SECTION TM

TRANSAXLE & TRANSMISSION

CONTENTS

CVT: RE0F10A

BASIC INSPECTION

DIAGNOSIS AND REPAIR WORK FLOW

Work Flow

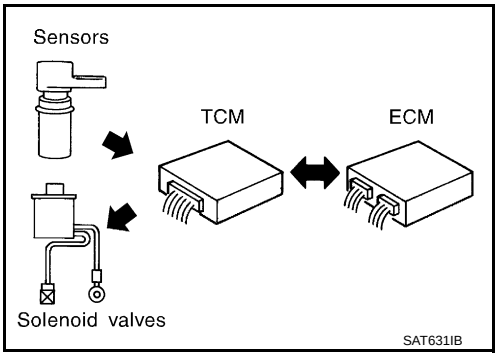
INFOID:0000000001695595

INTRODUCTION

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

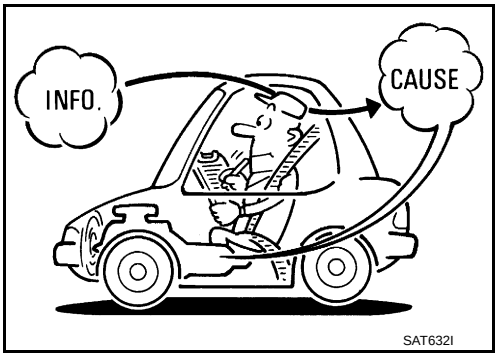
The TCM also communicates with the ECM by means of a signal sent from sensing elements used with the OBD-related parts of the CVT system for malfunction-diagnostic purposes. The TCM is capable of diagnosing malfunctioning parts while the ECM can store malfunctions in its memory.

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.

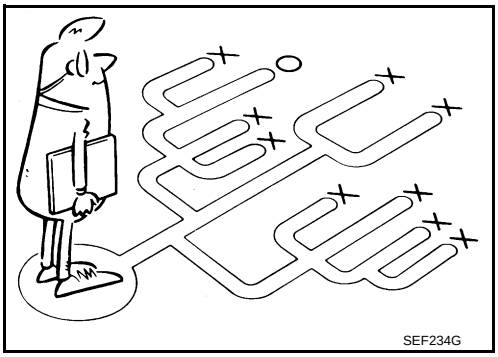
A visual check only may not find the cause of the malfunctions. A road test with CONSULT-III (or GST) or a circuit tester connected should be performed. Follow the “DETAILED FLOW”.



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-7) 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-7, "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-133, "Fail-safe".
- CVT fluid inspection. Refer to TM-160, "Inspection".
- Line pressure test. Refer to TM-167, "Inspection and Judgment".

• Stall test. Refer to TM-165, "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-41, "Diagnosis Description".

Is any DTC detected?

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

4.PERFORM DIAGNOSTIC PROCEDURE

Perform “Diagnostic Procedure” for the displayed DTC.

>> GO TO 5.

5.PERFORM DTC CONFIRMATION PROCEDURE

Perform “DTC CONFIRMATIOM 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-169, "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:0000000001695596

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	o Continuous o Intermittent (times a day)	

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

DIAGNOSTIC WORK SHEET

1	o Read the item on cautions concerning fail-safe and understand the customer's complaint.			TM-133
2	o CVT fluid inspection, stall test and line pressure test			
		o CVT fluid inspection		TM-160
			o Leak (Repair leak location.) o State o Amount	
		o Stall test		TM-165 TM-167
			o Torque converter one-way clutch o Reverse brake o Forward clutch o Steel belt	o Engine o Line pressure low o Primary pulley o Secondary pulley
		o Line pressure inspection - Suspected part:		
3	o Perform self-diagnosis.			TM-43
		Enter checks for detected items.		
4	o Perform road test.			TM-169
	4-1.	Check before engine is started		TM-169
	4-2.	Check at idle		TM-170
	4-3.	Cruise test		TM-171
	o Check malfunction phenomena to repair or replace malfunctioning part after completing all road tests.			TM-136
5	o Drive vehicle to check that the malfunction phenomenon has been resolved.			
6	o Erase the results of the self-diagnosis from the TCM and the ECM.			

INSPECTION AND ADJUSTMENT

ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT

ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Service After Replacing TCM and Transaxle Assembly

INFOID:0000000001695597

SERVICE AFTER REPLACING TCM AND TRANSAXLE ASSEMBLY

Perform the applicable service according to the following sheet when replacing TCM or transaxle assembly.

CAUTION:

- **Never start the engine until the service is completed.**
- **"TCM- POWER SUPPLY [P1701]" may be indicated soon after replacing TCM or transaxle assembly (after erasing the memory at the pattern B). Restart the self-diagnosis after erasing the self-diagnosis result. Check that no error is detected.**

TCM	CVT assembly	Service pattern
Replace the new unit.	Do not replace the unit.	"PATTERN A"
Do not replace the unit.	Replace either an old unit or new unit.	"PATTERN B"
Replace the old unit.	Do not replace the unit.	
	Replace either an old unit or new unit.	
Replace the new unit.	Replace either an old unit or new unit.	"PATTERN C"

NOTE:

Old unit means that the unit has been already used for another vehicle.

PATTERN A

1. Shift selector lever to "P" position after replacing TCM. Turn ignition switch ON.
2. Check that shift position indicator in the combination meter turns ON (It indicates approximately 1 or 2 seconds after turning ignition switch ON.)
   - Check the following items if shift position indicator does not turn ON. Repair or replace shift position indicator if necessary.
   - The harness between TCM and ROM ASSY in transaxle assembly is open or shorted.
   - Cable disconnected, loose, or bent from connector housing.

PATTERN B

1. Turn ignition switch ON after replacing each part.
2. Start engine.
   CAUTION:
   Never start driving.
3. Select "DATA MONITOR".
4. Warm up transaxle assembly until "ATFTEMP COUNT" indicates 47 [approximately 20°C (68°F)] or more. Turn ignition switch OFF.
5. Turn ignition switch ON.
   CAUTION:
   Never start engine.
6. Select "SELF-DIAG RESULTS".
7. Shift selector lever to "R" position.
8. Depress slightly accelerator pedal (Pedal angle: 2/8) while depressing brake pedal.
9. Perform "ERASE".
10. Shift selector lever to "R" position after replacing TCM. Turn ignition switch OFF.
11. Wait approximately 10 seconds after turning ignition switch OFF.
12. Turn ignition switch ON while shifting selector lever to "R" position.
    CAUTION:
    Never start engine.
13. Select "Special function".
14. Check that the value on "CALIBRATION DATA" is the same as the data after erasing "Calibration Data".

- Restart the procedure from step 3 if the values are not the same.

15. Shift selector lever to “P” position.
16. Check that shift position indicator in combination meter turns ON. (It indicates approximately 1 or 2 seconds after shifting selector lever to “P” position.)
    - Check the following items if shift position indicator does not turn ON. Repair or replace shift position indicator if necessary.
    - The harness between TCM and ROM ASSY in transaxle assembly is open or shorted.
    - Cable disconnected, loose, or bent from connector housing.
    - Power supply and ground of TCM. Refer to TM-97, "Description".

Calibration Data

Data after deletion

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

PATTERN C

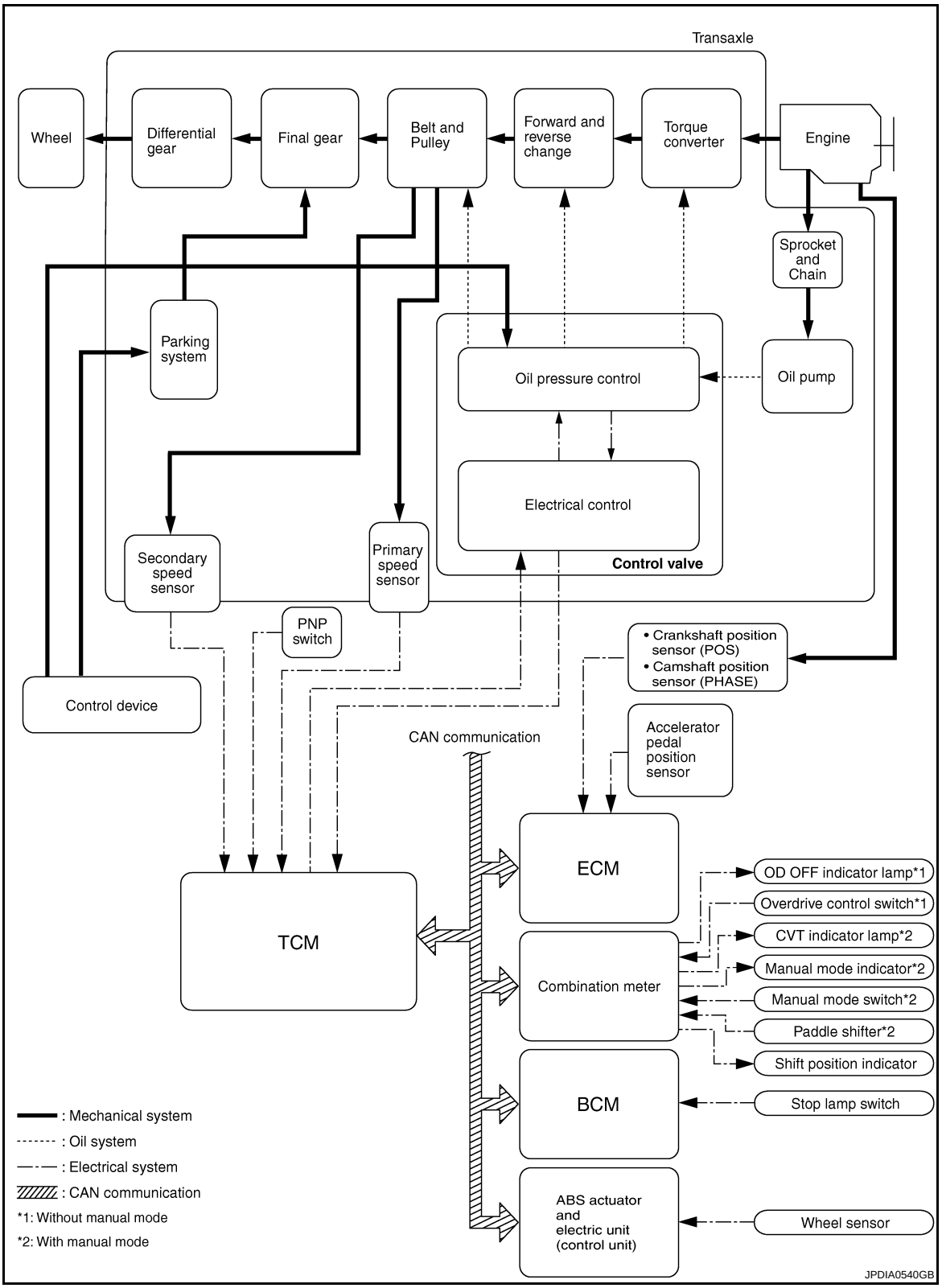
1. Replace transaxle assembly first, and then replace TCM.
2. Perform the service of “PATTERN A”.
   (Perform the service of “PATTERN B” if TCM is replaced first.)

FUNCTION DIAGNOSIS

CVT SYSTEM

System Diagram

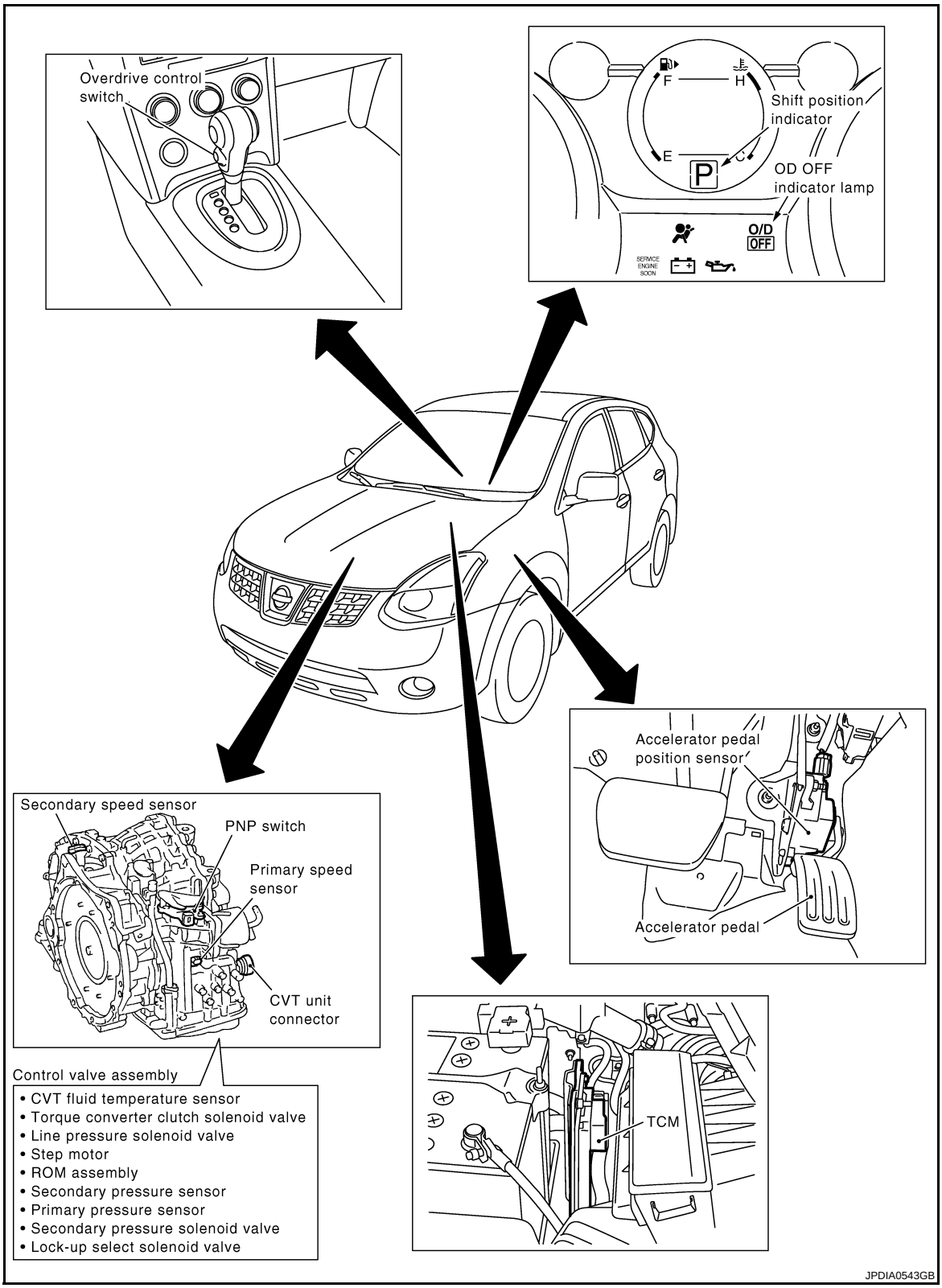
INFOID:0000000001695598



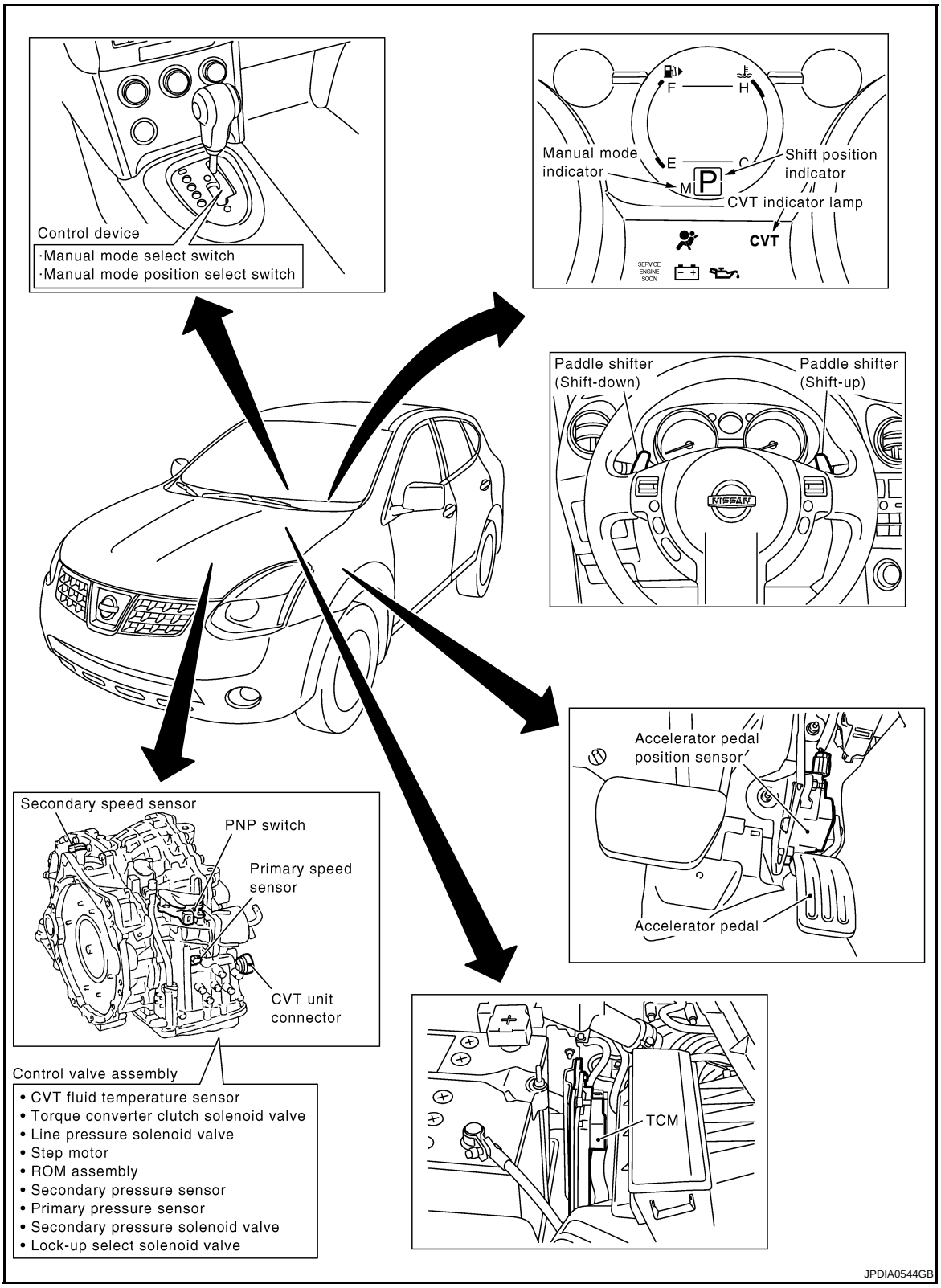
Component Parts Location

INFOID:0000000001695599

Without manual mode



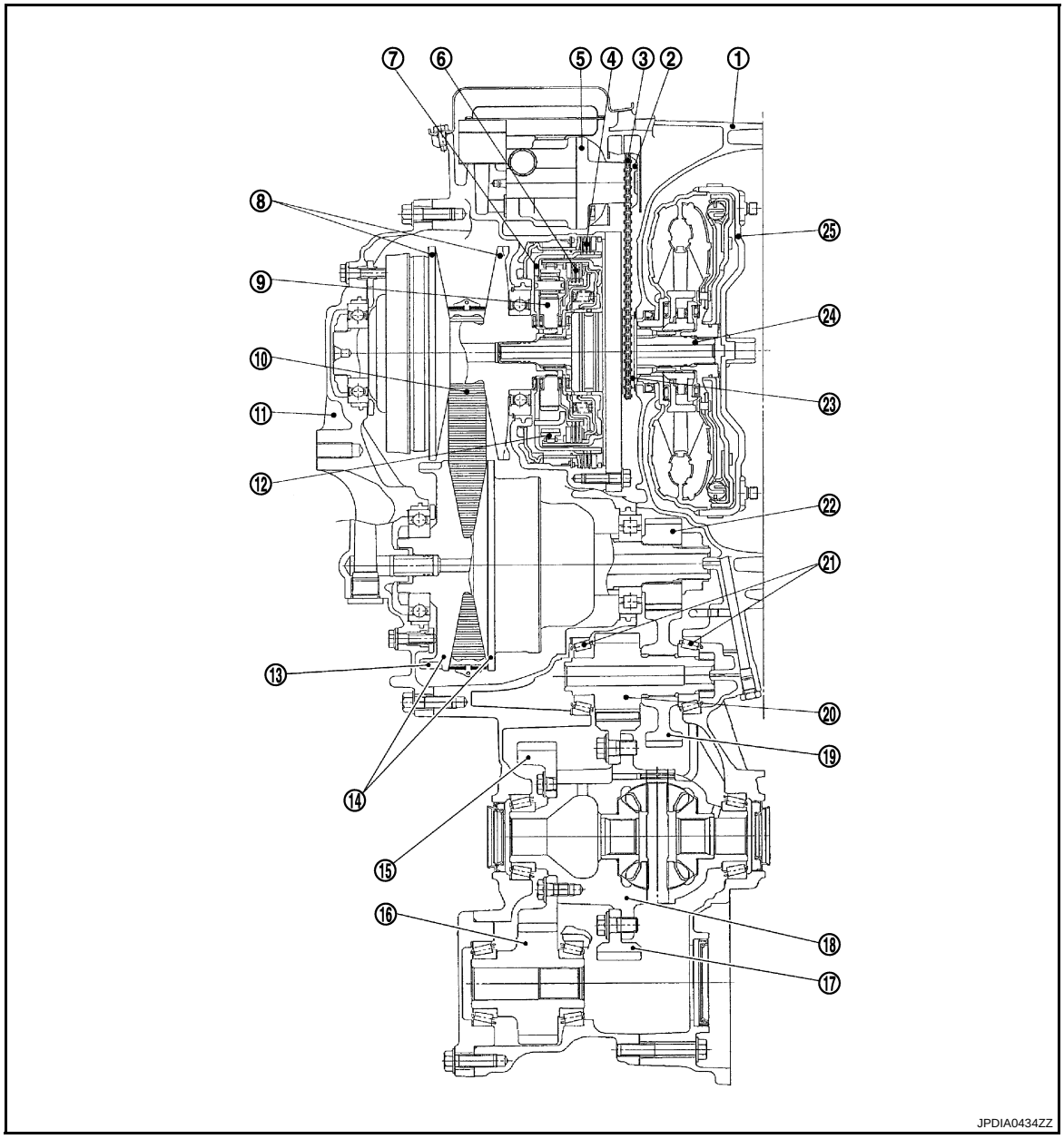
With manual mode



MECHANICAL SYSTEM

Cross-Sectional View

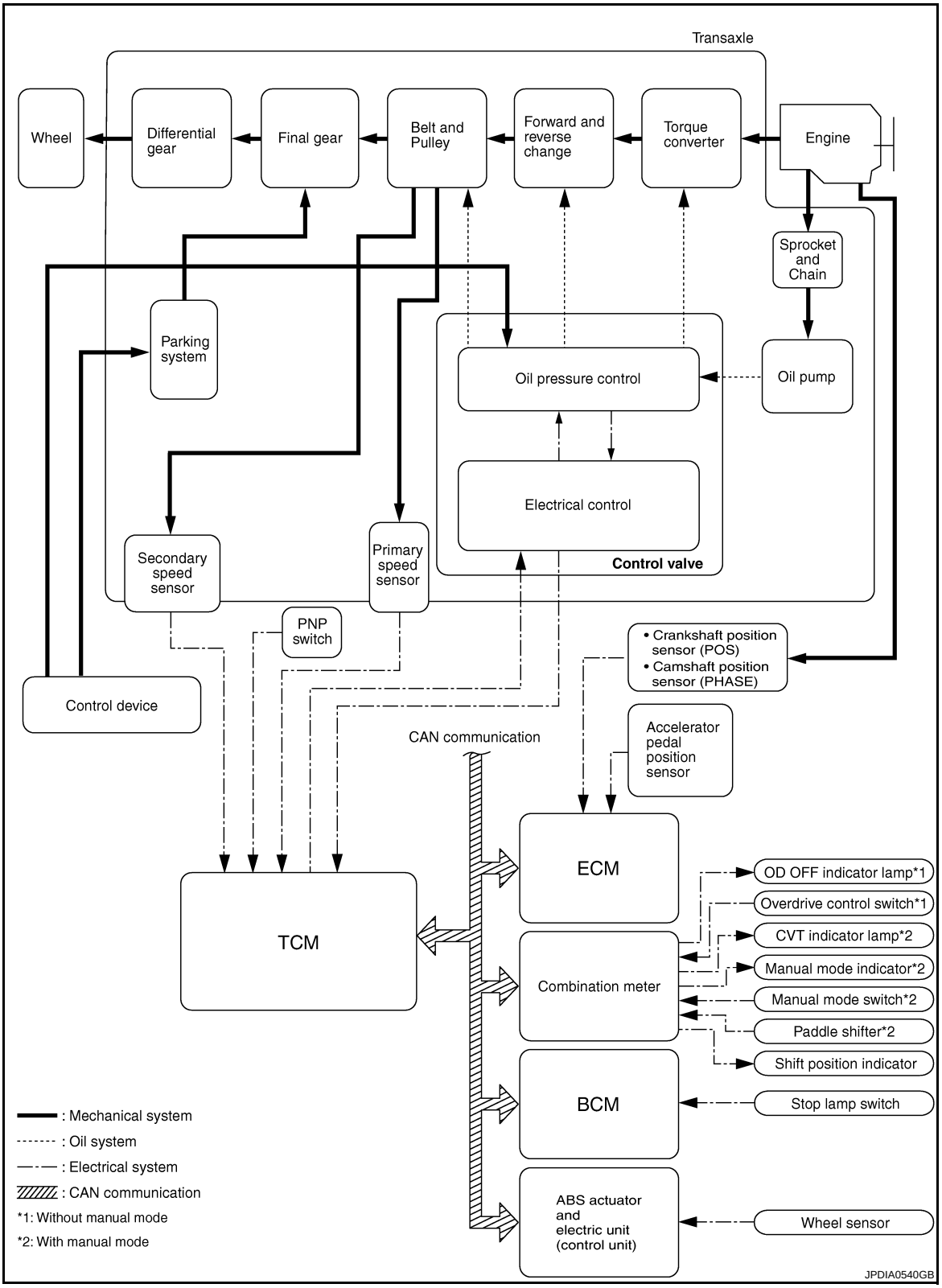
INFOID:0000000001695600



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

System Diagram

INFOID:0000000001695601



System Description

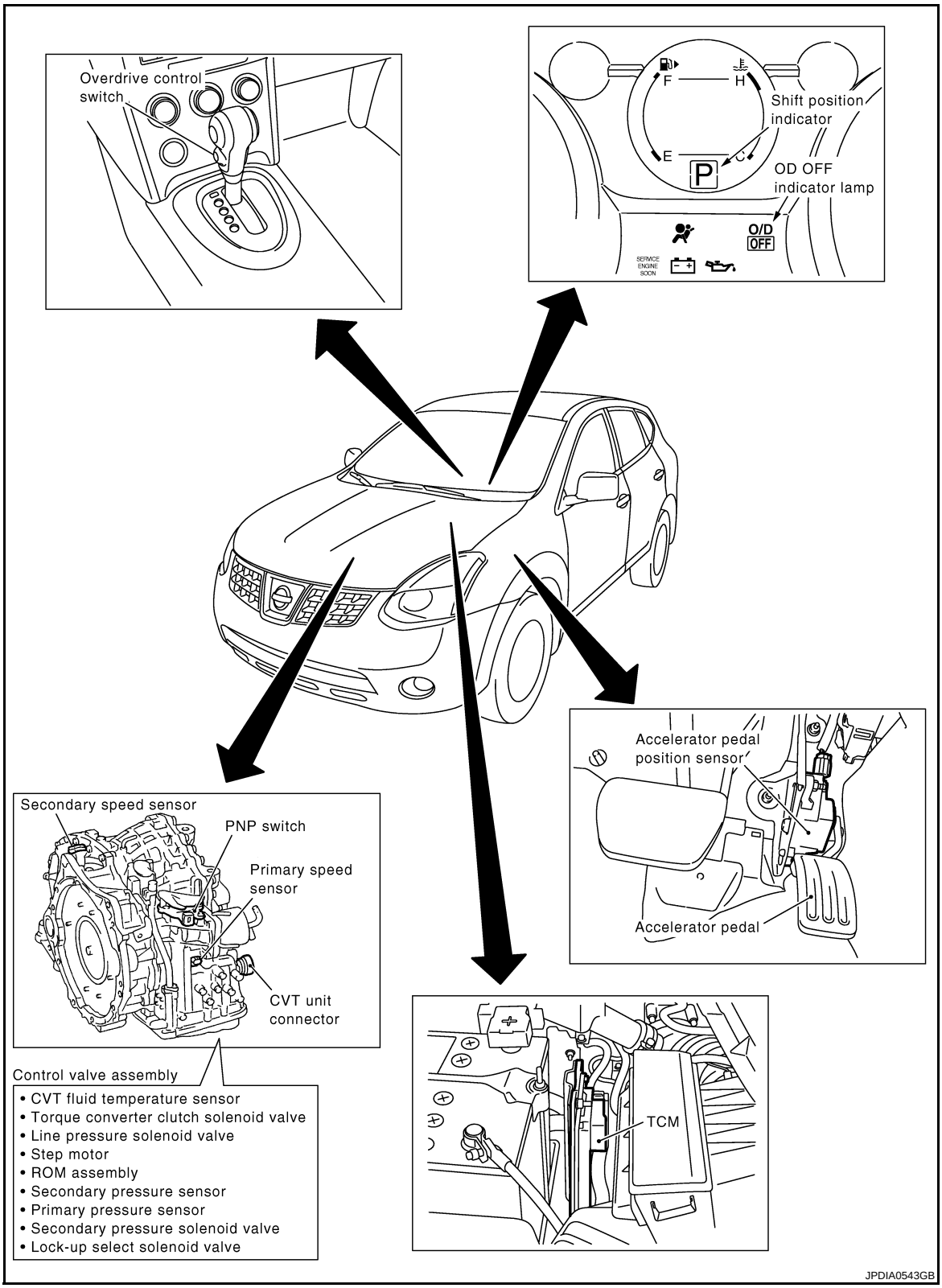
INFOID:0000000001695602

Transmits the power from the engine to the drive wheel.

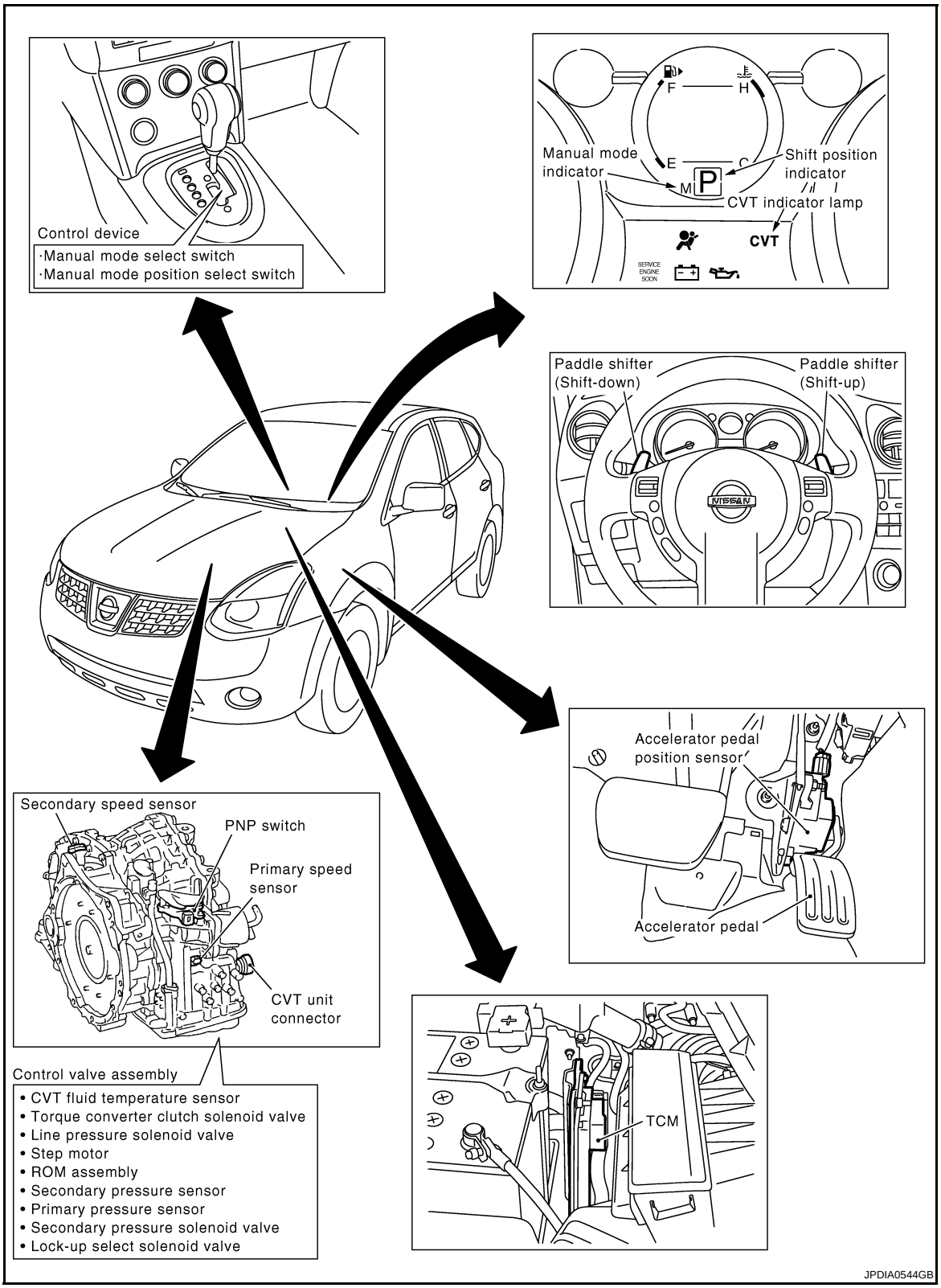
Component Parts Location

INFOID:0000000001695603

Without manual mode



With manual mode



Component Description

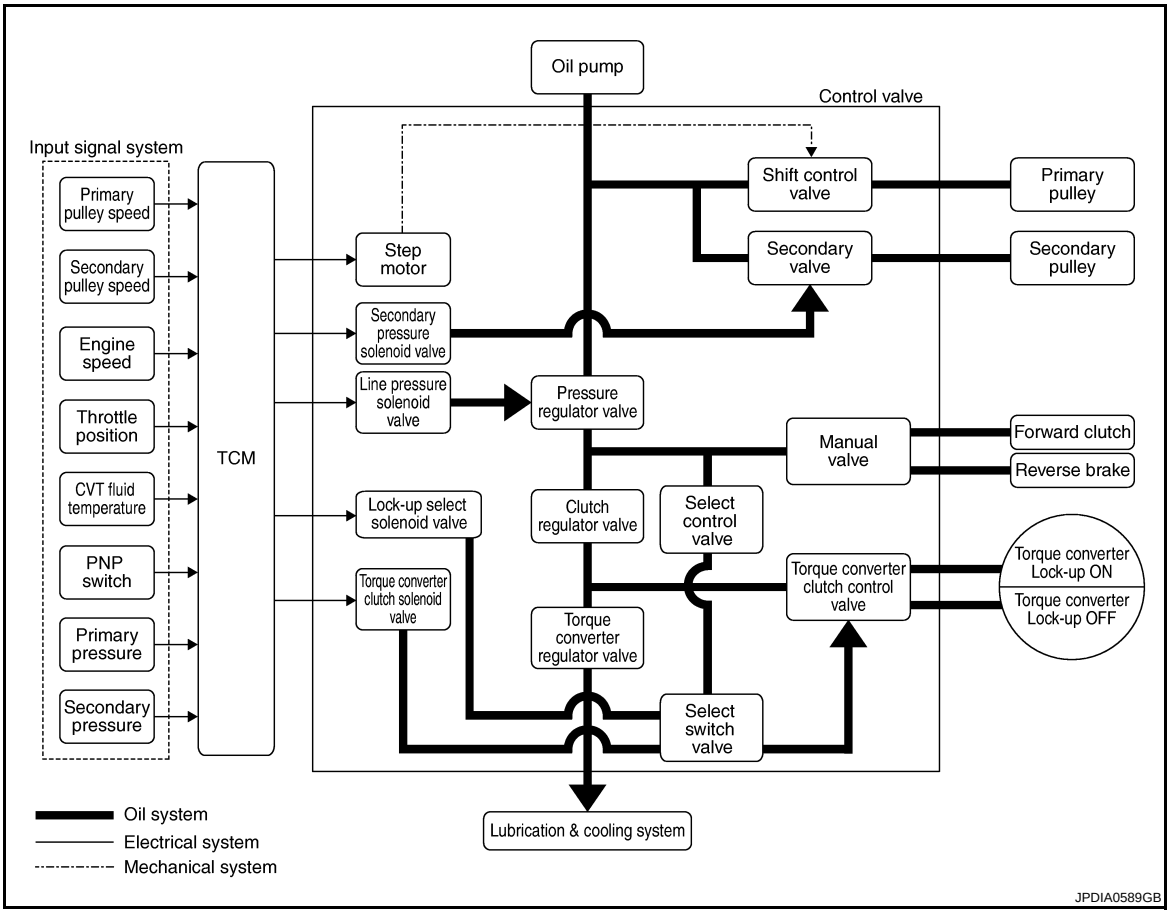
INFOID:0000000001695604

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 efficiency of pump discharge rate has been increased at low-rpm and optimized at high-rpm by adopting a vane-type oil pump controlled by the engine. Discharged oil from oil pump is transmitted to the control valve. It is used as the oil of primary and secondary pulley operation and the oil of clutch operation and the lubricant for each part.
Planetary gear	Perform the transmission of drive power and the switching of forward/backward movement.
Forward clutch	
Reverse brake	
Primary pulley	It is composed of a pair of pulleys (the groove width is changed freely in the axial direction) and the steel belt (the steel star wheels are placed continuously and the belt is guided with the 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	Variable speed gear consists of primary deceleration (output gear and idler gear in pair), secondary deceleration (reduction gear and final gear in pair), and acceleration (drive trans gear and ring trans gear in pair). Each of them uses a helical gear.
Idler gear	
Reduction gear	
Final gear	
Differential	
Drive trans gear	
Ring trans gear	
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:0000000001695605



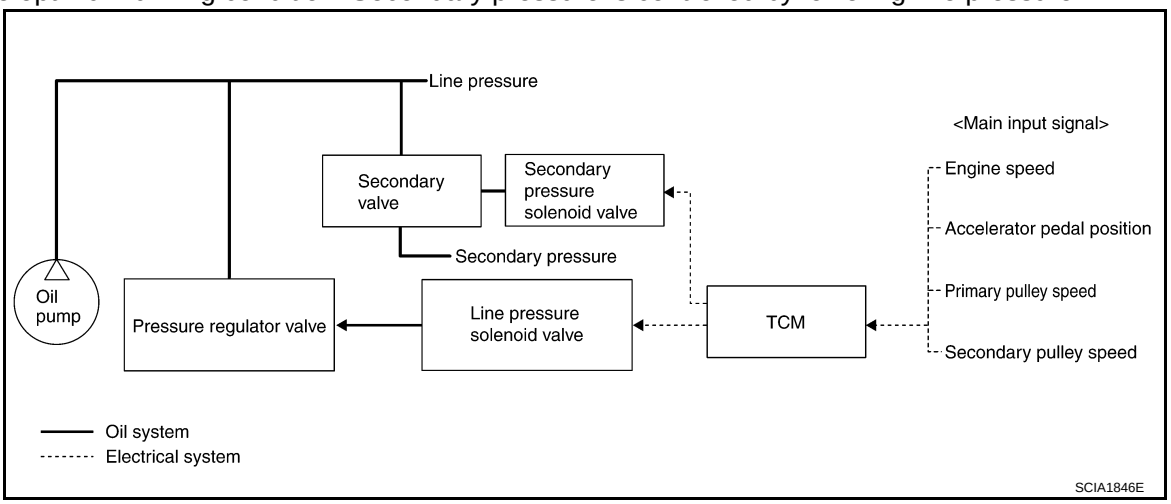
System Description

INFOID:0000000001695606

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 PNP switch signal, the lock-up signal, the voltage, the target gear ratio, the fluid temperature, and the fluid pressure.

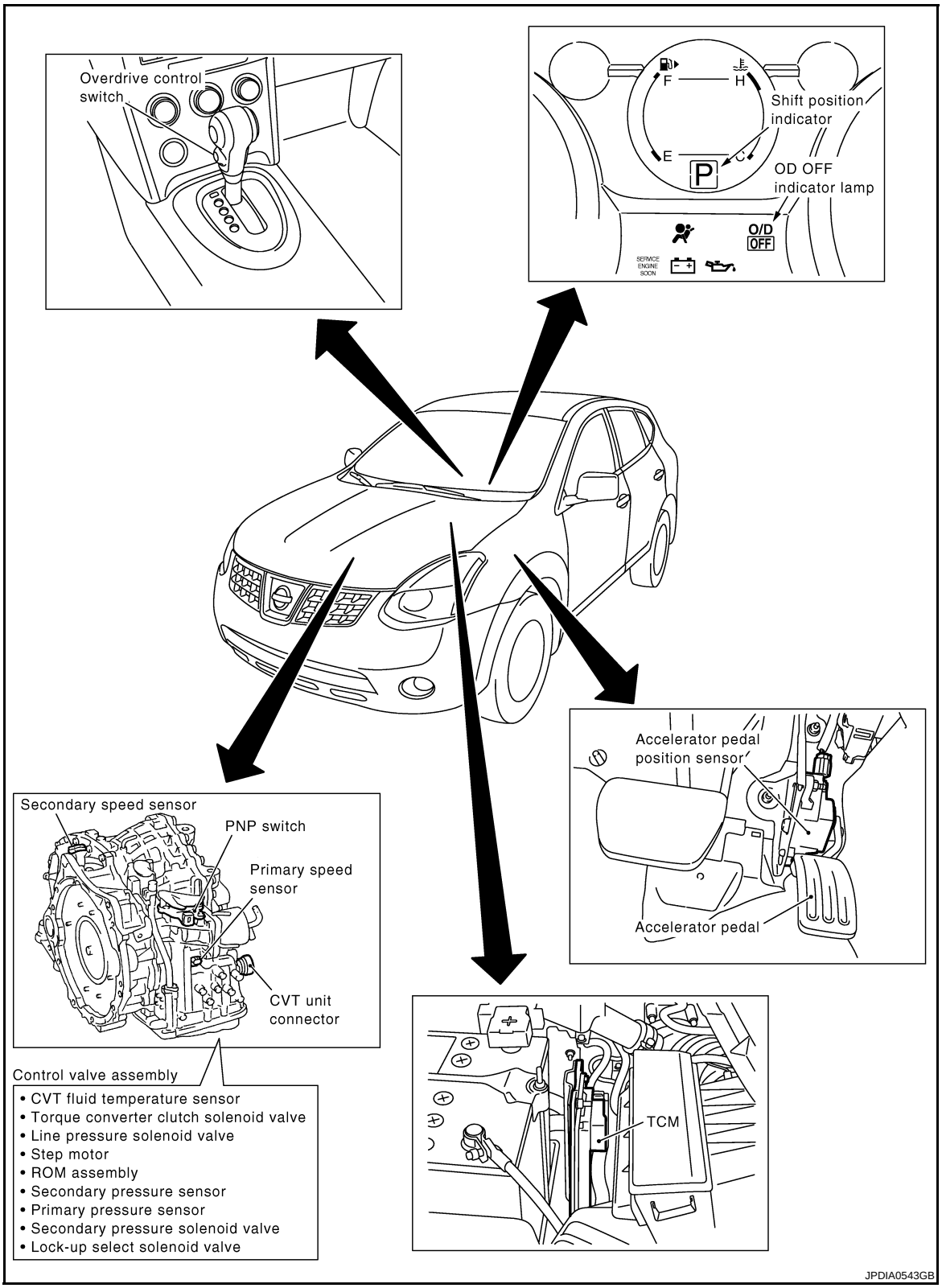
Feedback Control

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.

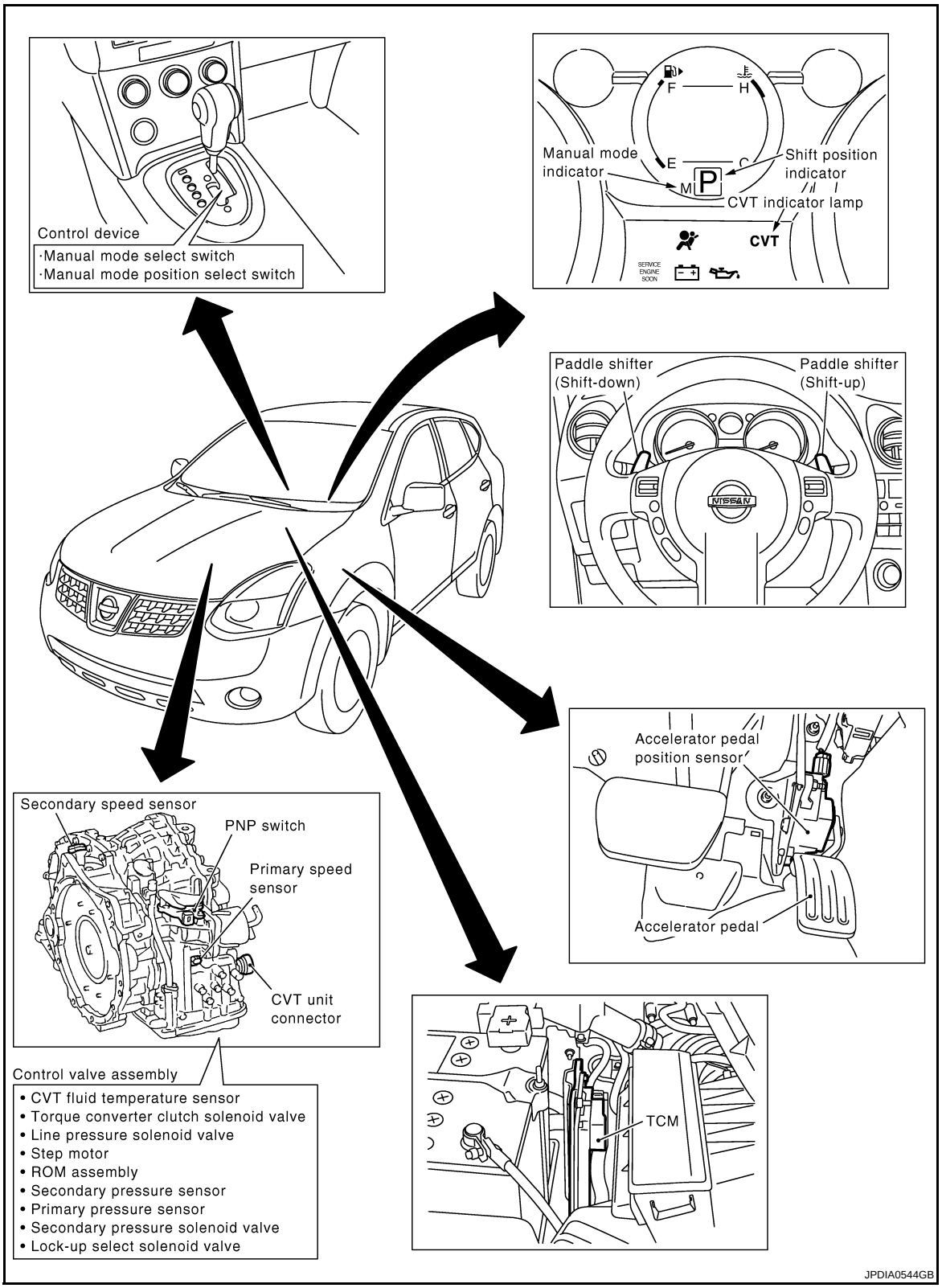
Component Parts Location

INFOID:0000000001695607

Without manual mode



With manual mode



Component Description

INFOID:0000000001695608

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-67
Secondary pressure solenoid valve	TM-78
Line pressure solenoid valve	TM-71
Step motor	TM-109
Lock-up select solenoid valve	TM-106
Primary speed sensor	TM-57
Secondary speed sensor	TM-61
PNP switch	TM-52
Primary pulley	TM-17
Secondary pulley	
Forward clutch	
Torque converter	

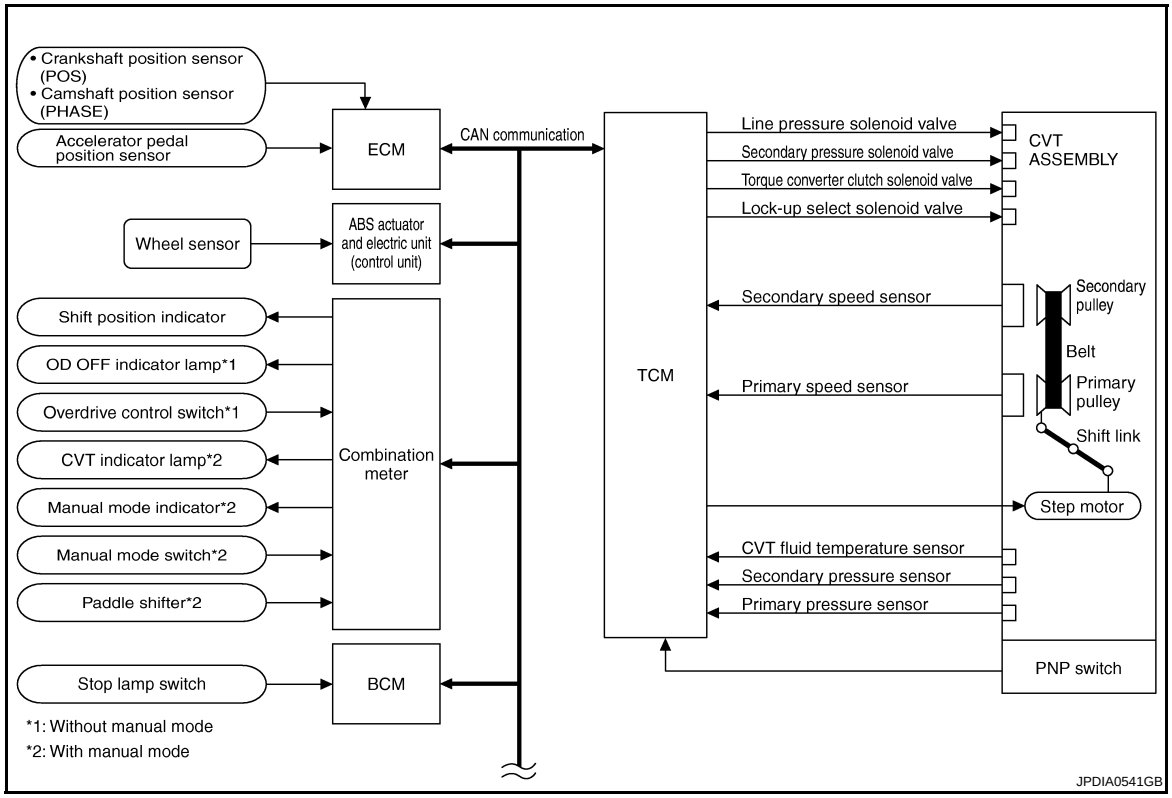
EXCEPT TRANSAXLE ASSEMBLY

Name	Function
TCM	Judges driving condition according to signals from each sensor, and optimally controls variable speed mechanism.
Accelerator pedal position sensor	TM-100

CONTROL SYSTEM

System Diagram

INFOID:0000000001695609



System Description

INFOID:0000000001695610

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
PNP switch Accelerator pedal position signal Closed throttle position signal Engine speed signal CVT fluid temperature sensor Vehicle speed signal Overdrive control switch signal*1 Manual mode signal*2 Paddle shifter signal*2 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*1 Manual mode indicator*2 Shift position indicator

- *1: Without manual mode
- *2: With manual mode

INPUT/OUTPUT SIGNAL OF TCM

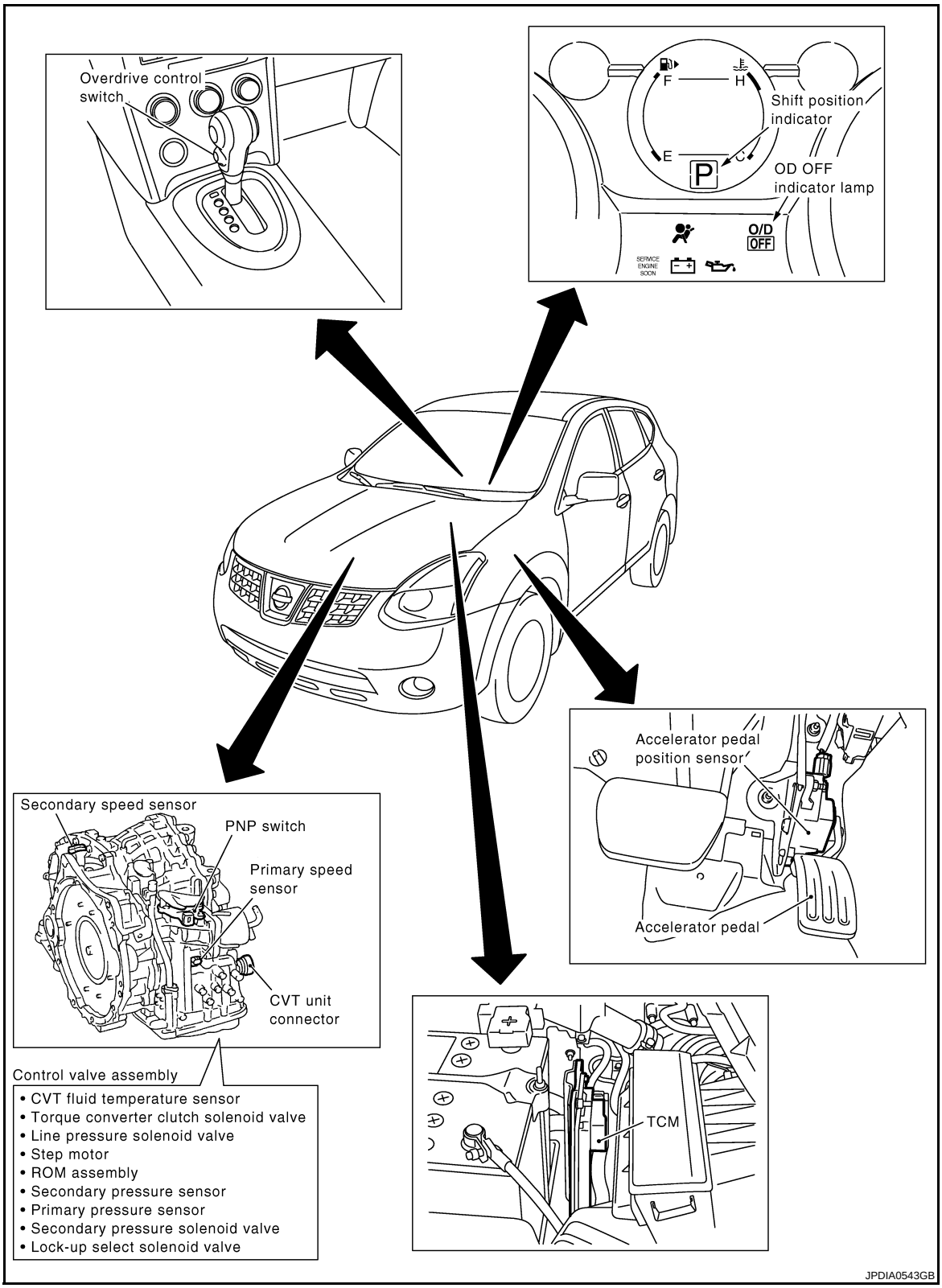
Control item		Fluid pressure control	Select control	Shift control	Lock-up control	CAN communication control	Fail-safe function*2
Input	PNP switch	X	X	X	X	X	X
	Accelerator pedal position signal*1	X	X	X	X	X	X
	Closed throttle position signal*1	X		X	X	X	
	Engine speed signal*1	X	X		X	X	X
	CVT fluid temperature sensor	X	X	X	X		X
	Overdrive control switch signal*1*3			X		X	
	Manual mode signal*1*4	X		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
Output	Step motor			X			X
	TCC solenoid valve		X		X		X
	Lock-up select solenoid valve		X		X		X
	Line pressure solenoid valve	X	X	X			X
	Secondary pressure solenoid valve	X		X			X

- *1: Input by CAN communications.
- *2: If these input and output signals are different, the TCM triggers the fail-safe function.
- *3: Without manual mode
- *4: With manual mode

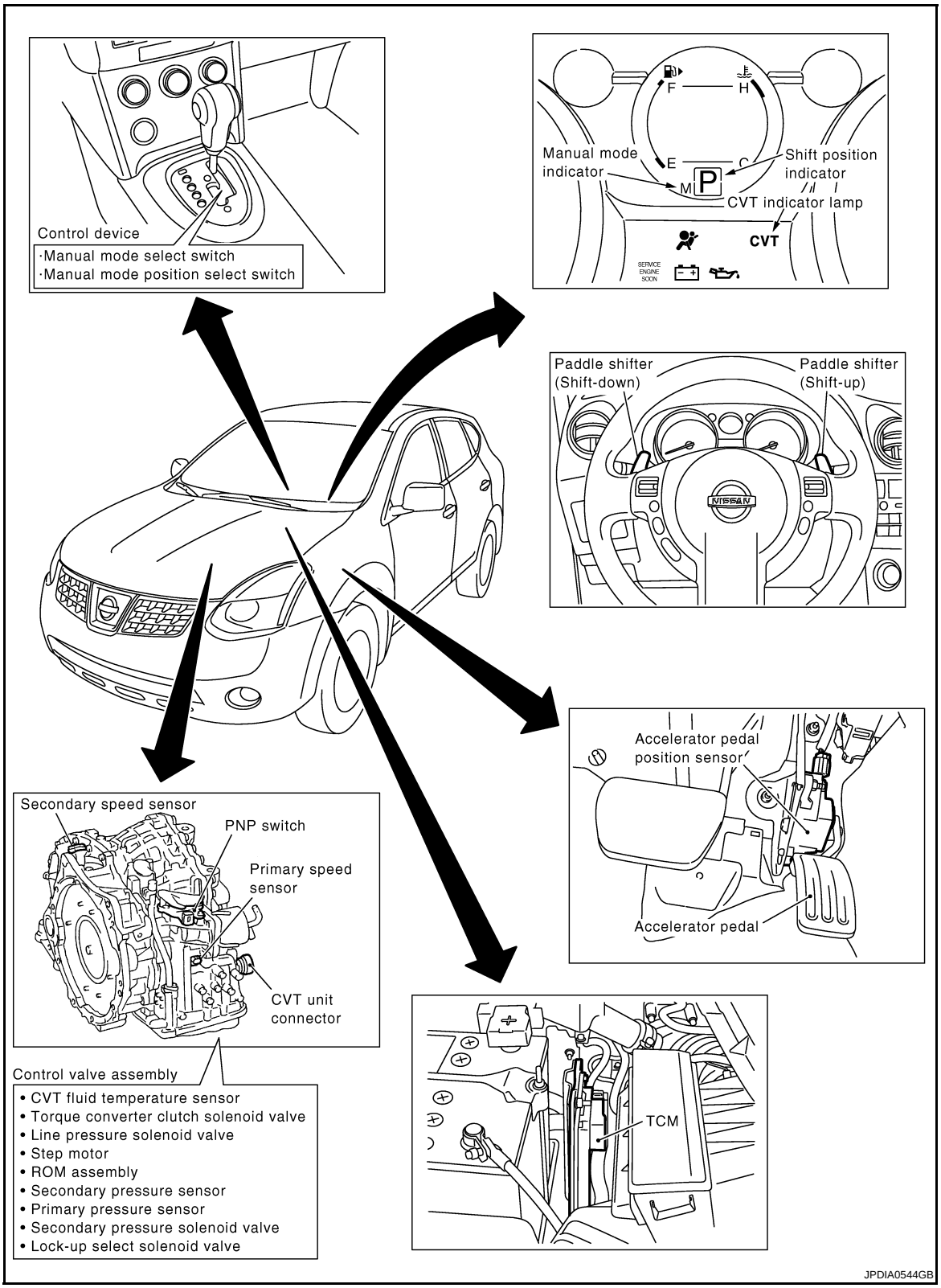
Component Parts Location

INFOID:0000000001695611

Without manual mode



With manual mode



Component Description

INFOID:0000000001695612

TRANSAXLE ASSEMBLY

Name	Function
PNP switch	TM-52
CVT fluid temperature sensor	TM-55
Primary speed sensor	TM-57
Secondary speed sensor	TM-61
Primary pressure sensor	TM-91
Secondary pressure sensor	TM-85
Step motor	TM-109
TCC solenoid valve	TM-67
Lock-up select solenoid valve	TM-106
Line pressure solenoid valve	TM-71
Secondary pressure solenoid valve	TM-78

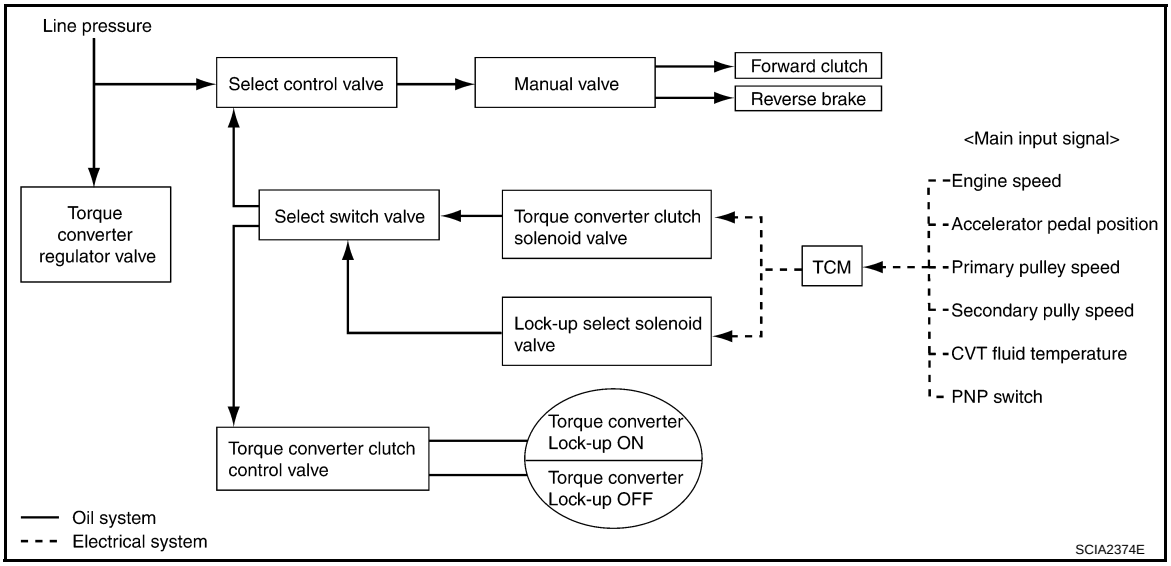
EXCEPT TRANSAXLE ASSEMBLY

Name	Function
TCM	TM-22
Stop lamp switch	TM-49

LOCK-UP AND SELECT CONTROL SYSTEM

System Diagram

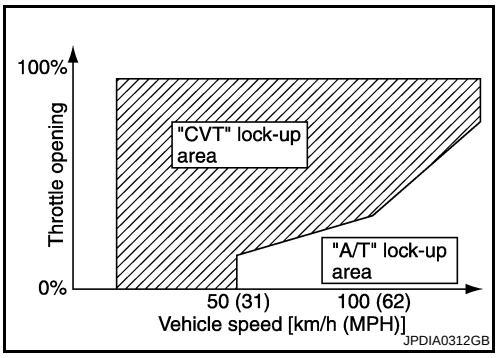
INFOID:0000000001695613



System Description

INFOID:0000000001695614

- 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.

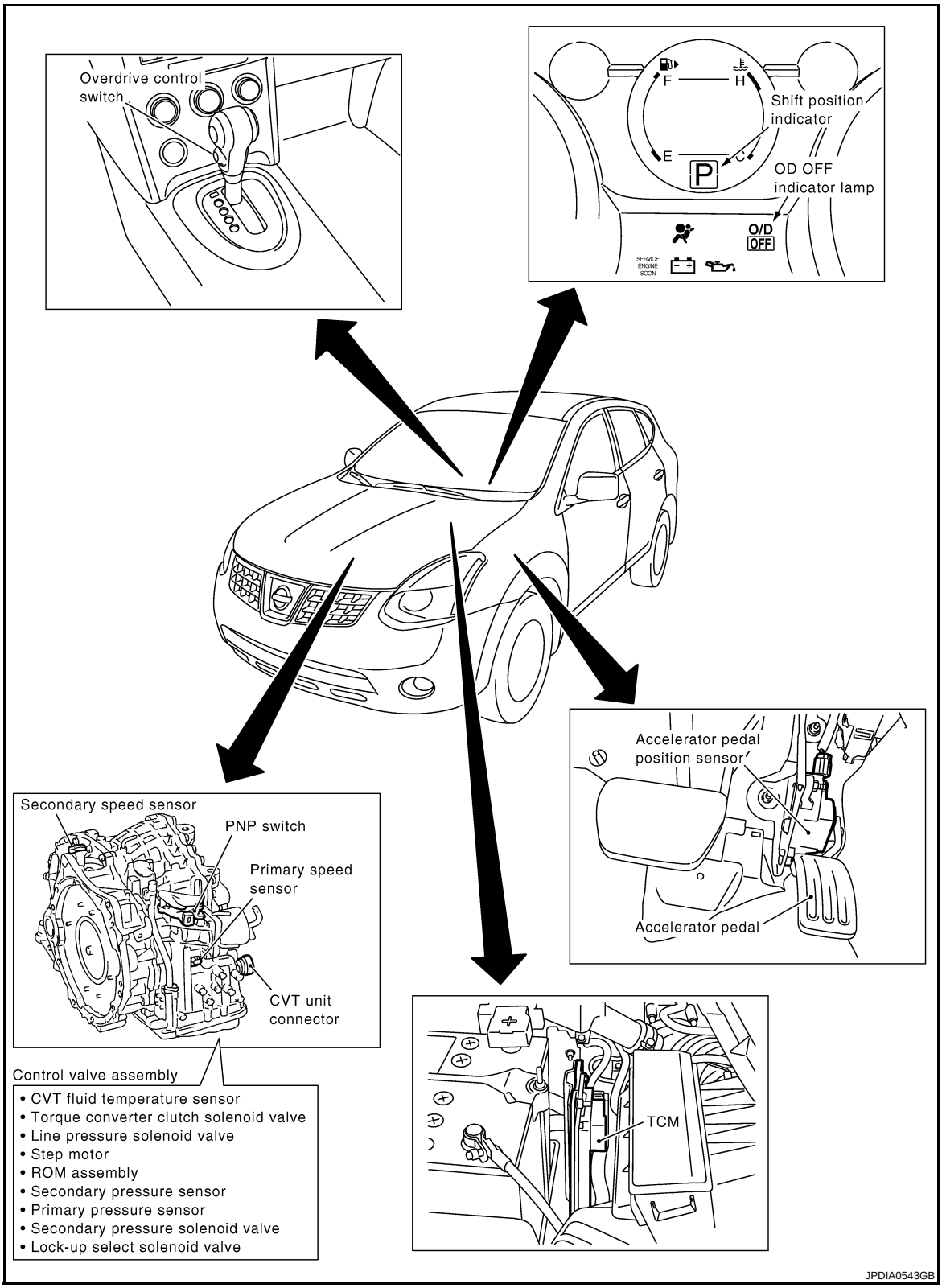
Select Control

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.

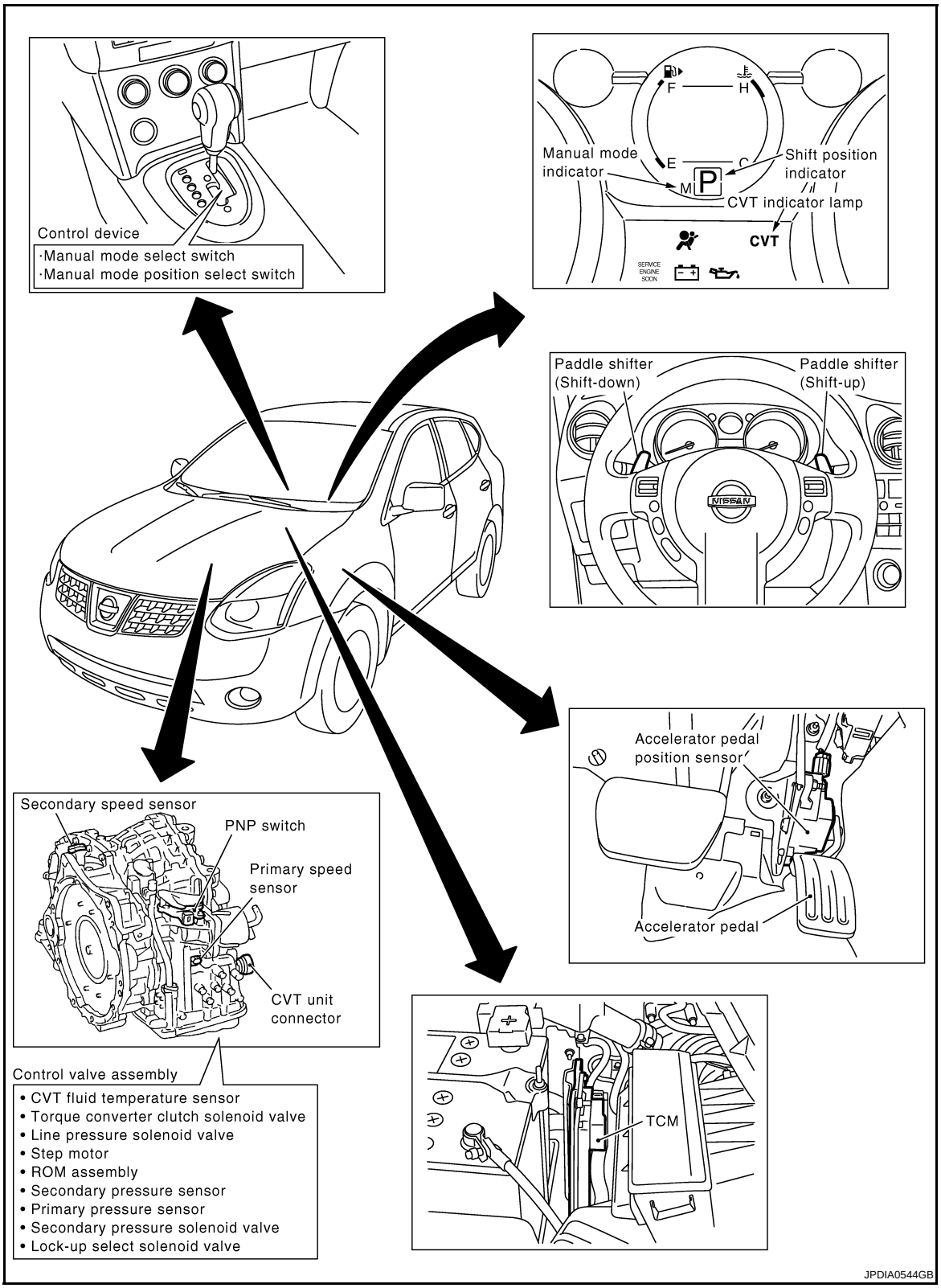
Component Parts Location

INFOID:0000000001695615

Without manual mode



With manual mode



Component Description

INFOID:0000000001695616

TRANSAXLE ASSEMBLY

Name	Function
Torque converter regulator valve	TM-22
TCC control valve	
Select control valve	
Select switch valve	
Manual valve	
TCC solenoid valve	TM-67
Lock-up select solenoid valve	TM-106
Primary speed sensor	TM-57
Secondary speed sensor	TM-61
CVT fluid temperature sensor	TM-55
PNP switch	TM-52
Forward clutch	TM-17
Reverse brake	
Torque converter	

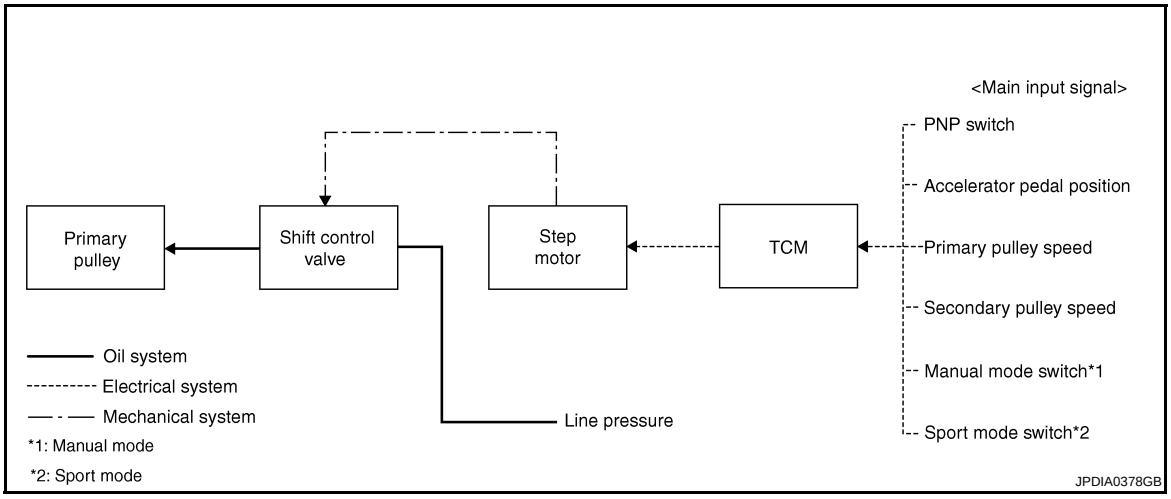
EXCEPT TRANSAXLE ASSEMBLY

Name	Function
TCM	TM-22
Accelerator pedal position sensor	TM-100

SHIFT CONTROL SYSTEM

System Diagram

INFOID:0000000001695617



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

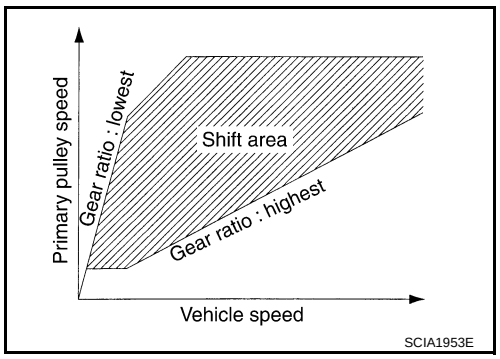
System Description

INFOID:0000000001695618

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.

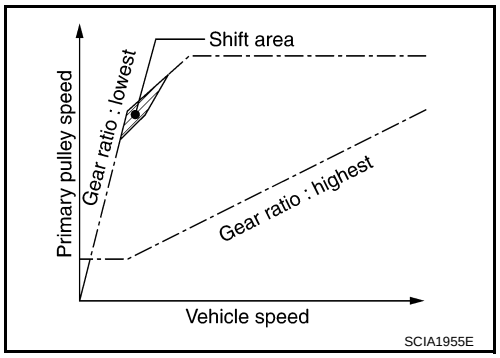


OVERDRIVE OFF CONDITION (WITHOUT MANUAL MODE)

Use this position for improved engine braking.

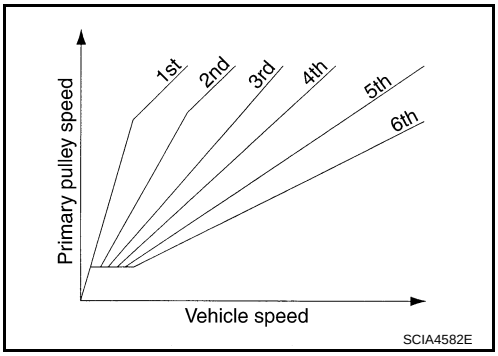
“L” POSITION (WITHOUT MANUAL MODE)

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



“M” POSITION (WITH MANUAL MODE)

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



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.

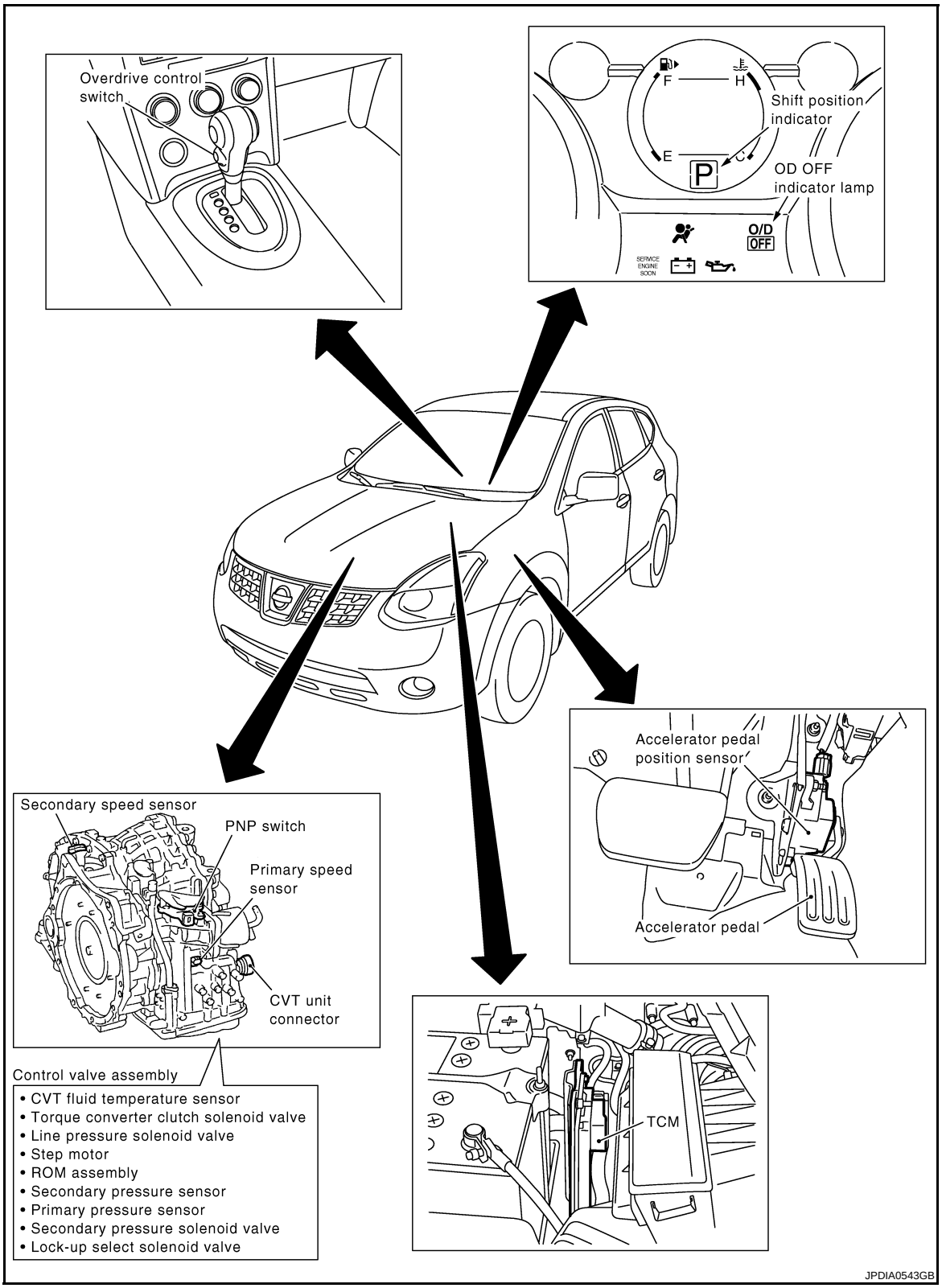
ACCELERATION CONTROL

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.

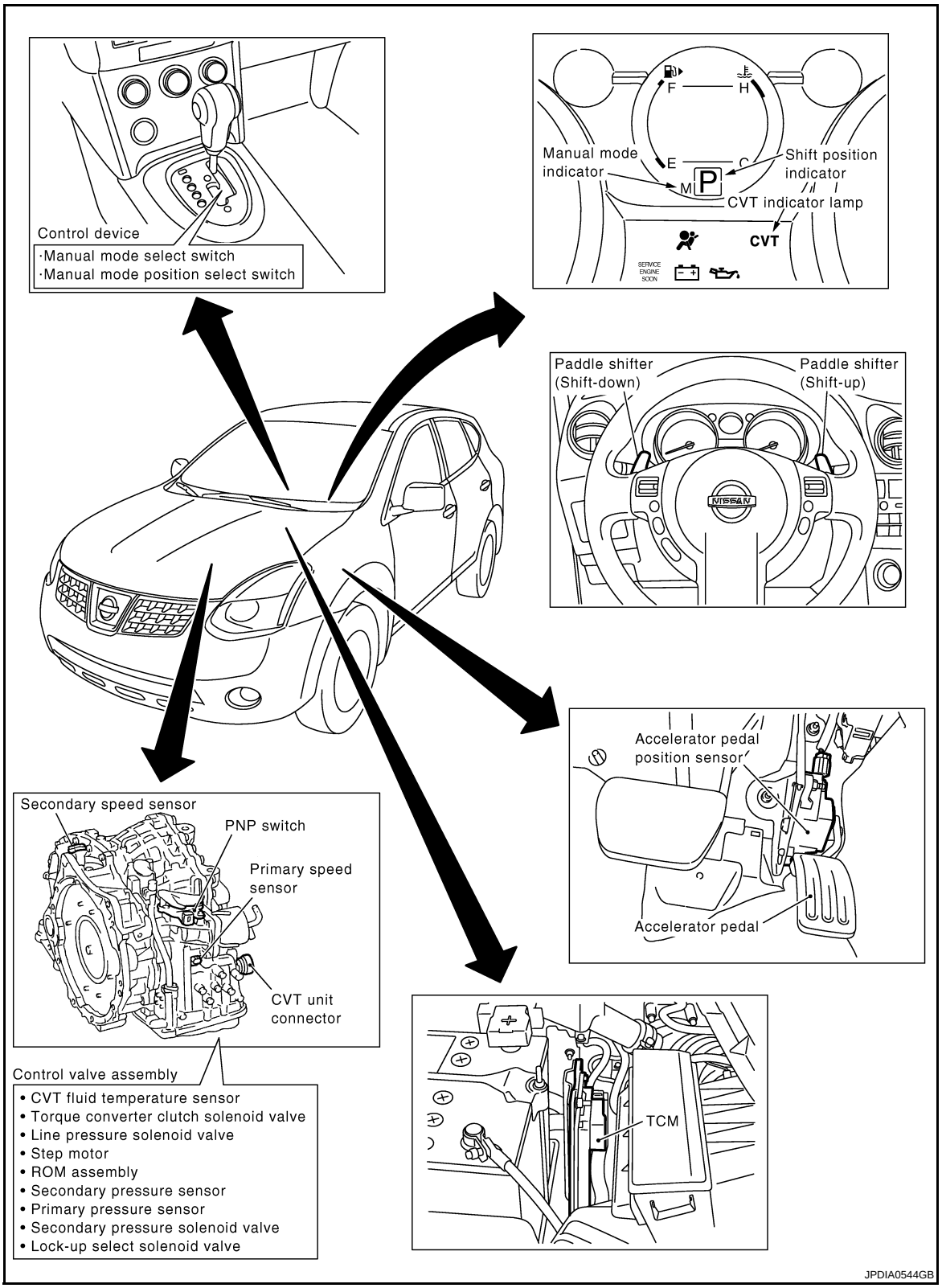
Component Parts Location

INFOID:0000000001695619

Without manual mode



With manual mode



Component Description

INFOID:0000000001695620

TRANSAXLE ASSEMBLY

Item	Function
PNP switch	TM-52
Primary speed sensor	TM-57
Secondary speed sensor	TM-61
Step motor	TM-109
Shift control valve	TM-22
Primary pulley	TM-17
Secondary pulley	TM-17

EXCEPT TRANSAXLE ASSEMBLY

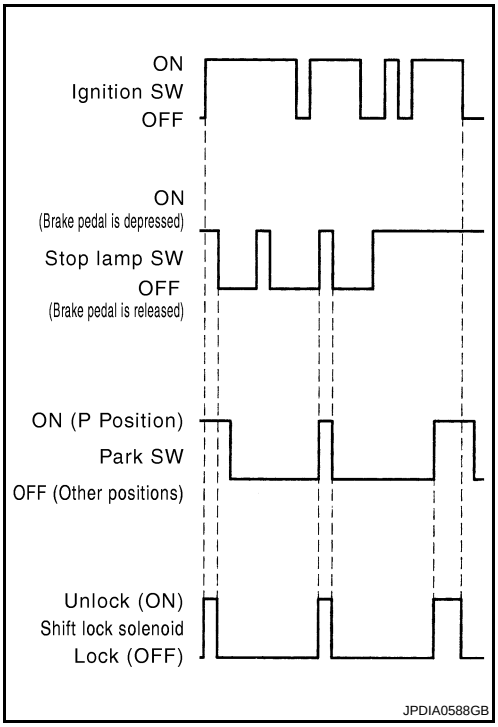
Item	Function
TCM	TM-22

SHIFT LOCK SYSTEM

System Description

INFOID:0000000001695621

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 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.)

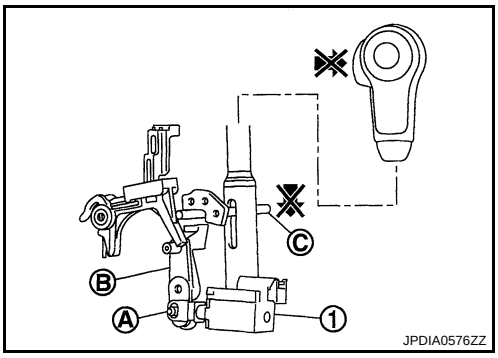


SHIFT LOCK OPERATION at P POSITION

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

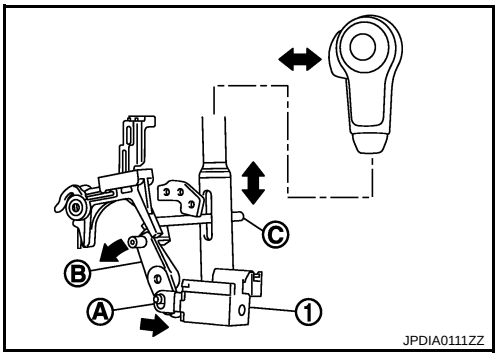
The shift lock solenoid (1) is turned OFF (not energized) and the solenoid rod (A) is extended with the spring when the brake pedal is not depressed (no selector operation allowed) with the ignition switch ON.

The connecting lock lever (B) is located at the position shown in the figure when the solenoid rod is extended. It prevents the movement of the detent rod (C). The selector lever cannot be shifted from the P position for this reason.



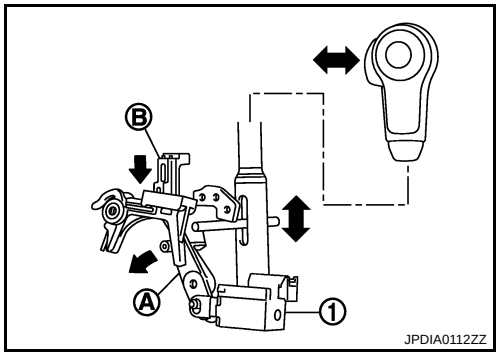
When Brake Pedal Is Depressed (Shift Operation Allowed)

The shift lock solenoid (1) is turned ON (energized) when the brake pedal is depressed with the ignition switch ON. The solenoid rod (A) is compressed by the electromagnetic force. The connecting lock lever (B) rotates when the solenoid is activated. Therefore, the detent rod (C) can be moved. The selector lever can be shifted to other positions for this reason.



P POSITION HOLD MECHANISM (IGNITION SWITCH LOCK)

The shift lock solenoid (1) 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 (A) is forcibly rotated and the shift lock is released when the shift lock release button (B) is pressed from above. Then the selector operation from P position can be performed.



JPDIA0112ZZ

CAUTION:

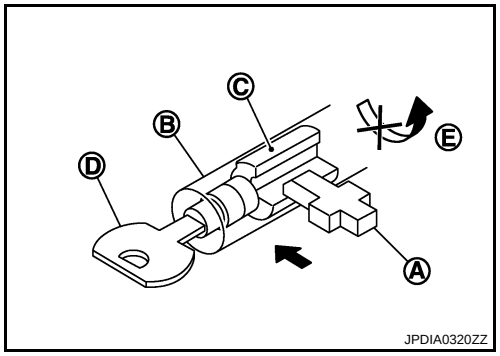
Use the shift lock release button only when the selector lever cannot be operated even if the brake pedal is depressed with the ignition switch ON.

KEY LOCK MECHANISM

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

Key Lock Status

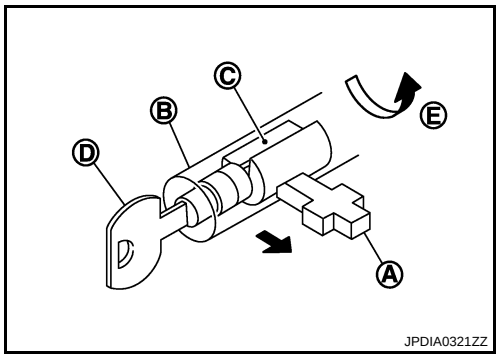
The slider (A) in the key cylinder (B) is moved to the left side of the figure when the selector lever is in any position other than P position. The rotator (C) that rotates together with the key (D) cannot be rotated for this reason. The key cannot be removed from the key cylinder because it cannot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



JPDIA0320ZZ

Key Unlock Status

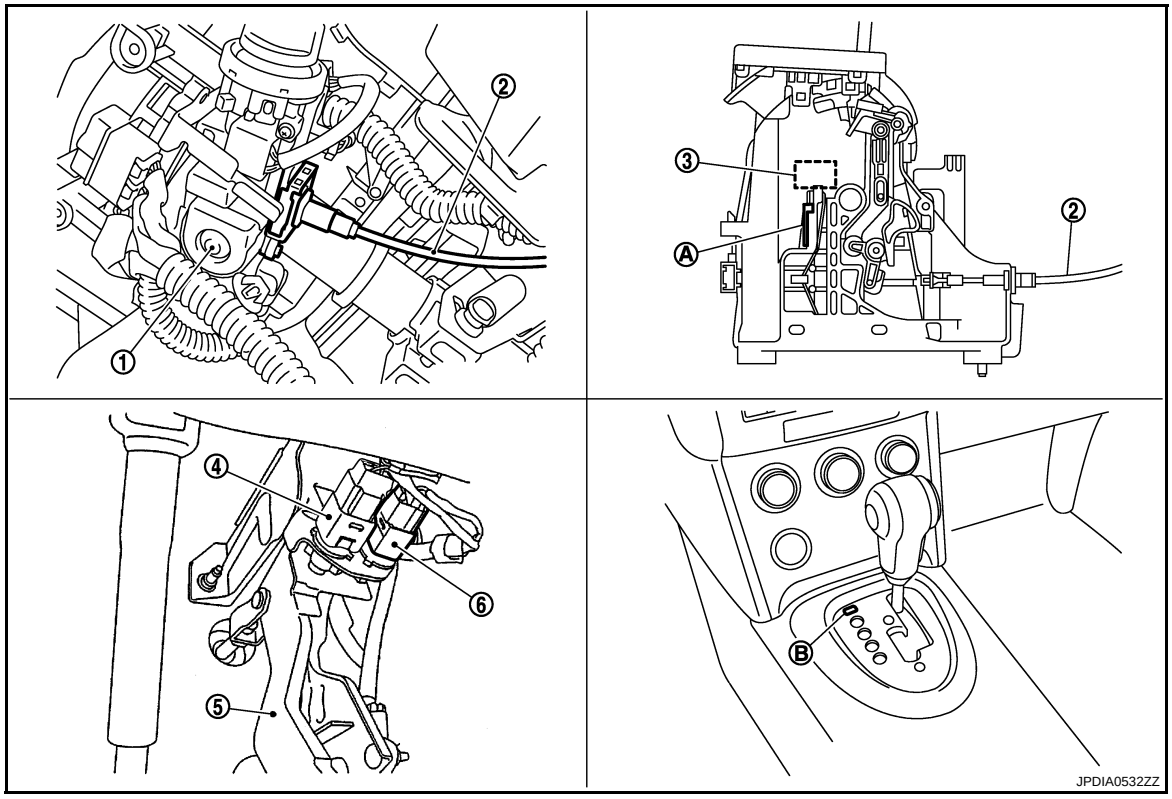
The slider (A) in the key cylinder (B) is moved to the right side of the figure when the selector lever is in P position and the finger is removed from the selector button. The rotator (C) can be rotated for this reason. The key (D) can be removed from the key cylinder because it can be turned to LOCK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



JPDIA0321ZZ

Component Parts Location

INFOID:0000000001695622



1. Key cylinder
2. Key interlock cable
3. Shift lock solenoid
4. ASCD brake switch
5. Brake pedal
6. Stop lamp switch

A. Park position switch
B. Shift lock release button*

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

Component Description

INFOID:0000000001695623

SHIFT LOCK

Component	Function
Shift lock solenoid	TM-116
Lock lever	
Detent rod	
Park position switch	
Key interlock cable and Key interlock rod	
Shift lock release button	

KEY LOCK

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

ON BOARD DIAGNOSTIC (OBD) SYSTEM

Diagnosis Description

INFOID:0000000001695624

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-135, "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 mode for “ENGINE” with CONSULT-III. Time data indicates how many times the vehicle was driven after the last detection of a DTC.
- If the DTC is being detected currently, the time data will be “0”.
- If a 1st trip DTC is stored in the ECM, the time data will be “1t”.

Freeze Frame Data and 1st Trip Freeze Frame Data

- The ECM has a memory function, which stores the driving 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-105, "CONSULT-III Function" (for California), EC-572, "CONSULT-III Function" [for USA (federal) and Canada], EC-996, "CONSULT-III Function" (for Mexico).

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 - P0304 Fuel Injection System Function — DTC: P0171, P0172
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 you 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-464, "DTC Index" (for California), EC-893, "DTC Index" [for USA (federal) and Canada], EC-1250, "DTC Index" (for Mexico).
- **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)

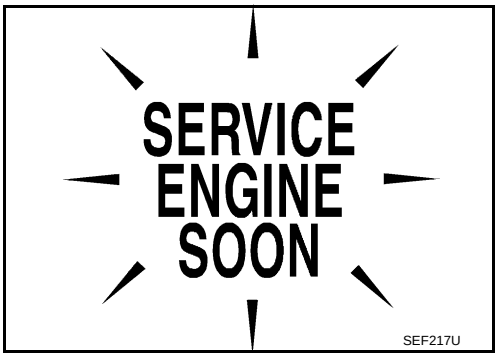
1. If the ignition switch stays ON after repair work, be sure to turn ignition switch OFF once. Wait at least 10 seconds and then turn it ON (engine stopped) again.
2. Select Mode 4 with GST (Generic Scan Tool). For details, refer to EC-105, "CONSULT-III Function" (for California), EC-572, "CONSULT-III Function" [for USA (federal) and Canada], EC-996, "CONSULT-III Function" (for Mexico).

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-427, "Component Function Check" (for California), EC-858, "Component Function Check" [for USA (federal) and Canada], EC-1220, "Component Function Check" (for Mexico).
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:0000000001695625

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 by following the indications on CONSULT-III.
Self-diagnostic results	Self-diagnostic results can be read and erased quickly.
Data monitor	Input/Output data in the TCM can be read.
CAN diagnostic support monitor	The results of transmit/receive diagnosis of CAN communication can be read.
CALIB data	Characteristic information for TCM and CVT assembly can be read.
ECU part number	TCM part number can be read.

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 mode other than “0” and “OFF”. Selecting “+1” or “–1” or “–2” is selected, that 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 RESULT MODE

Display Items List

Refer to TM-135, "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	—	▼	Output speed sensor (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)	—	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) numeric value is converted. Refer to TM-152.
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	▼	Pressure control solenoid valve A (line pressure solenoid valve) output current
ISOLT3	(A)	—	X	▼	Pressure control solenoid valve B (secondary pressure solenoid valve) output current
SOLMON1	(A)	X	X	▼	Torque converter clutch solenoid valve monitor current

Monitored item	(Unit)	Monitor item selection			Remarks
		ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	
SOLMON2	(A)	X	X	▼	Pressure control solenoid valve A (line pressure solenoid valve) monitor current
SOLMON3	(A)	X	X	▼	Pressure control solenoid valve B (secondary pressure solenoid valve) monitor current
BRAKESW	(On/Off)	X	X	▼	Stop lamp switch (Signal input via CAN communications)
FULL SW	(On/Off)	X	X	▼	Signal input via CAN communications
IDLE SW	(On/Off)	X	X	▼	
SPORT MODE SW	(On/Off)	X	X	▼	Signal input via CAN communications (Responds only to vehicles without manual mode)
STRDWNSW	(On/Off)	X	—	▼	Responds only to vehicles with paddle shifter
STRUPSW	(On/Off)	X	—	▼	
DOWNLVR	(On/Off)	X	—	▼	Responds only to vehicles with manual mode
UPLVR	(On/Off)	X	—	▼	
NONMMODE	(On/Off)	X	—	▼	
MMODE	(On/Off)	X	—	▼	
INDLRNG	(On/Off)	—	—	▼	“L” position indicator output (Responds only to vehicles without manual mode)
INDDRNG	(On/Off)	—	—	▼	“D” position indicator output
INDNRNG	(On/Off)	—	—	▼	“N” position indicator output
INDRRNG	(On/Off)	—	—	▼	“R” position indicator output
INDPRNG	(On/Off)	—	—	▼	“P” position indicator output
CVT LAMP	(On/Off)	—	—	▼	—
SPORT MODE IND	(On/Off)	—	—	▼	—
MMODE IND	(On/Off)	—	—	▼	—
SMCOIL D	(On/Off)	—	—	▼	Step motor coil “D” energizing status
SMCOIL C	(On/Off)	—	—	▼	Step motor coil “C” energizing status
SMCOIL B	(On/Off)	—	—	▼	Step motor coil “B” energizing status
SMCOIL A	(On/Off)	—	—	▼	Step motor coil “A” energizing status
LUSEL SOL OUT	(On/Off)	—	—	▼	—
LUSEL SOL MON	(On/Off)	—	—	▼	—
VDC ON	(On/Off)	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	▼	—

Monitored item	(Unit)	Monitor item selection			Remarks
		ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	
D POSITION SW	(On/Off)	X	—	▼	—
N POSITION SW	(On/Off)	X	—	▼	—
L POSITION SW	(On/Off)	X	—	▼	Responds only to vehicles without manual mode
P POSITION SW	(On/Off)	X	—	▼	—
R POSITION SW	(On/Off)	X	—	▼	—

Diagnostic Tool Function

INFOID:0000000001695626

OBD-II SELF-DIAGNOSTIC PROCEDURE (WITH GST)

Refer to EC-114, "Diagnosis Tool Function" (for California), EC-580, "Diagnosis Tool Function" [for USA (federal) and Canada], EC-1003, "Diagnosis Tool Function" (for Mexico).

COMPONENT DIAGNOSIS

U1000 CAN COMM CIRCUIT

Description

INFOID:0000000001695886

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:0000000001695887

DTC DETECTION LOGIC

DTC	Item (CONSULT-III screen term)	Malfunction is detected when...	Possible cause
U1000	CAN COMM CIRCUIT	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:

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. Turn ignition switch ON.
2. Start engine and wait for at least 6 seconds.
3. Perform “SELF-DIAG RESULTS” mode for “TRANSMISSION”.

With GST

Follow the procedure “With CONSULT-III”.

Is “U1000 CAN COMM CIRCUIT” detected?

YES >> Go to TM-47, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-41, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000001695888

1. CHECK CAN COMMUNICATION CIRCUIT

With CONSULT-III

1. Turn ignition switch ON and start engine.
2. Perform “SELF-DIAG RESULTS” mode for “TRANSMISSION”.

Is “U1000 CAN COMM CIRCUIT” indicated?

YES >> Go to LAN section. Refer to LAN-23, "CAN System Specification Chart".
NO >> Check intermittent incident. Refer to GI-41, "Intermittent Incident".

U1010 CONTROL UNIT (CAN)

Description

INFOID:0000000001695889

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:0000000001695890

DTC DETECTION LOGIC

DTC	Item (CONSULT-III screen term)	Malfunction is detected when...	Possible cause
U1010	CONTROL UNIT (CAN)	When detecting error during the initial diagnosis of CAN controller to TCM.	Harness or connectors (CAN communication line is open or shorted.)

DTC CONFIRMATION PROCEDURE

NOTE:
If “DTC CONFIRMATION PROCEDURE” has been previously performed, always turn ignition switch OFF. 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-DIAG RESULTS” mode for “TRANSMISSION”.

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

Is “U1010 CONTROL UNIT (CAN)” detected?

YES >> Go to TM-48, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-41, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000001695891

1. CHECK CAN COMMUNICATION CIRCUIT

With CONSULT-III
1. Turn ignition switch ON and start engine.
2. Perform “SELF-DIAG RESULTS” mode for “TRANSMISSION”.

Is “U1010 CONTROL UNIT (CAN)” indicated?

YES >> Replace TCM. Refer to TM-176, "Exploded View".
NO >> Check intermittent incident. Refer to GI-41, "Intermittent Incident".

P0703 STOP LAMP SWITCH

Description

INFOID:0000000001695892

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:0000000001695893

DTC DETECTION LOGIC

DTC	Item (CONSULT-III screen term)	Malfunction is detected when...	Possible cause
P0703	BRAKE SW/CIRC	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:

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. Turn ignition switch ON.
2. Start engine.
3. Drive vehicle for at least 3 consecutive seconds.
4. Perform “SELF-DIAG RESULTS” mode for “TRANSMISSION”.

Is “P0703 BRAKE SW/CIRC” detected?

YES >> Go to TM-49, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-41, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000001695894

1. CHECK STOP LAMP SWITCH CIRCUIT

1. Check and adjust the installation position of stop lamp switch. Refer to BR-9, "Inspection and Adjustment".
2. Disconnect BCM connector.
3. Check voltage between BCM vehicle side harness connector terminal and ground.

BCM vehicle side harness connector		Ground	Condition	Voltage (Approx.)
Connector	Terminal			
M65	9		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. Disconnect stop lamp switch connector.
2. 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	
E115	2	M65	9	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		
M65	9		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-50, "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. 11, located in fuse block)

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” in “DATA MONITOR” of “BCM” and verify the proper operation of ON/OFF. Refer to BCS-43, "Reference Value".

Is the inspection result normal?

YES >> GO TO 6.
NO >> Replace BCM. Refer to BCS-67, "Exploded View".

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-176, "Exploded View".
NO >> Repair or replace damaged parts.

Component Inspection (Stop Lamp Switch)

INFOID:0000000001695895

1.CHECK STOP LAMP SWITCH

Check continuity between stop lamp switch connector terminals.

Stop lamp switch connector			Condition	Continuity
Connector	Terminal			
E115	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-18, "Exploded View".

P0705 PARK/NEUTRAL POSITION SWITCH

Description

INFOID:0000000001695896

- The PNP switch assembly includes a transaxle range switch.
- The transaxle range switch detects the selector lever position and sends a signal to the TCM.

DTC Logic

INFOID:0000000001695897

DTC DETECTION LOGIC

DTC	Item (CONSULT-III screen term)	Malfunction is detected when...	Possible cause
P0705	PNP SW/CIRC	TCM does not receive the correct voltage signal (based on the gear position) from the switch.	• Harness or connectors (PNP switches circuit is open or shorted.) • PNP switch

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

If “DTC CONFIRMATION PROCEDURE” has been previously performed, always turn ignition switch OFF. 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”.
3. Start engine.
4. Drive vehicle and maintain the following conditions for at least 2 consecutive seconds.

VEHICLE SPEED	: More than 10 km/h (6 MPH)
ENG SPEED	: More than 450 rpm
ACC PEDAL OPEN	: More than 1.0/8

With GST

Follow the procedure “With CONSULT-III”.

Is “P0705 PNP SW/CIRC” detected?

YES >> Go to TM-52, "Diagnosis Procedure".

NO >> Check intermittent incident. Refer to GI-41, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000001695898

1.CHECK POWER SOURCE

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

PNP switch vehicle side harness connector		Ground	Voltage (Approx.)
Connector	Terminal		
F21	3		Battery voltage

Is the inspection result normal?

YES >> GO TO 2.

NO >> Check the following. If NG, repair or replace damaged parts.

- Harness for short or open between ignition switch and PNP switch
- 10A fuse (No. 60, located in fuse block)
- Ignition switch

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

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

TCM vehicle side harness connector		PNP switch vehicle side harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F25	1	F21	5	Existed
	2		6	
	3		7	
	4		8	
	11		4	

Is the inspection result normal?

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

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

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

TCM vehicle side harness connector			Continuity
Connector	Terminal		
F25	1	Ground	Not existed
	2		
	3		
	4		
	11		

Is the inspection result normal?

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

4.CHECK CVT POSITION

1. Remove control cable from manual lever. Refer to TM-183, "Exploded View".
2. Check continuity PNP switch connector terminals. Refer to TM-53, "Component Inspection (Park/Neutral Position Switch)"

Is the inspection result normal?

YES >> Adjust CVT position. Refer to TM-174, "WITHOUT MANUAL MODE : Inspection and Adjustment" (without manual mode), TM-174, "WITH MANUAL MODE : Inspection and Adjustment" (with manual mode).
NO >> GO TO 5.

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-176, "Exploded View".
NO >> Repair or replace damaged parts.

Component Inspection (Park/Neutral Position Switch)

INFOID:0000000001695899

1.CHECK PNP SWITCH

1. Adjust PNP switch position. Refer to TM-174, "WITHOUT MANUAL MODE : Inspection and Adjustment" (without manual mode), TM-174, "WITH MANUAL MODE : Inspection and Adjustment" (with manual mode).

2. Check continuity of PNP switch connector terminals.

PNP switch connector			Condition	Continuity
Connector	Terminal			
F21	1	2	Manual lever in “P” position	Existed
	3	4		
	3	5	Manual lever in “R” position	
	1	2	Manual lever in “N” position	
	3	6		
	3	7	Manual lever in “D” position	
	3	8	Manual lever in “L” position	

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace PNP switch. Refer to TM-189, "Exploded View".

P0710 CVT FLUID TEMPERATURE SENSOR

Description

INFOID:0000000001695900

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

DTC Logic

INFOID:0000000001695901

DTC DETECTION LOGIC

DTC	Item (CONSULT-III screen term)	Malfunction is detected when...	Possible cause
P0710	ATF TEMP SEN/CIRC	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:

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

VEHICLE SPEED	: 10 km/h (6 MPH) or more
ENG SPEED	: 450 rpm or more
ACC PEDAL OPEN	: More than 1.0/8
RANGE	: “D” position

With GST

Follow the procedure “With CONSULT-III”.

Is “P0710 ATF TEMP SEN/CIRC” detected?

YES >> Go to TM-55, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-41, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000001695902

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			
F25	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 vehicle side unit harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F25	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		
F25	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-56, "Component Inspection (CVT Fluid Temperature Sensor)".

Is the inspection result normal?

YES >> GO TO 5.
NO >> Replace transaxle assembly. Refer to TM-207, "2WD : Exploded View" (2WD), TM-211, "AWD : Exploded View" (AWD).

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-176, "Exploded View".
NO >> Repair or replace damaged parts.

Component Inspection (CVT Fluid Temperature Sensor)

INFOID:0000000001695903

1. CHECK CVT FLUID TEMPERATURE SENSOR

Check resistance between CVT unit harness 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-207, "2WD : Exploded View" (2WD), TM-211, "AWD : Exploded View" (AWD).

P0715 INPUT SPEED SENSOR (PRI SPEED SENSOR)

Description

INFOID:0000000001695904

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

DTC Logic

INFOID:0000000001695905

DTC DETECTION LOGIC

DTC	Item (CONSULT-III screen term)	Malfunction is detected when...	Possible cause
P0715	INPUT SPD SEN/CIRC	• Input speed sensor (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.) • Input speed sensor (primary speed sensor)

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

If “DTC CONFIRMATION PROCEDURE” has been previously performed, always turn ignition switch OFF. 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”.
3. Start engine and maintain the following conditions for at least 5 consecutive seconds.

VEHICLE SPEED	: 10 km/h (6 MPH) or more
ACC PEDAL OPEN	: More than 1.0/8
RANGE	: “D” position
ENG SPEED	: 450 rpm or more
Driving location	: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.

With GST

Follow the procedure “With CONSULT-III”.

Is “P0715 INPUT SPD SEN/CIRC” detected?

YES >> Go to TM-57, "Diagnosis Procedure".

NO >> Check intermittent incident. Refer to GI-41, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000001695906

1. CHECK INPUT SPEED SENSOR (PRIMARY SPEED SENSOR)

With CONSULT-III

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

TCM connector			Voltage (Approx.)
Connector	Terminal		
F25	25	46	Battery voltage
		48	

3. If OK, check pulse when vehicle cruises.

TCM connector		Condition		Data (Approx.)
Connector	Terminal			
F25	33	With manual mode	When driving at 20 km/h (12 MPH) in "M1" position, use the CONSULT-III pulse frequency measuring function.	760 Hz
		Without manual mode	When driving at 20 km/h (12 MPH) in "L" position, use the CONSULT-III pulse frequency measuring function.	900 Hz

Is the inspection result normal?

YES >> GO TO 12.
NO >> GO TO 2.

2.CHECK POWER AND SENSOR GROUND

1. Turn ignition switch OFF.
2. Disconnect input speed sensor (primary speed sensor) connector.
3. Turn ignition switch ON.
4. Check voltage between input speed sensor (primary speed sensor) vehicle side harness connector terminals.

Input speed sensor (primary speed sensor) vehicle side harness connector			Voltage (Approx.)
Connector	Terminal		
F55	1	3	Battery voltage

5. Check voltage between input speed sensor (primary speed sensor) vehicle side harness connector terminal and ground.

Input speed sensor (primary speed sensor) vehicle side harness connector		Ground	Voltage (Approx.)
Connector	Terminal		
F55	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 INPUT SPEED SENSOR (PRIMARY SPEED SENSOR) (SENSOR GROUND)

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

TCM vehicle side harness connector		Ground	Continuity
Connector	Terminal		
F25	25		Not existed

Is the inspection result normal?

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

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

Check continuity between TCM vehicle side harness connector terminal and input speed sensor (primary speed sensor) vehicle side harness connector terminal.

TCM vehicle side harness connector		Input speed sensor (primary speed sensor) vehicle side harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F25	33	F55	2	Existed

Is the inspection result normal?

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

5. CHECK HARNESS BETWEEN TCM AND INPUT SPEED SENSOR (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		
F25	33		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 INPUT SPEED SENSOR (PRIMARY 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 input speed sensor (primary speed sensor) vehicle side harness connector terminal.

IPDM E/R vehicle side harness connector		Input speed sensor (primary speed sensor) vehicle side harness connector		Continuity
Connector	Terminal	Connector	Terminal	
E15	58	F55	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 INPUT SPEED SENSOR (PRIMARY 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		
E15	58		Not existed

Is the inspection result normal?

YES >> Check the following.
- Harness for short or open between ignition switch and IPDM E/R
- 10A fuse (No. 58, located in IPDM E/R)
- Ignition switch

NO >> Repair or replace damaged parts.

8. CHECK HARNESS BETWEEN TCM AND INPUT SPEED SENSOR (PRIMARY 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 input speed sensor (primary speed sensor) vehicle side harness connector terminal.

TCM vehicle side harness connector		Input speed sensor (primary speed sensor) vehicle side harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F25	25	F55	1	Existed

Is the inspection result normal?

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

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

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

TCM vehicle side harness connector		Ground	Continuity
Connector	Terminal		
F25	25		Not existed

Is the inspection result normal?

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

10. CHECK CVT UNIT CIRCUIT

Check continuity between CVT unit connector terminal and ground.

CVT unit connector		Ground	Continuity
Connector	Terminal		
F24	19		Not existed

Is the inspection result normal?

YES >> GO TO 11.
NO >> Repair or replace damaged parts.

11. CHECK TCM

1. Replace with the same type of TCM. Refer to TM-176, "Exploded View".
2. Connect each connector.
3. Perform “DTC CONFIRMATION PROCEDURE”. Refer to TM-57, "DTC Logic".

Is “P0715 INPUT SPD SEN/CIRC” detected?

YES >> Replace input speed sensor (primary speed sensor). Refer to TM-191, "Exploded View".
NO >> Replace TCM. Refer to TM-176, "Exploded View".

12. 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-176, "Exploded View".
NO >> Repair or replace damaged parts.

P0720 VEHICLE SPEED SENSOR CVT (SECONDARY SPEED SENSOR)

Description

INFOID:0000000001695907

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

DTC Logic

INFOID:0000000001695908

DTC DETECTION LOGIC

DTC	Item (CONSULT-III screen term)	Malfunction is detected when...	Possible cause
P0720	VEH SPD SEN/CIR AT	• Signal from vehicle speed sensor CVT [output speed sensor (secondary speed sensor)] is not input due to open or short circuit. • Unexpected signal is input during running.	• Harness or connectors (Sensor circuit is open or shorted.) • Output speed sensor (secondary speed sensor)

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

If “DTC CONFIRMATION PROCEDURE” has been previously performed, always turn ignition switch OFF. 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”.
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 VEH SPD SEN/CIR AT” detected?

YES >> Go to TM-61, "Diagnosis Procedure".

NO >> Check intermittent incident. Refer to GI-41, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000001695909

1. CHECK OUTPUT SPEED SENSOR (SECONDARY SPEED SENSOR)

With CONSULT-III

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

TCM connector			Voltage (Approx.)
Connector	Terminal		
F25	7	46	Battery voltage
		48	

3. If OK, check pulse when vehicle drive.

TCM connector		Condition		Data (Approx.)
Connector	Terminal			
F25	34	Without manual mode	When driving at 20 km/h (12 MPH) in “D” position, use the CONSULT-III pulse frequency measuring function.	470 Hz
		With manual mode	When driving at 20 km/h (12 MPH) in “D” position, use the CONSULT-III pulse frequency measuring function.	470 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 output speed sensor (secondary speed sensor) connector.
3. Turn ignition switch ON.
4. Check voltage between output speed sensor (secondary speed sensor) vehicle side harness connector terminals.

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

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

Output speed sensor (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, terminals 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 OUTPUT SPEED SENSOR (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		
F25	7		Not existed

Is the inspection result normal?

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

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

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

TCM vehicle side harness connector		Output speed sensor (secondary speed sensor) vehicle side harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F25	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 OUTPUT SPEED SENSOR (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		
F25	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 OUTPUT SPEED SENSOR (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 output speed sensor (secondary speed sensor) vehicle side harness connector terminal.

IPDM E/R vehicle side harness connector		Output speed sensor (secondary speed sensor) vehicle side harness connector		Continuity
Connector	Terminal	Connector	Terminal	
E15	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 OUTPUT SPEED SENSOR (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		
E15	58		Not existed

Is the inspection result normal?

YES >> Check the following.
- Harness for short or open between ignition switch and IPDM E/R
- 10A fuse (No. 58, located in IPDM E/R)
- Ignition switch

NO >> Repair or replace damaged parts.

8. CHECK HARNESS BETWEEN TCM AND OUTPUT SPEED SENSOR (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 output speed sensor (secondary speed sensor) vehicle side harness connector terminal.

TCM vehicle side harness connector		Output speed sensor (secondary speed sensor) vehicle side harness connector		Continuity
Connector	Terminal	Connector	Terminal	
F25	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 OUTPUT SPEED SENSOR (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		
F25	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-176, "Exploded View".
2. Connect each connector.
3. Perform “DTC CONFIRMATION PROCEDURE”. Refer to TM-61, "DTC Logic".

Is “P0720 VEH SPD SEN/CIR AT” detected?

YES >> Replace output speed sensor (secondary speed sensor). Refer to TM-192, "Exploded View".
NO >> Replace TCM. Refer to TM-176, "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-176, "Exploded View".
NO >> Repair or replace damaged parts.

P0725 ENGINE SPEED SIGNAL

Description

INFOID:0000000001695910

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

DTC Logic

INFOID:0000000001695911

DTC DETECTION LOGIC

DTC	Item (CONSULT-III screen term)	Malfunction is detected when...	Possible cause
P0725	ENGINE SPEED SIG	• 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:

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

PRI SPEED SEN	: More than 1,000 rpm

Is “P0725 ENGINE SPEED SIG” detected?

YES >> Go to TM-65, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-41, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000001695912

1.CHECK DTC WITH ECM

With CONSULT-III

1. Turn ignition switch ON.
2. Perform “SELF-DIAG RESULTS” mode for “ENGINE”.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Check DTC detected item. Refer to EC-464, "DTC Index" (for California), EC-893, "DTC Index" [for USA (federal) and Canada], EC-1250, "DTC Index" (for Mexico).

2.CHECK DTC WITH TCM

With CONSULT-III

Perform “SELF-DIAG RESULTS” mode for “TRANSMISSION”.

Is “P0725 ENGINE SPEED SIG” detected?

YES >> Replace TCM. Refer to TM-176, "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-176, "Exploded View".
NO >> Repair or replace damaged parts.

P0730 BELT DAMAGE

Description

INFOID:0000000001695913

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:0000000001695914

DTC DETECTION LOGIC

DTC	Item (CONSULT-III screen term)	Malfunction is detected when...	Possible cause
P0730	BELT DAMG	Unexpected gear ratio is detected.	Transaxle assembly

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

If “DTC CONFIRMATION PROCEDURE” has been previously performed, always turn ignition switch OFF. 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”.
3. Make sure that output voltage of CVT fluid temperature sensor is within the range specified 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 sec or more
VEHICLE SPEED	: 10 km/h (6 MPH) or more
ACC PEDAL OPEN	: More than 1.0/8
RANGE	: “D” position
ENG SPEED	: 450 rpm or more

Is “P0730 BELT DAMG” detected?

YES >> Go to TM-66, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-41, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000001695915

1.CHECK DTC

With CONSULT-III

1. Turn ignition switch ON.
2. Perform “SELF-DIAG RESULTS” mode for “TRANSMISSION”.

Are any DTC displayed?

YES-1 (DTC for “P0730 BELT DAMG” is displayed)>>Replace transaxle assembly. Refer to TM-207, "2WD : Exploded View" (2WD), TM-211, "AWD : Exploded View" (AWD).
YES-2 (DTC except for “P0730 BELT DAMG” is displayed)>>Check DTC detected item. Refer to TM-135, "DTC Index".
NO >> Check intermittent incident. Refer to GI-41, "Intermittent Incident".

P0740 TORQUE CONVERTER CLUTCH SOLENOID VALVE

Description

INFOID:0000000001695916

- 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:0000000001695917

DTC DETECTION LOGIC

DTC	Item (CONSULT-III screen term)	Malfunction is detected when...	Possible cause
P0740	TCC SOLENOID/CIRC	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:

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. Turn ignition switch ON.
2. Wait at least 10 consecutive seconds.
3. Perform “SELF-DIAG RESULTS” mode for “TRANSMISSION”.

With GST

Follow the procedure “With CONSULT-III”.

Is “P0740 TCC SOLENOID/CIRC” detected?

YES >> Go to TM-67, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-41, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000001695918

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		
F25	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	
F25	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		
F25	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-68, "Component Inspection (Torque Converter Clutch Solenoid Valve)".

Is the inspection result normal?

YES >> GO TO 5.
NO >> Replace transaxle assembly. Refer to TM-207, "2WD : Exploded View" (2WD), TM-211, "AWD : Exploded View" (AWD).

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-176, "Exploded View".
NO >> Repair or replace damaged parts.

Component Inspection (Torque Converter Clutch Solenoid Valve)

INFOID:0000000001695919

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-207, "2WD : Exploded View" (2WD), TM-211, "AWD : Exploded View" (AWD).

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

Description

INFOID:0000000001695920

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:0000000001695921

DTC DETECTION LOGIC

DTC	Item (CONSULT-III screen term)	Malfunction is detected when...	Possible cause
P0744	A/T TCC S/V FNCTN	• CVT cannot perform lock-up even if electrical circuit is good. • TCM detects as irregular by comparing difference value with slip rotation. • There is a 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:

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

ACC PEDAL OPEN	: More than 1.0/8
RANGE	: “D” position
VEHICLE SPEED	: Constant speed of more than 40 km/h (25 MPH)

With GST

Follow the procedure “With CONSULT-III”.

Is “P0744 A/T TCC S/V FNCTN” detected?

YES >> Go to TM-69, "Diagnosis Procedure".

NO >> Check intermittent incident. Refer to GI-41, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000001695922

1.CHECK LINE PRESSURE

Perform line pressure test. Refer to TM-167, "Inspection and Judgment".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace damaged parts. Refer to TM-167, "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-70, "Component Inspection (Torque Converter Clutch Solenoid Valve)".

Is the inspection result normal?

YES >> GO TO 3.
NO >> Replace transaxle assembly. Refer to TM-207, "2WD : Exploded View" (2WD), TM-211, "AWD : Exploded View" (AWD).

3.CHECK LOCK-UP SELECT SOLENOID VALVE

Check lock-up select solenoid valve. Refer to TM-70, "Component Inspection (Lock-up Select Solenoid Valve)".

Is the inspection result normal?

YES >> GO TO 4.
NO >> Replace transaxle assembly. Refer to TM-207, "2WD : Exploded View" (2WD), TM-211, "AWD : Exploded View" (AWD).

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

Check output speed sensor (secondary speed sensor) system. Refer to TM-61, "DTC Logic".

Is the inspection result normal?

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

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

Check input speed sensor (primary speed sensor) system. Refer to TM-57, "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-176, "Exploded View".
NO >> Repair or replace damaged parts.

Component Inspection (Torque Converter Clutch Solenoid Valve)

INFOID:0000000001712969

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-207, "2WD : Exploded View" (2WD), TM-211, "AWD : Exploded View" (AWD).

Component Inspection (Lock-up Select Solenoid Valve)

INFOID:0000000001712970

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		17.0 – 38.0 Ω

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace transaxle assembly. Refer to TM-207, "2WD : Exploded View" (2WD), TM-211, "AWD : Exploded View" (AWD).

P0745 LINE PRESSURE SOLENOID VALVE

Description

INFOID:0000000001695925

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

DTC Logic

INFOID:0000000001695926

DTC DETECTION LOGIC

DTC	Item (CONSULT-III screen term)	Malfunction is detected when...	Possible cause
P0745	L/PRESS SOL/CIRC	• 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.) • Pressure control solenoid valve A (line pressure solenoid valve)

DTC CONFIRMATION PROCEDURE

NOTE:
If “DTC CONFIRMATION PROCEDURE” has been previously performed, always turn ignition switch OFF. 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-DIAG RESULTS” mode for “TRANSMISSION”.

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

Is “P0745 L/PRESS SOL/CIRC” detected?

YES >> Go to TM-71, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-41, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000001695927

1. CHECK PRESSURE CONTROL SOLENOID VALVE A (LINE PRESSURE SOLENOID VALVE) CIRCUIT

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

TCM vehicle side harness connector		Ground	Resistance (Approx.)
Connector	Terminal		
F25	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 [PRESSURE CONTROL SOLENOID VALVE A (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	
F25	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 [PRESSURE CONTROL SOLENOID VALVE A (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		
F25	40		Not existed

Is the inspection result normal?

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

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

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

Is the inspection result normal?

YES >> GO TO 5.
NO >> Replace transaxle assembly. Refer to TM-207, "2WD : Exploded View" (2WD), TM-211, "AWD : Exploded View" (AWD).

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-176, "Exploded View".
NO >> Repair or replace damaged parts.

Component Inspection [Pressure Control Solenoid Valve A (Line Pressure Solenoid Valve)]

INFOID:0000000001695928

1. CHECK PRESSURE CONTROL SOLENOID VALVE A (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-207, "2WD : Exploded View" (2WD), TM-211, "AWD : Exploded View" (AWD).

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

Description

INFOID:0000000001695929

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

DTC Logic

INFOID:0000000001695930

DTC DETECTION LOGIC

DTC	Item (CONSULT-III screen term)	Malfunction is detected when...	Possible cause
P0746	PRS CNT SOL/A FCTN	Unexpected gear ratio was detected in the low side due to excessively low line pressure.	• Line pressure control system • Output speed sensor (secondary speed sensor) • Input speed sensor (primary speed sensor)

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

If “DTC CONFIRMATION PROCEDURE” has been previously performed, always turn ignition switch OFF. 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”.
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 PRS CNT SOL/A FCTN” detected?

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

NO >> Check intermittent incident. Refer to GI-41, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000001695931

1.CHECK LINE PRESSURE

Perform line pressure test. Refer to TM-167, "Inspection and Judgment".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace damaged parts. Refer to TM-167, "Inspection and Judgment".

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

1. Turn ignition switch OFF.
2. Disconnect CVT unit connector.

3. Check pressure control solenoid valve A (line pressure solenoid valve). Refer to TM-74, "Component Inspection [Pressure Control Solenoid Valve A (Line Pressure Solenoid Valve)]".

Is the inspection result normal?

YES >> GO TO 3.
NO >> Replace transaxle assembly. Refer to TM-207, "2WD : Exploded View" (2WD), TM-211, "AWD : Exploded View" (AWD).

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

Check output speed sensor (secondary speed sensor) system. Refer to TM-61, "DTC Logic".

Is the inspection result normal?

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

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

Check input speed sensor (primary speed sensor) system. Refer to TM-57, "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-176, "Exploded View".
NO >> Repair or replace damaged parts.

Component Inspection [Pressure Control Solenoid Valve A (Line Pressure Solenoid Valve)]

INFOID:0000000001712971

1. CHECK PRESSURE CONTROL SOLENOID VALVE A (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-207, "2WD : Exploded View" (2WD), TM-211, "AWD : Exploded View" (AWD).

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

Description

INFOID:0000000001695933

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

DTC Logic

INFOID:0000000001695934

DTC DETECTION LOGIC

DTC	Item (CONSULT-III screen term)	Malfunction is detected when...	Possible cause
P0776	PRS CNT SOL/B FCTN	Secondary pressure is too high or too low compared with the commanded value while driving.	• Harness or connectors (Solenoid circuit is open or shorted.) • Pressure control solenoid valve B (secondary pressure solenoid valve system) • Transmission fluid pressure sensor A (secondary pressure sensor) • Line pressure control system

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

If “DTC CONFIRMATION PROCEDURE” has been previously performed, always turn ignition switch OFF. 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”.
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 PRS CNT SOL/B FCTN” detected?

YES >> Go to TM-75, "Diagnosis Procedure".

NO >> Check intermittent incident. Refer to GI-41, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000001695935

1.CHECK LINE PRESSURE

Perform line pressure test. Refer to TM-167, "Inspection and Judgment".

Is the inspection result normal?

YES >> GO TO 2.

NO >> Repair or replace damaged parts. Refer to TM-167, "Inspection and Judgment".

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

1. Turn ignition switch OFF.
2. Disconnect CVT unit connector.

3. Check pressure control solenoid valve B (secondary pressure solenoid valve). Refer to TM-76, "Component Inspection [Pressure Control Solenoid Valve B (Secondary Pressure Solenoid Valve)]".

Is the inspection result normal?

YES >> GO TO 3.
NO >> Replace transaxle assembly. Refer to TM-207, "2WD : Exploded View" (2WD), TM-211, "AWD : Exploded View" (AWD).

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

Check pressure control solenoid valve A (line pressure solenoid valve). Refer to TM-76, "Component Inspection [Pressure Control Solenoid Valve A (Line Pressure Solenoid Valve)]".

Is the inspection result normal?

YES >> GO TO 4.
NO >> Replace transaxle assembly. Refer to TM-207, "2WD : Exploded View" (2WD), TM-211, "AWD : Exploded View" (AWD).

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

Check transmission fluid pressure sensor A (secondary pressure sensor) system. Refer to TM-85, "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-176, "Exploded View".
NO >> Repair or replace damaged parts.

Component Inspection [Pressure Control Solenoid Valve A (Line Pressure Solenoid Valve)]

INFOID:0000000001712972

1. CHECK PRESSURE CONTROL SOLENOID VALVE A (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-207, "2WD : Exploded View" (2WD), TM-211, "AWD : Exploded View" (AWD).

Component Inspection [Pressure Control Solenoid Valve B (Secondary Pressure Solenoid Valve)]

INFOID:0000000001712973

1. CHECK PRESSURE CONTROL SOLENOID VALVE B (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-207, "2WD : Exploded View" (2WD), TM-211, "AWD : Exploded View" (AWD).

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

Description

INFOID:0000000001695938

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

DTC Logic

INFOID:0000000001695939

DTC DETECTION LOGIC

DTC	Item (CONSULT-III screen term)	Malfunction is detected when...	Possible cause
P0778	PRS CNT SOL/B CIRC	• 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.) • Pressure control solenoid valve B (secondary pressure solenoid valve)

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 and maintain the following conditions for at least 5 consecutive seconds.
3. Perform “SELF-DIAG RESULTS” mode for “TRANSMISSION”.

With GST

Follow the procedure “With CONSULT-III”.

Is “P0778 PRS CNT SOL/B CIRC” detected?

YES >> Go to TM-78, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-41, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000001695940

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

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

TCM vehicle side harness connector		Ground	Resistance (Approx.)
Connector	Terminal		
F25	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 CVT UNIT [PRESSURE CONTROL SOLENOID VALVE B (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	
F25	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 CVT UNIT [PRESSURE CONTROL SOLENOID VALVE B (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		
F25	39		Not existed

Is the inspection result normal?

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

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

Check pressure control solenoid valve B (secondary pressure solenoid valve). Refer to TM-79, "Component Inspection [Pressure Control Solenoid Valve B (Secondary Pressure Solenoid Valve)]".

Is the inspection result normal?

YES >> GO TO 5.
NO >> Replace transaxle assembly. Refer to TM-207, "2WD : Exploded View" (2WD), TM-211, "AWD : Exploded View" (AWD).

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-176, "Exploded View".
NO >> Repair or replace damaged parts.

Component Inspection [Pressure Control Solenoid Valve B (Secondary Pressure Solenoid Valve)]

INFOID:0000000001695941

1. CHECK PRESSURE CONTROL SOLENOID VALVE B (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-207, "2WD : Exploded View" (2WD), TM-211, "AWD : Exploded View" (AWD).

P0826 MANUAL MODE SWITCH

Description

INFOID:0000000001695942

Manual mode switch is installed in control device.
Manual mode switch transmits signals (manual mode, not manual mode, shift up and shift down) to combination meter.
Paddle shifter is included in steering wheel.
Paddle shifter transmits signals (shift up and shift down) to combination meter.
Combination meter transmits signals (manual mode, not manual mode, shift up and shift down) to TCM with CAN communication signal.

DTC Logic

INFOID:0000000001695943

DTC DETECTION LOGIC

DTC	Item (CONSULT-III screen term)	Malfunction is detected when...	Possible cause
P0826	MANUAL MODE SWITCH	• When an impossible pattern of switch signals is detected, a malfunction is detected. • When shift up/down signal of paddle shifter continuously remains ON for 60 seconds.	• Harness or connectors - (The circuit of these switches are open or shorted.) - (TCM, and combination meter circuit are open or shorted.) - (CAN communication line is open or shorted.) • Manual mode select switch (Built into control device) • Manual mode position select switch (Built into control device) • Paddle shifter

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. Turn ignition switch ON.
2. Select “DATA MONITOR”.
3. Drive vehicle and maintain the following conditions for at least 2 consecutive seconds.

MMODE	: On

Is “P0826 MANUAL MODE SWITCH” detected?

YES >> Go to TM-80, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-41, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000001695944

1.CHECK MANUAL MODE SWITCH SIGNALS

With CONSULT-III
1. Turn ignition switch ON.
2. Select “DATA MONITOR”.
3. Check the ON/OFF operations of each monitor item.

Item name	Monitor item	Condition	Status
Manual mode switch	MMODE	Manual shift gate position (neutral)	On
		Other than the above	Off
	NONMMODE	Manual shift gate position (neutral, + side, – side)	Off
		Other than the above	On
	UPLVR	Selector lever: UP (+ side)	On
		Other than the above	Off
	DOWNLVR	Selector lever: DOWN (– side)	On
		Other than the above	Off
Paddle shifter	STRDWNSW	Pull paddle shifter (shift-down)	On
		Other than the above	Off
	STRUPSW	Pull paddle shifter (shift-up)	On
		Other than the above	Off

⊗Without CONSULT-III
Drive vehicle in the manual mode, and confirm that the actual gear position and the meter's indication of the position mutually coincide when the selector lever and paddle shifter are shifted to the “+ (up)” or “– (down)” side (1st ⇔ 6th gear).

Is the inspection result normal?

YES >> GO TO 13.
NO-1 (Manual mode switch is abnormal)>>GO TO 2.
NO-2 (Paddle shifter is abnormal)>>GO TO 7.

2.CHECK MANUAL MODE SWITCH

1. Turn ignition switch OFF.
2. Disconnect control device connector.
3. Check manual mode switch. Refer to TM-83, "Component Inspection (Manual Mode Switch)".

Is the inspection result normal?

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

3.CHECK GROUND CIRCUIT (PART 1)

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

Control device vehicle side harness connector		Ground	Continuity
Connector	Terminal		
M57	10		Existed

Is the inspection result normal?

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

4.CHECK GROUND CIRCUIT (PART 2)

Check voltage between control device vehicle side harness connector terminal and ground.

Control device vehicle side harness connector		Ground	Voltage (Approx.)
Connector	Terminal		
M57	10		0 V

Is the inspection result normal?

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

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

1. Disconnect combination meter connector.
2. Check continuity between control device vehicle side harness connector terminals and combination meter vehicle side harness connector terminals.

Control device vehicle side harness connector		Combination meter vehicle side harness connector		Continuity
Connector	Terminal	Connector	Terminal	
M57	7	M34	40	Existed
	8		38	
	9		39	
	11		37	

Is the inspection result normal?

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

6. CHECK HARNESS BETWEEN CVT DEVICE AND COMBINATION METER (PART 2)

Check continuity between control device vehicle side harness connector terminals and ground.

Control device vehicle side harness connector		Ground	Continuity
Connector	Terminal		
M57	7		Not existed
	8		
	9		
	11		

Is the inspection result normal?

YES >> GO TO 12.
NO >> Repair or replace damaged parts.

7. CHECK PADDLE SHIFTER

1. Turn ignition switch OFF.
2. Disconnect combination switch (spiral cable) connector.
3. Check paddle shifter. Refer to TM-84, "Component Inspection (Paddle Shifter)".

Is the inspection result normal?

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

8. CHECK SPIRAL CABLE

1. Disconnect combination switch (spiral cable) connector.
2. Check spiral cable. Refer to TM-84, "Component Inspection (Spiral Cable)".

Is the inspection result normal?

YES >> GO TO 9.
NO >> Replace spiral cable. Refer to SR-8, "Exploded View" (dual stage air bag), SR-27, "Exploded View" (single stage air bag).

9. CHECK GROUND CIRCUIT (PART 1)

Check continuity between combination switch (spiral cable) vehicle side harness connector terminal and ground.

Combination switch (spiral cable) vehicle side harness connector		Ground	Continuity
Connector	Terminal		
M32	41		Existed

Is the inspection result normal?

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

10. CHECK GROUND CIRCUIT (PART 2)

Check voltage between combination switch (spiral cable) vehicle side harness connector terminal and ground.

Combination switch (spiral cable) vehicle side harness connector		Ground	Voltage (Approx.)
Connector	Terminal		
M32	41		0 V

Is the inspection result normal?

YES >> GO TO 11.
NO >> Repair or replace damaged parts.

11. CHECK HARNESS BETWEEN SPIRAL CABLE AND COMBINATION METER (PART 1)

1. Disconnect combination meter connector.
2. Check continuity between combination switch (spiral cable) vehicle side harness connector terminals and combination meter vehicle side harness connector terminals.

Combination switch (spiral cable) vehicle side harness connector		Combination meter vehicle side harness connector		Continuity
Connector	Terminal	Connector	Terminal	
M32	40	M34	12	Existed
	42		14	

Is the inspection result normal?

YES >> GO TO 12.
NO >> Repair or replace damaged parts.

12. CHECK HARNESS BETWEEN SPIRAL CABLE AND COMBINATION METER (PART 2)

Check continuity between combination switch (spiral cable) vehicle side harness connector terminals and ground.

Combination switch (spiral cable) vehicle side harness connector		Ground	Continuity
Connector	Terminal		
M32	40		Not existed
	42		

Is the inspection result normal?

YES >> GO TO 13.
NO >> Repair or replace damaged parts.

13. 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-176, "Exploded View".
NO >> Repair or replace damaged parts.

Component Inspection (Manual Mode Switch)

INFOID:0000000001695945

1. CHECK MANUAL MODE SWITCH

Check continuity between control device connector terminals.

Control device connector			Condition	Continuity
Connector	Terminal			
M57	10	11	Manual shift gate position (neutral)	Not existed
			Other than the above	Existed
	7	10	Manual shift gate position (neutral)	Existed
			Other than the above	Not existed
	9	10	Selector lever: UP (+ side)	Existed
			Other than the above	Not existed
	8	10	Selector lever: DOWN (– side)	Existed
			Other than the above	Not existed

Is the inspection result normal?

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

Component Inspection (Paddle Shifter)

INFOID:0000000001732905

1.CHECK PADDLE SHIFTER

Check continuity between combination switch (spiral cable) connector terminals.

Combination switch (spiral cable) connector			Condition	Continuity
Connector	Terminal			
M353	9	8	Pull paddle shifter (shift-up)	Existed
			Other than the above	Not existed
	7	8	Pull paddle shifter (shift-down)	Existed
			Other than the above	Not existed

Is the inspection result normal?

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

Component Inspection (Spiral Cable)

INFOID:0000000002980200

1.CHECK SPIRAL CABLE

Check continuity between combination switch (spiral cable) connector terminals.

Combination switch (spiral cable) connector				Continuity
Connector	Terminal	Connector	Terminal	
M32	40	M353	7	Existed
	41		8	
	42		9	

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace spiral cable. Refer to SR-8, "Exploded View" (dual stage air bag), SR-27, "Exploded View" (single stage air bag).

P0840 TRANSMISSION FLUID PRESSURE SENSOR A (SEC PRESSURE SENSOR)

Description

INFOID:0000000001695946

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

DTC Logic

INFOID:0000000001695947

DTC DETECTION LOGIC

DTC	Item (CONSULT-III screen term)	Malfunction is detected when...	Possible cause
P0840	TR PRS SENS/A CIRC	Signal voltage of the transmission fluid pressure sensor A (secondary pressure sensor) is too high or too low while driving.	• Harness or connectors (Sensor circuit is open or shorted.) • Transmission fluid pressure sensor A (secondary pressure sensor)

DTC CONFIRMATION PROCEDURE

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. Turn ignition switch ON.
2. Select “DATA MONITOR”.
3. Make sure that output voltage of CVT fluid temperature sensor is within the range specified 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 TR PRS SENS/A CIRC” detected?

YES >> Go to TM-85, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-41, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000001695948

1.CHECK INPUT SIGNAL

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

TCM connector		Ground	Condition	Voltage (Approx.)
Connector	Terminal			
F25	15		“N” position idle	1.0 V

Is the inspection result normal?

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

2.CHECK POWER AND SENSOR GROUND

Check voltage between TCM vehicle side harness connector terminals.

TCM vehicle side harness connector			Voltage (Approx.)
Connector	Terminal		
F25	25	26	5.0 V

Is the inspection result normal?

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

3. CHECK HARNESS BETWEEN TCM AND CVT UNIT [TRANSMISSION FLUID PRESSURE SENSOR A (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	
F25	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 [TRANSMISSION FLUID PRESSURE SENSOR A (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		
F25	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) (STEP 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	
F25	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) (STEP 2)

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

TCM vehicle side harness connector		Ground	Continuity
Connector	Terminal		
F25	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-176, "Exploded View".
2. Connect each connector.
3. Perform “DTC CONFIRMATION PROCEDURE”. Refer to TM-85, "DTC Logic".

Is “P0840 TR PRS SENS/A CIRC” detected?

YES >> Replace transaxle assembly. Refer to TM-207, "2WD : Exploded View" (2WD), TM-211, "AWD : Exploded View" (AWD).
NO >> Replace TCM. Refer to TM-176, "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-176, "Exploded View".
NO >> Repair or replace damaged parts.

P0841 PRESSURE SENSOR FUNCTION

Description

INFOID:0000000001695949

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:0000000001695950

DTC DETECTION LOGIC

DTC	Item (CONSULT-III screen term)	Malfunction is detected when...	Possible cause
P0841	PRESS SEN/FNCTN	Correlation between the values of the transmission fluid pressure sensor A (secondary pressure sensor) and the transmission fluid pressure sensor B (primary pressure sensor) is out of specification.	• Harness or connectors (Sensor circuit is open or shorted.) • Transmission fluid pressure sensor A (secondary pressure sensor) • Transmission fluid pressure sensor B (primary pressure sensor)

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

If “DTC CONFIRMATION PROCEDURE” has been previously performed, always turn ignition switch OFF. 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”.
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 PRESS SEN/FNCTN” detected?

YES >> Go to TM-88, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-41, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000001695951

1.CHECK LINE PRESSURE

Perform line pressure test. Refer to TM-167, "Inspection and Judgment".

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair or replace damaged parts. Refer to TM-167, "Inspection and Judgment".

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

Check transmission fluid pressure sensor A (secondary pressure sensor) system. Refer to TM-85, "Description".

Is the inspection result normal?

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

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

Check transmission fluid pressure sensor B (primary pressure sensor) system. Refer to TM-91, "Description".

Is the inspection result normal?

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

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

1. Turn ignition switch OFF.
2. Disconnect CVT unit connector.
3. Check pressure control solenoid valve A (line pressure solenoid valve). Refer to TM-89, "Component Inspection [Pressure Control Solenoid Valve A (Line Pressure Solenoid Valve)]".

Is the inspection result normal?

YES >> GO TO 5.
NO >> Replace transaxle assembly. Refer to TM-207, "2WD : Exploded View" (2WD), TM-211, "AWD : Exploded View" (AWD).

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

Check pressure control solenoid valve B (secondary pressure solenoid valve). Refer to TM-89, "Component Inspection [Pressure Control Solenoid Valve B (Secondary Pressure Solenoid Valve)]".

Is the inspection result normal?

YES >> GO TO 6.
NO >> Replace transaxle assembly. Refer to TM-207, "2WD : Exploded View" (2WD), TM-211, "AWD : Exploded View" (AWD).

6. CHECK STEP MOTOR SYSTEM

Check step motor system. Refer to TM-109, "Description".

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-176, "Exploded View".
NO >> Repair or replace damaged parts.

Component Inspection [Pressure Control Solenoid Valve A (Line Pressure Solenoid Valve)]

INFOID:0000000001712974

1. CHECK PRESSURE CONTROL SOLENOID VALVE A (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-207, "2WD : Exploded View" (2WD), TM-211, "AWD : Exploded View" (AWD).

Component Inspection [Pressure Control Solenoid Valve B (Secondary Pressure Solenoid Valve)]

INFOID:0000000001712975

1. CHECK PRESSURE CONTROL SOLENOID VALVE B (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-207, "2WD : Exploded View" (2WD), TM-211, "AWD : Exploded View" (AWD).

P0845 TRANSMISSION FLUID PRESSURE SENSOR B (PRI PRESSURE SENSOR)

Description

INFOID:0000000001695954

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

DTC Logic

INFOID:0000000001695955

DTC DETECTION LOGIC

DTC	Item (CONSULT-III screen term)	Malfunction is detected when...	Possible cause
P0845	TR PRS SENS/B CIRC	Signal voltage of the transmission fluid pressure sensor B (primary pressure sensor) is too high or too low while driving.	• Harness or connectors (Sensor circuit is open or shorted.) • Transmission fluid pressure sensor B (primary pressure sensor)

DTC CONFIRMATION PROCEDURE

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. Turn ignition switch ON.
2. Select “DATA MONITOR”.
3. Make sure that output voltage of line temperature sensor is within the range specified 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 TR PRS SENS/B CIRC” detected?

YES >> Go to TM-91, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-41, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000001695956

1.CHECK INPUT SIGNAL

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

TCM connector		Ground	Condition	Voltage (Approx.)
Connector	Terminal			
F25	14		“N” position idle	0.7 – 3.5 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		
F25	25	26	5.0 V

Is the inspection result normal?

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

3.CHECK HARNESS BETWEEN TCM AND CVT UNIT [TRANSMISSION FLUID PRESSURE SENSOR B (PRIMARY PRESSURE SENSOR)] (STEP 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	
F25	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 [TRANSMISSION FLUID PRESSURE SENSOR B (PRIMARY PRESSURE SENSOR)] (STEP 2)

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

TCM vehicle side harness connector		Ground	Continuity
Connector	Terminal		
F25	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) (STEP 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	
F25	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) (STEP 2)

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

TCM vehicle side harness connector		Ground	Continuity
Connector	Terminal		
F25	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-176, "Exploded View".
2. Connect each connector.
3. Perform “DTC CONFIRMATION PROCEDURE”. Refer to TM-91, "DTC Logic".

Is “P0845 TR PRS SENS/B CIRC” detected?

YES >> Replace transaxle assembly. Refer to TM-207, "2WD : Exploded View" (2WD), TM-211, "AWD : Exploded View" (AWD).
NO >> Replace TCM. Refer to TM-176, "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-176, "Exploded View".
NO >> Repair or replace damaged parts.

P0868 SECONDARY PRESSURE DOWN

Description

INFOID:0000000001695957

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

DTC Logic

INFOID:0000000001695958

DTC DETECTION LOGIC

DTC	Item (CONSULT-III screen term)	Malfunction is detected when...	Possible cause
P0868	SEC/PRESS DOWN	Secondary fluid pressure is too low compared with the commanded value while driving.	• Harness or connectors (Solenoid circuit is open or shorted.) • Pressure control solenoid valve B (secondary pressure solenoid valve) system • Transmission fluid pressure sensor A (secondary pressure sensor) • Line pressure control system

DTC CONFIRMATION PROCEDURE

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

If “DTC CONFIRMATION PROCEDURE” has been previously performed, always turn ignition switch OFF. 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”.
3. Make sure that output voltage of CVT fluid temperature sensor is within the range specified 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 SEC/PRESS DOWN” detected?

YES >> Go to TM-94, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-41, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000001695959

1.CHECK LINE PRESSURE

Perform line pressure test. Refer to TM-167, "Inspection and Judgment".

Is the inspection result normal?

YES >> GO TO 2.
NO >> Repair or replace damaged parts. Refer to TM-167, "Inspection and Judgment".

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

1. Turn ignition switch OFF.
2. Disconnect CVT unit connector.

3. Check pressure control solenoid valve B (secondary pressure solenoid valve). Refer to TM-95, "Component Inspection [Pressure Control Solenoid Valve B (Secondary Pressure Solenoid Valve)]".

Is the inspection result normal?

YES >> GO TO 3.
NO >> Replace transaxle assembly. Refer to TM-207, "2WD : Exploded View" (2WD), TM-211, "AWD : Exploded View" (AWD).

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

Check pressure control solenoid valve A (line pressure solenoid valve). Refer to TM-95, "Component Inspection [Pressure Control Solenoid Valve A (Line Pressure Solenoid Valve)]".

Is the inspection result normal?

YES >> GO TO 4.
NO >> Replace transaxle assembly. Refer to TM-207, "2WD : Exploded View" (2WD), TM-211, "AWD : Exploded View" (AWD).

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

Check transmission fluid pressure sensor A (secondary pressure sensor) system. Refer to TM-85, "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-176, "Exploded View".
NO >> Repair or replace damaged parts.

Component Inspection [Pressure Control Solenoid Valve A (Line Pressure Solenoid Valve)]

INFOID:0000000001712894

1.CHECK PRESSURE CONTROL SOLENOID VALVE A (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-207, "2WD : Exploded View" (2WD), TM-211, "AWD : Exploded View" (AWD).

Component Inspection [Pressure Control Solenoid Valve B (Secondary Pressure Solenoid Valve)]

INFOID:0000000001712895

1.CHECK PRESSURE CONTROL SOLENOID VALVE B (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-207, "2WD : Exploded View" (2WD), TM-211, "AWD : Exploded View" (AWD).

P1701 TRANSMISSION CONTROL MODULE (POWER SUPPLY)

Description

INFOID:0000000001695962

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 TCM-POWER SUPPLY” will be indicated when replacing TCM, perform diagnosis after erasing “SELF-DIAG RESULTS”.

DTC Logic

INFOID:0000000001695963

DTC DETECTION LOGIC

DTC	Item (CONSULT-III screen term)	Malfunction is detected when...	Possible cause
P1701	TCM-POWER SUPPLY	• When the power supply to the TCM is cut off, for example because the battery is removed, and the self-diagnosis memory function stops. • This is not a malfunction message (Whenever shutting off a power supply to the TCM, this message appears on the screen).	Harness or connectors (Battery or ignition switch and TCM circuit is open or shorted.)

DTC CONFIRMATION PROCEDURE

NOTE:
If “DTC CONFIRMATION PROCEDURE” has been previously 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. Turn ignition switch ON.
2. Wait for at least 2 consecutive seconds.
3. Perform “SELF-DIAG RESULTS” mode for “TRANSMISSION”.

Is “P1701 TCM-POWER SUPPLY” detected?

YES >> Go to TM-97, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-41, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000001695964

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			
F25	46	5, 42	Ignition switch ON	Battery voltage
			Ignition switch OFF	0 V
	48		Ignition switch ON	Battery voltage
			Ignition switch OFF	0 V
	45		Always	Battery voltage
	47			

Is the inspection result normal?

YES >> GO TO 8.
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		
F25	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			
F25	46		Ignition switch ON	Battery voltage
			Ignition switch OFF	0 V
	48		Ignition switch ON	Battery voltage
			Ignition switch OFF	0 V
	45		Always	Battery voltage
	47			

Is the inspection result normal?

YES >> GO TO 8.
NO-1 (Battery voltage is not supplied between terminals 46, 48 and ground)>>GO TO 4.
NO-2 (Battery voltage is not supplied between terminals 45, 47 and ground)>>GO TO 6.

4.CHECK HARNESS BETWEEN TCM AND IPDM E/R (STEP 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	
F25	46	E15	58	Existed
	48			

Is the inspection result normal?

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

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

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

TCM vehicle side harness connector		Ground	Continuity
Connector	Terminal		
F25	46		Not existed
	48		

Is the inspection result normal?

YES >> Check the following.

- 10A fuse (No. 58, located in IPDM E/R)
- Ignition switch. Refer to PG-40, "Wiring Diagram - IGNITION POWER SUPPLY -".

NO >> Repair or replace damaged parts.

6. CHECK HARNESS BETWEEN TCM AND BATTERY (STEP 1)

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

TCM vehicle side harness connector		Battery (+)	Continuity
Connector	Terminal		
F25	45		Existed
	47		

Is the inspection result normal?

YES >> GO TO 7.
NO >> Check the following.
- Harness
- 10A fuse (No. 38, located in fuse block)

7. CHECK HARNESS BETWEEN TCM AND BATTERY (STEP 2)

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

TCM vehicle side harness connector		Ground	Continuity
Connector	Terminal		
F25	45		Not existed
	47		

Is the inspection result normal?

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

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-176, "Exploded View".
NO >> Repair or replace damaged parts.

P1705 THROTTLE POSITION SENSOR

Description

INFOID:0000000001695965

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:0000000001695966

DTC DETECTION LOGIC

DTC	Item (CONSULT-III screen term)	Malfunction is detected when...	Possible cause
P1705	TP SEN/CIRC A/T	TCM does not receive the proper accelerator pedal position signals (input by CAN communication) from ECM.	• ECM • Harness or connectors (CAN communication line is open or shorted.)

DTC CONFIRMATION PROCEDURE

NOTE:
If “DTC CONFIRMATION PROCEDURE” has been previously performed, always turn ignition switch OFF. 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-DIAG RESULTS” mode for “TRANSMISSION”.

Is “P1705 TP SEN/CIRC A/T” detected?

YES >> Go to TM-100, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-41, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000001695967

1.CHECK DTC WITH ECM

With CONSULT-III
1. Turn ignition switch ON.
2. Perform “SELF-DIAG RESULTS” mode for “ENGINE”.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Check DTC detected item. Refer to EC-464, "DTC Index" (for California), EC-893, "DTC Index" [for USA (federal) and Canada], EC-1250, "DTC Index" (for Mexico).

2.CHECK DTC WITH TCM

With CONSULT-III
Perform “SELF-DIAG RESULTS” mode for “TRANSMISSION”.

Is “P1705 TP SEN/CIRC A/T” detected?

YES >> Replace TCM. Refer to TM-176, "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-176, "Exploded View".
NO >> Repair or replace damaged parts.

P1722 ESTM VEHICLE SPEED SIGNAL

Description

INFOID:0000000001695968

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

DTC Logic

INFOID:0000000001695969

DTC DETECTION LOGIC

DTC	Item (CONSULT-III screen term)	Malfunction is detected when...	Possible cause
P1722	ESTM VEH SPD SIG	• 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:

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

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

Is “P1722 ESTM VEH SPD SIG” detected?

YES >> Go to TM-101, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-41, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000001695970

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

With CONSULT-III

Perform “SELF-DIAG RESULTS” mode for “ABS”.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Check DTC detected item. Refer to BRC-56, "DTC No. Index".

2. CHECK DTC WITH TCM

With CONSULT-III

Perform “SELF-DIAG RESULTS” mode for “TRANSMISSION”.

Is “P1722 ESTM VEH SPD SIG” detected?

YES >> Replace TCM. Refer to TM-176, "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-176, "Exploded View".
NO >> Repair or replace damaged parts.

P1723 CVT SPEED SENSOR FUNCTION

Description

INFOID:0000000001695971

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

DTC Logic

INFOID:0000000001695972

DTC DETECTION LOGIC

DTC	Item (CONSULT-III screen term)	Malfunction is detected when...	Possible cause
P1723	CVT SPD SEN/FNCTN	A rotation sensor error is detected because the gear does not change in accordance with the position of the stepping motor. **CAUTION:** **One of the “P0720 VEH SPD SEN/CIR AT”, the “P0715 INPUT SPD SEN/CIRC” or the “P0725 ENGINE SPEED SIG“ is displayed with the DTC at the same time.**	• Harness or connectors (Sensor circuit is open or shorted.) • Output speed sensor (secondary speed sensor) • Input speed sensor (primary speed sensor) • Engine speed signal system

DTC CONFIRMATION PROCEDURE

CAUTION:
Always drive vehicle at a safe speed.
NOTE:
If “DTC CONFIRMATION PROCEDURE” has been previously performed, always turn ignition switch OFF. 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”.
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 CVT SPD SEN/FNCTN” detected?

YES >> Go to TM-103, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-41, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000001695973

1.CHECK STEP MOTOR FUNCTION

Perform “SELF-DIAG RESULTS” mode for “TRANSMISSION”.

Is “P1778 STEP MOTR/FNC” detected?

YES >> Repair or replace damaged parts. Refer to TM-112, "DTC Logic".
NO >> GO TO 2.

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

Check output speed sensor (secondary speed sensor) system. Refer to TM-61, "DTC Logic".

Is the inspection result normal?

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

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

Check input speed sensor (primary speed sensor) system. Refer to TM-57, "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-65, "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-176, "Exploded View".
NO >> Repair or replace damaged parts.

P1726 ELECTRIC THROTTLE CONTROL SYSTEM

Description

INFOID:0000000001695974

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:0000000001695975

DTC DETECTION LOGIC

DTC	Item (CONSULT-III screen term)	Malfunction is detected when...	Possible cause
P1726	ELEC TH CONTROL	The electronically controlled throttle for ECM is malfunctioning.	Harness or connectors (Sensor circuit is open or shorted.)

DTC CONFIRMATION PROCEDURE

NOTE:
If “DTC CONFIRMATION PROCEDURE” has been previously performed, always turn ignition switch OFF. 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-DIAG RESULTS” mode for “TRANSMISSION”.

Is “P1726 ELEC TH CONTROL” detected?

YES >> Go to TM-105, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-41, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000001695976

1. CHECK DTC WITH ECM

With CONSULT-III
1. Turn ignition switch ON.
2. Perform “SELF-DIAG RESULTS” mode for “ENGINE”.

Is the inspection result normal?

YES >> GO TO 2.
NO >> Check DTC detected item. Refer to EC-464, "DTC Index" (for California), EC-893, "DTC Index" [for USA (federal) and Canada], EC-1250, "DTC Index" (for Mexico).

2. CHECK DTC WITH TCM

With CONSULT-III
Perform “SELF-DIAG RESULTS” mode for “TRANSMISSION”.

Is “P1726 ELEC TH CONTROL” detected?

YES >> Replace TCM. Refer to TM-176, "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-176, "Exploded View".
NO >> Repair or replace damaged parts.

P1740 LOCK-UP SELECT SOLENOID VALVE

Description

INFOID:0000000001695977

- 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:0000000001695978

DTC DETECTION LOGIC

DTC	Item (CONSULT-III screen term)	Malfunction is detected when...	Possible cause
P1740	LU-SLCT SOL/CIRC	• 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:

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

RANGE : “D”, “N” and “L”* positions

(At each time, wait for 5 seconds.)

*: Without manual mode

With GST

Follow the procedure “With CONSULT-III”.

Is “P1740 LU-SLCT SOL/CIRC” detected?

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

NO >> Check intermittent incident. Refer to GI-41, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000001695979

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		
F25	37		17.0 – 38.0 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) (STEP 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	
F25	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) (STEP 2)

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

TCM vehicle side harness connector		Ground	Continuity
Connector	Terminal		
F25	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-107, "Component Inspection (Lock-up Select Solenoid Valve)".

Is the inspection result normal?

YES >> GO TO 5.
NO >> Replace transaxle assembly. Refer to TM-207, "2WD : Exploded View" (2WD), TM-211, "AWD : Exploded View" (AWD).

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-176, "Exploded View".
NO >> Repair or replace damaged parts.

Component Inspection (Lock-up Select Solenoid Valve)

INFOID:0000000001695980

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		17.0 – 38.0 Ω

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace transaxle assembly. Refer to TM-207, "2WD : Exploded View" (2WD), TM-211, "AWD : Exploded View" (AWD).

P1745 LINE PRESSURE CONTROL

Description

INFOID:0000000001695981

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

DTC Logic

INFOID:0000000001695982

DTC DETECTION LOGIC

DTC	Item (CONSULT-III screen term)	Malfunction is detected when...	Possible cause
P1745	L/PRESS CONTROL	TCM detects the unexpected line pressure.	TCM

DTC CONFIRMATION PROCEDURE

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

ATF TEMP SEN : 1.0 – 2.0 V

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

Is “P1745 L/PRESS CONTROL” detected?

YES >> Go to TM-108, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-41, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000001695983

1.CHECK DTC

With CONSULT-III

1. Start engine.
2. Perform “SELF-DIAG RESULTS” mode for “TRANSMISSION”.

Is “P1745 L/PRESS CONTROL” displayed?

YES >> Replace TCM. Refer to TM-176, "Exploded View".
NO >> Check intermittent incident. Refer to GI-41, "Intermittent Incident".

P1777 STEP MOTOR

Description

INFOID:0000000001695984

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:0000000001695985

DTC DETECTION LOGIC

DTC	Item (CONSULT-III screen term)	Malfunction is detected when...	Possible cause
P1777	STEP MOTR CIRC	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-DIAG RESULTS” mode for “TRANSMISSION”.

With GST

Follow the procedure “With CONSULT-III”.

Is “P1777 STEP MOTR CIRC” detected?

YES >> Go to TM-109, "Diagnosis Procedure".

NO >> Check intermittent incident. Refer to GI-41, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000001695986

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		
F25	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		
F25	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) (STEP 1)

1. Disconnect CVT unit harness 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	
F25	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) (STEP 2)

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

TCM vehicle side harness connector			Continuity
Connector	Terminal		
F25	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-110, "Component Inspection (Step Motor)".

Is the inspection result normal?

YES >> GO TO 5.
NO >> Replace transaxle assembly. Refer to TM-207, "2WD : Exploded View" (2WD), TM-211, "AWD : Exploded View" (AWD).

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-176, "Exploded View".
NO >> Repair or replace damaged parts.

Component Inspection (Step Motor)

INFOID:0000000001695987

1.CHECK STEP MOTOR

1. Check resistance between CVT unit connector terminals.

CVT unit connector			Resistance (Approx.)
Connector	Terminal		
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-207, "2WD : Exploded View" (2WD), TM-211, "AWD : Exploded View" (AWD).

P1778 STEP MOTOR - FUNCTION

Description

INFOID:0000000001695988

- 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:0000000001695989

DTC DETECTION LOGIC

DTC	Item (CONSULT-III screen term)	Malfunction is detected when...	Possible cause
P1778	STEP MOTR/FNC	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" on "DATA MONITOR MODE".**
- **If hi-geared fixation occurred, go to TM-112, "Diagnosis Procedure".**

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. Turn ignition switch ON.
2. Select "DATA MONITOR".
3. Make sure that output voltage of CVT fluid temperature sensor is within the range specified 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 sec or more
VEHICLE SPEED	: 10 km/h (6 MPH) or more
ACC PEDAL OPEN	: More than 1.0/8
RANGE	: "D" position
ENG SPEED	: 450 rpm or more

With GST

Follow the procedure "With CONSULT-III".

Is "P1778 STEP MOTR/FNC" detected?

YES >> Go to TM-112, "Diagnosis Procedure".
NO >> Check intermittent incident. Refer to GI-41, "Intermittent Incident".

Diagnosis Procedure

INFOID:0000000001695990

1.CHECK STEP MOTOR SYSTEM

Check step motor system. Refer to TM-109, "Description".

Is the inspection result normal?

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

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

Check input speed sensor (primary speed sensor) system. Refer to TM-57, "Description".

Is the inspection result normal?

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

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

Check output speed sensor (secondary speed sensor) system. Refer to TM-61, "Description".

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-176, "Exploded View".
NO >> Repair or replace damaged parts.

SHIFT POSITION INDICATOR CIRCUIT

WITHOUT MANUAL MODE

WITHOUT MANUAL MODE : Description

INFOID:0000000001695723

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

WITHOUT MANUAL MODE : Component Function Check

INFOID:0000000001695724

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-114, "WITHOUT MANUAL MODE : Diagnosis Procedure".

WITHOUT MANUAL MODE : Diagnosis Procedure

INFOID:0000000001695725

1.CHECK INPUT SIGNALS

With CONSULT-III
1. Start engine.
2. Select “RANGE” on “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-123, "Component Inspection (Overdrive Control Switch)".
- Check CVT main system (Fail-safe function actuated).
  - Perform “SELF-DIAG RESULTS” mode for “TRANSMISSION”.

NO-2 (The actual gear position changes, but the shift position indicator is not indicated.)>>Perform “SELF-DIAG RESULTS” mode for “TRANSMISSION”.
NO-3 (The actual gear position and the indication on the shift position indicator do not coincide.)>>Perform “SELF-DIAG RESULTS” mode for “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-33, "CONSULT-III Function (METER/M&A)".

WITH MANUAL MODE

WITH MANUAL MODE : Description

INFOID:0000000001695726

- TCM sends position indicator signals to combination meter via CAN communication line.
- Manual mode switch position is indicated on shift position indicator.

WITH MANUAL MODE : Component Function Check

INFOID:0000000001695727

1.CHECK SHIFT POSITION INDICATOR

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

3. Drive vehicle in the manual mode, and confirm that the actual gear position and the meter's indication of the position mutually coincide when the selector lever is shifted to the “UP (+ side)” or “DOWN (– side)” side (1st ⇔ 6th gear).

Is the inspection result normal?

YES >> INSPECTION END
NO >> Go to TM-115, "WITH MANUAL MODE : Diagnosis Procedure".

WITH MANUAL MODE : Diagnosis Procedure

INFOID:0000000001695728

1.CHECK INPUT SIGNALS

With CONSULT-III

1. Start engine.
2. Check that correct selector lever position (“P”, “N”, “R” or “D”) is displayed as selector lever is moved into each position.
3. Select “RANGE” on “DATA MONITOR” and read out the value.
4. Drive vehicle in the manual mode, and confirm that the actual gear position and the meter's indication of the position mutually coincide when the selector lever is shifted to the “UP (+ side)” or “DOWN (– side)” side (1st ⇔ 6th gear).

Is the inspection result normal?

YES >> INSPECTION END

NO-1 [The actual gear position does not change, or shifting into the manual mode is not possible (no gear shifting in the manual mode possible). Or the shift position indicator is not indicated.]>>Check the following.

- Check manual mode switch. Refer to TM-83, "Component Inspection (Manual Mode Switch)".
- Check CVT main system (Fail-safe function actuated).
  - Perform “SELF-DIAG RESULTS” mode for “TRANSMISSION”.

NO-2 (The actual gear position changes, but the shift position indicator is not indicated.)>>Perform “SELF-DIAG RESULTS” mode for “TRANSMISSION”.

NO-3 (The actual gear position and the indication on the shift position indicator do not coincide.)>>Perform “SELF-DIAG RESULTS” mode for “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-33, "CONSULT-III Function (METER/M&A)".

SHIFT LOCK SYSTEM

Description

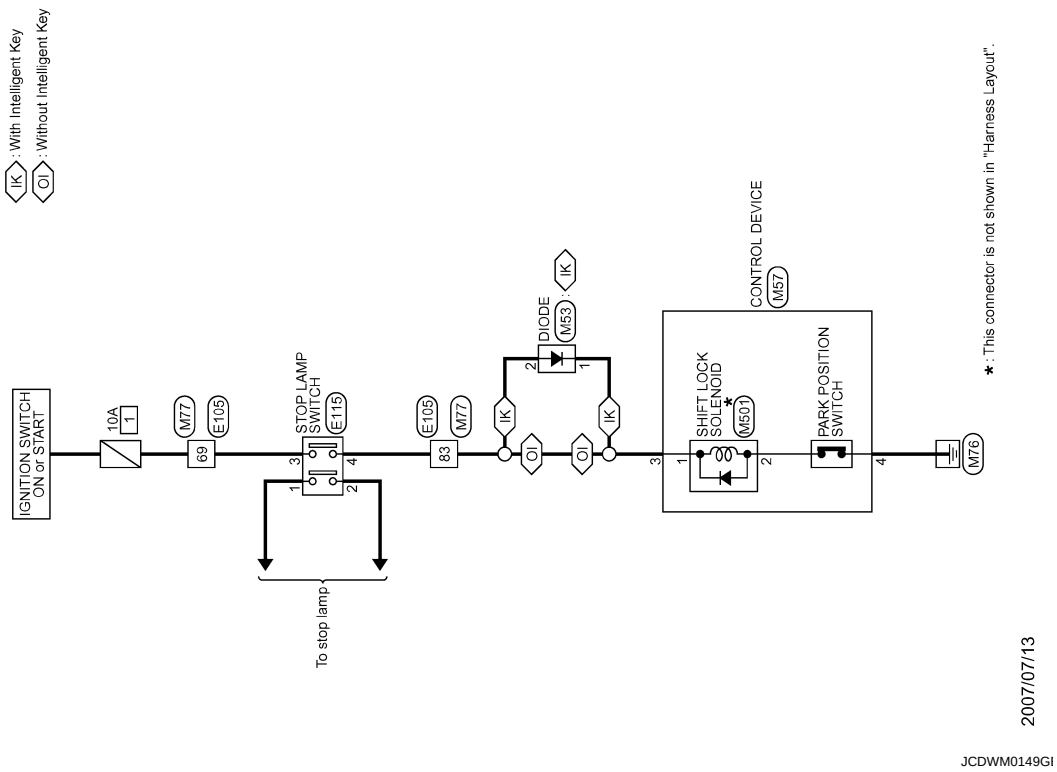
INFOID:0000000001695729

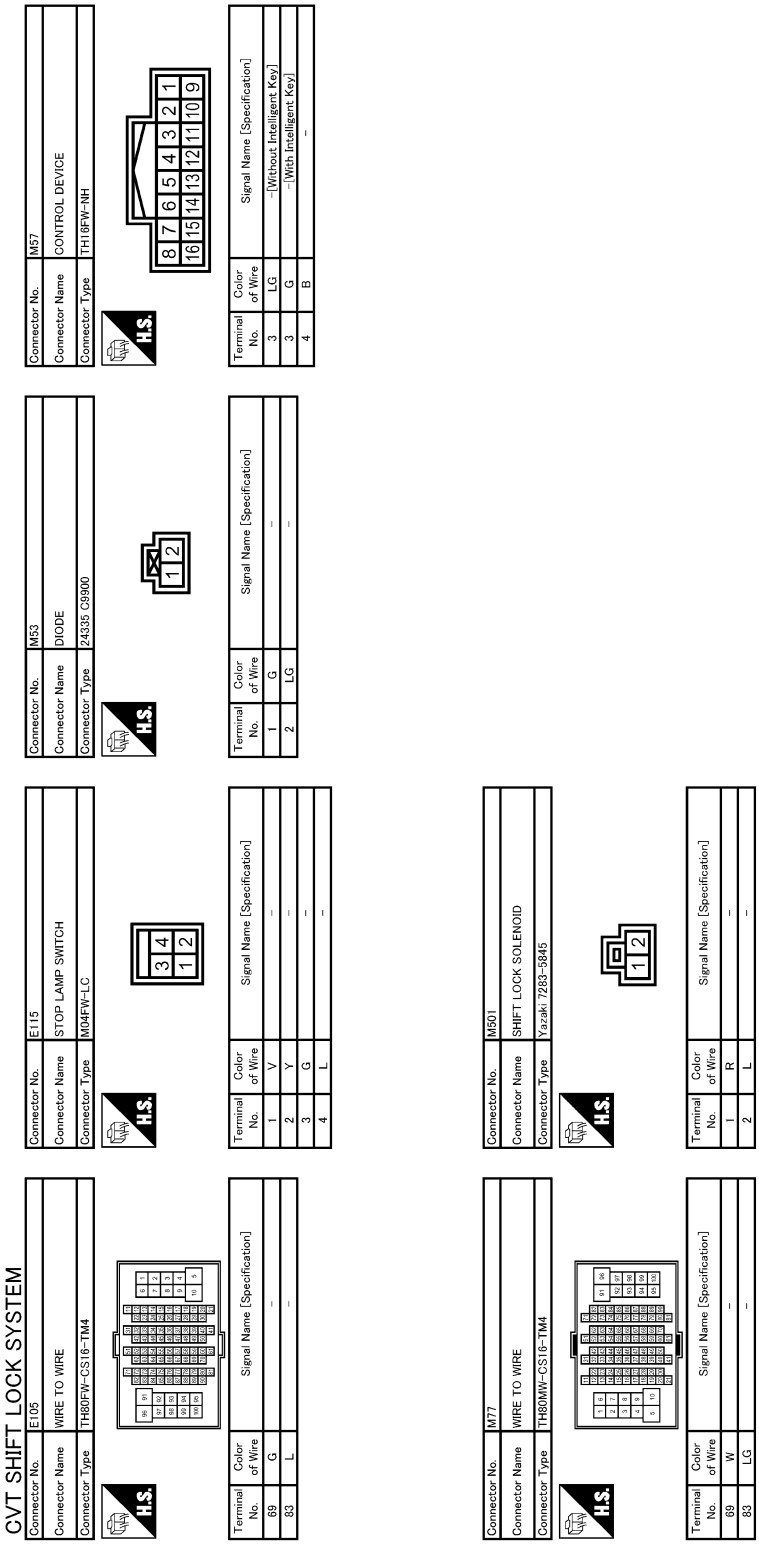
Component	Function
Shift lock solenoid	It operates according to the signal from the stop lamp switch and moves the lock lever.
Lock lever	It moves according to the operation of the shift lock solenoid and performs the release of the shift lock.
Detent rod	It links with the selector button and restricts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

Wiring Diagram - CVT SHIFT LOCK SYSTEM -

INFOID:0000000001695730

CVT SHIFT LOCK SYSTEM





JCDWM0150GI

Component Function Check

INFOID:0000000001695731

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 >> INSPECTION END
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-119, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000001695732

1. CHECK POWER SOURCE

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

Stop lamp switch vehicle side harness connector		Ground	Voltage (Approx.)
Connector	Terminal		
E115	3		Battery voltage

Is the inspection result normal?

YES >> GO TO 2.
NO >> Check the following.
- Harness for short or open between ignition switch and stop lamp switch
- 10A fuse (No. 1, located in fuse block)
- Ignition switch

2. CHECK STOP LAMP SWITCH

1. Turn ignition switch OFF.
2. Check stop lamp switch. Refer to TM-121, "Component Inspection (Stop Lamp Switch)".

Is the inspection result normal?

YES >> GO TO 3.
NO >> Replace stop lamp switch. Refer to BR-18, "Exploded View".

3. CHECK HARNESS BETWEEN STOP LAMP SWITCH AND CONTROL DEVICE (PART 1)

1. Disconnect control device connector.
2. Check continuity between stop lamp switch vehicle side harness connector terminal and control devices vehicle side connector terminal.

Stop lamp switch vehicle side harness connector		Control device vehicle side harness connector		Continuity
Connector	Terminal	Connector	Terminal	
E115	4	M57	3	Existed

Is the inspection result normal?

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

4. CHECK HARNESS BETWEEN STOP LAMP SWITCH AND CONTROL DEVICE (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		
E115	4		Not existed

Is the inspection result normal?

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

5.CHECK GROUND CIRCUIT (PART 1)

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

Control device vehicle side harness connector		Ground	Continuity
Connector	Terminal		
M57	4		Existed

Is the inspection result normal?

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

6.CHECK GROUND CIRCUIT (PART 2)

Check voltage between control device vehicle side harness connector terminal and ground.

Control device vehicle side harness connector		Ground	Voltage (Approx.)
Connector	Terminal		
M57	4		0 V

Is the inspection result normal?

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

7.CHECK CONTROL DEVICE

1. Move selector lever to “P” position.
2. Check continuity between control device connector terminals.

Control device connector			Continuity
Connector	Terminal		
M57	3	4	Existed

Is the inspection result normal?

YES >> GO TO 9.
NO >> GO TO 8.

8.CHECK HARNESS BETWEEN CONTROL DEVICE AND SHIFT LOCK SOLENOID

1. Disconnect shift lock solenoid connector.
2. Check continuity between control device connector terminal and shift lock solenoid harness connector terminal.

Control device connector		Shift lock solenoid harness connector		Continuity
Connector	Terminal	Connector	Terminal	
M57	3	M501	1	Existed
	4		2	

Is the inspection result normal?

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

9.CHECK SHIFT LOCK SOLENOID

1. Remove shift lock solenoid. Refer to TM-178, "WITHOUT MANUAL MODE : Exploded View" (without manual mode), TM-180, "WITH MANUAL MODE : Exploded View" (with manual mode).
2. Check shift lock solenoid. Refer to TM-121, "Component Inspection (Shift Lock Solenoid)".

Is the inspection result normal?

YES >> INSPECTION END
NO >> Replace shift lock solenoid. Refer to TM-178, "WITHOUT MANUAL MODE : Exploded View" (without manual mode), TM-180, "WITH MANUAL MODE : Exploded View" (with manual mode).

Component Inspection (Stop Lamp Switch)

INFOID:0000000001695733

1.CHECK STOP LAMP SWITCH

Check continuity between stop lamp switch connector terminals.

Stop lamp switch connector			Condition	Continuity
Connector	Terminal			
E115	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-18, "Exploded View".

Component Inspection (Shift Lock Solenoid)

INFOID:0000000001695734

1.CHECK SHIFT LOCK SOLENOID

Apply voltage to terminals of shift lock solenoid connector and then check that shift lock solenoid is activated.

CAUTION:
Connect the fuse between the terminals when applying the voltage.

(+) (fuse)		(–)	Condition	Status
Shift lock solenoid connector				
Connector	Terminal			
M501	1	2	Apply 12 V direct current between terminals 1 and 2.	Shift lock solenoid operates

Can the lock plate be moved up and down?

YES >> INSPECTION END
NO >> Replace shift lock solenoid. Refer to TM-178, "WITHOUT MANUAL MODE : Exploded View" (without manual mode), TM-180, "WITH MANUAL MODE : Exploded View" (with manual mode).

OVERDRIVE CONTROL SWITCH

Description

INFOID:0000000001695735

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

Component Function Check

INFOID:0000000001695736

1.CHECK OVERDRIVE CONTROL SWITCH SIGNAL

1. Turn ignition switch ON.
2. Select “DATA MONITOR”.
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-122, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000001695737

1. CHECK CAN COMMUNICATION CIRCUIT

Perform “SELF-DIAG RESULT” mode for “TRANSMISSION”.

Is “U1000 CAN COMM CIRCUIT” indicated?

YES >> Check CAN communication line. Refer to TM-47, "Description".
NO >> GO TO 2.

2.CHECK COMBINATION METER

Perform “SELF-DIAG RESULT” mode for “METER/M&A”.

Is the inspection result normal?

YES >> GO TO 3.
NO >> Check DTC detected item. Refer to MWI-65, "DTC Index".

3.CHECK OVERDRIVE CONTROL SWITCH

1. Turn ignition switch OFF.
2. Remove overdrive control switch. Refer to TM-178, "WITHOUT MANUAL MODE : Exploded View".
3. Check overdrive control switch. Refer to TM-123, "Component Inspection (Overdrive Control Switch)".

Is the inspection result normal?

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

4.CHECK GROUND CIRCUIT (PART 1)

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

Control device vehicle side harness connector		Ground	Continuity
Connector	Terminal		
M57	2		Existed

Is the inspection result normal?

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

5.CHECK GROUND CIRCUIT (PART 2)

Check voltage between control device vehicle side harness connector terminal and ground.

Control device vehicle side harness connector		Ground	Voltage (Approx.)
Connector	Terminal		
M57	2		0 V

Is the inspection result normal?

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

6. CHECK HARNESS BETWEEN CVT DEVICE AND COMBINATION METER (PART 1)

1. Disconnect combination meter connector.
2. Check continuity between control device vehicle side harness connector terminal and combination meter vehicle side harness connector terminal.

Control device vehicle side harness connector		Combination meter vehicle side harness connector		Continuity
Connector	Terminal	Connector	Terminal	
M57	1	M34	9	Existed

Is the inspection result normal?

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

7. CHECK HARNESS BETWEEN CVT DEVICE AND COMBINATION METER (STEP 2)

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

Control device vehicle side harness connector		Ground	Continuity
Connector	Terminal		
M57	1		Not existed

Is the inspection result normal?

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

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-176, "Exploded View".
NO >> Repair or replace damaged parts.

Component Inspection (Overdrive Control Switch)

INFOID:0000000001695738

1. CHECK OVERDRIVE CONTROL SWITCH

Check continuity between overdrive control switch connector terminals.

Overdrive control switch connector			Condition	Continuity
Connector	Terminal			
M503	1	3	While pushing overdrive control switch	Existed
			Other conditions	Not existed

Is the inspection result normal?

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

ECU DIAGNOSIS

TCM

Reference Value

INFOID:0000000001695739

VALUES ON THE DIAGNOSIS TOOL

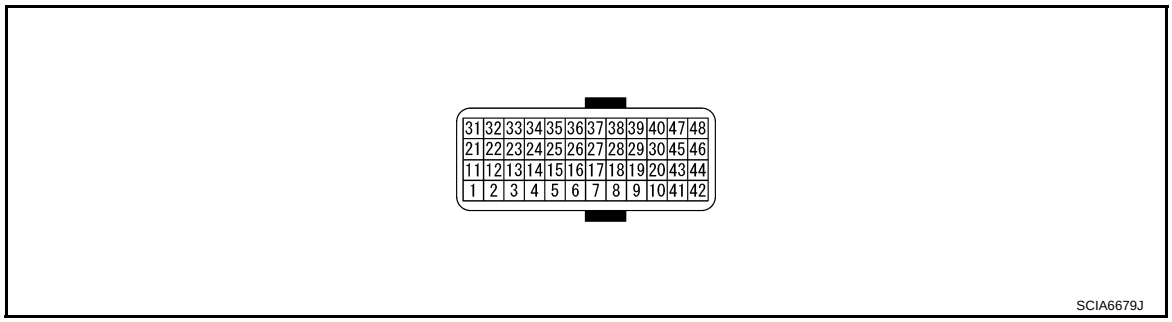
Monitor item	Condition	Value / Status (Approx.)
VSP SENSOR	During driving	Approximately matches the speedometer reading.
ESTM VSP SIG	During driving	Approximately matches the speedometer reading.
PRI SPEED SEN	During driving (lock-up ON)	Approximately matches the engine speed.
ENG SPEED SIG	Engine running	Closely matches the tachometer reading.
SEC HYDR SEN	“N” position idle	1.0 V
PRI HYDR SEN	“N” position idle	0.7 – 3.5 V
ATF TEMP SEN*1	When CVT fluid temperature is 20°C (68°F)	2.0 V
	When CVT fluid temperature is 80°C (176°F)	1.0 V
VIGN SEN	Ignition switch: ON	Battery voltage
VEHICLE SPEED	During driving	Approximately matches the speedometer reading.
PRI SPEED	During driving (lock-up ON)	Approximately matches the engine speed.
SEC SPEED	During driving	45 X Approximately matches the speedometer reading.
ENG SPEED	Engine running	Closely matches the tachometer reading.
GEAR RATIO	During driving	2.34 – 0.39
ACC PEDAL OPEN	Released accelerator pedal – Fully depressed accelerator pedal	0.0/8 – 8.0/8
SEC PRESS	“N” position idle	0.5 MPa
PRI PRESS	“N” position idle	0.3 – 0.7 MPa
STM STEP	During driving	0 step – 177 step
ISOLT1	Lock-up “OFF”	0.0 A
	Lock-up “ON”	0.7 A
ISOLT2	Release 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”	0.7 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
P POSITION SW	Selector lever in “P” position	On
	Other than the above position.	Off
R POSITION SW	Selector lever in “R” position	On
	Other than the above position.	Off
N POSITION SW	Selector lever in “N“ position	On
	Other than the above position.	Off

Monitor item	Condition	Value / Status (Approx.)
D POSITION SW	Selector lever in “D” position	On
	Other than the above position.	Off
L POSITION SW*2	Selector lever in “L” position	On
	Other than the above position.	Off
BRAKESW	Depressed brake pedal	On
	Released brake pedal	Off
FULL SW	Fully depressed accelerator pedal	On
	Released accelerator pedal	Off
IDLE SW	Released accelerator pedal	On
	Fully depressed accelerator pedal	Off
SPORT MODE SW*2	While pushing overdrive control switch	On
	Other conditions	Off
INDLRNG*2	Selector lever in “L” position	On
	When setting selector lever to other positions	Off
INDDRNG	Selector lever in “D” position	On
	When setting selector lever to other positions	Off
INDNRNG	Selector lever in “N“ position	On
	When setting selector lever to other positions	Off
INDRRNG	Selector lever in “R” position	On
	When setting selector lever to other positions	Off
INDPRNG	Selector lever in “P” position	On
	When setting selector lever to other positions	Off
SPORT MODE IND*2	When overdrive OFF condition	On
	Other conditions	Off
SMCOIL A	During driving	Changes On ⇔ Off.
SMCOIL B	During driving	Changes On ⇔ Off.
SMCOIL C	During driving	Changes On ⇔ Off.
SMCOIL D	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”*2 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”*2 positions	Off
ABS ON	ABS operate	On
	Other conditions	Off
RANGE	Selector lever in “N” or “P” position	N·P
	Selector lever in “R” position	R
	Selector lever in “D” position	D
	Selector lever in “L” position*2	L
DOWNLVR*3	Selector lever: DOWN (- side)	On
	Other than the above	Off
UPLVR*3	Selector lever: UP (+ side)	On
	Other than the above	Off

Monitor item	Condition	Value / Status (Approx.)
NONMMODE*3	Manual shift gate position (neutral, +side, -side)	Off
	Other than the above	On
MMODE*3	Manual shift gate position (neutral)	On
	Other than the above	Off
STRDWNSW*3	Pull paddle shifter (shift-down)	On
	Other than the above	Off
STRUPSW*3	Pull paddle shifter (shift-up)	On
	Other than the above	Off
M GEAR POS*3	During driving	1, 2, 3, 4, 5, 6

- *1: Means CVT fluid temperature. Convert numerical values for actual fluid temperature °C (°F). Refer to TM-152, "FOR USA AND CANADA : ATFTEMP COUNT Conversion Table".
- *2: Without manual mode
- *3: With manual mode

TERMINAL LAYOUT



PHYSICAL VALUES

Terminal (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/Output			
1 (G)	Ground	R RANGE SW	Input	Ignition switch ON	Selector lever in “R” position	Battery voltage
					Other than the above position	0 V
2 (Y)	Ground	N RANGE SW	Input		Selector lever in “N” position	Battery voltage
					Other than the above position	0 V
3 (W)	Ground	D RANGE SW	Input		Selector lever in “D” positions	Battery voltage
					Other than the above position	0 V
4 (V)	Ground	L RANGE SW	Input		Selector lever in “L” position*1	Battery voltage
					Other than the above position	0 V
5 (B)	Ground	Ground	Output	Always		0 V
6 (O)	—	K-LINE	Input/Output	—		—
7 (Y)	Ground	Sensor ground	Input	Always		0 V
8 (L)	—	CLOCK (SEL2)	—	—		—

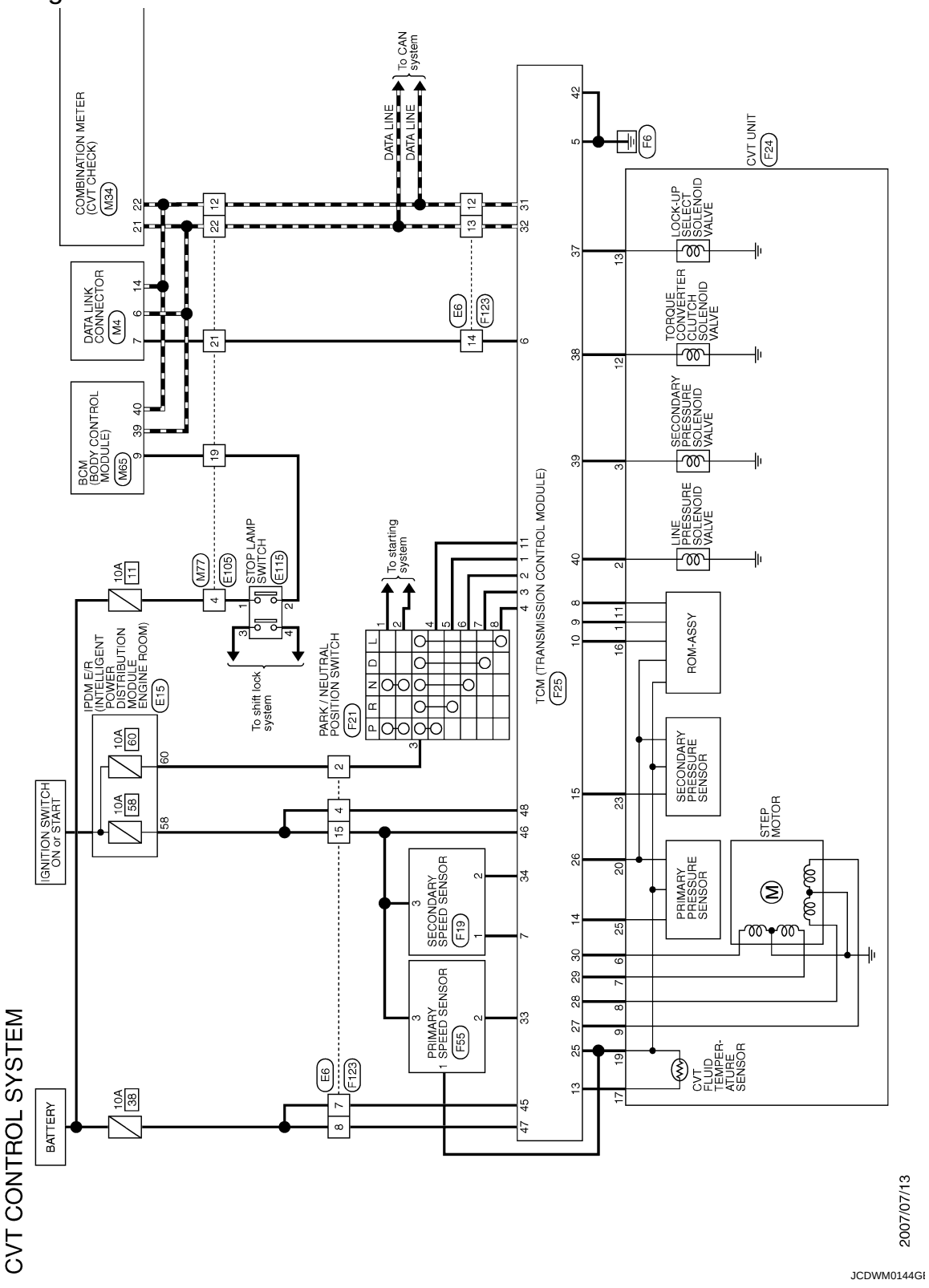
Terminal (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/Output			
9 (G)	—	CHIP SELECT (SEL1)	—	—		—
10 (W)	—	DATA I/O (SEL3)	—	—		—
11 (L)	Ground	P RANGE SW	Input	Ignition switch ON	Selector lever in “P” position	Battery voltage
					Other than the above position	0 V
13 (SB)	Ground	CVT fluid temperature sensor	Input	Ignition switch ON	When CVT fluid temperature is 20°C (68°F)	2.0 V
					When CVT fluid temperature is 80°C (176°F)	1.0 V
14 (BR)	Ground	Transmission fluid pressure sensor B (Primary pressure sensor)	Input	“N” position idle		0.7 – 3.5 V
15 (P)	Ground	Transmission fluid pressure sensor A (Secondary pressure sensor)	Input			1.0 V
25 (Y)	Ground	Sensor ground	Input	Always		0 V
26 (LG)	Ground	Sensor power	Output	Ignition switch ON	—	5.0 V
				Ignition switch OFF	—	0 V
27 (GR)	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.*2		10.0 msec
28 (V)	Ground	Step motor C	Output			30.0 msec
29 (O)	Ground	Step motor B	Output			10.0 msec
30 (R)	Ground	Step motor A	Output			30.0 msec
31 (P)	—	CAN-L	Input/Output	—		—
32 (L)	—	CAN-H	Input/Output	—		—
33 (O)	Ground	Input speed sensor (primary speed sensor)	Input	Without manual mode	When driving [“L” position, 20 km/h (12 MPH)]	900 Hz
				With manual mode	When driving [“M1” position, 20 km/h (12 MPH)]	760 Hz
34 (R)	Ground	Output speed sensor (secondary speed sensor)	Input	Without manual mode	When driving [“D” position, 20 km/h (12 MPH)]	470 Hz
				With manual mode		470 Hz
37 (L)	Ground	Lock-up select solenoid valve	Output	Ignition switch ON	Selector lever in “P” or “N” positions	Battery voltage
					Wait at least for 5 seconds with the selector lever in “R”, “D” or “L”*1 positions	0 V
38 (G)	Ground	Torque converter clutch solenoid valve	Output	When vehicle cruises in “D” position	When CVT performs lock-up	5.0 V
					When CVT does not perform lock-up	0 V

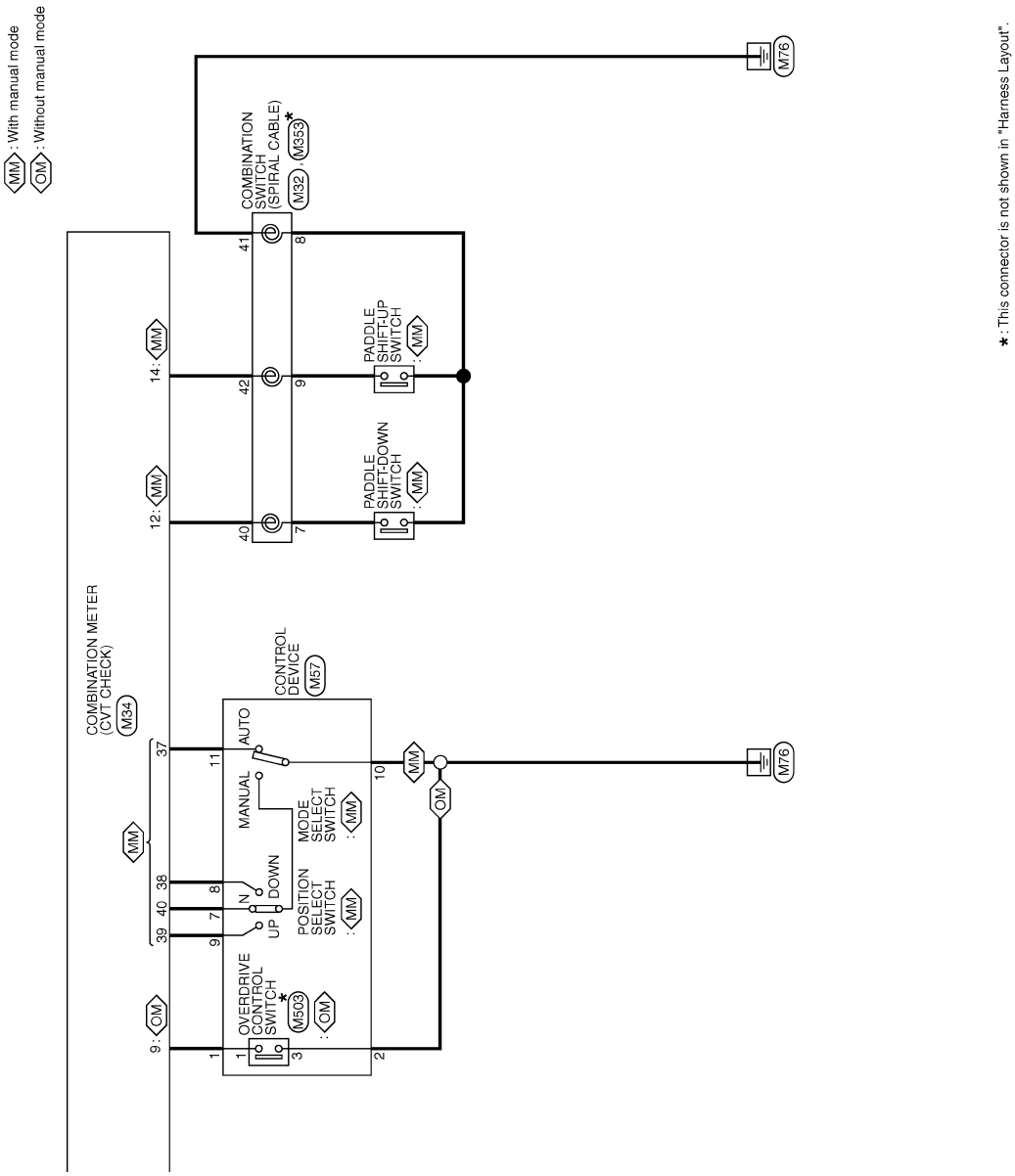
Terminal (Wire color)		Description		Condition		Value (Approx.)
+	–	Signal name	Input/Output			
39 (W)	Ground	Pressure control solenoid valve B (secondary pressure solenoid valve)	Output	"P" or "N" position idle	Release your foot from the accelerator pedal	5.0 – 7.0 V
					Press the accelerator pedal all the way down	3.0 – 4.0 V
40 (Y)	Ground	Pressure control solenoid valve A (line pressure solenoid valve)	Output		Release your foot from the accelerator pedal	5.0 – 7.0 V
					Press the accelerator pedal all the way down	1.0 V
42 (B)	Ground	Ground	Output	Always		0 V
45 (L)	Ground	Power supply (memory back-up)	Input	Always		Battery voltage
46 (LG)	Ground	Power supply	Input	Ignition switch ON	—	Battery voltage
				Ignition switch OFF	—	0 V
47 (O)	Ground	Power supply (memory back-up)	Input	Always		Battery voltage
48 (Y)	Ground	Power supply	Input	Ignition switch ON	—	Battery voltage
				Ignition switch OFF	—	0 V

- *1: Without manual mode
- *2: A circuit tester cannot be used to test this item.

Wiring Diagram - CVT CONTROL SYSTEM -

INFOID:0000000001695740




MM : With manual mode
OM : Without manual mode
COMBINATION METER (CVT CHECK) M34
CONTROL DEVICE M57
COMBINATION SWITCH (SPIRAL CABLE)* M32, M353
PADDLE SHIFT-UP SWITCH MM
PADDLE SHIFT-DOWN SWITCH MM
OVERDRIVE CONTROL SWITCH* M503
POSITION SELECT SWITCH MM
MODE SELECT SWITCH MM
AUTO
MANUAL
N
DOWN
UP
M76
* : This connector is not shown in "Harness Layout".
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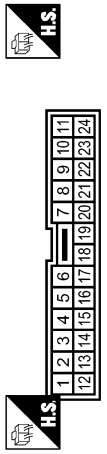
CVT CONTROL SYSTEM

Connector No.	E6
Connector Name	WIRE TO WIRE
Connector Type	TK24MW-1Y

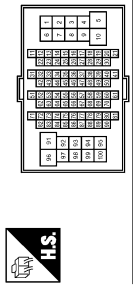
Terminal No.	Color of Wire	Signal Name [Specification]
2	SB	–
4	LG	–
7	O	–
8	O	–
12	P	–
13	L	–
14	O	–
15	LG	–

Connector No.	E15
Connector Name	IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM)
Connector Type	NS16FW-CS



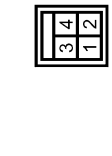
Terminal No.	Color of Wire	Signal Name [Specification]
58	LG	–
60	SB	–

Connector No.	E105
Connector Name	WIRE TO WIRE
Connector Type	TH80FW-CS16-TM4



Terminal No.	Color of Wire	Signal Name [Specification]
4	V	–
12	P	–
19	R	–
21	L	–
22	L	–

Connector No.	E115
Connector Name	STOP LAMP SWITCH
Connector Type	M04FW-LC



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

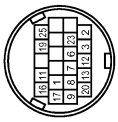
Connector No.	F19
Connector Name	SECONDARY SPEED SENSOR
Connector Type	RK03FB

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

Connector No.	F21
Connector Name	PARK / NEUTRAL POSITION SWITCH
Connector Type	RK08FG

Terminal No.	Color of Wire	Signal Name [Specification]
1	LG	–
2	R	–
3	SB	–
4	L	–
5	G	–
6	Y	–
7	W	–
8	V	–

Connector No.	F24
Connector Name	CVT UNIT
Connector Type	Yazaki: 7283-8750-30



Terminal No.	Color of Wire	Signal Name [Specification]
1	G	CHIP SELECT (SEL1)
2	Y	LINE PRESSURE SOLENOID VALVE
3	W	SECONDARY PRESSURE SOLENOID VALVE
6	R	STEP MOTOR A
7	O	STEP MOTOR B
8	V	STEP MOTOR C
9	GR	STEP MOTOR D
11	L	CLOCK (SEL2)
12	G	TORQE CONVERTER CLUTCH SOLENOID VALVE
13	L	L/U SELECT SOLENOID VALVE
16	W	DATE I/O (SEL3)

17	SB	CVT FLUID TEMPERATURE SENSOR
19	Y	SENSOR GND
20	LG	SENSOR POWER SOURCE
23	P	SECONDARY PRESSURE SENSOR
25	BR	PRIMARY PRESSURE SENSOR

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CVT CONTROL SYSTEM

Connector No.	F25
Connector Name	TCM (TRANSMISSION CONTROL MODULE)
Connector Type	MAA40FB-MEA8-LH

Terminal No.	Color of Wire	Signal Name [Specification]
1	G	R RANGE SW
2	Y	N RANGE SW
3	W	D RANGE SW
4	V	L RANGE SW
5	B	GND
6	O	K-LINE
7	Y	SENSOR GND
8	L	CLOCK (SEL2)
9	G	CHIP SELECT (SEL1)
10	W	DATA I/O (SEL3)
11	L	P RANGE SW
13	SB	CVT FLUID TEMP SENSOR
14	BR	PRIMARY PRESSURE SENSOR
15	P	SECONDARY PRESSURE SENSOR
25	Y	SENSOR GND
26	LG	SENSOR POWER SOURCE(5V)
27	GR	STEP MOTOR D
28	V	STEP MOTOR C
29	O	STEP MOTOR B
30	R	STEP MOTOR A
31	P	CAN-L
32	L	CAN-H
33	O	PRIMARY SPEED SENSOR
34	R	SECONDARY SPEED SENSOR
37	L	L/U SELECT SOLENOID VALVE
38	G	TORQE CONVERTER CLUTCH SOLENOID VALVE
39	W	SECONDARY PRESSURE SOLENOID VALVE
40	Y	LINE PRESSURE SOLENOID VALVE
42	B	GND
45	L	BATT
46	LG	VIGN
47	O	BATT
48	Y	VIGN

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

Terminal No.	Color of Wire	Signal Name [Specification]
6	L	–
7	O	–
14	P	–

Connector No.	M32
Connector Name	COMBINATION SWITCH (SPIRAL CABLE)
Connector Type	TK06FY-EX-1V

Terminal No.	Color of Wire	Signal Name [Specification]
40	G	–
41	B	–
42	L	–

Connector No.	F55
Connector Name	PRIMARY SPEED SENSOR
Connector Type	RK03FB

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

Connector No.	M34
Connector Name	COMBINATION METER
Connector Type	SAB40FW

Terminal No.	Color of Wire	Signal Name [Specification]
9	P	O/D OFF SW
12	G	STRG SW DOWN
14	L	STRG SW UP
21	L	CAN-H
22	P	CAN-L
37	P	NOT MANUAL MODE
38	O	SHIFT DOWN
39	V	SHIFT UP
40	LG	MANUAL MODE

Connector No.	F123
Connector Name	WIRE TO WIRE
Connector Type	TK24FW-1V

Terminal No.	Color of Wire	Signal Name [Specification]
2	SB	–
4	Y	–
7	L	–
8	O	–
12	P	–
13	L	–
14	O	–
15	LG	–

Connector No.	M57
Connector Name	CONTROL DEVICE
Connector Type	TH16FW-NH

Terminal No.	Color of Wire	Signal Name [Specification]
1	P	–
2	B	–
7	LG	–
8	O	–
9	V	–
10	B	–
11	P	–

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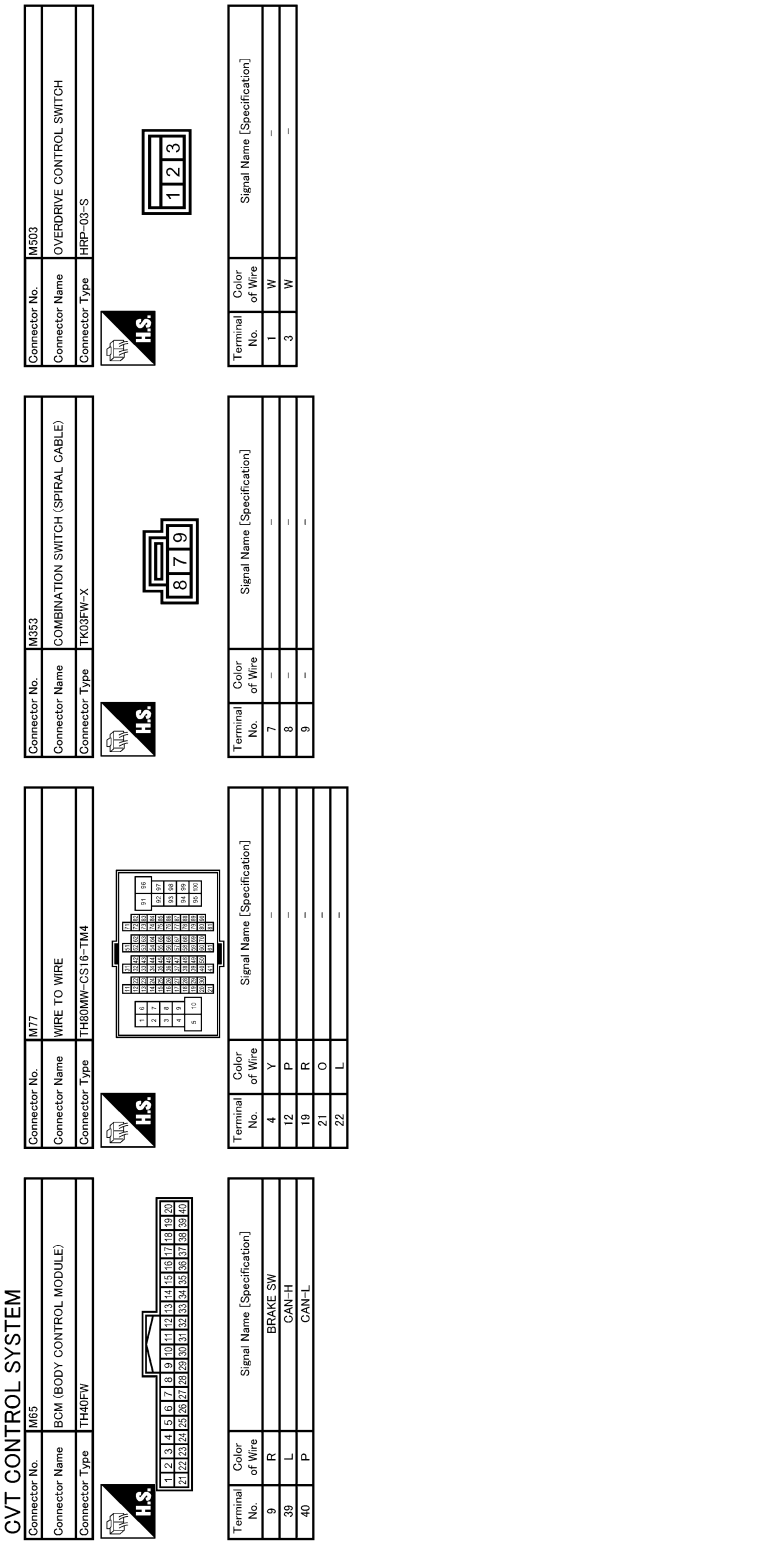


JCDWM0148GI

Fail-safe

INFOID:0000000001695741

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.

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

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

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

Manual Mode Switch
If an unexpected signal is sent from the manual mode switch to the TCM, the transaxle is put in “D”.

CVT Fluid Temperature Sensor
If an unexpected signal is sent from the CVT fluid temperature sensor to the TCM, the gear ratio in use before receiving the unexpected signal is maintained or the gear ratio is controlled to keep engine speed under 5,000 rpm.

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

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

Pressure Control Solenoid B (Secondary Pressure Solenoid Valve)
If an unexpected signal is sent from the solenoid valve to the TCM, the pressure control solenoid B (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.

CVT Lock-up Select Solenoid Valve
If an unexpected signal is sent from the solenoid valve to the TCM, the CVT 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 TCM. Normal status is restored when turning the ignition switch OFF to ON after the normal power supply.

DTC Inspection Priority Chart

INFOID:0000000001695742

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

NOTE:
If DTC “U1000 CAN COMM CIRCUIT”/“U1010 CONTROL UNIT (CAN)” is indicated with other DTCs, start from a diagnosis for “DTC U1000 CAN COMMUNICATION LINE”/“U1010 CONTROL UNIT (CAN)”. Refer to TM-47, TM-48.

Priority	Detected items (DTC)
1	U1000 CAN communication line, U1010 CONTROL UNIT (CAN)
2	Except above

DTC Index

INFOID:0000000001695743

NOTE:
If DTC "U1000 CAN COMM CIRCUIT"/"U1010 CONTROL UNIT (CAN)" is indicated with other DTCs, start from a diagnosis for "DTC U1000 CAN COMMUNICATION LINE"/"U1010 CONTROL UNIT (CAN)". Refer to TM-47, TM-48.

TCM self-diagnosis	OBD-II	Items (CONSULT-III screen terms)	Reference
"TRANSMISSION" with CONSULT-III	MIL[*1], "ENGINE" with CONSULT-III or GST[*2]		
P0703	—	BRAKE SW/CIRC	TM-49
P0705	P0705	PNP SW/CIRC	TM-52
P0710	P0710	ATF TEMP SEN/CIRC	TM-55
P0715	P0715	INPUT SPD SEN/CIRC	TM-57
P0720	P0720	VEH SPD SEN/CIR AT	TM-61
P0725	—	ENGINE SPEED SIG	TM-65
P0730	—	BELT DAMG	TM-66
P0740	P0740	TCC SOLENOID/CIRC	TM-67
P0744	P0744	A/T TCC S/V FNCTN	TM-69
P0745	P0745	L/PRESS SOL/CIRC	TM-71
P0746	P0746	PRS CNT SOL/A FCTN	TM-73
P0776	P0776	PRS CNT SOL/B FCTN	TM-75
P0778	P0778	PRS CNT SOL/B CIRC	TM-78
P0826[*3]	—	MANUAL MODE SWITCH	TM-80
P0840	P0840	TR PRS SENS/A CIRC	TM-85
P0841	—	PRESS SEN/FNCTN	TM-88
P0845	P0845	TR PRS SENS/B CIRC	TM-91
P0868	—	SEC/PRESS DOWN	TM-94
P1701	—	TCM-POWER SUPPLY	TM-97
P1705	—	TP SEN/CIRC A/T	TM-100
P1722	—	ESTM VEH SPD SIG	TM-101
P1723	—	CVT SPD SEN/FNCTN	TM-103
P1726	—	ELEC TH CONTROL	TM-105
P1740	P1740	LU-SLCT SOL/CIRC	TM-106
P1745	—	L/PRESS CONTROL	TM-108
P1777	P1777	STEP MOTR CIRC	TM-109
P1778	P1778	STEP MOTR/FNC	TM-112
U1000	U1000	CAN COMM CIRCUIT	TM-47
U1010	—	CONTROL UNIT (CAN)	TM-48

- *1: Refer to TM-41, "Diagnosis Description".
- *2: These numbers are prescribed by SAE J2012.
- *3: Models without manual mode dose not indicate.

SYMPTOM DIAGNOSIS

SYSTEM SYMPTOM

Symptom Table

INFOID:0000000001695744

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-25 (for California), EC-500 [for USA (federal) and Canada], EC-928 (for Mexico)
				2. Engine speed signal	TM-65
				3. Accelerator pedal position sensor	TM-100
				4. CVT position	TM-174 (without manual mode), TM-174 (with manual mode)
				5. CVT fluid temperature sensor	TM-55
				6. CAN communication line	TM-47
				7. CVT fluid level and state	TM-160
				8. Line pressure test	TM-167
				9. Torque converter clutch solenoid valve	TM-67
				10. Lock-up select solenoid valve	TM-106
				11. PNP switch	TM-49
			OFF vehicle	12. Forward clutch	TM-207 (2WD), TM-211 (AWD)
				13. Control valve	
2		Large shock. (“N”→ “R” position)	ON vehicle	1. Engine idle speed	EC-25 (for California), EC-500 [for USA (federal) and Canada], EC-928 (for Mexico)
				2. Engine speed signal	TM-65
				3. Accelerator pedal position sensor	TM-100
				4. CVT position	TM-174 (without manual mode), TM-174 (with manual mode)
				5. CVT fluid temperature sensor	TM-55
				6. CAN communication line	TM-47
				7. CVT fluid level and state	TM-160
				8. Line pressure test	TM-167
				9. Torque converter clutch solenoid valve	TM-67
				10. Lock-up select solenoid valve	TM-106
				11. PNP switch	TM-49
			OFF vehicle	12. Reverse brake	TM-207 (2WD), TM-211 (AWD)
				13. Control valve	

No.	Item	Symptom	Condition	Diagnostic item	Reference
3	Shift Shock	Shock is too large for lock-up.	ON vehicle	1. CVT position	TM-174 (without manual mode), TM-174 (with manual mode)
				2. Engine speed signal	TM-65
				3. CAN communication line	TM-47
				4. CVT fluid level and state	TM-160
			OFF vehicle	5. Torque converter	TM-215
				6. Control valve	TM-207 (2WD), TM-211 (AWD)
4	Slips/Will Not Engage	Vehicle cannot take off from “D” position.	ON vehicle	1. CVT fluid level and state	TM-160
				2. CVT position	TM-174 (without manual mode), TM-174 (with manual mode)
				3. CAN communication line	TM-47
				4. Line pressure test	TM-167
				5. Stall test	TM-165
				6. Step motor	TM-109
				7. Primary speed sensor	TM-57
				8. Secondary speed sensor	TM-61
				9. Accelerator pedal position sensor	TM-100
				10. CVT fluid temperature sensor	TM-55
				11. Secondary pressure sensor	TM-85
				12. TCM power supply and ground	TM-97
			OFF vehicle	13. Oil pump assembly	TM-207 (2WD), TM-211 (AWD)
				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-160
				2. CVT position	TM-174 (without manual mode), TM-174 (with manual mode)
				3. CAN communication line	TM-47
				4. Line pressure test	TM-167
				5. Stall test	TM-165
				6. Step motor	TM-109
				7. Primary speed sensor	TM-57
				8. Secondary speed sensor	TM-61
				9. Accelerator pedal position sensor	TM-100
				10. CVT fluid temperature sensor	TM-55
				11. Secondary pressure sensor	TM-85
				12. TCM power supply and ground	TM-97
			OFF vehicle	13. Oil pump assembly	TM-207 (2WD), TM-211 (AWD)
				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-160
				2. Line pressure test	TM-167
				3. Engine speed signal	TM-65
				4. Primary speed sensor	TM-57
				5. Torque converter clutch solenoid valve	TM-67
				6. CAN communication line	TM-47
				7. Stall test	TM-165
				8. Step motor	TM-109
				9. PNP switch	TM-49
				10. Lock-up select solenoid valve	TM-106
				11. CVT fluid temperature sensor	TM-55
				12. Secondary speed sensor	TM-61
				13. Secondary pressure sensor	TM-85
			OFF vehicle	14. Torque converter	TM-215
				15. Oil pump assembly	TM-207 (2WD), TM-211 (AWD)
				16. Control valve	
7		Does not hold lock-up condition.	ON vehicle	1. CVT fluid level and state	TM-160
				2. Line pressure test	TM-167
				3. Engine speed signal	TM-65
				4. Primary speed sensor	TM-57
				5. Torque converter clutch solenoid valve	TM-67
				6. CAN communication line	TM-47
				7. Stall test	TM-165
				8. Step motor	TM-109
				9. PNP switch	TM-49
				10. Lock-up select solenoid valve	TM-106
				11. CVT fluid temperature sensor	TM-55
				12. Secondary speed sensor	TM-61
				13. Secondary pressure sensor	TM-85
			OFF vehicle	14. Torque converter	TM-215
				15. Oil pump assembly	TM-207 (2WD), TM-211 (AWD)
				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-160
				2. Line pressure test	TM-167
				3. Engine speed signal	TM-65
				4. Primary speed sensor	TM-57
				5. Torque converter clutch solenoid valve	TM-67
				6. CAN communication line	TM-47
				7. Stall test	TM-165
			OFF vehicle	8. Torque converter	TM-215
				9. Oil pump assembly	TM-207 (2WD), TM-211 (AWD)
				10. Control valve	
9		With selector lever in “D” position, acceleration is extremely poor.	ON vehicle	1. CVT fluid level and state	TM-160
				2. Line pressure test	TM-167
				3. Stall test	TM-165
				4. Accelerator pedal position sensor	TM-100
				5. CAN communication line	TM-47
				6. PNP switch	TM-49
				7. CVT position	TM-174 (without manual mode), TM-174 (with manual mode)
				8. Step motor	TM-109
				9. Primary speed sensor	TM-57
				10. Secondary speed sensor	TM-61
				11. Accelerator pedal position sensor	TM-100
				12. Primary pressure sensor	TM-91
				13. Secondary pressure sensor	TM-85
				14. CVT fluid temperature sensor	TM-55
				15. TCM power supply and ground	TM-97
			OFF vehicle	16. Torque converter	TM-215
				17. Oil pump assembly	TM-207 (2WD), TM-211 (AWD)
				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-160
				2. Line pressure test	TM-167
				3. Stall test	TM-165
				4. Accelerator pedal position sensor	TM-100
				5. CAN communication line	TM-47
				6. PNP switch	TM-49
				7. CVT position	TM-174 (without manual mode), TM-174 (with manual mode)
				8. Step motor	TM-109
				9. Primary speed sensor	TM-57
				10. Secondary speed sensor	TM-61
				11. Accelerator pedal position sensor	TM-100
				12. Primary pressure sensor	TM-91
				13. Secondary pressure sensor	TM-85
				14. CVT fluid temperature sensor	TM-55
				15. TCM power supply and ground	TM-97
			OFF vehicle	16. Torque converter	TM-215
				17. Oil pump assembly	TM-207 (2WD), TM-211 (AWD)
				18. Reverse brake	
				19. Control valve	
11		Slips at lock-up.	ON vehicle	1. CVT fluid level and state	TM-160
				2. Line pressure test	TM-167
				3. Engine speed signal	TM-65
				4. Primary speed sensor	TM-57
				5. Torque converter clutch solenoid valve	TM-67
				6. CAN communication line	TM-47
				7. Stall test	TM-165
				8. Step motor	TM-109
				9. PNP switch	TM-49
				10. Lock-up select solenoid valve	TM-106
				11. CVT fluid temperature sensor	TM-55
				12. Secondary speed sensor	TM-61
				13. Secondary pressure sensor	TM-85
			OFF vehicle	14. Torque converter	TM-215
				15. Oil pump assembly	TM-207 (2WD), TM-211 (AWD)
				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-160
				2. Line pressure test	TM-167
				3. Accelerator pedal position sensor	TM-100
				4. PNP switch	TM-49
				5. CAN communication line	TM-47
				6. Stall test	TM-165
				7. CVT position	TM-174 (without manual mode), TM-174 (with manual mode)
				8. Step motor	TM-109
				9. Primary speed sensor	TM-57
				10. Secondary speed sensor	TM-61
				11. Accelerator pedal position sensor	TM-100
				12. CVT fluid temperature sensor	TM-55
				13. Primary pressure sensor	TM-91
				14. Secondary pressure sensor	TM-85
				15. TCM power supply and ground	TM-97
			OFF vehicle	16. Torque converter	TM-215
				17. Oil pump assembly	TM-207 (2WD), TM-211 (AWD)
				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-160
				2. Line pressure test	TM-167
				3. PNP switch	TM-49
				4. Stall test	TM-165
				5. CVT position	TM-174 (without manual mode), TM-174 (with manual mode)
				6. Step motor	TM-109
				7. Primary speed sensor	TM-57
				8. Secondary speed sensor	TM-61
				9. Accelerator pedal position sensor	TM-100
				10. CVT fluid temperature sensor	TM-55
				11. Secondary pressure sensor	TM-85
				12. TCM power supply and ground	TM-97
			OFF vehicle	13. Torque converter	TM-215
				14. Oil pump assembly	TM-207 (2WD), TM-211 (AWD)
				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-160
				2. Line pressure test	TM-167
				3. PNP switch	TM-49
				4. Stall test	TM-165
				5. CVT position	TM-174 (without manual mode), TM-174 (with manual mode)
				6. Step motor	TM-109
				7. Primary speed sensor	TM-57
				8. Secondary speed sensor	TM-61
				9. Accelerator pedal position sensor	TM-100
				10. CVT fluid temperature sensor	TM-55
				11. Secondary pressure sensor	TM-85
				12. TCM power supply and ground	TM-97
			OFF vehicle	13. Torque converter	TM-215
				14. Oil pump assembly	TM-207 (2WD), TM-211 (AWD)
				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-160
				2. Line pressure test	TM-167
				3. PNP switch	TM-49
				4. Stall test	TM-165
				5. CVT position	TM-174 (without manual mode), TM-174 (with manual mode)
				6. Step motor	TM-109
				7. Primary speed sensor	TM-57
				8. Secondary speed sensor	TM-61
				9. Accelerator pedal position sensor	TM-100
				10. CVT fluid temperature sensor	TM-55
				11. Secondary pressure sensor	TM-85
				12. TCM power supply and ground	TM-97
			OFF vehicle	13. Torque converter	TM-215
				14. Oil pump assembly	TM-207 (2WD), TM-211 (AWD)
				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-160
				2. Engine speed signal	TM-65
				3. Primary speed sensor	TM-57
				4. Secondary speed sensor	TM-61
				5. Accelerator pedal position sensor	TM-100
				6. CAN communication line	TM-47
				7. Torque converter clutch solenoid valve	TM-67
			OFF vehicle	8. Torque converter	TM-215
				9. Control valve	TM-207 (2WD), TM-211 (AWD)
17		Strange noise in “D” position.	ON vehicle	1. CVT fluid level and state	TM-160
				2. Engine speed signal	TM-65
				3. CAN communication line	TM-47
			OFF vehicle	4. Torque converter	TM-215
				5. Oil pump assembly	TM-207 (2WD), TM-211 (AWD)
				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-160
				2. Engine speed signal	TM-65
				3. CAN communication line	TM-47
			OFF vehicle	4. Torque converter	TM-215
				5. Oil pump assembly	TM-207 (2WD), TM-211 (AWD)
				6. Gear system	
				7. Reverse brake	
				8. Control valve	
19		Strange noise in “N” position.	ON vehicle	1. CVT fluid level and state	TM-160
				2. Engine speed signal	TM-65
				3. CAN communication line	TM-47
			OFF vehicle	4. Torque converter	TM-215
				5. Oil pump assembly	TM-207 (2WD), TM-211 (AWD)
				6. Gear system	
				7. Control valve	
20		Vehicle does not decelerate by engine brake.	ON vehicle	1. CVT fluid level and state	TM-160
				2. CVT position	TM-174 (without manual mode), TM-174 (with manual mode)
				3. CAN communication line	TM-47
				4. Step motor	TM-109
				5. Primary speed sensor	TM-57
				6. Secondary speed sensor	TM-61
				7. Line pressure test	TM-167
				8. Engine speed signal	TM-65
				9. Accelerator pedal position sensor	TM-100
			OFF vehicle	10. Control valve	TM-207 (2WD), TM-211 (AWD)

No.	Item	Symptom	Condition	Diagnostic item	Reference
21	Others	Maximum speed low.	ON vehicle	1. CVT fluid level and state	TM-160
				2. Line pressure test	TM-167
				3. Accelerator pedal position sensor	TM-100
				4. CAN communication line	TM-47
				5. Stall test	TM-165
				6. Step motor	TM-109
				7. Primary speed sensor	TM-57
				8. Secondary speed sensor	TM-61
				9. Primary pressure sensor	TM-91
				10. Secondary pressure sensor	TM-85
				11. CVT fluid temperature sensor	TM-55
			OFF vehicle	12. Torque converter	TM-215
				13. Oil pump assembly	TM-207 (2WD), TM-211 (AWD)
				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. PNP switch	TM-49
				2. CVT position	TM-174 (without manual mode), TM-174 (with manual mode)
			OFF vehicle	3. Parking components	TM-207 (2WD), TM-211 (AWD)
23		Vehicle drives with CVT in “P” position.	ON vehicle	1. PNP switch	TM-49
				2. CVT fluid level and state	TM-160
				3. CVT position	TM-174 (without manual mode), TM-174 (with manual mode)
			OFF vehicle	4. Parking components	TM-207 (2WD), TM-211 (AWD)
				5. Gear system	
				6. Control valve	
24		Vehicle drives with CVT in “N” position.	ON vehicle	1. PNP switch	TM-49
				2. CVT fluid level and state	TM-160
				3. CVT position	TM-174 (without manual mode), TM-174 (with manual mode)
			OFF vehicle	4. Gear system	TM-207 (2WD), TM-211 (AWD)
				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-160
				2. Engine speed signal	TM-65
				3. Primary speed sensor	TM-57
				4. Torque converter clutch solenoid valve	TM-67
				5. CAN communication line	TM-47
				6. Stall test	TM-165
				7. Secondary pressure sensor	TM-85
			OFF vehicle	8. Torque converter	TM-215
				9. Control valve	TM-207 (2WD), TM-211 (AWD)
26		Engine stalls when selector lever is shifted “N”→“D”or “R”.	ON vehicle	1. CVT fluid level and state	TM-160
				2. Engine speed signal	TM-65
				3. Primary speed sensor	TM-57
				4. Torque converter clutch solenoid valve	TM-67
				5. CAN communication line	TM-47
				6. Stall test	TM-165
			OFF vehicle	7. Torque converter	TM-215
				8. Control valve	TM-207 (2WD), TM-211 (AWD)
27		Engine speed does not return to idle.	ON vehicle	1. CVT fluid level and state	TM-160
				2. Accelerator pedal position sensor	TM-100
				3. Secondary speed sensor	TM-61
				4. CAN communication line	TM-47
			OFF vehicle	5. Control valve	TM-207 (2WD), TM-211 (AWD)
28		CVT does not shift	ON vehicle	1. CVT fluid level and state	TM-160
				2. CVT position	TM-174 (without manual mode), TM-174 (with manual mode)
				3. Line pressure test	TM-167
				4. Engine speed signal	TM-65
				5. Accelerator pedal position sensor	TM-100
				6. CAN communication line	TM-47
				7. Primary speed sensor	TM-57
				8. Secondary speed sensor	TM-61
				9. Step motor	TM-109
			OFF vehicle	10. Control valve	TM-207 (2WD), TM-211 (AWD)
				11. Oil pump assembly	
29		Engine does not start in “N” or “P” position.	ON vehicle	1. Ignition switch and starter	PG-40, STR-5
				2. CVT position	TM-174 (without manual mode), TM-174 (with manual mode)
				3. PNP switch	TM-49

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-40, STR-5
				2. CVT position	TM-174 (without manual mode), TM-174 (with manual mode)
				3. PNP switch	TM-49
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-116
				2. Shift lock solenoid	
				3. Control device	
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-116
				2. Shift lock solenoid	
				3. Control device	
33		Cannot be changed to manual mode.	ON vehicle	1. Manual mode switch	TM-80
				2. CAN communication line	TM-47
				3. Combination meters	MWI-41
34		Cannot be changed to overdrive OFF condition.	ON vehicle	1. Overdrive control switch	TM-122
				2. CAN communication line	TM-47
				3. Combination meters	MWI-41
35		OD OFF indicator lamp is not turned ON.	ON vehicle	1. CAN communication line	TM-47
				2. Combination meters	MWI-41
				3. TCM power supply and ground	TM-97

PRECAUTION

PRECAUTIONS

FOR USA AND CANADA

FOR USA AND CANADA : Precaution for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER"

INFOID:0000000003249400

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 AIRBAG” and “SEAT BELT” of this Service Manual.

WARNING:

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

FOR USA AND CANADA : Precaution Necessary for Steering Wheel Rotation After Battery Disconnect

INFOID:0000000003249405

NOTE:

- This Procedure is applied only to models with Intelligent Key system and NVIS/IVIS (NISSAN/INFINITI VEHICLE IMMOBILIZER SYSTEM - NATS).
- Remove and install all control units after disconnecting both battery cables with the ignition knob in the ″LOCK″ position.
- Always use CONSULT-III to perform self-diagnosis as a part of each function inspection after finishing work. If DTC is detected, perform trouble diagnosis according to self-diagnostic results.

For models equipped with the Intelligent Key system and NVIS/IVIS, an electrically controlled steering lock mechanism is adopted on the key cylinder.
For this reason, if the battery is disconnected or if the battery is discharged, the steering wheel will lock and steering wheel rotation will become impossible.
If steering wheel rotation is required when battery power is interrupted, follow the procedure below before starting the repair operation.

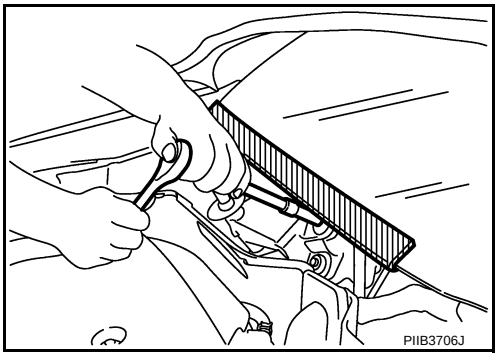
OPERATION PROCEDURE

1. Connect both battery cables.
   NOTE:
   Supply power using jumper cables if battery is discharged.
2. Use the Intelligent Key or mechanical key to turn the ignition switch to the ″ACC″ position. At this time, the steering lock will be released.
3. Disconnect both battery cables. The steering lock will remain released and the steering wheel can be rotated.
4. Perform the necessary repair operation.
5. When the repair work is completed, return the ignition switch to the ″LOCK″ position before connecting the battery cables. (At this time, the steering lock mechanism will engage.)
6. Perform a self-diagnosis check of all control units using CONSULT-III.

FOR USA AND CANADA : Precaution for Procedure without Cowl Top Cover

INFOID:0000000003249403

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



FOR USA AND CANADA : Precaution for On Board Diagnosis (OBD) System of CVT and Engine

INFOID:0000000001695748

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 CVT Assembly Replacement

INFOID:0000000001695749

CAUTION:

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

EEPROM ERASING PATTERNS

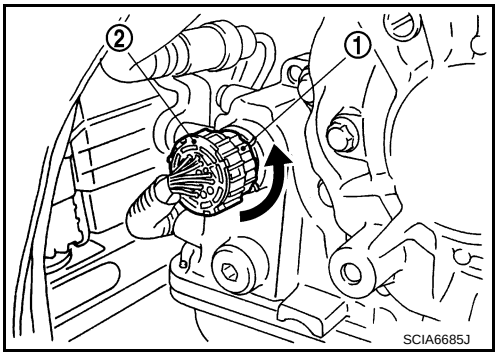
CVT assembly	TCM	Erasing EEPROM in TCM	Remarks
Replaced	Replaced	Not required	Not required because the EEPROM in the TCM is in the default state. (CVT assembly must be replaced first.)
Not replaced	Replaced	Not required	Not required because the EEPROM in the TCM is in the default state.
Replaced	Not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

FOR USA AND CANADA : Removal and Installation Procedure for CVT Unit Connector

INFOID:0000000001695750

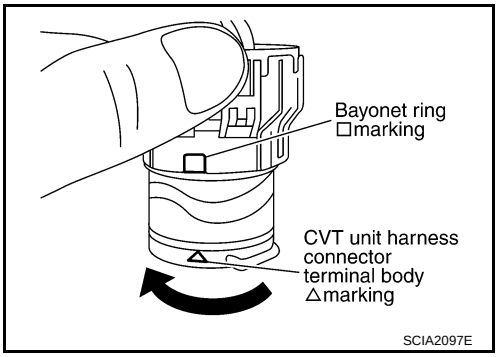
REMOVAL

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

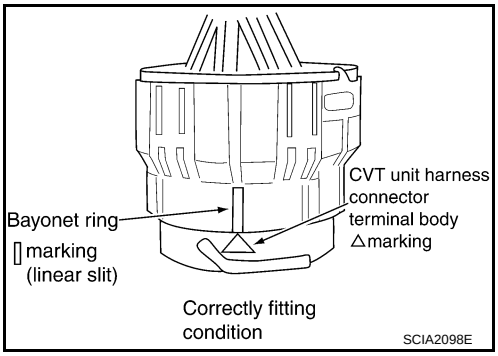


INSTALLATION

1. Align Δ marking on CVT unit harness connector terminal body with o marking on bayonet ring. Insert CVT unit harness connector. Then rotate bayonet ring clockwise.

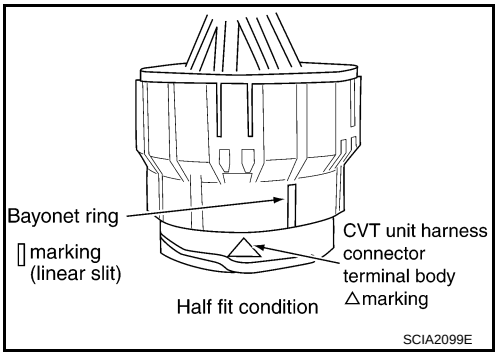


2. Rotate bayonet ring clockwise until Δ marking on CVT unit harness connector terminal body is aligned with the slit on bayonet ring as shown in the figure (correctly fitting condition). Install CVT unit harness connector to CVT unit harness connector terminal body.



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.**

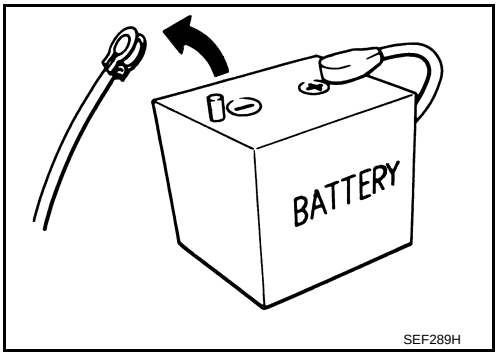


FOR USA AND CANADA : Precaution

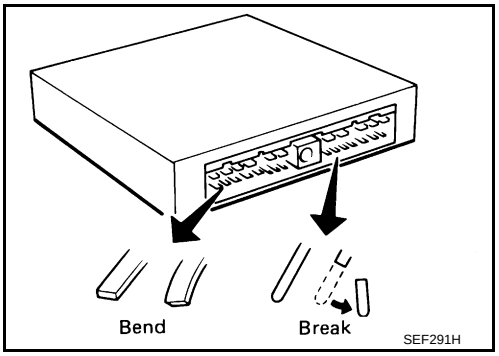
INFOID:0000000001695751

NOTE:
If any malfunction occurs in the RE0F10A model transaxle, replace the entire transaxle assembly.

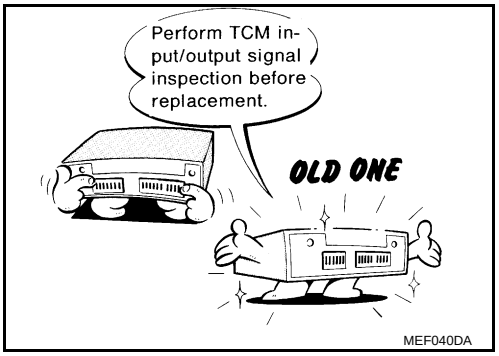
- **Turn ignition switch OFF and disconnect negative battery cable before connecting or disconnecting the TCM harness connector. Because battery voltage is applied to TCM even if ignition switch is turned OFF.**



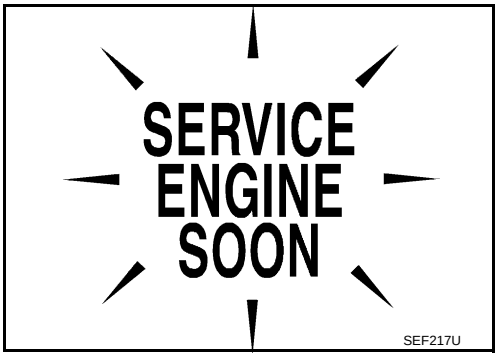
- **When connecting or disconnecting pin connectors into or from TCM, do not damage pin terminals (bend or break).**
  Check that there are not any bends or breaks on TCM pin terminal, when connecting pin connectors.



- **Perform TCM input/output signal inspection and check whether TCM functions normally or not before replacing TCM. TM-124, "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-17, "FOR NORTH AMERICA : Fluids and Lubricants" (for north America), MA-18, "FOR MEXICO : Fluids and Lubricants" (for Mexico).
- Use lint-free paper, not cloth rags, during work.
- Dispose of the waste oil using the methods prescribed by law, ordinance, etc. after replacing the CVT fluid.



FOR USA AND CANADA : Service Notice or Precaution

INFOID:0000000001695752

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-43, "CONSULT-III Function (TRANSMISSION)" for the indicator used to display each self-diagnostic result.
- The self-diagnostic results indicated by the MIL are automatically stored in both the ECM and TCM memories.
  Always perform the procedure on TM-41, "Diagnosis Description" to complete the repair and avoid unnecessary blinking of the MIL.

For details of OBD-II, refer to EC-92, "Diagnosis Description" (for California), EC-559, "Diagnosis Description" [for USA (federal) and Canada], EC-983, "Diagnosis Description" (for Mexico).

- **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-78.**

FOR USA AND CANADA : ATFTEMP COUNT Conversion Table

INFOID:0000000001695753

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:0000000003249402

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 AIRBAG” and “SEAT BELT” of this Service Manual.

WARNING:

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

FOR MEXICO : Precaution Necessary for Steering Wheel Rotation After Battery Dis-

connect

INFOID:0000000003249406

NOTE:
- This Procedure is applied only to models with Intelligent Key system and NVIS/IVIS (NISSAN/INFINITI VEHICLE IMMOBILIZER SYSTEM - NATS).
- Remove and install all control units after disconnecting both battery cables with the ignition knob in the "LOCK" position.
- Always use CONSULT-III to perform self-diagnosis as a part of each function inspection after finishing work. If DTC is detected, perform trouble diagnosis according to self-diagnostic results.

For models equipped with the Intelligent Key system and NVIS/IVIS, an electrically controlled steering lock mechanism is adopted on the key cylinder.
For this reason, if the battery is disconnected or if the battery is discharged, the steering wheel will lock and steering wheel rotation will become impossible.
If steering wheel rotation is required when battery power is interrupted, follow the procedure below before starting the repair operation.

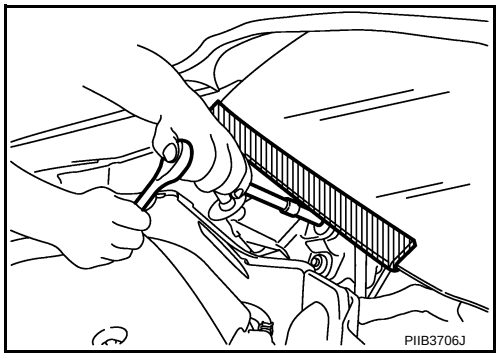
OPERATION PROCEDURE

1. Connect both battery cables.
   NOTE:
   Supply power using jumper cables if battery is discharged.
2. Use the Intelligent Key or mechanical key to turn the ignition switch to the "ACC" position. At this time, the steering lock will be released.
3. Disconnect both battery cables. The steering lock will remain released and the steering wheel can be rotated.
4. Perform the necessary repair operation.
5. When the repair work is completed, return the ignition switch to the "LOCK" position before connecting the battery cables. (At this time, the steering lock mechanism will engage.)
6. Perform a self-diagnosis check of all control units using CONSULT-III.

FOR MEXICO : Precaution for Procedure without Cowl Top Cover

INFOID:0000000003249404

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



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

INFOID:0000000003249394

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 CVT Assembly Replacement

INFOID:0000000003249395

CAUTION:

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

EEPROM ERASING PATTERNS

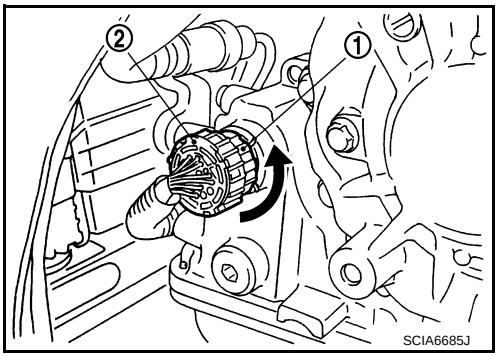
CVT assembly	TCM	Erasing EEPROM in TCM	Remarks
Replaced	Replaced	Not required	Not required because the EEPROM in the TCM is in the default state. (CVT assembly must be replaced first.)
Not replaced	Replaced	Not required	Not required because the EEPROM in the TCM is in the default state.
Replaced	Not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

FOR MEXICO : Removal and Installation Procedure for CVT Unit Connector

INFOID:0000000003249396

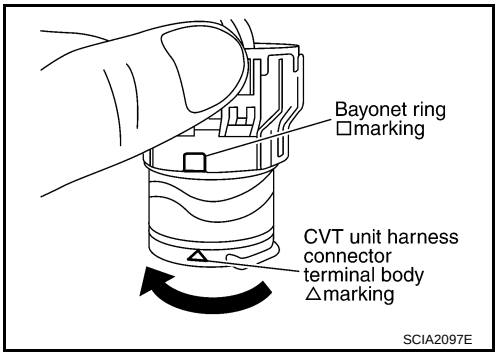
REMOVAL

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

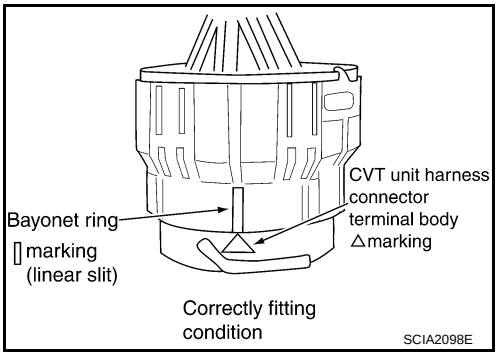


INSTALLATION

1. Align Δ marking on CVT unit harness connector terminal body with o marking on bayonet ring. Insert CVT unit harness connector. Then rotate bayonet ring clockwise.

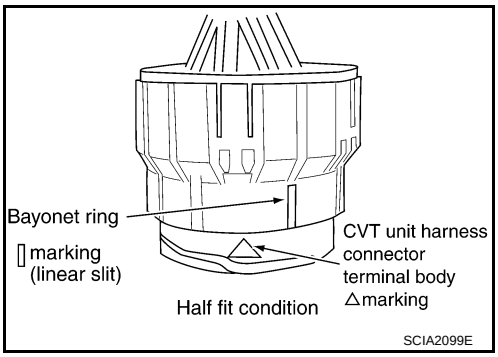


2. Rotate bayonet ring clockwise until Δ marking on CVT unit harness connector terminal body is aligned with the slit on bayonet ring as shown in the figure (correctly fitting condition). Install CVT unit harness connector to CVT unit harness connector terminal body.



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.**



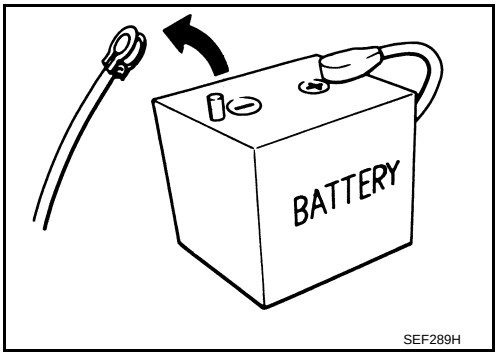
FOR MEXICO : Precaution

INFOID:0000000003249397

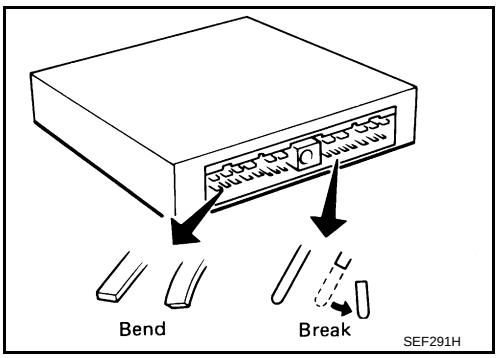
NOTE:

If any malfunction occurs in the RE0F10A model transaxle, replace the entire transaxle assembly.

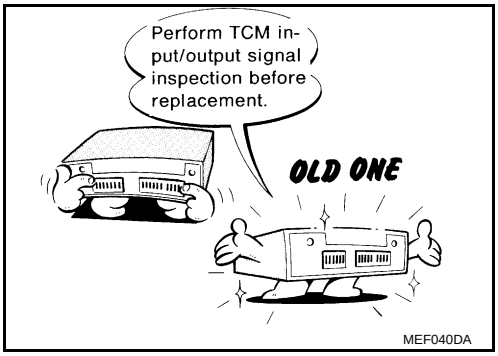
- **Turn ignition switch OFF and disconnect negative battery cable before connecting or disconnecting the TCM harness connector. Because battery voltage is applied to TCM even if ignition switch is turned OFF.**



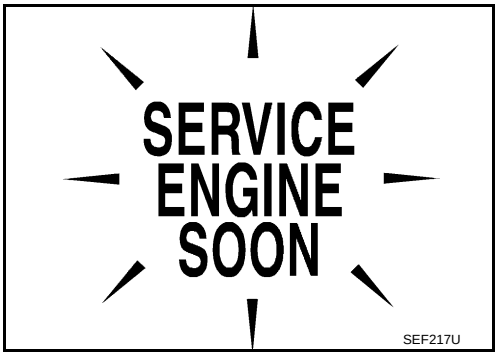
- **When connecting or disconnecting pin connectors into or from TCM, do not damage pin terminals (bend or break).**
  Check that there are not any bends or breaks on TCM pin terminal, when connecting pin connectors.



- **Perform TCM input/output signal inspection and check whether TCM functions normally or not before replacing TCM. TM-124, "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-17, "FOR NORTH AMERICA : Fluids and Lubricants" (for north America), MA-18, "FOR MEXICO : Fluids and Lubricants" (for Mexico).
- Use lint-free paper, not cloth rags, during work.
- Dispose of the waste oil using the methods prescribed by law, ordinance, etc. after replacing the CVT fluid.



FOR MEXICO : Service Notice or Precaution

INFOID:0000000003249398

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-43, "CONSULT-III Function (TRANSMISSION)" for the indicator used to display each self-diagnostic result.
- The self-diagnostic results indicated by the MIL are automatically stored in both the ECM and TCM memories.
  Always perform the procedure on TM-41, "Diagnosis Description" to complete the repair and avoid unnecessary blinking of the MIL.

For details of OBD-II, refer to EC-92, "Diagnosis Description" (for California), EC-559, "Diagnosis Description" [for USA (federal) and Canada], EC-983, "Diagnosis Description" (for Mexico).

- **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-78.**

FOR MEXICO : ATFTEMP COUNT Conversion Table

INFOID:0000000003249399

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)

ATFTEMP COUNT	Temperature °C (°F)	ATFTEMP COUNT	Temperature °C (°F)
83	40 (104)	229	150 (302)
93	45 (113)	231	155 (311)
104	50 (122)	233	160 (320)
114	55 (131)	235	165 (329)
124	60 (140)	236	170 (338)
134	65 (149)	238	175 (347)
143	70 (158)	239	180 (356)
152	75 (167)	241	190 (374)
161	80 (176)	243	200 (392)
169	85 (185)	—	—

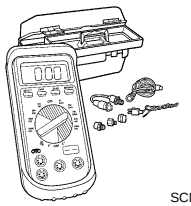
PREPARATION

PREPARATION

Special Service Tools

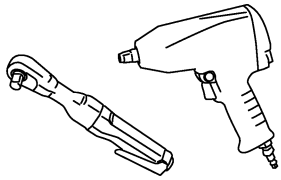
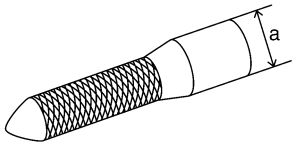
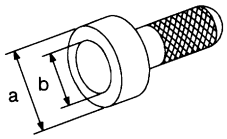
INFOID:0000000001695754

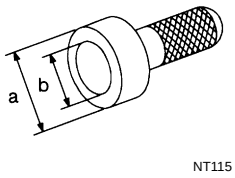
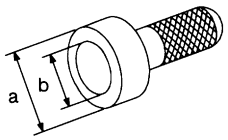
The actual shapes of Kent-Moore tools may differ from those of special service tools illustrated here.

Tool number (Kent-Moore No.) Tool name	Description
— (OTC3492) Oil pressure gauge set  SCIA7531E	Measuring line pressure

Commercial Service Tools

INFOID:0000000001695755

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
Drift a: 54 mm (2.13 in) dia. b: 47 mm (1.85 in) dia.  NT115	Installing differential side oil seal

Tool number Tool name	Description
Drift a: 70 mm (2.76 in) dia. b: 56 mm (2.20 in) dia.  NT115	Installing side oil seal (transfer joint)
Drift a: 65 mm (2.56 in) dia. b: 60 mm (2.36 in) dia.  NT115	Installing converter housing oil seal

ON-VEHICLE MAINTENANCE

CVT FLUID

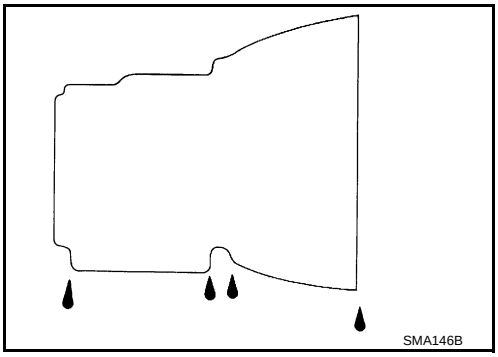
Inspection

INFOID:0000000001695756

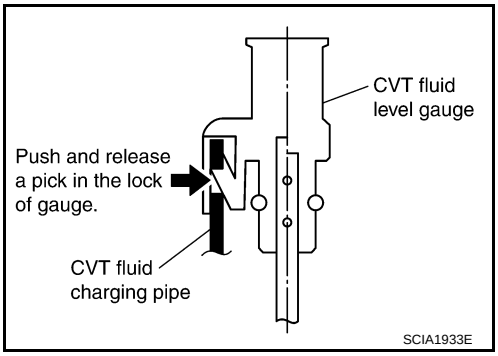
CHECKING CVT FLUID

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:

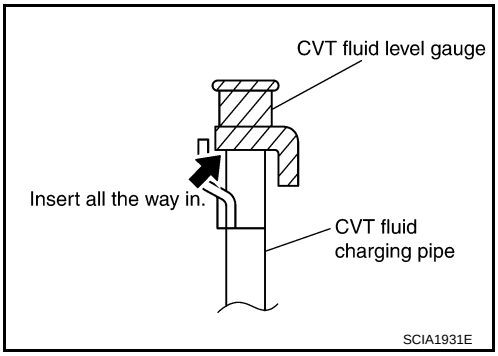
1. Check for fluid leakage.
2. With the engine warmed up, drive the vehicle in an urban area. When ambient temperature is 20°C (68°F), it takes about 10 minutes for the CVT fluid to warm up to 50 to 80°C (122 to 176°F).
3. Park the vehicle on a level surface.
4. Apply parking brake firmly.
5. With engine at idle, while depressing brake pedal, move shift selector throughout the entire shift range.



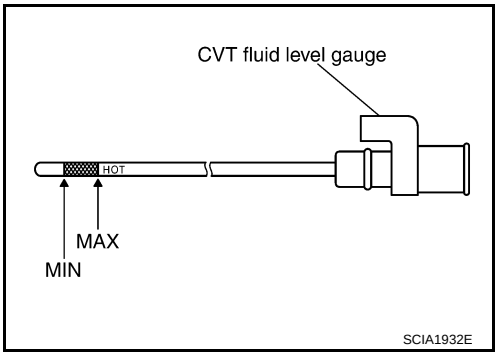
6. Pull out the CVT fluid level gauge from the CVT fluid charging pipe after pressing the tab on the CVT fluid level gauge to release the lock.



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.



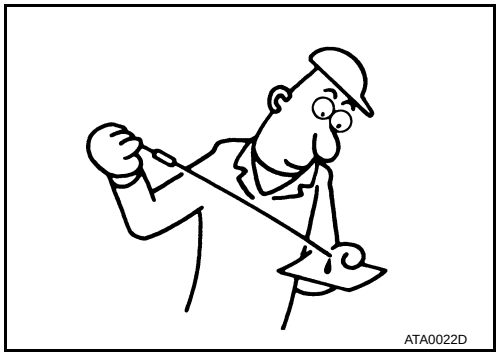
8. Place the selector lever in “P” or “N” and check that the fluid level is within the specified range.
   CAUTION:
   When reinstalling CVT fluid level gauge, insert it into the CVT fluid charging pipe and rotate it to the original installation position until securely locked.



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-204, "FLUID COOLER : Exploded view" (with fluid cooler), TM-162, "Cleaning".



Fluid status	Conceivable cause	Required operation
Varnished (viscous varnish state)	CVT fluid become degraded due to high temperatures.	Replace the CVT fluid and check the CVT main unit and the vehicle for malfunctions (wire harnesses, 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:0000000001695757

1. Remove drain plug from oil pan.
2. Remove drain plug gasket from drain plug.
3. Install drain plug gasket to drain plug
   CAUTION:
   Never reuse drain plug gasket.
4. Install drain plug to oil pan. Refer to TM-187, "Exploded View".
5. Fill CVT fluid from CVT fluid charging pipe to the specified level.

   CVT fluid : **Refer to TM-217, "General Specification".**
   Fluid capacity : **Refer to TM-217, "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-43, "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

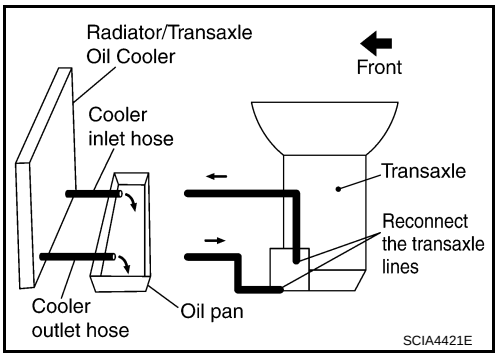
Cleaning

INFOID:0000000001711187

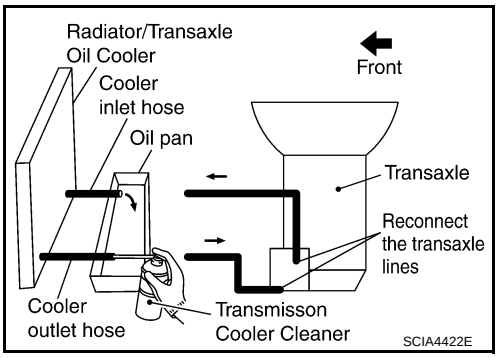
Whenever an automatic transaxle is repaired, overhauled, or replaced, the CVT fluid cooler mounted in the radiator must be inspected and cleaned.
Metal debris and friction material, if present, can be trapped or be deposited in the CVT fluid cooler. This debris can contaminate the newly serviced CVT 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

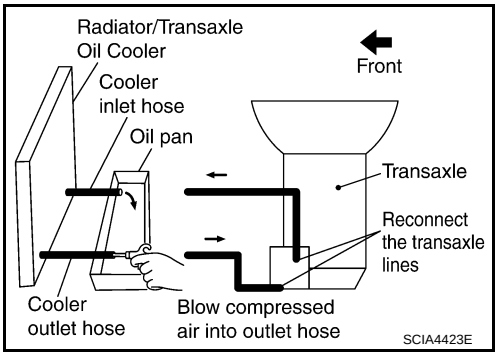
1. Position an oil pan under the transaxle's inlet and outlet cooler hoses.
2. Identify the inlet and outlet fluid cooler hoses.
3. Disconnect the fluid cooler inlet and outlet rubber hoses from the steel cooler tubes or bypass valve.
   NOTE:
   Replace the cooler hoses if rubber material from the hose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



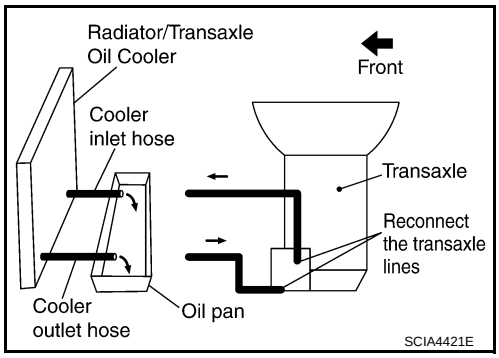
13. Flush each steel line from the cooler side back toward the transaxle by spraying Transmission Cooler Cleaner in a continuous stream for 5 seconds.
14. Blow compressed air regulated to 5 to 9 kg/cm^2 (70 to 130 psi) through each steel line from the cooler side back toward the transaxle for 10 seconds 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”.

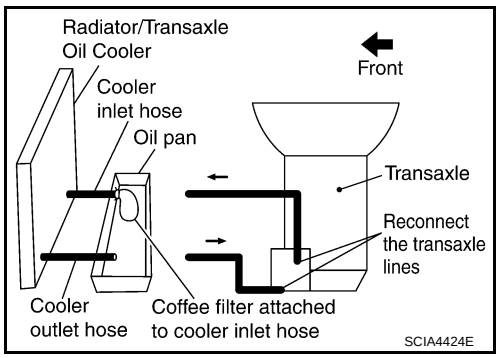
CVT FLUID COOLER DIAGNOSIS PROCEDURE

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

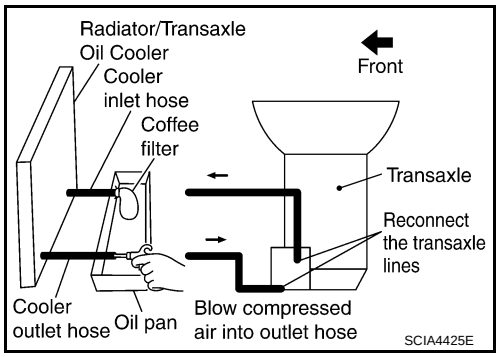
1. Position an oil pan under the transaxle's inlet and outlet cooler hoses.
2. Clean the exterior and tip of the cooler inlet hose.
3. Insert the extension adapter hose of a can of Transmission Cooler Cleaner (Nissan P/N 999MP-AM006) into the cooler outlet hose.
   CAUTION:
   - **Wear safety glasses 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.



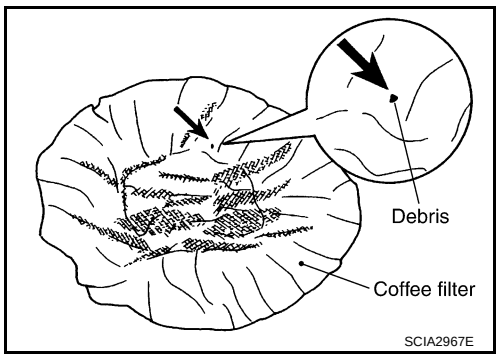
6. Insert the tip of an air gun into the end of the cooler outlet hose.
7. Wrap a shop rag around the air gun tip and end of cooler outlet hose.
8. Blow compressed air regulated to 5 to 9 kg/cm^2 (70 to 130 psi) through the cooler outlet hose to force any remaining CVT fluid into the coffee filter.
9.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



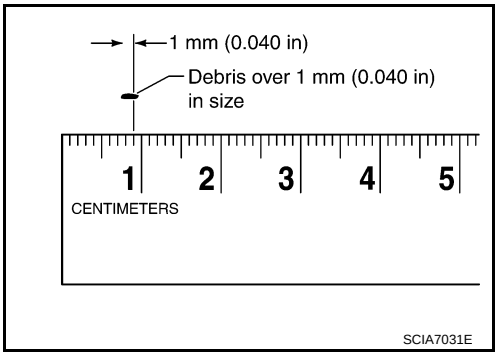
CVT FLUID COOLER INSPECTION PROCEDURE

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.

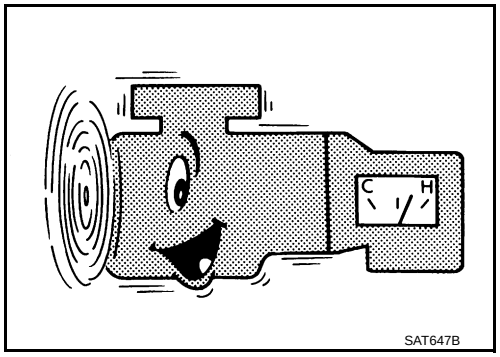
STALL TEST

Inspection and Judgment

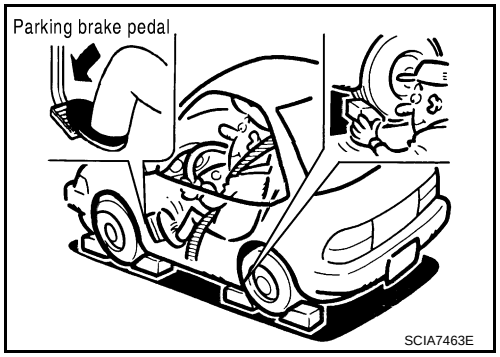
INFOID:0000000001695758

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.

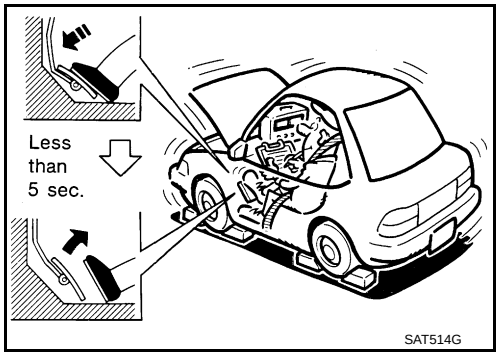


3. Securely engage parking brake so that the tires do not turn.
4. Install a tachometer where it can be seen by driver during test.
   NOTE:
   It is good practice to mark the point of specified engine rpm on indicator.
5. Start engine, apply foot brake, and move selector lever to “D” position.



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-217, "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

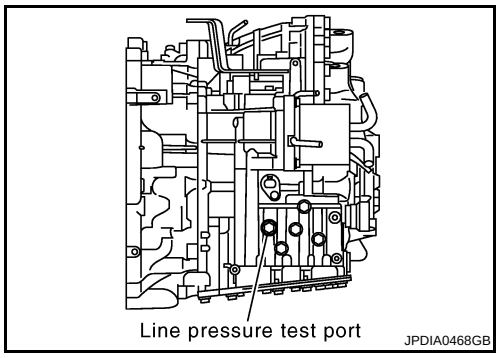
Inspection and Judgment

INFOID:0000000001695759

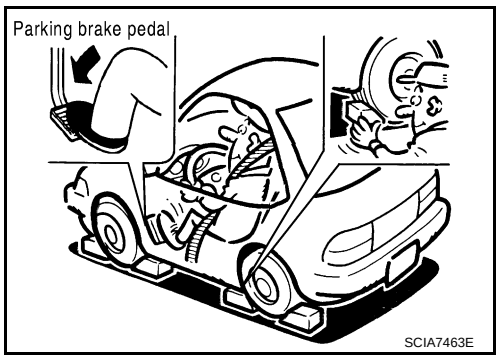
INSPECTION

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.

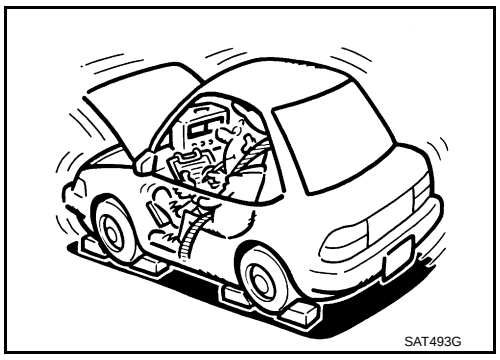


4. Securely engage parking brake so that the tires do not turn.



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-165, "Inspection and Judgment".**

   Line pressure : Refer to TM-217, "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.

*: Without manual mode

ROAD TEST

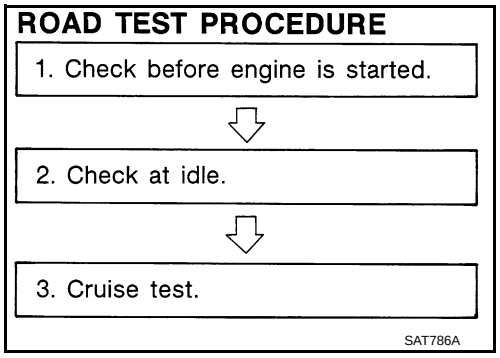
Description

INFOID:0000000001695760

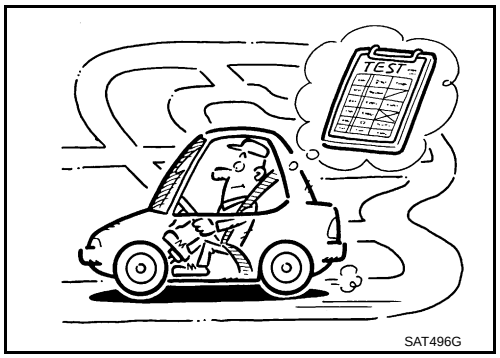
DESCRIPTION

- 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-169.
2. “Check at Idle” TM-170.
3. “Cruise Test” TM-171.



- 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.



CONSULT-III SETTING PROCEDURE

- Using CONSULT-III, perform a cruise test and record the result.
- Print the result and ensure that shifts and lock-ups take place as per Shift Schedule.

1. Touch “DATA MONITOR” on “SELECT DIAG MODE” screen.
2. Touch “MAIN SIGNALS” to set recording condition.
3. See “Numerical Display”, “Barchart Display” or “Line Graph Display”.
4. Touch “START”.
5. When performing cruise test. Refer to TM-171, "Cruise Test".
6. After finishing cruise test part, touch “RECORD”.
7. Touch “STORE”.
8. Touch “BACK”.
9. Touch “DISPLAY”.
10. Touch “PRINT”.
11. Check the monitor data printed out.

Check before Engine Is Started

INFOID:0000000001695761

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-135, "DTC Index".
3. Go to TM-170, "Check at Idle".

NO >> Stop “Road Test”. Refer to TM-136, "Symptom Table".

Check at Idle

INFOID:0000000001695762

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-136, "Symptom Table".

2. CHECK STARTING THE ENGINE (PART 2)

Without manual mode

1. Turn ignition switch ON.
2. Move selector lever to “D”, “L” or “R” position.
3. Turn ignition switch to “START” position.

With manual mode

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

Is engine started?

YES >> Stop “Road Test”. Refer to TM-136, "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-136, "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-136, "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-136, "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-136, "Symptom Table". GO TO 7.

7. CHECK “D” POSITION FUNCTION

Without manual mode

Move selector lever to “D” and “L” position and check if vehicle creeps forward.
With manual mode
Move selector lever to “D” position and check if vehicle creeps forward.

Does vehicle creep forward in all positions?

YES >> Go to TM-171, "Cruise Test".
NO >> Stop “Road Test”. Refer to TM-136, "Symptom Table".

Cruise Test

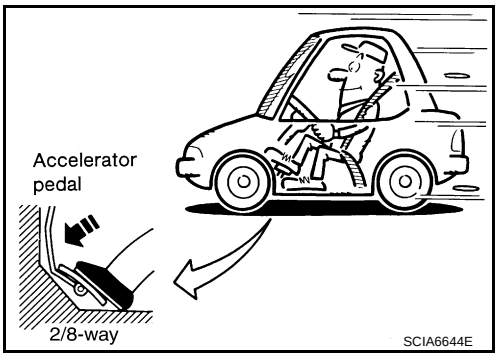
INFOID:0000000001695763

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”.



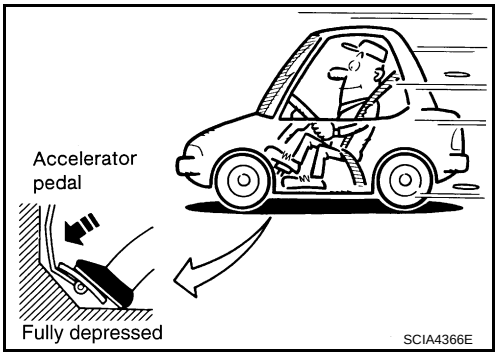
With CONSULT-III
- Read vehicle speed and engine speed. Refer to TM-217, "Vehicle Speed When Shifting Gears".

Is the inspection result normal?

YES >> GO TO 2.
NO >> Refer to TM-136, "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-217, "Vehicle Speed When Shifting Gears".

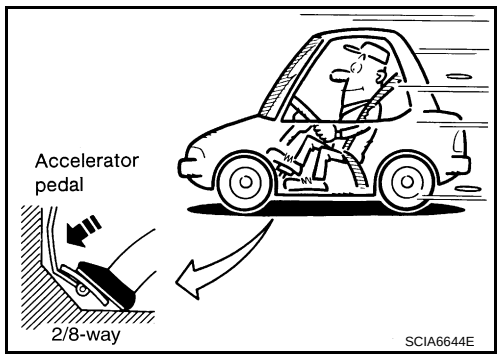
Is the inspection result normal?

YES-1 (Without manual mode)>>GO TO 3.
YES-2 (With manual mode)>>GO TO 8.
NO-1 (Without manual mode)>>Refer to TM-136, "Symptom Table". GO TO 3.
NO-2 (With manual mode)>>Refer to TM-136, "Symptom Table". GO TO 8.

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”.



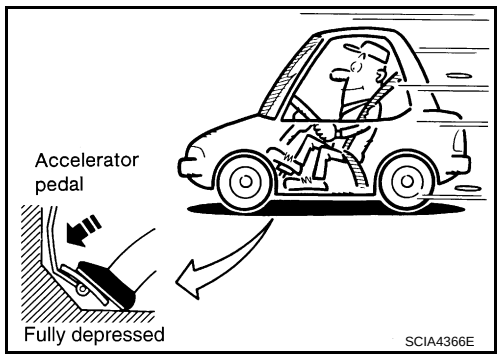
With CONSULT-III
- Read vehicle speed and engine speed. Refer to TM-217, "Vehicle Speed When Shifting Gears".

Is the inspection result normal?

YES >> GO TO 4.
NO >> Refer to TM-136, "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”.



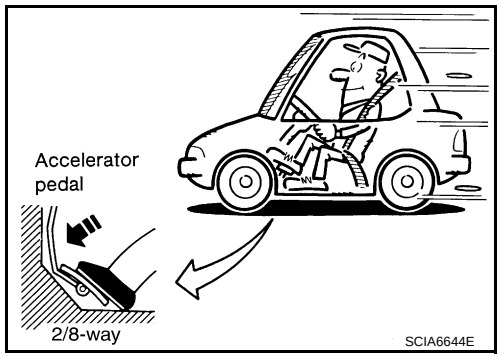
With CONSULT-III
- Read vehicle speed and engine speed. Refer to TM-217, "Vehicle Speed When Shifting Gears".

Is the inspection result normal?

YES >> GO TO 5.
NO >> Refer to TM-136, "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”.



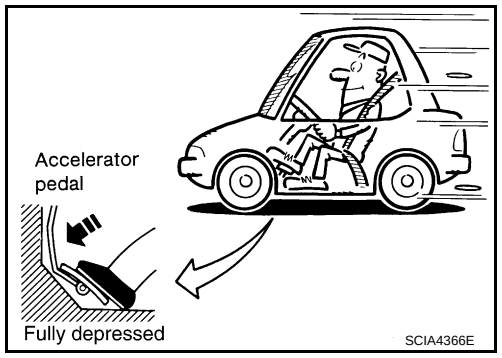
With CONSULT-III
- Read vehicle speed and engine speed. Refer to TM-217, "Vehicle Speed When Shifting Gears".

Is the inspection result normal?

YES >> GO TO 6.
NO >> Refer to TM-136, "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-217, "Vehicle Speed When Shifting Gears".

Is the inspection result normal?

YES >> GO TO 7.
NO >> Refer to TM-136, "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-DIAG RESULT” mode for “TRANSMISSION”.
NO >> Refer to TM-136, "Symptom Table". Then continue trouble diagnosis.

8. CHECK MANUAL MODE FUNCTION

Move to manual mode from “D” position.

Does it switch to manual mode?

YES >> GO TO 9.
NO >> Refer to TM-136, "Symptom Table". GO TO 9.

9. CHECK SHIFT-UP FUNCTION

During manual mode driving, is upshift from M1 → M2 → M3 → M4 → M5 → M6 performed?

With CONSULT-III
- Read gear position. Refer to TM-43, "CONSULT-III Function (TRANSMISSION)".

Is upshifting correctly performed?

YES >> GO TO 10.
NO >> Refer to TM-136, "Symptom Table". GO TO 10.

10. CHECK SHIFT-DOWN FUNCTION

During manual mode driving, is downshift from M6 → M5 → M4 → M3 → M2 → M1 performed?

With CONSULT-III
- Read gear position. Refer to TM-43, "CONSULT-III Function (TRANSMISSION)".

Is downshifting correctly performed?

YES >> GO TO 11.
NO >> Refer to TM-136, "Symptom Table". GO TO 11.

11. CHECK ENGINE BRAKE FUNCTION

Check engine brake.

Does engine braking effectively reduce vehicle speed in M1 position?

YES >> 1. Stop the vehicle.
2. Perform “SELF-DIAG RESULT” mode for “TRANSMISSION”.
NO >> Refer to TM-136, "Symptom Table". Then continue trouble diagnosis.

CVT POSITION

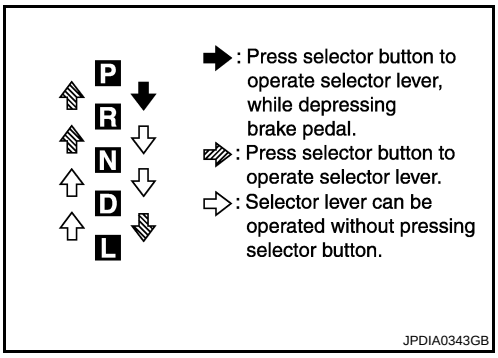
WITHOUT MANUAL MODE

WITHOUT MANUAL MODE : Inspection and Adjustment

INFOID:0000000001695764

INSPECTION

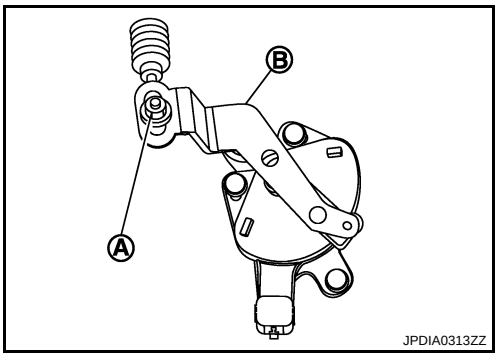
1. Move selector lever to “P” position, and turn ignition switch ON (engine stop).
2. Check that selector lever can be shifted to other than “P” position when brake pedal is depressed. Also check that selector lever can be shifted from “P” position only when brake pedal is depressed.
3. Move selector 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 nut (A).
3. Place manual lever (B) to “P” position.
   CAUTION:
   Never apply any force to manual lever.
4. Tighten nut. Refer to TM-183, "Exploded View".
   CAUTION:
   Fix manual lever when tightening.



WITH MANUAL MODE

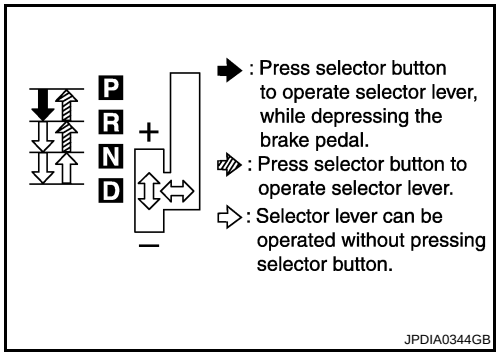
WITH MANUAL MODE : Inspection and Adjustment

INFOID:0000000001695765

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.

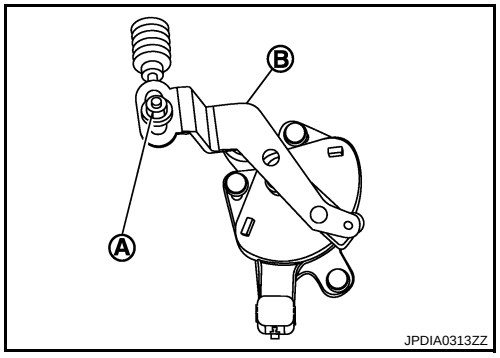
4. Check that selector lever stops at each position with the feel of engagement when it is moved through all the positions. Check that the actual position of selector lever matches the position shown by shift position indicator and manual lever on the transaxle.
5. The method of operating selector lever to individual positions correctly should be as shown.
6. When selector button is pressed in “P”, “R” or “N” 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.
12. When selector lever is set to manual shift gate, check that manual mode is displayed on combination meter.
    Shift selector lever to “+” and “–” sides, and check that set shift position changes.

ADJUSTMENT

1. Move selector lever to “ P” position.
   CAUTION:
   Turn wheels more than 1/4 rotations and apply the park lock.
2. Loosen nut (A).
3. Place manual lever (B) to “P” position.
   CAUTION:
   Never apply any force to manual lever.
4. Tighten nut. Refer to TM-183, "Exploded View".
   CAUTION:
   Fix manual lever when tightening.

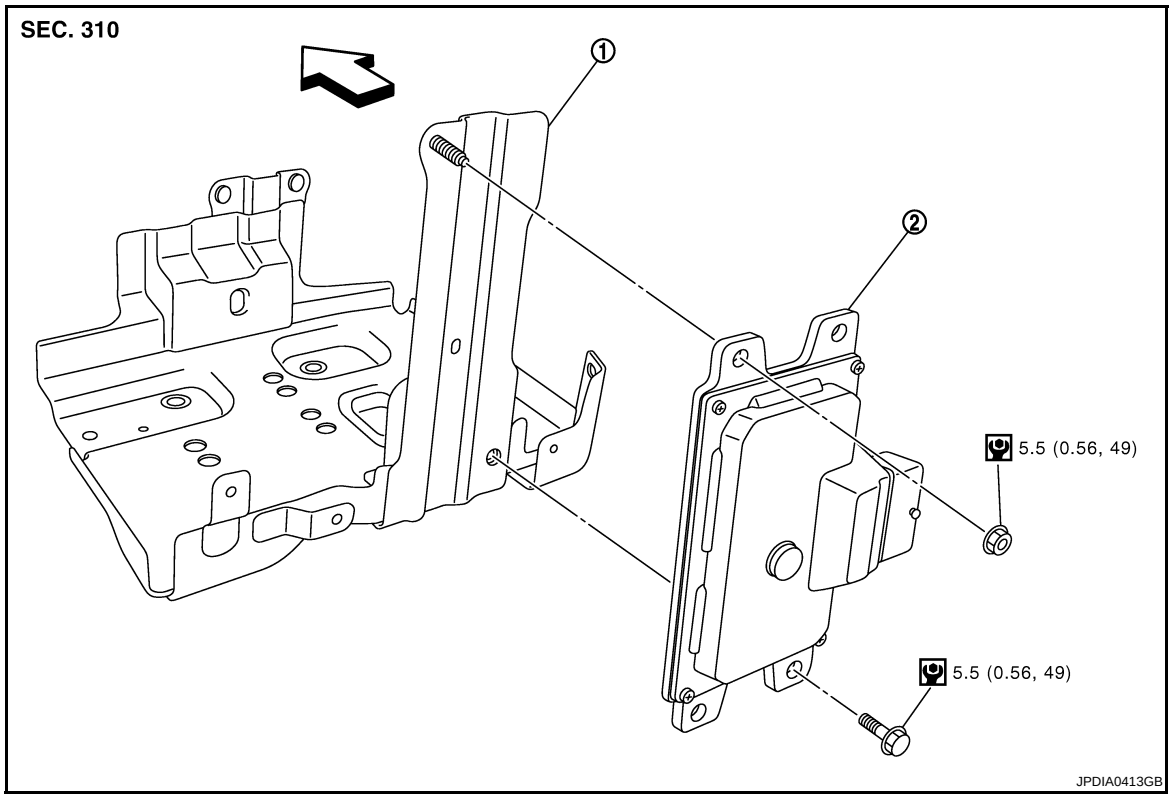


ON-VEHICLE REPAIR

TRANSMISSION CONTROL MODULE

Exploded View

INFOID:0000000001695768



1. Battery bracket
2. TCM

⇦ : Vehicle front

Refer to GI-4, "Components" for symbols in the figure.

Removal and Installation

INFOID:0000000001695769

REMOVAL

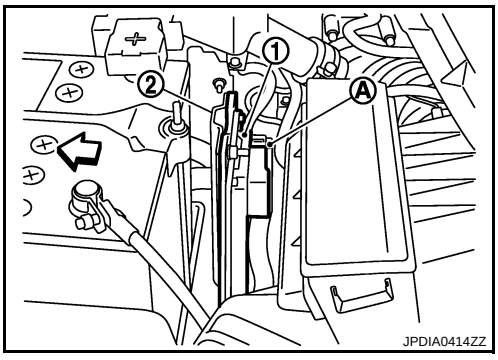
CAUTION:

Never impact on TCM when removing or installing TCM.

1. Disconnect the battery cable from the negative terminal.
2. Disconnect TCM harness connector (A).

⇦ : Vehicle front

3. Remove TCM (1) from battery bracket (2).



INSTALLATION

Install in the reverse order of removal.

Adjustment

INFOID:0000000001695876

ADJUSTMENT AFTER INSTALLATION

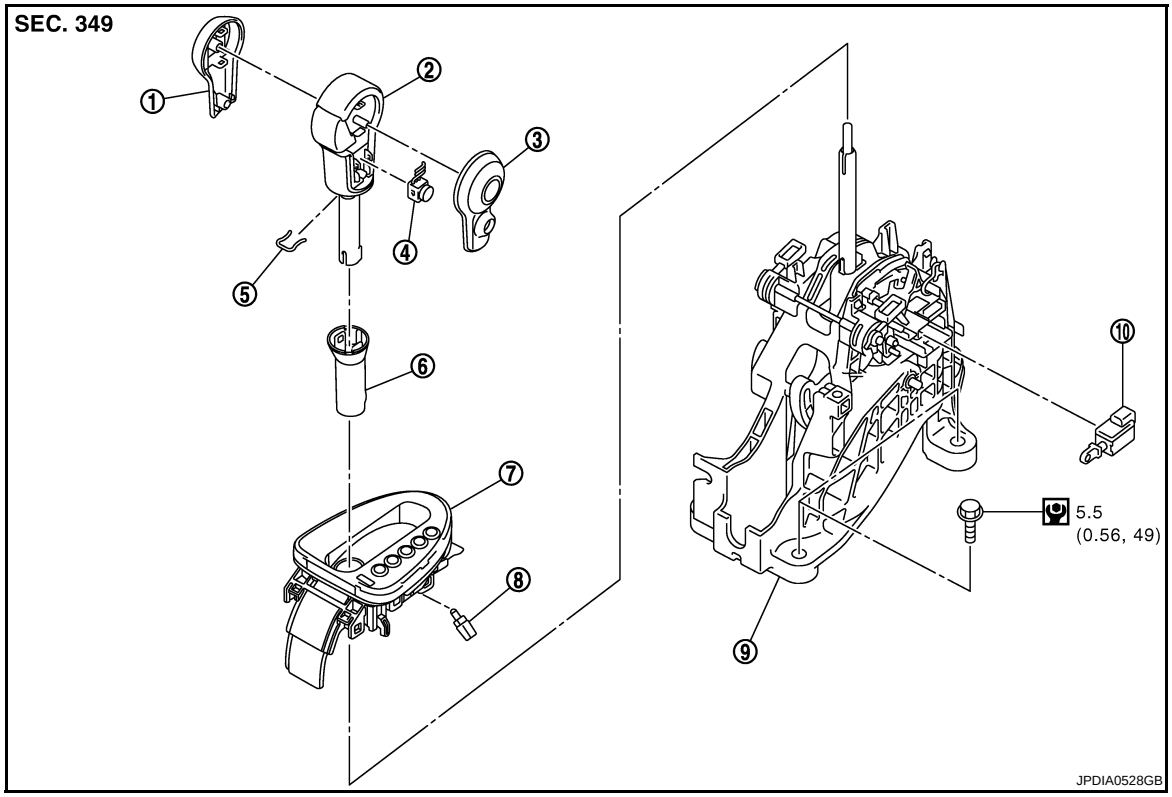
After TCM is replaced. Refer to TM-9, "ADDITIONAL SERVICE WHEN REPLACING CONTROL UNIT : Service After Replacing TCM and Transaxle Assembly".

CONTROL DEVICE

WITHOUT MANUAL MODE

WITHOUT MANUAL MODE : Exploded View

INFOID:0000000001695770



1. Knob fin (right side)
2. Selector lever knob
3. Knob fin (left side)
4. Overdrive control switch
5. Lock pin
6. Knob cover
7. Position indicator plate
8. Position lamp
9. Control device assembly
10. Shift lock solenoid

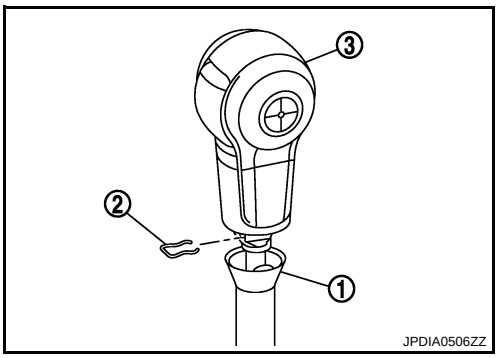
Refer to GI-4, "Components" for symbols in the figure.

WITHOUT MANUAL MODE : Removal and Installation

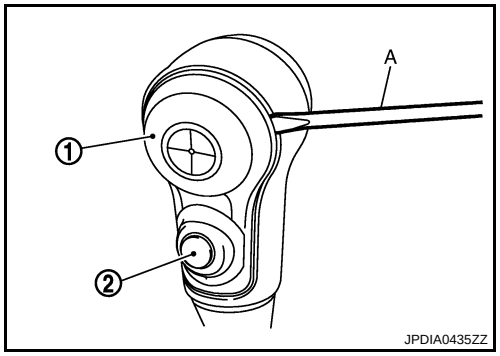
INFOID:0000000001695771

REMOVAL

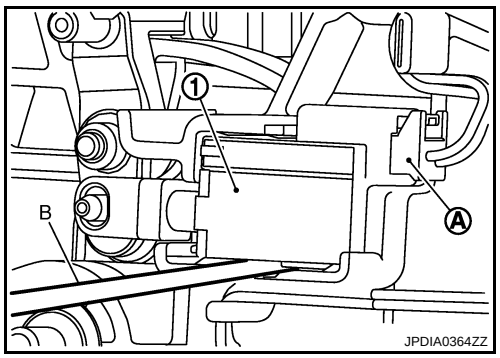
1. Disconnect the battery cable from the negative terminal.
2. Move selector lever to “N” position.
3. Slide knob cover (1) below selector lever downward.
   CAUTION:
   Be careful not to damage knob cover.
4. Pull lock pin (2) out of selector lever knob (3).
5. Remove selector lever knob and knob cover.



6. Remove knob fin (1) using a flat-bladed screwdriver (A).
CAUTION:
Be careful not to damage selector lever knob.
7. Remove overdrive control switch (2).
8. Remove center console assembly. Refer to IP-20, "Exploded View".

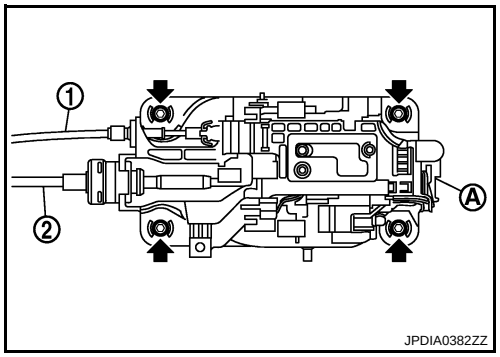


9. Disconnect shift lock solenoid connector (A).
10. Remove shift lock solenoid (1) using a feeler gauge (B).



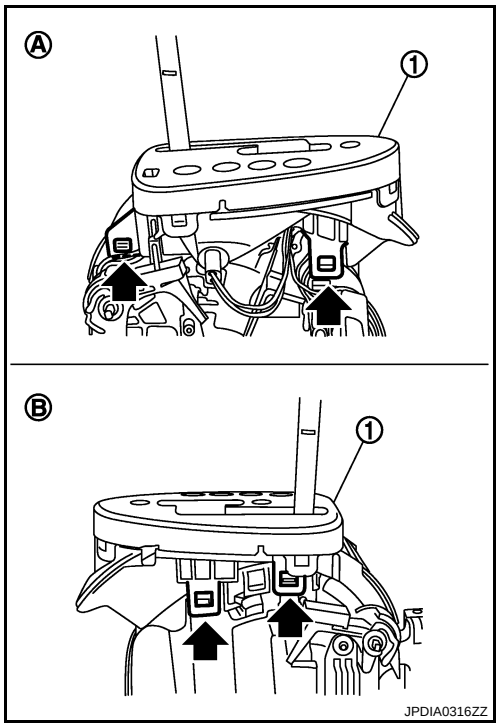
11. Disconnect control device connector (A).
12. Move selector lever to “P” position.
13. Remove key interlock cable (1) from control device assembly. Refer to TM-185, "Exploded View".
14. Remove control cable (2) from control device assembly. Refer to TM-183, "Exploded View".
15. Remove control device assembly.

⬅ : Bolt



16. Remove position lamp.
17. Unhook (⬅) position indicator plate (1) for removal.

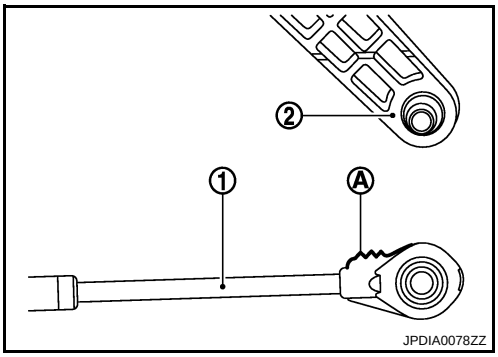
A : Driver side
B : Passenger side



INSTALLATION

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

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



WITHOUT MANUAL MODE : Inspection and Adjustment

INFOID:0000000001695772

ADJUSTMENT AFTER INSTALLATION

Adjust the CVT positions after installing control device. Refer to TM-174, "WITHOUT MANUAL MODE : Inspection and Adjustment".

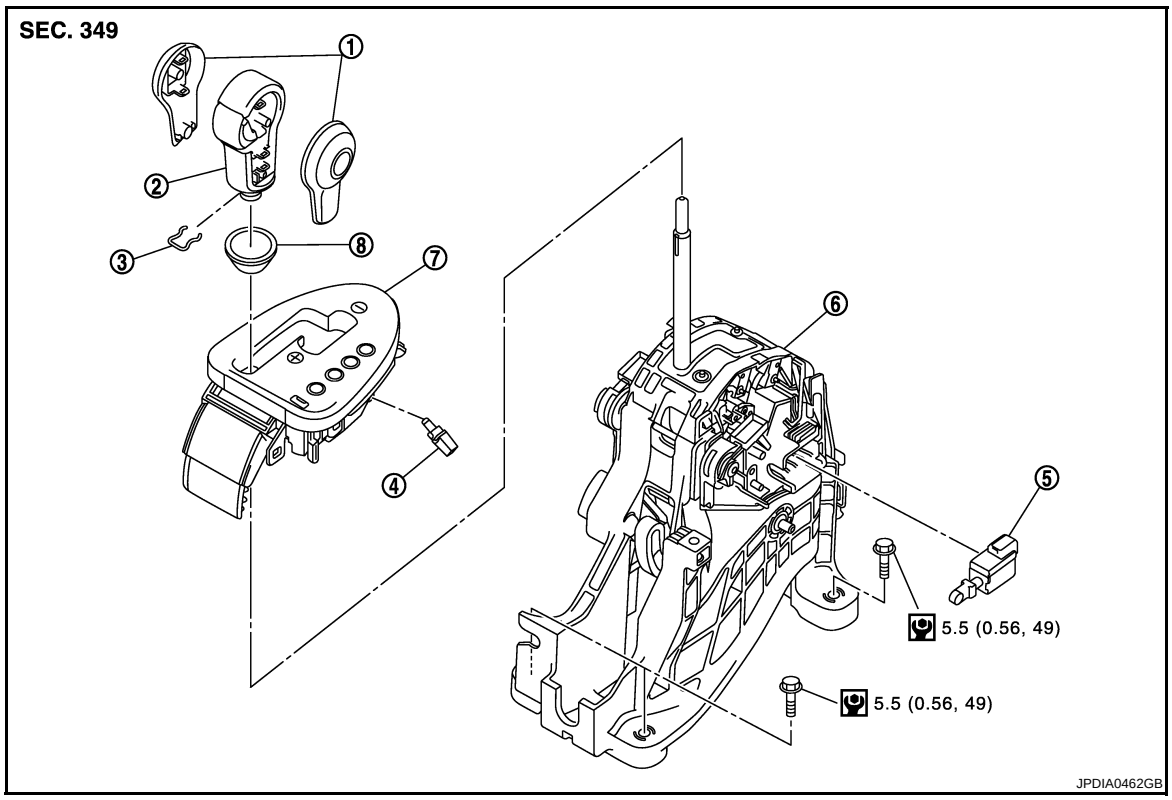
INSPECTION AFTER INSTALLATION

Check the CVT positions after adjusting the CVT positions. Refer to TM-174, "WITHOUT MANUAL MODE : Inspection and Adjustment".

WITH MANUAL MODE

WITH MANUAL MODE : Exploded View

INFOID:0000000001695773



1.	Knob fin	2.	Selector lever knob	3.	Lock pin
4.	Position lamp	5.	Shift lock solenoid	6.	Control device assembly
7.	Position indicator plate	8.	Knob cover		

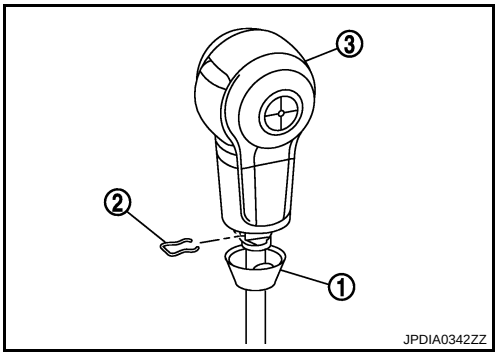
Refer to GI-4, "Components" for symbols in the figure.

WITH MANUAL MODE : Removal and Installation

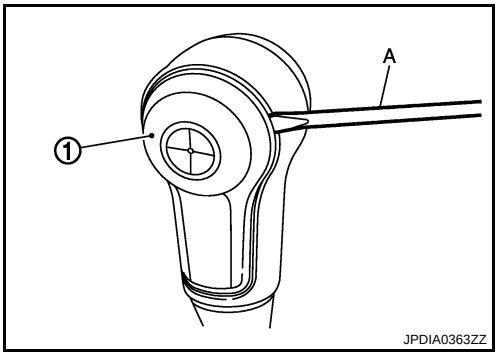
INFOID:0000000001695774

REMOVAL

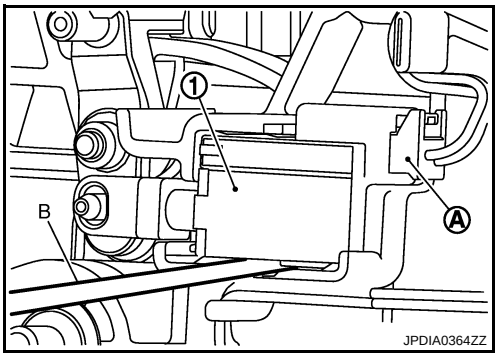
1. Disconnect the battery cable from the negative terminal.
2. Move selector lever to “N” position.
3. Slide knob cover (1) below selector lever downward.
   CAUTION:
   Be careful not to damage knob cover.
4. Pull lock pin (2) out of selector lever knob (3).
5. Remove selector lever knob and knob cover.



6. Remove knob fin (1) using a flat-bladed screwdriver (A).
   CAUTION:
   Be careful not to damage selector lever knob.
7. Remove center console assembly. Refer to IP-20, "Exploded View".



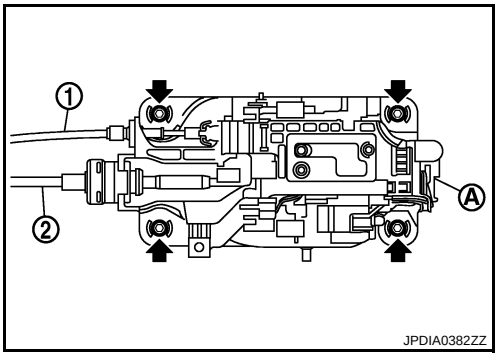
8. Disconnect shift lock solenoid connector (A).
9. Remove shift lock solenoid (1) using a feeler gauge (B).



10. Disconnect control device connector (A).
11. Move selector lever to “P” position.
12. Remove key interlock cable (1) from control device assembly. Refer to TM-185, "Exploded View".
13. Remove control cable (2) from control device assembly. Refer to TM-183, "Exploded View".
14. Remove control device assembly.

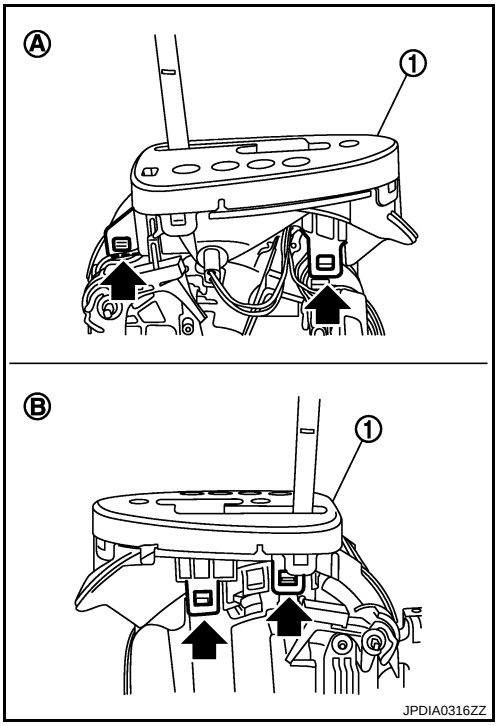
    ⬅ : Bolt

15. Remove position lamp.



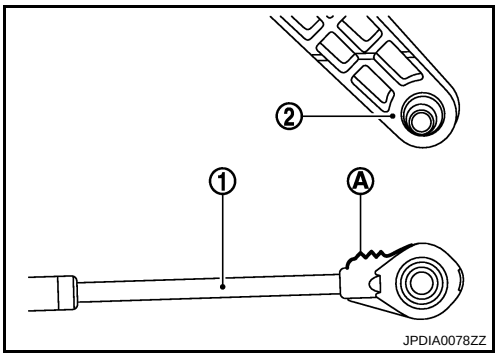
16. Unhook (⬅) position indicator plate (1) for removal.

A : Driver side
B : Passenger side



INSTALLATION

Note the following, and install in the reverse order of removal.
When installing control cable (1) to control device assembly (2), check that control cable is fully pressed in with the ribbed (A) surface facing upward.



WITH MANUAL MODE : Inspection and Adjustment

INFOID:0000000001695775

ADJUSTMENT AFTER INSTALLATION

Adjust the CVT positions after installing control device. Refer to TM-174, "WITH MANUAL MODE : Inspection and Adjustment".

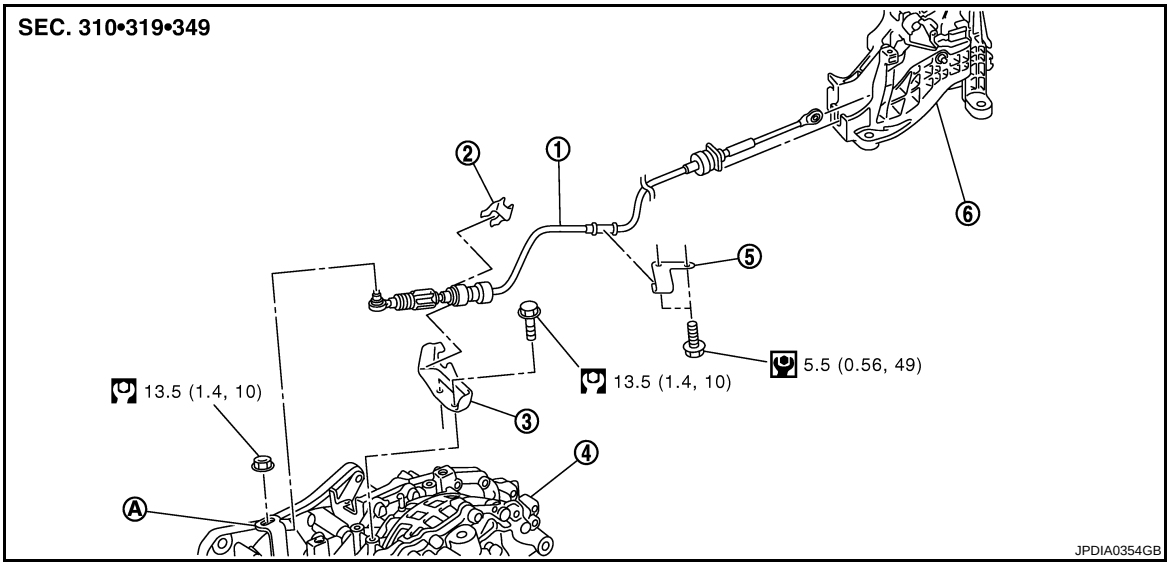
INSPECTION AFTER INSTALLATION

Check the CVT positions after adjusting the CVT positions. Refer to TM-174, "WITH MANUAL MODE : Inspection and Adjustment".

CONTROL CABLE

Exploded View

INFOID:0000000001695779



1. Control cable
2. Lock plate
3. Bracket
4. Transaxle assembly
5. Bracket
6. Control device assembly
A. Manual lever

Refer to GI-4, "Components" for symbols in the figure.

Removal and Installation

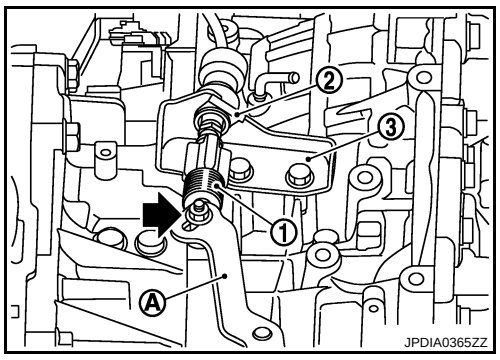
INFOID:0000000001695780

REMOVAL

CAUTION:

Make sure that parking brake is applied before removal/installation.

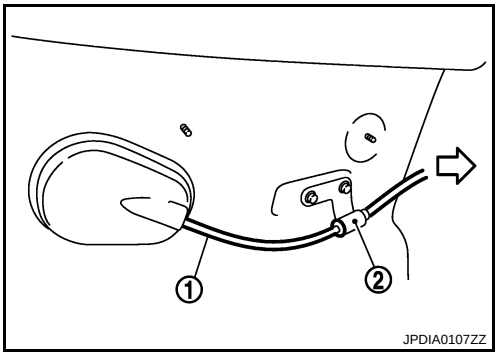
1. Remove control cable from control device assembly. Refer to TM-178, "WITHOUT MANUAL MODE : Exploded View" (without manual mode), TM-180, "WITH MANUAL MODE : Exploded View" (with manual mode).
2. Remove air duct (inlet). Refer to EM-27, "Exploded View".
3. Remove battery and battery bracket. Refer to PG-88, "Exploded View".
4. Remove nut (⬅).
5. Remove control cable (1) from manual lever (A).
6. Remove lock plate (2) from control cable.
7. Remove control cable (1) from bracket (3).



8. Remove control cable (1) from bracket (2).

⇦ : Vehicle front

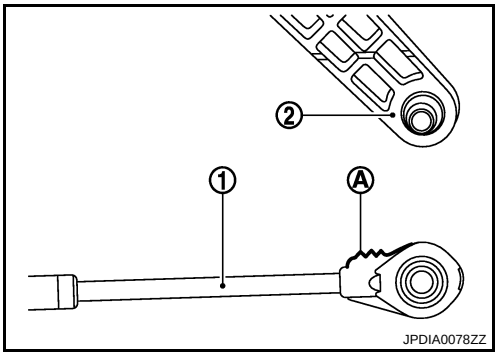
9. Remove the control cable from the vehicle.



INSTALLATION

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

When installing control cable (1) to control device assembly (2), make sure that control cable is fully pressed in with the ribbed (A) surface facing upward.



Inspection and Adjustment

INFOID:0000000001695781

ADJUSTMENT AFTER INSTALLATION

Adjust the CVT positions after installing control cable. Refer to TM-174, "WITHOUT MANUAL MODE : Inspection and Adjustment" (without manual mode), TM-174, "WITH MANUAL MODE : Inspection and Adjustment" (with manual mode).

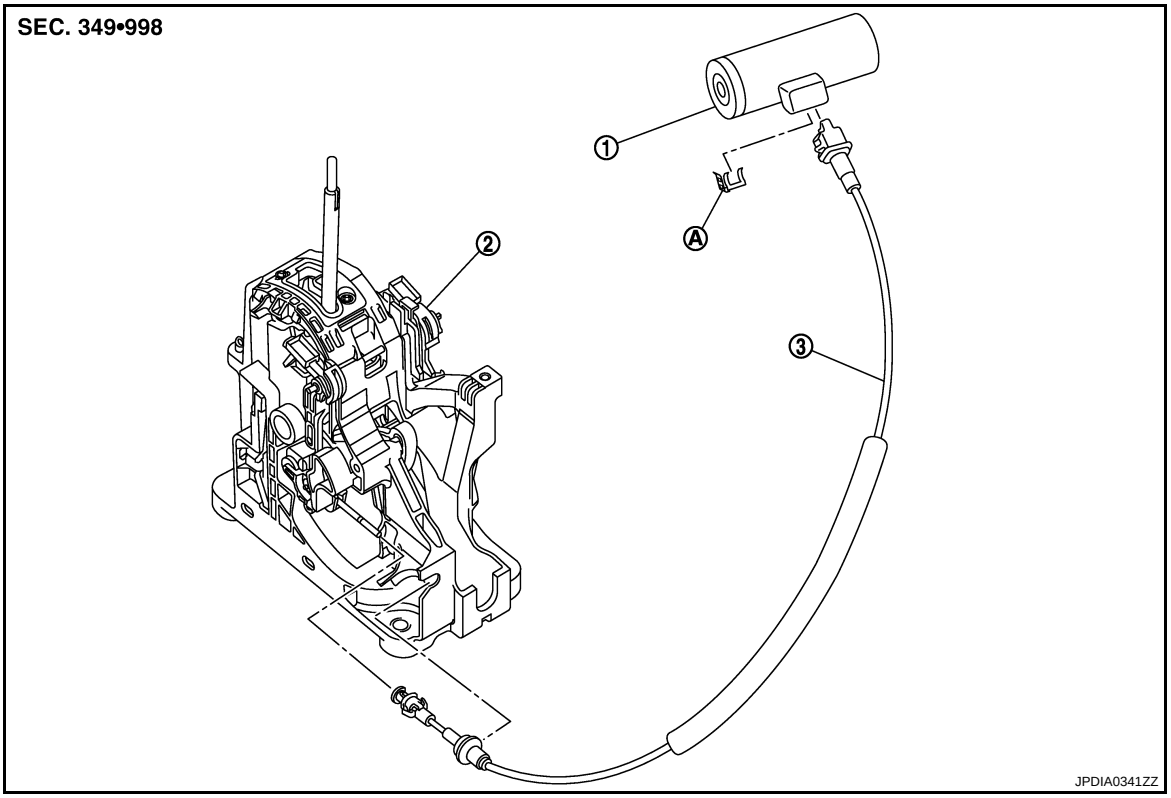
INSPECTION AFTER INSTALLATION

Check the CVT positions after adjusting the CVT positions. Refer to TM-174, "WITHOUT MANUAL MODE : Inspection and Adjustment" (without manual mode), TM-174, "WITH MANUAL MODE : Inspection and Adjustment" (with manual mode).

KEY INTERLOCK CABLE

Exploded View

INFOID:0000000001695782



1. Key cylinder
2. Control device assembly
3. Key interlock cable

A. Clip

Removal and Installation

INFOID:0000000001695783

REMOVAL

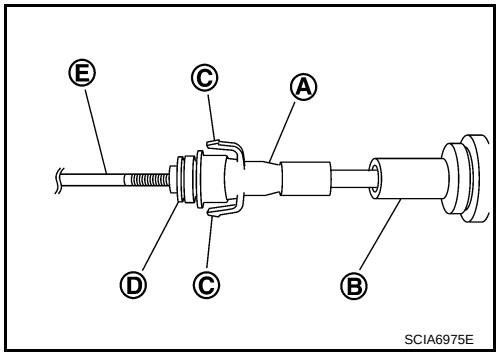
CAUTION:

Check that parking brake is applied before removal/installation.

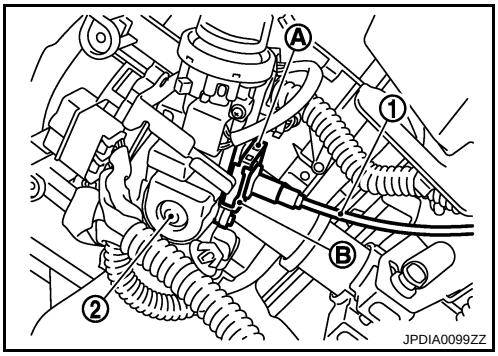
1. Move selector lever to “P” position.
2. Remove selector lever knob. Refer to TM-178, "WITHOUT MANUAL MODE : Exploded View" (without manual mode), TM-180, "WITH MANUAL MODE : Exploded View" (with manual mode).
3. Removal center console assembly. Refer to IP-20, "Exploded View".
4. Slide slider (A) toward casing cap (B) while pressing tabs (C) on slider to separate slider from adjust holder (D).

   E : Key interlock rod

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



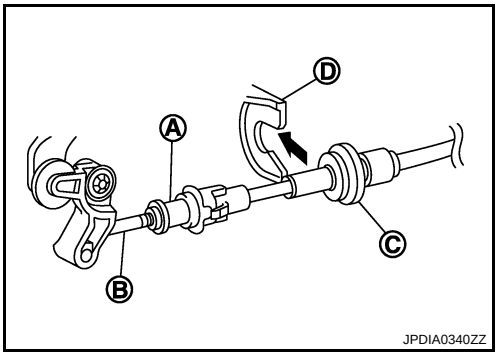
6. Remove clip (A) from holder (B).
7. Remove key interlock cable (1) from key cylinder (2).
8. Remove key interlock cable.



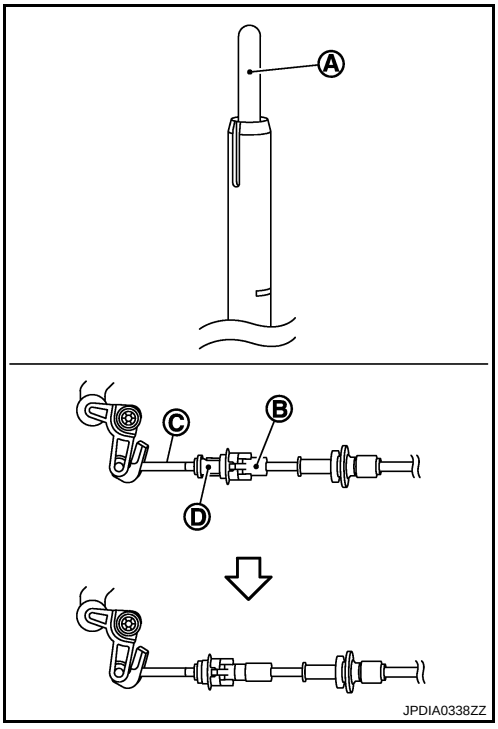
INSTALLATION

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

- Temporarily install adjust holder (A) to key interlock rod (B). Install casing cap (C) to cable bracket (D) on control device assembly.
  CAUTION:
  - **Never bend or twist key interlock cable excessively when installing.**
  - **Check that casing caps is firmly secured in cable bracket on control device assembly after installing key interlock cable to cable bracket on control device assembly.**
  - **If casing cap is loose [less than 39.2 N (4.0 kg, 8.8 lb) removing force], replace key interlock cable.**



- With the detent rod (A) pressed fully to the end, slider the key interlock cable slider (B) to the key interlock rod side (C), and install adjust holder (D) and key interlock rod.
  CAUTION:
  - **Never press tabs when holding slider.**
  - **Never apply any force at a right angle to key interlock rod when sliding.**



Inspection

INFOID:0000000001695784

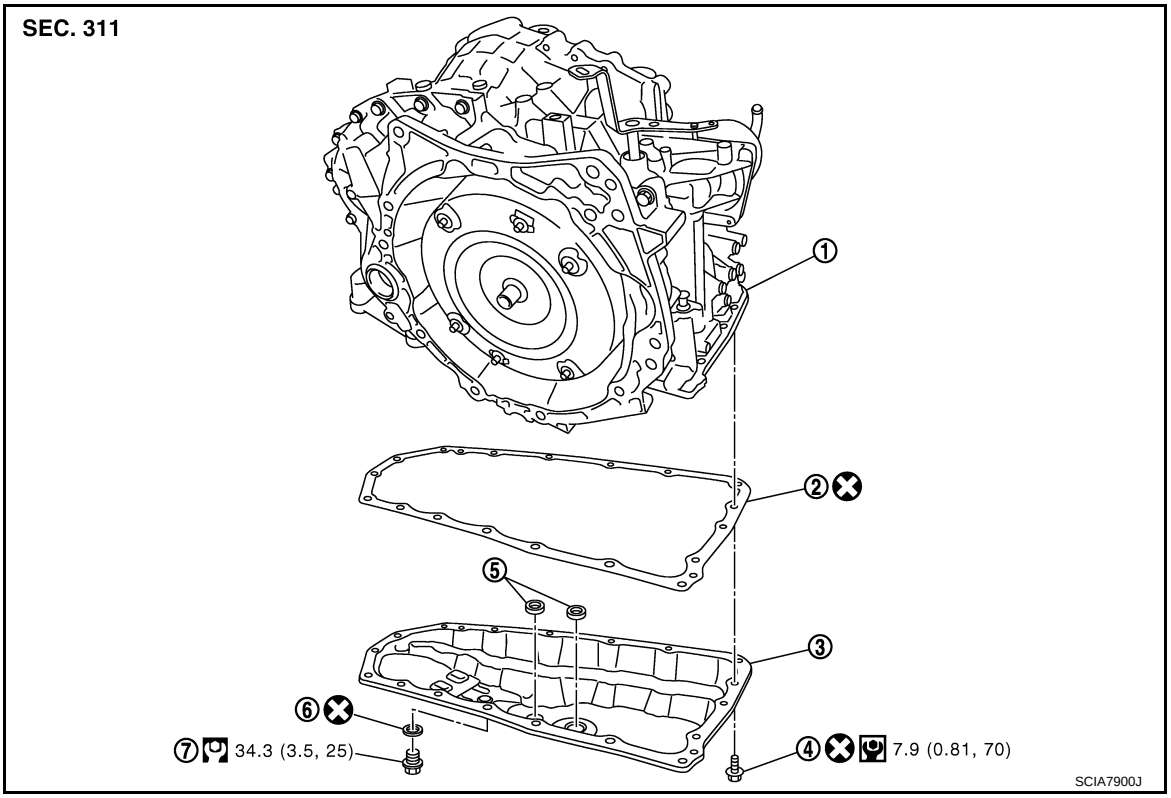
INSPECTION AFTER INSTALLATION

Check the CVT positions after adjusting the CVT positions. Refer to TM-174, "WITHOUT MANUAL MODE : Inspection and Adjustment" (without manual mode), TM-174, "WITH MANUAL MODE : Inspection and Adjustment" (with manual mode).

OIL PAN

Exploded View

INFOID:0000000001695785



1. Transaxle assembly
2. Oil pan gasket
3. Oil pan
4. Oil pan fitting bolt
5. Magnet
6. Drain plug gasket
7. Drain plug

Refer to GI-4, "Components" for symbols in the figure.

Removal and Installation

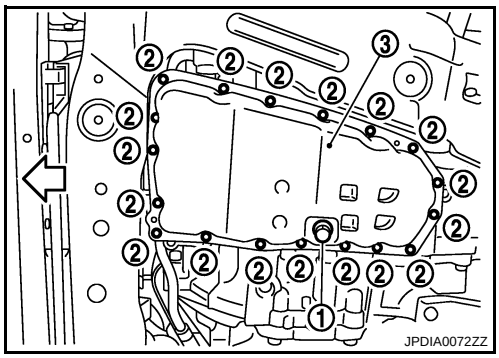
INFOID:0000000001695786

REMOVAL

1. Remove engine under cover with power tool.
2. Remove drain plug (1).

⇦ : Vehicle front

3. Remove drain plug gasket from drain plug.
4. Remove oil pan fitting bolts (2).
5. Remove oil pan (3).
6. Remove oil pan gasket from oil pan.
7. Remove magnets from oil pan.



INSTALLTION

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

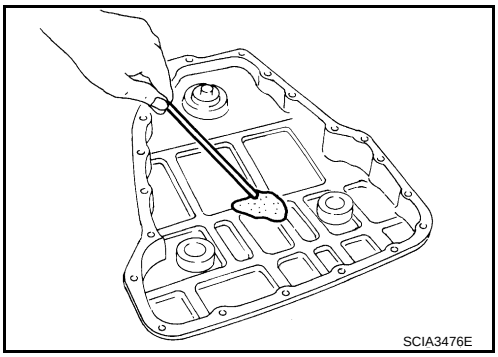
CAUTION:

- **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, drain plug gasket and oil pan fitting bolts.**

Inspection

INFOID:0000000001695787

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.



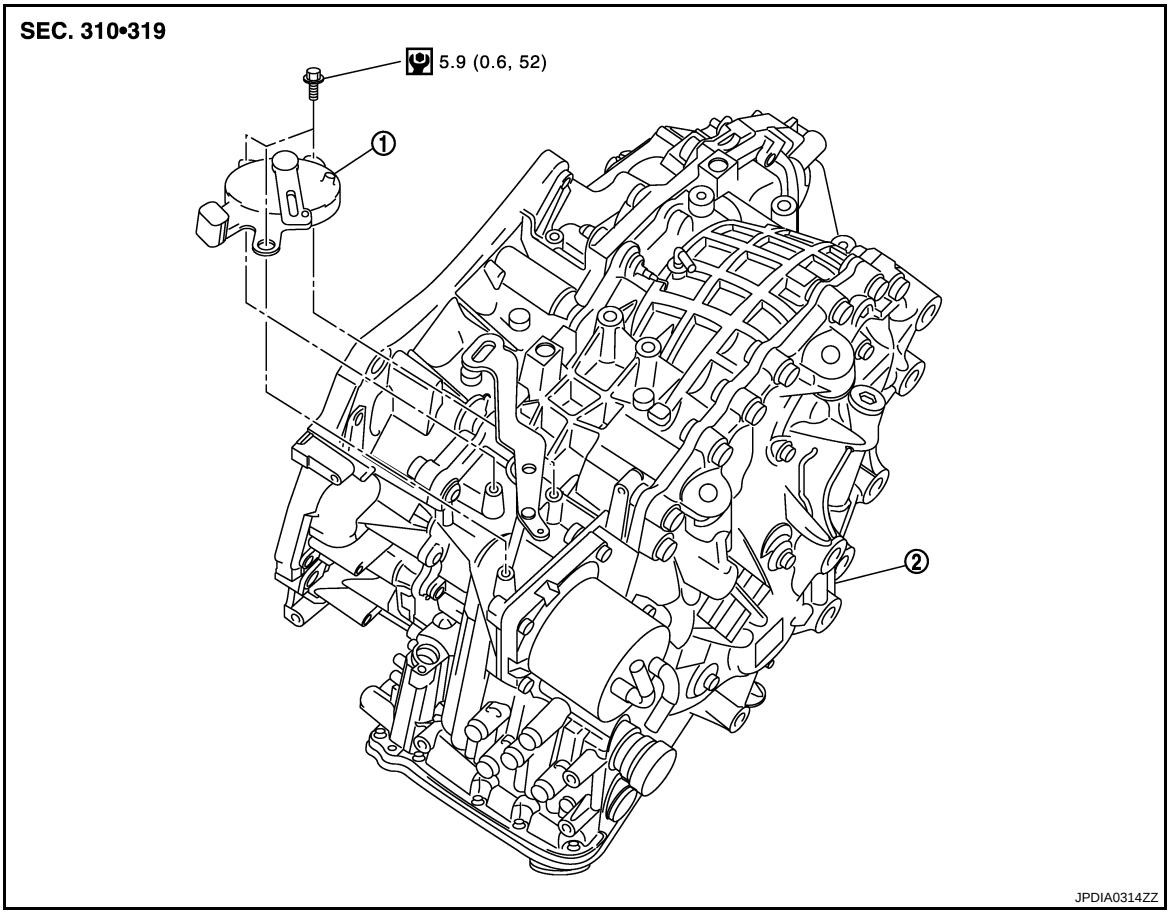
INSPECTION AFTER INSTALLATION

Check for CVT fluid leakage and check CVT fluid level. Refer to TM-160, "Inspection".

PARK/NEUTRAL POSITION (PNP) SWITCH

Exploded View

INFOID:0000000001695791



1. PNP switch
2. Transaxle assembly

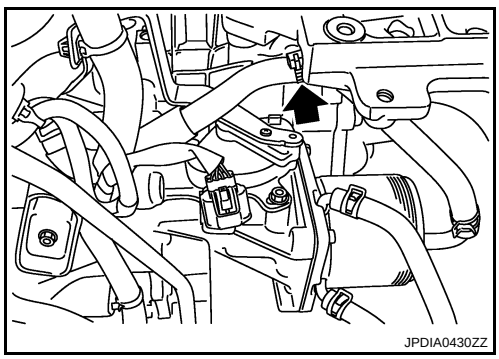
Refer to GI-4, "Components" for symbols in the figure.

Removal and Installation

INFOID:0000000001695792

REMOVAL

1. Remove battery and battery bracket. Refer to PG-88, "Exploded View".
2. Remove PNP switch connector.
3. Remove control cable. Refer to TM-183, "Exploded View".
4. Remove clip (⬅).
5. Remove PNP switch from transaxle assembly.



INSTALLATION

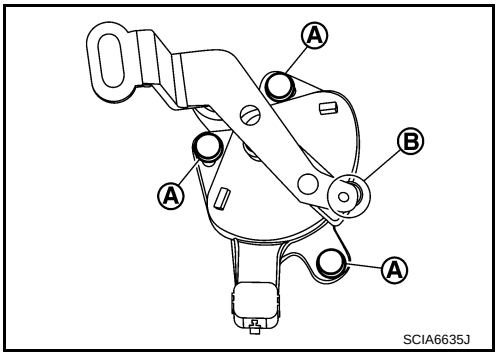
Install in the reverse order of removal.

Inspection and Adjustment

INFOID:0000000001695793

ADJUSTMENT OF PNP SWITCH

1. Move selector lever to “N” position.
2. Remove control cable from manual lever.
3. Loosen mounting bolts (A) of PNP switch. Insert a pin [ϕ4 mm (0.16 in)] into the adjusting holes (B) on both PNP switch and manual lever for adjusting the position.
4. Tighten mounting bolts of PNP switch.
5. Install control cable to manual lever. Refer to TM-174, "WITHOUT MANUAL MODE : Inspection and Adjustment" (without manual mode), TM-174, "WITH MANUAL MODE : Inspection and Adjustment" (with manual mode).



ADJUSTMENT AFTER INSTALLATION

Adjust the CVT positions after installing control device. Refer to TM-174, "WITHOUT MANUAL MODE : Inspection and Adjustment" (without manual mode), TM-174, "WITH MANUAL MODE : Inspection and Adjustment" (with manual mode).

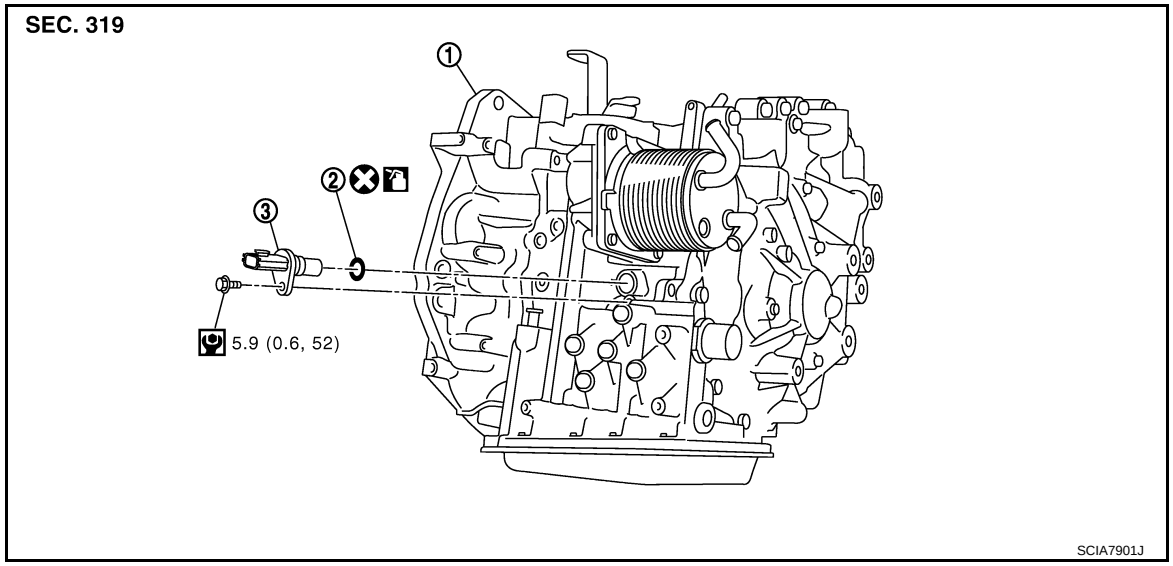
INSPECTION AFTER INSTALLATION

Check the CVT positions after adjusting the CVT positions. Refer to TM-174, "WITHOUT MANUAL MODE : Inspection and Adjustment" (without manual mode), TM-174, "WITH MANUAL MODE : Inspection and Adjustment" (with manual mode).

PRIMARY SPEED SENSOR

Exploded View

INFOID:0000000001695794



1. Transaxle assembly
2. O-ring
3. Primary speed sensor

: Apply CVT Fluid NS-2.

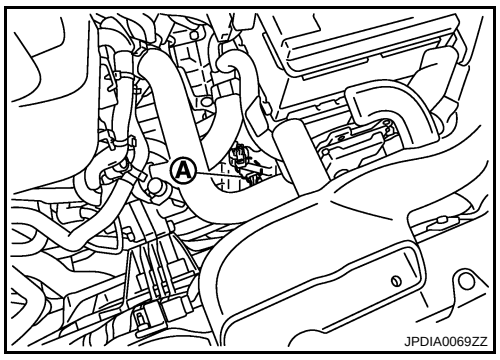
Refer to GI-4, "Components" for symbols not described above.

Removal and Installation

INFOID:0000000001695795

REMOVAL

1. Disconnect the battery cable from negative terminal.
2. Disconnect primary speed sensor connector (A).
3. Remove primary speed sensor.
4. Remove O-ring from primary 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

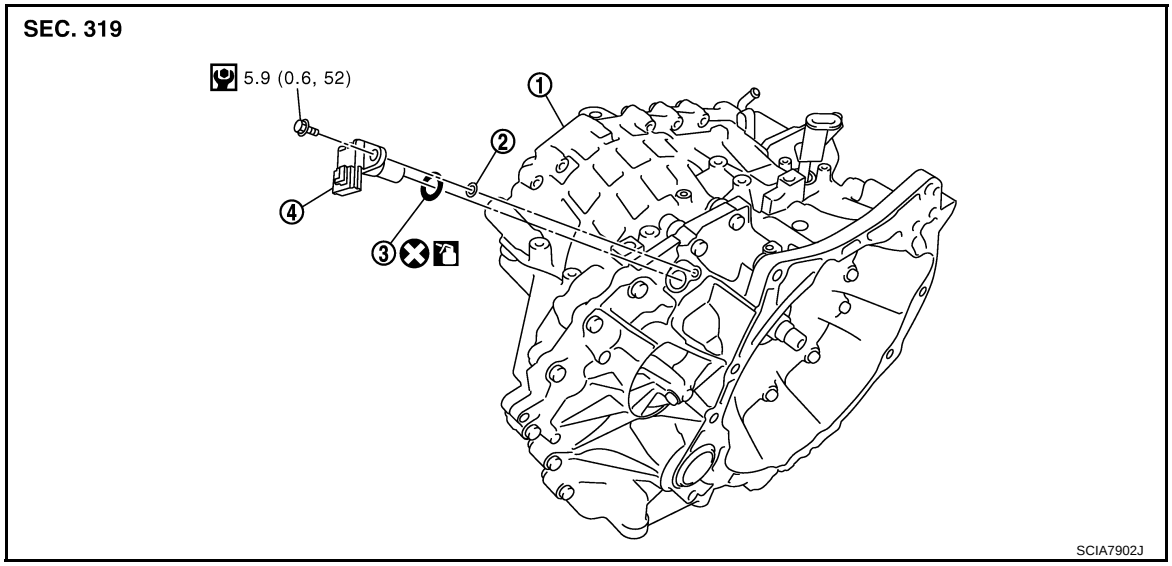
INFOID:0000000001695879

After completing installation, check for CVT fluid leakage and check CVT fluid level. Refer to TM-160, "Inspection".

SECONDARY SPEED SENSOR

Exploded View

INFOID:0000000001695798



1. Transaxle assembly
2. Shim
3. O-ring
4. Secondary speed sensor

: Apply CVT Fluid NS-2.

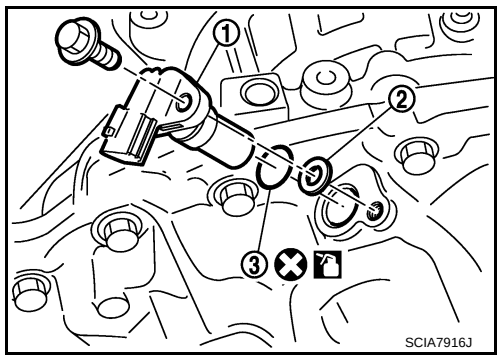
Refer to GI-4, "Components" for symbols not described above.

Removal and Installation

INFOID:0000000001695799

REMOVAL

1. Disconnect the battery cable from negative terminal.
2. Disconnect secondary speed sensor connector.
3. Remove secondary speed sensor (1) and shim (2).
   CAUTION:
   Never lose the shim.
4. Remove O-ring (3) from secondary speed sensor.



INSTALLATION

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

CAUTION:

- **Never reuse O-ring.**
- **Apply CVT fluid to O-ring.**

Inspection

INFOID:0000000001695880

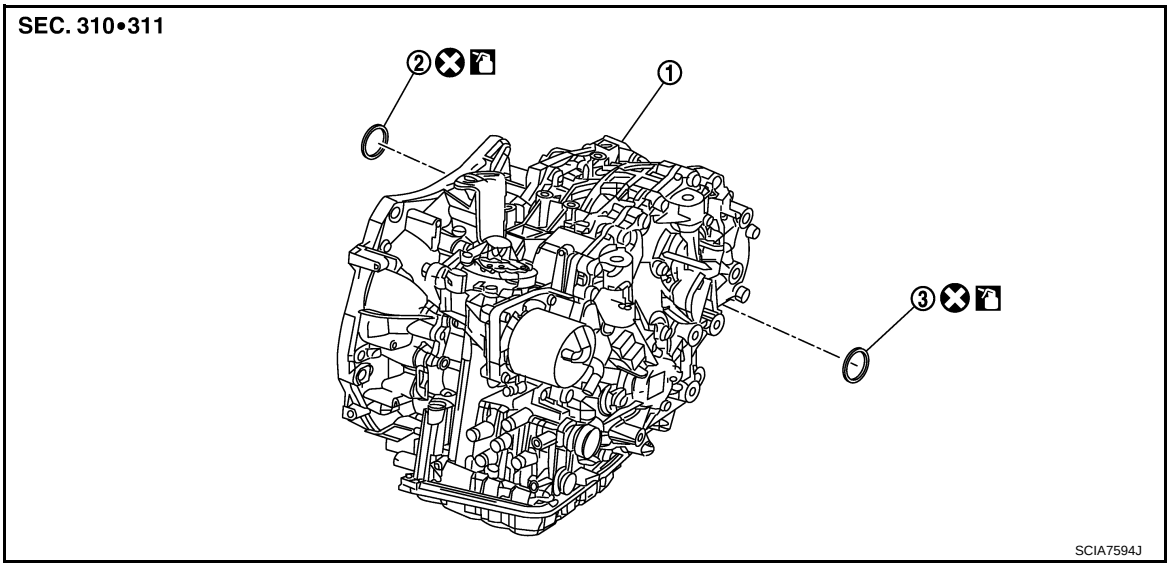
After completing installation, check for CVT fluid leakage and check CVT fluid level. Refer to TM-160, "Inspection".

DIFFERENTIAL SIDE OIL SEAL

2WD

2WD : Exploded View

INFOID:0000000001696909



1. Transaxle assembly
2. RH differential side oil seal
3. LH differential side oil seal

: Apply CVT Fluid NS-2.

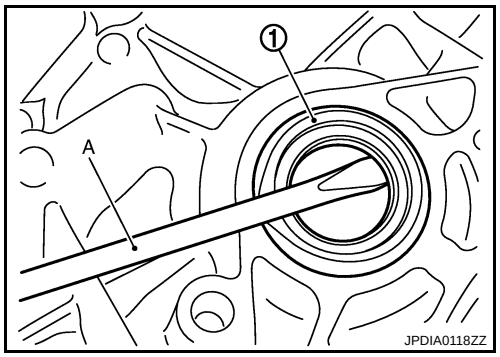
Refer to GI-4, "Components" for symbols not described above.

2WD : Removal and Installation

INFOID:0000000001696910

REMOVAL

1. Remove front drive shafts. Refer to FAX-18, "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.



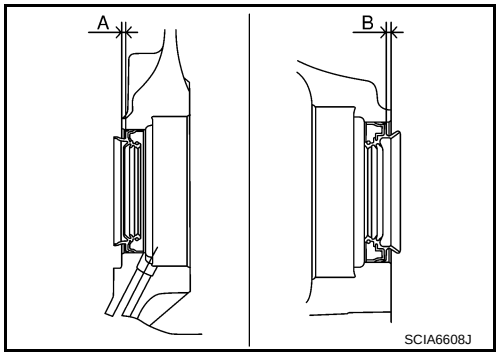
INSTALLTION

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 (A) or (B) respectively.

Unit: mm (in)

Dimension A (transaxle case side)	1.8 ± 0.5 (0.071 ± 0.020)
Dimension B (converter housing side)	2.2 ± 0.5 (0.087 ± 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
Transaxle case side	Commercial service tool [Outer diameter: 54 mm (2.13 in), inner diameter: 47 mm (1.85 in)]
Converter housing side	

2WD : Inspection

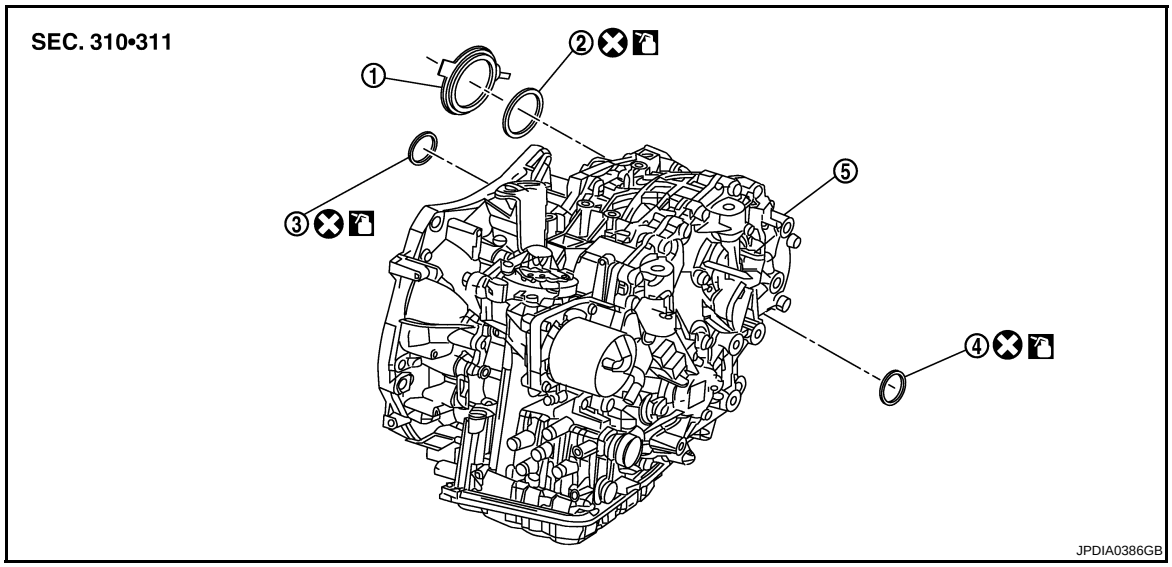
INFOID:0000000001696911

After completing installation, check for CVT fluid leakage and check CVT fluid level. Refer to TM-160, "Inspection".

AWD

AWD : Exploded View

INFOID:0000000001695803



1. Dust cover
2. Side oil seal (transfer joint)
3. RH differential side oil seal
4. LH differential side oil seal
5. Transaxle assembly

: Apply CVT Fluid NS-2.

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

AWD : Removal and Installation

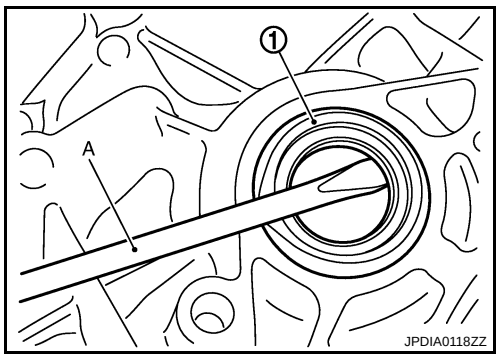
INFOID:0000000001695804

REMOVAL

1. Remove exhaust front tube. Refer to EX-5, "Exploded View".
2. Separate propeller shaft. Refer to DLN-87, "Exploded View".
3. Remove front drive shafts. Refer to FAX-42, "Exploded View".
4. Remove transfer from transaxle assembly. Refer to DLN-58, "Exploded View".
5. Remove dust cover from transaxle assembly.

6. Remove differential side oil seals (1) and side oil seal (transfer joint) using a flat-bladed screwdriver (A).

CAUTION:
Be careful not to scratch transaxle case and converter housing.



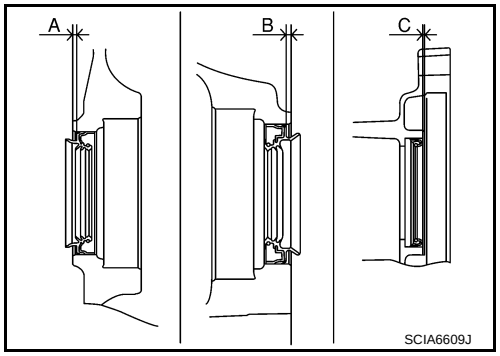
INSTALLTION

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 (A), (B), or (C) respectively.

Unit: mm (in)

Dimension A (transaxle case side)	1.8 ± 0.5 (0.071 ± 0.020)
Dimension B (converter housing side)	2.2 ± 0.5 (0.087 ± 0.020)
Dimension C (transfer joint)	0.5 ± 0.5 (0.020 ± 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
Differential side oil seal	Transaxle case side	Commercial service tool [Outer diameter: 54 mm (2.13 in), inner diameter: 47 mm (1.85 in)]
	Converter housing side	
Side oil seal (transfer joint)	Transaxle engagement	Commercial service tool [Outer diameter: 70 mm (2.76 in), inner diameter: 56 mm (2.20 in)]

AWD : Inspection

INFOID:0000000001695805

After completing installation, check for CVT fluid leakage and check CVT fluid level. Refer to TM-160, "Inspection".

OIL PUMP FITTING BOLT

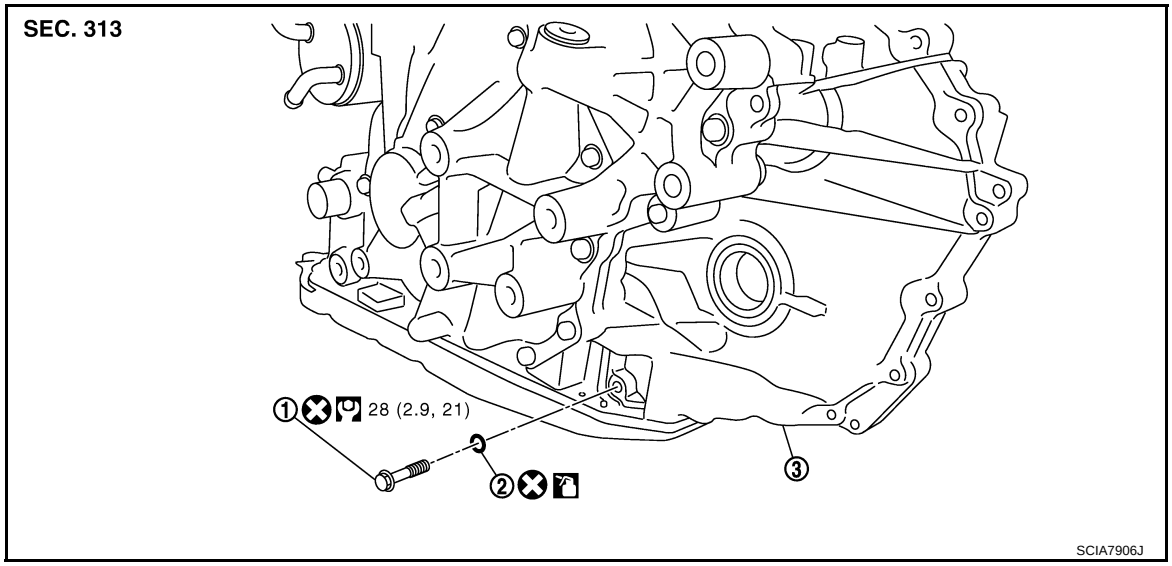
Description

INFOID:0000000001695806

Replace oil pump fitting bolt and O-ring if oil leakage or exudes from oil pump fitting bolt.

Exploded View

INFOID:0000000001695807



1. Oil pump fitting bolt
2. O-ring
3. Transaxle assembly

: Apply CVT Fluid NS-2.

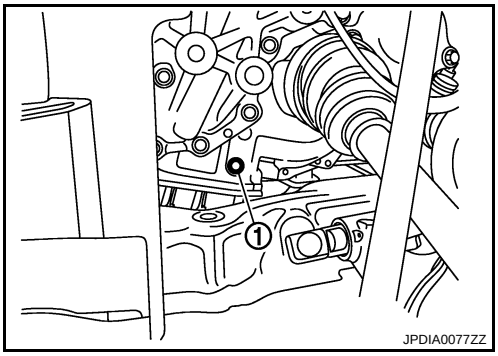
Refer to GI-4, "Components" for symbols not described above.

Removal and Installation

INFOID:0000000001695808

REMOVAL

1. Remove Oil pump fitting bolt (1) from transaxle assembly.
2. Remove O-ring from oil pump fitting bolt.



INSTALLATION

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

CAUTION:

- **Never reuse oil pump fitting bolt and O-ring.**
- **Apply CVT fluid to O-ring.**

Inspection

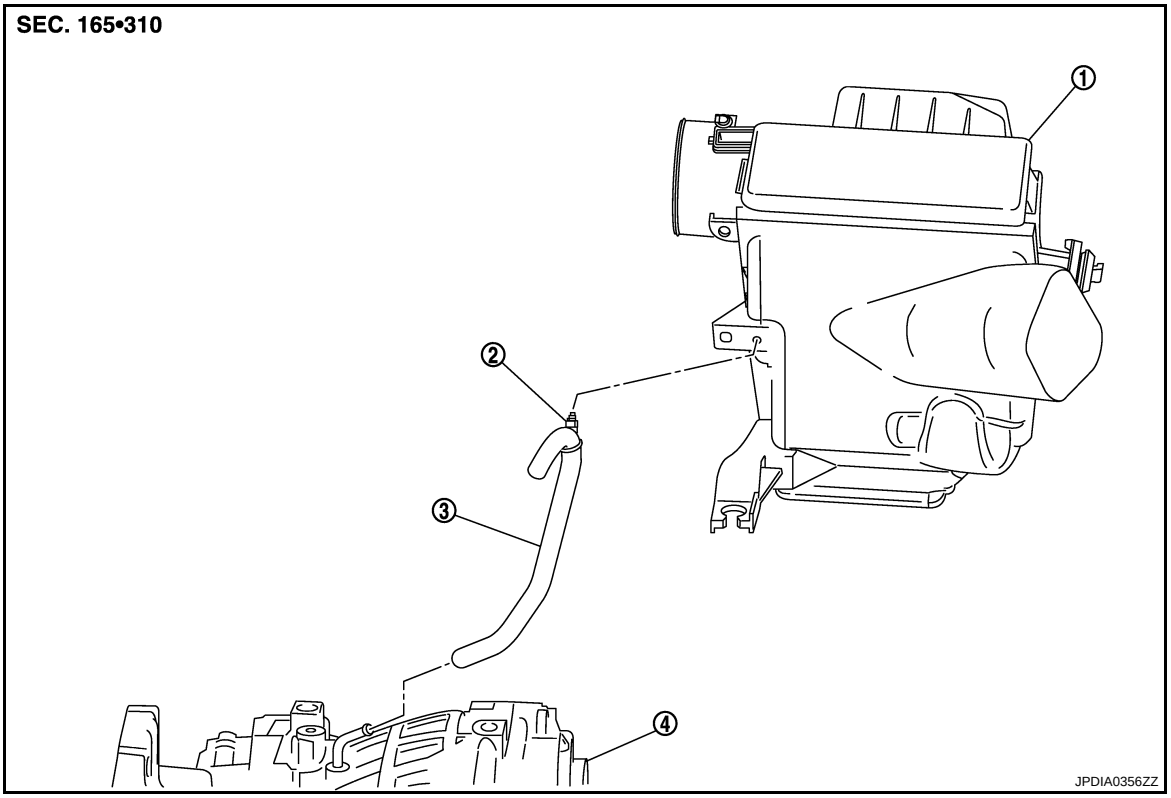
INFOID:0000000001695881

After completing installation, check for CVT fluid leakage and check CVT fluid level. Refer to TM-160, "Inspection".

AIR BREATHER HOSE

Exploded View

INFOID:0000000001695811



1. Air cleaner assembly
2. Clip
3. Air breather hose
4. Transaxle assembly

Removal and Installation

INFOID:0000000001695812

REMOVAL

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

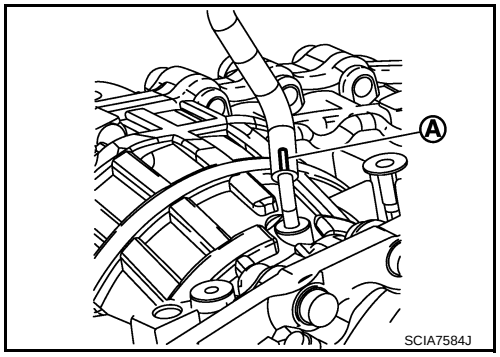
INSTALLATION

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

CAUTION:

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

- 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.

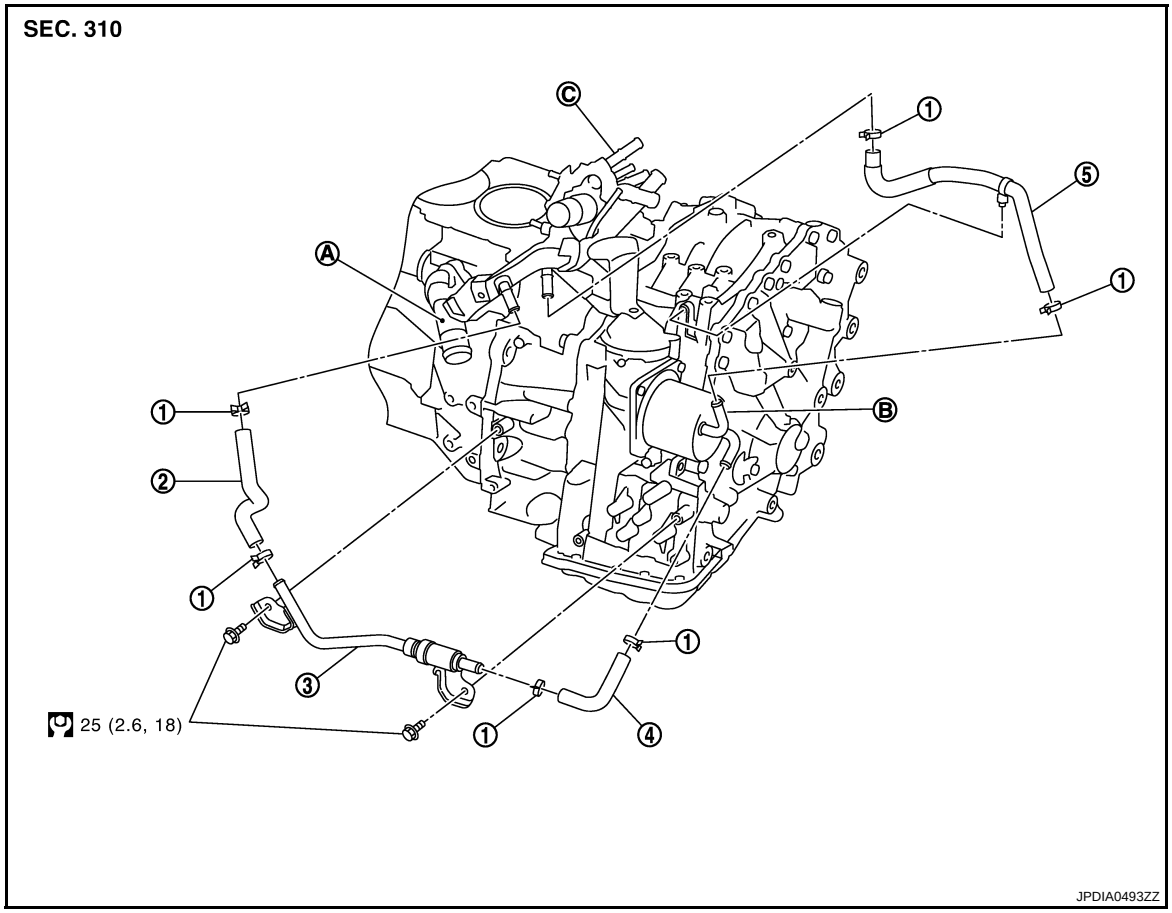


FLUID COOLER SYSTEM

WATER HOSE (WITHOUT FLUID COOLER)

WATER HOSE (WITHOUT FLUID COOLER) : Exploded View

INFOID:0000000001695815



1. Hose clamp
2. CVT water hose A
3. Heater thermostat
4. CVT water hose B
5. CVT water hose C
A. Water inlet
B. CVT fluid cooler
C. Water outlet

Refer to GI-4, "Components" for symbols in the figure.

WATER HOSE (WITHOUT FLUID COOLER) : Removal and Installation

INFOID:0000000001695816

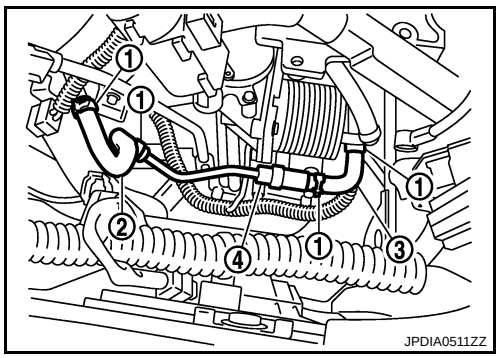
REMOVAL

WARNING:

- **Never remove radiator cap when engine is hot. Serious burns may occur from high-pressure engine coolant escaping from radiator.**
- **Wrap a thick cloth around the radiator cap. Slowly turn it a quarter of a turn to release built-up pressure. Then turn it all the way.**

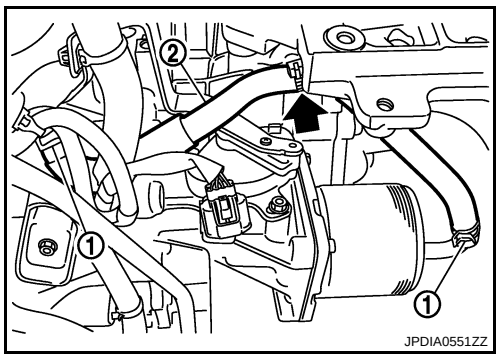
1. Remove air duct (inlet). Refer to EM-27, "Exploded View".
2. Remove battery and battery bracket. Refer to PG-88, "Exploded View".

3. Remove hose clamps (1), and remove CVT water hose A (2).
4. Remove hose clamps (1), and remove CVT water hose B (3).
5. Remove heater thermostat (4) from transaxle assembly.



JPDIA0511ZZ

6. Remove clip (⬅).
7. Remove hose clamps (1), and remove CVT water hose C (2).



JPDIA0551ZZ

INSTALLATION

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

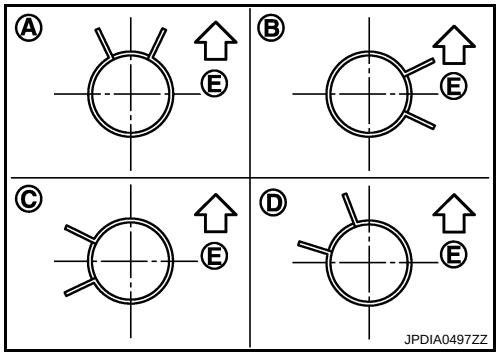
CVT water hose	Hose end	Paint mark	Position of hose clamp*
CVT water hose A	Water inlet	Facing upward	C
	Heater thermostat	Facing forward	C
CVT water hose B	Heater thermostat	Facing forward	B
	CVT fluid cooler	Facing to the left of the vehicle	C
CVT water hose C	CVT fluid cooler	Facing forward	A
	Water outlet	Facing downward left of the vehicle at 45°	D

*: Refer to the illustrations for the specific position of each hose clamp tab.

- The illustrations indicate the view from the hose ends.

⇦E : Upper

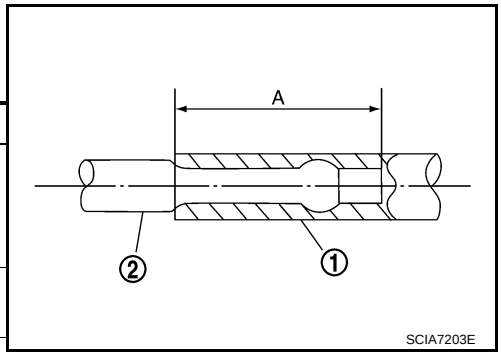
- When installing hose clamps the center line of each clamp tab should be positioned as shown in the figure.



JPDIA0497ZZ

- Insert CVT water hose according to dimension (A) described below.

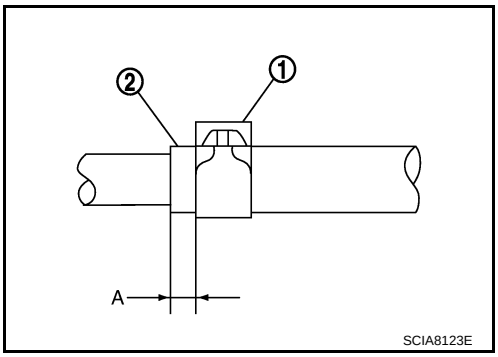
(1)	(2)	Distance A
CVT water hose A	Water inlet	27 mm (1.06 in)
	Heater thermostat	
CVT water hose B	Heater thermostat	
	CVT fluid cooler	End reaches the tube bend R position.
CVT water hose C	CVT fluid cooler	End reaches the tube bend R position.
	Water outlet	27 mm (1.06 in)



- Set hose clamps (1) from the end of fluid cooler hose (2) according to dimension (A) described below.

Dimension A : 5 – 7 mm (0.20 – 0.28 in)

- Hose clamp should not interfere with the bulge.



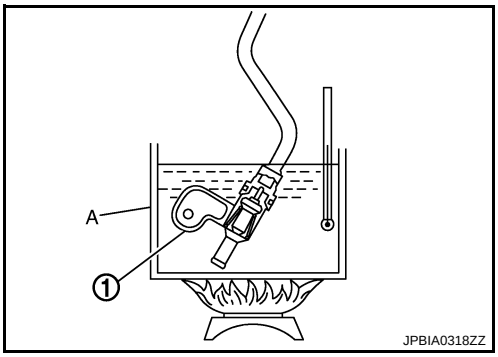
WATER HOSE (WITHOUT FLUID COOLER) : Inspection

INFOID:0000000001696942

INSPECTION AFTER REMOVAL

Heater Thermostat

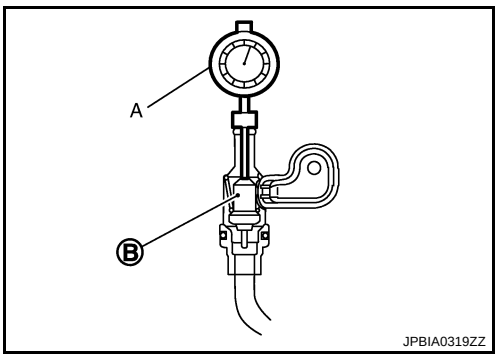
- Fully immerse the heater thermostat (1) in a container (A) filled with water. Continue heating the water while stirring.
- Continue heating the heater thermostat for 5 minutes or more after bringing the water to a boil.
- Quickly take the heater thermostat out of the hot water, measure the heater thermostat within 10 seconds.



- Place dial indicator (A) on the pellet (B) and measure the elongation from the initial state.

Standard : TM-218, "Heater Thermostat"

- If out of the standard, replace heater thermostat.



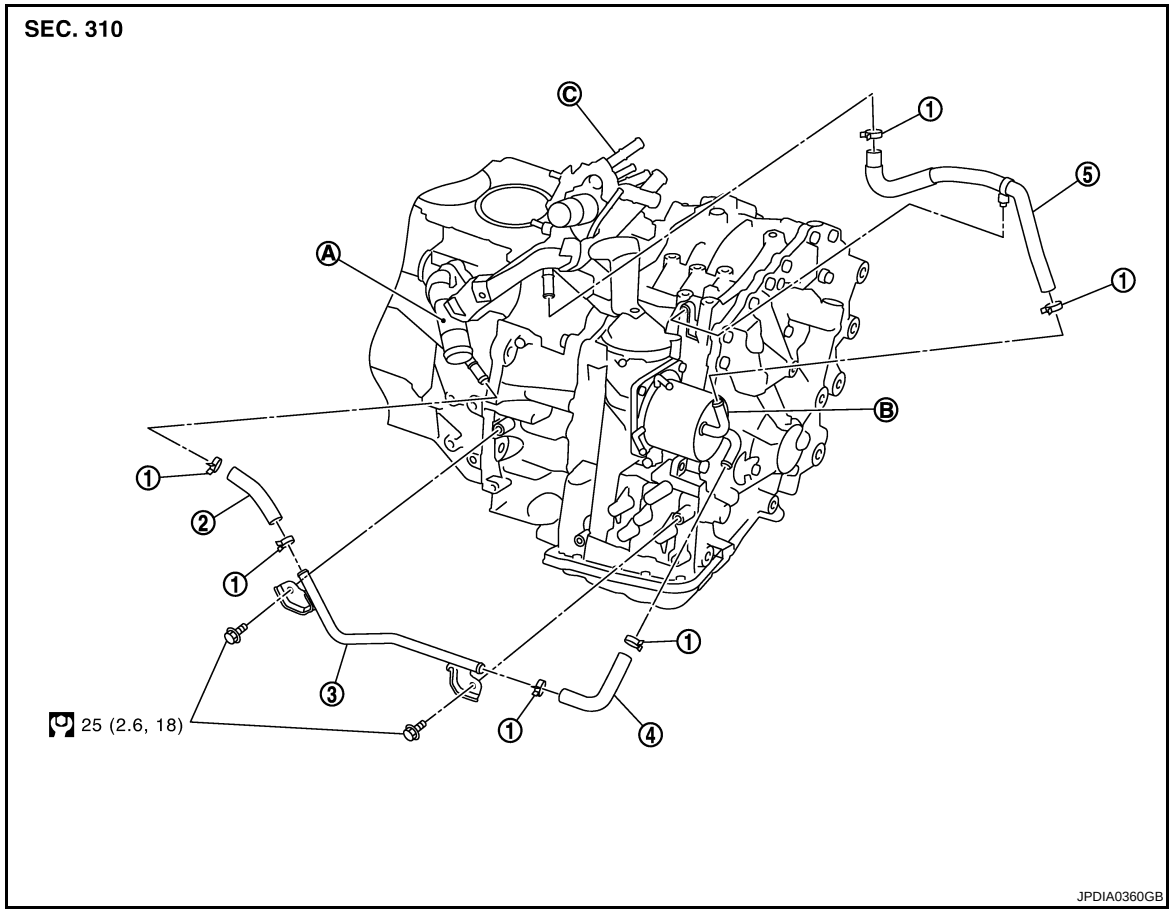
INSPECTION AFTER INSTALLATION

After completing installation, check for engine coolant leakage and check engine coolant level. Refer to CO-9, "Inspection".

WATER HOSE (WITH FLUID COOLER)

WATER HOSE (WITH FLUID COOLER) : Exploded View

INFOID:0000000001696913



1. Hose clamp	2. CVT water hose A	3. CVT water tube
4. CVT water hose B	5. CVT water hose C	
A. Water inlet	B. CVT fluid cooler	C. Water outlet

Refer to GI-4, "Components" for symbols in the figure.

WATER HOSE (WITH FLUID COOLER) : Removal and Installation

INFOID:0000000001696914

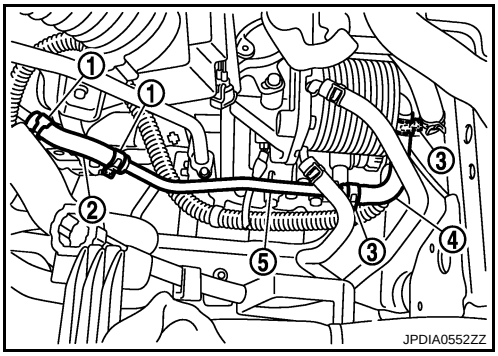
REMOVAL

WARNING:

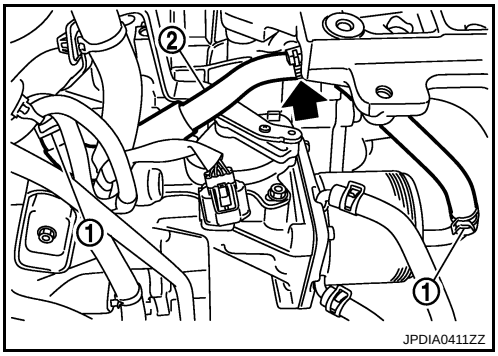
- **Never remove radiator cap when engine is hot. Serious burns may occur from high-pressure engine coolant escaping from radiator.**
- **Wrap a thick cloth around the radiator cap. Slowly turn it a quarter of a turn to release built-up pressure. Then turn it all the way.**

1. Remove air duct (inlet). Refer to EM-27, "Exploded View".
2. Remove battery and battery bracket. Refer to PG-88, "Exploded View".

3. Remove hose clamps (1), and remove CVT water hose A (2).
4. Remove hose clamps (3), and remove CVT water hose B (4).
5. Remove CVT water tube (5) from transaxle assembly.



6. Remove clips (⬅).
7. Remove hose clamps (1), and remove CVT water hose C (2).



INSTALLATION

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

CVT water hose	Hose end	Paint mark	Position of hose clamp*
CVT water hose A	Water inlet	Facing upward	B
	CVT water tube	Facing forward	C
CVT water hose B	CVT water tube	Facing forward	B
	CVT fluid cooler	Facing forward	C
CVT water hose C	CVT fluid cooler	Facing forward	A
	Water outlet	Facing forward	A

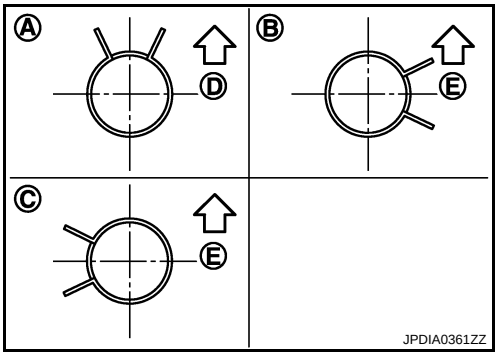
*: Refer to the illustrations for the specific position each hose clamp tab.

- The illustrations indicate the view from the hose ends.

  ⇦D : Front

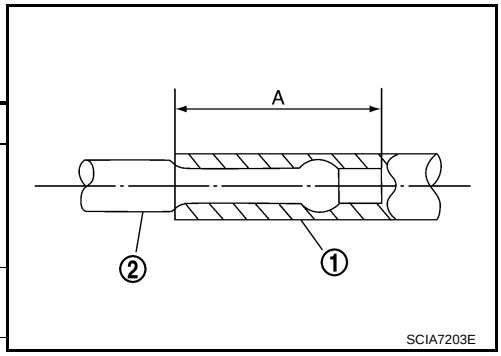
  ⇦E : Upper

- When installing hose clamps the center line of each clamp tab should be positioned as shown in the figure.



- Insert CVT water hose according to dimension (A) described below.

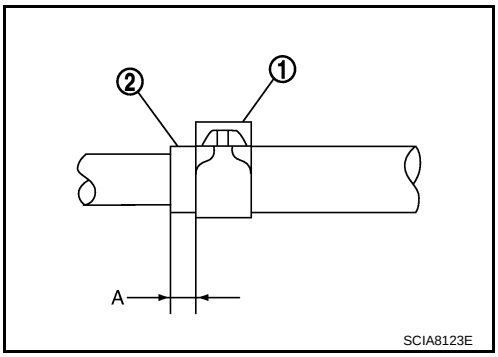
(1)	(2)	Distance A
CVT water hose A	Water inlet	27 mm (1.06 in)
	CVT water tube	
CVT water hose B	CVT water tube	
	CVT fluid cooler	End reaches the tube bend R position.
CVT water hose C	CVT fluid cooler	End reaches the tube bend R position.
	Water outlet	27 mm (1.06 in)



- Set hose clamps (1) from the end of fluid cooler hose (2) according to dimension (A) described below.

Dimension A : 5 – 7 mm (0.20 – 0.28 in)

- Hose clamp should not interfere with the bulge.



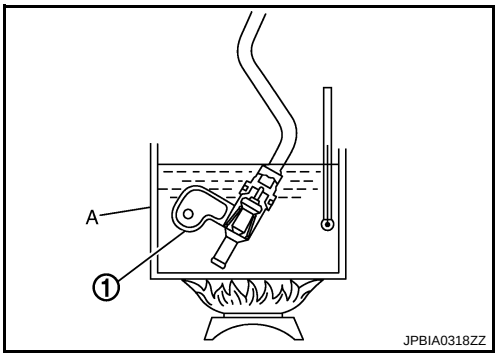
WATER HOSE (WITH FLUID COOLER) : Inspection

INFOID:0000000001706157

INSPECTION AFTER REMOVAL

Heater Thermostat

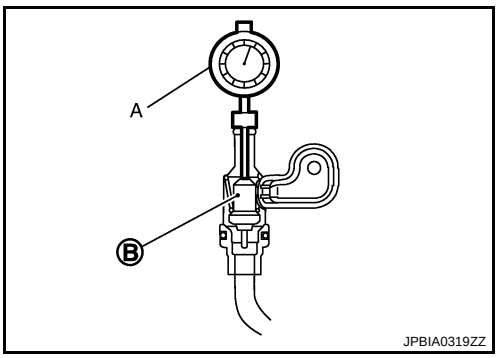
- Fully immerse the heater thermostat (1) in a container (A) filled with water. Continue heating the water while stirring.
- Continue heating the heater thermostat for 5 minutes or more after bringing the water to a boil.
- Quickly take the heater thermostat out of the hot water, measure the heater thermostat within 10 seconds.



- Place dial indicator (A) on the pellet (B) and measure the elongation from the initial state.

Standard : TM-218, "Heater Thermostat"

- If out of the standard, replace heater thermostat.



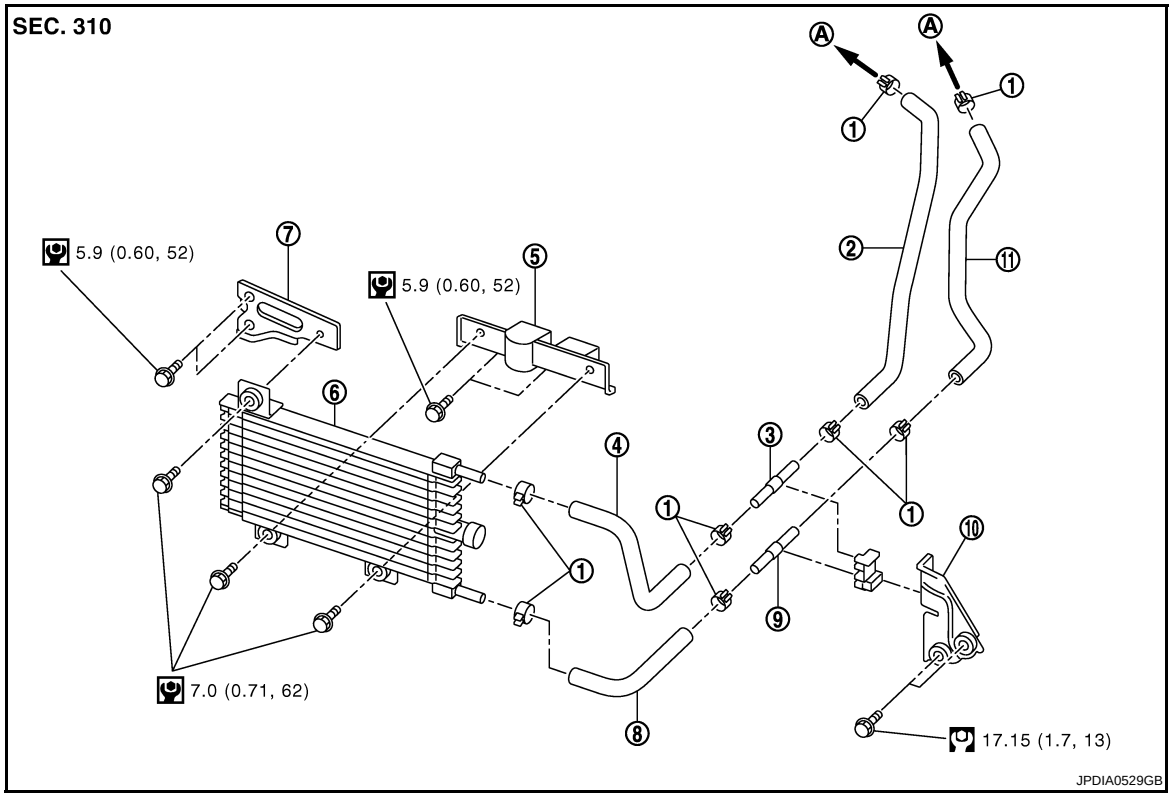
INSPECTION AFTER INSTALLATION

After completing installation, check for engine coolant leakage and check engine coolant level. Refer to CO-9, "Inspection".

FLUID COOLER

FLUID COOLER : Exploded view

INFOID:0000000001695817



1. Hose clamp
2. Fluid cooler hose A
3. Fluid cooler tube
4. Fluid cooler hose C
5. Bracket
6. Fluid cooler
7. Bracket
8. Fluid cooler hose D
9. Fluid cooler tube
10. Bracket
11. Fluid cooler hose B

A. To CVT fluid cooler

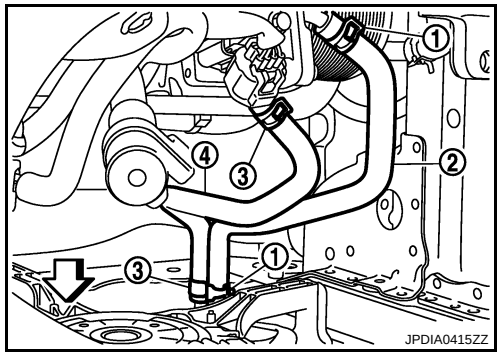
Refer to GI-4, "Components" for symbols in the figure.

FLUID COOLER : Removal and Installation

INFOID:0000000001695818

REMOVAL

1. Remove engine under cover with power tool.
2. Remove front bumper assembly. Refer to EXT-13, "Exploded View".
3. Remove air duct (inlet). Refer to EM-27, "Exploded View".
4. Remove hose clamps (1) and fluid cooler hose A (2).



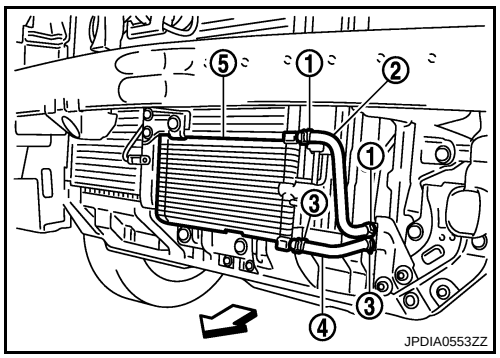
⇦ : Vehicle front

5. Remove hose clamps (3) and fluid cooler hose B (4).

6. Remove hose clamps (1) and fluid cooler hose C (2).

⇦ : Vehicle front

7. Remove hose clamps (3) and fluid cooler hose D (4).
8. Remove fluid cooler (5).
9. Remove fluid cooler tubes and bracket.



INSTALLATION

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

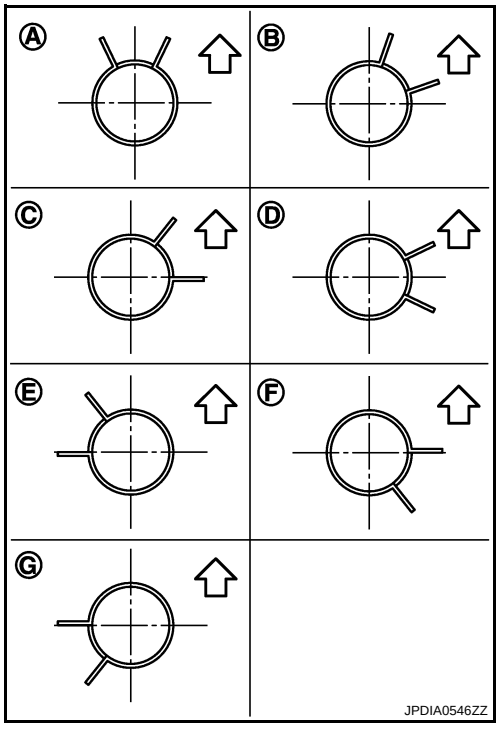
Fluid cooler hose	Hose end	Paint mark	Position of hose clamp*
Fluid cooler hose A	CVT fluid cooler side	Facing upward	B
	Fluid cooler tube side	Facing upward left of the vehicle at 25°	C
Fluid cooler hose B	CVT fluid cooler side	Facing upward	A
	Fluid cooler tube side	Facing downward left of the vehicle at 25°	F
Fluid cooler hose C	Fluid cooler side	Facing forward	D
	Fluid cooler tube side	Facing upward left of the vehicle at 25°	E
Fluid cooler hose D	Fluid cooler side	Facing forward	D
	Fluid cooler tube side	Facing downward left of the vehicle at 25°	G

*: Refer to the illustrations for the specific position of each hose clamp tab.

- The illustrations indicate the view from the hose ends.

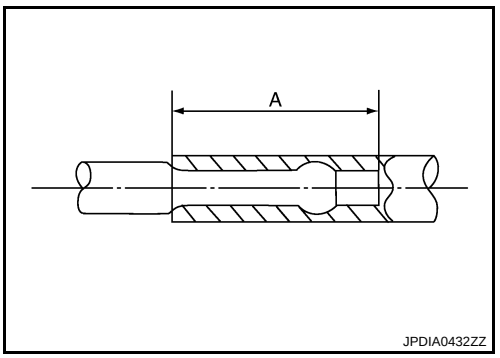
⇦ : Upper

- When installing hose clamps the center line of each clamp tab should be positioned as shown in the figure.



- Insert fluid cooler hoses according to dimension (A) described below.

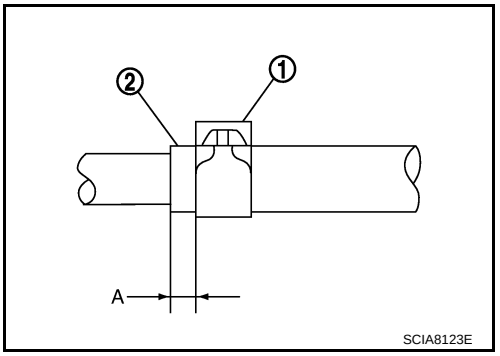
Dimension A : 30 mm (1.18 in)



- Set hose clamps (1) from the end of fluid cooler hose (2) according to dimension (A) described below.

Dimension A : 5 – 7 mm (0.20 – 0.28 in)

- Hose clamp should not interfere with the bulge.



FLUID COOLER : Inspection

INFOID:0000000001696944

After completing installation, check for CVT fluid leakage and check CVT fluid level. Refer to TM-160, "Inspection".

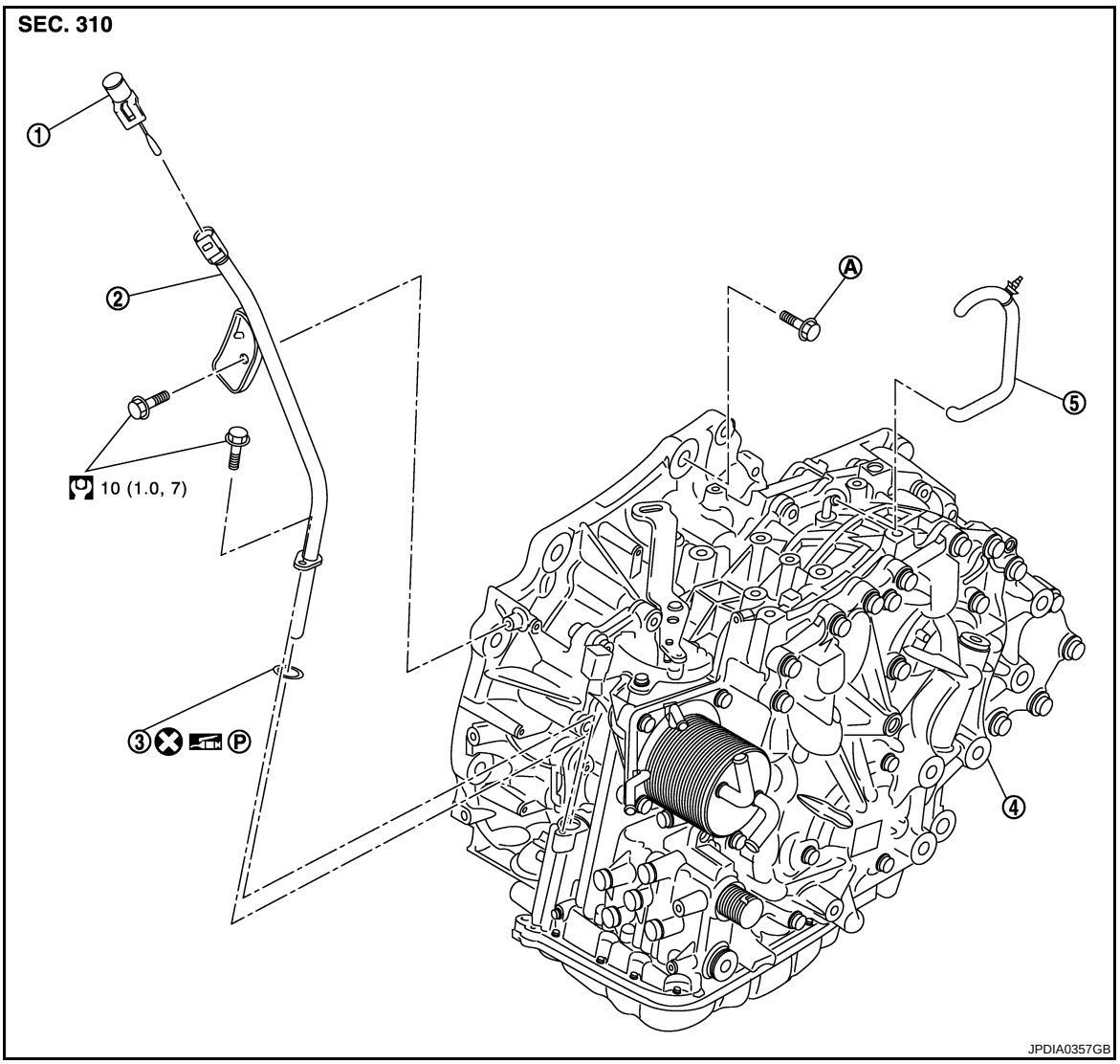
REMOVAL AND INSTALLATION

TRANSAXLE ASSEMBLY

2WD

2WD : Exploded View

INFOID:0000000001696932



1. CVT fluid level gauge
2. CVT fluid charging pipe
3. O-ring
4. Transaxle assembly
5. Air breather hose

A. For tightening torque, refer to TM-207, "2WD : Removal and Installation".

Refer to GI-4, "Components" for symbols in the figure.

2WD : Removal and Installation

INFOID:0000000001696933

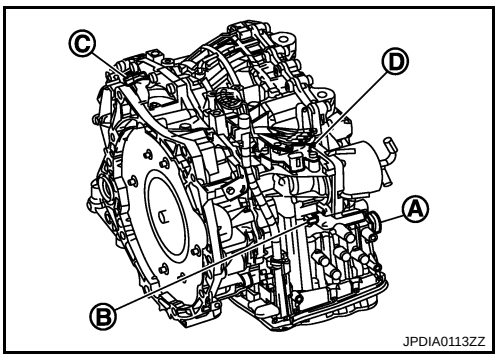
WARNING:

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.

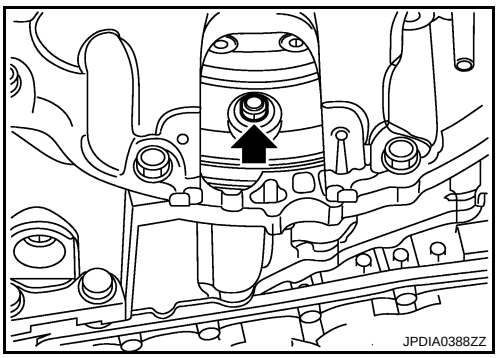
REMOVAL

1. Remove battery and battery bracket. Refer to PG-88, "Exploded View".
2. Remove air breather hose. Refer to TM-197, "Exploded View".

3. Remove air duct (inlet). Refer to EM-27, "Exploded View".
4. Remove air cleaner case. Refer to EM-27, "Exploded View".
5. Remove engine under cover with power tool.
6. Drain engine coolant. Refer to CO-9, "Draining".
7. Remove CVT fluid level gauge.
8. Remove CVT fluid charging pipe from transaxle assembly.
9. Remove O-ring from CVT fluid charging pipe.
10. Disconnect fluid cooler hose from transaxle assembly (with fluid cooler only). Refer to TM-204, "FLUID COOLER : Exploded view".
11. Disconnect the following harness connectors and wire harnesses.
    - CVT unit connector (A).
    - Primary speed sensor connector (B).
    - Secondary speed sensor connector (C).
    - PNP switch connector (D).



12. Remove harness and clip from transaxle assembly.
13. Remove CVT water hoses. Refer to TM-198, "WATER HOSE (WITHOUT FLUID COOLER) : Exploded View" (without fluid cooler), TM-201, "WATER HOSE (WITH FLUID COOLER) : Exploded View" (with fluid cooler).
14. Remove control cable from bracket. Refer to TM-183, "Exploded View".
15. Remove control cable bracket. Refer to TM-183, "Exploded View".
16. Remove starter motor. Refer to STR-15, "2WD : Exploded View".
17. Remove rear plate cover. Refer to EM-34, "Exploded View".
18. Turn crankshaft, and remove the four tightening nuts (⬅) for drive plate and torque converter.
    CAUTION:
    When turning crankshaft, turn it clockwise as viewed from the front of the engine.

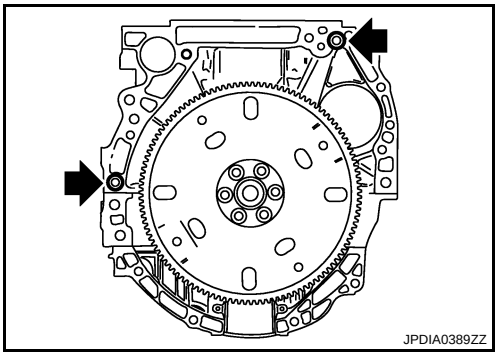


19. Remove exhaust front tube. Refer to EX-5, "Exploded View".
20. Remove front drive shafts. Refer to FAX-18, "Exploded View".
21. Remove front suspension member from vehicle. Refer to FSU-18, "Exploded View".
22. Support transaxle assembly with a transmission jack.
    CAUTION:
    When setting the transmission jack, be careful not to collide against drain plug.
23. Support engine assembly with a transmission jack.
    CAUTION:
    When setting the transmission jack, be careful not to collide against drain plug.
24. Remove engine mounting insulator (LH). Refer to EM-60, "Exploded View".
25. Remove bolts fixing transaxle assembly to engine assembly.
26. Remove transaxle assembly from vehicle.
    CAUTION:
    - **Secure torque converter to prevent it from dropping.**
    - **Secure transaxle assembly to a transmission jack.**

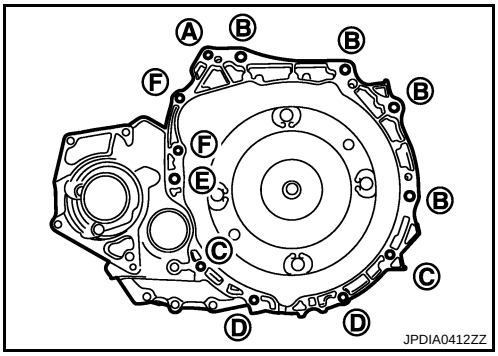
INSTALLATION

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

Check fitting of dowel pin (⬅) when installing transaxle assembly to engine assembly.

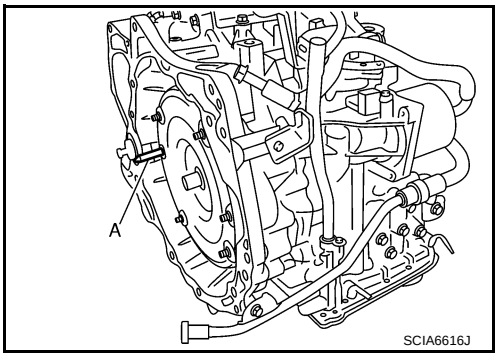


When installing transaxle assembly to the engine assembly, attach the fixing bolts in accordance with the following.

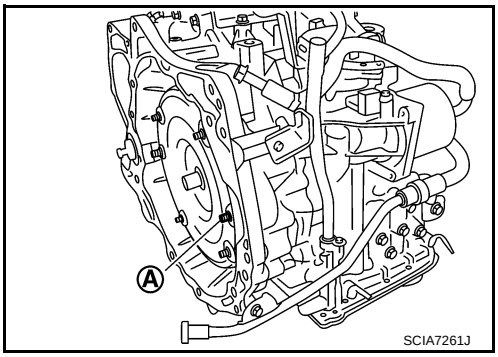


Insertion direction	Transaxle assembly to engine assembly		Engine assembly to transaxle assembly			
Bolt position	A	B	C	D	E	F
Number of bolts	1	4	2	2	1	2
Bolt length mm (in)	45 (1.77)		45 (1.77)	35 (1.38)	45 (1.77)	60 (2.36)
Tightening torque N·m (kg-m, ft-lb)	35.3 (3.6, 26)	74.5 (7.6, 55)	42.6 (4.3, 31)		74.5 (7.6, 55)	50 (5.1,37)

- Set and screw in the drive plate location guide (commercial service tool: 31197CA000) (A) onto the stud bolts for the torque converter.



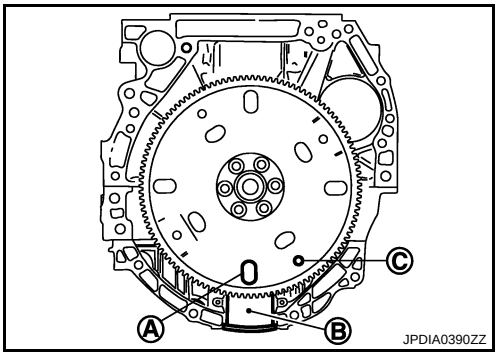
- When not using drive plate location guide, rotate torque converter so that the stud bolt (A) for mounting the drive plate location guide of torque converter aligns with the mounting position of starter motor.



- Rotate crankshaft so that the hole (A) for inserting drive plate location guide of drive plate aligns with the service hole (B).

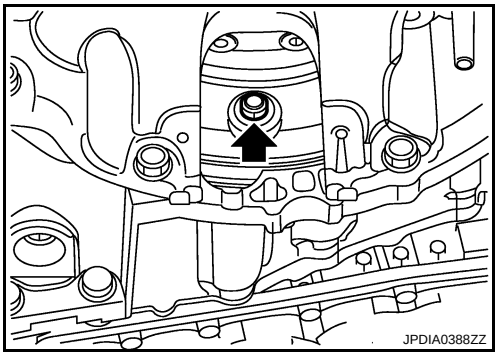
NOTE:
When not using drive plate location guide, insert stud bolt of torque converter into the hole (C) of drive plate, aligning the drive plate hole position and torque converter.

CAUTION:
Be careful not to strike the drive plate when installing the torque converter stud bolt.



- 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-68, "Exploded View".**
- **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.**

2WD : Inspection

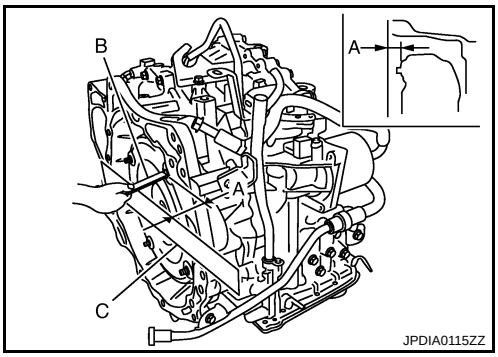
INFOID:0000000001696934

INSPECTION BEFORE INSTALLATION

After inserting a torque converter to transaxle assembly, check that distance (A) is within the reference value limit.

B : Scale
C : Straightedge

Distance A : Refer to TM-218, "Torque Converter".



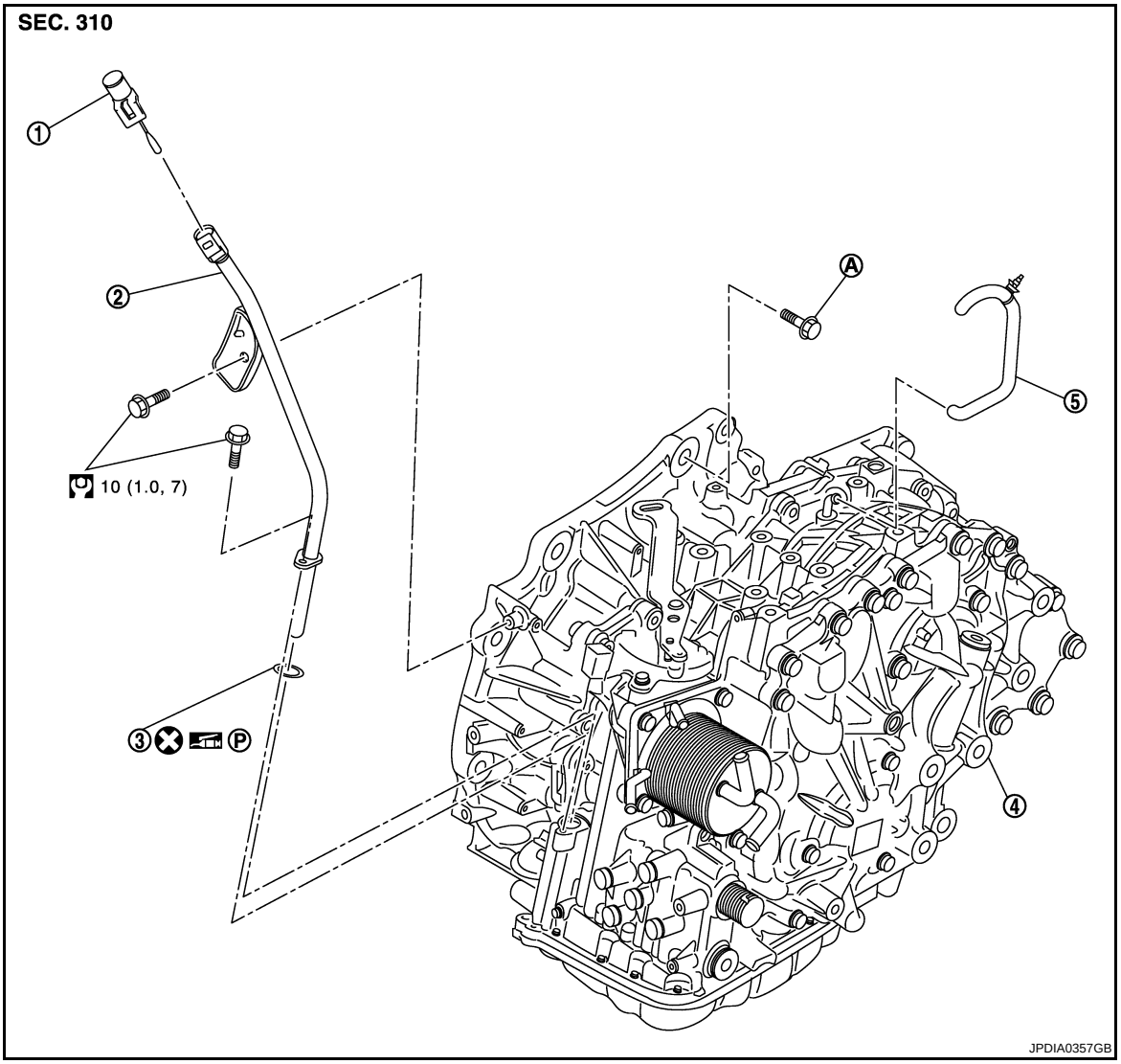
INSPECTION AFTER INSTALLATION

Check the following items.
- CVT fluid leakage and CVT fluid level. Refer to TM-160, "Inspection".
- CVT position. Refer to TM-174, "WITHOUT MANUAL MODE : Inspection and Adjustment" (without manual mode), TM-174, "WITH MANUAL MODE : Inspection and Adjustment" (with manual mode).

AWD

AWD : Exploded View

INFOID:0000000001695822



1. CVT fluid level gauge
2. CVT fluid charging pipe
3. O-ring
4. Transaxle assembly
5. Air breather hose

A. For tightening torque, refer to TM-211, "AWD : Removal and Installation".

Refer to GI-4, "Components" for symbols in the figure.

AWD : Removal and Installation

INFOID:0000000001695823

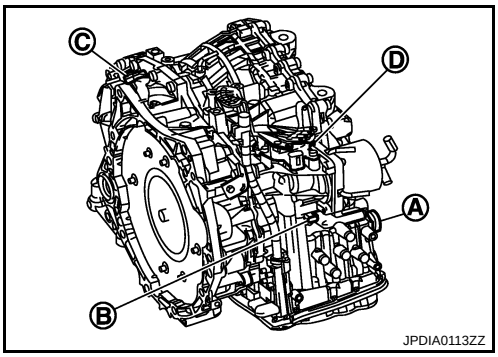
WARNING:

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.

REMOVAL

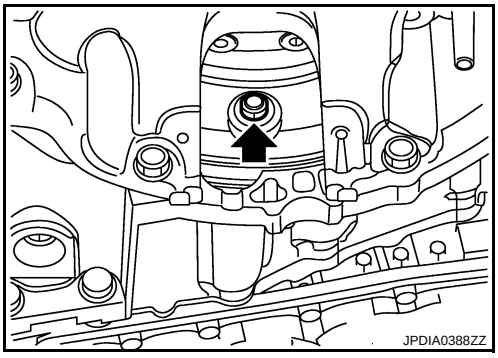
1. Remove battery and battery bracket. Refer to PG-88, "Exploded View".
2. Remove air breather hose. Refer to TM-197, "Exploded View".
3. Remove air duct (inlet). Refer to EM-27, "Exploded View".
4. Remove air cleaner case. Refer to EM-27, "Exploded View".
5. Remove engine under cover with power tool.
6. Drain engine coolant. Refer to CO-9, "Draining".
7. Remove CVT fluid level gauge.

8. Remove CVT fluid charging pipe from transaxle assembly.
9. Remove O-ring from CVT fluid charging pipe.
10. Disconnect fluid cooler hose from transaxle assembly (with fluid cooler only). Refer to TM-204, "FLUID COOLER : Exploded view".
11. Disconnect the following harness connectors and wire harnesses.
    - CVT unit connector (A).
    - Primary speed sensor connector (B).
    - Secondary speed sensor connector (C).
    - PNP switch connector (D).



JPDIA0113ZZ

12. Remove harness and clip from the transaxle assembly.
13. Remove CVT water hoses. Refer to TM-198, "WATER HOSE (WITHOUT FLUID COOLER) : Exploded View" (without fluid cooler), TM-201, "WATER HOSE (WITH FLUID COOLER) : Exploded View" (with fluid cooler).
14. Remove control cable from bracket. Refer to TM-183, "Exploded View".
15. Remove control cable bracket. Refer to TM-183, "Exploded View".
16. Remove starter motor. Refer to STR-17, "AWD : Exploded View".
17. Remove rear plate cover. Refer to EM-34, "Exploded View".
18. Turn crankshaft, and remove the four tightening nuts (⬅) for drive plate and torque converter.
    CAUTION:
    When turning crankshaft, turn it clockwise as viewed from the front of the engine.

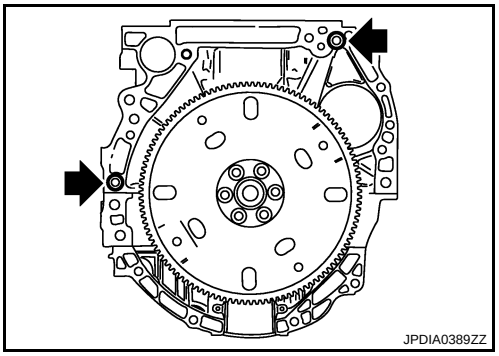

JPDIA0388ZZ

19. Remove exhaust front tube. Refer to EX-5, "Exploded View".
20. Separate the propeller shaft. Refer to DLN-87, "Exploded View".
21. Remove front drive shafts. Refer to FAX-42, "Exploded View".
22. Remove front suspension member from vehicle. Refer to FSU-18, "Exploded View".
23. Remove transfer assembly from transaxle assembly with power tool. Refer to DLN-58, "Exploded View".
24. Support transaxle assembly with a transmission jack.
    CAUTION:
    When setting the transmission jack, be careful not to collide against drain plug.
25. Support engine assembly with a transmission jack.
    CAUTION:
    When setting the transmission jack, be careful not to collide against drain plug.
26. Remove engine mounting insulator (LH). Refer to EM-60, "Exploded View".
27. Remove bolts fixing transaxle assembly to engine assembly.
28. Remove transaxle assembly from vehicle.
    CAUTION:
    - **Secure torque converter to prevent it from dropping.**
    - **Secure transaxle assembly to a transmission jack.**

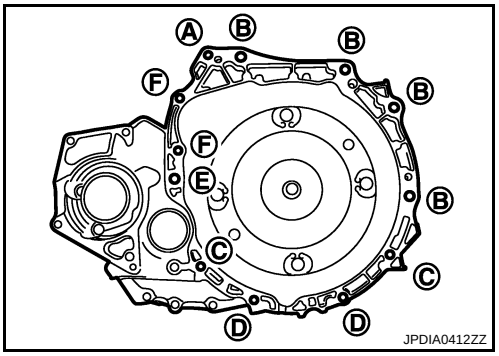
INSTALLATION

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

Check fitting of dowel pin (⬅) when installing transaxle assembly to engine assembly.

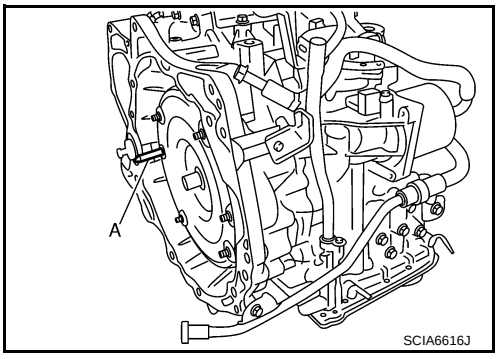


When installing transaxle assembly to the engine assembly, attach the fixing bolts in accordance with the following.

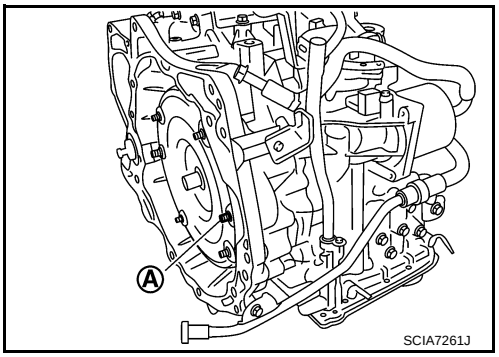


Insertion direction	Transaxle assembly to engine assembly		Engine assembly to transaxle assembly			
Bolt position	A	B	C	D	E	F
Number of bolts	1	4	2	2	1	2
Bolt length mm (in)	45 (1.77)		45 (1.77)	35 (1.38)	45 (1.77)	60 (2.36)
Tightening torque N·m (kg-m, ft-lb)	35.3 (3.6, 26)	74.5 (7.6, 55)	42.6 (4.3, 31)		74.5 (7.6, 55)	50 (5.1,37)

- Set and screw in the drive plate location guide (commercial service tool: 31197CA000) (A) onto the stud bolts for the torque converter.



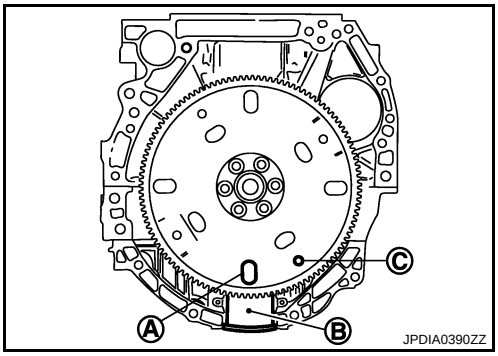
- When not using drive plate location guide, rotate torque converter so that the stud bolt (A) for mounting the drive plate location guide of torque converter aligns with the mounting position of starter motor.



- Rotate crankshaft so that the hole (A) for inserting drive plate location guide of drive plate aligns with the service hole (B).

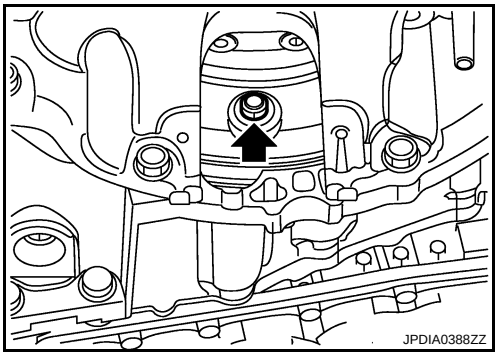
NOTE:
When not using drive plate location guide, insert stud bolt of torque converter into the hole (C) of drive plate, aligning the drive plate hole position and torque converter.

CAUTION:
Be careful not to strike the drive plate when installing the torque converter stud bolt.



- 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-68, "Exploded View".**
- **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.**

AWD : Inspection

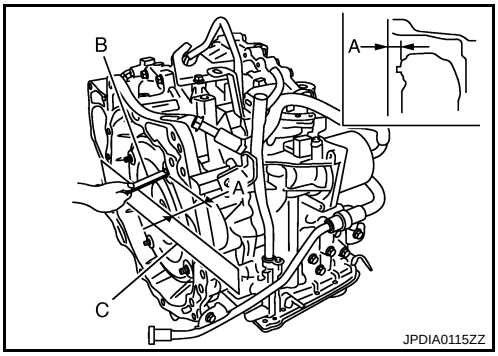
INFOID:0000000001707314

INSPECTION BEFORE INSTALLATION

After inserting a torque converter to transaxle assembly, check that distance (A) is within the reference value limit.

B : Scale
C : Straightedge

Distance A : Refer to TM-218, "Torque Converter".



INSPECTION AFTER INSTALLATION

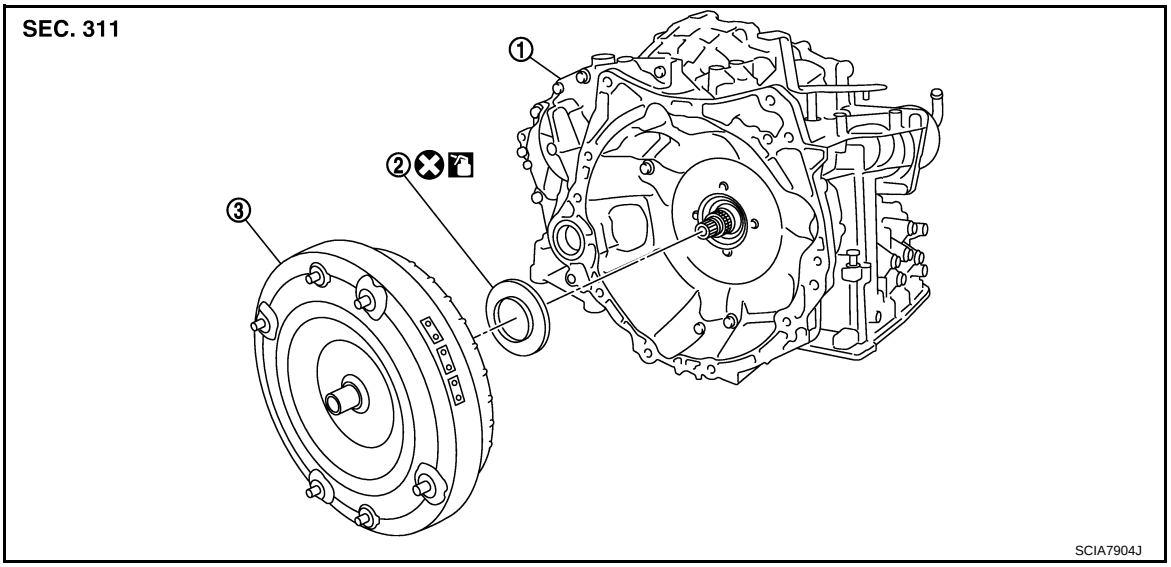
Check the following items.
- CVT fluid leakage and CVT fluid level. Refer to TM-160, "Inspection".
- CVT position. Refer to TM-174, "WITHOUT MANUAL MODE : Inspection and Adjustment" (without manual mode), TM-174, "WITH MANUAL MODE : Inspection and Adjustment" (with manual mode).

DISASSEMBLY AND ASSEMBLY

TORQUE CONVERTER AND CONVERTER HOUSING OIL SEAL

Exploded View

INFOID:0000000001695825



1. Transaxle assembly
2. Converter housing oil seal
3. Torque converter

: Apply CVT Fluid NS-2.

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

Disassembly

INFOID:0000000001695826

1. Remove transaxle assembly. Refer to TM-207, "2WD : Exploded View" (2WD), TM-211, "AWD : Exploded View" (AWD).
2. Remove torque converter from transaxle assembly.
   CAUTION:
   Never damage bushing inside of torque converter sleeve when removing torque converter.
3. Remove converter housing oil seal using a flat-bladed screwdriver.
   CAUTION:
   Be careful not to scratch converter housing.

Assembly

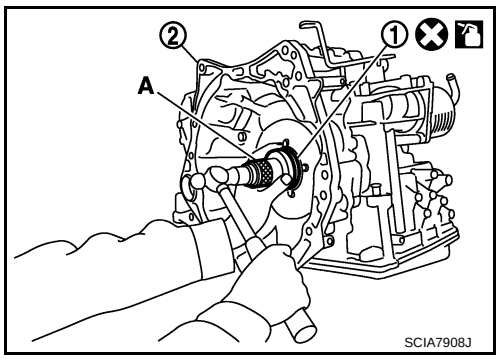
INFOID:0000000001695827

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

- Drive converter housing oil seal (1) evenly using a drift (A) (commercial service tool) so that converter housing oil seal protrudes by the dimension (B) respectively.

Unit: mm (in)

Commercial service tool: A	Outer diameter: 65 (2.56)
	Inner diameter: 60 (2.36)

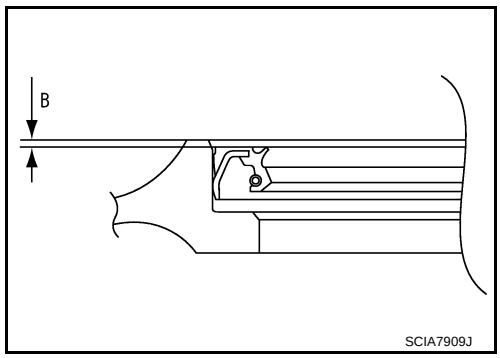


2 : Transaxle assembly

Unit: mm (in)

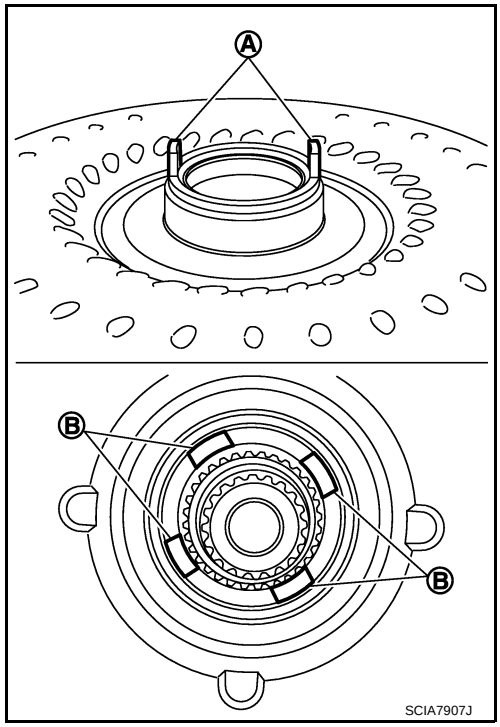
Dimension B	1.0 ± 0.5 (0.039 ± 0.020)

NOTE:
Converter housing oil seal pulling direction is used as the reference.



- Attach the pawl (A) of the torque converter to the drive sprocket hole (B) on the transaxle assembly side.

CAUTION:
- **Rotate the torque converter for installing torque converter.**
- **Never damage the bushing inside the torque converter sleeve when installing the converter housing oil seal.**
- **Never reuse converter housing oil seal.**
- **Apply CVT fluid to converter housing oil seal.**



Inspection

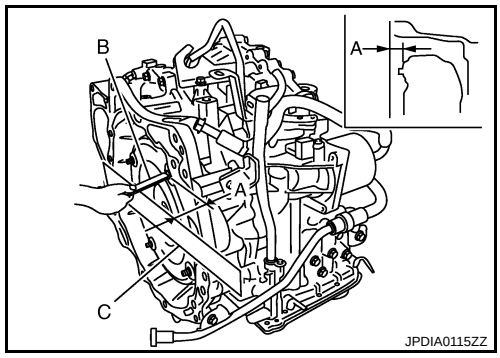
INFOID:0000000001695828

INSPECTION AFTER INSTALLATION

After inserting a torque converter to transaxle assembly, check distance (A) is within the reference value limit.

B : Scale
C : Straightedge

Distance A : Refer to TM-218, "Torque Converter".



SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

General Specification

INFOID:0000000001695829

Applied model		QR25DE engine								
		2WD					AWD			
CVT model		RE0F10A								
CVT assembly model code number		1XF6C	1XF9C	1XF9E	1XF6D	1XF9D	1XF6E	1XF4A	1XF7A	1XF4B
Transmission gear ratio	D range	2.349 – 0.394								
	Reverse	1.750								
	Final drive	6.120								
Recommended fluid		Genuine NISSAN CVT Fluid NS-2*								
Fluid capacity liter (US qt, Imp qt)		8.3 (8-3/4, 7-1/4)			8.5 (9, 7-1/2)		9.3 (9-7/8, 8-1/8)		9.5 (10, 8-3/8)	

CAUTION:

- **Use only Genuine NISSAN CVT Fluid NS-2. Do not mix with other fluid.**
- **Using CVT fluid other than Genuine NISSAN CVT Fluid NS-2 will deteriorate in driveability and CVT durability, and may damage the CVT, which is not covered by the NISSAN new vehicle limited warranty.**

*: Refer to MA-17, "FOR NORTH AMERICA : Fluids and Lubricants" (for north America), MA-18, "FOR MEXICO : Fluids and Lubricants" (for Mexico).

Vehicle Speed When Shifting Gears

INFOID:0000000001695830

Numerical value data are reference values.

(rpm)

Throttle position	Shift pattern	Engine speed	
		At 40 km/h (25 MPH)	At 60 km/h (37 MPH)
8/8	“D” position	3,600 – 4,500	4,500 – 5,400
	Overdrive OFF condition*	3,600 – 4,500	4,500 – 5,400
	“L” position*	3,600 – 4,500	4,500 – 5,400
2/8	“D” position	1,200 – 3,100	1,300 – 3,500
	Overdrive OFF condition*	2,200 – 3,100	2,800 – 3,700
	“L” position*	3,300 – 4,200	4,300 – 5,200

*: Without manual mode

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:0000000001695831

Stall speed	2,500 – 3,000 rpm

Line Pressure

INFOID:0000000001695832

kPa (kg/cm^2, psi)

Engine speed	Line pressure
	“R”, “D” and “L”* positions
At idle	750 (7.65, 108.8)
At stall	5,700 (58.14, 826.5)

*: Without manual mode

Solenoid Valves

INFOID:0000000001695833

Name	Resistance (Approx.)	Terminal
Pressure control solenoid valve B (secondary pressure solenoid valve)	3.0 – 9.0 Ω	3
Pressure control solenoid valve A (line pressure solenoid valve)		2
Torque converter clutch solenoid valve		12
Lock-up select solenoid valve	17.0 – 38.0 Ω	13

CVT Fluid Temperature Sensor

INFOID:0000000001695834

Name	Condition	CONSULT-III "DATA MONITOR" (Approx.)	Resistance (Approx.)
CVT fluid temperature sensor	When CVT fluid temperature is 20°C (68°F)	2.0 V	6.5 kΩ
	When CVT fluid temperature is 80°C (176°F)	1.0 V	0.9 kΩ

Primary Speed Sensor

INFOID:0000000001695835

Name	Condition		Data (Approx.)
Primary speed sensor	Without manual mode	When driving ["L" position, 20 km/h (12 MPH)]	900 Hz
	With manual mode	When driving ["M1" position, 20 km/h (12 MPH)]	760 Hz

Secondary Speed Sensor

INFOID:0000000001695836

Name	Condition		Data (Approx.)
Secondary speed sensor	Without manual mode	When driving ["D" position, 20 km/h (12 MPH)]	470 Hz
	With manual mode	When driving ["D" position, 20 km/h (12 MPH)]	470 Hz

Heater Thermostat

INFOID:0000000003844047

Standard

Valve lift	More than 4.5 mm (0.177 in)

Reference value

Valve opening temperature	82°C (180°F)
Maximum valve lift	5.0 mm/95°C (0.197 in/203°F)

Torque Converter

INFOID:0000000001695837

Distance between end of converter housing and torque converter	14.4 mm (0.567 in)