA MONITOR”.
3. Start engine and maintain the following conditions for at least 14 minutes.

RANGE	: “D” position
VEHICLE SPEED	: 10 km/h (6 MPH) or more

With GST

Follow the procedure “With CONSULT-III”.

Is “P0710” detected?

YES >> Go to TM-50, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-44, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000006260088

1.CHECK CVT FLUID TEMPERATURE SENSOR CIRCUIT

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

TCM vehicle side harness connector			Condition	Resistance (Approx.)
Connector	Terminal			
F23	13	25	When CVT fluid temperature is 20°C (68°F)	6.5 kΩ
			When CVT fluid temperature is 80°C (176°F)	0.9 kΩ

Is the inspection result normal?

YES >> GO TO 5.
NO >> GO TO 2.

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

1. Disconnect CVT unit connector.
2. Check continuity between TCM vehicle side harness connector terminals and CVT unit vehicle side harness connector terminals.

TCM vehicle side harness connector		CVT unit vehicle side harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F23	13	F24	17	Existed
	25		19	

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair or replace damaged parts.

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

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

TCM vehicle side harness connector		Ground	Continuity
Connector	Terminal		
F23	13		Not existed
	25		

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair or replace damaged parts.

4.CHECK CVT FLUID TEMPERATURE SENSOR

Check CVT fluid temperature sensor. Refer to TM-51, "Component Inspection (CVT Fluid Temperature Sensor)".

Is the inspection result normal?

YES >> GO TO 5.
NO >> Replace transaxle assembly. Refer to TM-174, "Exploded View".

5.DETECT MALFUNCTIONING ITEMS

Check TCM connector pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> Replace TCM. Refer to TM-161, "Exploded View".
NO >> Repair or replace damaged parts.

Component Inspection (CVT Fluid Temperature Sensor)

INFOID:0000000006260089

1.CHECK CVT FLUID TEMPERATURE SENSOR

Check resistance between CVT unit connector terminals.

CVT unit connector			Condition	Resistance (Approx.)
Connector	Terminal			
F24	17	19	When CVT fluid temperature is 20°C (68°F)	6.5 kΩ
			When CVT fluid temperature is 80°C (176°F)	0.9 kΩ

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace transaxle assembly. Refer to TM-174, "Exploded View".

P0715 INPUT SPEED SENSOR A

Description

INFOID:0000000006260090

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

DTC Logic

INFOID:0000000006260091

DTC DETECTION LOGIC

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

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

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

1. CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Select “Data Monitor” in “TRANSMISSION”.
3. Start engine and maintain the following conditions for at least 5 consecutive seconds.

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” detected?

YES >> Go to TM-53, "Diagnosis Procedure".

NO >> Check intermittent incident. Refer to GI-44, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000006260092

1. CHECK PRIMARY SPEED SENSOR

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

TCM connector			Voltage (Approx.)
Connector	Terminal		
F23	25	26	4.75 – 5.25 V

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

TCM connector		Condition	Voltage (Approx.)
Connector	Terminal		
F23	33	When driving [“L”position, 20 km/h (12 MPH)]	680 Hz

Is the inspection result normal?

YES >> GO TO 7.
NO-1 >> Battery voltage is not supplied: GO TO 2.
NO-2 >> Battery voltage is supplied, but there is a malfunction in the frequency: GO TO 4.

2. CHECK HARNESS BETWEEN TCM AND CVT UNIT HARNESS CONNECTOR (SENSOR POWER AND SENSOR GROUND) (PART 1)

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

TCM vehicle side harness connector		CVT unit vehicle side harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F23	25	F24	19	Existed
	26		20	

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair or replace damaged parts.

3. CHECK HARNESS BETWEEN TCM AND CVT UNIT HARNESS CONNECTOR (SENSOR POWER AND SENSOR GROUND) (PART 2)

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

TCM vehicle side harness connector		Ground	Continuity
Connector	Terminal		
F23	25		Not existed
	26		

Is the inspection result normal?

YES >> GO TO 6.
NO >> Repair or replace damaged parts.

4. CHECK HARNESS BETWEEN TCM AND CVT UNIT HARNESS CONNECTOR (PRIMARY SPEED SENSOR) (PART 1)

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

TCM vehicle side harness connector		CVT unit vehicle side harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F23	33	F24	22	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair or replace damaged parts.

5. CHECK HARNESS BETWEEN TCM AND CVT UNIT HARNESS CONNECTOR (PRIMARY SPEED SENSOR) (PART 2)

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

TCM vehicle side harness connector		Ground	Continuity
Connector	Terminal		
F23	33		Not existed

Is the inspection result normal?

YES >> GO TO 6.

>> Repair or replace damaged parts.

6. CHECK THE TCM SHORT

1. Replace with the same type of TCM. Refer to TM-161, "Exploded View".
2. Connect each connectors.
3. Perform “DTC CONFIRMATION PROCEDURE”. Refer to TM-53, "DTC Logic".

Is the “P0715” detected again?

YES >> GO TO 7.
NO >> Check intermittent incident. Refer to GI-44, "Intermittent Incident".

7. DETECT MALFUNCTIONING ITEMS

Check TCM connector pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> Replace TCM. Refer to TM-161, "Exploded View".
NO >> Repair or replace damaged parts.

P0720 OUTPUT SPEED SENSOR

Description

INFOID:0000000006260093

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

DTC Logic

INFOID:0000000006260094

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P0720	Output Speed Sensor Circuit	• Signal from secondary speed sensor is not input due to open or short circuit. • An unexpected signal is input during running.	• Harness or connectors (Sensor circuit is open or shorted.) • Secondary speed sensor

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

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

1.CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Select “Data Monitor” in “TRANSMISSION”.
3. Start engine and maintain the following conditions for at least 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.

With GST

Follow the procedure “With CONSULT-III”.

Is “P0720” detected?

YES >> Go to TM-56, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-44, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000006260095

1.CHECK SECONDARY SPEED SENSOR

With CONSULT-III

Check the pulse when vehicle drive.

TCM connector		Condition	Data (Approx.)
Connector	Terminal		
F23	34	When driving [“D” position, 20 km/h (12 MPH)]	350 Hz

Is the inspection result normal?

YES >> GO TO 11.
NO >> GO TO 2.

2.CHECK POWER AND SENSOR GROUND

1. Turn ignition switch OFF.
2. Disconnect secondary speed sensor connector.
3. Turn ignition switch ON.

4. Check voltage between secondary speed sensor vehicle side harness connector terminals.

Secondary speed sensor vehicle side harness connector			Voltage (Approx.)
Connector	Terminal		
F19	1	3	Battery voltage

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

Secondary speed sensor vehicle side harness connector		Ground	Voltage (Approx.)
Connector	Terminal		
F19	3		Battery voltage

Is the inspection result normal?

YES >> GO TO 3.
NO-1 (Battery voltage is not supplied between terminals 1 and 3, terminal 3 and ground)>>GO TO 6.
NO-2 (Battery voltage is not supplied between terminals 1 and 3 only)>>GO TO 8.

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

1. Turn ignition switch OFF.
2. Disconnect TCM connector.
3. Check continuity between TCM vehicle side harness connector terminal and ground.

TCM vehicle side harness connector		Ground	Continuity
Connector	Terminal		
F23	7		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair or replace damaged parts.

4. CHECK HARNESS BETWEEN TCM AND SECONDARY SPEED SENSOR (PART 1)

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

TCM vehicle side harness connector		secondary speed sensor vehicle side harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F23	34	F19	2	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair or replace damaged parts.

5. CHECK HARNESS BETWEEN TCM AND SECONDARY SPEED SENSOR (PART 2)

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

TCM vehicle side harness connector		Ground	Continuity
Connector	Terminal		
F23	34		Not existed

Is the inspection result normal?

YES >> GO TO 10.
NO >> Repair or replace damaged parts.

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

1. Turn ignition switch OFF.
2. Disconnect IPDM E/R connector.

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

IPDM E/R vehicle side harness connector		Secondary speed sensor vehicle side harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F12	58	F19	3	Existed

Is the inspection result normal?

YES >> GO TO 7.
NO >> Repair or replace damaged parts.

7. CHECK HARNESS BETWEEN IPDM E/R AND SECONDARY SPEED SENSOR (POWER) (PART 2)

Check continuity between IPDM E/R vehicle side harness connector terminal and ground.

IPDM E/R vehicle side harness connector		Ground	Continuity
Connector	Terminal		
F12	58		Not existed

Is the inspection result normal?

YES >> Check the following. If NG, repair or replace damaged parts.
- Harness for short or open between ignition switch and IPDM E/R
- 10A fuse (No. 43, located in IPDM E/R)
- Ignition switch

NO >> Repair or replace damaged parts.

8. CHECK HARNESS BETWEEN TCM AND SECONDARY SPEED SENSOR (SENSOR GROUND) (PART 1)

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

TCM vehicle side harness connector		Secondary speed sensor vehicle side harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F23	7	F19	1	Existed

Is the inspection result normal?

YES >> GO TO 9.
NO >> Repair or replace damaged parts.

9. CHECK HARNESS BETWEEN TCM AND SECONDARY SPEED SENSOR (SENSOR GROUND) (PART 2)

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

TCM vehicle side harness connector		Ground	Continuity
Connector	Terminal		
F23	7		Not existed

Is the inspection result normal?

YES >> GO TO 10.
NO >> Repair or replace damaged parts.

10. CHECK TCM

1. Replace with the same type of TCM. Refer to TM-161, "Exploded View".
2. Perform “DTC CONFIRMATION PROCEDURE”. Refer to TM-56, "DTC Logic".

Is “P0720” detected?

YES >> Replace the secondary speed sensor. Refer to TM-169, "Exploded View".
NO >> Replace TCM. Refer to TM-161, "Exploded View".

11. DETECT MALFUNCTIONING ITEMS

Check TCM connector pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> Replace TCM. Refer to TM-161, "Exploded View".
NO >> Repair or replace damaged parts.

P0725 ENGINE SPEED

Description

INFOID:0000000006260096

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

DTC Logic

INFOID:0000000006260097

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P0725	Engine Speed Input Circuit	• TCM does not receive the CAN communication signal from the ECM. • Engine speed is too low while driving.	Harness or connectors (The ECM to the TCM circuit is open or shorted.)

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

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

1.CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Select “Data Monitor” in “TRANSMISSION”.
3. Start engine and maintain the following conditions for at least 10 consecutive seconds.

PRI SPEED SEN	: More than 1000 rpm

Is “P0725” detected?

YES >> Go to TM-60, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-44, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000006260098

1.CHECK DTC WITH ECM

With CONSULT-III

1. Turn ignition switch ON.
2. Perform “Self Diagnostic Results” in “ENGINE”.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Check DTC detected item. Refer to EC-519, "DTC Index".

2.CHECK DTC WITH TCM

With CONSULT-III

Perform “Self Diagnostic Results” in “TRANSMISSION”.

Is “P0725” detected?

YES >> Replace TCM. Refer toTM-161, "Exploded View".
NO >> GO TO 3.

3.DETECT MALFUNCTIONING ITEMS

Check TCM connector pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> Replace TCM. Refer to TM-161, "Exploded View".
NO >> Repair or replace damaged parts.

P0730 INCORRECT GEAR RATIO

Description

INFOID:0000000006260099

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

DTC Logic

INFOID:0000000006260100

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P0730	Incorrect Gear Ratio	Unexpected gear ratio detected.	Transaxle assembly

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

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

1. CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Select “Data Monitor” in “TRANSMISSION”.
3. Make sure that output voltage of CVT fluid temperature sensor is within the range below.

ATF TEMP SEN	: 1.0 – 2.0 V

If it is 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.

Start test from 0 km/h (0 MPH)	
Constant acceleration	: Keep 30 seconds or more
VEHICLE SPEED	: 10 km/h (6 MPH) or more
ACC PEDAL OPEN	: More than 1.0/8
RANGE	: “D” position
ENG SPEED	: 450 rpm or more

Is “P0730” detected?

YES >> Go to TM-61, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-44, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000006260101

1. CHECK DTC

With CONSULT-III

1. Turn ignition switch ON.
2. Perform “Self Diagnostic Results” in “TRANSMISSION”.

Are any DTC detected?

YES-1 (DTC for “P0730” is detected)>>Replace transaxle assembly. Refer to TM-174, "Exploded View".
YES-2 (DTC except for “P0730” is detected)>>Check DTC detected item. Refer to TM-37, "CONSULT-III Function (TRANSMISSION)".
NO >> GO TO 2.

2. DETECT MALFUNCTIONING ITEMS

Check TCM connector pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> Replace TCM. Refer to TM-161, "Exploded View".
NO >> Repair or replace damaged parts.

P0740 TORQUE CONVERTER

Description

INFOID:0000000006260102

- 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

INFOID:0000000006260103

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P0740	Torque Converter Clutch Circuit/Open	Normal voltage is not applied to solenoid due to open or short circuit.	• Torque converter clutch solenoid valve • Harness or connectors (Solenoid circuit is open or shorted.)

DTC CONFIRMATION PROCEDURE

NOTE:

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

1. CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Wait at least 10 consecutive seconds.
3. Perform “Self Diagnostic Results” in “TRANSMISSION”.

With GST

Follow the procedure “With CONSULT-III”.

Is “P0740” detected?

YES >> Go to TM-63, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-44, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000006260104

1. CHECK TORQUE CONVERTER CLUTCH SOLENOID VALVE CIRCUIT

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

TCM vehicle side harness connector		Ground	Resistance (Approx.)
Connector	Terminal		
F23	38		3.0 – 9.0 Ω

Is the inspection result normal?

YES >> GO TO 5.
NO >> GO TO 2.

2. CHECK HARNESS BETWEEN TCM AND CVT UNIT (TORQUE CONVERTER CLUTCH SOLENOID VALVE) (PART 1)

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

TCM vehicle side harness connector		CVT unit vehicle side harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F23	38	F24	12	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair or replace damaged parts.

3.CHECK HARNESS BETWEEN TCM AND CVT UNIT (TORQUE CONVERTER CLUTCH SOLENOID VALVE) (PART 2)

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

TCM vehicle side harness connector		Ground	Continuity
Connector	Terminal		
F23	38		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair or replace damaged parts.

4.CHECK TORQUE CONVERTER CLUTCH SOLENOID VALVE

Check torque converter clutch solenoid valve. Refer to TM-64, "Component Inspection (Torque Converter Clutch Solenoid Valve)".

Is the inspection result normal?

YES >> GO TO 5.
NO >> Replace transaxle assembly. Refer to TM-174, "Exploded View".

5.DETECT MALFUNCTIONING ITEMS

Check TCM connector pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> Replace TCM. Refer to TM-161, "Exploded View".
NO >> Repair or replace damaged parts.

Component Inspection (Torque Converter Clutch Solenoid Valve)

INFOID:0000000006260105

1.CHECK TORQUE CONVERTER CLUTCH SOLENOID VALVE

Check resistance between CVT unit connector terminal and ground.

CVT unit connector		Ground	Resistance (Approx.)
Connector	Terminal		
F24	12		3.0 – 9.0 Ω

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace transaxle assembly. Refer to TM-174, "Exploded View".

P0744 TORQUE CONVERTER

Description

INFOID:0000000006260106

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 malfunctions (circuits open or shorted), but also by mechanical malfunctions such as control valve sticking, improper solenoid valve operation, etc.

DTC Logic

INFOID:0000000006260107

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P0744	Torque Converter Clutch Circuit Intermittent	• 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 big difference between engine speed and primary speed sensor when TCM lock-up signal is on.	• Torque converter clutch solenoid valve • Hydraulic control circuit

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

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

1. CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Select “Data Monitor” in “TRANSMISSION”.
3. Start engine and maintain the following 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)

With GST

Follow the procedure “With CONSULT-III”.

Is “P0744” detected?

YES >> Go to TM-65, "Diagnosis Procedure".

NO >> Check intermittent incident. Refer to GI-44, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000006260108

1. CHECK LINE PRESSURE

Perform line pressure test. Refer to TM-154, "Inspection and Judgment".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace damaged parts. Refer to TM-154, "Inspection and Judgment".

2. CHECK TORQUE CONVERTER CLUTCH SOLENOID VALVE

1. Turn ignition switch OFF.
2. Disconnect CVT unit connector.
3. Check torque converter clutch solenoid valve. Refer to TM-66, "Component Inspection (Torque Converter Clutch Solenoid Valve)".

Is the inspection result normal?

YES >> GO TO 3.

NO >> Replace transaxle assembly. Refer to TM-174, "Exploded View".

3.CHECK LOCK-UP SELECT SOLENOID VALVE

Check lock-up select solenoid valve. Refer to TM-66, "Component Inspection (Lock-up Select Solenoid Valve)".

Is the inspection result normal?

YES >> GO TO 4.
NO >> Replace transaxle assembly. Refer to TM-174, "Exploded View".

4.CHECK SECONDARY SPEED SENSOR SYSTEM

Check secondary speed sensor system. Refer to TM-56, "DTC Logic".

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair or replace damaged parts.

5.CHECK PRIMARY SPEED SENSOR SYSTEM

Check primary speed sensor system. Refer to TM-53, "DTC Logic".

Is the inspection result normal?

YES >> GO TO 6.
NO >> Repair or replace damaged parts.

6.DETECT MALFUNCTIONING ITEMS

Check TCM connector pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> Replace TCM. Refer to TM-161, "Exploded View".
NO >> Repair or replace damaged parts.

Component Inspection (Torque Converter Clutch Solenoid Valve)

INFOID:0000000006260109

1.CHECK TORQUE CONVERTER CLUTCH SOLENOID VALVE

Check resistance between CVT unit connector terminal and ground.

CVT unit connector		Ground	Resistance (Approx.)
Connector	Terminal		
F24	12		3.0 – 9.0 Ω

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace transaxle assembly. Refer to TM-174, "Exploded View".

Component Inspection (Lock-up Select Solenoid Valve)

INFOID:0000000006260110

1.CHECK LOCK-UP SELECT SOLENOID VALVE

Check resistance between CVT unit connector terminal and ground.

CVT unit connector		Ground	Resistance (Approx.)
Connector	Terminal		
F24	13		6.0 – 19.0 Ω

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace transaxle assembly. Refer to TM-174, "Exploded View".

P0745 PRESSURE CONTROL SOLENOID A

Description

INFOID:0000000006260111

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

DTC Logic

INFOID:0000000006260112

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P0745	Pressure Control Solenoid A	• Normal voltage is not applied to solenoid due to open or short circuit. • TCM detects as irregular by comparing target value with monitor value.	• Harness or connectors (Solenoid circuit is open or shorted.) • Line pressure solenoid valve

DTC CONFIRMATION PROCEDURE

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

1.CHECK DTC DETECTION

With CONSULT-III
1. Turn ignition switch ON.
2. Start engine and wait at least 5 seconds.
3. Perform “Self Diagnostic Results” in “TRANSMISSION”.

With GST
Follow the procedure “With CONSULT-III”.

Is “P0745” detected?

YES >> Go to TM-67, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-44, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000006260113

1.CHECK LINE PRESSURE SOLENOID VALVE CIRCUIT

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

TCM vehicle side harness connector		Ground	Resistance (Approx.)
Connector	Terminal		
F23	40		3.0 – 9.0 Ω

Is the inspection result normal?

YES >> GO TO 5.
NO >> GO TO 2.

2.CHECK HARNESS BETWEEN TCM AND CVT UNIT (LINE PRESSURE SOLENOID VALVE) (PART 1)

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

TCM vehicle side harness connector		CVT unit vehicle side harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F23	40	F24	2	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair or replace damaged parts.

3. CHECK HARNESS BETWEEN TCM AND CVT UNIT (LINE PRESSURE SOLENOID VALVE) (PART 2)

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

TCM vehicle side harness connector		Ground	Continuity
Connector	Terminal		
F23	40		Not existed

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 TM-68, "Component Inspection (Line Pressure Solenoid Valve)"

Is the inspection result normal?

YES >> GO TO 5.
NO >> Replace transaxle assembly. Refer to TM-174, "Exploded View".

5. DETECT MALFUNCTIONING ITEMS

Check TCM connector pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> Replace TCM. Refer to TM-161, "Exploded View".
NO >> Repair or replace damaged parts.

Component Inspection (Line Pressure Solenoid Valve)

INFOID:0000000006260114

1. CHECK LINE PRESSURE SOLENOID VALVE

Check resistance between CVT unit connector terminal and ground.

CVT unit connector		Ground	Resistance (Approx.)
Connector	Terminal		
F24	2		3.0 – 9.0 Ω

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace transaxle assembly. Refer to TM-174, "Exploded View".

P0746 PRESSURE CONTROL SOLENOID A

Description

INFOID:0000000006260115

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

DTC Logic

INFOID:0000000006260116

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P0746	Pressure Control Solenoid A Performance/Stuck Off	Unexpected gear ratio was detected in the low side due to excessively low line pressure.	• Line pressure control system • Secondary speed sensor • Primary speed sensor

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

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

1.CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Select “Data Monitor” in “TRANSMISSION”.
3. Start engine and maintain the following conditions for at least 10 consecutive seconds. 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) 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 “P0746” detected?

YES >> Go to TM-69, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-44, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000006260117

1.CHECK LINE PRESSURE

Perform line pressure test. Refer to TM-154, "Inspection and Judgment".

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair or replace damaged parts. Refer to TM-154, "Inspection and Judgment".

2.CHECK LINE PRESSURE SOLENOID VALVE

1. Turn ignition switch OFF.
2. Disconnect CVT unit connector.
3. Check line pressure solenoid valve. Refer to TM-70, "Component Inspection (Line Pressure Solenoid Valve)".

Is the inspection result normal?

YES >> GO TO 3.
NO >> Replace transaxle assembly. Refer to TM-174, "Exploded View".

3.CHECK SECONDARY SPEED SENSOR SYSTEM

Check secondary speed sensor system. Refer to TM-56, "DTC Logic".

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair or replace damaged parts.

4.CHECK PRIMARY SPEED SENSOR SYSTEM

Check primary speed sensor system. Refer to TM-53, "DTC Logic".

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair or replace damaged parts.

5.DETECT MALFUNCTIONING ITEMS

Check TCM connector pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> Replace TCM. Refer to TM-161, "Exploded View".
NO >> Repair or replace damaged parts.

Component Inspection (Line Pressure Solenoid Valve)

INFOID:0000000006260118

1.CHECK LINE PRESSURE SOLENOID VALVE

Check resistance between CVT unit connector terminal and ground.

CVT unit connector		Ground	Resistance (Approx.)
Connector	Terminal		
F24	2		3.0 – 9.0 Ω

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace transaxle assembly. Refer to TM-174, "Exploded View".

P0776 PRESSURE CONTROL SOLENOID B

Description

INFOID:0000000006260119

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

DTC Logic

INFOID:0000000006260120

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P0776	Pressure Control Solenoid B Performance/Stuck Off	Secondary pressure is too high or too low compared with the commanded value while driving.	• Harness or connectors (Solenoid circuit is open or shorted.) • Secondary pressure solenoid valve system • Secondary pressure sensor • Line pressure control system

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

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

1.CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Select “Data Monitor” in “TRANSMISSION”.
3. Start engine and maintain the following conditions for at least 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) 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 “P0776” detected?

YES >> Go to TM-71, "Diagnosis Procedure".

NO >> Check intermittent incident. Refer to GI-44, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000006260121

1.CHECK LINE PRESSURE

Perform line pressure test. Refer to TM-154, "Inspection and Judgment".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace damaged parts. Refer to TM-154, "Inspection and Judgment".

2.CHECK SECONDARY PRESSURE SOLENOID VALVE

1. Turn ignition switch OFF.
2. Disconnect CVT unit connector.
3. Check secondary pressure solenoid valve. Refer to TM-72, "Component Inspection (Secondary Pressure Solenoid Valve)".

Is the inspection result normal?

YES >> GO TO 3.
NO >> Replace transaxle assembly. Refer to TM-174, "Exploded View".

3.CHECK LINE PRESSURE SOLENOID VALVE

Check line pressure solenoid valve. Refer to TM-72, "Component Inspection (Line Pressure Solenoid Valve)".

Is the inspection result normal?

YES >> GO TO 4.
NO >> Replace transaxle assembly. Refer to TM-174, "Exploded View".

4.CHECK SECONDARY PRESSURE SENSOR SYSTEM

Check secondary pressure sensor system. Refer to TM-75, "DTC Logic".

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair or replace damaged parts.

5.DETECT MALFUNCTIONING ITEMS

Check TCM connector pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> Replace TCM. Refer to TM-174, "Exploded View".
NO >> Repair or replace damaged parts.

Component Inspection (Line Pressure Solenoid Valve)

INFOID:0000000006260122

1.CHECK LINE PRESSURE SOLENOID VALVE

Check resistance between CVT unit connector terminal and ground.

CVT unit connector		Ground	Resistance (Approx.)
Connector	Terminal		
F24	2		3.0 – 9.0 Ω

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace transaxle assembly. Refer to TM-174, "Exploded View".

Component Inspection (Secondary Pressure Solenoid Valve)

INFOID:0000000006260123

1.CHECK SECONDARY PRESSURE SOLENOID VALVE

Check resistance between CVT unit connector terminal and ground.

CVT unit connector		Ground	Resistance (Approx.)
Connector	Terminal		
F24	3		3.0 – 9.0 Ω

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace transaxle assembly. Refer to TM-174, "Exploded View".

P0778 PRESSURE CONTROL SOLENOID B

Description

INFOID:0000000006260124

The 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

INFOID:0000000006260125

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P0778	Pressure Control Solenoid B Electrical	• Normal voltage is not applied to solenoid due to cut line, short, etc. • TCM detects as irregular by comparing target value with monitor value.	• Harness or connectors (Solenoid circuit is open or shorted.) • Secondary pressure solenoid valve

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

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

1. CHECK DTC DETECTION

With CONSULT-III

1. Start engine.
2. Drive vehicle and maintain the following conditions for at least 5 consecutive seconds.
3. Perform “Self Diagnostic Results” in “TRANSMISSION”.

With GST

Follow the procedure “With CONSULT-III”.

Is “P0778” detected?

YES >> Go to TM-73, "Diagnosis Procedure".

NO >> Check intermittent incident. Refer to GI-44, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000006260126

1. CHECK SECONDARY PRESSURE SOLENOID VALVE CIRCUIT

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

TCM vehicle side harness connector		Ground	Resistance (Approx.)
Connector	Terminal		
F23	39		3.0 – 9.0 Ω

Is the inspection result normal?

YES >> GO TO 5.

NO >> GO TO 2.

2. CHECK HARNESS BETWEEN TCM AND SECONDARY PRESSURE SOLENOID VALVE (PART 1)

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

TCM vehicle side harness connector		CVT unit vehicle side harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F23	39	F24	3	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair or replace damaged parts.

3.CHECK HARNESS BETWEEN TCM AND SECONDARY PRESSURE SOLENOID VALVE (PART 2)

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

TCM vehicle side harness connector		Ground	Continuity
Connector	Terminal		
F23	39		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair or replace damaged parts.

4.CHECK SECONDARY PRESSURE SOLENOID VALVE

Check secondary pressure solenoid valve. Refer to TM-74, "Component Inspection (Secondary Pressure Solenoid Valve)".

Is the inspection result normal?

YES >> GO TO 5.
NO >> Replace transaxle assembly. Refer to TM-174, "Exploded View".

5.DETECT MALFUNCTIONING ITEMS

Check TCM connector pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> Replace TCM. Refer to TM-161, "Exploded View".
NO >> Repair or replace damaged parts.

Component Inspection (Secondary Pressure Solenoid Valve)

INFOID:0000000006260127

1.CHECK SECONDARY PRESSURE SOLENOID VALVE

Check resistance between CVT unit connector terminal and ground.

CVT unit connector		Ground	Resistance (Approx.)
Connector	Terminal		
F24	3		3.0 – 9.0 Ω

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace transaxle assembly. Refer to TM-174, "Exploded View".

P0840 TRANSMISSION FLUID PRESSURE SEN/SW A

Description

INFOID:0000000006260128

The secondary pressure sensor detects secondary pressure of CVT and sends a signal to the TCM.

DTC Logic

INFOID:0000000006260129

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P0840	Transmission Fluid Pressure Sensor/Switch A Circuit	Signal voltage of the transmission fluid pressure sensor A (secondary pressure sensor) is too high or too low while driving.	• Harness or connectors (Sensor circuit is open or shorted.) • Secondary pressure sensor

DTC CONFIRMATION PROCEDURE

NOTE:

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

1.CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Select “Data Monitor” in “TRANSMISSION”.
3. Make sure that output voltage of CVT fluid temperature sensor is within the range below.

ATF TEMP SEN : 1.0 – 2.0 V

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

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

With GST

Follow the procedure “With CONSULT-III”.

Is “P0840” detected?

YES >> Go to TM-75, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-44, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000006260130

1.CHECK INPUT SIGNAL

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

TCM connector		Ground	Condition	Voltage (Approx.)
Connector	Terminal			
F23	15		“N” position idle	1.0 – 1.5 V

Is the inspection result normal?

YES >> GO TO 8.
NO >> GO TO 2.

2.CHECK POWER AND SENSOR GROUND

Check voltage between TCM terminals.

TCM connector			Voltage (Approx.)
Connector	Terminal		
F23	25	26	4.75 – 5.25 V

Is the inspection result normal?

YES >> GO TO 3.
NO >> GO TO 5.

3. CHECK HARNESS BETWEEN TCM AND CVT UNIT (SECONDARY PRESSURE SENSOR) (PART 1)

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

TCM vehicle side harness connector		CVT unit vehicle side harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F23	15	F24	23	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair or replace damaged parts.

4. CHECK HARNESS BETWEEN TCM AND CVT UNIT (SECONDARY PRESSURE SENSOR) (PART 2)

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

TCM vehicle side harness connector		Ground	Continuity
Connector	Terminal		
F23	15		Not existed

Is the inspection result normal?

YES >> GO TO 7.
NO >> Repair or replace damaged parts.

5. CHECK HARNESS BETWEEN TCM AND CVT UNIT (SENSOR POWER AND SENSOR GROUND) (PART 1)

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

TCM vehicle side harness connector		CVT unit vehicle side harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F23	25	F24	19	Existed
	26		20	

Is the inspection result normal?

YES >> GO TO 6.
NO >> Repair or replace damaged parts.

6. CHECK HARNESS BETWEEN TCM AND CVT UNIT (SENSOR POWER AND SENSOR GROUND) (PART 2)

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

TCM vehicle side harness connector		Ground	Continuity
Connector	Terminal		
F23	25		Not existed
	26		

Is the inspection result normal?

YES >> GO TO 7.
NO >> Repair or replace damaged parts.

7. CHECK TCM

1. Replace with the same type of TCM. Refer to TM-161, "Exploded View".
2. Connect each connector.
3. Perform “DTC CONFIRMATION PROCEDURE”. Refer to TM-75, "DTC Logic".

Is “P0840” detected?

YES >> Replace transaxle assembly. Refer to TM-174, "Exploded View".
NO >> Replace TCM. Refer to TM-161, "Exploded View".

8. DETECT MALFUNCTIONING ITEMS

Check TCM connector pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> Replace TCM. Refer to TM-161, "Exploded View".
NO >> Repair or replace damaged parts.

P0841 TRANSMISSION FLUID PRESSURE SEN/SW A

Description

INFOID:0000000006260131

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

DTC Logic

INFOID:0000000006260132

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P0841	Transmission Fluid Pressure Sensor/Switch A Circuit Range/Performance	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.	• Harness or connectors (Sensor circuit is open or shorted.) • Secondary pressure sensor • Primary pressure sensor

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

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

1.CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Select “Data Monitor” in “TRANSMISSION”.
3. Start engine and maintain the following conditions for at least 12 consecutive seconds.

VEHICLE SPEED	: 40 km/h (25 MPH) or more
RANGE	: “D” position

Is “P0841” detected?

YES >> Go to TM-78, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-44, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000006260133

1.CHECK LINE PRESSURE

Perform line pressure test. Refer to TM-154, "Inspection and Judgment".

Is the inspection result normal?

YES >> .GO TO 2.
NO >> Repair or replace damaged parts. Refer to TM-154, "Inspection and Judgment".

2.CHECK SECONDARY PRESSURE SENSOR SYSTEM

Check secondary pressure sensor system. Refer to TM-75, "DTC Logic".

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair or replace damaged parts.

3.CHECK PRIMARY PRESSURE SENSOR SYSTEM

Check primary pressure sensor system. Refer to TM-80, "DTC Logic".

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair or replace damaged parts.

4. CHECK LINE PRESSURE SOLENOID VALVE

1. Turn ignition switch OFF.
2. Disconnect CVT unit connector.
3. Check line pressure solenoid valve. Refer to TM-79, "Component Inspection (Line Pressure Solenoid Valve)".

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 TM-79, "Component Inspection (Secondary Pressure Solenoid Valve)".

Is the inspection result normal?

YES >> GO TO 6.
NO >> Repair or replace damaged parts.

6. CHECK STEP MOTOR SYSTEM

Check step motor system. Refer to TM-99, "DTC Logic".

Is the inspection result normal?

YES >> GO TO 7.
NO >> Repair or replace damaged parts.

7. DETECT MALFUNCTIONING ITEMS

Check TCM connector pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> Replace TCM. Refer to TM-161, "Exploded View".
NO >> Repair or replace damaged parts.

Component Inspection (Line Pressure Solenoid Valve)

INFOID:0000000006260134

1. CHECK LINE PRESSURE SOLENOID VALVE

Check resistance between CVT unit connector terminal and ground.

CVT unit connector		Ground	Resistance (Approx.)
Connector	Terminal		
F24	2		3.0 – 9.0 Ω

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace transaxle assembly. Refer to TM-174, "Exploded View".

Component Inspection (Secondary Pressure Solenoid Valve)

INFOID:0000000006260135

1. CHECK SECONDARY PRESSURE SOLENOID VALVE

Check resistance between CVT unit connector terminal and ground.

CVT unit connector		Ground	Resistance (Approx.)
Connector	Terminal		
F24	3		3.0 – 9.0 Ω

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace transaxle assembly. Refer to TM-174, "Exploded View".

P0845 TRANSMISSION FLUID PRESSURE SEN/SW B

Description

INFOID:0000000006260136

The primary pressure sensor detects primary pressure of CVT and sends a signal to the TCM.

DTC Logic

INFOID:0000000006260137

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P0845	Transmission Fluid Pressure Sensor/Switch B Circuit	Signal voltage of the transmission fluid pressure sensor B (primary pressure sensor) is too high or too low while driving.	• Harness or connectors (Sensor circuit is open or shorted.) • Primary pressure sensor

DTC CONFIRMATION PROCEDURE

NOTE:

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

1.CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Select “Data Monitor” in “TRANSMISSION”.
3. Make sure that output voltage of line temperature sensor is within the range below.

ATF TEMP SEN : 1.0 – 2.0 V

If it is 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” detected?

YES >> Go to TM-80, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-44, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000006260138

1.CHECK INPUT SIGNAL

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

TCM connector		Ground	Condition	Voltage (Approx.)
Connector	Terminal			
F23	14		“N” position idle	0.5 – 0.8 V

Is the inspection result normal?

YES >> GO TO 8.
NO >> GO TO 2.

2.CHECK SENSOR POWER AND SENSOR GROUND

Check voltage between TCM connector terminals.

TCM connector			Voltage (Approx.)
Connector	Terminal		
F23	25	26	4.75 – 5.25 V

Is the inspection result normal?

YES >> GO TO 3.
NO >> GO TO 5.

3. CHECK HARNESS BETWEEN TCM AND CVT UNIT (PRIMARY PRESSURE SENSOR) (PART 1)

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

TCM vehicle side harness connector		CVT unit vehicle side harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F23	14	F24	25	Existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair or replace damaged parts.

4. CHECK HARNESS BETWEEN TCM AND CVT UNIT (PRIMARY PRESSURE SENSOR) (PART 2)

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

TCM vehicle side harness connector		Ground	Continuity
Connector	Terminal		
F23	14		Not existed

Is the inspection result normal?

YES >> GO TO 7.
NO >> Repair or replace damaged parts.

5. CHECK HARNESS BETWEEN TCM AND CVT UNIT (SENSOR POWER AND SENSOR GROUND) (PART 1)

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

TCM vehicle side harness connector		CVT unit vehicle side harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F23	25	F24	19	Existed
	26		20	

Is the inspection result normal?

YES >> GO TO 6.
NO >> Repair or replace damaged parts.

6. CHECK HARNESS BETWEEN TCM AND CVT UNIT (SENSOR POWER AND SENSOR GROUND) (PART 2)

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

TCM vehicle side harness connector		Ground	Continuity
Connector	Terminal		
F23	25		Not existed
	26		

Is the inspection result normal?

YES >> GO TO 7.
NO >> Repair or replace damaged parts.

7. CHECK TCM

1. Replace with the same type of TCM. Refer to TM-161, "Exploded View".
2. Connect each connector.
3. Perform “DTC CONFIRMATION PROCEDURE”. Refer to TM-80, "DTC Logic".

Is “P0845” detected?

YES >> Replace transaxle assembly. Refer to TM-174, "Exploded View".
NO >> Replace TCM. Refer to TM-161, "Exploded View".

8. DETECT MALFUNCTIONING ITEMS

Check TCM connector pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> Replace TCM. Refer to TM-161, "Exploded View".
NO >> Repair or replace damaged parts.

P0868 TRANSMISSION FLUID PRESSURE

Description

INFOID:0000000006260139

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

DTC Logic

INFOID:0000000006260140

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P0868	Transmission Fluid Pressure Low	Secondary fluid pressure is too low compared with the commanded value while driving.	• Harness or connectors (Solenoid circuit is open or shorted.) • Secondary pressure solenoid valve system • Secondary pressure sensor • Line pressure control system

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

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

1. CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Select “Data Monitor” in “TRANSMISSION”.
3. Make sure that output voltage of CVT fluid temperature sensor is within the range below.

ATF TEMP SEN	: 1.0 – 2.0 V

If it is 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” detected?

YES >> Go to TM-83, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-44, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000006260141

1. CHECK LINE PRESSURE

Perform line pressure test. Refer to TM-154, "Inspection and Judgment".

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair or replace damaged parts. Refer to TM-154, "Inspection and Judgment".

2. CHECK SECONDARY PRESSURE SOLENOID VALVE

1. Turn ignition switch OFF.
2. Disconnect CVT unit connector.
3. Check secondary pressure solenoid valve. Refer to TM-84, "Component Inspection (Secondary Pressure Solenoid Valve)".

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair or replace damaged parts.

3. CHECK LINE PRESSURE SOLENOID VALVE

Check line pressure solenoid valve. Refer to TM-84, "Component Inspection (Line Pressure Solenoid Valve)".

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair or replace damaged parts.

4. CHECK SECONDARY PRESSURE SENSOR SYSTEM

Check secondary pressure sensor system. Refer to TM-75, "DTC Logic".

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair or replace damaged parts.

5. DETECT MALFUNCTIONING ITEMS

Check TCM connector pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> Replace TCM. Refer to TM-161, "Exploded View".
NO >> Repair or replace damaged parts.

Component Inspection (Line Pressure Solenoid Valve)

INFOID:0000000006260142

1. CHECK LINE PRESSURE SOLENOID VALVE

Check resistance between CVT unit connector terminal and ground.

CVT unit connector		Ground	Resistance (Approx.)
Connector	Terminal		
F24	2		3.0 – 9.0 Ω

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace transaxle assembly. Refer to TM-174, "Exploded View".

Component Inspection (Secondary Pressure Solenoid Valve)

INFOID:0000000006260143

1. CHECK SECONDARY PRESSURE SOLENOID VALVE

Check resistance between CVT unit connector terminal and ground.

CVT unit connector		Ground	Resistance (Approx.)
Connector	Terminal		
F24	3		3.0 – 9.0 Ω

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace transaxle assembly. Refer to TM-174, "Exploded View".

P1701 TCM

Description

INFOID:0000000006260144

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

NOTE:
Since “P1701” is indicated when replacing TCM, perform diagnosis after erasing “Self Diagnostic Results”.

DTC Logic

INFOID:0000000006260145

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P1701	Power Supply Circuit	• 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).	Harness or connectors (Battery or ignition switch and TCM circuit is open or shorted.)

DTC CONFIRMATION PROCEDURE

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

1.CHECK DTC DETECTION

With CONSULT-III
1. Turn ignition switch ON.
2. Wait for at least 2 consecutive seconds.
3. Perform “Self Diagnostic Results” in “TRANSMISSION”.

Is “P1701” detected?

YES >> Go to TM-85, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-44, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000006260146

1.CHECK TCM POWER SOURCE

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

TCM vehicle side harness connector			Condition	Voltage (Approx.)
Connector	Terminal			
F23	46	5, 42	Ignition switch ON	Battery voltage
			Ignition switch OFF	0 V
	48		Ignition switch ON	Battery voltage
			Ignition switch OFF	0 V
	47		Always	Battery voltage

Is the inspection result normal?

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

2.CHECK TCM GROUND CIRCUIT

1. Turn ignition switch OFF.

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

TCM vehicle side harness connector		Ground	Continuity
Connector	Terminal		
F23	5		Existed
	42		

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair or replace damaged parts.

3.CHECK TCM POWER CIRCUIT

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

TCM vehicle side harness connector		Ground	Condition	Voltage (Approx.)
Connector	Terminal			
F23	46		Ignition switch ON	Battery voltage
			Ignition switch OFF	0 V
	48		Ignition switch ON	Battery voltage
			Ignition switch OFF	0 V
	47		Always	Battery voltage

Is the inspection result normal?

YES >> GO TO 6.
NO >> GO TO 4.

4.CHECK HARNESS BETWEEN TCM AND IPDM E/R AND BETWEEN TCM AND BATTERY (PART 1)

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

TCM vehicle side harness connector		IPDM E/R vehicle side harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F23	46	F12	58	Existed
	48			

4. Disconnect fuse block (J/B) connector.
5. Check continuity between TCM vehicle side harness connector terminals and fuse block (J/B) vehicle side harness connector terminal.

TCM vehicle side harness connector		Fuse block (J/B) vehicle side harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F23	47	E103	12F	Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair or replace damaged parts.

5.CHECK HARNESS BETWEEN TCM AND IPDM E/R AND BETWEEN TCM AND BATTERY (PART 2)

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

TCM vehicle side harness connector			
Connector	Terminal	Ground	Continuity
F23	46		Not existed
	47		
	48		

Is the inspection result normal?

YES >> Check the following. If NG, repair or replace damaged parts.
- 10A fuse (No. 43, located in IPDM E/R)
- 10A fuse [No. 11, located in fuse block (J/B)]
- Ignition switch. Refer to PG-6, "Wiring Diagram - BATTERY POWER SUPPLY -".

NO >> Repair or replace damaged parts.

6. DETECT MALFUNCTIONING ITEMS

Check TCM connector pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> Replace TCM. Refer to TM-161, "Exploded View".
NO >> Repair or replace damaged parts.

P1705 TP SENSOR

Description

INFOID:0000000006260147

The 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 via CAN communication.

DTC Logic

INFOID:0000000006260148

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P1705	Accelerator Pedal Position Sensor Signal Circuit	TCM does not receive the proper accelerator pedal position signals (input via CAN communication) from ECM.	• ECM • Harness or connectors (CAN communication line is open or shorted.)

DTC CONFIRMATION PROCEDURE

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

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 Diagnostic Results” in “TRANSMISSION”.

Is “P1705” detected?

YES >> Go to TM-88, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-44, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000006260149

1.CHECK DTC WITH ECM

With CONSULT-III
1. Turn ignition switch ON.
2. Perform “Self Diagnostic Results” in “ENGINE”.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Check DTC Detected Item. Refer to EC-519, "DTC Index".

2.CHECK DTC WITH TCM

With CONSULT-III
Perform “Self Diagnostic Results” in “TRANSMISSION”.

Is “P1705” detected?

YES >> Replace TCM. Refer to TM-161, "Exploded View".
NO >> GO TO 3.

3.DETECT MALFUNCTIONING ITEMS

Check TCM connector pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> Replace TCM. Refer to TM-161, "Exploded View".
NO >> Repair or replace damaged parts.

P1709 INCOMPLETED DATA WRITING

Description

INFOID:0000000007958482

When TCM does not store calibration data (individual characteristic value) of each solenoid valve that is stored in the ROM assembly (in the control valve), a malfunction is detected.

DTC Logic

INFOID:0000000007958483

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P1709	Incompleted Data Writing	When TCM does not store calibration data (individual characteristic value) of each solenoid valve that is stored in the ROM assembly (in the control valve).	• Harness or connectors (ROM assembly circuit is open or shorted.) • TCM • ROM assembly (in the control valve)

DTC CONFIRMATION PROCEDURE

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

1. CHECK DTC DETECTION

With CONSULT
1. Turn ignition switch OFF.
2. Wait for at least 10 consecutive seconds.
3. Turn ignition switch ON.
4. Perform “Self Diagnostic Results” in “TRANSMISSION”.

Is “P1709” detected?

YES >> Go to TM-89, "Diagnosis Procedure".
NO >> INSPECTION END

Diagnosis Procedure

INFOID:0000000007958484

1. CHECK HARNESS BETWEEN TCM AND CVT UNIT HARNESS CONNECTOR (ROM ASSEMBLY) (PART 1)

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

TCM vehicle side harness connector		CVT unit vehicle side harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F23	8	F24	11	Existed
	9		1	
	10		16	
	25		19	
	26		20	

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair or replace damaged parts.

2. CHECK HARNESS BETWEEN TCM AND CVT UNIT HARNESS CONNECTOR (ROM ASSEMBLY) (PART 2)

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

TCM vehicle side harness connector			Continuity
Connector	Terminal		
F23	8	Ground	Not existed
	9		
	10		
	25		
	26		

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair or replace damaged parts.

3. CHECK TCM POWER SUPPLY AND GROUND CIRCUIT

Check TCM power supply and ground circuit. Refer to TM-89, "Diagnosis Procedure".

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair or replace damaged parts.

4. REPLACE TCM

1. Replace TCM. Refer to TM-161, "Removal and Installation".
2. Perform “DTC CONFIRMATION PROCEDURE”. Refer to TM-89, "DTC Logic".

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace transaxle assembly. Refer to TM-174, "Removal and Installation".

P1722 VEHICLE SPEED

Description

INFOID:0000000006260150

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

DTC Logic

INFOID:0000000006260151

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P1722	Vehicle Speed Signal Circuit	• CAN communication with the ABS actuator and the electric unit (control unit) is malfunctioning. • There is a big difference between the vehicle speed signal from the ABS actuator and the electric unit (control unit), and the vehicle speed sensor signal.	• 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:

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

1. CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Select “Data Monitor” in “TRANSMISSION”.
3. Start engine and maintain the following conditions for at least 5 consecutive seconds.

ACC PEDAL OPEN	: 1.0/8 or less
VEHICLE SPEED	: 30 km/h (19 MPH) or more

Is “P1722” detected?

YES >> Go to TM-91, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-44, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000006260152

1. CHECK DTC WITH ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

With CONSULT-III

Perform “Self Diagnostic Results” in “ABS”.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Check DTC detected item. Refer to BRC-106, "DTC No. Index" (VDC/TCS/ABS).

2. CHECK DTC WITH TCM

With CONSULT-III

Perform “Self Diagnostic Results” in “TRANSMISSION”.

Is “P1722” detected?

YES >> Replace TCM. Refer to TM-161, "Exploded View".
NO >> GO TO 3.

3. DETECT MALFUNCTIONING ITEMS

Check TCM connector pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> Replace TCM. Refer to TM-161, "Exploded View".
NO >> Repair or replace damaged parts.

P1723 SPEED SENSOR

Description

INFOID:0000000006260153

The secondary speed sensor detects the revolution of parking gear and generates a pulse signal. The pulse signal is sent to the TCM, which converts it into vehicle speed.
The primary speed sensor detects the primary pulley revolution speed and sends a signal to the TCM.

DTC Logic

INFOID:0000000006260154

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P1723	Speed Sensor Circuit	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”, the “P0715” or the “P0725“ is displayed with the DTC at the same time.**	• Harness or connectors (Sensor circuit is open or shorted.) • Secondary speed sensor • Primary speed sensor • Engine speed signal system

DTC CONFIRMATION PROCEDURE

CAUTION:
Always drive vehicle at a safe speed.
NOTE:
Immediately after performing any “DTC CONFIRMATION PROCEDURE”, always turn ignition switch OFF. Then wait at least 10 seconds before performing the next test.

1.CHECK DTC DETECTION

With CONSULT-III
1. Turn ignition switch ON.
2. Select “Data Monitor” in “TRANSMISSION”.
3. Start engine and maintain the following conditions for at least 5 consecutive seconds.

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.

Is “P1723” detected?

YES >> Go to TM-93, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-44, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000006260155

1.CHECK STEP MOTOR FUNCTION

Perform “Self Diagnostic Results” in “TRANSMISSION”.

Is “P1778” detected?

YES >> Repair or replace damaged parts. Refer to TM-102, "DTC Logic".
NO >> GO TO 2.

2.CHECK SECONDARY SPEED SENSOR SYSTEM

Check secondary speed sensor system. Refer to TM-56, "DTC Logic".

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair or replace damaged parts.

3.CHECK PRIMARY SPEED SENSOR SYSTEM

Check primary speed sensor system. Refer to TM-53, "DTC Logic".

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair or replace damaged parts.

4.CHECK ENGINE SPEED SIGNAL SYSTEM

Check engine speed signal system. Refer to TM-60, "DTC Logic".

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair or replace damaged parts.

5.DETECT MALFUNCTIONING ITEMS

Check TCM connector pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> Replace TCM. Refer to TM-161, "Exploded View".
NO >> Repair or replace damaged parts.

P1726 THROTTLE CONTROL SIGNAL

Description

INFOID:0000000006260156

The 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 via CAN communication.

DTC Logic

INFOID:0000000006260157

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P1726	Throttle Control Signal Circuit	The electronically controlled throttle for ECM is malfunctioning.	Harness or connectors (Sensor circuit is open or shorted.)

DTC CONFIRMATION PROCEDURE

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

1. CHECK DTC DETECTION

With CONSULT-III
1. Start engine and let it idle for 5 seconds.
2. Perform “Self Diagnostic Results” in “TRANSMISSION”.

Is “P1726” detected?

YES >> Go to TM-95, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-44, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000006260158

1. CHECK DTC WITH ECM

With CONSULT-III
1. Turn ignition switch ON.
2. Select “Self Diagnostic Results” in “ENGINE”.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Check DTC Detected Item. Refer to EC-519, "DTC Index".

2. CHECK DTC WITH TCM

With CONSULT-III
Perform “Self Diagnostic Results” in “TRANSMISSION”.

Is “P1726” detected?

YES >> Replace TCM. Refer to TM-161, "Exploded View".
NO >> GO TO 3.

3. DETECT MALFUNCTIONING ITEMS

Check TCM connector pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> Replace TCM. Refer to TM-161, "Exploded View".
NO >> Repair or replace damaged parts.

P1740 SELECT SOLENOID

Description

INFOID:0000000006260159

- The 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

INFOID:0000000006260160

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P1740	Lock-up Select Solenoid Valve Circuit	• Normal voltage is not applied to solenoid due to cut line, short, etc. • TCM detects as irregular by comparing target value with monitor value.	• Harness or connectors (Solenoid circuit is open or shorted.) • Lock-up select solenoid valve

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

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

1.CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON.
2. Select “Data Monitor” in “TRANSMISSION”.
3. Start engine and maintain the following conditions for at least 5 consecutive seconds.

RANGE : “D”, “N” and “L” position

(At each time, wait for 5 seconds.)

With GST

Follow the procedure “With CONSULT-III”.

Is “P1740” detected?

YES >> Go to TM-96, "Diagnosis Procedure".

NO >> Check intermittent incident. Refer to GI-44, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000006260161

1.CHECK LOCK-UP SELECT SOLENOID VALVE CIRCUIT

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

TCM vehicle side harness connector		Ground	Resistance (Approx.)
Connector	Terminal		
F23	37		6.0 – 19.0 Ω

Is the inspection result normal?

YES >> GO TO 5.

NO >> GO TO 2.

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

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

TCM vehicle side harness connector		CVT unit vehicle side harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F23	37	F24	13	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair or replace damaged parts.

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

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

TCM vehicle side harness connector		Ground	Continuity
Connector	Terminal		
F23	37		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair or replace damaged parts.

4. CHECK LOCK-UP SELECT SOLENOID VALVE

Check lock-up select solenoid valve. Refer to TM-97, "Component Inspection (Lock-up Select Solenoid Valve)".

Is the inspection result normal?

YES >> GO TO 5.
NO >> Replace transaxle assembly. Refer to TM-174, "Exploded View".

5. DETECT MALFUNCTIONING ITEMS

Check TCM connector pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> Replace TCM. Refer to TM-161, "Exploded View".
NO >> Repair or replace damaged parts.

Component Inspection (Lock-up Select Solenoid Valve)

INFOID:0000000006260162

1. CHECK LOCK-UP SELECT SOLENOID VALVE

Check resistance between CVT unit connector terminal and ground.

CVT unit connector		Ground	Resistance (Approx.)
Connector	Terminal		
F24	13		6.0 – 19.0 Ω

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace transaxle assembly. Refer to TM-174, "Exploded View".

P1745 LINE PRESSURE CONTROL

Description

INFOID:0000000006260163

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

DTC Logic

INFOID:0000000006260164

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P1745	Line Pressure Control Circuit	TCM detects the unexpected line pressure.	TCM

DTC CONFIRMATION PROCEDURE

NOTE:

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

1.CHECK DTC DETECTION

With CONSULT-III

1. Turn ignition switch ON
2. Select “Data Monitor” in “TRANSMISSION”.
3. Make sure that output voltage of CVT fluid temperature sensor is within the range below.

ATF TEMP SEN : 1.0 – 2.0 V

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

Is “P1745” detected?

YES >> Go to TM-98, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-44, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000006260165

1.CHECK DTC

With CONSULT-III

1. Start engine.
2. Perform “Self Diagnostic Results” in “TRANSMISSION”.

Is “P1745” detected?

YES >> Replace TCM. Refer to TM-161, "Exploded View".
NO >> Check intermittent incident. Refer to GI-44, "Intermittent Incident".

P1777 STEP MOTOR

Description

INFOID:0000000006260166

The step motor changes the step by 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

INFOID:0000000006260167

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P1777	Step Motor Circuit	Each coil of the step motor is not energized properly due to an open or a short.	• Harness or connectors (Step motor circuit is open or shorted.) • Step motor

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

If “DTC CONFIRMATION PROCEDURE” has been previously performed, always turn ignition switch OFF. Then wait at least 10 seconds before performing the next test.

1. CHECK DTC DETECTION

With CONSULT-III

1. Start engine.
2. Drive vehicle for at least 5 consecutive seconds.
3. Perform “Self Diagnostic Results” in “TRANSMISSION”.

With GST

Follow the procedure “With CONSULT-III”.

Is “P1777” detected?

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

NO >> Check intermittent incident. Refer to GI-44, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000006260168

1. CHECK STEP MOTOR CIRCUIT

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

TCM vehicle side harness connector			Resistance (Approx.)
Connector	Terminal		
F23	27	28	30.0 Ω
	29	30	

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

TCM vehicle side harness connector			Resistance (Approx.)
Connector	Terminal		
F23	27	Ground	15.0 Ω
	28		
	29		
	30		

Is the inspection result normal?

YES >> GO TO 5.
NO >> GO TO 2.

2.CHECK HARNESS BETWEEN TCM AND CVT UNIT (STEP MOTOR) (PART 1)

1. Disconnect CVT unit connector.
2. Check continuity between TCM vehicle side harness connector terminals and CVT unit vehicle side harness connector terminals.

TCM vehicle side harness connector		CVT unit vehicle side harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F23	27	F24	9	Existed
	28		8	
	29		7	
	30		6	

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair or replace damaged parts.

3.CHECK HARNESS BETWEEN TCM AND CVT UNIT (STEP MOTOR) (PART 2)

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

TCM vehicle side harness connector			Continuity
Connector	Terminal		
F23	27	Ground	Not existed
	28		
	29		
	30		

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair or replace damaged parts.

4.CHECK STEP MOTOR

Check step motor. Refer to TM-100, "Component Inspection (Step Motor)".

Is the inspection result normal?

YES >> GO TO 5.
NO >> Replace transaxle assembly. Refer to TM-174, "Exploded View".

5.DETECT MALFUNCTIONING ITEMS

Check TCM connector pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> Replace TCM. Refer to TM-161, "Exploded View".
NO >> Repair or replace damaged parts.

Component Inspection (Step Motor)

INFOID:0000000006260169

1.CHECK STEP MOTOR

1. Check resistance between CVT unit connector terminals.

CVT unit connector			Resistance (Approx.)
Connector	Terminals		
F24	6	7	30.0 Ω
	8	9	

2. Check resistance between CVT unit connector terminals and ground.

CVT unit connector		Ground	Resistance (Approx.)
Connector	terminal		
F24	6		15.0 Ω
	7		
	8		
	9		

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace transaxle assembly. Refer to TM-174, "Exploded View".

P1778 STEP MOTOR

Description

INFOID:0000000006260170

- The step motor changes the step by 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.
- This diagnosis item is detected when the electrical system is OK, but the mechanical system is NG.
- This diagnosis item is detected when the state of the changing of the speed mechanism in the unit does not operate normally.

DTC Logic

INFOID:0000000006260171

DTC DETECTION LOGIC

DTC	Trouble diagnosis name	DTC is detected if...	Possible cause
P1778	Step Motor Circuit Intermittent	There is a big difference between the number of steps for the stepping motor and for the actual gear ratio.	Step motor

DTC CONFIRMATION PROCEDURE

CAUTION:

- **Always drive vehicle at a safe speed.**
- **Before starting "DTC CONFIRMATION PROCEDURE", confirm "Hi" or "Mid" or "Low" fixation by "PRI SPEED" and "VEHICLE SPEED" in "Data Monitor".**
- **If hi-geared fixation occurred, go to TM-102, "Diagnosis Procedure".**

NOTE:

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

1.CHECK DTC DETECTION

With CONSULT-III

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

ATF TEMP SEN	: 1.0 – 2.0 V

If it is 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.

Start test from 0 km/h (0 MPH)	
Constant acceleration	: Keep 30 seconds or more
VEHICLE SPEED	: 10 km/h (6 MPH) or more
ACC PEDAL OPEN	: More than 1.0/8
RANGE	: "D" position
ENG SPEED	: 450 rpm or more

With GST

Follow the procedure "With CONSULT-III".

Is "P1778" detected?

YES >> Go to TM-102, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-44, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000006260172

1.CHECK STEP MOTOR SYSTEM

Check step motor system. Refer to TM-99, "DTC Logic".

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair or replace damaged parts.

2.CHECK PRIMARY SPEED SENSOR SYSTEM

Check primary speed sensor system. Refer to TM-53, "DTC Logic".

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair or replace damaged parts.

3.CHECK SECONDARY SPEED SENSOR SYSTEM

Check secondary speed sensor system. Refer to TM-56, "DTC Logic".

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair or replace damaged parts.

4.DETECT MALFUNCTIONING ITEMS

Check TCM connector pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> Replace TCM. Refer to TM-161, "Exploded View".
NO >> Repair or replace damaged parts.

SHIFT POSITION INDICATOR CIRCUIT

Description

INFOID:0000000006260173

- TCM sends position indicator signals to combination meter via CAN communication line.
- The selector lever position is indicated on the shift position indicator.

Component Function Check

INFOID:0000000006260174

1.CHECK SHIFT POSITION INDICATOR

CAUTION:
Always drive vehicle at a safe speed.
1. Start engine.
2. Check that correct selector lever position (“P”, “R”, “N”, “D”, “L”) is displayed as selector lever is moved into each position.

Is the inspection result normal?

YES >> INSPECTION END
NO >> Go to TM-104, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000006260175

1.CHECK INPUT SIGNALS

With CONSULT-III
1. Start engine.
2. Select “RANGE” in “Data Monitor” and read out the value.
3. Check that correct selector lever position (“P”, “R”, “N”, “D”, “L”) is displayed as selector lever is moved into each position.

Is the inspection result normal?

YES >> INSPECTION END
NO-1 (CVT position indicator does not indicate “L” when selector lever is moved into “L”.)>>Check the following.
- Check overdrive control switch. Refer to TM-111, "Description".
- Check CVT main system (Fail-safe function actuated).
  - Perform “Self Diagnostic Results” in “TRANSMISSION”.

NO-2 (The actual gear position changes, but the shift position indicator is not indicated.)>>Perform “Self Diagnostic Results” in “TRANSMISSION”.
NO-3 (The actual gear position and the indication on the shift position indicator do not coincide.)>>Perform “Self Diagnostic Results” in “TRANSMISSION”.
NO-4 (Only a specific position or positions is/are not indicated on the shift position indicator.)>>Check the combination meter. Refer to MWI-35, "CONSULT-III Function (METER/M&A)".

SHIFT LOCK SYSTEM

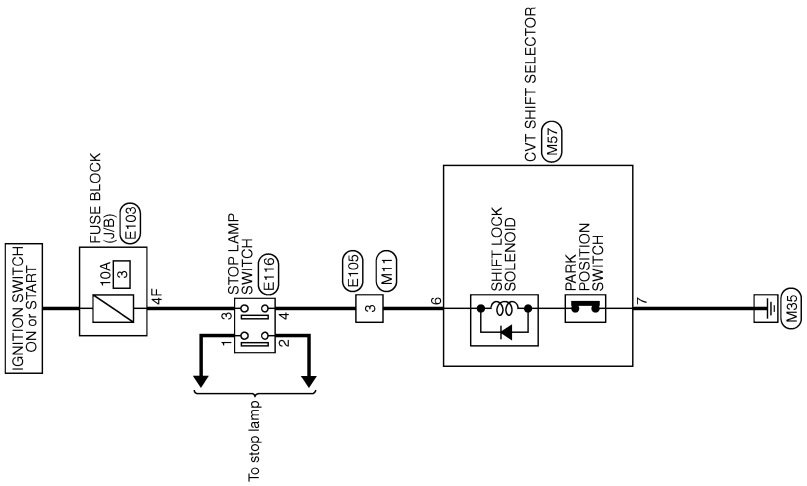
Description

INFOID:0000000006260176

Component	Function
Shift lock solenoid	It operates according to the signal from the stop lamp switch and moves the lock lever.
Lock lever	It moves according to the operation of the shift lock solenoid and performs the release of the shift lock.
Detent rod	It links with the selector button and restricts the selector lever movement.
Park position switch	It detects that the selector lever is in “P” position.
Shift lock release button	It moves the lock lever forcibly.

Wiring Diagram - CVT SHIFT LOCK SYSTEM -

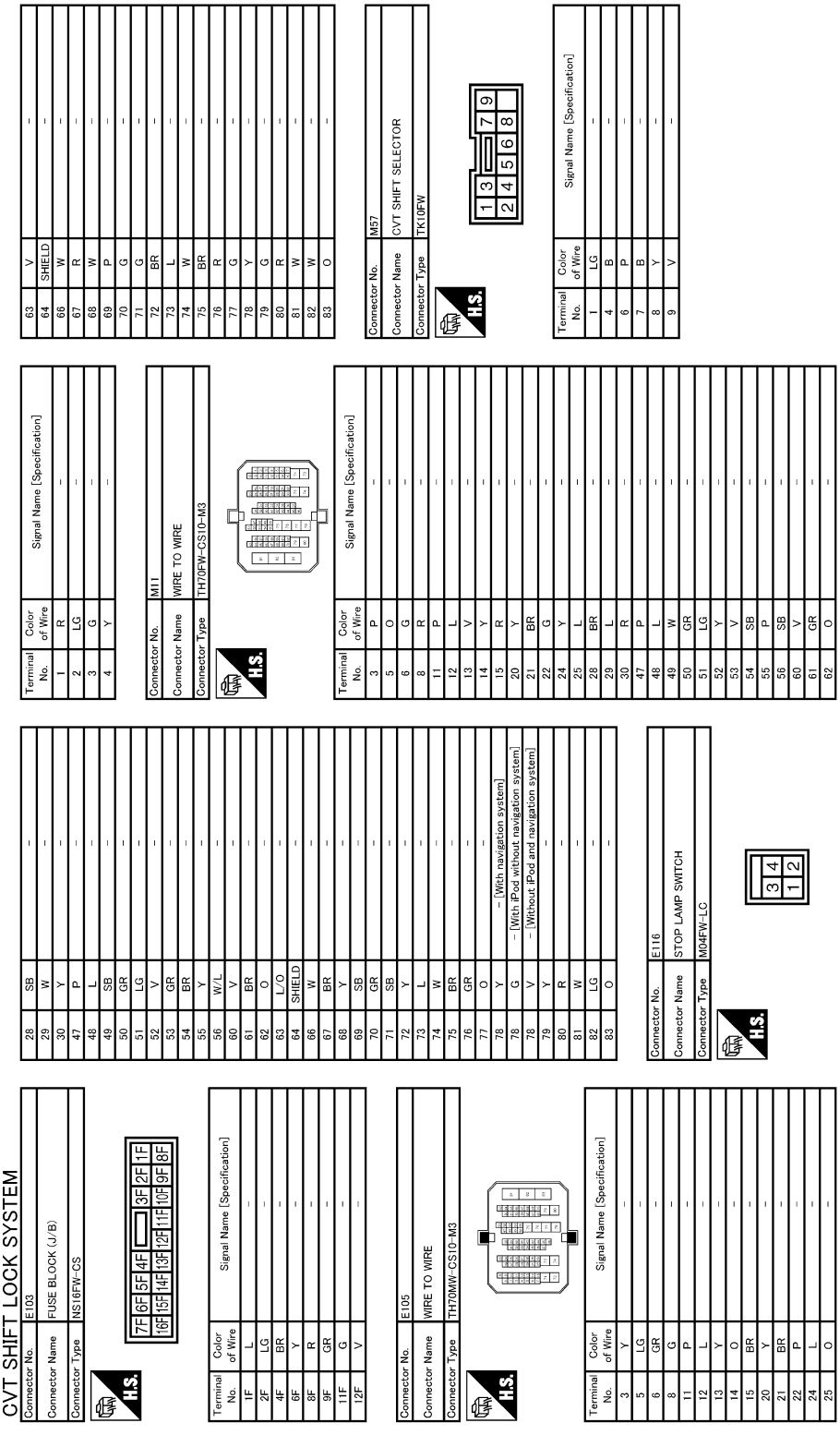
INFOID:0000000006260177



CVT SHIFT LOCK SYSTEM

2009/08/07

JCDWM0719GB



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Component Function Check

INFOID:0000000006260178

1. CHECK CVT SHIFT LOCK OPERATION

1. Turn ignition switch ON.
2. Move selector lever to “P” position.
3. Attempt to shift selector lever to any other position with brake pedal released.

Can selector lever be shifted to any other position?

YES >> Go to TM-108, "Diagnosis Procedure".
NO >> GO TO 2.

2. CHECK CVT SHIFT LOCK OPERATION

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

Can the selector lever be shifted to any other position?

YES >> INSPECTION END
NO >> Go to TM-108, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000006260179

1. CHECK POWER SOURCE

1. Turn ignition switch OFF.
2. Disconnect fuse block (J/B) connector.
3. Turn ignition switch ON.
4. Check voltage between fuse block (J/B) connector terminal and ground.

Fuse block (J/B) connector		Ground	Voltage (Approx.)
Connector	Terminal		
E103	4F		Battery voltage

Is the inspection result normal?

YES >> GO TO 2.
NO >> Check the following.
- 10A fuse [No. 3, located in fuse block (J/B)]
- Ignition switch

2. CHECK HARNESS BETWEEN FUSE BLOCK (J/B) AND STOP LAMP SWITCH (PART 1)

1. Turn ignition switch OFF.
2. Disconnect stop lamp switch connector.
3. Check continuity between fuse block (J/B) vehicle side harness connector terminal and stop lamp switch vehicle side harness connector terminal.

Fuse block (J/B) vehicle side harness connector		Stop lamp switch vehicle side harness connector		Continuity
Connector	Terminal	Connector	Terminal	
E103	4F	E116	3	Existed

Is the inspection result normal?

YES >> GO TO 3.
NO >> Repair or replace damaged parts.

3. CHECK HARNESS BETWEEN FUSE BLOCK (J/B) AND STOP LAMP SWITCH (PART 2)

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

Stop lamp switch vehicle side harness connector		Ground	Continuity
Connector	Terminal		
E116	3		Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair or replace damaged parts.

4. CHECK STOP LAMP SWITCH

Check stop lamp switch. Refer to TM-110, "Component Inspection (Stop Lamp Switch)".

Is the inspection result normal?

YES >> GO TO 5.
NO >> Replace stop lamp switch. Refer to BR-19, "Exploded View".

5.CHECK HARNESS BETWEEN STOP LAMP SWITCH AND CVT SHIFT SELECTOR (PART 1)

1. Disconnect CVT shift selector connector.
2. Check continuity between stop lamp switch vehicle side harness connector terminal and CVT shift selector vehicle side harness connector terminal.

Stop lamp switch vehicle side harness connector		CVT shift selector vehicle side harness connector		Continuity
Connector	Terminal	Connector	Terminal	
E116	4	M57	6	Existed

Is the inspection result normal?

YES >> GO TO 6.
NO >> Repair or replace damaged parts.

6.CHECK HARNESS BETWEEN STOP LAMP SWITCH AND CVT SHIFT SELECTOR (PART 2)

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

CVT shift selector vehicle side harness connector		Ground	Continuity
Connector	Terminal		
M57	6		Not existed

Is the inspection result normal?

YES >> GO TO 7.
NO >> Repair or replace damaged parts.

7.CHECK GROUND CIRCUIT

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

CVT shift selector vehicle side harness connector		Ground	Continuity
Connector	Terminal		
M57	7		Existed

Is the inspection result normal?

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

8.CHECK CVT SHIFT SELECTOR

1. Shift selector lever to “P” position.
2. Check continuity between CVT shift selector connector terminals.

CVT shift selector connector			Continuity
Connector	Terminal		
M57	6	7	Existed

Is the inspection result normal?

YES >> GO TO 9.
NO >> Replace CVT shift selector. Refer to TM-163, "Exploded View".

9.CHECK SHIFT LOCK SOLENOID

1. Remove shift lock unit. Refer to TM-163, "Exploded View".
2. Check shift lock solenoid. Refer to TM-110, "Component Inspection (Shift Lock Solenoid)".

Is the inspection result normal?

YES >> INSPECTION END
NO >> Repair or replace damaged parts.

Component Inspection (Stop Lamp Switch)

INFOID:0000000006260180

1.CHECK STOP LAMP SWITCH

Check continuity between stop lamp switch connector terminals.

Stop lamp switch connector			Condition	Continuity
Connector	Terminal			
E116	3	4	Depressed brake pedal	Existed
			Released brake pedal	Not existed

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace stop lamp switch. Refer to BR-19, "Exploded View".

Component Inspection (Shift Lock relay)

INFOID:0000000006260181

1.CHECK SHIFT LOCK RELAY

Apply voltage to terminals of shift lock relay connector to check the continuity.
CAUTION:
Connect the fuse between the terminals when applying the voltage.

Shift lock relay connector			Condition	Continuity
Connector	Terminal			
E53	5	3	Apply 12 V direct voltage between terminals 2 and 1.	Existed

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace shift lock relay.

Component Inspection (Shift Lock Solenoid)

INFOID:0000000006260182

1.CHECK SHIFT LOCK SOLENOID

Apply voltage to CVT shift selector connector terminals and then check that shift lock solenoid is activated.
CAUTION:
Connect the fuse between the terminals when applying the voltage.

(+) (fuse)		(–)	Condition	Status
CVT shift selector connector				
Connector	Terminal			
M57	6	7	• Park switch: ON • Apply 12 V direct current between terminals 6 and 7.	Shift lock solenoid operates

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace shift lock unit. Refer to TM-163, "Exploded View".

OVERDRIVE CONTROL SWITCH

Description

INFOID:0000000006260183

- The Overdrive control switch is installed to the selector lever knob.
- When pushing the Overdrive control switch (OD OFF indicator lamp turns ON), the driving condition becomes Overdrive OFF. When pushing again the Overdrive control switch (OD OFF indicator lamp turns OFF), the driving condition changes to D range.

Component Function Check

INFOID:0000000006260184

1.CHECK OVERDRIVE CONTROL SWITCH SIGNAL

1. Turn ignition switch ON.
2. Select “Data Monitor” in “TRANSMISSION”.
3. Check the ON/OFF operations of monitor item.

Monitor item	Condition	Status
SPORT MODE SW	While pushing overdrive control switch	On
	Other conditions	Off

Is the inspection result normal?

YES >> INSPECTION END.
NO >> Go to TM-111, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000006260185

1. CHECK CAN COMMUNICATION CIRCUIT

Perform “Self Diagnostic Results” in “TRANSMISSION”.

Is “U1000” indicated?

YES >> Check CAN communication line. Refer to TM-41, "Description".
NO >> GO TO 2.

2.CHECK COMBINATION METER

Perform “Self Diagnostic Results” in “METER/M&A”.

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check DTC detected item. Refer to MWI-77, "DTC Index".

3.CHECK OVERDRIVE CONTROL SWITCH

1. Turn ignition switch OFF.
2. Disconnect CVT shift selector connector.
3. Check continuity overdrive control switch.

CVT shift selector connector			Condition	Continuity
Connector	Terminal			
M57	1	4	While pushing overdrive control switch	Existed
			Other condition	Not existed

Is the inspection result normal?

YES >> GO TO 4.
NO >> Repair or replace damaged parts.

4.CHECK GROUND CIRCUIT (PART 1)

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

CVT shift selector vehicle side harness connector		Ground	Continuity
Connector	Terminal		
M57	4		Existed

Is the inspection result normal?

YES >> GO TO 5.
NO >> Repair or replace damaged parts.

5. CHECK HARNESS BETWEEN CVT SHIFT SELECTOR AND COMBINATION METER (PART 1)

1. Disconnect combination meter connector.
2. Check continuity between CVT shift selector vehicle side harness connector terminal and combination meter vehicle side harness connector terminal.

CVT shift selector vehicle side harness connector		Combination meter vehicle side harness connector		Continuity
Connector	Terminal	Connector	Terminal	
M57	1	M34	32	Existed

Is the inspection result normal?

YES >> GO TO 6.
NO >> Repair or replace damaged parts.

6. CHECK HARNESS BETWEEN CVT SHIFT SELECTOR AND COMBINATION METER (STEP 2)

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

CVT shift selector vehicle side harness connector		Ground	Continuity
Connector	Terminal		
M57	1		Not existed

Is the inspection result normal?

YES >> GO TO 7.
NO >> Repair or replace damaged parts.

7. DETECT MALFUNCTIONING ITEMS

Check TCM connector pin terminals for damage or loose connection with harness connector.

Is the inspection result normal?

YES >> Replace TCM. Refer to TM-161, "Exploded View".
NO >> Repair or replace damaged parts.

ECU DIAGNOSIS INFORMATION

TCM

Reference Value

INFOID:0000000006260186

VALUES ON THE DIAGNOSIS TOOL

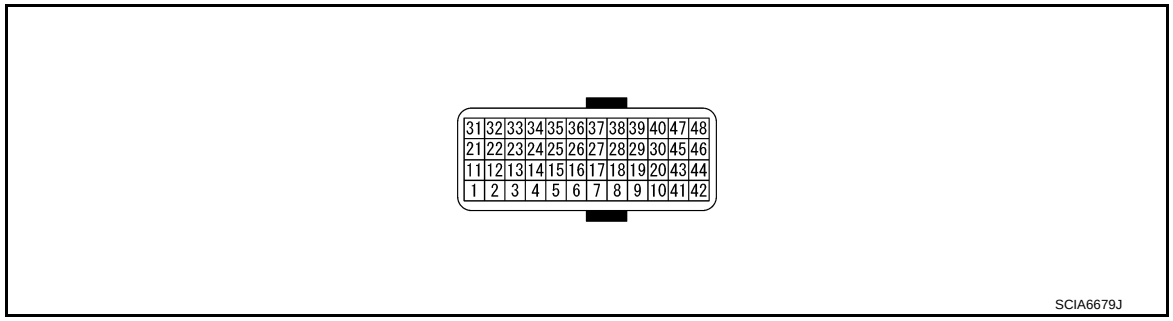
Item name	Condition	Display value (Approx.)
VSP SENSOR	During driving	Approximately matches the speedometer reading.
ESTM VSP SIG	During driving	Approximately matches the speedometer reading.
PRI SPEED SEN	During driving (lock-up ON)	Approximately matches the engine speed.
ENG SPEED SIG	Engine running	Closely matches the tachometer reading.
SEC HYDR SEN	“N” position idle	0.5 – 0.8 V
PRI HYDR SEN	“N” position idle	1.0 – 1.5 V
ATFTEMP COUNT*	When CVT fluid temperature is 20°C (68°F)	47
	When CVT fluid temperature is 80°C (176°F)	161
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	40 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) – (+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
SOLMON2	“N” position idle	0.8 A
	When stalled	0.3 – 0.6 A
SOLMON3	“N” position idle	0.6 – 0.7 A
	When stalled	0.4 – 0.6 A
RANGE SW3M	Selector lever in “D” and “L” positions	On
	Selector lever in “P”, “R” and “N” positions	Off
RANGE SW4	Selector lever in “R” and “D” positions	On
	Selector lever in “P”, “N” and “L” positions	Off

Item name	Condition	Display value (Approx.)
RANGE SW3	Selector lever in “D” and “L” positions	On
	Selector lever in “P”, “R” and “N” positions	Off
RANGE SW2	Selector lever in “N”, “D” and “L” positions	On
	Selector lever in “P” and “R” positions	Off
RANGE SW1	Selector lever in “R”, “N” and “D” positions	On
	Selector lever in “P” and “L” positions	Off
BRAKE SW	Depressed brake pedal	On
	Released brake pedal	Off
IDLE SW	Released accelerator pedal	On
	Fully depressed accelerator pedal	Off
SPORT MODE SW	While pushing overdrive control switch	On
	Other conditions	Off
INDLRNG	Selector lever in “L” position	On
	Selector lever in other positions	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
SPORT MODE IND	When overdrive OFF condition	On
	Other conditions	Off
SMCOIL D	During driving	Changes ON ⇔ OFF.
SMCOIL C	During driving	Changes ON ⇔ OFF.
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”, “D” and “L” positions	Off
LUSEL SOL MON	Selector lever in “P” and “N” positions	On
	Wait at least for 5 seconds with the selector lever in “R”, “D” and “L” 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

Item name	Condition	Display value (Approx.)
RANGE	Selector lever in “N” and “P” positions	N·P
	Selector lever in “R” position	R
	Selector lever in “D” position	D
	Selector lever in “L” position	L

* Means CVT fluid temperature. Actual oil temperature °C (°F) cannot be checked unless a numeric value is converted. Refer to TM-141, "FOR USA AND CANADA : ATFTEMP COUNT Conversion Table" (FOR USA AND CANADA), TM-145, "FOR MEXICO : ATFTEMP COUNT Conversion Table" (FOR MEXIICO).

TERMINAL LAYOUT



PHYSICAL VALUES

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/Output			
1 (P/B)	Ground	Transmission range switch 2	Input	Ignition switch ON	Selector lever in “N”, “D” and “L” positions	0 V
					Selector lever in other positions	10.0 V – Battery voltage
2 (P/L)	Ground	Transmission range switch 3	Input		Selector lever in “D” and “L” positions	0 V
					Selector lever in other positions	10.0 V – Battery voltage
3 (G/O)	Ground	Transmission range switch 4	Input		Selector lever in “R” and “D” positions	0 V
					Selector lever in other positions	10.0 V – Battery voltage
4 (GR)	Ground	Transmission range switch 3 (monitor)	Input		Selector lever in “D” and “L” positions	0 V
					Selector lever in other positions	10.0 V – Battery voltage
5 (B)	Ground	Ground	Output	Always		0 V
7 (W)	Ground	Sensor ground	Output	Always		0 V
8 (G/W)	—	CLOCK (SEL2)	—	—		—
9 (L/R)	—	CHIP SELECT (SEL1)	—	—		—

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/Output			
10 (BR/R)	—	DATA I/O (SEL3)	—	—		—
11 (BR/W)	Ground	Transmission range switch 1	Input	Ignition switch ON	Selector lever in “R”, “N” and “D” positions	0 V
					Selector lever in other positions	Battery voltage
13 (V)	Ground	CVT fluid temperature sensor	Input	Ignition switch ON	When CVT fluid temperature is 20°C (68°F)	1.9 – 2.2 V
					When CVT fluid temperature is 80°C (176°F)	0.8 – 1.1 V
14 (R/W)	Ground	Primary pressure sensor	Input	“N” position idle		0.5 – 0.8 V
15 (V/W)	Ground	Secondary pressure sensor	Input			1.0 – 1.5 V
19 (G/B)	Ground	Reverse lamp relay	Output	Ignition switch ON	Selector lever in “R” position	0 V
					Selector lever in other positions	Battery voltage
20 (R/B)	Ground	Starter relay	Output	Ignition switch ON	Selector lever in “N” and “P” positions	Battery voltage
					Selector lever in other positions	0 V
25 (W/R)	Ground	Sensor ground	Output	Always		0 V
26 (L/O)	Ground	Sensor power	Output	Ignition switch ON		4.75 – 5.25 V
				Ignition switch OFF		0 V
27 (R/G)	Ground	Step motor D	Output	Within 2 seconds after ignition switch ON, the time measurement by using the pulse width measurement function (Hi level) of CONSULT-III.* **CAUTION:** **Connect the diagnosis data link cable to the vehicle diagnosis connector.**		10.0 msec
28 (R)	Ground	Step motor C	Output			30.0 msec
29 (O/B)	Ground	Step motor B	Output			10.0 msec
30 (G/R)	Ground	Step motor A	Output			30.0 msec
31 (P)	—	CAN-L	Input/Output	—		—
32 (L)	—	CAN-H	Input/Output	—		—
33 (LG)	Ground	Primary speed sensor	Input	When driving [“L” position, 20 km/h (12 MPH)]		680 Hz
34 (LG/R)	Ground	Secondary speed sensor	Input	When driving [“D” position, 20 km/h (12 MPH)]		350 Hz
37 (V/R)	Ground	Lock-up select solenoid valve	Output	Ignition switch ON	Selector lever in “P” and “N” positions	Battery voltage
					Wait at least for 5 seconds with the selector lever in “R”, “D” and “L” positions	0 V
38 (L/W)	Ground	Torque converter clutch solenoid valve	Output	When vehicle drive in “D” position	When CVT performs lock-up	6.0 V
					When CVT does not perform lock-up	1.0 V

Terminal No. (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/Output			
39 (W/B)	Ground	Secondary pressure solenoid valve	Output	“N” positions 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	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
46 (Y)	Ground	Power supply	Output	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	Output	Ignition switch ON		Battery voltage
				Ignition switch OFF		0 V

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

Wiring Diagram - CVT CONTROL SYSTEM -

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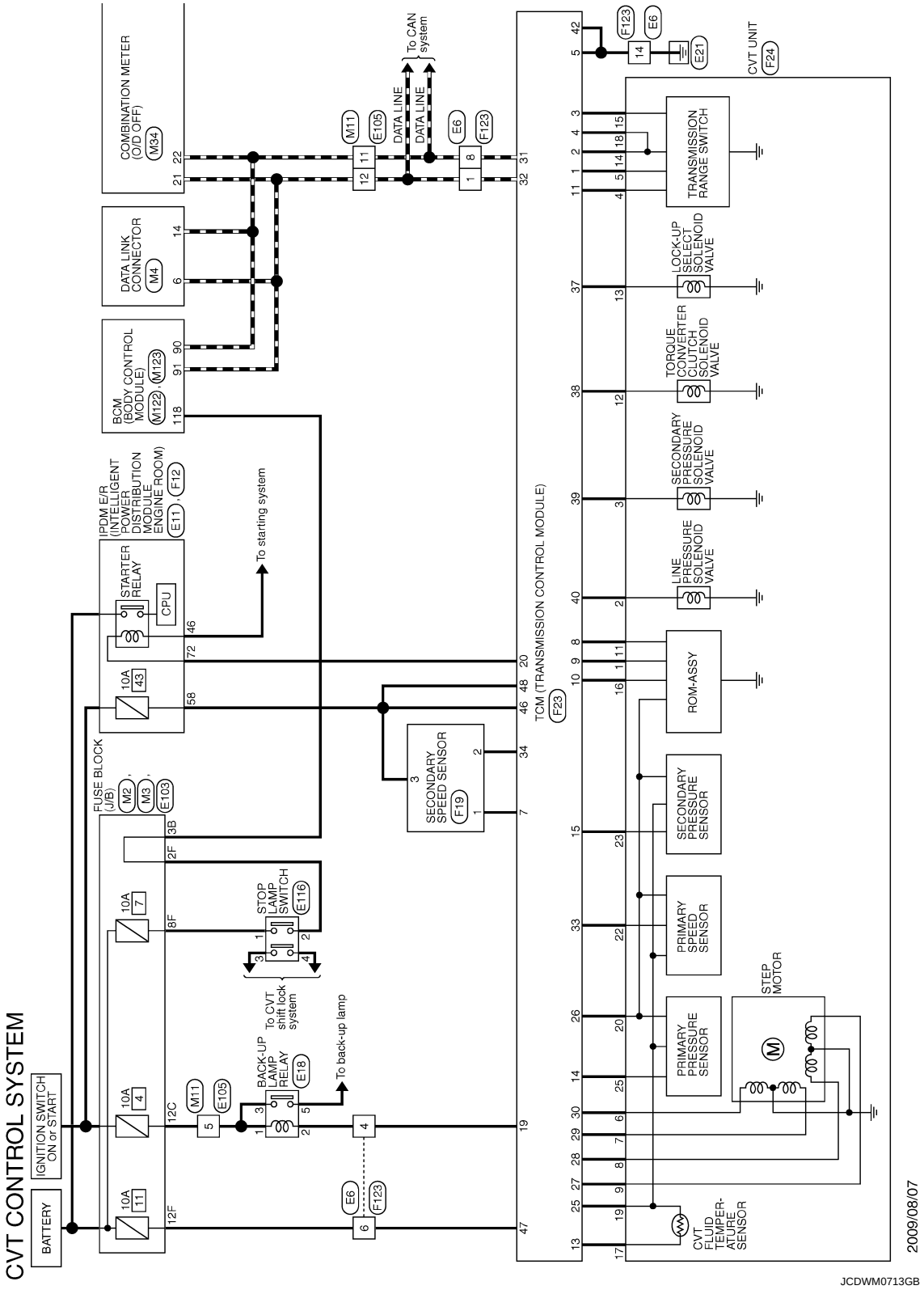
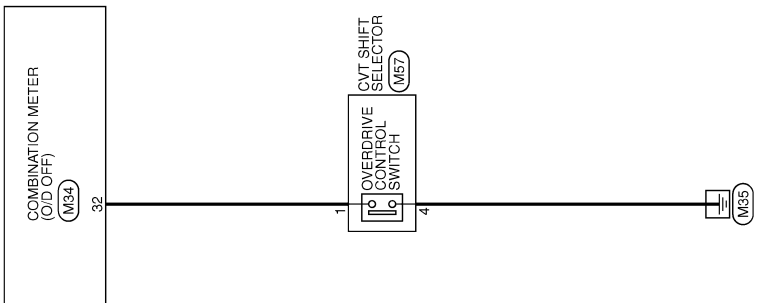




JCDWM0714GB

CVT CONTROL SYSTEM

Connector No.	E6
Connector Name	WIRE TO WIRE
Connector Type	TK16MGY-1V

Terminal No.	Color of Wire	Signal Name [Specification]
1	L	–
3	Y	–
4	R	–
5	GR	–
6	V	–
8	P	–
10	W	–
11	G	–
12	BR	–
13	SB	–
14	B	–

Connector No.	E11
Connector Name	IPDM E R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	TH08FW-NH

Terminal No.	Color of Wire	Signal Name [Specification]
39	P	–
40	L	–
41	B	–
42	SB	–
43	Y	–
44	W	–
45	O	–
46	BR	–

Connector No.	E18
Connector Name	BACK-UP LAMP RELAY
Connector Type	MS02FL-M2-LC

Terminal No.	Color of Wire	Signal Name [Specification]
1	LG	–
2	R	–
3	LG	–
5	R	–

Connector No.	E103
Connector Name	FUSE BLOCK (J/B)
Connector Type	NS16FW-CS

Terminal No.	Color of Wire	Signal Name [Specification]
1F	L	–
2F	LG	–
4F	BR	–
6F	Y	–
8F	R	–
9F	GR	–
11F	G	–
12F	V	–

Connector No.	E105
Connector Name	WIRE TO WIRE
Connector Type	TH70MW-CS10-M3

Terminal No.	Color of Wire	Signal Name [Specification]
3	Y	–
5	LG	–
6	GR	–
8	G	–
11	P	–
12	L	–
13	Y	–
14	O	–
15	BR	–
20	Y	–
21	BR	–
22	P	–
24	L	–
25	O	–
28	SB	–
29	W	–
30	Y	–
47	P	–
48	L	–
49	SB	–
50	GR	–
51	LG	–
52	V	–
53	GR	–
54	BR	–
55	Y	–
56	W/L	–
60	V	–
61	BR	–
62	O	–
63	L/O	–
64	SHIELD	–
66	W	–
67	BR	–
68	Y	–
69	SB	–
70	GR	–
71	SB	–
72	Y	–
73	L	–
74	W	–
75	BR	–
76	GR	–
77	O	–
78	Y	– [With navigation system]
78	G	– [With iPod without navigation system]
78	V	– [Without iPod and navigation system]
79	Y	–
80	R	–
81	W	–
82	LG	–
83	O	–

Connector No.	E116
Connector Name	STOP LAMP SWITCH
Connector Type	M04FW-LC

Terminal No.	Color of Wire	Signal Name [Specification]
1	R	–
2	LG	–
3	G	–
4	Y	–

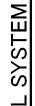
JCDWM1225GB

CVT CONTROL SYSTEM

Connector No.	F12
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	TH20FW-CS12-M4

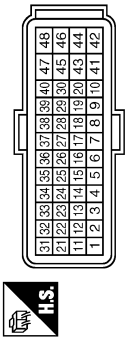
Terminal No.	Color of Wire	Signal Name [Specification]
48	W	–
49	R/B	–
51	LG	–
52	Y/G	–
53	R/W	–
54	G/W	–
55	W/L	–
56	R/Y	–
57	O	–
58	Y	–
69	W/B	–
70	O	–
72	R/B	–
75	LG	–
76	SB	–
77	GR	–
80	B	–

Connector No.	F19
Connector Name	SECONDARY SPEED SENSOR
Connector Type	RK03FB



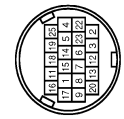
Terminal No.	Color of Wire	Signal Name [Specification]
1	W	–
2	LG/R	–
3	Y	–

Connector No.	F23
Connector Name	TCM (TRANSMISSION CONTROL MODULE)
Connector Type	RH40FB-RZ8-L-RH



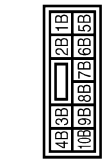
Terminal No.	Color of Wire	Signal Name [Specification]
1	P/B	INH SW 2
2	P/L	INH SW 3
3	G/O	INH SW 4
4	GR	INH SW 3 MON
5	B	GND
7	W	SENSOR GND
8	G/W	CLOCK (SEL 2)
9	L/R	CHIP SELECT (SEL 1)
10	BR/R	DATA I/O (SEL 3)
11	BR/W	INH SW 1
13	V	ATF TEMP SENSOR
14	R/W	PRI PRESS SENSOR
15	V/W	SEC PRESS SENSOR
19	G/B	REV LAMP RELAY
20	R/B	STARTER RELAY
25	W/R	SENSOR GND
26	L/O	SENSOR POWER SOURCE (5V)
27	R/G	S/M-D
28	R	S/M-C
29	O/B	S/M-B
30	G/R	S/M-A
31	P	CAN-L
32	L	CAN-H
33	LG	PRI SPEED SENSOR
34	LG/R	SEC SPEED SENSOR
37	V/R	L/U & SEL-ON/OFF SOL
38	L/W	L/U & SEL LINEAR SOL
39	W/B	SEC-LINEAR SOL
40	R/Y	PL LINEAR SOL
42	B	GND
46	Y	VIGN
47	L/R	BATT
48	Y	VIGN

Connector No.	F24
Connector Name	CVT UNIT
Connector Type	RK22FGY



Terminal No.	Color of Wire	Signal Name [Specification]
1	L/R	–
2	R/Y	–
3	W/B	–
4	BR/W	–
5	P/B	–
6	G/R	–
7	O/B	–
8	R	–
9	R/G	–
11	G/W	–
12	L/W	–
13	V/R	–
14	P/L	–
15	G/O	–
16	BR/R	–
17	V	–
18	GR	–
19	W/R	–
20	L/O	–
22	LG	–
23	V/W	–
25	R/W	–

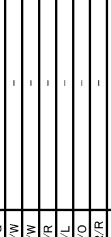
Connector No.	M2
Connector Name	FUSE BLOCK (J/B)
Connector Type	NS10FW-CS



Terminal No.	Color of Wire	Signal Name [Specification]
1B	W	–
3B	L	–
4B	G	–
5B	L	–
6B	Y	–
7B	R	–
8B	R	–
9B	GR	–

Terminal No.	Color of Wire	Signal Name [Specification]
1	L	–
3	G/R	–
4	G/B	–
5	R	–
6	L/R	–
8	P	–
10	Y/B	–
11	BR/W	–
12	BR	–
13	G	–
14	B	–

Connector No.	F123
Connector Name	WIRE TO WIRE
Connector Type	TK16FGY-1V



Terminal No.	Color of Wire	Signal Name [Specification]

JCDWM1226GB

CVT CONTROL SYSTEM

Connector No.	M3
Connector Name	FUSE BLOCK (J/B)
Connector Type	NS12FW-CS

H.S.

5C 4C 3C 2C 1C
12C 11C 10C 9C 8C 7C 6C

Terminal No.	Color of Wire	Signal Name [Specification]
6C	BR	–
7C	B	–
8C	G	–
9C	GR	–
10C	SB	–
11C	R	–
12C	O	–

Connector No.	M4
Connector Name	DATA LINK CONNECTOR
Connector Type	BD16FW

H.S.

9 10 11 12 13 14 15 16
1 2 3 4 5 6 7 8

Terminal No.	Color of Wire	Signal Name [Specification]
3	LG	–
4	B	–
5	B	–
6	L	–
7	O	–
8	G	–
11	SB	–
14	P	–
16	Y	–

Connector No.	M11
Connector Name	WIRE TO WIRE
Connector Type	TH70FW-CS10-M3

H.S.

Terminal No.	Color of Wire	Signal Name [Specification]
3	P	–
5	O	–
6	G	–
8	R	–
11	P	–
12	L	–
13	V	–
14	Y	–
15	R	–
20	Y	–
21	BR	–
22	G	–
24	Y	–
25	L	–
28	BR	–
29	L	–
30	R	–
47	P	–
48	L	–
49	W	–
50	GR	–
51	LG	–
52	Y	–
53	V	–
54	SB	–
55	P	–
56	SB	–
60	V	–
61	GR	–
62	O	–
63	V	–
64	SHIELD	–
66	W	–
67	R	–
68	W	–
69	P	–
70	G	–
71	G	–
72	BR	–
73	L	–
74	W	–
75	BR	–
76	R	–
77	G	–
78	Y	–
79	G	–
80	R	–
81	W	–
82	W	–
83	O	–

Connector No.	M34
Connector Name	COMBINATION METER
Connector Type	TH40FW-NH

H.S.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40

Terminal No.	Color of Wire	Signal Name [Specification]
1	Y	BAT
2	O	IGN
3	B	GROUND
4	B	GROUND
5	SB	ILLUMINATION CONTROL
8	SB	TRIP RESET SWITCH
9	W	SW ILL POWER
10	O	METER CONTROL SW GND
11	L	ENTER SWITCH
12	R	SELECT SWITCH
13	V	ILLUMINATION CONTROL SWITCH (+) [With automatic drive positioner]
13	Y	ILLUMINATION CONTROL SWITCH (+) [Without automatic drive positioner]
14	GR	ILLUMINATION CONTROL SWITCH (–)
15	BR	AIR BAG
18	L	AMBIENT SENSOR
19	P	AMBIENT SENSOR POWER
20	Y	AMBIENT SENSOR GROUND
21	L	CAN-H
22	P	CAN-L
23	B	GROUND
24	W	FUEL LEVEL SENSOR GROUND
25	BR	CHG
26	G	PARKING BRAKE SWITCH
27	V	BRAKE FLUID LEVEL SWITCH
29	R	WASHER LEVEL SWITCH
30	P	VEHICLE SPEED (2-PULSE)
31	V	VEHICLE SPEED (8-PULSE)
32	LG	OD OFF / SPORTS
34	G	FUEL LEVEL SENSOR
35	SB	SEAT BELT BUCKLE SWITCH (DRIVER SIDE)
36	R	SEAT BELT BUCKLE SWITCH (PASSENGER SIDE)

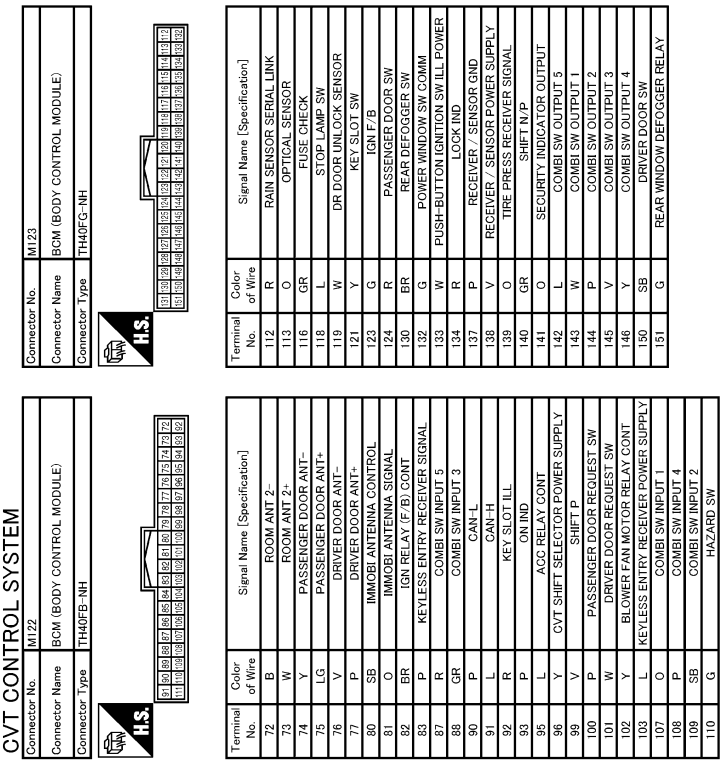
Connector No.	M57
Connector Name	CVT SHIFT SELECTOR
Connector Type	TK10FW

H.S.

1 3 7 9
2 4 5 6 8

Terminal No.	Color of Wire	Signal Name [Specification]
1	LG	–
4	B	–
6	P	–
7	B	–
8	Y	–
9	V	–

JCDWM1227GB



Terminal No.	Color of Wire	Signal Name [Specification]
72	B	ROOM ANT 2–
73	W	ROOM ANT 2+
74	Y	PASSENGER DOOR ANT–
75	LG	PASSENGER DOOR ANT+
76	V	DRIVER DOOR ANT–
77	P	DRIVER DOOR ANT+
80	SB	IMMOBI ANTENNA CONTROL
81	O	IMMOBI ANTENNA SIGNAL
82	BR	IGN RELAY (F/B) CONT
83	P	KEYLESS ENTRY RECEIVER SIGNAL
87	R	COMBI SW INPUT 5
88	GR	COMBI SW INPUT 3
90	P	CAN-L
91	L	CAN-H
92	R	KEY SLOT ILL
93	P	ON IND
95	L	ACC RELAY CONT
96	Y	CVT SHIFT SELECTOR POWER SUPPLY
99	V	SHIFT P
100	P	PASSENGER DOOR REQUEST SW
101	W	DRIVER DOOR REQUEST SW
102	Y	BLOWER FAN MOTOR RELAY CONT
103	L	KEYLESS ENTRY RECEIVER POWER SUPPLY
107	O	COMBI SW INPUT 1
108	P	COMBI SW INPUT 4
109	SB	COMBI SW INPUT 2
110	G	HAZARD SW

Terminal No.	Color of Wire	Signal Name [Specification]
112	R	RAIN SENSOR SERIAL LINK
113	O	OPTICAL SENSOR
116	GR	FUSE CHECK
118	L	STOP LAMP SW
119	W	DR DOOR UNLOCK SENSOR
121	Y	KEY SLOT SW
123	G	IGN F/B
124	R	PASSENGER DOOR SW
130	BR	REAR DEFOGGER SW
132	G	POWER WINDOW SW COMM
133	W	PUSH-BUTTON IGNITION SW ILL POWER
134	R	LOCK IND
137	P	RECEIVER / SENSOR GND
138	V	RECEIVER / SENSOR POWER SUPPLY
139	O	TIRE PRESS RECEIVER SIGNAL
140	GR	SHIFT N/P
141	O	SECURITY INDICATOR OUTPUT
142	L	COMBI SW OUTPUT 5
143	W	COMBI SW OUTPUT 1
144	P	COMBI SW OUTPUT 2
145	V	COMBI SW OUTPUT 3
146	Y	COMBI SW OUTPUT 4
150	SB	DRIVER DOOR SW
151	G	REAR WINDOW DEFOGGER RELAY

JCDWM1228GB

Fail-safe

INFOID:0000000006260188

The TCM has an electrical fail-safe mode. In this mode TCM operates 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 valve, this function controls the CVT to make driving possible.

Secondary Speed Sensor
The shift pattern is changed in accordance with the throttle position when an unexpected signal is sent from the secondary speed sensor to the TCM. The overdrive control mode is inhibited, and the transaxle is put in “D”.

Primary Speed Sensor
The shift pattern is changed in accordance with the throttle position and secondary speed (vehicle speed) when an unexpected signal is sent from the primary speed sensor to the TCM. The overdrive control mode is inhibited, and the transaxle is put in “D”.

Transmission range Switch
If an unexpected signal is sent from the transmission range 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 5,000 rpm.

Secondary Pressure Sensor
- If an unexpected signal is sent from the secondary pressure sensor to the TCM, the secondary pressure feedback control is stopped and the offset value obtained before the non-standard condition occurs is used to control line pressure.
- If secondary pressure sensor error signal is inputted to the TCM, secondary pressure feedback control stops, but line pressure is controlled normally.

Line Pressure Solenoid Valve
If an unexpected signal is sent from the solenoid valve to the TCM, the line pressure solenoid valve is turned OFF to achieve the maximum fluid pressure.

Secondary Pressure Solenoid Valve
If an unexpected signal is sent from the solenoid valve to the TCM, the secondary pressure solenoid valve is turned OFF to achieve the maximum fluid pressure.

Torque Converter Clutch Solenoid Valve
If an unexpected signal is sent from the solenoid valve to the TCM, the torque converter clutch solenoid valve 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 just before the non-standard condition occurred.

Lock-up Select Solenoid Valve
If an unexpected signal is sent from the solenoid valve to the TCM, the lock-up select solenoid valve 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 the TCM. Normal status is restored when turning the ignition switch OFF to ON after the normal power supply.

DTC Inspection Priority Chart

INFOID:0000000006260189

If some DTCs are displayed at the same time, perform inspections one by one based on the following priority chart.
NOTE:
If DTC “U1000” is indicated with other DTCs, start from a diagnosis for DTC “U1000”. Refer to TM-41.

Priority	Detected items (DTC)
1	U1000
2	Except above

DTC Index

INFOID:0000000006260190

NOTE:
If DTC “U1000” is indicated with other DTCs, start from a diagnosis for DTC “U1000”. Refer to TM-41.

DTC[*1]		Trouble diagnosis name	Reference
"TRANSMISSION" with CONSULT-III	MIL[*2], "ENGINE" with CONSULT-III or GST		
P0615	—	STARTER RELAY	TM-42, "DTC Logic"
P0703	—	BRAKE SWITCH B	TM-44, "DTC Logic"
P0705	P0705	T/M RANGE SENSOR A	TM-47, "DTC Logic"
P0710	P0710	FLUID TEMP SENSOR A	TM-50, "DTC Logic"
P0715	P0715	INPUT SPEED SENSOR A	TM-53, "DTC Logic"
P0720	P0720	INPUT SPEED SENSOR A	TM-56, "DTC Logic"
P0725	—	ENGINE SPEED	TM-60, "DTC Logic"
P0730	—	INCORRECT GR RATIO	TM-61, "DTC Logic"
P0740	P0740	TORQUE CONVERTER	TM-63, "DTC Logic"
P0744	P0744	TORQUE CONVERTER	TM-65, "DTC Logic"
P0745	P0745	PC SOLENOID A	TM-67, "DTC Logic"
P0746	P0746	PC SOLENOID A	TM-69, "DTC Logic"
P0776	P0776	PC SOLENOID B	TM-71, "DTC Logic"
P0778	P0778	PC SOLENOID B	TM-73, "DTC Logic"
P0840	P0840	FLUID PRESS SEN/SW A	TM-75, "DTC Logic"
P0841	—	FLUID PRESS SEN/SW A	TM-78, "DTC Logic"
P0845	P0845	FLUID PRESS SEN/SW B	TM-80, "DTC Logic"
P0868	—	FLUID PRESS LOW	TM-83, "DTC Logic"
P1701	—	TCM	TM-85, "DTC Logic"
P1705	—	TP SENSOR	TM-88, "DTC Logic"
P1709	—	INCOMPLETED DATA WRITING	TM-89, "DTC Logic"
P1722	—	VEHICLE SPEED	TM-91, "DTC Logic"
P1723	—	SPEED SENSOR	TM-93, "DTC Logic"
P1726	—	THROTTLE CONTROL SIGNAL	TM-95, "DTC Logic"
P1740	P1740	SLCT SOLENOID	TM-96, "DTC Logic"
P1745	—	LINE PRESSURE CONTROL	TM-98, "DTC Logic"
P1777	P1777	STEP MOTOR	TM-99, "DTC Logic"
P1778	P1778	STEP MOTOR	TM-102, "DTC Logic"
U1000	U1000	CAN COMM CIRCUIT	TM-41, "DTC Logic"

- *1: These numbers are prescribed by SAE J2012.
- *2: Refer to TM-35, "Diagnosis Description".

SYMPTOM DIAGNOSIS

SYSTEM SYMPTOM

Symptom Table

INFOID:0000000006260191

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

No.	Item	Symptom	Condition	Diagnostic item	Reference
1	Shift Shock	Large shock. (“N”→ “D” position)	ON vehicle	1. Engine idle speed	EC-17
				2. Engine speed signal	TM-60
				3. Accelerator pedal position sensor	TM-88
				4. CVT position	TM-160
				5. CVT fluid temperature sensor	TM-50
				6. CAN communication line	TM-41
				7. CVT fluid level and state	TM-147
				8. Line pressure test	TM-154
				9. Torque converter clutch solenoid valve	TM-63
				10. Lock-up select solenoid valve	TM-96
				11. Transmission range switch	TM-44
			OFF vehicle	12. Forward clutch	TM-174
				13. Control valve	
2		Large shock. (“N”→ “R” position)	ON vehicle	1. Engine idle speed	EC-17
				2. Engine speed signal	TM-60
				3. Accelerator pedal position sensor	TM-88
				4. CVT position	TM-160
				5. CVT fluid temperature sensor	TM-50
				6. CAN communication line	TM-41
				7. CVT fluid level and state	TM-147
				8. Line pressure test	TM-154
				9. Torque converter clutch solenoid valve	TM-63
				10. Lock-up select solenoid valve	TM-96
				11. Transmission range switch	TM-44
			OFF vehicle	12. Reverse brake	TM-174
				13. Control valve	
3		Shock is too large for lock-up.	ON vehicle	1. CVT position	TM-160
				2. Engine speed signal	TM-60
				3. CAN communication line	TM-41
				4. CVT fluid level and state	TM-147
			OFF vehicle	5. Torque converter	TM-178
				6. Control valve	TM-174

No.	Item	Symptom	Condition	Diagnostic item	Reference
4	Slips/Will Not Engage	Vehicle cannot take off from “D” position.	ON vehicle	1. CVT fluid level and state	TM-147
				2. CVT position	TM-160
				3. CAN communication line	TM-41
				4. Line pressure test	TM-154
				5. Stall test	TM-152
				6. Step motor	TM-99
				7. Primary speed sensor	TM-53
				8. Secondary speed sensor	TM-56
				9. Accelerator pedal position sensor	TM-88
				10. CVT fluid temperature sensor	TM-50
				11. Secondary pressure sensor	TM-75
				12. TCM power supply and ground	TM-85
			OFF vehicle	13. Oil pump assembly	TM-174
				14. Forward clutch	
				15. Control valve	
				16. Parking components	
5		Vehicle cannot take off from “R” position.	ON vehicle	1. CVT fluid level and state	TM-147
				2. CVT position	TM-160
				3. CAN communication line	TM-41
				4. Line pressure test	TM-154
				5. Stall test	TM-152
				6. Step motor	TM-99
				7. Primary speed sensor	TM-53
				8. Secondary speed sensor	TM-56
				9. Accelerator pedal position sensor	TM-88
				10. CVT fluid temperature sensor	TM-50
				11. Secondary pressure sensor	TM-75
				12. TCM power supply and ground	TM-85
			OFF vehicle	13. Oil pump assembly	TM-174
				14. Reverse brake	
				15. Control valve	
				16. Parking components	

No.	Item	Symptom	Condition	Diagnostic item	Reference
6	Slips/Will Not Engage	Does not lock-up.	ON vehicle	1. CVT fluid level and state	TM-147
				2. Line pressure test	TM-154
				3. Engine speed signal	TM-60
				4. Primary speed sensor	TM-53
				5. Torque converter clutch solenoid valve	TM-63
				6. CAN communication line	TM-41
				7. Stall test	TM-152
				8. Step motor	TM-99
				9. Transmission range switch	TM-44
				10. Lock-up select solenoid valve	TM-96
				11. CVT fluid temperature sensor	TM-50
				12. Secondary speed sensor	TM-56
				13. Secondary pressure sensor	TM-75
			OFF vehicle	14. Torque converter	TM-178
				15. Oil pump assembly	TM-174
				16. Control valve	
7		Does not hold lock-up condition.	ON vehicle	1. CVT fluid level and state	TM-147
				2. Line pressure test	TM-154
				3. Engine speed signal	TM-60
				4. Primary speed sensor	TM-53
				5. Torque converter clutch solenoid valve	TM-63
				6. CAN communication line	TM-41
				7. Stall test	TM-152
				8. Step motor	TM-99
				9. Transmission range switch	TM-44
				10. Lock-up select solenoid valve	TM-96
				11. CVT fluid temperature sensor	TM-50
				12. Secondary speed sensor	TM-56
				13. Secondary pressure sensor	TM-75
			OFF vehicle	14. Torque converter	TM-178
				15. Oil pump assembly	TM-174
				16. Control valve	

No.	Item	Symptom	Condition	Diagnostic item	Reference
8	Slips/Will Not Engage	Lock-up is not released.	ON vehicle	1. CVT fluid level and state	TM-147
				2. Line pressure test	TM-154
				3. Engine speed signal	TM-60
				4. Primary speed sensor	TM-53
				5. Torque converter clutch solenoid valve	TM-63
				6. CAN communication line	TM-41
				7. Stall test	TM-152
			OFF vehicle	8. Torque converter	TM-178
				9. Oil pump assembly	TM-174
				10. Control valve	
9		With selector lever in “D” position, acceleration is extremely poor.	ON vehicle	1. CVT fluid level and state	TM-147
				2. Line pressure test	TM-154
				3. Stall test	TM-152
				4. Accelerator pedal position sensor	TM-88
				5. CAN communication line	TM-41
				6. Transmission range switch	TM-44
				7. CVT position	TM-160
				8. Step motor	TM-99
				9. Primary speed sensor	TM-53
				10. Secondary speed sensor	TM-56
				11. Accelerator pedal position sensor	TM-88
				12. Primary pressure sensor	TM-80
				13. Secondary pressure sensor	TM-75
				14. CVT fluid temperature sensor	TM-50
				15. TCM power supply and ground	TM-85
			OFF vehicle	16. Torque converter	TM-178
				17. Oil pump assembly	TM-174
				18. Forward clutch	
				19. Control valve	

No.	Item	Symptom	Condition	Diagnostic item	Reference
10	Slips/Will Not Engage	With selector lever in “R” position, acceleration is extremely poor.	ON vehicle	1. CVT fluid level and state	TM-147
				2. Line pressure test	TM-154
				3. Stall test	TM-152
				4. Accelerator pedal position sensor	TM-88
				5. CAN communication line	TM-41
				6. Transmission range switch	TM-44
				7. CVT position	TM-160
				8. Step motor	TM-99
				9. Primary speed sensor	TM-53
				10. Secondary speed sensor	TM-56
				11. Accelerator pedal position sensor	TM-88
				12. Primary pressure sensor	TM-80
				13. Secondary pressure sensor	TM-75
				14. CVT fluid temperature sensor	TM-50
				15. TCM power supply and ground	TM-85
			OFF vehicle	16. Torque converter	TM-178
				17. Oil pump assembly	TM-174
				18. Reverse brake	
				19. Control valve	
11		Slips at lock-up.	ON vehicle	1. CVT fluid level and state	TM-147
				2. Line pressure test	TM-154
				3. Engine speed signal	TM-60
				4. Primary speed sensor	TM-53
				5. Torque converter clutch solenoid valve	TM-63
				6. CAN communication line	TM-41
				7. Stall test	TM-152
				8. Step motor	TM-99
				9. Transmission range switch	TM-44
				10. Lock-up select solenoid valve	TM-96
				11. CVT fluid temperature sensor	TM-50
				12. Secondary speed sensor	TM-56
				13. Secondary pressure sensor	TM-75
			OFF vehicle	14. Torque converter	TM-178
				15. Oil pump assembly	TM-174
				16. Control valve	

No.	Item	Symptom	Condition	Diagnostic item	Reference
12	Others	No creep at all.	ON vehicle	1. CVT fluid level and state	TM-147
				2. Line pressure test	TM-154
				3. Accelerator pedal position sensor	TM-88
				4. Transmission range switch	TM-44
				5. CAN communication line	TM-41
				6. Stall test	TM-152
				7. CVT position	TM-160
				8. Step motor	TM-99
				9. Primary speed sensor	TM-53
				10. Secondary speed sensor	TM-56
				11. Accelerator pedal position sensor	TM-88
				12. CVT fluid temperature sensor	TM-50
				13. Primary pressure sensor	TM-80
				14. Secondary pressure sensor	TM-75
				15. TCM power supply and ground	TM-85
			OFF vehicle	16. Torque converter	TM-178
				17. Oil pump assembly	TM-174
				18. Gear system	
				19. Forward clutch	
				20. Reverse brake	
				21. Control valve	

No.	Item	Symptom	Condition	Diagnostic item	Reference
13	Others	Vehicle cannot drive in all positions.	ON vehicle	1. CVT fluid level and state	TM-147
				2. Line pressure test	TM-154
				3. Transmission range switch	TM-44
				4. Stall test	TM-152
				5. CVT position	TM-160
				6. Step motor	TM-99
				7. Primary speed sensor	TM-53
				8. Secondary speed sensor	TM-56
				9. Accelerator pedal position sensor	TM-88
				10. CVT fluid temperature sensor	TM-50
				11. Secondary pressure sensor	TM-75
				12. TCM power supply and ground	TM-85
			OFF vehicle	13. Torque converter	TM-178
				14. Oil pump assembly	TM-174
				15. Gear system	
				16. Forward clutch	
				17. Reverse brake	
				18. Control valve	
				19. Parking components	
14		With selector lever in “D” position, driving is not possible.	ON vehicle	1. CVT fluid level and state	TM-147
				2. Line pressure test	TM-154
				3. Transmission range switch	TM-44
				4. Stall test	TM-152
				5. CVT position	TM-160
				6. Step motor	TM-99
				7. Primary speed sensor	TM-53
				8. Secondary speed sensor	TM-56
				9. Accelerator pedal position sensor	TM-88
				10. CVT fluid temperature sensor	TM-50
				11. Secondary pressure sensor	TM-75
				12. TCM power supply and ground	TM-85
			OFF vehicle	13. Torque converter	TM-178
				14. Oil pump assembly	TM-174
				15. Gear system	
				16. Forward clutch	
				17. Control valve	
				18. Parking components	

No.	Item	Symptom	Condition	Diagnostic item	Reference
15	Others	With selector lever in “R” position, driving is not possible.	ON vehicle	1. CVT fluid level and state	TM-147
				2. Line pressure test	TM-154
				3. Transmission range switch	TM-44
				4. Stall test	TM-152
				5. CVT position	TM-160
				6. Step motor	TM-99
				7. Primary speed sensor	TM-53
				8. Secondary speed sensor	TM-56
				9. Accelerator pedal position sensor	TM-88
				10. CVT fluid temperature sensor	TM-50
				11. Secondary pressure sensor	TM-75
				12. TCM power supply and ground	TM-85
			OFF vehicle	13. Torque converter	TM-178
				14. Oil pump assembly	TM-174
				15. Gear system	
				16. Reverse brake	
				17. Control valve	
				18. Parking components	
16		Judder occurs during lock-up.	ON vehicle	1. CVT fluid level and state	TM-147
				2. Engine speed signal	TM-60
				3. Primary speed sensor	TM-53
				4. Secondary speed sensor	TM-56
				5. Accelerator pedal position sensor	TM-88
				6. CAN communication line	TM-41
				7. Torque converter clutch solenoid valve	TM-63
			OFF vehicle	8. Torque converter	TM-178
				9. Control valve	TM-174
17		Strange noise in “D” position.	ON vehicle	1. CVT fluid level and state	TM-147
				2. Engine speed signal	TM-60
				3. CAN communication line	TM-41
			OFF vehicle	4. Torque converter	TM-178
				5. Oil pump assembly	TM-174
				6. Gear system	
				7. Forward clutch	
				8. Control valve	
				9. Bearing	

No.	Item	Symptom	Condition	Diagnostic item	Reference
18	Others	Strange noise in “R” position.	ON vehicle	1. CVT fluid level and state	TM-147
				2. Engine speed signal	TM-60
				3. CAN communication line	TM-41
			OFF vehicle	4. Torque converter	TM-178
				5. Oil pump assembly	TM-174
				6. Gear system	
				7. Reverse brake	
				8. Control valve	
19		Strange noise in “N” position.	ON vehicle	1. CVT fluid level and state	TM-147
				2. Engine speed signal	TM-60
				3. CAN communication line	TM-41
			OFF vehicle	4. Torque converter	TM-178
				5. Oil pump assembly	TM-174
				6. Gear system	
				7. Control valve	
20		Vehicle does not decelerate by engine brake.	ON vehicle	1. CVT fluid level and state	TM-147
				2. CVT position	TM-160
				3. Overdrive control switch	TM-111
				4. CAN communication line	TM-41
				5. Step motor	TM-99
				6. Primary speed sensor	TM-53
				7. Secondary speed sensor	TM-56
				8. Line pressure test	TM-154
				9. Engine speed signal	TM-60
				10. Accelerator pedal position sensor	TM-88
			OFF vehicle	11. Control valve	TM-174

No.	Item	Symptom	Condition	Diagnostic item	Reference
21	Others	Maximum speed low.	ON vehicle	1. CVT fluid level and state	TM-147
				2. Line pressure test	TM-154
				3. Accelerator pedal position sensor	TM-88
				4. CAN communication line	TM-41
				5. Stall test	TM-152
				6. Step motor	TM-99
				7. Primary speed sensor	TM-53
				8. Secondary speed sensor	TM-56
				9. Primary pressure sensor	TM-80
				10. Secondary pressure sensor	TM-75
				11. CVT fluid temperature sensor	TM-50
			OFF vehicle	12. Torque converter	TM-178
				13. Oil pump assembly	TM-174
				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. Transmission range switch	TM-44
				2. CVT position	TM-160
			OFF vehicle	3. Parking components	TM-174
23		Vehicle drives with CVT in “P” position.	ON vehicle	1. Transmission range switch	TM-44
				2. CVT fluid level and state	TM-147
				3. CVT position	TM-160
			OFF vehicle	4. Parking components	TM-174
				5. Gear system	
				6. Control valve	
24		Vehicle drives with CVT in “N” position.	ON vehicle	1. Transmission range switch	TM-44
				2. CVT fluid level and state	TM-147
				3. CVT position	TM-160
			OFF vehicle	4. Gear system	TM-174
				5. Forward clutch	
				6. Reverse brake	
				7. Control valve	

No.	Item	Symptom	Condition	Diagnostic item	Reference
25	Others	Engine stall.	ON vehicle	1. CVT fluid level and state	TM-147
				2. Engine speed signal	TM-60
				3. Primary speed sensor	TM-53
				4. Torque converter clutch solenoid valve	TM-63
				5. CAN communication line	TM-41
				6. Stall test	TM-152
				7. Secondary pressure sensor	TM-75
			OFF vehicle	8. Torque converter	TM-178
				9. Control valve	TM-174
26		Engine stalls when selector lever is shifted “N”→“D”or “R”.	ON vehicle	1. CVT fluid level and state	TM-147
				2. Engine speed signal	TM-60
				3. Primary speed sensor	TM-53
				4. Torque converter clutch solenoid valve	TM-63
				5. CAN communication line	TM-41
				6. Stall test	TM-152
			OFF vehicle	7. Torque converter	TM-178
				8. Control valve	TM-174
27		Engine speed does not return to idle.	ON vehicle	1. CVT fluid level and state	TM-147
				2. Accelerator pedal position sensor	TM-88
				3. Secondary speed sensor	TM-56
				4. CAN communication line	TM-41
			OFF vehicle	5. Control valve	TM-174
28		CVT does not shift	ON vehicle	1. CVT fluid level and state	TM-147
				2. CVT position	TM-160
				3. Line pressure test	TM-154
				4. Engine speed signal	TM-60
				5. Accelerator pedal position sensor	TM-88
				6. CAN communication line	TM-41
				7. Primary speed sensor	TM-53
				8. Secondary speed sensor	TM-56
				9. Step motor	TM-99
			OFF vehicle	10. Control valve	TM-174
				11. Oil pump assembly	
29		Engine does not start in “N” or “P” position.	ON vehicle	1. Ignition switch and starter	PG-63, STR-5
				2. CVT position	TM-160
				3. Transmission range switch	TM-44

No.	Item	Symptom	Condition	Diagnostic item	Reference
30	Others	Engine starts in positions other than “N” or “P”.	ON vehicle	1. Ignition switch and starter	PG-63, STR-5
				2. CVT position	TM-160
				3. Transmission range switch	TM-44
31		When brake pedal is depressed with ignition switch ON, selector lever cannot be shifted from “P” position to other position.	ON vehicle	1. Stop lamp switch	TM-105
				2. Shift lock solenoid	
				3. CVT shift selector	
32		When brake pedal is not depressed with ignition switch ON, selector lever can be shifted from “P” position to other position.	ON vehicle	1. Stop lamp switch	TM-105
				2. Shift lock solenoid	
				3. CVT shift selector	
33		Cannot be changed to overdrive OFF condition.	ON vehicle	1. Overdrive control switch	TM-111
				2. CAN communication line	TM-41
				3. Combination meter	MWI-44
34		OD OFF indicator lamp is not turned ON.	ON vehicle	1. CAN communication line	TM-41
				2. Combination meter	MWI-44
				3. TCM power supply and ground	TM-85

PRECAUTION

PRECAUTIONS

FOR USA AND CANADA

FOR USA AND CANADA : Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER"

INFOID:0000000006260192

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

WARNING:

Always observe the following items for preventing accidental activation.

- **To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision that would result in air bag inflation, 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 AIR BAG”.**
- **Never use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harnesses or harness connectors.**

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

WARNING:

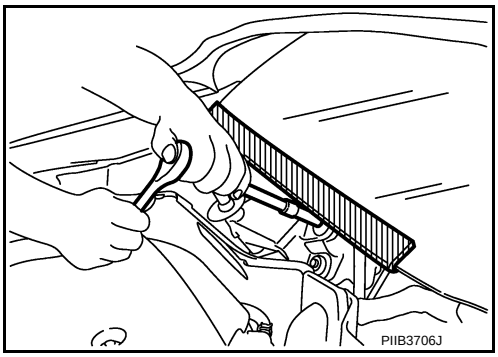
Always observe the following items for preventing accidental activation.

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

FOR USA AND CANADA : Precaution for Procedure without Cowl Top Cover

INFOID:0000000006260194

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



FOR USA AND CANADA : Precaution for On Board Diagnosis (OBD) System of CVT and Engine

INFOID:0000000006260195

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

CAUTION:

- **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.**

FOR USA AND CANADA : Precaution for TCM and Transaxle Assembly Replacement

INFOID:0000000006260196

CAUTION:

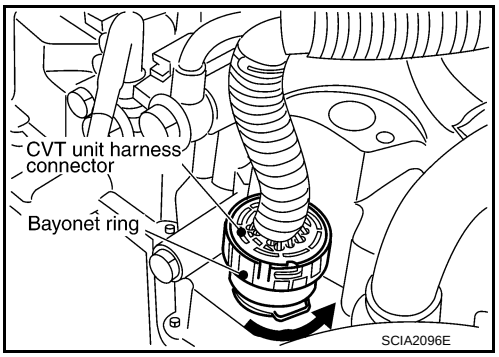
- **To replace TCM, refer to TM-8, "Description".**
- **To replace transaxle assembly, refer to TM-9, "Description".**

FOR USA AND CANADA : Removal and Installation Procedure for CVT Unit Connector

INFOID:0000000006260197

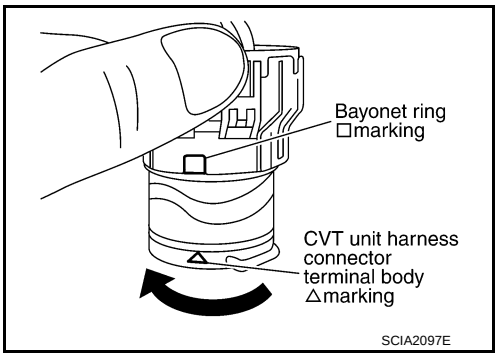
REMOVAL

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

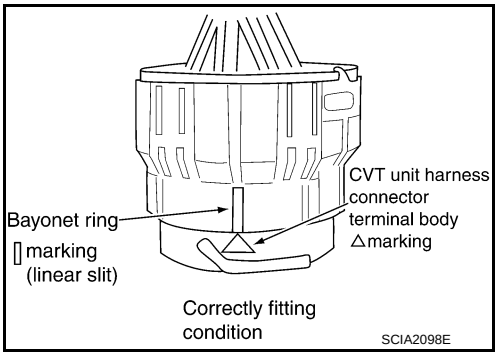


INSTALLATION

1. Align Δ marking on CVT unit harness connector terminal body with □ marking on bayonet ring. Insert CVT unit harness connector. Then rotate bayonet ring clockwise.

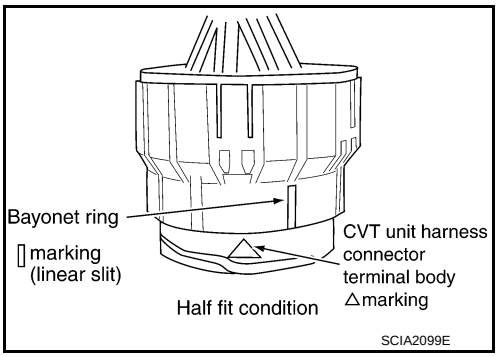


2. Rotate bayonet ring clockwise until Δ marking on CVT unit harness connector terminal body is aligned with the slit on bayonet ring as shown in the figure (correctly fitting condition). Install CVT unit harness connector to CVT unit harness connector terminal body.



CAUTION:

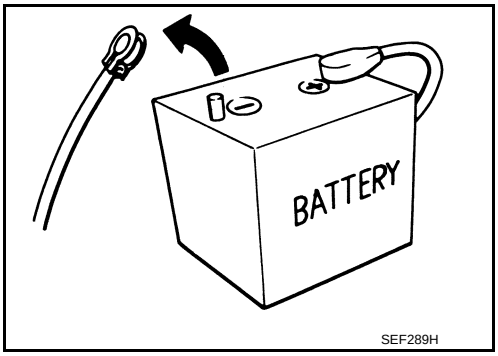
- **Securely align Δ marking on CVT unit harness connector terminal body with bayonet ring slit. Then, be careful not to make a half fit condition as shown in the figure.**
- **Never mistake the slit of bayonet ring for other dent portion.**



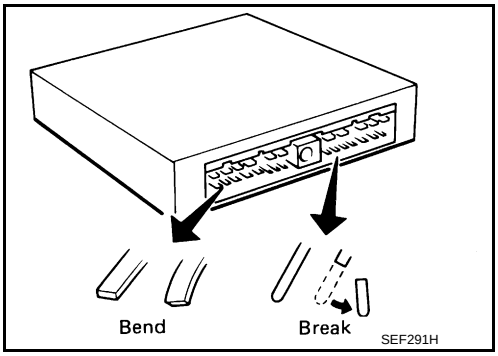
FOR USA AND CANADA : Precaution

INFOID:0000000006260198

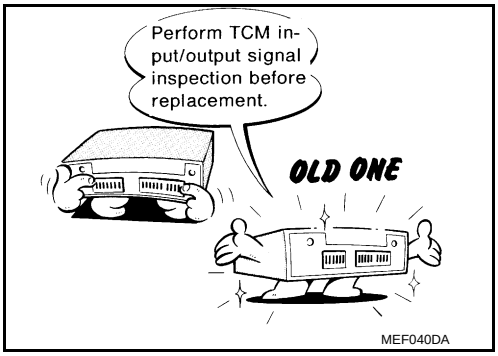
- **Turn ignition switch OFF and disconnect negative battery cable before connecting or disconnecting the TCM harness connector. Because battery voltage is applied to TCM even if ignition switch is turned OFF.**



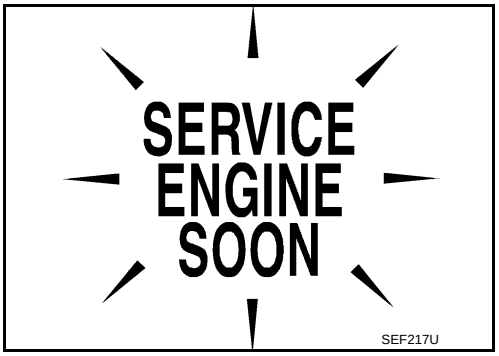
- **When connecting or disconnecting pin connectors into or from TCM, do not damage pin terminals (bend or break).**
  Check that there are not any bends or breaks on TCM pin terminal, when connecting pin connectors.



- **Perform TCM input/output signal inspection and check whether TCM functions normally or not before replacing TCM. TM-113, "Reference Value".**



- **Perform “DTC Confirmation Procedure” after performing each TROUBLE DIAGNOSIS.**
  If the repair is completed the DTC should not be displayed in the “DTC Confirmation Procedure”.
- Always use the specified brand of CVT fluid. Refer to MA-15, "FOR NORTH AMERICA : Fluids and Lubricants".
- Use lint-free paper, not cloth rags, during work.
- Dispose of the waste oil using the methods prescribed by law, ordinance, etc. after replacing the CVT fluid.



FOR USA AND CANADA : Service Notice or Precaution

INFOID:0000000006260199

OBD-II SELF-DIAGNOSIS

- CVT self-diagnosis is performed by the TCM in combination with the ECM. The results can be read through the blinking pattern of the Malfunction Indicator Lamp (MIL). Refer to the table on TM-37, "CONSULT-III Function (TRANSMISSION)" for the indicator used to display each self diagnostic results.
- The self diagnostic results indicated by the MIL are automatically stored in both the ECM and TCM memories.
  Always perform the procedure on TM-35, "Diagnosis Description" to complete the repair and avoid unnecessary blinking of the MIL.

For details of OBD-II, refer to EC-118, "Diagnosis Description".

- **Certain systems and components, especially those related to OBD, may use the new style slide-locking type harness connector. For description and how to disconnect, refer to PG-107.**

FOR USA AND CANADA : ATFTEMP COUNT Conversion Table

INFOID:0000000006260200

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

FOR MEXICO

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

INFOID:0000000006260201

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

WARNING:

Always observe the following items for preventing accidental activation.

- **To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision that would result in air bag inflation, 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 AIR BAG”.**
- **Never use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harnesses or harness connectors.**

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

WARNING:

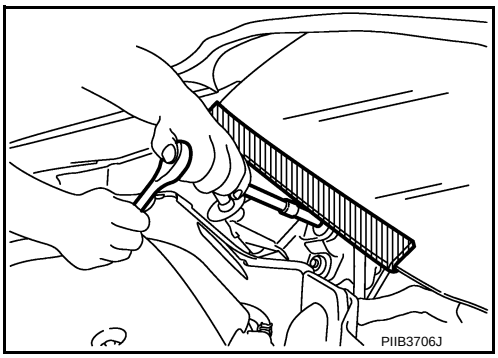
Always observe the following items for preventing accidental activation.

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

FOR MEXICO : Precaution for Procedure without Cowl Top Cover

INFOID:0000000006260203

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



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

INFOID:0000000006260204

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

CAUTION:

- **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.**

FOR MEXICO : Precaution for TCM and Transaxle Assembly Replacement

INFOID:0000000006260205

CAUTION:

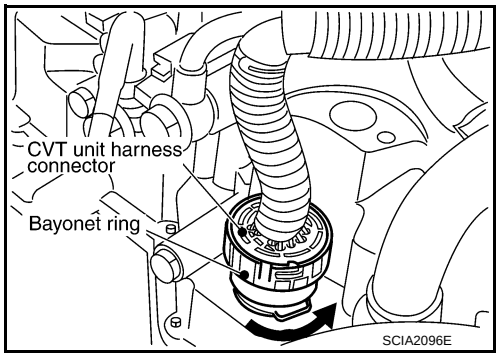
- **To replace TCM, refer to TM-8, "Description".**
- **To replace transaxle assembly, refer to TM-9, "Description".**

FOR MEXICO : Removal and Installation Procedure for CVT Unit Connector

INFOID:0000000006260206

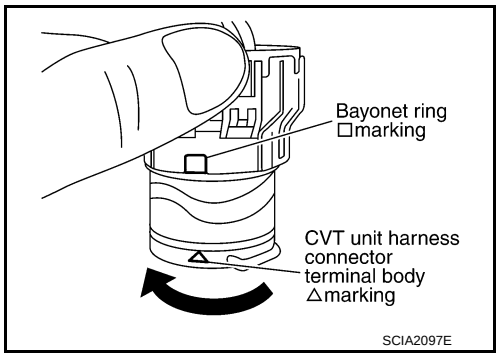
REMOVAL

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

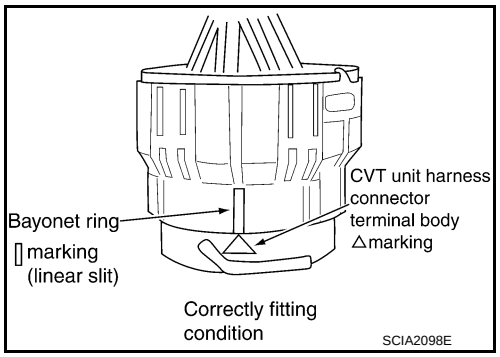


INSTALLATION

1. Align Δ marking on CVT unit harness connector terminal body with □ marking on bayonet ring. Insert CVT unit harness connector. Then rotate bayonet ring clockwise.

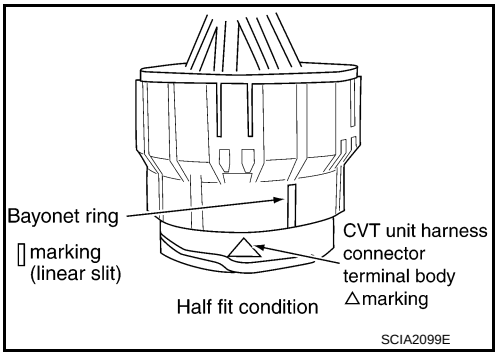


2. Rotate bayonet ring clockwise until Δ marking on CVT unit harness connector terminal body is aligned with the slit on bayonet ring as shown in the figure (correctly fitting condition). Install CVT unit harness connector to CVT unit harness connector terminal body.



CAUTION:

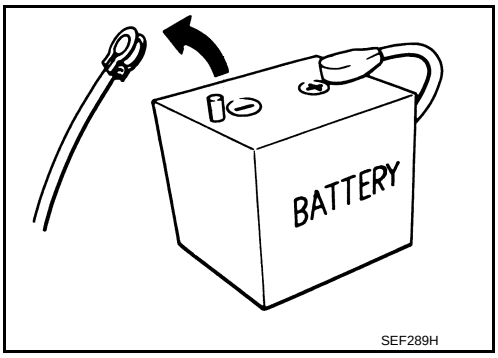
- **Securely align ∆ marking on CVT unit harness connector terminal body with bayonet ring slit. Then, be careful not to make a half fit condition as shown in the figure.**
- **Never mistake the slit of bayonet ring for other dent portion.**



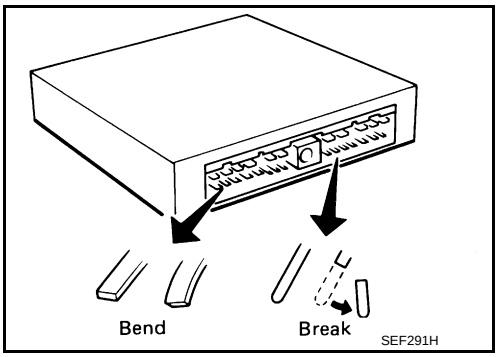
FOR MEXICO : Precaution

INFOID:0000000006260207

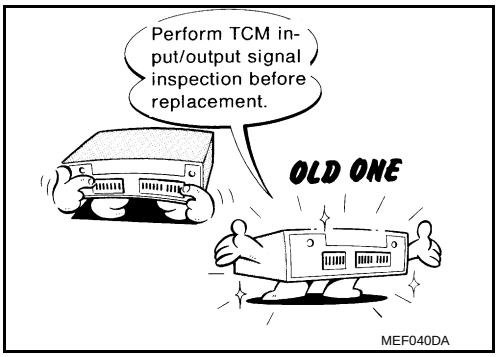
- **Turn ignition switch OFF and disconnect negative battery cable before connecting or disconnecting the TCM harness connector. Because battery voltage is applied to TCM even if ignition switch is turned OFF.**



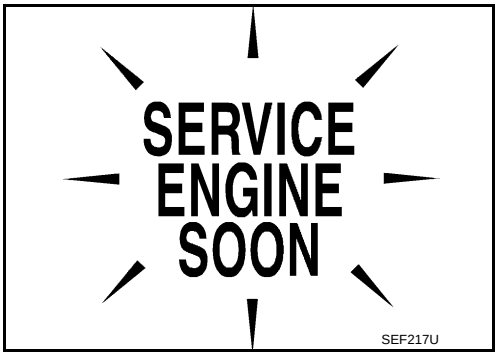
- **When connecting or disconnecting pin connectors into or from TCM, do not damage pin terminals (bend or break).**
  Check that there are not any bends or breaks on TCM pin terminal, when connecting pin connectors.



- **Perform TCM input/output signal inspection and check whether TCM functions normally or not before replacing TCM. TM-113, "Reference Value".**



- **Perform “DTC Confirmation Procedure” after performing each TROUBLE DIAGNOSIS.**
  If the repair is completed the DTC should not be displayed in the “DTC Confirmation Procedure”.
- Always use the specified brand of CVT fluid. Refer to MA-16, "FOR MEXICO : Fluids and Lubricants".
- Use lint-free paper, not cloth rags, during work.
- Dispose of the waste oil using the methods prescribed by law, ordinance, etc. after replacing the CVT fluid.



FOR MEXICO : Service Notice or Precaution

INFOID:0000000006260208

OBD-II SELF-DIAGNOSIS

- CVT self-diagnosis is performed by the TCM in combination with the ECM. The results can be read through the blinking pattern of the Malfunction Indicator Lamp (MIL). Refer to the table on TM-37, "CONSULT-III Function (TRANSMISSION)" for the indicator used to display each self diagnostic results.
- The self diagnostic results indicated by the MIL are automatically stored in both the ECM and TCM memories.
  Always perform the procedure on TM-35, "Diagnosis Description" to complete the repair and avoid unnecessary blinking of the MIL.

For details of OBD-II, refer to EC-118, "Diagnosis Description".

- **Certain systems and components, especially those related to OBD, may use the new style slide-locking type harness connector. For description and how to disconnect, refer to PG-107.**

FOR MEXICO : ATFTEMP COUNT Conversion Table

INFOID:0000000006260209

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

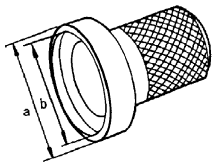
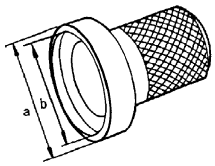
PREPARATION

PREPARATION

Special Service Tools

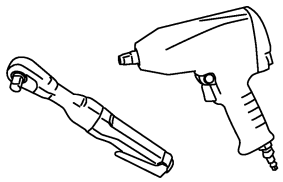
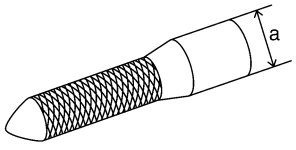
INFOID:0000000006260210

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

Tool number (Kent-Moore No.) Tool name	Description
— (OTC3492) Oil pressure gauge set  SCIA7531E	Measuring line pressure
ST33400001 (J-26082) Drift a: 60 mm (2.36 in) dia. b: 47 mm (1.85 in) dia.  ZZA0814D	Installing differential side oil seal
KV40100621 (J-25405) Drift a: 76 mm (2.99 in) dia. b: 69 mm (2.72 in) dia.  ZZA0814D	Installing side oil seal (transfer joint)

Commercial Service Tools

INFOID:0000000006260211

Tool number Tool name	Description
Power tool  PBIC0190E	Loosening nuts and bolts
31197CA000 Drive plate location guide a: 14 mm (0.55 in) dia.  SCIA2013E	Installing transaxle assembly

PERIODIC MAINTENANCE

CVT FLUID

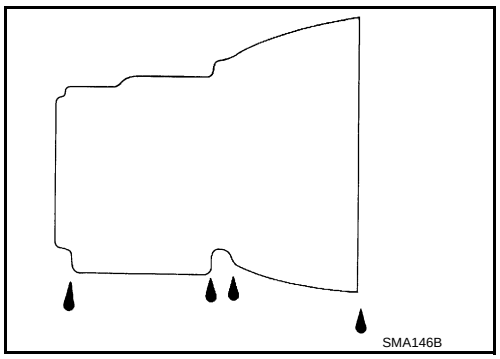
Inspection

INFOID:0000000006260212

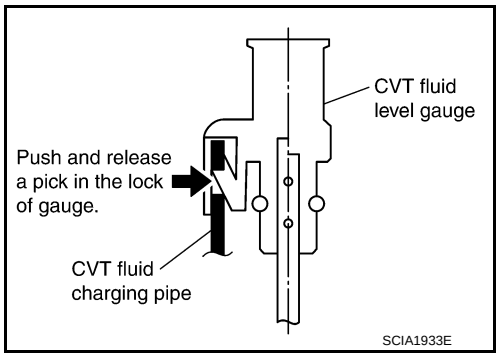
CHECKING CVT FLUID

The fluid level should be checked with the fluid warmed up to 50 to 80°C (122 to 176°F). The fluid level check procedure is as follows:

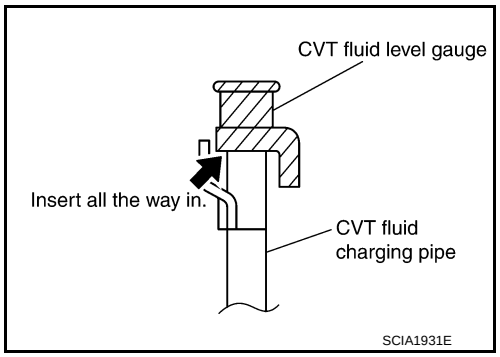
1. Check for fluid leakage.
2. With the engine warmed up, drive the vehicle in an urban area. When ambient temperature is 20°C (68°F), it takes about 10 minutes for the CVT fluid to warm up to 50 to 80°C (122 to 176°F).
3. Park the vehicle on a level surface.
4. Apply parking brake firmly.
5. With engine at idle, while depressing brake pedal, move shift selector throughout the entire shift range.



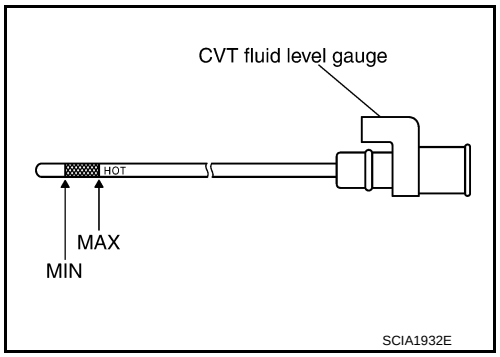
6. Pull out the CVT fluid level gauge from the CVT fluid charging pipe after pressing the tab on the CVT fluid level gauge to release the lock.



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.



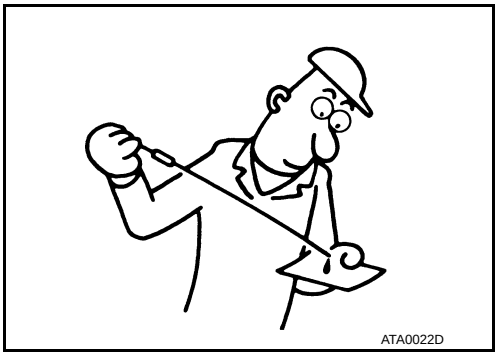
8. Place the selector lever in “P” or “N” and check that the fluid level is within the specified range.
   CAUTION:
   When reinstalling CVT fluid level gauge, insert it into the CVT fluid charging pipe and rotate it to the original installation position until securely locked.



CVT FLUID CONDITION

Check CVT fluid condition.

- If CVT fluid is very dark or smells burned, check operation of CVT. Flush cooling system after repair of CVT.
- If CVT fluid contains frictional material (clutches, brakes, etc.), replace radiator and flush cooler line using cleaning solvent and compressed air after repair of CVT. Refer to TM-149, "Cleaning".



Fluid status	Conceivable cause	Required operation
Varnished (viscous varnish state)	CVT fluid becomes degraded due to high temperatures.	Replace the CVT fluid and check the CVT main unit 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.

Changing

INFOID:0000000006260213

CAUTION:
Replace a O-ring with new ones at the final stage of the operation when installing.

1. Remove drain plug from oil pan.
2. Remove O-ring from drain plug.
3. Install O-ring to drain plug.
   CAUTION:
   Never reuse O-ring.
4. Install drain plug to oil pan. Refer to TM-167, "Exploded View".
5. Fill CVT fluid from CVT fluid charging pipe to the specified level.

CVT fluid	**: Refer to TM-180, "General Specification".**
Fluid capacity	**: Refer to TM-180, "General Specification".**

CAUTION:

- **Use only Genuine NISSAN CVT Fluid NS-2. Never mix with other fluid.**
- **Using CVT fluid other than Genuine NISSAN CVT Fluid NS-2 will deteriorate in driveability and CVT durability, and may damage the CVT, which is not covered by the warranty.**
- **When filling CVT fluid, take care not to scatter heat generating parts such as exhaust.**
- **Sufficiently shake the container of CVT fluid before using.**
- **Delete CVT fluid deterioration date with CONSULT-III after changing CVT fluid. Refer to TM-37, "CONSULT-III Function (TRANSMISSION)".**

6. With the engine warmed up, drive the vehicle in an urban area.
   NOTE:
   When ambient temperature is 20°C (68°F), it takes about 10 minutes for the CVT fluid to warm up to 50 to 80°C (122 to 176°F).
7. Check CVT fluid level and condition.
8. Repeat steps 1 to 5 if CVT fluid has been contaminated.

CVT FLUID COOLER SYSTEM

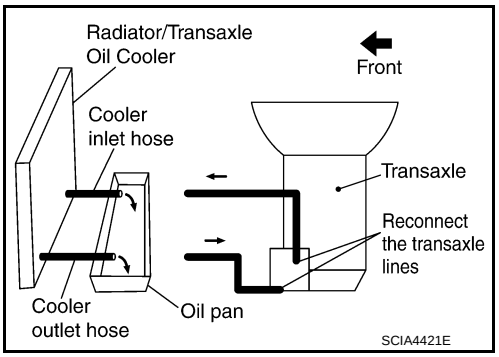
Cleaning

INFOID:0000000006260214

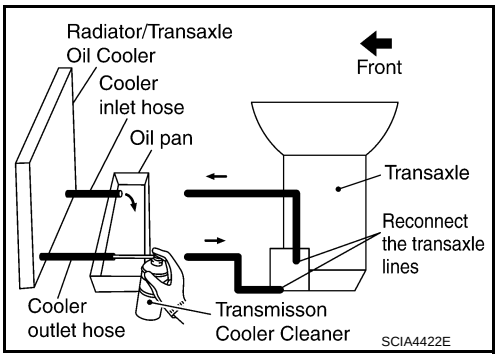
Whenever an automatic transaxle is repaired, overhauled, or replaced, the CVT fluid cooler mounted in the radiator must be inspected and cleaned.
Metal debris and friction material, if present, can be trapped or be deposited in the CVT fluid cooler. This debris can contaminate the newly serviced CVT or, in severe cases, can block or restrict the flow of CVT fluid. In either case, malfunction of the newly serviced CVT may occur.
Debris, if present, may deposit as CVT fluid enters the cooler inlet. It will be necessary to back flush the cooler through the cooler outlet in order to flush out any built up debris.

CVT FLUID COOLER CLEANING PROCEDURE

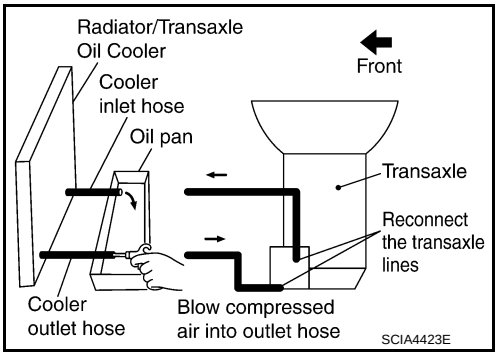
1. Position an oil pan under the transaxle's inlet and outlet cooler hoses.
2. Identify the inlet and outlet fluid cooler hoses.
3. Disconnect the fluid cooler inlet and outlet rubber hoses from the steel cooler tubes or bypass valve.
   NOTE:
   Replace the cooler hoses if rubber material from the hose remains on the tube fitting.
4. Allow any CVT fluid that remains in the cooler hoses to drain into the oil pan.



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.
9. Blow compressed air regulated to 5 to 9 kg/cm^2 (70 to 130 psi) through the cooler outlet hose for 10 seconds to force out any remaining CVT fluid.
10. Repeat steps 5 through 9 three additional times.
11. Position an oil pan under the banjo bolts that connect the CVT fluid cooler steel lines to the transaxle.
12. Remove the banjo bolts.



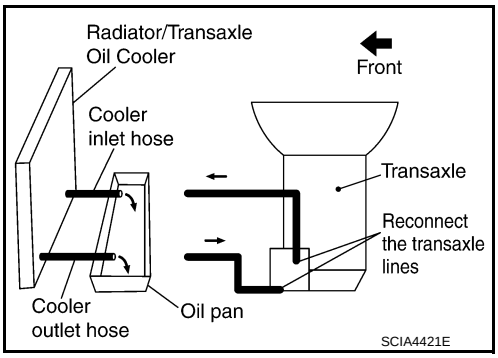
13. Flush each steel line from the cooler side back toward the transaxle by spraying Transmission Cooler Cleaner in a continuous stream for 5 seconds.
14. Blow compressed air regulated to 5 to 9 kg/cm^2 (70 to 130 psi) through each steel line from the cooler side back toward the transaxle for 10 seconds 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.

17. Perform “CVT FLUID COOLER DIAGNOSIS PROCEDURE”.

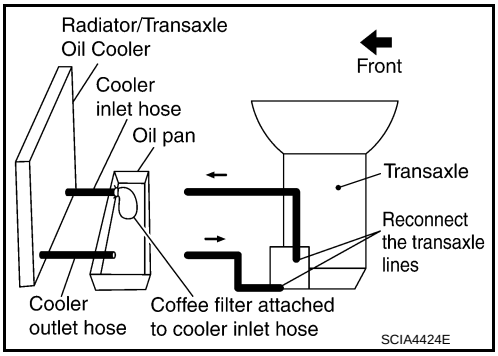
CVT FLUID COOLER DIAGNOSIS PROCEDURE

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

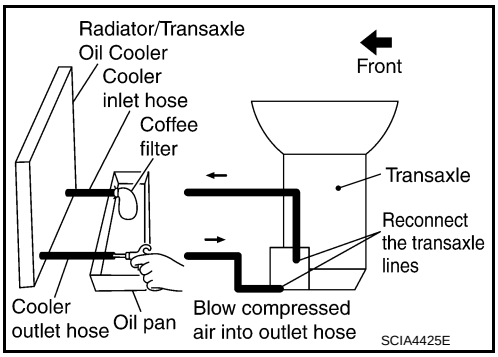
1. Position an oil pan under the transaxle's inlet and outlet cooler hoses.
2. Clean the exterior and tip of the cooler inlet hose.
3. Insert the extension adapter hose of a can of Transmission Cooler Cleaner (Nissan P/N 999MP-AM006) into the cooler outlet hose.
   CAUTION:
   - **Wear safety glasses 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.
5. Tie a common white, basket-type coffee filter to the end of the cooler inlet hose.



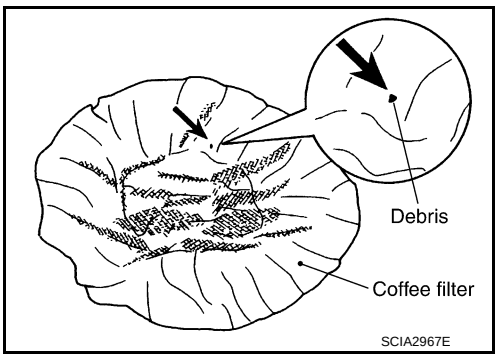
6. Insert the tip of an air gun into the end of the cooler outlet hose.
7. Wrap a shop rag around the air gun tip and end of cooler outlet hose.
8. Blow compressed air regulated to 5 to 9 kg/cm^2 (70 to 130 psi) through the cooler outlet hose to force any remaining CVT fluid into the coffee filter.
9.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



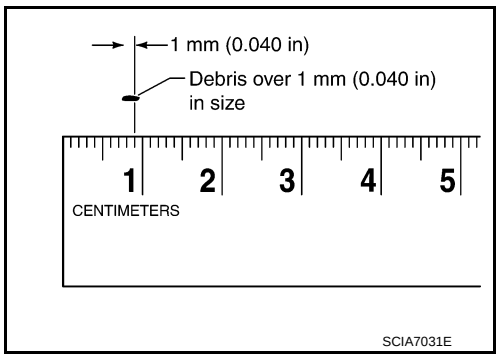
CVT FLUID COOLER INSPECTION PROCEDURE

1. Inspect the coffee filter for debris.

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



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



CVT FLUID COOLER FINAL INSPECTION

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

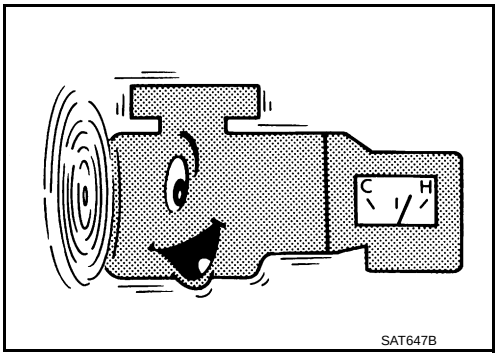
STALL TEST

Inspection and Judgment

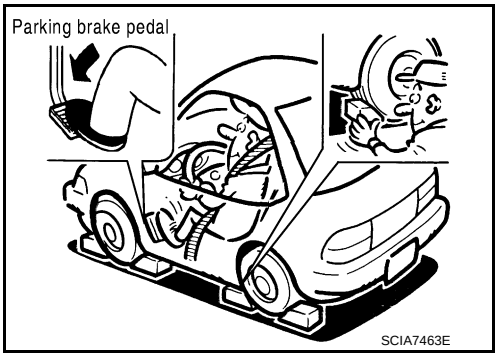
INFOID:0000000006260215

INSPECTION

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

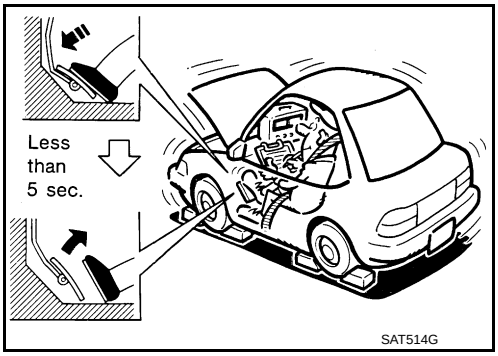


3. Securely engage parking brake so that the tires do not turn.
4. Install a tachometer where it can be seen by driver during test.
   NOTE:
   It is good practice to mark the point of specified engine rpm on indicator.
5. Start engine, apply foot brake, and move selector lever to “D” position.



6. Gradually press down accelerator pedal while holding down the foot brake.
7. Quickly read off the stall speed, and then quickly remove your foot from accelerator pedal.
   CAUTION:
   Never hold down accelerator pedal for more than 5 seconds during this test.

   Stall speed : Refer to TM-180, "Stall Speed".



8. Move selector lever to “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		Expected problem location
	“D”	“R”	
Stall rotation	H	O	• Forward clutch
	O	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

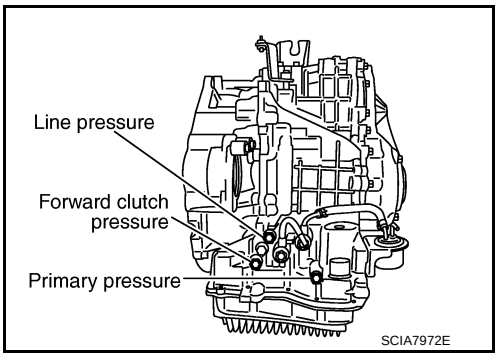
Inspection and Judgment

INFOID:0000000006260216

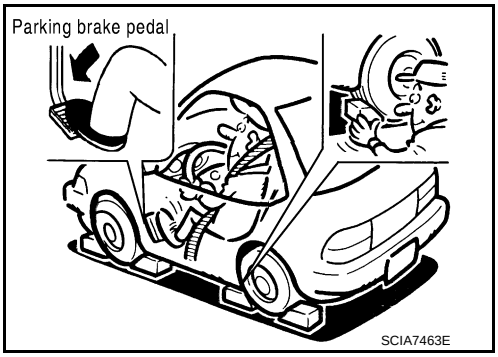
INSPECTION

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 transaxle assembly, remove oil pressure detection plug and install oil pressure gauge [special service tool: — (OTC3492)].
   CAUTION:
   When using oil pressure gauge, be sure to use O-ring attached to oil pressure detection plug.

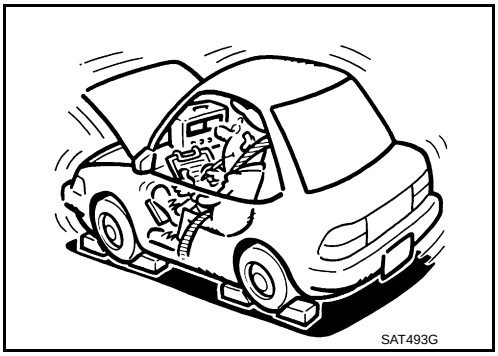


4. Securely engage parking brake so that the tires do not turn.



5. Start the engine, and then measure the line pressure at both idle and the stall speed.
   CAUTION:
   - **Keep brake pedal pressed all the way down during measurement.**
   - **When measuring the line pressure at the stall speed. Refer to TM-152, "Inspection and Judgment".**

   Line pressure : Refer to TM-180, "Line Pressure".



6. Install oil pressure detection plug and tighten to the specified torque below after the measurements are complete.

   : 7.5 N·m (0.77 kg-m, 66 in-lb)

   CAUTION:
   - **Never reuse O-ring.**
   - **Apply CVT fluid to O-ring.**

JUDGMENT

Judgment		Possible cause
Idle speed	Low for all positions (“P”, “R”, “N”, “D”, “L”)	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.
	High	Possible causes include a sensor malfunction or malfunction in the line pressure adjustment function. For example • Accelerator pedal position signal malfunction • CVT fluid temperature sensor malfunction • 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

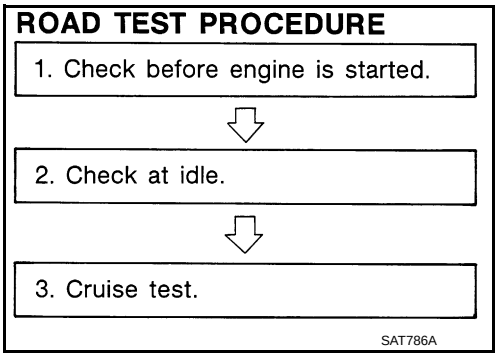
Description

INFOID:0000000006260217

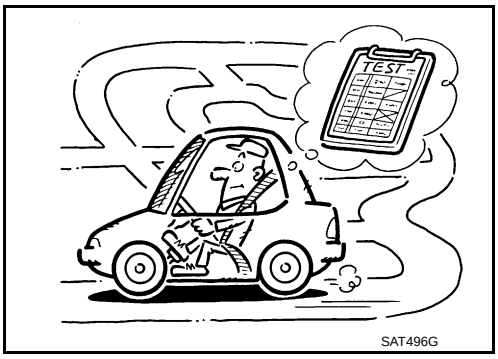
DESCRIPTION

- The purpose of the test is to determine the overall performance of CVT and analyze causes of problems.
- The road test consists of the following three parts:

1. “Check Before Engine Is Started” TM-156.
2. “Check at Idle” TM-156.
3. “Cruise Test” TM-157.



- Before the road test, familiarize yourself with all test procedures and items to check.
- Perform tests for all the check items until a malfunction phenomenon is detected. Perform diagnosis for NG items after the completion of road tests.



Check before Engine Is Started

INFOID:0000000006260218

1.CHECK OD OFF 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.)

Has OD OFF indicator lamp been turned ON for about 2 seconds?

YES >> 1. Turn ignition switch OFF.
2. Perform self-diagnosis and note NG items. Refer to TM-124, "DTC Index".
3. Go to TM-156, "Check at Idle".

NO >> Stop “Road Test”. Refer to TM-126, "Symptom Table".

Check at Idle

INFOID:0000000006260219

1.CHECK STARTING THE ENGINE (PART 1)

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 TM-126, "Symptom Table".

2.CHECK STARTING THE ENGINE (PART 2)

1. Turn ignition switch ON.
2. Move selector lever to “D”, “L” or “R” position.
3. Turn ignition switch to “START” position.

Is engine started?

YES >> Stop “Road Test”. Refer to TM-126, "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 forward or backward?

YES >> Refer to TM-126, "Symptom Table". GO TO 4.
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 TM-126, "Symptom Table". GO TO 5.
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 TM-126, "Symptom Table". GO TO 6.
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 TM-126, "Symptom Table". GO TO 7.

7.CHECK “D” POSITION FUNCTION

Move selector lever to “D” and “L” position and check if vehicle creeps forward.

Does vehicle creep forward in all positions?

YES >> Go to TM-157, "Cruise Test".
NO >> Stop “Road Test”. Refer to TM-126, "Symptom Table".

Cruise Test

INFOID:0000000006260220

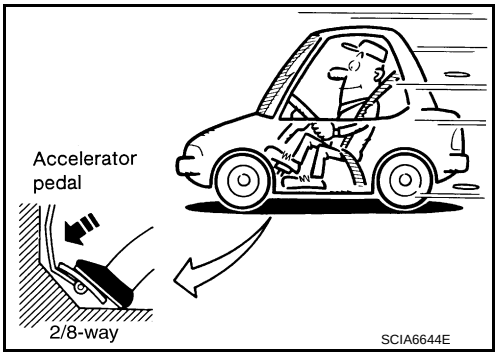
1.CHECK VEHICLE SPEED WHEN SHIFTING GEARS (PART 1)

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 at 2/8 throttle opening and check “Vehicle Speed When Shifting Gears”.



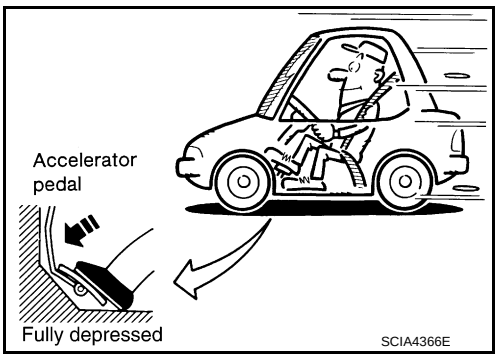
With CONSULT-III
- Read vehicle speed and engine speed. Refer to TM-180, "Vehicle Speed When Shifting Gears".

Is the inspection result normal?

YES >> GO TO 2.
NO >> Refer to TM-126, "Symptom Table". GO TO 2.

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 at 8/8 throttle opening and check “Vehicle Speed When Shifting Gears”.



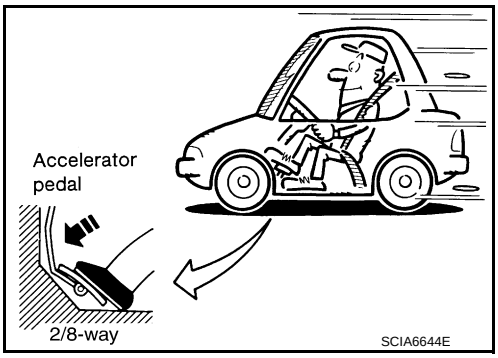
With CONSULT-III
- Read vehicle speed and engine speed. Refer to TM-180, "Vehicle Speed When Shifting Gears".

Is the inspection result normal?

YES >> GO TO 3.
NO >> Refer to TM-126, "Symptom Table". GO TO 3.

3. CHECK OVERDRIVE OFF CONDITION (PART 1)

1. Park vehicle on flat surface.
2. Push overdrive control switch.
3. Accelerate vehicle at 2/8 throttle opening and check “Vehicle Speed When Shifting Gears”.



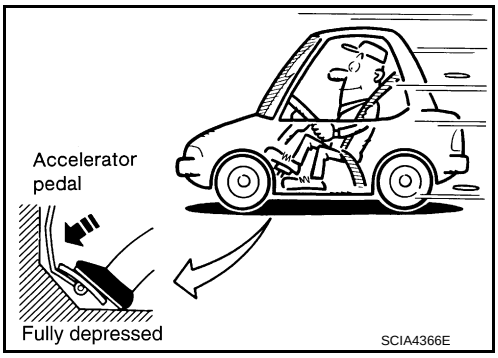
With CONSULT-III
- Read vehicle speed and engine speed. Refer to TM-180, "Vehicle Speed When Shifting Gears".

Is the inspection result normal?

YES >> GO TO 4.
NO >> Refer to TM-126, "Symptom Table". GO TO 4.

4. CHECK OVERDRIVE OFF CONDITION (PART 2)

1. Park vehicle on flat surface.
2. Push overdrive control switch.
3. Accelerate vehicle at 8/8 throttle opening and check “Vehicle Speed When Shifting Gears”.



With CONSULT-III
- Read vehicle speed and engine speed. Refer to TM-180, "Vehicle Speed When Shifting Gears".

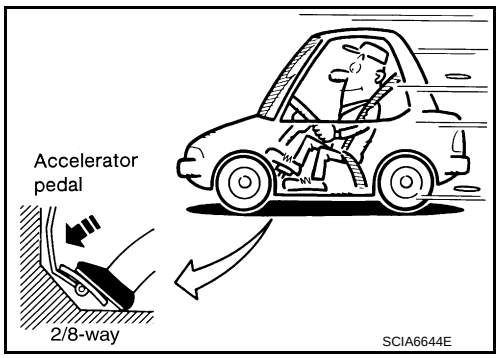
Is the inspection result normal?

YES >> GO TO 5.
NO >> Refer to TM-126, "Symptom Table". GO TO 5.

5. CHECK “L” POSITION FUNCTION (PART 1)

1. Park vehicle on flat surface.
2. Move selector lever to “L” position.

3. Accelerate vehicle at 2/8 throttle opening and check “Vehicle Speed When Shifting Gears”.



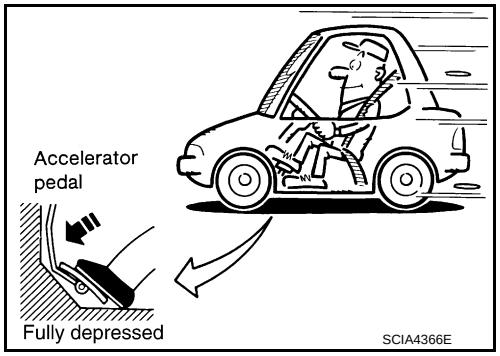
With CONSULT-III
- Read vehicle speed and engine speed. Refer to TM-180, "Vehicle Speed When Shifting Gears".

Is the inspection result normal?

YES >> GO TO 6.
NO >> Refer to TM-126, "Symptom Table". GO TO 6.

6. CHECK “L” POSITION FUNCTION (PART 2)

1. Park vehicle on flat surface.
2. Move selector lever to “L” position.
3. Accelerate vehicle at 8/8 throttle opening and check “Vehicle Speed When Shifting Gears”.



With CONSULT-III
- Read vehicle speed and engine speed. Refer to TM-180, "Vehicle Speed When Shifting Gears".

Is the inspection result normal?

YES >> GO TO 7.
NO >> Refer to TM-126, "Symptom Table". GO TO 7.

7. CHECK ENGINE BRAKE FUNCTION

Check engine brake.

Does engine braking effectively reduce vehicle speed in “L” position?

YES >> 1. Stop the vehicle.
2. Perform “Self Diagnostic Results” in “TRANSMISSION”.
NO >> Refer to TM-126, "Symptom Table". Then continue trouble diagnosis.

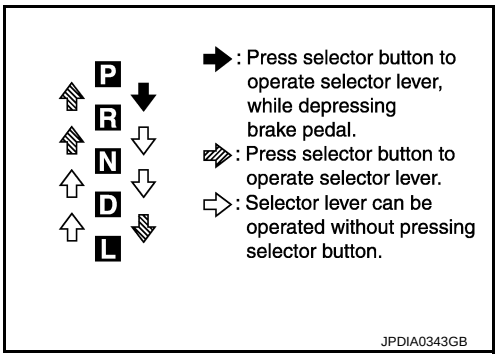
CVT POSITION

Inspection and Adjustment

INFOID:0000000006260221

INSPECTION

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



9. Check that back-up lamps do not illuminate when selector lever is pushed toward the “R” position when in the “P” or “N” position.
   CAUTION:
   Check the lighting without pressing shift button.
10. Check that the engine can only be started with selector lever in the “P” and “N” positions.
11. Check that transaxle is locked completely in “P” position.

ADJUSTMENT

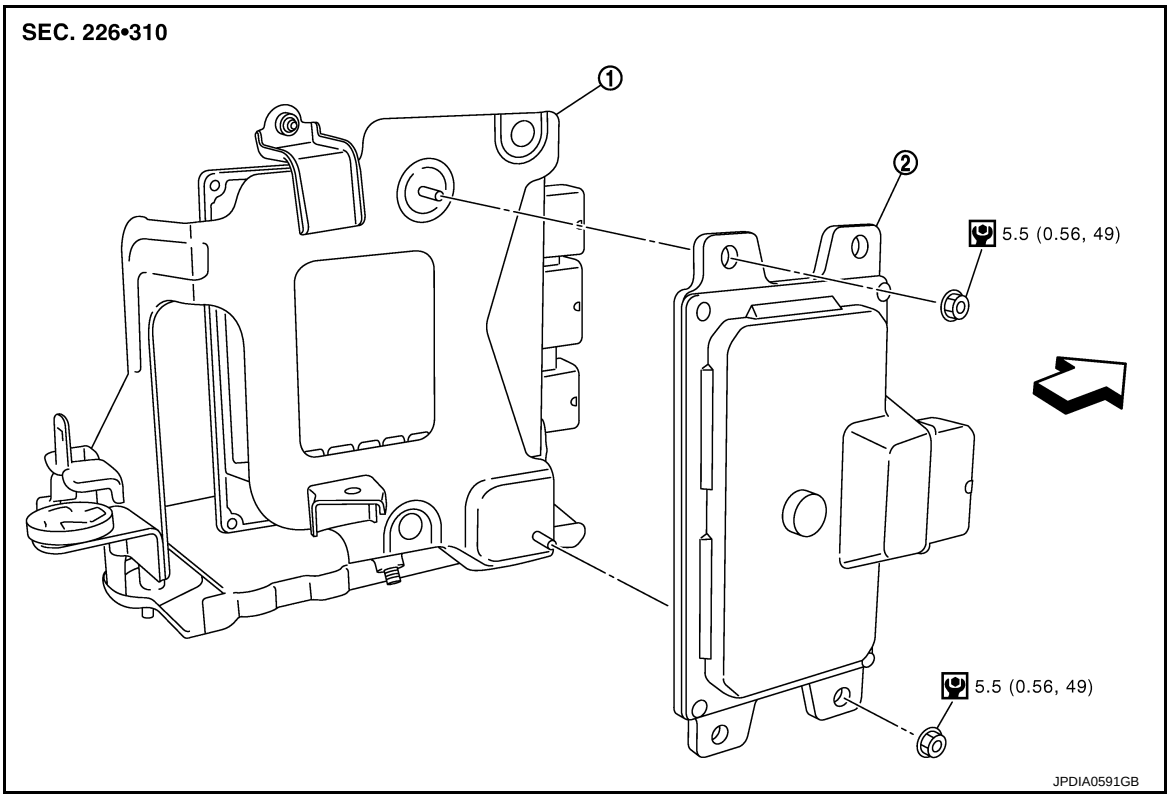
1. Move selector lever to “ P” position.
   CAUTION:
   Turn wheels more than 1/4 rotations and apply the park lock.
2. Loosen the control cable nut.
3. Place manual lever to “P” position.
   CAUTION:
   Never apply any force to manual lever.
4. Tighten the control cable nut. Refer to TM-165, "Exploded View".
   CAUTION:
   Fix manual lever when tightening.

REMOVAL AND INSTALLATION

TCM

Exploded View

INFOID:0000000006260222



1. Bracket
2. TCM

⇦ : Vehicle front

Refer to GI-4, "Components" for symbols in the figure.

Removal and Installation

INFOID:0000000006260223

REMOVAL

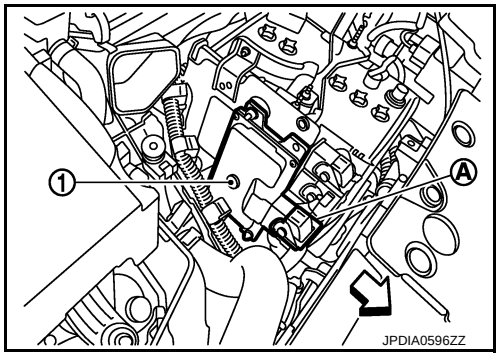
CAUTION:

- **When replacing TCM and transaxle assembly as a set, replace transaxle assembly first and then replace TCM. Refer to TM-8, "Description".**
- **Never impact on TCM when removing or installing TCM.**

1. Disconnect the battery cable from the negative terminal.
2. Remove air duct (inlet). Refer to EM-31, "Exploded View".
3. Disconnect TCM connector (A).

⇦ : Vehicle front

4. Remove TCM (1) from bracket.



INSTALLATION
Install in the reverse order of removal.

Adjustment

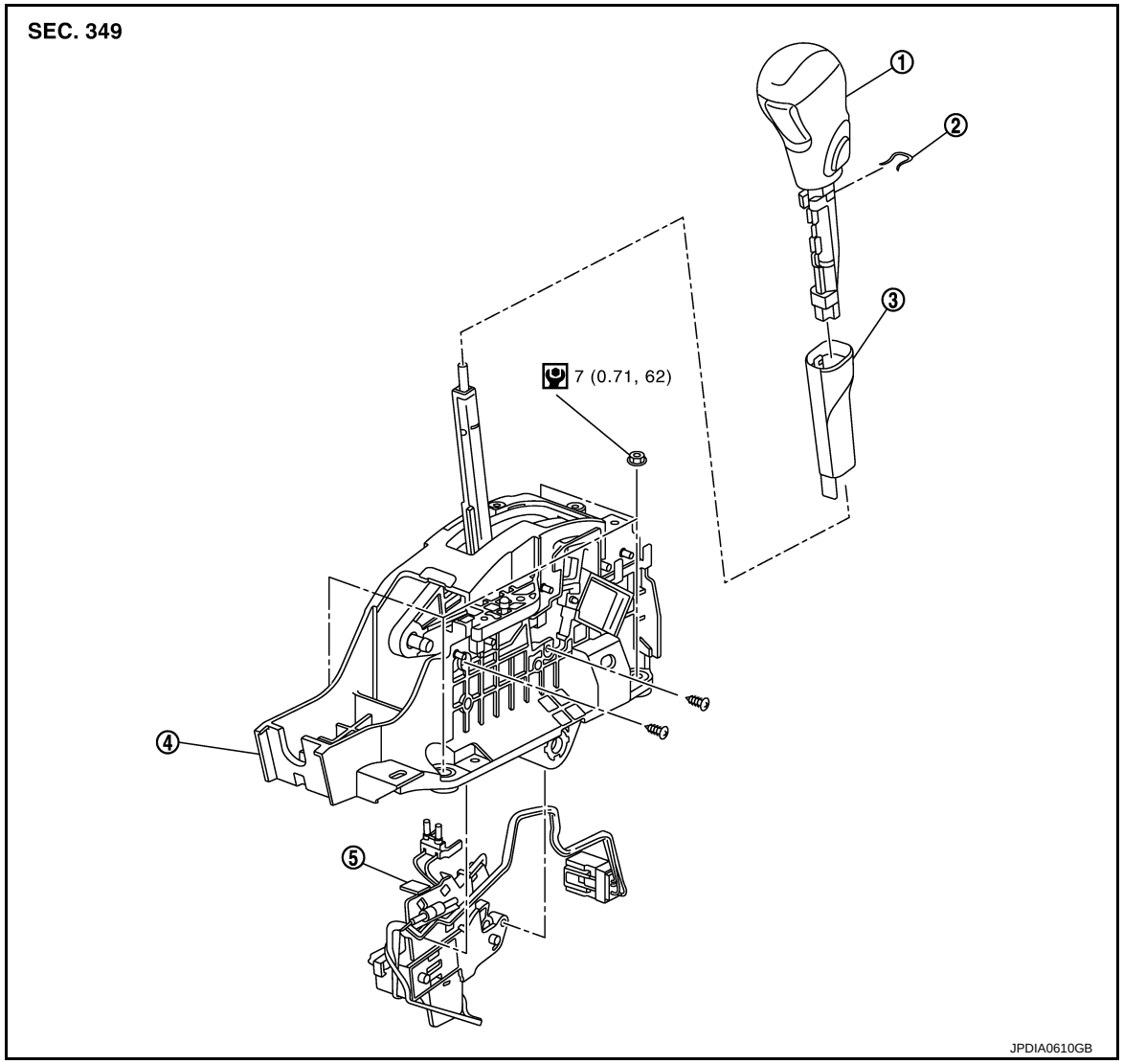
INFOID:0000000006260224

ADJUSTMENT AFTER INSTALLATION
Perform “ADDITIONAL SERVICE WHEN REPLACING TCM”. Refer to TM-8, "Description".

CVT SHIFT SELECTOR

Exploded View

INFOID:0000000006260225



1. Selector lever knob
2. Lock pin
3. Knob cover
4. CVT shift selector assembly
5. Shift lock unit

Refer to GI-4, "Components" for symbols in the figure.

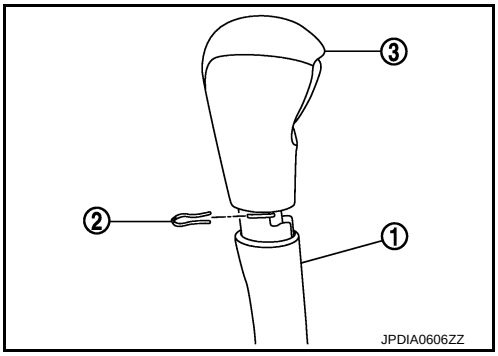
Removal and Installation

INFOID:0000000006260226

REMOVAL

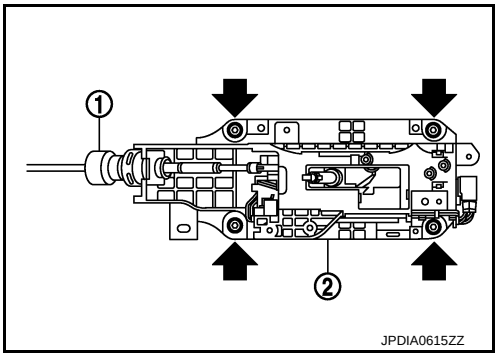
1. Disconnect the battery cable from the negative terminal.
2. Move selector lever to “N” position.

3. Slide knob cover (1) below selector lever downward.
CAUTION:
Be careful not to damage knob cover.
4. Pull lock pin (2) out of selector lever knob (3).
5. Remove selector lever knob and knob cover.
6. Remove center console assembly. Refer to IP-20, "Exploded View".

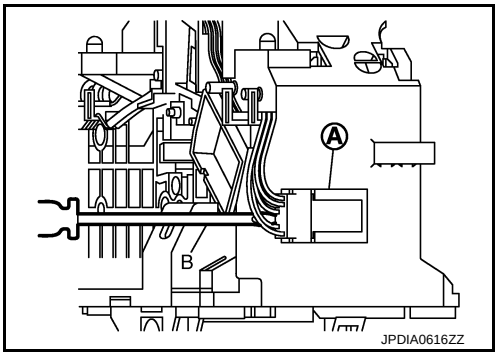


7. Move selector lever to “P” position.
8. Remove control cable (1) from CVT shift selector assembly. Refer to TM-165, "Exploded View".
9. Remove CVT shift selector assembly (2).

⬅ : Nut

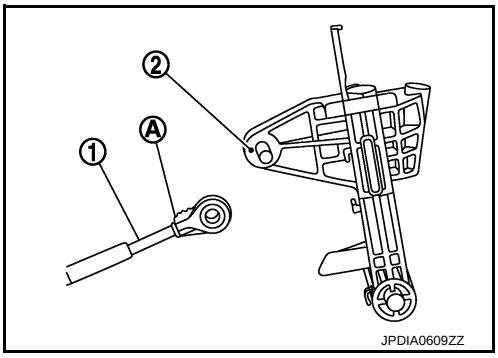


10. Remove CVT shift selector connector (A) using a flat-bladed screwdriver (B).
11. Remove shift lock unit from CVT shift selector assembly.



INSTALLATION

Note the following, and install in the reverse order of removal.
When installing control cable (1) to CVT shift selector assembly (2), check that control cable is fully pressed in with the ribbed (A) surface facing upward.



Inspection and Adjustment

INFOID:0000000006260227

ADJUSTMENT AFTER INSTALLATION

Adjust the CVT positions after installing CVT shift selector. Refer to TM-160, "Inspection and Adjustment".

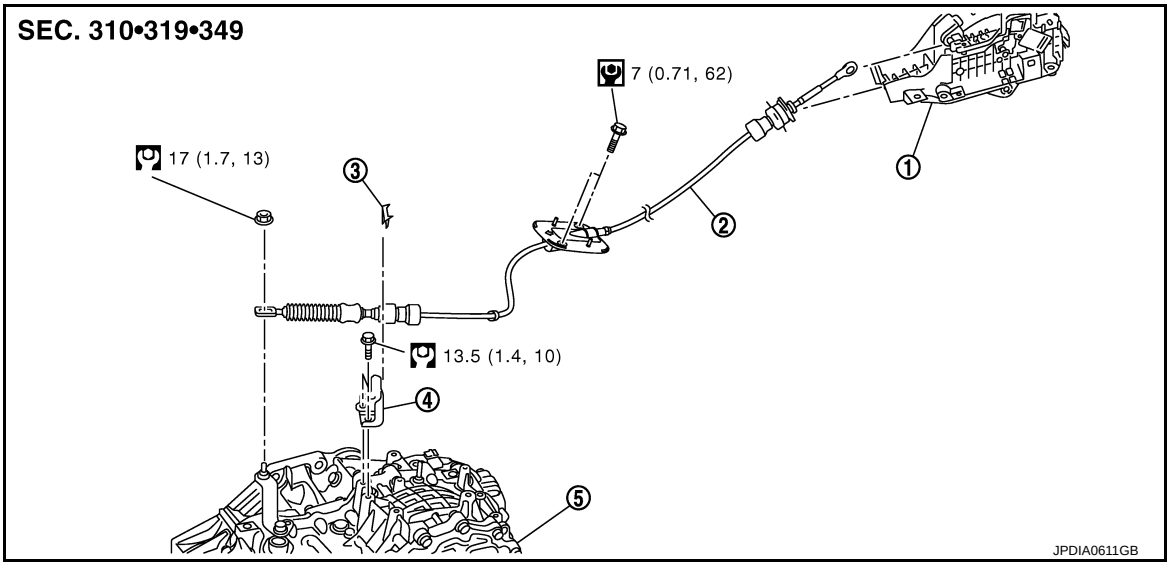
INSPECTION AFTER INSTALLATION

Check the CVT positions after adjusting the CVT positions. Refer to TM-160, "Inspection and Adjustment".

CONTROL CABLE

Exploded View

INFOID:0000000006260228



1. CVT shift selector assembly
2. Control cable
3. Lock plate
4. Bracket
5. Transaxle assembly

Refer to GI-4, "Components" for symbols in the figure.

Removal and Installation

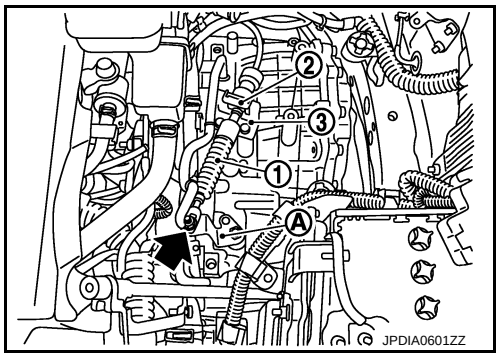
INFOID:0000000006260229

REMOVAL

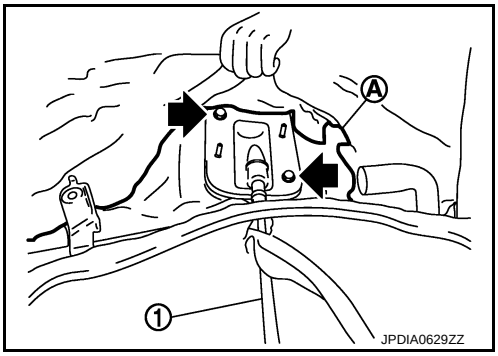
CAUTION:

Make sure that parking brake is applied before removal/installation.

1. Remove control cable from CVT shift selector assembly. Refer to TM-163, "Exploded View".
2. Remove air duct (inlet). Refer to EM-31, "Exploded View".
3. Remove battery and battery bracket. Refer to PG-118, "Exploded View".
4. Remove air cleaner case. Refer to EM-31, "Exploded View".
5. Remove nut (⬅).
6. Remove control cable (1) from manual lever (A).
7. Remove lock plate (2) from control cable.
8. Remove control cable from bracket (3).
9. Remove front foot duct RH. Refer to VTL-61, "REAR FOOT DUCT 1 : Exploded View" (without 7 inch display), VTL-118, "REAR VENTILATOR DUCT 1 : Exploded View" (with 7 inch display).



10. Remove the control cable (1) from the vehicle.



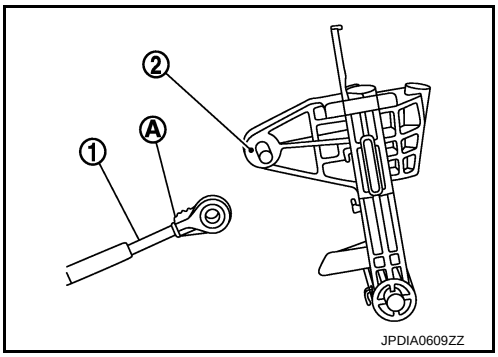
A : Dash trim

⬅ : Bolt

INSTALLATION

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

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



Inspection and Adjustment

INFOID:0000000006260230

ADJUSTMENT AFTER INSTALLATION

Adjust the CVT positions after installing control cable. Refer to TM-160, "Inspection and Adjustment".

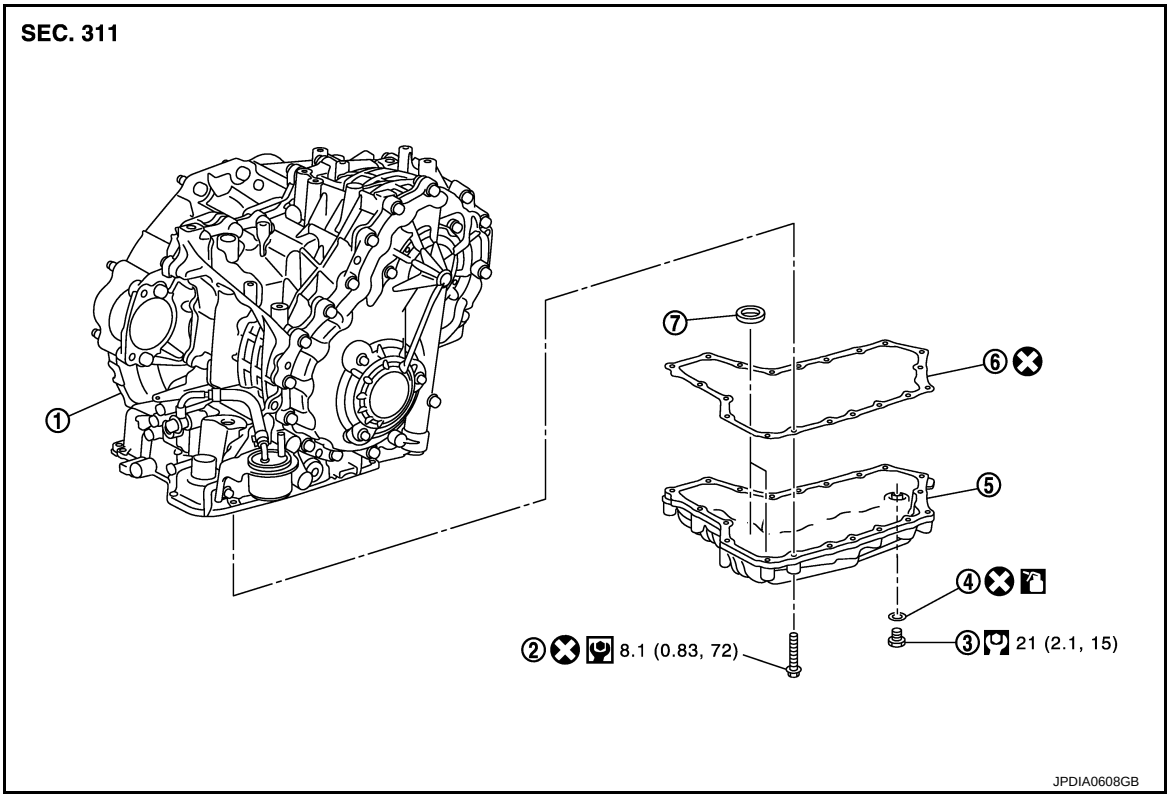
INSPECTION AFTER INSTALLATION

Check the CVT positions after adjusting the CVT positions. Refer to TM-160, "Inspection and Adjustment".

OIL PAN

Exploded View

INFOID:0000000006260231



1. Transaxle assembly
2. Oil pan fitting bolt
3. Drain plug
4. O-ring
5. Oil pan
6. Oil pan gasket
7. Magnet

: Apply CVT Fluid NS-2.

Refer to GI-4, "Components" for symbols in the figure.

Removal and Installation

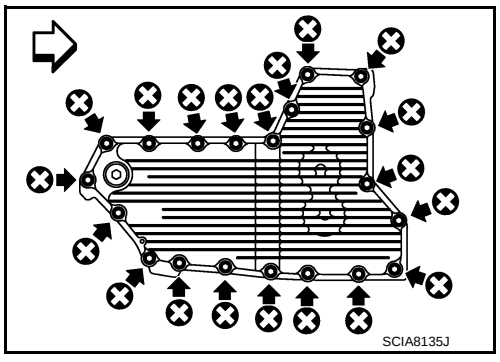
INFOID:0000000006260232

REMOVAL

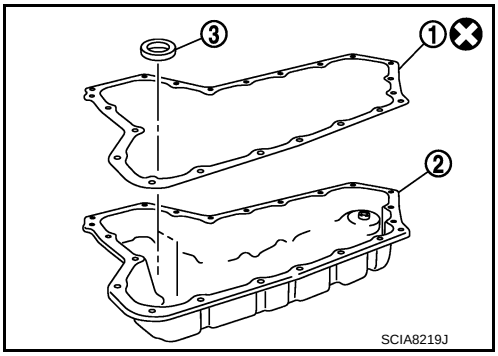
1. Remove engine under cover with power tool.
2. Remove drain plug.
3. Remove O-ring from drain plug.
4. Remove oil pan fitting bolts (⇦).

⇦ : Vehicle front

5. Remove oil pan.



6. Remove oil pan gasket (1) from oil pan (2).
7. Remove magnet (3) from oil pan.



INSTALLATION

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

CAUTION:

- **Completely remove all moisture, oil and old gasket, etc. from the oil pan gasket mounting surface of transaxle case and oil pan.**
- **Never reuse oil pan gasket, O-ring and oil pan fitting bolts.**
- **Apply CVT fluid to O-ring.**

Inspection

INFOID:0000000006260233

Check foreign materials in oil pan to help determine causes of malfunction. If the CVT fluid is very dark, smells burned, or contains foreign particles, frictional material (clutches) may need replacement. A tacky film that will not wipe clean indicates varnish build up. Varnish can cause valves and clutches to stick and can inhibit pump pressure.

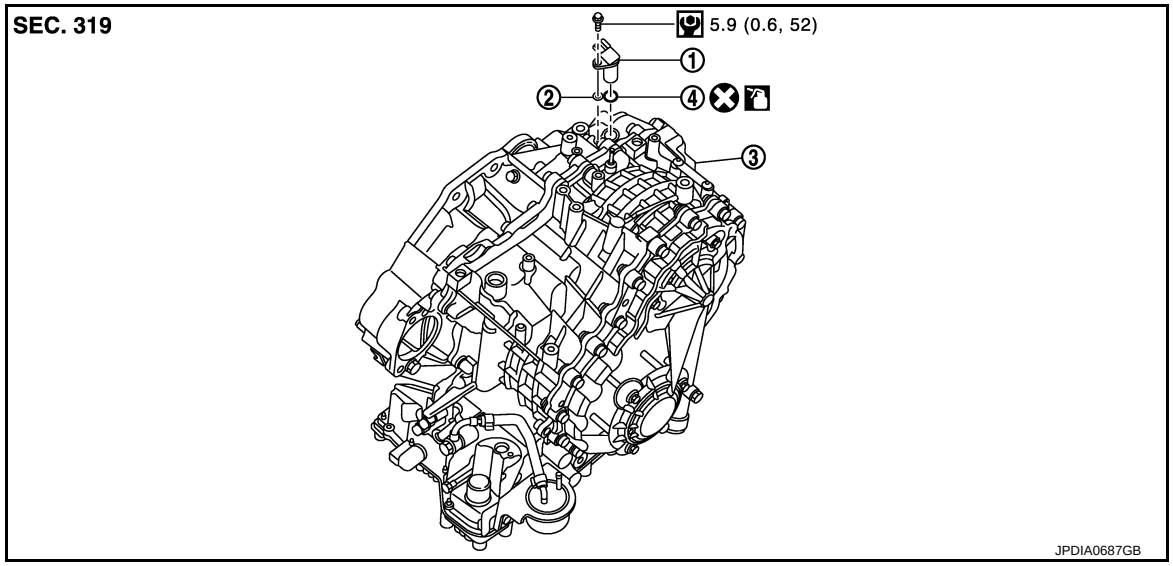
INSPECTION AFTER INSTALLATION

Check for CVT fluid leakage and check CVT fluid level. Refer to TM-147, "Inspection".

SECONDARY SPEED SENSOR

Exploded View

INFOID:0000000006260234



1. Secondary speed sensor
2. Shim
3. Transaxle assembly
4. O-ring

: Apply CVT Fluid NS-2.

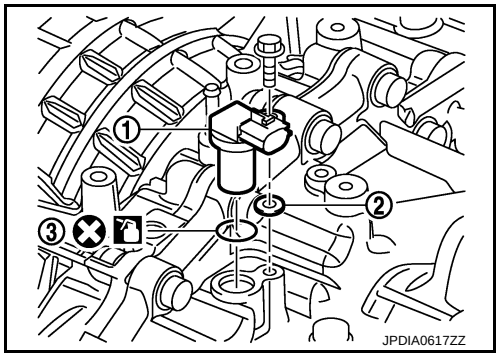
Refer to GI-4, "Components" for symbols not described above.

Removal and Installation

INFOID:0000000006260235

REMOVAL

1. Disconnect the battery cable from negative terminal.
2. Remove air duct (inlet). Refer to EM-31, "Exploded View".
3. Remove air cleaner case. Refer to EM-31, "Exploded View"
4. Disconnect secondary speed sensor connector.
5. Remove secondary speed sensor (1) and shim (2).
   CAUTION:
   Never lose the shim.
6. Remove O-ring (3) from secondary speed sensor.



INSTALLATION

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

CAUTION:

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

Inspection

INFOID:0000000006260236

INSPECTION AFTER INSTALLATION

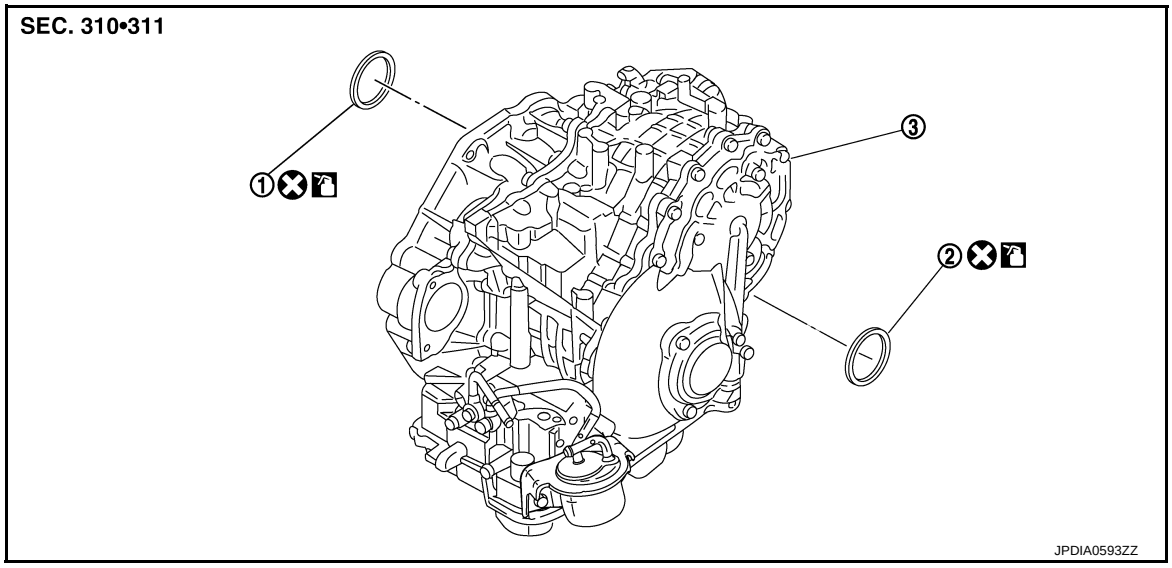
Check for CVT fluid leakage and check CVT fluid level. Refer to TM-147, "Inspection".

DIFFERENTIAL SIDE OIL SEAL

2WD

2WD : Exploded View

INFOID:0000000006260237



1. RH differential side oil seal
2. LH differential side oil seal
3. Transaxle assembly

: Apply CVT Fluid NS-2.

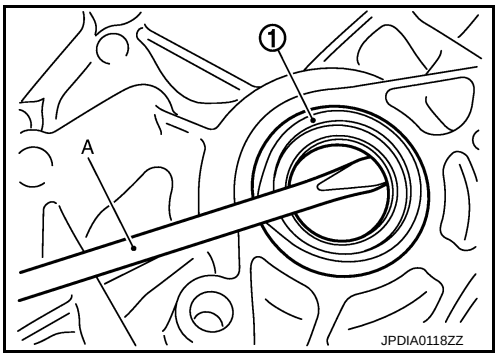
Refer to GI-4, "Components" for symbols not described above.

2WD : Removal and Installation

INFOID:0000000006260238

REMOVAL

1. Remove front drive shafts. Refer to FAX-17, "Exploded View".
2. Remove differential side oil seals (1) using a flat-bladed screwdriver (A).
   CAUTION:
   Be careful not to scratch transaxle case and converter housing.

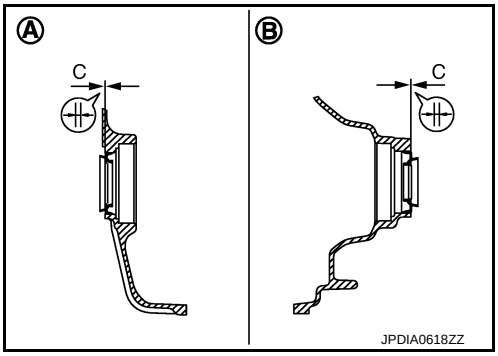


INSTALLATION

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

- Drive each differential side oil seal evenly using a commercial service tool so that differential side oil seal protrudes by the dimension (C) respectively.

A : Transaxle case side
B : Converter housing side



Unit: mm (in)

Dimension C	0 ± 0.5 (0 ± 0.020)

NOTE:
Differential side oil seal pulling direction is used as the reference.

CAUTION:
- **Never reuse differential side oil seals.**
- **Apply CVT fluid to differential side oil seals.**

Drift to be used:

Location	Tool number (Kent-Moore No.)
Transaxle case side	ST33400001 (J-26082)
Converter housing side	

2WD : Inspection

INFOID:0000000006260239

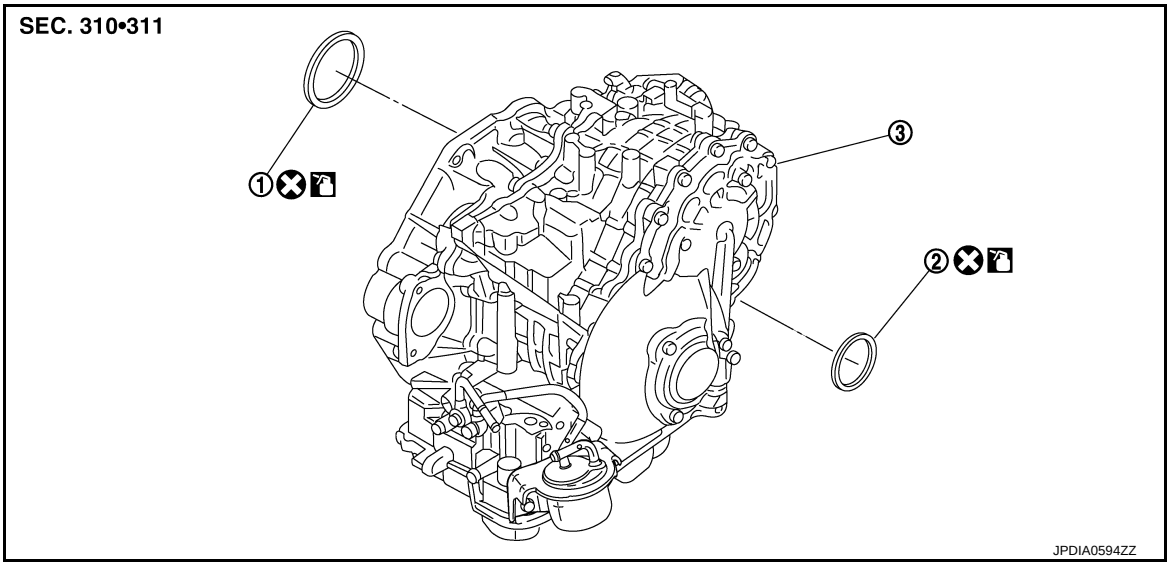
INSPECTION AFTER INSTALLATION

Check for CVT fluid leakage and check CVT fluid level. Refer to TM-147, "Inspection".

AWD

AWD : Exploded View

INFOID:0000000006260240



1. Side oil seal (transfer joint)
2. LH differential side oil seal
3. Transaxle assembly

: Apply CVT Fluid NS-2.

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

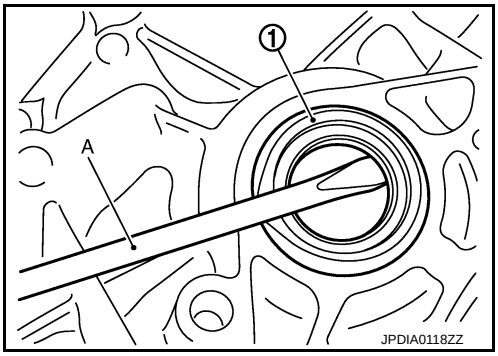
AWD : Removal and Installation

INFOID:0000000006260241

REMOVAL

1. Remove exhaust front tube. Refer to EX-5, "Exploded View".
2. Separate propeller shaft. Refer to DLN-82, "Exploded View".
3. Remove front drive shafts. Refer to FAX-43, "Exploded View".
4. Remove transfer from transaxle assembly. Refer to DLN-53, "Exploded View".

5. Remove differential side oil seal (1) and side oil seal (transfer joint) using a flat-bladed screwdriver (A).
CAUTION:
Be careful not to scratch transaxle case and converter housing.

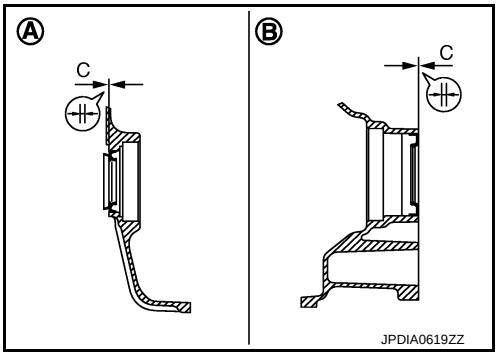


INSTALLATION

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

- Drive each differential side oil seal and side oil seal (transfer joint) evenly using a commercial service tool so that differential side oil seal and side oil seal (transfer joint) protrudes by the dimension (C) respectively.

A : Transaxle case side
B : Converter housing side



Unit: mm (in)

Dimension C	0 ± 0.5 (0 ± 0.020)

NOTE:
Differential side oil seal and side oil seal (transfer joint) pulling direction is used as the reference.

CAUTION:
- **Never reuse differential side oil seals and side oil seal (transfer joint).**
- **Apply CVT fluid to differential side oil seals and side oil seal (transfer joint).**

Drift to be used:

Location	Tool number (Kent-Moore No.)
Differential side oil seal	ST33400001 (J-26082)
Side oil seal (transfer joint)	KV40100621 (J-25405)

AWD : Inspection

INFOID:0000000006260242

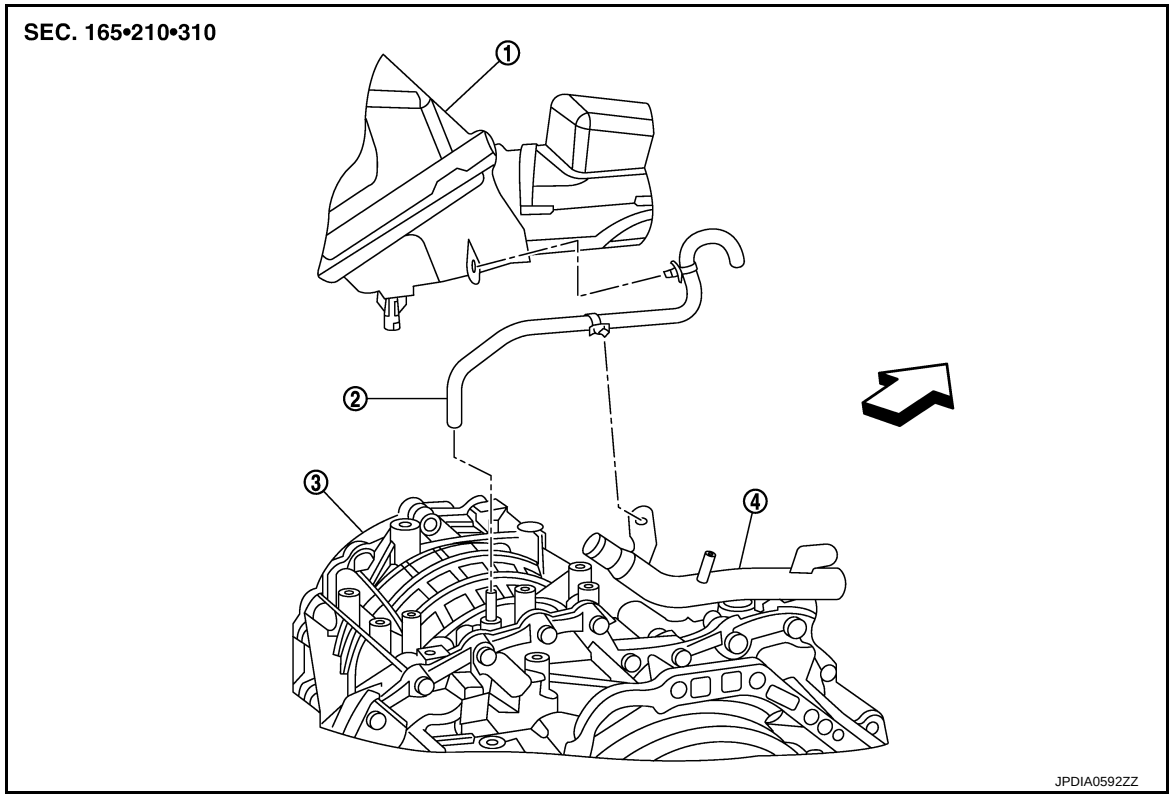
INSPECTION AFTER INSTALLATION

Check for CVT fluid leakage and check CVT fluid level. Refer to TM-147, "Inspection".

AIR BREATHER HOSE

Exploded View

INFOID:0000000006260243



1. Air cleaner case
2. Air breather hose
3. Transaxle assembly
4. Heater pipe

⇦ : Vehicle front

Removal and Installation

INFOID:0000000006260244

REMOVAL

1. Remove air duct (inlet). Refer to EM-31, "Exploded View".
2. Remove air cleaner case. Refer to EM-31, "Exploded View".
3. Remove air breather hose from transaxle assembly.

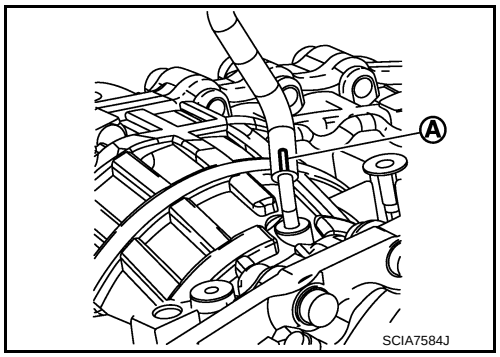
INSTALLATION

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

CAUTION:

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

- Install air breather hose to air breather tube so that the paint mark (A) faces upward. Also insert hose to the bend of air breather tube.

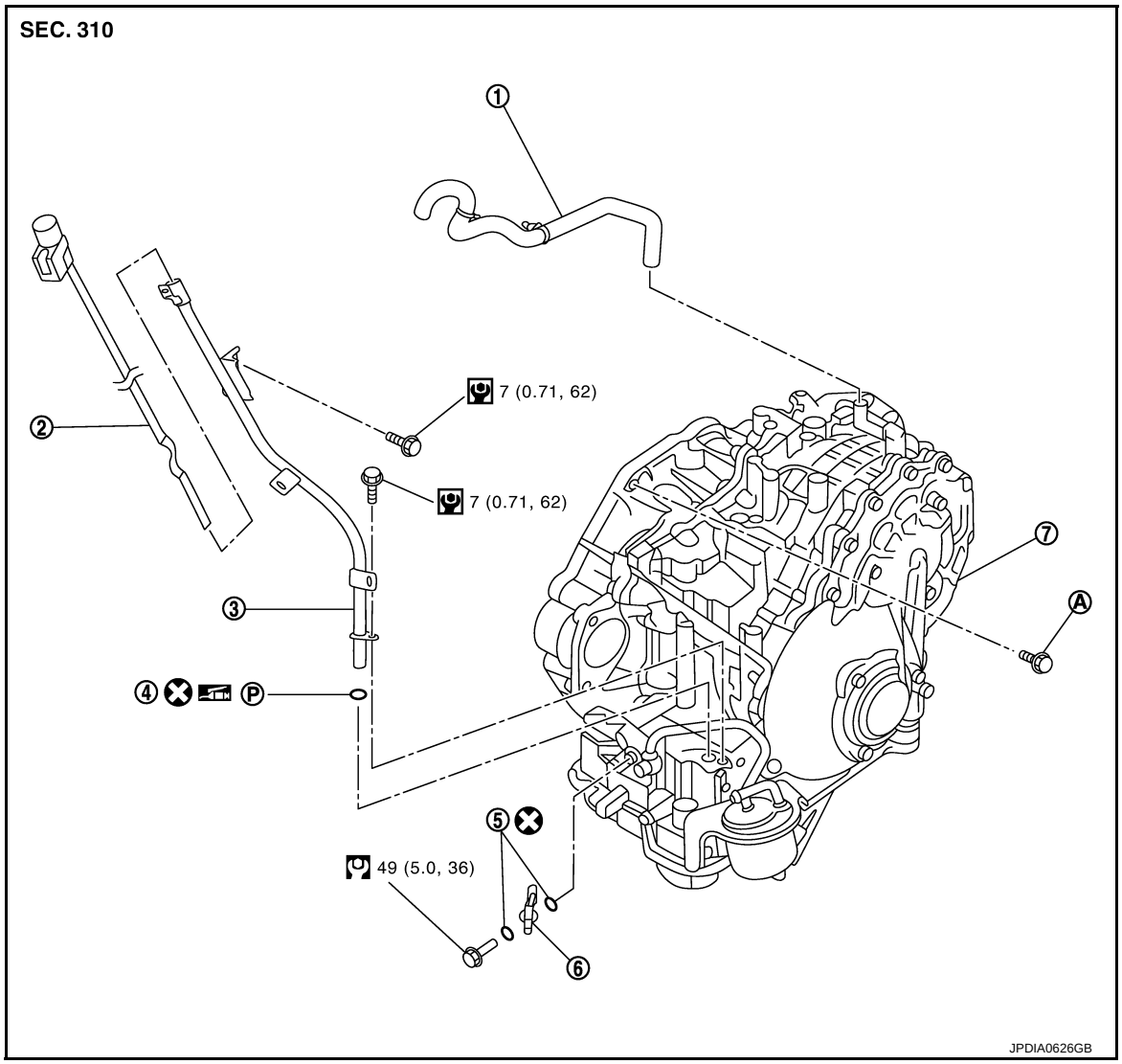


UNIT REMOVAL AND INSTALLATION

TRANSAXLE ASSEMBLY

Exploded View

INFOID:0000000006260245



1. Air breather hose
2. CVT fluid level gauge
3. CVT fluid charging pipe
4. O-ring
5. Copper washer
6. fluid cooler tube
7. Transaxle assembly

A. For tightening torque, refer to TM-174, "Removal and Installation".

Refer to GI-4, "Components" for symbols in the figure.

Removal and Installation

INFOID:0000000006260246

WARNING:

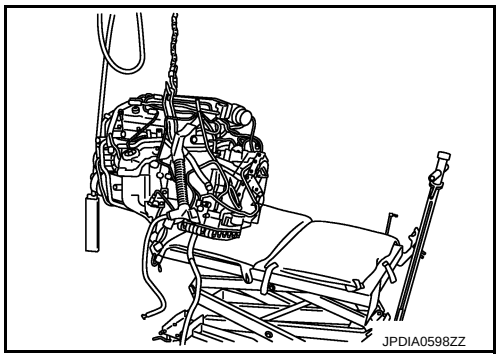
Never remove the reservoir tank cap when the engine is hot. Serious burns could occur from high-pressure engine coolant escaping from the reservoir tank.

CAUTION:

- **Perform this step engine is cold.**
- **When replacing TCM and transaxle assembly as a set, replace transaxle assembly first and then replace TCM. Refer to TM-8, "Description".**

REMOVAL

1. Remove the engine, the transaxle, transfer (AWD models) assembly and front suspension member. Refer to EM-72, "2WD : Exploded View" (2WD), EM-81, "AWD : Exploded View" (AWD).
2. Lift with hoist and separate engine, transaxle and transfer (AWD models) assembly from front suspension member. Refer to EM-72, "2WD : Exploded View" (2WD), EM-81, "AWD : Exploded View" (AWD).
3. Remove air breather hose. Refer to TM-173, "Exploded View".
4. Disconnect secondary speed sensor connector. Refer to TM-169, "Exploded View".
5. Disconnect CVT unit connector.
6. Disconnect air fuel ratio sensor 1 (bank 2). Refer to EM-38, "Exploded View".
7. Remove crankshaft position sensor (POS). Refer to EM-43, "Exploded View".
8. Remove CVT fluid charging pipe from transaxle assembly.
9. Remove transaxle assembly fixing bolts with power tool.
10. Remove transaxle assembly from engine assembly with a hoist.
11. Remove CVT fluid cooler hose from transaxle assembly.

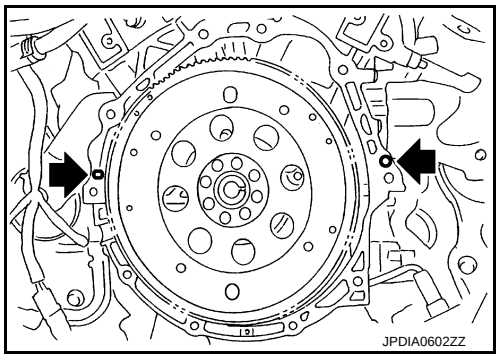


INSTALLATION

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

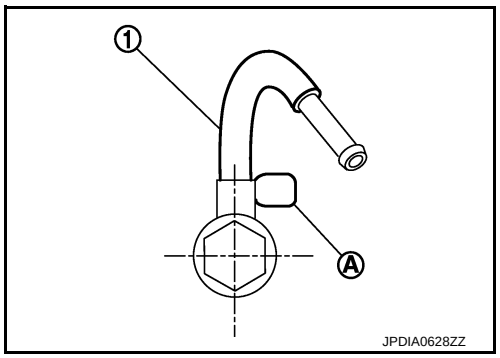
CAUTION:

Check fitting of dowel pins (⬅) when installing transaxle assembly to engine assembly.

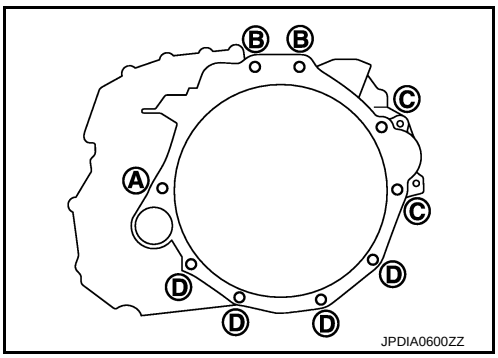


When installing CVT fluid cooler tube (1) to transaxle assembly:

- Contact CVT fluid cooler tube a boss portion (A) of the transaxle case.
- Tighten the bolt of CVT fluid cooler tube without moving the CVT fluid cooler tube.



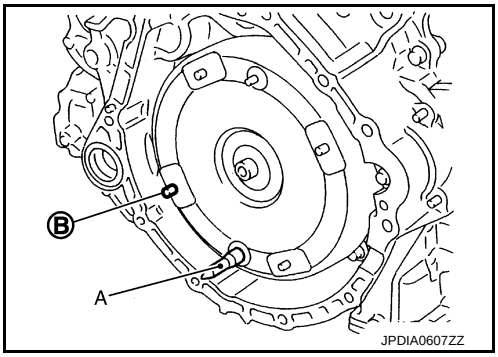
When installing transaxle assembly to the engine assembly, attach the fixing bolts in accordance with the following.



JPDIA0600ZZ

Insertion direction	Transaxle assembly to engine assembly			Engine assembly to transaxle assembly
Bolt position	A	B	C	D
Number of bolts	1	2	2	4
Bolt length mm (in)	55 (2.17)	39 (1.54)	108 (4.25)	45 (1.77)
Tightening torque N·m (kg-m, ft-lb)	74.5 (7.6, 55)			50 (5.1, 37)

- When using the drive plate location guide (commercial service tool: 31197CA000) (A), set it to the stud bolts which is used to install it to the torque converter.
- When not using drive plate location guide, rotate torque converter so that the stud bolt (B) for mounting the drive plate location guide of torque converter aligns with the mounting position of service hole.

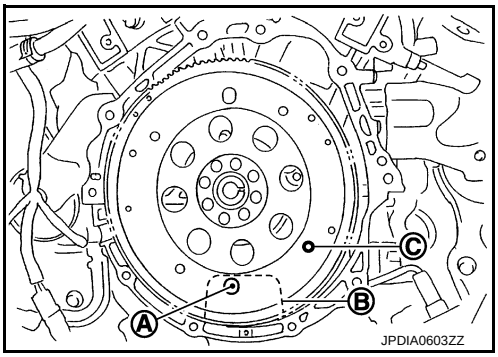


JPDIA0607ZZ

- Rotate crankshaft so that the hole (A) for inserting drive plate location guide of drive plate aligns with the service hole (B).

NOTE:
When not using drive plate location guide, insert stud bolt of torque converter into the hole (C) of drive plate, aligning the drive plate hole position and torque converter.

CAUTION:
Be careful not to strike the drive plate when installing the torque converter stud bolt.

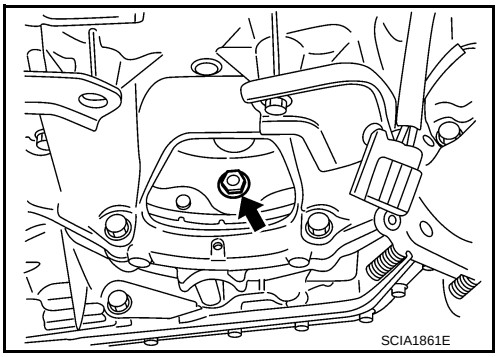


JPDIA0603ZZ

- Align the position of tightening nuts (⬅) for drive plate with those of the torque converter, and temporarily tighten the nuts. Then, tighten the bolts to the specified torque.

: **51 N·m (5.2 kg-m, 38 ft-lb)**

CAUTION:
- **When turning crankshaft, turn it clockwise as viewed from the front of the engine.**
- **When tightening the nuts for the torque converter after fixing the crankshaft pulley bolts, confirm the tightening torque of the crankshaft pulley mounting bolts. Refer to EM-93, "Exploded View".**


SCIA1861E

- **Rotate crankshaft several turns and check that transaxle rotates freely without binding after converter is installed to drive plate.**
- **Never reuse O-ring.**
- **Apply grease to O-ring.**

Inspection and Adjustment

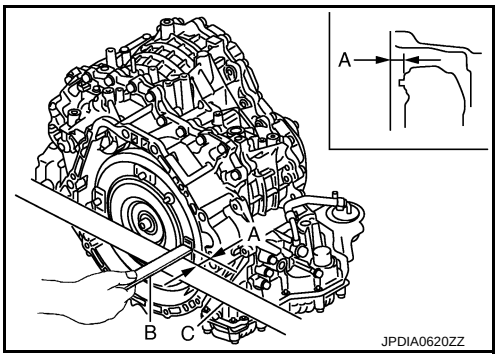
INFOID:0000000006260247

INSPECTION BEFORE INSTALLATION

After inserting a torque converter to transaxle assembly, check that dimension (A) is within the reference value limit.

B : Scale
C : Straightedge

Dimension A : Refer to TM-181, "Torque Converter".



INSPECTION AFTER INSTALLATION

Check the following.

- Check for CVT fluid leakage and check CVT fluid level. Refer to TM-147, "Inspection".
- Check CVT position. Refer to TM-160, "Inspection and Adjustment".
- Start and warm up the engine. Visually check that there is no leakage of engine coolant and CVT fluid.

ADJUSTMENT AFTER INSTALLATION

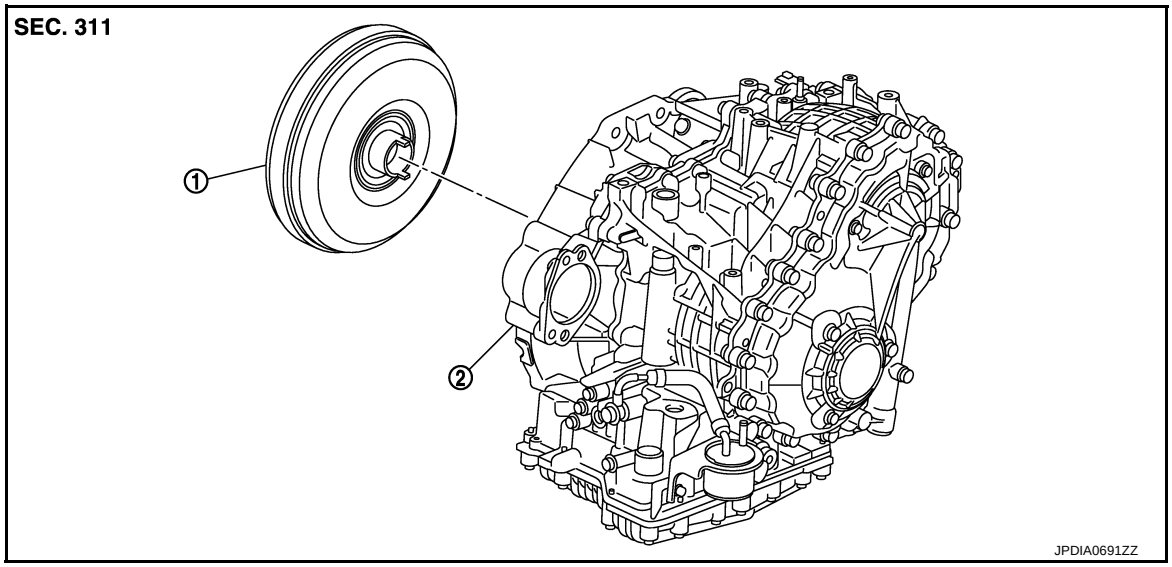
Perform “ADDITIONAL SERVICE WHEN REPLACE CONTROL VALVE OR TRANSAXLE ASSEMBLY”. Refer to TM-9, "Description".

UNIT DISASSEMBLY AND ASSEMBLY

TORQUE CONVERTER AND CONVERTER HOUSING OIL SEAL

Exploded View

INFOID:0000000006260248



1. Torque converter
2. Transaxle assembly

Disassembly

INFOID:0000000006260249

1. Remove transaxle assembly. Refer to TM-174, "Exploded View".
2. Remove torque converter from transaxle assembly.

Assembly

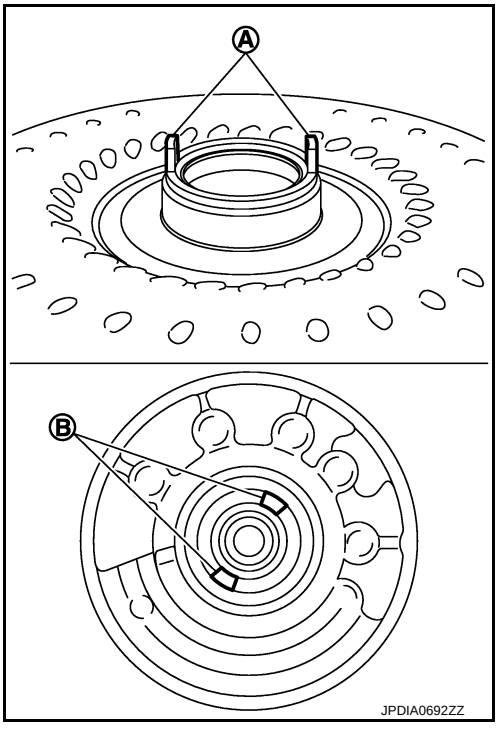
INFOID:0000000006260250

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

- Attach the pawl (A) of the torque converter to the inner gear hole (B) on the oil pump side.

CAUTION:

Rotate the torque converter for installing torque converter.



Inspection

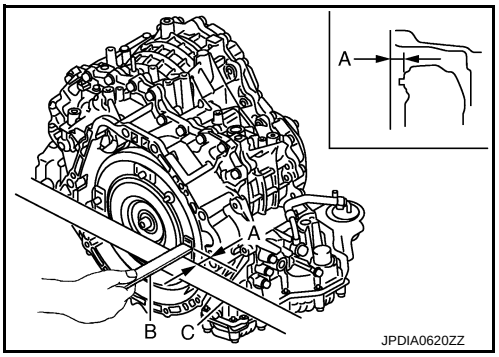
INFOID:0000000006260251

INSPECTION AFTER INSTALLATION

After inserting a torque converter to transaxle assembly, check dimension (A) is within the reference value limit.

B : Scale
C : Straightedge

Dimension A : Refer to TM-181, "Torque Converter".



SERVICE DATA AND SPECIFICATIONS (SDS)

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General Specification

INFOID:0000000006260252

Applied model		VQ35DE engine	
		2WD	AWD
CVT model		RE0F09B	
CVT assembly model code number		1XE1B	1XE1C
Transmission gear ratio	D range	Variable	
	Reverse	1.766	
	Final drive	5.173	
Recommended fluid		Genuine NISSAN CVT Fluid NS-2*1	
Fluid capacity liter (US qt, Imp qt)		10.2 (10-6/8, 9)*2	

CAUTION:

- **Use only Genuine NISSAN CVT Fluid NS-2. Never mix with other fluid.**
- **Using CVT fluid other than Genuine NISSAN CVT Fluid NS-2 will deteriorate in driveability and CVT durability, and may damage the CVT, which is not covered by the NISSAN new vehicle limited warranty.**

*1: Refer to MA-15, "FOR NORTH AMERICA : Fluids and Lubricants" (FOR NORTH AMERICA), MA-16, "FOR MEXICO : Fluids and Lubricants" (FOR MEXICO).

*2: The fluid capacity is the reference value. Check the fluid level with CVT fluid level gauge.

Vehicle Speed When Shifting Gears

INFOID:0000000006260253

Numerical value data are reference values.

Unit: rpm

Throttle position	Shift pattern	Engine speed	
		At 40 km/h (25 MPH)	At 60 km/h (37 MPH)
8/8	“D” position	2,600 – 4,100	3,600 – 5,300
	Overdrive OFF condition	2,600 – 4,100	3,600 – 5,300
	“L” position	2,600 – 4,100	3,600 – 5,300
2/8	“D” position	1,000 – 3,000	1,100 – 3,300
	Overdrive OFF condition	2,200 – 3,000	2,800 – 3,600
	“L” position	2,600 – 3,500	3,600 – 4,500

CAUTION:

Lock-up clutch is engaged when vehicle speed is approximately 18 km/h (11 MPH) to 90 km/h (56 MPH).

Stall Speed

INFOID:0000000006260254

Stall speed	2,700 – 3,500 rpm

Line Pressure

INFOID:0000000006260255

Unit: kPa (kg/cm^2, psi)

Engine speed	Line pressure
	“R”, “D” and “L” positions
At idle	700 (7.14, 101.5)
At stall	5,700 (58.14, 826.5)

Solenoid Valves

INFOID:0000000006260256

Name	Resistance (Approx.)
Pressure control solenoid valve B (secondary pressure solenoid valve)	3.0 – 9.0 Ω
Pressure control solenoid valve A (line pressure solenoid valve)	
Torque converter clutch solenoid valve	
Lock-up select solenoid valve	6.0 – 19.0 Ω

CVT Fluid Temperature Sensor

INFOID:0000000006260257

Name	Condition	CONSULT-III "Data Monitor" (Approx.)	Resistance (Approx.)
CVT fluid temperature sensor	When CVT fluid temperature is 20°C (68°F)	1.9 – 2.2 V	6.5 kΩ
	When CVT fluid temperature is 80°C (176°F)	0.8 – 1.1 V	0.9 kΩ

Primary Speed Sensor

INFOID:0000000006260258

Name	Condition	Data (Approx.)
Primary speed sensor	When driving ["L" position, 20 km/h (12 MPH)]	680 Hz

Secondary Speed Sensor

INFOID:0000000006260259

Name	Condition	Data (Approx.)
Secondary speed sensor	When driving ["D" position, 20 km/h (12 MPH)]	350 Hz

Step Motor

INFOID:0000000006260260

Name	Resistance (Approx.)
Step motor A	15.0 Ω
Step motor B	15.0 Ω
Step motor C	15.0 Ω
Step motor D	15.0 Ω

Torque Converter

INFOID:0000000006260261

Dimension between end of converter housing and torque converter	14.0 mm (0.55 in)