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INDEX FOR DTC

Alphabetical Index

PFP:00024

ECS00F56

NOTE:

If DTC "U1000 CAN COMM CIRCUIT" is displayed with other DTCs, first perform the trouble diagnosis for "DTC U1000 CAN COMMUNICATION LINE". Refer to <u>CVT-65</u>.

	DTC			
Items	OBD-II	Except OBD-II	Reference page	
(CONSULT-II screen terms)	CONSULT-II GST*1	CONSULT-II only "TRANSMISSION"	riterenete page	
A/T TCC S/V FNCTN	P0744	P0744	<u>CVT-106</u>	
ATF TEMP SEN/CIRC	P0710	P0710	<u>CVT-81</u>	
BELT DAMG	—	P0730	<u>CVT-99</u>	
BRAKE SW/CIRC	—	P0703	<u>CVT-72</u>	
CAN COMM CIRCUIT	U1000	U1000	<u>CVT-65</u>	
CVT SPD SEN/FNCTN	—	P1723	<u>CVT-159</u>	
ENGINE SPEED SIG	—	P0725	<u>CVT-97</u>	
ELEC TH CONTROL	—	P1726	<u>CVT-161</u>	
ESTM VEH SPD SIG	—	P1722	<u>CVT-157</u>	
INPUT SPD SEN/CIRC	P0715	P0715	<u>CVT-86</u>	
L/PRESS CONTROL	—	P1745	<u>CVT-168</u>	
L/PRESS SOL/CIRC	P0745	P0745	<u>CVT-109</u>	
LU-SLCT SOL/CIRC	P1740	P1740	<u>CVT-163</u>	
MANUAL MODE SWITCH	—	P0826	<u>CVT-125</u>	
PNP SW/CIRC	P0705	P0705	<u>CVT-74</u>	
PRESS SEN/FNCTN	—	P0841	<u>CVT-137</u>	
PRS CNT SOL/A FCTN	P0746	P0746	<u>CVT-114</u>	
PRS CNT SOL/B CIRC	P0778	P0778	<u>CVT-120</u>	
PRS CNT SOL/B FCTN	P0776	P0776	<u>CVT-117</u>	
SEC/PRESS DOWN	—	P0868	<u>CVT-145</u>	
STARTER RELAY/CIRC	—	P0615	<u>CVT-68</u>	
STEP MOTR CIRC	P1777	P1777	<u>CVT-169</u>	
STEP MOTR/FNC	P1778	P1778	<u>CVT-173</u>	
TCC SOLENOID/CIRC	P0740	P0740	<u>CVT-101</u>	
TCM-POWER SUPPLY	—	P1701	<u>CVT-148</u>	
TP SEN/CIRC A/T	—	P1705	<u>CVT-155</u>	
TR PRS SENS/A CIRC	P0840	P0840	<u>CVT-132</u>	
TR PRS SENS/B CIRC	P0845	P0845	<u>CVT-140</u>	
VEH SPD SEN/CIR AT	P0720	P0720	<u>CVT-91</u>	

*1: These numbers are prescribed by SAE J2012.

DTC No. Index

ECS00F57

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NOTE:

If DTC "U1000 CAN COMM CIRCUIT" is displayed with other DTCs, first perform the trouble diagnosis for "DTC U1000 CAN COMMUNICATION LINE". Refer to <u>CVT-65</u>.

DTC			
OBD-II	Except OBD-II	Items	Reference page
CONSULT-II GST*1	CONSULT-II only "TRANSMISSION"	(CONSULT-II screen terms)	Kelerense page
_	P0615	STARTER RELAY/CIRC	<u>CVT-68</u>
—	P0703	BRAKE SW/CIRC	<u>CVT-72</u>
P0705	P0705	PNP SW/CIRC	<u>CVT-74</u>
P0710	P0710	ATF TEMP SEN/CIRC	<u>CVT-81</u>
P0715	P0715	INPUT SPD SEN/CIRC	<u>CVT-86</u>
P0720	P0720	VEH SPD SEN/CIR AT	<u>CVT-91</u>
—	P0725	ENGINE SPEED SIG	<u>CVT-97</u>
_	P0730	BELT DAMG	<u>CVT-99</u>
P0740	P0740	TCC SOLENOID/CIRC	<u>CVT-101</u>
P0744	P0744	A/T TCC S/V FNCTN	<u>CVT-106</u>
P0745	P0745	L/PRESS SOL/CIRC	<u>CVT-109</u>
P0746	P0746	PRS CNT SOL/A FCTN	<u>CVT-114</u>
P0776	P0776	PRS CNT SOL/B FCTN	<u>CVT-117</u>
P0778	P0778	PRS CNT SOL/B CIRC	<u>CVT-120</u>
_	P0826	MANUAL MODE SWITCH	<u>CVT-125</u>
P0840	P0840	TR PRS SENS/A CIRC	<u>CVT-132</u>
—	P0841	PRESS SEN/FNCTN	<u>CVT-137</u>
P0845	P0845	TR PRS SENS/B CIRC	<u>CVT-140</u>
_	P0868	SEC/PRESS DOWN	<u>CVT-145</u>
—	P1701	TCM-POWER SUPPLY	<u>CVT-148</u>
—	P1705	TP SEN/CIRC A/T	<u>CVT-155</u>
—	P1722	ESTM VEH SPD SIG	<u>CVT-157</u>
—	P1723	CVT SPD SEN/FNCTN	<u>CVT-159</u>
—	P1726	ELEC TH CONTROL	<u>CVT-161</u>
P1740	P1740	LU-SLCT SOL/CIRC	<u>CVT-163</u>
—	P1745	L/PRESS CONTROL	<u>CVT-168</u>
P1777	P1777	STEP MOTR CIRC	<u>CVT-169</u>
P1778	P1778	STEP MOTR/FNC	<u>CVT-173</u>
U1000	U1000	CAN COMM CIRCUIT	<u>CVT-65</u>

*1: These numbers are prescribed by SAE J2012.

PRECAUTIONS

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

The Supplemental Restraint System such as "AIR BAG" and "SEAT BELT PRE-TENSIONER", used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. This system includes seat belt switch inputs and dual stage front air bag modules. The SRS system uses the seat belt switches to determine the front air bag deployment, and may only deploy one front air bag, depending on the severity of a collision and whether the front occupants are belted or unbelted. Information necessary to service the system safely is included in the SRS and SB section of this Service Manual.

WARNING:

- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, 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 section.
- Do not use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harnesses or harness connectors.

On Board Diagnostic (OBD) System of CVT and Engine

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

CAUTION:

- Be sure to turn the ignition switch OFF and disconnect the negative battery cable before any repair or inspection work. The open/short circuit of related switches, sensors, solenoid valves, etc. will cause the MI to light up.
- Be sure to connect and lock the connectors securely after work. A loose (unlocked) connector will cause the MI to light up due to the 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. The interference of the harness with a bracket, etc. may cause the MI to light up due to the short circuit.
- Be sure to connect rubber tubes properly after work. A misconnected or disconnected rubber tube may cause the MI to light up due to the malfunction of the 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.

Precautions for TCM and CVT Assembly Replacement

ECS00F5A

ECS00ENP

CAUTION:

- Check if new data (Unit ID) are entered correctly after replacing CVT assembly and erasing data in TCM. (Connect CONSULT-II, 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.

CVT assembly	ТСМ	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.

EEPROM ERASING PATTERNS



PRECAUTIONS

ME	ETHOD FOR ERASING THE EEPROM IN THE TCM	
1.	Connect CONSULT-II to data link connector. Refer to CVT-55, "CONSULT-II SETTING PROCEDURE".	А
2.	Turn ignition switch ON. Confirm that CONSULT-II is turned ON.	
3.	Move selector lever to "R" position.	_
4.	Touch "START (NISSAN BASED VHCL)" on CONSULT-II.	В
5.	Select "SELF-DIAG RESULTS" mode for "TRANSMISSION" with CONSULT-II.	
6.	Press the brake pedal and turn the brake switch ON.	CV/T
7.	Press the accelerator pedal (0.5/8 - 4/8 throttle) not to exceed the half, and hold it in the half or less open position. (This will set the closed throttle position signal to OFF and the wide open throttle position signal to "OFF".)	
8.	Touch "ERASE" on CONSULT-II, and then touch "YES".	D
9.	Wait 3 seconds and then release the accelerator pedal.	
10.	. Turn ignition switch OFF.	F
MF	THOD FOR WRITING DATA FROM THE ROM ASSEMBLY IN THE TRANSAXI F	
In t TC	the following procedure, the TCM reads data from the ROM assembly and writes it to the EEPROM in the M.	F
1.	Erase the EEPROM in the TCM.	
2.	Move selector lever to "P" position.	
3.	Turn ignition switch ON.	G
СН	IECK METHOD	
•	Standard: About 2 seconds after the ignition switch ON, the CVT indicator lamp lights up for 2 seconds.	Н
•	Non-standard: Even after the ignition switch ON, the CVT indicator lamp does not light up after 2 seconds or illuminates immediately.	
	CAUTION:	
	Perform in the "P" or "N" position.	
Ac	tion for Non-standard	
•	Replace the CVT assembly.	J
•	Replace the TCM.	
Re RE	emoval and Installation Procedure for CVT Unit Connector	K
•	Rotate bayonet ring counterclockwise, pull out CVT unit harness connector upward and remove it.	L
	CVT unit harness connector Bayonet ring	Μ

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SCIA2096E

INSTALLATION

 Align ∆ marking on CVT unit harness connector terminal body with □ marking on bayonet ring, insert CVT unit harness connector, and then rotate bayonet ring clockwise.



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



CAUTION:

- Securely align △ marking on CVT unit harness connector terminal body with bayonet ring slit. Then, be careful not to make a half fit condition as shown in the figure.
- Do not mistake the slit of bayonet ring for other dent portion.



ECS00F5C

Precautions

NOTE:

If any malfunction occurs in the RE0F09A model transaxle, replace the entire transaxle assembly.

 Before connecting or disconnecting the TCM harness connector, turn ignition switch OFF and disconnect the battery cable from the negative terminal. Because battery voltage is applied to TCM even if ignition switch is turned OFF.



- PRECAUTIONS
- When connecting or disconnecting pin connectors into or from TCM, take care not to damage pin terminals (bend or break).

When connecting pin connectors make sure that there are not any bends or breaks on TCM pin terminal.



- After performing each TROUBLE DIAGNOSIS, perform "DTC Confirmation Procedure". If the repair is completed the DTC should not be displayed in the "DTC Confirmation Procedure".
- Always use the specified brand of CVT fluid. Refer to <u>MA-14</u>, <u>"Fluids and Lubricants"</u>.
- Use lint-free paper, not cloth rags, during work.
- After replacing the CVT fluid, dispose of the waste oil using the methods prescribed by law, ordinance, etc.

Service Notice or Precautions 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 (MI). Refer to the table on <u>CVT-58</u>, "<u>Display Items</u> <u>List</u>" for the indicator used to display each self-diagnostic result.
- The self-diagnostic results indicated by the MI are automatically stored in both the TCM and ECM memories.

Always perform the procedure on <u>CVT-26, "HOW TO ERASE DTC"</u> to complete the repair and avoid unnecessary blinking of the MI.

For details of OBD-II, refer to EC-35, "ON BOARD DIAGNOSTIC (OBD) SYSTEM" .

 Certain systems and components, especially those related to OBD, may use the new style slidelocking type harness connector. For description and how to disconnect, refer to <u>PG-103, "HAR-NESS CONNECTOR"</u>.

Wiring Diagrams and Trouble Diagnosis

When reading wiring diagrams, refer to the following:

- GI-14, "How to Read Wiring Diagrams".
- <u>PG-3, "POWER SUPPLY ROUTING CIRCUIT"</u> for power distribution circuit.

When performing trouble diagnosis, refer to the following:

- <u>GI-10, "How to Follow Trouble Diagnoses"</u>.
- GI-23, "How to Perform Efficient Diagnosis for an Electrical Incident".



ECS00F5D

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ECS00F5E

PREPARATION

PREPARATION Special Service Tools

ECS00F5F

Tool number Tool name		Description
ST2505S001 Oil pressure gauge set 1 ST25051001 Oil pressure gauge 2 ST25052000 Hose 3 ST25053000 Joint pipe 4 ST25054000 Adapter 5 ST25055000 Adapter	ZZA0600D	Measuring line pressure
KV40100621 Drift a: 76 mm (2.99 in) dia. b: 69 mm (2.72 in) dia	a b NT086	 Installing differential side oil seal Converter housing side (right)
ST33400001 Drift a: 60 mm (2.36 in) dia. b: 47 mm (1.85 in) dia.	a b NT086	Installing differential side oil seal Transaxle case side (left)

PREPARATION

Tool number Tool name		Description	
31197CA000 Drive plate location guide a: 14 mm (0.55 in) dia.	Ta	Installing transaxle assembly	E
			C
	SCIA2013E		[
31093CA000 Slinger		Removing and installing transaxle assembly	
	o		ľ
	SCIA2014E		I
31092CA000 Slinger	Ø	Removing and installing transaxle assembly	
			(
	SCIA2015E		ŀ
Power tool		Loosening nuts and bolts	

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CVT FLUID

Checking CVT Fluid

Fluid level should be checked with the fluid warmed up to 50 to 80°C (122 to 176°F). The fluid level check procedure is as follows:

- Check for fluid leakage. 1.
- 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.

top end of the CVT fluid charging pipe.

lint-free paper, not a cloth rag.

- 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 When wiping away the CVT fluid level gauge, always use Insert all the way in CVT fluid charging pipe

a pick in the lock of gauge.

> CVT fluid charging pipe

8. Place the selector lever in "P" or "N" and make sure the fluid level is within the specified range.

CAUTION:

CAUTION:

 When reinstalling CVT fluid level gauge, insert it into the CVT fluid charging pipe and rotate it to the original installation position until it is securely locked.









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ECS00F5H

- 9 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, bands, etc.), replace radiator and flush cooler line using cleaning solvent and compressed air after repair of CVT. Refer to CO-13, "RADIATOR" .



Changing CVT Fluid

- Warm up CVT fluid by driving the vehicle for 10 minutes. 1.
- <⊐: Vehicle front
- Radiator (2)
- CVT fluid cooler hose [inlet side (3)]
- Transaxle assembly (4)
- Drain CVT fluid from CVT fluid cooler hose [outlet side (1)] and 2 refill with new CVT fluid at CVT fluid charging pipe with the engine running at idle speed.
- Refill until new CVT fluid comes out from CVT fluid cooler hose 3. (outlet side).

About 30 to 50% extra fluid will be required for this procedure.

CVT fluid:

Genuine NISSAN CVT fluid NS-2

Fluid capacity:

Approx. 10.0 ℓ (8-3/4 lmp qt)

CAUTION:

- Use only Genuine NISSAN CVT fluid NS-2. Do not mix with other fluid.
- Using CVT fluid other than Genuine NISSAN CVT fluid NS-2 will deteriorate in driveability and Κ CVT durability, and may damage the CVT, which is not covered by the warranty.
- When filling CVT fluid, take care not to scatter heat generating parts such as exhaust.
- Delete CVT fluid deterioration date with CONSULT-II after changing CVT fluid. Refer to CVT-57, L "Check CVT Fluid Deterioration Date" .
- 4. Check fluid leakage, fluid level and condition.





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ECS00F5I

CVT SYSTEM

19. Input shaft



PFP:31036

ECS00F5K



CVT-16

20. Torque converter



CVT-17

Hydraulic Control System



ECS00F5M

ECS00F5N

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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.

CONTROL SYSTEM OUTLINE

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

SENSORS (or SIGNAL)		TCM		ACTUATORS	Г
PNP switch Accelerator pedal position signal Closed throttle position signal Engine speed signal CVT fluid temperature sensor Vehicle speed signal Manual mode signal Stop lamp switch signal Primary speed sensor Secondary speed sensor Primary pressure sensor Secondary pressure sensor	⇒	Shift control Line pressure control Primary pressure control Secondary pressure control Lock-up control Engine brake control Vehicle speed control Fail-safe control Self-diagnosis CONSULT-II 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 Manual mode indicator CVT position indicator CVT indicator lamp Starter relay	F

CONTROL SYSTEM DIAGRAM



CAN Communication SYSTEM DESCRIPTION

CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Many electronic control units are equipped onto a vehicle, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with 2 communication lines (CAN H line, CAN L line) allowing a high rate of information transmission with less wiring. Each control unit transmits/receives data but selectively reads required data only. For details, refer to <u>LAN-21</u>, <u>"CAN Communication Unit"</u>.

Input/Output Signal of TCM

	Control item	Fluid pressure control	Select control	Shift con- trol	Lock-up control	CAN com- munication control	Fail-safe function (*2)
	PNP switch	Х	Х	Х	Х	Х	Х
	Accelerator pedal position signal (*1)	Х	Х	Х	Х	Х	Х
	Closed throttle position signal ^(*1)	Х		Х	Х	Х	
	Engine speed signal ^(*1)	Х	Х		Х	Х	Х
	CVT fluid temperature sensor	Х	Х	Х	Х		Х
Input	Manual mode signal ^(*1)	Х		Х	Х	Х	Х
	Stop lamp switch signal ^(*1)	Х		Х	Х	Х	
	Primary speed sensor	Х		Х	Х	Х	Х
	Secondary speed sensor	Х	Х	Х	Х	Х	Х
	Primary pressure sensor	Х		Х			
	Secondary pressure sensor	Х		Х			Х
	TCM power supply voltage signal	Х	Х	Х	Х	Х	Х
	Step motor			Х			Х
	TCC solenoid valve		Х		Х		Х
Out-	Lock-up select solenoid valve		Х		Х		Х
P.41	Line pressure solenoid valve	Х	Х	Х			Х
	Secondary pressure solenoid valve	Х		Х			Х

*1: Input by CAN communications.

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

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Line Pressure and Secondary Pressure Control

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



NORMAL CONTROL

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

FEEDBACK CONTROL

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

Shift Control

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



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NOTE:

The gear ratio is set for every position separately.

"D" POSITION

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



"M" POSITION

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



DOWNHILL ENGINE BRAKE CONTROL (AUTO ENGINE BRAKE CONTROL)

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

ACCELERATION CONTROL

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

Lock-up and Select Control

ECS00F5S

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



TORQUE CONVERTER CLUTCH AND SELECT CONTROL VALVE CONTROL Lock-up and Select Control System Diagram



Lock-up Released

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

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Control Valve FUNCTION OF CONTROL VALVE

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Name	Function
Torque converter regulator valve	Optimizes the supply pressure for the torque converter depending on driving conditions.
Pressure regulator valve	Optimizes the discharge pressure from the oil pump depending on driving conditions.
TCC control valvo	Activates or deactivate the lock-up.
	 Lock-up smoothly by opening lock-up operation excessively.
TCC solenoid valve	Controls the TCC control valve or select control valve.
Shift control valve	Controls flow-in/out of line pressure from the primary pulley depending on the stroke dif- ference between the stepping motor and the primary pulley.
Secondary valve	Controls the line pressure from the secondary pulley depending on operating condi- tions.
Clutch regulator valve	Adjusts the clutch operating pressure depending on operating conditions.
Secondary pressure solenoid valve	Controls the secondary valve.
Line pressure solenoid valve	Controls the line pressure control valve.
Step motor	Controls the pulley ratio.
Manual valve	Transmits the clutch operating pressure to each circuit in accordance with the selected position.
Select control valve	Engages forward clutch, reverse brake smoothly depending on select operation.
Select switch valve	Switches torque converter clutch solenoid valve control pressure use to torque converter clutch control valve or select control valve.
Lock-up select solenoid valve	Controls the select switch valve.

ON BOARD DIAGNOSTIC (OBD) SYSTEM

ON BOARD DIAGNOSTIC (OBD) SYSTEM

Introduction

The CVT system has two self-diagnostic systems.

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

The second is the TCM original self-diagnosis performed by the TCM. The malfunction is stored in the TCM memory. The detected items are overlapped with OBD-II self-diagnostic items. For detail, refer to CVT-58, "Display Items List" .

OBD-II Function for CVT System

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 MI (malfunction indicator) on the instrument panel. Sensors, switches and solenoid valves are used as sensing elements.

The MI 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 MI will illuminate and the malfunction will be stored in the ECM memory as a DTC. The TCM is not provided with such a memory function.

TWO TRIP DETECTION LOGIC

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

(P) with CONSULT-II or (CONSULT-II or GST (Generic Scan Tool) Examples: P0705, P0720 etc. These DTC are prescribed by SAE J2012.

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

- 1st trip DTC No. is the same as DTC No.
- Output of the diagnostic trouble code indicates that the indicated circuit has a malfunction. However, in case of the Mode II and GST, they do not indicate whether the malfunction is still occurring or occurred in the past and returned to normal. CONSULT-II can identify them as shown below, therefore, CONSULT-II (if available) is recommended.

A sample of CONSULT-II display for DTC and 1st trip DTC is shown on the next page. DTC or 1st trip DTC of a malfunction is displayed in SELF-DIAGNOSTIC RESULTS mode for "ENGINE" with CON-SULT-II. Time data indicates how many times the vehicle was driven after the last detection of a DTC.

SELECT SYSTEM	
ENGINE	
ABS	
AIR BAG	
ALL MODE AWD/4WD	
IPDM E/R	
BCM	
	SCIA4823E

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ON BOARD DIAGNOSTIC (OBD) SYSTEM

If the DTC is being detected currently, the time data will be "0".

SELF-DIAG RES	ULTS
DTC RESULTS	TIME
PNP SW/CIRC [P0705]	o

 SELF-DIAG RESULTS

 DTC RESULTS
 TIME

 PNP SW/CIRC
 1 t

 [P0705]
 1 t

 SAT016K

If a 1st trip DTC is stored in the ECM, the time data will be "1t".

Freeze Frame Data and 1st Trip Freeze Frame Data

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

Data which are stored in the ECM memory, along with the 1st trip DTC, are called 1st trip freeze frame data, and the data, stored together with the DTC data, are called freeze frame data and displayed on CONSULT-II or GST. The 1st trip freeze frame data can only be displayed on the CONSULT-II screen, not on the GST. For details, refer to EC-98, "CONSULT-II Function (ENGINE)".

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/MI on) is stored in the ECM memory, 1st trip freeze frame data is no longer stored. Remember, only one set of freeze frame data can be stored in the ECM. The ECM has the following priorities to update the data.

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

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-II, GST or ECM DIAGNOSTIC TEST MODE as described following.

- If the battery cable is disconnected, the diagnostic trouble code will be lost within 24 hours.
- When you erase the DTC, using CONSULT-II 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 $\underline{\text{EC-36}}$, "Emission-related Diagnostic Information".

- Diagnostic trouble codes (DTC)
- 1st trip diagnostic trouble codes (1st trip DTC)
- Freeze frame data

CVT-26

ON BOARD DIAGNOSTIC (OBD) SYSTEM



B 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 Generic Scan Tool (GST). For details, refer to <u>EC-109</u>, "<u>Generic Scan Tool (GST)</u> <u>Function</u>".

Malfunction Indicator (MI) DESCRIPTION

- 1. The MI will light up when the ignition switch is turned ON without the engine running. This is a bulb check.
 - If the MI does not light up, refer to <u>DI-37, "WARNING LAMPS"</u>, or see <u>EC-682, "MI & DATA LINK CONNECTORS"</u>.
- 2. When the engine is started, the MI should go off. If the MI remains on, the on board diagnostic system has detected an engine system malfunction.



TROUBLE DIAGNOSIS

DTC Inspection Priority Chart

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

NOTE:

If DTC "U1000 CAN COMM CIRCUIT" is displayed with other DTCs, first perform the trouble diagnosis for "DTC U1000 CAN COMMUNICATION LINE". Refer to <u>CVT-65</u>.

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

Fail-safe

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

FAIL-SAFE FUNCTION

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

Output Speed Sensor (Secondary Speed Sensor)

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

Input Speed Sensor (Primary Speed Sensor)

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

PNP Switch

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

Manual Mode Switch

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

CVT Fluid Temperature Sensor

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

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

Pressure Control Solenoid B (Secondary Pressure Solenoid)

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

Torque Converter Clutch Solenoid

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

CVT-29

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Step Motor

good parts.

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

CVT Lock-up Select Solenoid

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

TCM Power Supply (Memory Back-up)

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

How to Perform Trouble Diagnosis for Quick and Accurate Repair INTRODUCTION

ECS00E61

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

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

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







Before undertaking actual checks, take a few minutes to talk with a customer who approaches with a driveability complaint. The customer can supply good information about such errors, especially intermittent ones. Find out what symptoms are present and under what conditions they occur. A "DIAGNOSTIC WORKSHEET" as shown on the example (Refer to CVT-32) should be used.

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

Also check related Service bulletins.

performed. Follow the CVT-31, "WORK FLOW" .

WORK FLOW

A good understanding of the malfunction conditions can make troubleshooting faster and more accurate. In general, each customer feels differently about a malfunction. It is important to fully understand the symptoms or conditions for a customer complaint.

А

Make good use of the two sheets provided, <u>CVT-32</u>, "Information from Customer" and <u>CVT-32</u>, "Diagnostic B Worksheet Chart", to perform the best troubleshooting possible.

Work Flow Chart



DIAGNOSTIC WORKSHEET Information from Customer

KEY POINTS

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

Customer name MR/MS	Model & Year	VIN	
Trans. Model	Engine	Mileage	
Malfunction Date	Manuf. Date	In Service Date	
Frequency	□ Continuous □ Intermittent (times a day)	
Symptoms	□ Vehicle does not move. (□ A	ny position 🛛 Particular position)	
	🗅 No shift		
	Lock-up malfunction		
	$\label{eq:shift shock or slip} (\Box \ N \to D \ \Box \ N \to R \ \Box \ Lock-up \ \Box \ Any \ drive \ position)$		
	Noise or vibration		
	No pattern select		
	Others		
	()	
Malfunction indicator (MI)	Continuously lit	D Not lit	

Diagnostic Worksheet Chart

1	Read the item on cautions concerning fail-safe and understand the customer's complaint.			<u>CVT-29</u>
2	CVT fluid inspection			
	 Leak (Repair leak location.) State Amount 			
3	□ Stall test and line pressure test			
		 Torque converter one-way clutch Reverse brake Forward clutch Steel belt 	 Engine Line pressure low Primary pulley Secondary pulley 	<u>CVT-37,</u> <u>CVT-39</u>
		Line pressure inspection - Suspected part:		

	Perform I	road test.	<u>CVT-41</u>
		Check before engine is started	
		 <u>CVT-184, "CVT Indicator Lamp Does Not Come On"</u> Perform self-diagnosis. Enter checks for detected items. <u>CVT-58</u> 	
		 CVT-65. "DTC U1000 CAN COMMUNICATION LINE". CVT-68. "DTC P0615 START SIGNAL CIRCUIT". CVT-72. "DTC P0703 STOP LAMP SWITCH CIRCUIT". CVT-74. "DTC P0705 PARK/NEUTRAL POSITION SWITCH". CVT-81. "DTC P0710 CVT FLUID TEMPERATURE SENSOR CIRCUIT". CVT-86. "DTC P0715 INPUT SPEED SENSOR CIRCUIT (PRI SPEED SENSOR)". CVT-91. "DTC P0720 VEHICLE SPEED SENSOR CVT (SECONDARY SPEED SENSOR)". CVT-97. "DTC P0725 ENGINE SPEED SIGNAL". CVT-99. "DTC P0730 BELT DAMAGE". CVT-101. "DTC P0740 TORQUE CONVERTER CLUTCH SOLENOID VALVE". CVT-106. "DTC P0745 LINE PRESSURE SOLENOID VALVE". 	C
	4-1.	 CVT-114, "DTC P0746 PRESSURE CONTROL SOLENOID A PERFORMANCE (LINE PRESSURE SOLENOID VALVE)". CVT-117, "DTC P0776 PRESSURE CONTROL SOLENOID B PERFOMANCE (SEC PRESSURE SOLENOID VALVE)". 	
4		 <u>CVT-120, "DTC P0778 PRESSURE CONTROL SOLENOID B ELECTRICAL (SEC PRESSURE SOLENOID VALVE)"</u>. <u>CVT-125, "DTC P0826 MANUAL MODE SWITCH CIRCUIT"</u>. <u>CVT-132, "DTC P0840 TRANSMISSION FLUID PRESSURE SENSOR A CIRCUIT</u> 	
		(SEC PRESSURE SENSOR)".	
		□ CVT-145, "DTC P0868 SECONDARY PRESSURE DOWN". □ CVT-148, "DTC P1701 TRANSMISSION CONTROL MODULE (POWER SUPPLY)". □ CVT-155, "DTC P1705 THROTTLE POSITION SENSOR". □ CVT-157, "DTC P1722 ESTM VEHICLE SPEED SIGNAL".	
		□ <u>CVT-159</u> , <u>DTC P1723</u> CVT <u>SPEED SENSOR FUNCTION</u> . □ <u>CVT-161</u> , <u>"DTC P1726 ELECTRIC THROTTLE CONTROL SYSTEM</u> ". □ <u>CVT-163</u> , <u>"DTC P1740 LOCK-UP SELECT SOLENOID VALVE CIRCUIT</u> ".	
		□ <u>CVT-173, "DTC P1778 STEP MOTOR - FUNCTION"</u> .	
	4.2	Check at idle CVT-186. "Engine Cannot Be Started in "P" or "N" Position" CVT-187. "In "P" Position, Vehicle Moves Forward or Backward When Pushed"	<u>CVT-44</u>
	4-2.	 □ <u>CVT-188. "In "N" Position, Vehicle Moves"</u>. □ <u>CVT-189. "Large Shock "N" → "R" Position"</u>. □ <u>CVT-191. "Vehicle Does Not Creep Backward in "R" Position"</u>. □ <u>CVT-193. "Vehicle Does Not Creep Forward in "D" Position"</u>. 	

		Cruise test	<u>CVT-47</u>	
		□ <u>CVT-195, "CVT Does Not Shift"</u> .		
		CVT-197, "Cannot Be Changed to Manual Mode".		
		UCVI-198, "CVI Does Not Shift in Manual Mode".		
	CVT-200, "Vehicle Does Not Decelerate by Engine Brake"			
		Perform self-diagnosis. Enter checks for detected items. <u>CV1-58</u>		
		□ <u>CVT-65, "DTC U1000 CAN COMMUNICATION LINE"</u> .		
		□ <u>CVT-68, "DTC P0615 START SIGNAL CIRCUIT"</u> .		
		CVT-72, "DTC P0703 STOP LAMP SWITCH CIRCUIT".		
		CVT-74, "DTC P0705 PARK/NEUTRAL POSITION SWITCH".		
		□ CVT-81, "DTC P0710 CVT FLUID TEMPERATURE SENSOR CIRCUIT"		
		□ <u>CVT-86, "DTC P0715 INPUT SPEED SENSOR CIRCUIT (PRI SPEED SENSOR)"</u> .		
		GEVI-91, "DIC P0720 VEHICLE SPEED SENSOR CVT (SECONDARY SPEED SEN-		
		SOR)" . CVT-97. "DTC P0725 ENGINE SPEED SIGNAL" .		
		CVT-99. "DTC P0730 BELT DAMAGE".		
		CVT-101, "DTC P0740 TORQUE CONVERTER CLUTCH SOLENOID VALVE".		
		CVT-106, "DTC P0744 A/T TCC S/V FUNCTION (LOCK-UP)".		
		CVT-109, "DTC P0745 LINE PRESSURE SOLENOID VALVE" .		
4	4-3.	CVT-114, "DTC P0746 PRESSURE CONTROL SOLENOID A PERFORMANCE		
		(LINE PRESSURE SOLENOID VALVE)".		
		CVT-117, "DTC P0776 PRESSURE CONTROL SOLENOID B PERFOMANCE (SEC		
		PRESSURE SOLENOID VALVE)".		
		CVT-120, "DTC P0778 PRESSURE CONTROL SOLENOID B ELECTRICAL (SEC)		
		PRESSURE SOLENOID VALVE)".		
		□ CVT-125, "DTC P0826 MANUAL MODE SWITCH CIRCUIT".		
		CVT-132, "DTC P0840 TRANSMISSION FLUID PRESSURE SENSOR A CIRCUIT		
		(SEC PRESSURE SENSOR)".		
		□ <u>CVT-137, "DTC P0841 PRESSURE SENSOR FUNCTION"</u> .		
		CVT-140, "DTC P0845 TRANSMISSION FLUID PRESSURE SENSOR B CIRCUIT		
		(PRI PRESSURE SENSOR)".		
		UCVI-145, "DIC P0868 SECONDARY PRESSURE DOWN".		
		UCVI-148, "DTC P1/01 TRANSMISSION CONTROL MODULE (POWER SUPPLY)".		
		UCVI-155, "DTC P1705 THROTTLE POSITION SENSOR"		
		U CVT-157, "DTC P1722 ESTM VEHICLE SPEED SIGNAL".		
		CVT-163, DTC P1740 LOCK-OP SELECT SOLENOID VALVE CIRCUIT		
		Gevents, Dicentroster Motor - Fonction.		
5		□ Inspect each system for items found to be NG in the self-diagnosis and repair or replace the malfunctioning parts.		
6	□ Perform all road tests and enter the checks again for the required items.			
7	For any remaining NG items, perform the "diagnosis procedure" and repair or replace the malfunctioning parts.			
8	Erase the	Erase the results of the self-diagnosis from the TCM.		
			<u></u>	

CVT Electrical Parts Location



Circuit Diagram ECS00F64 oll STOP SWITCH 8 ٩ŀ FUSE 29 This relay is built into the IPDM E/R (Intelligent power distribution module engine room). 14 4 13 œ 22 5 ĉ UNIFIED METER AND A/C AMP. JMANUAL ECM DOWN AUTO 102 S2 ЧD z 86 94 CVT DEVICE 2 Ý COMBINATION METER σ 6 POSITION SELECT SWITCH UNIFIED METER CONTROL UNIT (WITH CVT INDICATOR) DATA LINE DATA LINE To starting system To starting system MODE SELECT SWITCH CVT oll STARTER 25 48 9 ł ÷ IPDM E/R (INTELLIGENT POWER DISTRIBUTION MODULE ENGINE ROOM) (CPU) ιc ¥ ł To CAN system 32 ∞ -In ¥ 24 42 13 14 15 CONNECTOR CVT FLUID ATURE SENSOR 47 PRIMARY PRESSURE SENSOR 41 ROM-ASSY FUSE -||-TCM (TRANSMISSION CONTROL MODULE) PRIMARY SPEED SENSOR DATA LINE DATA LINE STEP MOTOR 38 SEC PRESSURE SENSOR To CAN system ant an FUSE 46 S 37 CVT UNIT 34 36 35 32 ത To rear combination lamp (Back-up) 00 PARK/ NEUTRAL POSITION SWITCH -11 BACK-UP LAMP RELAY 27 11 12 20 21 LOCK-UP SELECT SOLENOID VALVE FUSE A F ത œ m -lı 4 TORQUE CONVERTER CONVERTER CLUTCH SOLENOID VALVE IGNITION SWITCH ON or START FUSE 19 SECONDARY PRESSURE SOLENOID VALVE 9 SECONDARY SPEED SENSOR 5 ÷ c 5 N -lı LINE PRESSURE SOLENOID VALVE 29 FUSE BATTERY 6 88 ╢ TCWB0135E

CVT-36
Inspections Before Trouble Diagnosis CVT FLUID CHECK



Inspect for fluid leakage and check the fluid level. Refer to CVT-14, "Checking CVT Fluid". •

Fluid Condition Check

Inspect the fluid condition.

Fluid status	Conceivable cause	Required operation
Varnished (viscous varnish state)	Clutch, brake scorched	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.

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STALL TEST Stall Test Procedure

rpm on indicator.

- 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.





5. Start engine, apply foot brake, and place selector lever in "D" position.





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CVT-37

- 6. While holding down the foot brake, gradually press down the accelerator pedal.
- 7. Quickly read off the stall speed, and then quickly remove your foot from the accelerator pedal.

CAUTION:

Do not hold down the accelerator pedal for more than 5 seconds during this test.

Stall speed: 2,700 - 3,250 rpm

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

Run the engine at idle for at least one minute.

10. Repeat steps 6 through 9 with selector lever in "R" position.

Judgement Stall Test



	Selector le	ver position	Expected problem location	
	"D"	"R"	Expected problem location	
	Н	0	Forward clutch	
0 L	0	Н	Reverse brake	
	L	L	Engine and torque converter one-way clutch	
Stall rotation	Η	Н	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 **Line Pressure Test Port**



Line Pressure Test Procedure

- 1. Inspect the amount of engine oil and replenish if necessary.
- 2. Drive the car for about 10 minutes to warm it up so that the CVT fluid reaches in the range of 50 to 80°C (122 to 176°F), then inspect the amount of CVT fluid and replenish if necessary. NOTE:

The CVT fluid temperature rises in the range of 50 to 80°C (122 to 176°F) during 10 minutes of driving.

3. After warming up CVT, remove the oil pressure detection plug and install the oil pressure gauge. (Special service tool: ST2505S001)

CAUTION:

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

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



5. Start the engine, and then measure the line pressure at both idle and the stall speed.

CAUTION:

- Keep the brake pedal pressed all the way down during measurement.
- When measuring the line pressure at the stall speed, refer to CVT-37, "STALL TEST" .
- 6. After the measurements are complete, install the oil pressure detection plug and tighten to the specified torque below.

• : 7.5 N·m (0.77 kg-m, 66 in-lb)

CAUTION:

- Do not reuse O-ring.
- Apply CVT fluid to O-ring.



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Line Pressure

Engine	Engine speed	Line pressure kPa (kg/cm ² , psi)	
Liigiile		"R", "D" positions	
VOIEDE	At idle speed	750 (7.65, 108.8)	
VQ35DE	At stall speed	5,700 (58.14, 826.5)* ¹	

*1 : Reference values

Judgement of Line Pressure Test

	ludgement	Possible cause
		Possible causes include malfunctions in the pressure supply system and low oil pump output. For example
	I ow for all positions	Oil pump wear
	("P", "R", "N", "D")	 Pressure regulator valve or plug sticking or spring fatigue
		• Oil strainer \Rightarrow oil pump \Rightarrow pressure regulator valve passage oil leak
		Engine idle speed too low
Idle speed	Only low for a spe- cific position	Possible causes include an oil pressure leak in a passage or device related to the position after the pressure is distributed by the manual valve.
		Possible causes include a sensor malfunction or malfunction in the line pressure adjustment func- tion. For example
		 Accelerator pedal position signal malfunction
	High	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
		Possible causes include a sensor malfunction or malfunction in the pressure adjustment function. For example
	Oil pressure does not rise higher than the oil pressure for idle.	 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
Stall speed	The pressure rises,	Possible causes include malfunctions in the pressure supply system and malfunction in the pres- sure adjustment function. For example
	the standard posi-	 Accelerator pedal position signal malfunction
	tion.	• Pressure control solenoid A (line pressure solenoid) malfunction (sticking, filter clog)
		 Pressure regulator valve or plug sticking
	Only low for a spe- cific position	Possible causes include an oil pressure leak in a passage or device related to the position after the pressure is distributed by the manual valve.

Road Test DESCRIPTION

- The purpose of the test is to determine overall performance of • CVT and analyze causes of problems.
- The road test consists of the following three parts:
- "Check Before Engine Is Started" CVT-44 . 1.
- 2 "Check at Idle" CVT-44 .
- 3. "Cruise Test" CVT-47.



- Before road test, familiarize yourself with all test procedures and items to check.
- Perform tests on all items until specified symptom is found. Troubleshoot items which check out No Good after road test. Refer to CVT-25, "ON BOARD DIAGNOSTIC (OBD) SYSTEM" .



CONSULT-II SETTING PROCEDURE

CAUTION:

If CONSULT-II is used with no connection of CONSULT-II CONVERTER, malfunctions might be detected in self-diagnosis depending on control unit which performs CAN communication.

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



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- 1. Turn ignition switch OFF.
- Connect CONSULT-II and CONSULT-II CONVERSTER to data 2. link connector, which is located in instrument driver lower panel on driver side.



- 3. Turn ignition switch ON.
- 4. Touch "START (NISSAN BASED VHCL)".

CONSULT- II

ENGINE
START (NISSAN BASED VHCL)
START (X-BADGE VHCL)
SUB MODE
LIGHT COPY
SAIA0450E







	DATA M	ONITOF	1	
MONIT	OR	N	O DTC	
VEHICL PRI SP ENG SI SLIP RI GEAR I ACC PE VENG 1 SEC PF PRI PR	LE SPEI EED EV RATIO EDAL O FRQ RESS ESS	ED 01 64 67 12 25 0.92 1.0	km / h 4 rpm 2 rpm 7 rpm 2.37 0.0 /8 .6 Nm 25 MPa 75MPa	
		Pag	e Up	
		REC	ORD	
MODE	BACK	LIGHT	COPY	SCIA4584E

 Touch "TRANSMISSION". If "TRANSMISSION" is not indicated, go to <u>GI-35, "CONSULT-II</u> <u>Data Link Connector (DLC) Circuit</u>".

6. Touch "DATA MONITOR".

- 7. Touch "MAIN SIGNALS" to set recording condition.
- 8. See "Numerical Display", "Barchart Display" or "Line Graph Display".
- 9. Touch "START".

- 10. When performing cruise test. Refer to CVT-47, "Cruise Test" .
- 11. After finishing cruise test part, touch "RECORD".



Check Before Engine Is Started

1. CHECK CVT INDICATOR LAMP

- 1. Park vehicle on flat surface.
- 2. Move selector lever to "P" position.
- 3. Turn ignition switch OFF. Wait at least 5 seconds.
- 4. Turn ignition switch ON. (Do not start engine.)

Does CVT indicator lamp come on for about 2 seconds?

- YES >> 1. Turn ignition switch OFF.
 - 2. Perform self-diagnosis and note NG items. Refer to <u>CVT-58, "SELF-DIAGNOSTIC RESULT</u> <u>MODE"</u>.
 - 3. Go to CVT-44, "Check at Idle" .
- NO >> Stop "Road Test". Go to <u>CVT-184, "CVT Indicator Lamp Does Not Come On"</u>.

Check at Idle

1. CHECK STARTING THE ENGINE

- 1. Park vehicle on flat surface.
- 2. Move selector lever to "P" or "N" position.
- 3. Turn ignition switch OFF.
- 4. Turn ignition switch to START position.

Is engine started?

- YES >> GO TO 2.
- NO >> Stop "Road Test". Mark the box on the <u>CVT-32</u>, "DIAG-<u>NOSTIC WORKSHEET"</u>. Go to <u>CVT-186</u>, "Engine Cannot Be Started in "P" or "N" Position".

2. CHECK STARTING THE ENGINE

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

Is engine started?

- YES >> Stop "Road Test". Mark the box on the <u>CVT-32</u>, "<u>DIAG-NOSTIC WORKSHEET</u>". Go to <u>CVT-186</u>, "<u>Engine Can-not Be Started in "P" or "N" Position</u>".
- NO >> GO TO 3.







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$\overline{\mathbf{3}}$. CHECK "P" POSITION FUNCTION А 1. Move selector lever to "P" position. P 2. Turn ignition switch OFF. В 3. Release parking brake. CVT ୍ଦ୍ ©©© D SCIA5947E F 4. Push vehicle forward or backward. 5. Apply parking brake. Does vehicle move when it is pushed forward or backward? F >> Mark the box "In "P" Position, Vehicle Moves Forward or YES Backward When Pushed" on the CVT-32, "DIAGNOS-TIC WORKSHEET" . Continue "Road Test". NO >> GO TO 4. Н SAT796A 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 >> Mark the box "In "N" Position, Vehicle Moves" on the <u>CVT-32</u>, "<u>DIAGNOSTIC WORKSHEET</u>" . Continue "Road Test".
- NO >> GO TO 5.

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5. CHECK SHIFT SHOCK

1. Apply foot brake.



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2. Move selector lever to "R" position.

Is there large shock when changing from "N" to "R" position?

- YES >> Mark the box "Large shock "N" →"R" Position" on the <u>CVT-32, "DIAGNOSTIC WORKSHEET"</u>. Continue "Road Test".
- NO >> GO TO 6.



Release foot brake for several seconds.

Does vehicle creep backward when foot brake is released?

YES >> GO TO 7. NO >> Mark the box "Vehicle Does Not Creep Backward in "R" Position" on the <u>CVT-32, "DIAGNOSTIC WORKSHEET"</u> . Continue "Road Test".



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$7. \ \text{CHECK "D" POSITION FUNCTION}$

Move selector lever to "D" position and check if vehicle creeps forward.

Does vehicle creep forward in all four positions?

- YES >> Go to <u>CVT-47, "Cruise Test"</u>.
- NO >> Mark the box "Vehicle Does Not Creep Forward in "D" Position" on the <u>CVT-32, "DIAGNOSTIC WORKSHEET"</u> . Continue "Road Test".



Cruise Test

- 1. CHECK VEHICLE SPEED WHEN SHIFTING GEARS PART 1
- 1. Drive vehicle for approximately 10 minutes to warm engine oil and CVT fluid up to operating temperature.

CVT fluid operating temperature: 50 - 80°C (122 - 176°F)

- 2. Park vehicle on flat surface.
- 3. Move selector lever to "P" position.
- 4. Start engine.





Read vehicle speed and engine speed. Refer to <u>CVT-49</u>, <u>"Vehicle Speed at Which Gear Shifting Occurs"</u>.

OK or NG

- OK >> GO TO 2.
- NG >> Mark the box of "CVT Does Not Shift" on the <u>CVT-32</u>, <u>"DIAGNOSTIC WORKSHEET"</u>. Continue "Road Test".







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$\overline{2}$. CHECK VEHICLE SPEED WHEN SHIFTING GEARS — PART 2

- 1. Park vehicle on flat surface.
- 2. Move selector lever to "D" position.



Read vehicle speed and engine speed. Refer to <u>CVT-49.</u>
<u>"Vehicle Speed at Which Gear Shifting Occurs"</u>.

OK or NG

- OK >> GO TO 3.
- NG >> Mark the box of "CVT Does Not Shift" on the <u>CVT-32</u>, <u>"DIAGNOSTIC WORKSHEET"</u>. Continue "Road Test".





3. CHECK MANUAL MODE FUNCTION

Move to manual mode from "D" position. Does it switch to manual mode?

YES >> GO TO 4.

NO >> Mark the box of "Cannot Be Changed to Manual Mode" on the <u>CVT-32</u>, "<u>DIAGNOSTIC WORKSHEET</u>". Continue "Road Test".



4. CHECK SHIFT-UP FUNCTION

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

Read the gear position. Refer to <u>CVT-61, "DATA MONITOR</u> <u>MODE"</u>.

Is upshifting correctly performed?

- YES >> GO TO 5.
- NO >> Mark the box of "CVT Does Not Shift in Manual Mode" on the <u>CVT-32</u>, "<u>DIAGNOSTIC WORKSHEET"</u>. Continue "Road Test".





Does engine braking effectively reduce speed in M1 position?

YES >> 1. Stop the vehicle.

- 2. Perform self-diagnosis. Refer to <u>CVT-58, "SELF-</u> <u>DIAGNOSTIC RESULT MODE"</u>.
- NO >> Mark the box of "Vehicle Does Not Decelerate by Engine Brake" on the <u>CVT-32</u>, "<u>DIAGNOSTIC WORKSHEET</u>". then continue trouble diagnosis.



Vehicle Speed at Which Gear Shifting Occurs

Numerical value data are reference values.

Engine type	Throttle position	Shift pattorn	Engine speed (rpm)		
Engine type		Shin pattern	At 40 km/h (25 MPH)	At 60 km/h (37 MPH)	-
	8/8	"D" position	2,800 - 4,300	3,900 - 5,300	-
VQSSDE	2/8	"D" position	1,200 - 2,000	1,300 - 2,100	

CAUTION:

Lock-up clutch is engaged when vehicle speed is approximately 18 km/h (11 MPH) to 90 km/h (56 MPH).

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TCM Input/Output Signal Reference Values TCM TERMINAL CONNECTOR LAYOUT



TCM INSPECTION TABLE

Data are reference values and are measured between each terminal and ground.

Terminal	Wire color	Item			Condition	Data (Approx.)
		Pressure control sole-	R	Release your	foot from the accelerator pedal.	5.0 - 7.0V
1	R/Y	noid valve A (Line pres- sure solenoid valve)	(LON)	Press the acc	elerator pedal all the way down.	1.0 - 3.0V
		Pressure control sole-	and	Release your	foot from the accelerator pedal.	5.0 - 7.0V
2	W/B	noid valve B (Second- ary pressure solenoid valve)		Press the acc	elerator pedal all the way down.	3.0 - 4.0V
	і лл/*1	Torque converter clutch		When vehicle	When CVT performs lock-up.	6.0V
3	G ^{*2}	solenoid valve		cruises in "D" position.	When CVT does not perform lock-up.	1.0V
	ı /v*1	Lock-up soloct solonoid	R	Selector lever	in "P", "N" positions.	Battery voltage
4	L/1 L ^{*2}	valve	(CON)	Wait at least fo "R", "D" positio	or 5 seconds with the selector lever in ons.	0V
5	L	CAN H				_
6	Р	CAN L	_		_	
			R	Selector lever	in "R" position.	0V
8	SB	Back-up lamp relay	Selector lever in other positions.		Battery voltage	
10	Y	Power supply	(Con) -		Battery voltage	
10	·		OFF	COFF) —		0V
11	G/R	Step motor A	Within 2 sec	onds after ignition	on switch ON, the time measurement by	30.0 msec
12	O/B	Step motor B	using the pulse width measurement function (Hi level) of CONSULT- II.*1 CAUTION: Connect the diagnosis data link cable to the vehicle diagnosis connector. *1: A circuit tester cannot be used to test this item.		10.0 msec	
13	G/W	ROM assembly			_	—
14	L/R	ROM assembly	—			—
15	BR/R	ROM assembly	—		—	

Terminal	Wire color	Item		Condition	Data (Approx.)	А
19	Y	Power supply	CON		Battery voltage	В
		· · · · · · · · · · · · · · · · · · ·	COFF		0V	CVT
20	R	Step motor C	Within 2 sec	onds after ignition switch ON, the time measurement by	30.0 msec	
21	R/G	Step motor D	II.*1 CAUTION: Connect the connector. *1: A circuit	e diagnosis data link cable to the vehicle diagnosis tester cannot be used to test this item.	10.0 msec	D
				Selector lever in "N", "P"positions.	Battery voltage	
24	6/0	Starter relay	(CON)	Selector lever in other positions.	0V	F
2.	0,0		OFF	_	0V	G
25	В	Ground		Always	0V	
27	BR/W	PNP switch 1	CON	Selector lever in "R", "N" and "D" positions. Selector lever in "P" position.	0V Battery voltage	Н
28	Y/R	Power supply (memory back-up)	Always		Battery voltage	
29	G ^{*1} LG/R ^{*2}	Output speed sensor (Secondary speed sen- sor)		When driving ["D" position, 20 km/h (12 MPH)].	300 Hz	J
				Selector lever in "D" position.	0V	
32	GR	PNP switch 3 (monitor)		Selector lever in "P", "R" and "N" positions.	8.0V - Battery voltage	К
				Selector lever in "N", "D" positions.	0V	
34	P/B	PNP switch 2		Selector lever in "P", "R" positions.	10.0V - Battery voltage	L
25	D/I	DND owitch 2		Selector lever in "D" position.	0V	NЛ
35	P/L	PINP SWIICH 5		Selector lever in "P", "R" and "N" positions.	8.0V - Battery voltage	IVI
	o*1			Selector lever in "R", "D" positions.	0V	
36	G/O ^{*2}	PNP switch 4		Selector lever in "P", "N" positions.	10.0V - Battery voltage	
37	V/W	Transmission fluid pressure sensor A (Secondary pressure sensor)	and	"N" position idle	0.8V	
38	LG	Input speed sensor (Primary speed sensor)		When driving ["D" position, 20 km/h (12 MPH)].	600 Hz	

Terminal	Wire color	Item		Condition Data (Approx.)	
41	V/O	Transmission fluid pressure sensor B (Pri- mary pressure sensor)	and "N" position idle		0.7 - 3.5V
42	W/R	Sensor ground	Always		0V
46	1/0	Sangar power	CON		4.5 - 5.5V
40	ĽO	Sensor power	OFF		0V
		CVT fluid temperature	R	When CVT fluid temperature is 20°C (68°F)	2.0V
47	V	sensor	(Lon)	When CVT fluid temperature is 80°C (176°F)	1.0V
48	В	Ground		Always	0V

^{*1}: LHD models.

*2: RHD models.

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CONSULT-II Function (TRANSMISSION)

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

FUNCTION

Diagnostic test mode	Function	Reference page	В
Work support	This mode enables a technician to adjust some devices faster and more accurately by following the indications on CONSULT-II.	<u>CVT-56</u>	
Self-diagnostic results	Self-diagnostic results can be read and erased quickly.	<u>CVT-58</u>	CVT
Data monitor	Input/Output data in the TCM can be read.	<u>CVT-61</u>	-
CAN diagnostic support monitor	The results of transmit/receive diagnosis of CAN communication can be read.	<u>CVT-63</u>	D
CALIB data	Characteristic information for TCM and CVT assembly can be read. Do not use, but displayed.	_	_
Function test	Performed by CONSULT-II instead of a technician to determine whether each system is "OK" or "NG".	_	
ECU part number	TCM part number can be read.	_	_

CONSULT-II REFERENCE VALUE

Item name	Condition	Display value (Approx.)
VSP SENSOR	During driving	Approximately matches the speedometer
ESTM VSP SIG		reading.
PRI SPEED SEN	During driving (lock-up ON)	Approximately matches the engine speed.
ENG SPEED SIG	Engine running	Closely matches the tachometer reading.
SEC HYDR SEN	"N" position idle	0.8 - 1.0V
PRI HYDR SEN	"N" position idle	0.7 - 3.5V
	When CVT fluid temperature is 20°C (68°F)	1.8 - 2.0V
ATF TEMP SEN	When CVT fluid temperature is 80°C (176°F)	0.6 - 1.0V
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 speed- ometer reading.
ENG SPEED	Engine running	Closely matches the tachometer reading.
GEAR RATIO	During driving	2.37 - 0.43
ACC PEDAL OPEN	Released accelerator pedal - Fully depressed accelerator pedal	0.0/8 - 8.0/8
SEC PRESS	"N" position idle	0.5 - 0.9MPa
PRI PRESS	"N" position idle	0.3 - 0.9MPa
STM STEP	During driving	-20 step - 190 step
100174	Lock-up "OFF"	0.0A
ISOLIT	Lock-up "ON"	0.7A
1001 T2	Release your foot from the accelerator pedal.	0.8A
ISULIZ	Press the accelerator pedal all the way down.	0.0A
ISOLT3	Secondary pressure low - Secondary pressure high	0.8 - 0.0A
	Lock-up "OFF"	0.0A
JOLINION I	Lock-up "ON"	0.6 - 0.7A

Item name	Condition	Display value (Approx.)	
	"N" position idle	0.8A	
SOLMONZ	When stalled	0.3 - 0.6A	
	"N" position idle	0.6 - 0.7A	
SOLMON3	When stalled	0.4 - 0.6A	
	Selector lever in "D" position	ON	
	Selector lever in "P", "R" and "N" positions	OFF	
	Selector lever in "R", "D" positions	ON	
INH SW4	Selector lever in "P", "N" positions	OFF	
	Selector lever in "D" position	ON	
INH SW3	Selector lever in "P", "R" and "N" positions	OFF	
	Selector lever in "N", "D" positions	ON	
INH SW2	Selector lever in "P", "R" positions	OFF	
	Selector lever in "R", "N" and "D" positions	ON	
INH SW1	Selector lever in "P" position	OFF	
	Depressed brake pedal	ON	
BRAKE SW	Released brake pedal	OFF	
	Fully depressed accelerator pedal	ON	
FULL SW	Released accelerator pedal	OFF	
	Released accelerator pedal	ON	
IDLE SW	Fully depressed accelerator pedal	OFF	
-	Select lever: - side	ON	
DOWNLVR	Other than the above	OFF	
	Select lever: + side	ON	
UPLVR	Other than the above	OFF	
	Manual shift gate position (neutral, +side, -side)	OFF	
NON MMODE	Other than the above	ON	
	Manual shift gate position (neutral)	ON	
MMODE	Other than the above	OFF	
SMCOIL D			
SMCOIL C			
SMCOIL B	During driving	Changes ON ⇔ OFF.	
SMCOIL A			
	Selector lever in "P", "N" positions	ON	
LUSEL SOL OUT	Wait at least for 5 seconds with the selector lever in "R" or "D" position	OFF	
	Selector lever in "P", "N" positions	ON	
STRTR RLY OUT	Selector lever in other positions	OFF	
	Selector lever in "P", "N" positions	ON	
STRTR RLY MON	Selector lever in other positions	OFF	
	ESP operate	ON	
VDC UN	Other conditions	OFF	
	TCS operate	ON	
TUS UN	Other conditions	OFF	
	ABS operate	ON	
ABS UN	Other conditions	OFF	

Item name	Condition	Display value (Approx.)	
	Selector lever in "N" or "P" position	N·P	A
RANGE	Selector lever in "R" position	R	
	Selector lever in "D" position	D	В
M GEAR POS	During driving	1, 2, 3, 4, 5, 6	

CONSULT-II SETTING PROCEDURE

CAUTION:

If CONSULT-II is used with no connection of CONSULT-II CONVERTER, malfunctions might be detected in self-diagnosis depending on control unit which performs CAN communication.

- For details, refer to the separate "CONSULT-II Operations Man-• ual".
- Turn ignition switch OFF. 1.
- 2. Connect CONSULT-II and CONSULT-II CONVERTER to data link connector, which is located in instrument driver lower panel on driver side.



- 3. Turn ignition switch ON. (Do not start engine.)
- 4. Touch "START (NISSAN BASED VHCL)".



Touch "TRANSMISSION". 5. If "TRANSMISSION" is not indicated, go to GI-35, "CONSULT-II Data Link Connector (DLC) Circuit" .



CVT

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6. Perform each diagnostic test mode according to each service procedure.

SELECT DIAG MODE	
WORK SUPPORT	
SELF-DIAG RESULTS	
DATA MONITOR	
CAN DIAG SUPPORT MNTR	
CALIB DATA	
FUNCTION TEST	
	SCIA5492E

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

- 1. Perform "CONSULT-II SETTING PROCEDURE". Refer to <u>CVT-55, "CONSULT-II SETTING PROCEDURE"</u>.
- 2. Touch "WORK SUPPORT".

SELECT DIAG MODE	
WORK SUPPORT	
SELF-DIAG RESULTS	
DATA MONITOR	
CAN DIAG SUPPORT MNTR	
CALIB DATA	
FUNCTION TEST	
	001454005
	SCIA5492E

3. Touch "ENGINE BRAKE ADJ".



4. Touch "START".

ENG	SINE BRA			
ADJUST	ENGINE E	BRAKE EF	FECT.	
	STA			
MODE	BACK	LIGHT	COPY	SCIA4288E

5. Set "ENGINE BRAKE LEVEL" by touching "UP" or "DOWN".

"ENGINE BRAKE LEVEL"

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

OFF: Engine brake level control is deactivated.

- 6. Turn ignition switch OFF, wait at least 5 seconds and then turn ignition switch ON.
- 7. Engine brake level set is completed.

CAUTION:

3

Mode of "+1" "0" "-1" "-2" "OFF" can be selected by press-

ing the "UP" "DOWN" on CONSULT-II screen. However, do not select mode other than "0" and "OFF". If the "+1" or "-1" or "-2" is selected, that might cause the irregular driveability.

Check CVT Fluid Deterioration Date

- 1. Perform "CONSULT-II SETTING PROCEDURE". Refer to <u>CVT-55, "CONSULT-II SETTING PROCEDURE"</u>.
- 2. Touch "WORK SUPPORT".

ENGINE BRAKE ADJ.
ADJ. MONITOR
ENGINE BRAKE LEVEL
0
UP
DOWN
SAT934J

D

А

В

CVT



- SELECT WORK ITEM ENGINE BRAKE ADJ. CONFORM CVTF DETERIORTN
- CONFORM CVTF DETERIORTN

 CVTF DETERIORATION DATE

 6

 CLEAR
 PRINT

 MODE
 BACK
 LIGHT
 COPY

 SCIA4289E

4. Check "CVTF DETERIORATION DATE"

Touch "CONFORM CVTF DETERIORTN".

"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

After performing self-diagnosis, place check marks for results on the <u>CVT-32</u>, "<u>DIAGNOSTIC WORKSHEET</u>". Reference pages are provided following the items.

Operation Procedure

- 1. Perform "CONSULT-II SETTING PROCEDURE". Refer to <u>CVT-</u> <u>55, "CONSULT-II SETTING PROCEDURE"</u>.
- Touch "SELF-DIAG RESULTS". Display shows malfunction experienced since the last erasing operation.



			X: Applicable	—: Not applicable
		TCM self- diagnosis	OBD-II (DTC)	
Items (CONSULT- II screen terms)	Malfunction is detected when	"TRANS- MISSION" with CON- SULT-II	MI*1, "ENGINE" with CONSULT-II or GST	Reference page
CAN COMM CIR- CUIT	When a malfunction is detected in CAN communications	U1000	U1000	<u>CVT-65</u>
STARTER RELAY/ CIRC	 If this signal is ON other than in "P" or "N" position, this is judged to be a malfunction. (And if it is OFF in "P" or "N" position, this is judged to be a malfunction too.) 	P0615	_	<u>CVT-68</u>
BRAKE SW/CIRC	When the brake switch does not switch to ON or OFF	P0703	_	<u>CVT-72</u>
PNP SW/CIRC	 PNP switch 1-4 signals input with impossible pattern PNP switch 3 monitor terminal open or short circuit 	P0705	P0705	<u>CVT-74</u>
ATF TEMP SEN/ CIRC	• During running, the CVT fluid temperature sensor signal voltage is excessively high or low	P0710	P0710	<u>CVT-81</u>
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. 	P0715	P0715	<u>CVT-86</u>
VEH SPD SEN/ CIR AT	 Signal from vehicle speed sensor CVT [Output speed sensor (Secondary speed sensor)] not input due to open or short circuit Unexpected signal input during running 	P0720	P0720	<u>CVT-91</u>

Display Items List

CVT-58

		TCM self- diagnosis	OBD-II (DTC)		A
Items (CONSULT- II screen terms)	Malfunction is detected when	"TRANS- MISSION" with CON- SULT-II	MI*1, "ENGINE" with CONSULT-II or GST	Reference page	В
ENGINE SPEED SIG	• TCM does not receive the CAN communication signal from the ECM.	P0725	—	<u>CVT-97</u>	CVT
BELT DAMG	Unexpected gear ratio detected	P0730		<u>CVT-99</u>	
TCC SOLENOID/ CIRC	 Normal voltage not applied to solenoid due to open or short circuit 	P0740	P0740	<u>CVT-101</u>	D
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. 	P0744	P0744	<u>CVT-106</u>	Е
L/PRESS SOL/ CIRC	 Normal voltage not applied to solenoid due to open or short circuit TCM detects as irregular by comparing target value with monitor value. 	P0745	P0745	<u>CVT-109</u>	F
PRS CNT SOL/A FCTN	• Unexpected gear ratio was detected in the LOW side due to excessively low line pressure.	P0746	P0746	<u>CVT-114</u>	G
PRS CNT SOL/B FCTN	• Secondary pressure is too high or too low compared with the commanded value while driving.	P0776	P0776	<u>CVT-117</u>	Н
PRS CNT SOL/B CIRC	 Normal voltage not applied to solenoid due to cut line, short, or the like TCM detects as irregular by comparing target value with monitor value. 	P0778	P0778	<u>CVT-120</u>	I
MANUAL MODE SWITCH	 When an impossible pattern of switch signals is detected, a malfunction is detected. 	P0826		<u>CVT-125</u>	
TR PRS SENS/A CIRC	• Signal voltage of the transmission fluid pressure sensor A (secondary pressure sensor) is too high or too low while driving.	P0840	P0840	<u>CVT-132</u>	J
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.	P0841	_	<u>CVT-137</u>	L K
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.	P0845	P0845	<u>CVT-140</u>	M
SEC/PRESS DOWN	• Secondary fluid pressure is too low compared with the commanded value while driving.	P0868		<u>CVT-145</u>	_
TCM-POWER SUPPLY	 When the power supply to the TCM is cut OFF, for example because the battery is removed, and the self-diagnosis memory function stops This is not a malfunction message (Whenever shutting OFF a power supply to the TCM, this message appears on the screen.) 	P1701	_	<u>CVT-148</u>	
TP SEN/CIRC A/T	• TCM does not receive the proper accelerator pedal posi- tion signals (input by CAN communication) from ECM.	P1705		<u>CVT-155</u>	_
ESTM VEH SPD SIG	 CAN communication with the ABS actuator and the electric unit (control unit) is malfunctioning. There is a great difference between the vehicle speed signal from the ABS actuator and the electric unit (control unit) and the vehicle speed sensor signal 	P1722	_	<u>CVT-157</u>	

		TCM self- diagnosis	OBD-II (DTC)	
Items (CONSULT- II screen terms)	Malfunction is detected when	"TRANS- MISSION" with CON- SULT-II	MI*1, "ENGINE" with CONSULT-II or GST	Reference page
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. 	P1723	_	<u>CVT-159</u>
ELEC TH CON- TROL	• The electronically controlled throttle for ECM is malfunc- tioning.	P1726	_	<u>CVT-161</u>
LU-SLCT SOL/ CIRC	 Normal voltage not applied to solenoid due to cut line, short, or the like TCM detects as irregular by comparing target value with monitor value. 	P1740	P1740	<u>CVT-163</u>
L/PRESS CON- TROL	• TCM detects the unexpected line pressure.	P1745	—	<u>CVT-168</u>
STEP MOTR CIRC	• Each coil of the step motor is not energized properly due to an open or a short.	P1777	P1777	<u>CVT-169</u>
STEP MOTR/FNC	• There is a great difference between the number of steps for the stepping motor and for the actual gear ratio.	P1778	P1778	<u>CVT-173</u>
NO DTC IS DETECTED: FUR- THER TESTING MAY BE REQUIRED	 No NG item has been detected. 	x	x	_

*1: Refer to CVT-28, "Malfunction Indicator (MI)" .

How to Erase Self-diagnostic Results

- 1. Perform "CONSULT-II SETTING PROCEDURE". Refer to <u>CVT-55, "CONSULT-II SETTING PROCEDURE"</u>.
- 2. Touch "SELF-DIAG RESULTS".



3. Touch "ERASE". (The self-diagnostic results will be erased.)

	-			-		
SI	ELF	-DIAG	a RESI	JLT	ſS	
DTC RESULTS					TIME	
ENGINE SPEED SIG [P0725]					PAST	
CAN COMM CIRCUIT [U1000]				-	PAST	
ESTM VEH SPD SI [P1722]					PAST	
ERASE				PR	INT	
MODE	В	ACK	LIGH	IT	COPY	SCIA4614E

DATA MONITOR MODE

Operation Procedure

- 1. Perform "CONSULT-II SETTING PROCEDURE". Refer to <u>CVT-</u> <u>55, "CONSULT-II SETTING PROCEDURE"</u>.
- 2. Touch "DATA MONITOR".

NOTE:

When malfunction is detected, CONSULT-II performs "REAL-TIME DIAGNOSIS". Also, any malfunction detected while in this mode will be displayed at real time.

SELECT DIAG MODE	
WORK SUPPORT	
SELF-DIAG RESULTS	
DATA MONITOR	
CAN DIAG SUPPORT MNTR	
CALIB DATA	
FUNCTION TEST	
	SCIA5492E
	· · · · / / · · / · · / · · /

Display Items List

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

	Mo	nitor item selec	tion	
Monitored item (Unit)	ECU INPUT SIGNALS	MAIN SIG- NALS	SELEC- TION FROM MENU	Remarks
VSP SENSOR (km/h)	Х	—	▼	Output speed sensor (secondary speed sensor).
ESTM VSP SIG (km/h)	Х	—	▼	
PRI SPEED SEN (rpm)	Х	—	▼	
ENG SPEED SIG (rpm)	Х	—	▼	
SEC HYDR SEN (V)	Х	—	▼	
PRI HYDR SEN (V)	Х	—	▼	
ATF TEMP SEN (V)	Х	—	▼	CVT fluid temperature sensor J
VIGN SEN (V)	Х	—	▼	
VEHICLE SPEED (km/h)	_	Х	▼	Vehicle speed recognized by the TCM.
PRI SPEED (rpm)	_	Х	▼	Primary pulley speed.
SEC SPEED (rpm)	_	—	▼	Secondary pulley speed.
ENG SPEED (rpm)	_	Х	▼	
SLIP REV (rpm)	_	Х	▼	Difference between engine speed and primary pulley speed
GEAR RATIO	_	Х	▼	
G SPEED (G)	_	—	▼	
ACC PEDAL OPEN (0.0/8)	x	х	▼	Degree of opening for accelerator recognized by the TCM For fail-safe operation, the specific value used for control is displayed.
TRQ RTO	_	—	▼	
SEC PRESS (MPa)	_	Х	▼	
PRI PRESS (MPa)	_	Х	▼	
ATF TEMP	_	Х	▼	
DSR REV (rpm)	_	_	▼	
DGEAR RATIO	_	_	▼	

CVT-61

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	Moi	nitor item seled	ction			
Monitored item (Unit)	ECU INPUT SIGNALS	MAIN SIG- NALS	SELEC- TION FROM MENU	Remarks		
DSTM STEP (step)	_		▼			
STM STEP (step)		Х	▼			
LU PRS (MPa)	_	—	▼			
LINE PRS (MPa)	—	—	▼			
TGT SEC PRESS (MPa)	—	—	▼			
ISOLT1 (A)		х	▼	Torque converter clutch solenoid valve output current		
ISOLT2 (A)		х	▼	Pressure control solenoid valve A (line pressure solenoid valve) output current		
ISOLT3 (A)	—	х	▼	Pressure control solenoid valve B (secondary pressure solenoid valve) output current		
SOLMON1 (A)	х	х	▼	Torque converter clutch solenoid valve monitor current		
SOLMON2 (A)	х	Х	▼	Pressure control solenoid valve A (line pressure solenoid valve) monitor current		
SOLMON3 (A)	х	Х	▼	Pressure control solenoid valve B (secondary pressure solenoid valve) monitor current		
INH SW3M (ON/OFF)	Х	—	▼	PNP switch 3 ON-OFF status monitor		
INH SW4 (ON/OFF)	Х	—	▼	PNP switch 4 ON-OFF status		
INH SW3 (ON/OFF)	Х	—	▼	PNP switch 3 ON-OFF status		
INH SW2 (ON/OFF)	Х	_	▼	PNP switch 2 ON-OFF status		
INH SW1 (ON/OFF)	Х	_	▼	PNP switch 1 ON-OFF status		
BRAKE SW (ON/OFF)	Х	Х	▼	Stop lamp switch		
FULL SW (ON/OFF)	Х	Х	▼	Signal input with CAN communications		
IDLE SW (ON/OFF)	Х	Х	▼			
SPORT MODE SW (ON/OFF)	х	х	▼			
STRDWNSW (ON/OFF)	х		▼	Not mounted but displayed.		
STRUPSW (ON/OFF)	х		▼			
DOWNLVR (ON/OFF)	Х		▼			
UPLVR (ON/OFF)	Х		▼			
NON MMODE (ON/OFF)	Х		▼			
MMODE (ON/OFF)	Х		▼			
INDLRNG (ON/OFF)			▼			
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		
CVTLAMP (ON/OFF)			▼			

	Monitor item selection				
Monitored item (Unit)	ECU INPUT SIGNALS	MAIN SIG- NALS	SELEC- TION FROM MENU	Remarks	B
SPORT MODE IND (ON/OFF)	_	—	▼	Not mounted but displayed.	
MMODE IND (ON/OFF)	_	—	▼	C	CVT
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	D
SMCOIL A (ON/OFF)		—	▼	Step motor coil "A" energizing status	_
LUSEL SOL OUT (ON/OFF)	—	—	▼		Е
REV LAMP (ON/OFF)	—	Х	▼		
STRTR RLY OUT (ON/OFF)	—	—	▼	Starter relay	F
LUSEL SOL MON (ON/OFF)	_	—	▼		
STRTR RLY MON (ON/OFF)	_	—	▼	Starter relay	G
VDC ON (ON/OFF)	Х	—	▼	ESP (Electronic Stability Program)	
TCS ON (ON/OFF)	Х	—	▼		Н
ABS ON (ON/OFF)	Х	—	▼		
ACC ON (ON/OFF)	Х	—	▼	Not mounted but displayed.	I
RANGE	_	х	▼	Indicates position is recognized by TCM. Indi- cates a specific value required for control when fail-safe function is activated.	
M GEAR POS	_	Х	▼		J
Voltage (V)	_	_	▼	Displays the value measured by the voltage probe.	K
Frequency (Hz)		—	▼		
DUTY-HI (high) (%)	—	—	▼]	I
DUTY-LOW (low) (%)	—	-	▼	The value measured by the pulse probe is displayed.	-
PLS WIDTH-HI (ms)	—	-	▼		
PLS WIDTH-LOW (ms)	—	—	▼]	IVI

CAN DIAGNOSTIC SUPPORT MONITOR MODE Operation Procedure

- 1. Perform "CONSULT-II SETTING PROCEDURE". Refer to <u>CVT-55, "CONSULT-II SETTING PROCEDURE"</u>.
- 2. Touch "CAN DAIG SUPPORT MNTR". Refer to <u>LAN-3, "Precau-</u> tions When Using CONSULT-II".



Diagnostic Procedure Without CONSULT-II OBD-II SELF-DIAGNOSTIC PROCEDURE (WITH GST)

Refer to EC-109, "Generic Scan Tool (GST) Function" .

ECS00F6D

DTC U1000 CAN COMMUNICATION LINE

Description

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

On Board Diagnosis Logic

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

Possible Cause

Harness or connectors (CAN communication line is open or shorted.)

DTC Confirmation Procedure

NOTE:

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

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

B WITH CONSULT-II

- 1. Turn ignition switch ON. (Do not start engine.)
- 2. Select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-II.
- 3. Start engine and wait for at least 6 seconds.
- 4. If DTC is detected, go to CVT-67, "Diagnostic Procedure" .

Γ	SELECT SYSTEM	
	IPDM E/R	
Ī	BCM	
Ī	AUTO DRIVE POS	
Ī	AIR PRESSURE MONITOR	
	TRANSMISSION	
	METER A/C AMP	
Ī		
L		SCIA4825E

WITH GST

Follow the procedure "WITH CONSULT-II".

PFP:23710

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ECS00F6H

DTC U1000 CAN COMMUNICATION LINE





TCWB0136E

DTC U1000 CAN COMMUNICATION LINE

TCM termi	inal data	a are reference v	alues, measured between each terr	minal and ground.		
Terminal	Terminal Wire Item Condition			Data (App	rox.)	
5	L	CAN H	AN H			
6	Р	CAN L				B
Diagnos 1. снес	STIC P	rocedure Communicat	ION CIRCUIT			ECS00F6J
With C	ONSUL gnition :	.T-II switch ON and st	tart engine.			D
2. Select with C	t "SELF ONSUI	-DIAG RESULT _T-II.	IS" mode for "TRANSMISSION"	SELF-DIAG RES DTC RESULTS	SULTS TIME	
Is any malfunction of the "U1000 CAN COMM CIRCUIT" indicated? YES >> Print out CONSULT-II screen, GO TO LAN section. Refer to LAN-3, "Precautions When Using CONSULT-II"			CAN COMM CIRCUI [U1000]	T PAST	E	
NO >	> İNSP	ECTION END				F
				ERASE	PRINT	G

CVT-67

MODE BACK LIGHT COPY

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Description

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

CONSULT-II Reference Value

Remarks: Specification data are reference values.

Item name	Condition	Display value
	Selector lever in "P", "N" positions.	ON
SHRIKKEI OOI	Selector lever in other positions.	OFF
	Selector lever in "P", "N" positions.	ON
STRTCRET MON	Selector lever in other positions.	OFF

On Board Diagnosis Logic

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

Possible Cause

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

DTC Confirmation Procedure

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

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

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

(P) WITH CONSULT-II

- 1. Turn ignition switch ON. (Do not start engine.)
- Select "DATA MONITOR" mode for "TRANSMISSION" with 2. CONSULT-II.
- 3. Start engine.
- 4. Drive vehicle for at least 2 consecutive seconds.
- If DTC is detected, go to CVT-70, "Diagnostic Procedure". 5.



SELECT SYSTEM

ECS00E6L

ECS00F6N

ECS00E6M

ECS00F60

ECS00E6K

PFP:25230



TCWB0137E

CVT-69

TCM terminal data are reference values, measured between each terminal and ground.

Terminal	Wire color	Item	Condition		Data (Approx.)
			Â	Selector lever in "N", "P" positions.	Battery voltage
24 G/O Starter relay	(LON)	Selector lever in other positions.	0V		

Display value

ON

OFF

ON

OFF

Diagnostic Procedure

1. CHECK STARTER RELAY

(B) With CONSULT-II

Item name

STRTR RLY OUT

STRTR RLY MON

1. Turn ignition switch ON. (Do not start engine.)

Condition

positions.

positions.

positions.

positions.

 Select "SELECTION FROM MENU" in "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-II and check monitor "STRTR RLY OUT", "STRTR RLY MON" (PNP relay) ON/OFF.

Selector lever in "P", "N"

Selector lever in other

Selector lever in "P", "N"

Selector lever in other

	DATA M	ONITOR		
MONIT	OR		IO DTC	
STRTR RI STRTR RI	_Y OUT _Y MON	0	N	
			7	
		REC	JKD	
MODE	BACK	LIGHT	COPY	
				SCIA2274E

Without CONSULT-II

- 1. Turn ignition switch ON. (Do not start engine.)
- 2. Check voltage between the TCM connector terminal and ground.

Terminal	Item	Condition		Data (Approx.)
Starte	Starter		Selector lever in "N", "P" positions.	Battery voltage
24	relay		Selector lever in other posi- tions.	0V



OK or NG

OK >> GO TO 3. NG >> GO TO 2.

2. DETECT MALFUNCTIONING ITEM

Check the following:

- Starter relay. Refer to PG-108, "STANDARDIZED RELAY".
- Open or short-circuit in the harness between TCM and the stater relay. Refer to <u>CVT-69</u>, "Wiring Diagram <u>— CVT — STSIG"</u>.
- Ground circuit for the starter relay. Refer to <u>SC-14, "Wiring Diagram START —</u>".

OK or NG

- OK >> GO TO 3.
- NG >> Repair or replace damaged parts.

CVT-70

ECS00F6Q

3. CHECK DTC	A
Perform "DTC Confirmation Procedure". Refer to <u>CVT-68, "DTC Confirmation OK or NG</u>	on Procedure" .
OK >> INSPECTION END NG >> GO TO 4.	В
4. снеск тсм	CVT
 Check TCM input/output signal. Refer to <u>CVT-50</u>, <u>"TCM Input/Output S</u> If NG, re-check TCM pin terminals for damage or loose connection with OK or NG 	ignal Reference Values" . harness connector.
OK >> INSPECTION END NG >> Repair or replace damaged parts.	E
	F
	G
	Н
	I
	J
	K

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M

DTC P0703 STOP LAMP SWITCH CIRCUIT

Description

ON, OFF status of the stop lamp switch is sent via the CAN communication from the unified meter and A/C amp to TCM using the signal.

CONSULT-II Reference Value

Remarks: Specification data are reference values.

Item name	Condition	Display value
BRAKE SW	Depressed brake pedal	ON
BRARE SW	Released brake pedal	OFF

On Board Diagnosis Logic

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

Possible Cause

- Harness or connectors (Stop lamp switch, and unified meter and A/C amp circuit are open or shorted.) (CAN communication line is open or shorted.)
- Stop lamp switch

DTC Confirmation Procedure

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

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

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

B WITH CONSULT-II

- 1. Turn ignition switch ON. (Do not start engine.)
- Select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-II.
- 3. Start engine.
- 4. Start vehicle for at least 3 consecutive seconds.
- 5. If DTC is detected, go to CVT-73, "Diagnostic Procedure" .



PFP:25320

ECS00F6R

ECS00E6S

ECS00F6U

ECS00F6T

ECS00F6V
DTC P0703 STOP LAMP SWITCH CIRCUIT

Diagnostic Procedure ECS00F6W 1. CHECK CAN COMMUNICATION LINE Perform the self-diagnosis check. Refer to CVT-58, "SELF-DIAGNOSTIC RESULT MODE" . Is any malfunction of the "U1000 CAN COMM CIRCUIT" indicated? YES >> Check CAN communication line. Refer to CVT-65, "DTC U1000 CAN COMMUNICATION LINE". NO >> GO TO 2. 2. CHECK STOP LAMP SWITCH CIRCUIT (P) With CONSULT-II Turn ignition switch ON. (Do not start engine.) 1. Select "ECU INPUT SIGNALS" in "DATA MONITOR" mode for 2. DATA NONITOR "TRANSMISSION" with CONSULT-II. HONITOR NO DTC Read out ON/OFF switching action of the "BRAKE SW". 3. INH SW 4 OFF INH SW 3 OFF Item name Condition Display value INH SW 2 OFF INH SW 1 OFF Depressed brake pedal ON **BRAKE SW** BRAKE SW OFF OFF Released brake pedal Δ OK or NG RECORD OK >> INSPECTION END MODE BACK LIGHT COPY NG >> GO TO 3. SCIA2275E 3. CHECK STOP LAMP SWITCH Check continuity between stop lamp switch harness connector terminals 1 and 2. Refer to CVT-176, "Wiring <u>Diagram — CVT — NONDTC (LHD Models)</u>, <u>CVT-180, "Wiring Diagram — CVT — NONDTC (RHD Mod-</u> <u>els)"</u>.



Check stop lamp switch after adjusting brake pedal — refer to <u>BR-6</u>, "<u>BRAKE PEDAL</u>". OK or NG

OK 01 NG OK >>

- Should be seen to be seen a - Harness for short or open between battery and stop lamp switch.
 - Harness for short or open between stop lamp switch and unified meter and A/C amp.

NG >> Repair or replace the stop lamp switch.

CVT

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DTC P0705 PARK/NEUTRAL POSITION SWITCH

Description

- The park/neutral position (PNP) switch includes 4 transmission position switches.
- TCM judges the selector lever position by the PNP switch signal.

Shift position	PNP switch 1	PNP switch 2	PNP switch 3	PNP switch 4	PNP switch 3 (monitor)
Р	OFF	OFF	OFF	OFF	OFF
R	ON	OFF	OFF	ON	OFF
Ν	ON	ON	OFF	OFF	OFF
D	ON	ON	ON	ON	ON

CONSULT-II Reference Value

Remarks: Specification data are reference values.

Item name	Condition	Display value
INH SW3M	Selector lever in "D" position.	ON
	Selector lever in "P", "R" and "N" positions.	OFF
INH SW4	Selector lever in "R", "D" positions.	ON
	Selector lever in "P", "N" positions.	OFF
	Selector lever in "D" position.	ON
	Selector lever in "P", "R" and "N" positions.	OFF
	Selector lever in "N", "D" positions.	ON
	Selector lever in "P", "R" positions.	OFF
	Selector lever in "R", "N" and "D" positions.	ON
INH SW1	Selector lever in "P" position.	OFF

On Board Diagnosis Logic

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

Possible Cause

- Harness or connectors [Park/neutral position (PNP) switches 1, 2, 3, 4 and TCM circuit is open or shorted.]
- Park/neutral position (PNP) switches 1, 2, 3 and 4
- Park/neutral position (PNP) switch 3 monitor terminal is open or shorted

DTC Confirmation Procedure

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

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

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

CVT-74

ECS00E6Z

ECS00E70

ECS00F71

PFP:32006

ECS00E6X

ECS00E6Y

(I) WITH CONSULT-II

- 1. Turn ignition switch ON. (Do not start engine.)
- 2. Select "DATA MONITOR" mode for "ENGINE" with CONSULT-II.
- 3. Start engine.
- Drive vehicle and maintain the following conditions for at least 2 consecutive seconds.
 VHCL SPEED SE: More than 10 km/h (6 MPH) ENG SPEED SIG: More than 450 rpm ACC PEDAL OPEN: More than 1/8
- 5. If DTC is detected, go to CVT-78, "Diagnostic Procedure" .

WITH GST

Follow the procedure "WITH CONSULT-II".

		Δ
SELECT SYSTEM		A
ENGINE		
ABS		В
AIR BAG		
ALL MODE AWD/4WD		
IPDM E/R		CVT
ВСМ		
	SCIA4823E	D

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Wiring Diagram — CVT — PNP/SW

ECS00F72

CVT-PNP/SW-01

: DETECTABLE LINE FOR DTC : NON-DETECTABLE LINE FOR DTC : LHD MODELS R: RHD MODELS





TCWB0138E

		,		6		
Terminal	Wire color	Item		Condition	Data (Approx.)	А
07		DND switch 1		Selector lever in "R", "N" and "D" positions.	0V	
27	BR/W	PNP SWITCH I		Selector lever in "P" position.	Battery voltage	В
		DND switch 2		Selector lever in "D" position.	0V	
32	GR	(monitor)		Selector lever in "P", "R" and "N" positions.	8.0V - Battery volt- age	CV
				Selector lever in "N", "D" positions.	0V	
34	P/B	PNP switch 2	CON	Selector lever in "P", "R" positions.	10.0V - Battery voltage	D
				Selector lever in "D" position.	0V	
35	P/L	PNP switch 3		Selector lever in "P", "R" and "N" positions.	8.0V - Battery volt- age	E
	C*1			Selector lever in "R", "D" positions.	0V	
36	G/O ^{*2}	PNP switch 4		Selector lever in "P", "N" positions.	10.0V - Battery voltage	F

^{*1}: LHD models.

*2: RHD models.

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Diagnostic Procedure

1. CHECK PNP SW CIRCUIT

(P) With CONSULT-II

- 1. Turn ignition switch ON. (Do not start engine.)
- Select "ECU INPUT SIGNALS" in "DATA MONITOR" mode for 2 "TRANSMISSION" with CONSULT-II.
- 3. Selector lever to "P", "R", "N" and "D" position to check the value of "INH SW1", "INH SW2", "INH SW3", "INH SW4" and "INH SW3M".

Shift posi- tion	"INH SW1"	"INH SW2"	"INH SW3"	"INH SW4"	"INH SW3M"
Р	OFF	OFF	OFF	OFF	OFF
R	ON	OFF	OFF	ON	OFF
Ν	ON	ON	OFF	OFF	OFF
D	ON	ON	ON	ON	ON



Without CONSULT-II

- 1. Turn ignition switch ON. (Do not start engine.)
- Change selector lever to "P", "R", "N" or "D" position to check 2. voltage between the TCM connector terminals and ground.

	Connector		F104		
Shift	Terminal				
position	27 - Ground	34 - Ground	35 - Ground	36 - Ground	32 - Ground
Ρ	Battery voltage	10.0V - Bat- tery voltage	8.0V - Bat- tery voltage	10.0V - Battery voltage	8.0V - Bat- tery voltage
R	0V	10.0V - Bat- tery voltage	8.0V - Bat- tery voltage	0V	8.0V - Bat- tery voltage
Ν	0V	0V	8.0V - Bat- tery voltage	10.0V - Battery voltage	8.0V - Bat- tery voltage
D	0V	0V	0V	0V	0V



OK or NG

OK >> GO TO 5. NG

>> GO TO 2.

ECS00F73

$\overline{2}$. CHECK HARNESS BETWEEN TCM AND PNP SWITCH

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

Connector	Terminal	Condition	Continuity
		Select lever in "P" position.	No
	27 - ground	Selector lever in "R", "N" and "D" positions.	Yes
	Selector lever in "P", "R" and "N" 32 - ground positions.	Selector lever in "P", "R" and "N" positions.	No
		Selector lever in "D" position.	Yes
F104	24 ground	Select lever in "P", "R" positions.	No
	34 - ground	Selector lever in "N", "D" positions.	Yes
	35 - ground	Selector lever in "P", "R" and "N" positions.	No
		Selector lever in "D" position.	Yes
	36 - ground	Select lever in "P", "N" positions.	No
	30 - ground	Selector lever in "R", "D" positions.	Yes



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4. If OK, check harness for short-circuit to ground or power supply. OK or NG

OK >> GO TO 5. NG >> GO TO 3.

3. CHECK HARNESS BETWEEN TCM AND PNP SWITCH

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

Item	Connector	Terminal	Continuity
ТСМ	F104	27	Yes
CVT unit harness connector	F6	4	
ТСМ	F104	34	Voc
CVT unit harness connector	F6	5	163
ТСМ	F104	35	Vee
CVT unit harness connector	F6	14	165
ТСМ	F104	32	Voc
CVT unit harness connector	F6	18	165
ТСМ	F104	36	Voc
CVT unit harness connector	F6	15	162



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

OK or NG

- OK >> GO TO 4.
- NG >> Repair or replace damaged parts.

4. DETECT MALFUNCTIONING ITEM

Check the following.

• PNP switch. Refer to <u>CVT-80, "Component Inspection"</u>.

OK or NG

OK >> GO TO 5.

NG >> Repair or replace damaged parts.

5. снеск отс

Perform "DTC Confirmation Procedure". Refer to CVT-74, "DTC Confirmation Procedure" .

OK or NG

OK >> INSPECTION END

NG >> GO TO 6.

6. снеск тсм

1. Check TCM input/output signal. Refer to CVT-50, "TCM Input/Output Signal Reference Values" .

2. If NG, re-check TCM pin terminals for damage or loose connection with harness connector.

OK or NG

OK >> **INSPECTION END** NG >> 1. Repair or replace

>> 1. Repair or replace damaged parts.

2. Replace the transaxle assembly. Refer to CVT-226, "Removal and Installation" .

Component Inspection PNP SWITCH

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

	A 14	2	_	A
PNP SW	Shift position	Connector	Terminal	Continuity
SW/ 1	"R", "N" and "D"		4 - Ground	Yes
3001	"P"		4 - Giouna	No
SW 2	"N", "D"		5 - Ground	Yes
5112	"P", "R"		e cround	No
SW/ 3	"D"	F6	14 - Ground	Yes
0110	"P", "R" and "N"	10		No
SW/ 4	"R", "D"		15 - Ground	Yes
311 4	"P", "N"			No
SW 3 moni-	"D"		18 - Ground	Yes
tor	"P", "R" and "N"		10 - Glouna	No



ECS00E74

- 2. If NG, check continuity with control cable disconnected. (Refer to step 1 above.)
- If OK, with the control cable disconnected, adjust the control linkage. Refer to <u>CVT-204</u>, "Adjustment of <u>CVT Position"</u>.
- If NG, even when the control cable is disconnected, replace the transaxle assembly. Refer to <u>CVT-226</u>, <u>"Removal and Installation"</u>.

DTC P0710 CVT FLUID TEMPERATURE SENSOR CIRCUIT

Description

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

CONSULT-II Reference Value

Remarks: Specification data are reference values.

Item name	Condition	Display value (Approx.)	
	Cold [20°C (68°F)]	1.8 - 2.0V	
All TEIVIF SEN	Hot [80°C (176°F)]	0.6 - 1.0V	

On Board Diagnosis Logic

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

Possible Cause

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

DTC Confirmation Procedure

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

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

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

WITH CONSULT-II

- 1. Turn ignition switch ON. (Do not start engine.)
- 2. Select "DATA MONITOR" mode for "ENGINE" with CONSULT-II.
- 3. Start engine and maintain the following conditions for at least 10 minutes (Total).

VHCL SPEED SE: 10 km/h (6 MPH) or more ENG SPEED: 450 rpm more than ACC PEDAL OPEN: More than 1/8 Selector lever: "D" position

4. If DTC is detected, go to CVT-83, "Diagnostic Procedure" .

WITH GST

Follow the procedure "WITH CONSULT-II".

	-
SELECT SYSTEM	
ENGINE	
ABS	
AIR BAG	
ALL MODE AWD/4WD	
IPDM E/R	
ВСМ	
	1
	SCIA4823E

PFP:31020

ECS00F75

ECS00E76

ECS00E77

ECS00E78

ECS00F79

А

D

F

F

Н

Wiring Diagram — CVT — FTS

ECS00F7A

CVT-FTS-01

: DETECTABLE LINE FOR DTC : NON-DETECTABLE LINE FOR DTC





TCWA0247E

Terminal Wire color		lor	Item Condition		on	Data (Approx.)	
42	W/R	Sen	sor ground		Always		0V
				When C	When CVT fluid ten	nperature is 20°C (68°F).	2.0V
47	47 V		fluid tempera- sensor	(CON)	When CVT fluid ten	nperature is 80°C (176°F).	1.0V
Diagnos 1. снес	stic Pr ск сvт	ocedu FLUID T	re Emperatur	E SENSOF	R SIGNAL		ECSO
With C	ONSUL	[- 					
I. Start e	engine.					DATA MONITOR	
2. Select	t "ECU II	NPUT S	IGNALS" in "[data mon	ITOR" mode for	MONITOR	NO DTC
	NOIVIIOOI	ON WILL	ATE TEMD SE	ENI"		SEC HYDR SEN PRI HYDR SEN	0.47 v 0.47 v
						ATF TEMP SEN	1.92 v
Item name		Conditio	n	Display val	ue (Approx.)	VIGN SEN	10.7 v 0.0 / 8
ATF TEMP	SEN	Cold [20	°℃ (68°F)]	1.8 - 2.0V			
		Hot [80°	C (1/6°F)]	0.6 - 1.0V		R	ECORD
 Start e Check 	engine. « voltage	ULT-II betweer	n TCM connec	tor termina	ls.		
2. Check	engine. « voltage	ULT-II betweer	TCM connec	tor termina Temperatu °C (°F)	ls. re Voltage (Approx.)	H.S. CONNECT	
 Start e CVT fluid te 	engine. voltage	betweer connector	TCM connec Terminal	tor termina Temperatu °C (°F) 20 (68)	Is. re Voltage (Approx.) 2.0V	TCM connector (/ehicle side)
 Start e Check Name CVT fluid te perature se 	engine. < voltage e C em- ensor	ULT-II betweer connector F104	TCM connec Terminal 47 - 42	tor termina Temperatu °C (°F) 20 (68) 80 (176)	Is. re Voltage (Approx.) 2.0V 1.0V	TCM connector (\	/ehicle side)
Name CVT fluid te perature se	engine. < voltage e C em- ensor gnition sv	ULT-II betweer onnector F104 witch OF	TCM connec Terminal 47 - 42	tor termina Temperatu °C (°F) 20 (68) 80 (176)	Is. re Voltage (Approx.) 2.0V 1.0V	TCM connector (V	/ehicle side)
CVT fluid te perature se 3. Turn ig 5. Check	engine. < voltage e C em- ensor gnition sv nnect TC < if there d.	ULT-II betweer connector F104 witch OF CM conne e is con	TCM connect Terminal 47 - 42 F. ector. tinuity betwee	tor termina Temperatu °C (°F) 20 (68) 80 (176) en connect	Is. re Voltage (Approx.) 2.0V 1.0V or terminal and	TCM connector (V	/ehicle side)
 Start e Start e Check Name CVT fluid te perature se Turn ie Discon Check groun CK or NG OK > 	engine. < voltage e C em- ensor gnition sv nnect TC < if there d. > GO TC > CO TC	ULT-II betweer onnector F104 witch OF M conne e is con	TCM connect Terminal 47 - 42 F. ector. tinuity betwee	tor termina Temperatu °C (°F) 20 (68) 80 (176) en connect	Is. re Voltage (Approx.) 2.0V 1.0V or terminal and	TCM connector (V	/ehicle side)
CVT fluid te perature se CVT fluid te peratur	at CONS engine. < voltage em- emsor gnition sv nnect TC < if there d. > GO TC > GO TC CK CVT	ULT-II betweer F104 witch OF M conne is con 0 5. 0 2. FLUID T	TCM connect Terminal 47 - 42 F. ector. tinuity betwee EMPERATUR	tor termina Temperatu °C (°F) 20 (68) 80 (176) en connect	Is. re Voltage (Approx.) 2.0V 1.0V or terminal and	TCM connector (V	/ehicle side)
CVT fluid te perature se CVT fluid te peratur	engine. voltage c voltage c voltage c c em- ensor gnition sv nnect TC v f there d. S GO TC CK CVT gnition sv c c c c c c c c c c c c c c c c c c c	ULT-II betweer connector F104 witch OF CM conne e is con 0 5. 0 2. FLUID T	TCM connect Terminal 47 - 42 F. ector. tinuity betwee EMPERATUR	tor termina Temperatu °C (°F) 20 (68) 80 (176) en connect	Is. re Voltage (Approx.) 2.0V 1.0V or terminal and R CIRCUIT	TCM connector (N 47 47 • • • • •	/ehicle side)
CVT fluid te Perature se CVT fluid te peratu	engine. voltage e C em- ensor gnition sv nnect TC v GO TC c GO TC CK CVT gnition sv nnect the	ULT-II betweer onnector F104 witch OF M conne e is con 0 5. 0 2. FLUID T witch OF	TCM connector Terminal 47 - 42 F. ector. tinuity betwee EMPERATUR	tor termina Temperatu °C (°F) 20 (68) 80 (176) en connect	Is. re Voltage (Approx.) 2.0V 1.0V or terminal and R CIRCUIT	TCM connector (V	Vehicle side)
CVT fluid te perature se CVT fluid te perature se CNE CHEC L Discoul CLEC CLEC CLEC CLEC	at CONS engine. < voltage em- emsor gnition sv nnect TC < if there d. > GO TC CK CVT gnition sv nnect the < resistar	ULT-II betweer F104 witch OF M conne is con 0 5. 0 2. FLUID T witch OF FCM conce betwo	TCM connect Terminal 47 - 42 F. ector. tinuity betwee EMPERATUR F. onnector. een TCM conn	tor termina Temperatu °C (°F) 20 (68) 80 (176) en connect	Is. re Voltage (Approx.) 2.0V 1.0V or terminal and R CIRCUIT	TCM connector (V	Vehicle side)
Start e Start e Name CVT fluid te perature se Turn ig Discon OK or NG OK > NG > CHEC Discon S. CHEC Discon S. Check S. Che	at CONS engine. < voltage em- emsor gnition sv nnect TC < if there d. > GO TC CK CVT gnition sv nnect the < resistar e C	ULT-II betweer onnector F104 witch OF M conne e is con 0 5. 0 2. FLUID T witch OF e TCM connector connector	TCM connect Terminal 47 - 42 F. ector. tinuity between EMPERATUR F. onnector. een TCM connector.	tor termina Temperatu °C (°F) 20 (68) 80 (176) en connect E SENSOF hector term Temperatu °C (°F)	Is. re Voltage (Approx.) 2.0V 1.0V or terminal and R CIRCUIT inals. ure Resistance (Approx.)	TCM connector (V	/ehicle side)
Start e Start e Start e Name CVT fluid te perature se S. Turn ig Discon OK or NG OK > NG > OK > OK > OK > OK > OK > NG > OK >	at CONS engine. < voltage e C em- ensor gnition sv nnect TC < if there d. > GO TC CK CVT gnition sv nnect the < resistar e C tem- e C	ULT-II betweer onnector F104 witch OF CM conne e is con 0 5. 0 2. FLUID T witch OF e TCM co nce betwo connector	Terminal 47 - 42 F. ector. tinuity betwee EMPERATUR F. onnector. een TCM cont Terminal	tor termina Temperatu °C (°F) 20 (68) 80 (176) en connect E SENSOF nector term Temperatu °C (°F) 20 (68)	Is. re Voltage (Approx.) 2.0V 1.0V or terminal and A CIRCUIT inals. Ire Resistance (Approx.) 6.5 kΩ	TCM connector (V	/ehicle side)

OK or NG

OK >> GO TO 5. NG >> GO TO 3.



$\overline{\mathbf{3.}}$ CHECK CVT FLUID TEMPERATURE SENSOR

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

Name	Connector	Terminal	Tempera- ture °C (°F)	Resistance (Approx.)
CVT fluid	50	17 10	20 (68)	6.5 kΩ
tempera- F6 ture sensor		17 - 19	80 (176)	0.9 kΩ

4. Reinstall any part removed.

OK or NG

OK >> GO TO 4.

NG >> Replace the transaxle assembly. Refer to <u>CVT-226,</u> <u>"Removal and Installation"</u>.

4. CHECK HARNESS BETWEEN TCM AND CVT FLUID TEMPERATURE SENSOR

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

ltem	Connector	Terminal	Continuity	
ТСМ	F104	42		
CVT unit harness connector	F6	19	165	
ТСМ	F104	47	Voc	
CVT unit harness connector	F6	17	165	

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

OK >> GO TO 5.

NG >> Repair or replace damaged parts.

5. снеск отс

Perform "DTC Confirmation Procedure". Refer to <u>CVT-81, "DTC Confirmation Procedure"</u>.

<u>OK or NG</u>

OK >> INSPECTION END

NG >> GO TO 6.

6. снеск тсм

1. Check TCM input/output signal. Refer to CVT-50, "TCM Input/Output Signal Reference Values" .

2. If NG, re-check TCM pin terminals for damage or loose connection with harness connector.

OK or NG

OK >> INSPECTION END

NG >> Repair or replace damaged parts.





Component Inspection CVT FLUID TEMPERATURE SENSOR

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

Name	Connector	Terminal	Tempera- ture °C (°F)	Resistance (Approx.)
CVT fluid	Ea	17 10	20 (68)	6.5 kΩ
tempera- ture sensor	F6	17 - 19	80 (176)	0.9 kΩ

4. If NG, replace the transaxle assembly. Refer to <u>CVT-226,</u> <u>"Removal and Installation"</u>.



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DTC P0715 INPUT SPEED SENSOR CIRCUIT (PRI SPEED SENSOR)

Description

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

CONSULT-II Reference Value

Remarks: Specification data are reference values.

Item name	Condition	Display value
ENG SPEED SIG	Engine running	Closely matches the tachometer reading.
PRI SPEED SEN	During driving (lock-up ON)	Approximately matches the engine speed.

On Board Diagnosis Logic

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

Possible Cause

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

DTC Confirmation Procedure

CAUTION:

- Always drive vehicle at a safe speed.
- Be careful not to rev engine into the red zone on the tachometer.

NOTE:

If "DTC Confirmation Procedure" has been previously performed, always turn ignition switch OFF and wait at least 5 seconds before performing the next test.

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

WITH CONSULT-II

- 1. Turn ignition switch ON and select "DATA MONITOR" mode for "ENGINE" with CONSULT-II.
- Start engine and maintain the following conditions for at least 5 consecutive seconds.
 VHCL SPEED SE: 10 km/h (6 MPH) or more ACC PEDAL OPEN: More than 1/8 Selector lever: "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.
- 3. If DTC is detected, go to CVT-88, "Diagnostic Procedure" .

WITH GST

Follow the procedure "WITH CONSULT-II".

SELECT SYSTEM	
ENGINE	
ABS	
AIR BAG	
ALL MODE AWD/4WD	
IPDM E/R	
ВСМ	
	SCIA4823E

PFP:31935

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ECS00E7E

ECS00F7G

ECS00F7F

ECS00E7H





TCWA0254E

TCM terminal data are reference values, measured between each terminal and ground.							
Terminal	Wire color	ltem		Data (Approx.)			
38	LG	Input speed sensor (Primary speed sensor)	When driving ["D" position, 20 km/h (12 MPH)].		600 Hz		
42	W/R	Sensor ground	Always		0V		
	1/0	Sensor power	CON	_	4.5 - 5.5V		
40	ĽO		COFF	_	0V		

Diagnostic Procedure

1. CHECK INPUT SIGNALS

B With CONSULT-II

- 1. Start engine.
- 2. Select "ECU INPUT SIGNALS" in "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-II.
- 3. Start vehicle and read out the value of "PRI SPEED SEN".

Item name	Condition	Display value
PRI SPEED SEN	During driving (lock-up ON)	Approximately matches the engine speed.

DATA NONITOR NONITOR NO DTC PBI SPEED SEN 32 rpm ENG SPEED SIG 0 rpm SEC HYDR SEN 0.47 V PRI HYDR SEN 0.47 V ATF TEMP SEN 1.92 V ∇ RECORD LIGHT COPY MODE BACK SCIA2278E

ECS00F7J

OK or NG

OK >> GO TO 6. NG >> GO TO 2.

2. CHECK INPUT SPEED SENSOR (PRIMARY SPEED SENSOR)

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

Item	Connector	Terminal	Data (Approx.)
TCM	F104	46 - 42	4.5 - 5.5V

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

Name	Condition
Input speed sensor (Primary speed	When running at 20 km/h (12 MPH) in "D" position with the closed throttle position signal "OFF", use the CONSULT-II pulse frequency measuring function.
sensor)	CAUTION: Connect the data link connector to the vehicle-side diag- nosis connector.

Item	Connector	Terminal	Name	Data (Approx.)
тсм	F104	38	Input speed sensor (Primary speed sensor)	600 Hz

OK or NG

- OK >> GO TO 6.
- NG 1 >> Battery voltage is not supplied: GO TO 3.
- NG 2 >> Battery voltage is supplied, but there is a malfunction in the frequency: GO TO 4.



CVT-88

((🖸 FF)

TCM connector (Vehicle side) Ó

42, 46

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

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

Item	Connector	Terminal	Continuity	
ТСМ	F104	42	Voc	
CVT unit harness connector	F6	19	- Tes	
ТСМ	F104	46	Vaa	
CVT unit harness connector	F6	20	tes	

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

OK or NG

OK >> GO TO 6. NG

>> Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK HARNESS BETWEEN TCM AND CVT UNIT HARNESS CONNECTOR [INPUT SPEED SEN-SOR (PRIMARY SPEED SENSOR)]

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

Item	Connector	Terminal	Continuity
ТСМ	F104	38	Vos
CVT unit harness connector	F6	22	163

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

OK or NG

NG

OK >> GO TO 5.

>> Repair open circuit or short to ground or short to power in harness or connectors.

5. CHECK THE TCM SHORT

Replace same type TCM, perform self-diagnosis check. Erase self-diagnostic results and then drive the vehicle [10 km/h (6 MPH) or more], perform self-diagnosis check. Refer to CVT-86, "DTC Confirmation Procedure"

CVT-89

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

YES >> Replace the transaxle assembly. Refer to CVT-226, "Removal and Installation" .

NO >> Replace TCM. Refer to CVT-8, "Precautions for TCM and CVT Assembly Replacement" .

CHECK DTC

Perform "DTC Confirmation Procedure". Refer to CVT-86, "DTC Confirmation Procedure".

OK or NG

OK >> INSPECTION END

NG >> GO TO 7.



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CVT unit harness connector

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SCIA4681E

(Vehicle side)

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7. снеск тсм

1. Check TCM input/output signal. Refer to <u>CVT-50, "TCM Input/Output Signal Reference Values"</u>.

2. If NG, re-check TCM pin terminals for damage or loose connection with harness connector. OK or NG

OK >> INSPECTION END

NG >> Repair or replace damaged parts.

DTC P0720 VEHICLE SPEED SENSOR CVT (SECONDARY SPEED SENSOR)

Description

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

CONSULT-II Reference Value

Remarks: Specification data are reference values

Item name	Condition	Display value	
VSP SENSOR	During driving	Approximately matches the speedometer reading.	D

On Board Diagnosis Logic

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

Possible Cause

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

DTC Confirmation Procedure

CAUTION:

- Always drive vehicle at a safe speed.
- Be careful not to rev engine into the red zone on the tachometer.

NOTE:

If "DTC Confirmation Procedure" has been previously performed, always turn ignition switch OFF and wait at least 5 seconds before performing the next test.

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

(I) WITH CONSULT-II

- 1. Turn ignition switch ON and select "DATA MONITOR" mode for "ENGINE" with CONSULT-II.
- 2. Start engine and maintain the following conditions for at least 12 consecutive seconds. ACC PEDAL OPEN: More than 1/8

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

If DTC is detected, go to CVT-93, "Diagnostic Procedure". 3.

WITH GST

Follow the procedure "WITH CONSULT-II".

		i K
SELECT SYSTEM		
ENGINE		
ABS		
AIR BAG		
ALL MODE AWD/4WD		R. /
IPDM E/R		IV
ВСМ		
	SCIA4823E	

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CVT

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PFP:31935

ECS00E7K

ECS00F7L

ECS00F7M

ECS00E7N

ECS00E70

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Terminal	Wire col	or Iten	n		Condition		Data (Approx.)
29	G ^{*1} LG/R ^{*2}	Output spee (Secondary sensor)	ed sensor speed		When driving km/h (12 MPH	["D" position, 20 1)].	300 Hz
42	W/R	Sensor grou	und		Always		0V
LHD models.							
: RHD models.							
	Procedu	Ire					ECS00F7
Start engine	ULT-II Ə.						
. Select "EC	U INPUT S	SIGNALS" in "D	ATA MONI ⁻	TOR" mod	le for	DATA NONI Monitor	NO DTC
"TRANSMIS	SSION" wit	h CONSULT-II.				VSP SENSOR	1 km / h
5. Start vehicle	e and read	out the value of	"VSP SEN	ISOR".		ESTM VSP SIG	0 km / h
Item name	C	ondition	Display	value		PRI SPEED SEN	32 rpm
				imataly mata	haa	SEC HYDR SEN	0.47 V
VSP SENSOR	Du	uring driving	the spee	pproximately matches ne speedometer reading.		[]	7
OK or NG							RECORD
OK >> GO	TO 8					MODE BACK L	IGHT COPY
NG >> GO	TO 2.						SCIA2279E
			SOR				
	ULT-II						
. Start engine	Э.		,				
. Check power	er supply to	o output speed s	sensor (sec	ondary sp	eed sensor)) by voltage bet	ween TCM connec
	0		,	Data (Asses		CONNECT	
Item	Connector		1	Data (Appro	H.S		
ТСМ	F103, F104	10 - 42		Battery volta	age	TCM connector	· (Vehicle side)
		19 - 42					
. If OK, chec	k the pulse	when vehicle ci	uises.				
Name	Condition					<u>``</u>	
a	When ru	nning at 20 km/h (1)	2 MPH) in "D"	' position, us	e the		∕ ₽
Output speed sen- sor (Secondary		.1-11 pulse frequency	measuring fu	unction.			
speed sensor)	Connec	▼. t the data link conr	nector to the	vehicle-side	e		<u> </u>
	diagnosi	s connector.					L
							/
	1			1			

OK or NG

тсм

OK >> GO TO 8. NG >> GO TO 3.

F104

29



300 Hz

Output speed sensor (Sec-

ondary speed sensor)

$\overline{\mathbf{3}}$. CHECK POWER AND SENSOR GROUND

- 1. Turn ignition switch OFF.
- 2. Disconnect the output speed sensor (secondary speed sensor) harness connector.
- 3. Turn ignition switch ON.
- 4. Check voltage between output speed sensor (secondary speed sensor) harness connector terminals.

ltem	Connector	Terminal	Data (Approx.)
Output speed sensor (Sec- ondary speed sensor)	F35	1 - 3	Battery voltage



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

ltem	Connector	Terminal	Data (Approx.)
Output speed sensor (Sec- ondary speed sensor)	F35	3 - ground	Battery voltage

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

7. Reinstall any part removed.

OK or NG

- OK >> GO TO 4.
- NG 1 >> Battery voltage is not supplied between terminals 1 and 3, terminals 1 and ground.: GO TO 6.
- NG 2 >> Battery voltage is not supplied between terminals 1 and 3 only.: GO TO 7.

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

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

Item	Connector	Terminal	Continuity
ТСМ	F104	29	
Output speed sensor (Sec- ondary speed sensor)	F35	2	Yes

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

OK or NG

OK >> GO TO 5.

NG >> Repair open circuit or short to ground or short to power in harness or connectors.





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5. CHECK THE TCM SHORT

Replace same type TCM, perform self-diagnosis check. Erase self-diagnostic results and them drive the vehicle [more than 40 km/h (25 MPH)], perform self-diagnosis check. Refer to CVT-91, "DTC Confirmation Procedure".

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

minal. Refer to CVT-36, "Circuit Diagram".

>> Replace the transaxle assembly. Refer to CVT-226, "Removal and Installation" . YES

>> Replace TCM. Refer to CVT-8, "Precautions for TCM and CVT Assembly Replacement" . NO

6. CHECK HARNESS BETWEEN TCM AND OUTPUT SPEED SENSOR (SECONDARY SPEED SEN-SOR) (POWER)

Turn ignition switch OFF. 1.

Item

(Secondary speed sensor)

(Secondary speed sensor)

Output speed sensor

Output speed sensor

2. Disconnect TCM connector and output speed sensor (secondary speed sensor) harness connector.

Yes

Yes

Terminal

10

3

19

3



If OK, check harness for short to ground and short to power. 4.

Connector

F103

F35

F103

F35

5. Reinstall any part removed.

OK or NG

3.

TCM

TCM

>> 10A fuse (No. 83, located in the IPDM E/R) or ignition switch are malfunctioning. OK

NG >> Repair open circuit or short to ground or short to power in harness or connectors.

7. CHECK HARNESS BETWEEN TCM AND OUTPUT SPEED SENSOR (SECONDARY SPEED SEN-SOR) (SENSOR GROUND)

- 1. Turn ignition switch OFF.
- Disconnect TCM connector and output speed sensor (secondary speed sensor) harness connector. 2.
- Check continuity between TCM connector terminal and output 3. speed sensor (secondary speed sensor) harness connector terminal. Refer to CVT-36, "Circuit Diagram" .

ltem	Connector	Terminal	Continuity
ТСМ	F104	42	
Output speed sensor (Secondary speed sensor)	F35	1	Yes

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

OK or NG

OK >> GO TO 8.

NG >> Repair open circuit or short to ground or short to power in harness or connectors.

8. CHECK DTC

Perform "DTC Confirmation Procedure". Refer to CVT-91, "DTC Confirmation Procedure".

OK or NG

OK >> INSPECTION END

NG >> GO TO 9.





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9. снеск тсм

1. Check TCM input/output signal. Refer to <u>CVT-50, "TCM Input/Output Signal Reference Values"</u>.

2. If NG, re-check TCM pin terminals for damage or loose connection with harness connector. OK or NG

OK >> INSPECTION END

NG >> Repair or replace damaged parts.

DTC P0725 ENGINE SPEED SIGNAL

DTC P0725 ENGINE	SPEED SIGNAL	PFP:24825	
Description		ECS00F7R	А
The engine speed signal is s	sent from the ECM to the TCM.		
CONSULT-II Referen	ce Value	ECS00F7S	В
Remarks: Specification data are re	ference values.		
Item name	Condition	Display value	CV
ENG SPEED SIG	Engine running	Closely matches the tachometer reading.	0 •
ACC PEDAL OPEN	Released accelerator pedal - Fully depressed accelerator pedal	0.0/8 - 8.0/8	D
On Board Diagnosis	Logic	ECS00F7T	
 This is not an OBD-II se Diagnostic trouble code receive the engine spee 	If-diagnostic item. "P0725 ENGINE SPEED SIG" with CONSU ed signal (input by CAN communication) from	LT-II is detected when TCM does not ECM.	Е
Possible Cause		ECS00F7U	F
Harness or connectors (The ECM to the TCM circui	t is open or shorted.)		
DTC Confirmation Pr	ocedure	ECS00F7V	G
CAUTION: Always drive vehicle at a s NOTE: If "DTC Confirmation Proc wait at least 10 seconds be After the repair, touch "ERAS firm the malfunction is elimin	edure" has been previously performed, al efore performing the next test. SE" on "SELF-DIAG RESULTS" and then pe nated.	ways turn ignition switch OFF and rform the following procedure to con-	H
(I) WITH CONSULT-II			
 Turn ignition switch ON "TRANSMISSION" with Start engine and mainta consecutive seconds. PRI SPEED SEN: More 	and select "DATA MONITOR" mode for CONSULT-II. in the following conditions for at least 10 e than 1,000 rpm	SELECT SYSTEM IPDM E/R BCM AUTO DRIVE POS	K
3. If DTC is detected, go to	<u>CVT-97, "Diagnostic Procedure"</u> .	AIR PRESSURE MONITOR	
		TRANSMISSION	L
		METER A/C AMP	
			M
Diagnostic Procedur 1. снеск отс with ес	e M	SCIA4825E	
With CONSULT-II			

- 1. Turn ignition switch ON. (Do not start engine.)
- 2. Select "SELF-DIAG RESULTS" mode for "ENGINE" with CON-SULT-II. Refer to <u>EC-101, "SELF-DIAG RESULTS MODE"</u>.

OK or NG

- OK >> GO TO 2.
- NG >> Check the DTC detected item. Refer to <u>EC-101, "SELF-</u> <u>DIAG RESULTS MODE"</u>.

SELECT SYSTEM	
ENGINE	
ABS	
AIR BAG	
ALL MODE AWD/4WD	
IPDM E/R	
ВСМ	
	SCIA4823E

2. снеск отс with тсм

With CONSULT-II

- 1. Turn ignition switch ON. (Do not start engine.)
- Select "SELF-DIAG RESULTS" mode for "TRANSMISSION" with CONSULT-II. Refer to <u>CVT-58</u>, "<u>SELF-DIAGNOSTIC</u> <u>RESULT MODE</u>".

OK or NG

- OK >> GO TO 3.
- NG >> Check the DTC detected item. Refer to <u>CVT-58</u>, "<u>SELF-</u> <u>DIAGNOSTIC RESULT MODE</u>".
 - If DTC of CAN communication line is detected, go to CVT-65, "DTC U1000 CAN COMMUNICATION LINE"

	SELECT SYSTEM	
	IPDM E/R	
	ВСМ	
	AUTO DRIVE POS	
[AIR PRESSURE MONITOR	
	TRANSMISSION	
	METER A/C AMP	
L		SCIA4825E

3. CHECK INPUT SIGNALS

With CONSULT-II

- 1. Start engine.
- 2. Select "ECU INPUT SIGNALS" in "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-II.
- 3. While monitoring "ENG SPEED SIG", check for engine speed change corresponding to "ACC PEDAL OPEN".

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

	DATA M	ONITOF	1	
MONIT	OR	N	O DTC	
VSP SE ESTM V PRI SP ENG SI SEC H' PRI HY ATF TE VIGN S ACC PE	ENSOR /SP SIG EED SE PEED S YDR SE DR SEN MP SEN EN EDAL OI	1 k N 32 IG 768 N 1.0 N 1.5 N 1.7 N 1.7 N 1.7	m/h rpm rpm 06 V 57 V 79 V .5 V 0 /8	
		Page	DOWN	
F		REC	ORD	
MODE	BACK	LIGHT	COPY	SCIA4504E

OK or NG

OK >> GO TO 4.

NG >> Check ignition signal circuit.

• Refer to EC-606, "IGNITION SIGNAL" .

4. снеск отс

Perform "DTC Confirmation Procedure". Refer to <u>CVT-97, "DTC Confirmation Procedure"</u> .

OK or NG

OK >> INSPECTION END

NG >> GO TO 5.

5. снеск тсм

1. Check TCM input/output signal. Refer to CVT-50, "TCM Input/Output Signal Reference Values" .

2. If NG, re-check TCM pin terminals for damage or loose connection with harness connector.

OK or NG

OK >> INSPECTION END

NG >> Repair or replace damaged parts.

DTC P0730 BELT DAMAGE

DTC P0730 BELT DAMAGE

Description

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

CONSULT-II Reference Value

Remarks: Specification data are reference values.			CV
Item name	Condition	Display value (Approx.)	
GEAR RATIO	During driving	2.37 - 0.43	D

On Board Diagnosis Logic

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

Possible Cause

Transaxle assembly

DTC Confirmation Procedure

CAUTION:

- Always drive vehicle at a safe speed.
- Be careful not to rev engine into the red zone on the tachometer.

NOTE:

If "DTC Confirmation Procedure" has been previously performed, always turn ignition switch OFF and wait at least 5 seconds before performing the next test.

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

(I) WITH CONSULT-II

- 1. Turn ignition switch ON and select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-II.
- Make sure that output voltage of CVT fluid temperature sensor is within the range below.
 FLUID TEMP SEN: 1.0 - 2.0V

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)

	-
SELECT SYSTEM	
IPDM E/R	
ВСМ	
AUTO DRIVE POS	
AIR PRESSURE MONITOR	
TRANSMISSION	
METER A/C AMP	
	1
	SCIA4825E

- 3. Select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-II.
- Start engine and maintain the following conditions for at least 30 consecutive seconds.
 TEST START FROM 0 km/h (0 MPH) CONSTANT ACCELERATION: Keep 30 sec or more VEHICLE SPEED: 10 km/h (6 MPH) or more ACC PEDAL OPEN: More than 1/8 Selector lever: "D" position ENG SPEED: 450 rpm or more
- 5. If DTC is detected, go to CVT-100, "Diagnostic Procedure".





ECS00F7X

ECS00F7Y

ECS00E77

ECS00E80

ECS00F81

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Diagnostic Procedure

1. снеск отс

Perform "DTC Confirmation Procedure". Refer to <u>CVT-99, "DTC Confirmation Procedure"</u>. Are any DTC displayed?

- YES 1>> DTC except for "P0730 BELT DAMG" is displayed: Go to Check the DTC detected item. Refer to <u>CVT-58, "SELF-DIAGNOSTIC RESULT MODE"</u>.
- YES 2>> DTC for "P0730 BELT DAMG" is displayed: Replace the transaxle assembly. Refer to <u>CVT-226</u>, <u>"Removal and Installation"</u>.
- NO >> INSPECTION END

DTC P0740 TORQUE CONVERTER CLUTCH SOLENOID VAL	/E
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Description

- The torque converter clutch solenoid valve is activated by the TCM in response to signals sent from the vehicle speed and throttle 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 2/8) 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.

CONSULT-II Reference Value

Remarks: Specification data are reference values.

Item name	Condition	Display value (Approx.)
	Lock-up "OFF"	0.0A
13011	Lock-up "ON"	0.7A

On Board Diagnosis Logic

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

Possible Cause

- Torque converter clutch solenoid valve
- Harness or connectors (Solenoid circuit is open or shorted.)

DTC Confirmation Procedure

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

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

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

WITH CONSULT-II

- 1. Turn ignition switch ON. (Do not start engine.)
- 2. Select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-II and wait at least 10 consecutive seconds.
- 3. If DTC is detected, go to CVT-103, "Diagnostic Procedure" .



WITH GST

Follow the procedure "WITH CONSULT-II".

PFP:31940

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ECS00F84

ECS00E85

ECS00E86

ECS00E87

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TCWB0140E

Terminal	Wire color	Item		Condition		on	Data (Approx.)
	L AA/*1	Torque conve	rter			When CVT performs lock-up.	6.0V
3	L/W ⁺ G ^{*2}	clutch solenoi valve	id Official	in "D	n vehicle cruises " position.	When CVT does not perform lock-up.	1.0V
^{*1} : LHD mod ^{*2} : RHD mo	dels.						
Diagno	stic Pro	adura					
1. сне	CK INPUT	SIGNAL					ECS00F89
🖲 With (CONSULT-I						
1. Start	engine.					DATA NONITOR	
2. Selec	t "MAIN	SIGNALS"	in "DATA	MONITO	R" mode for	NONITOR N	IO DTC
TRA Ctort	NSMISSIU		NSULI-II.			ATF TEMP 59	
s. Start	venicie and	read out in	e value of 1	SOLIT.		ISOL T1 0.0	000A
Item name Condition Display value (Approx.)		ISOL T2 0.8	000A				
		Lock-up "C	DFF"	0.0A		ISOL T3 0.8	300A
IOOEIT		Lock-up "C	DN"	0.7A			
						MODE BACK LIGHT	COPY SCIA2349E
							30IA2349E
🕱 Witho	ut CONSUI	.T-II					
1. Start	engine.						
2. Chec	k voltage be	etween TCN	I connector	erminal a	nd ground.		
Name	Connecto	Terminal	Conc	lition	Voltage (Approx.)		connector
Torque converter	E103	3 - ground	When vehi- cle cruises	Lock-up "OFF"	6.0V	(Veh	icle side)
clutch sole		5 - ground	in "D" posi-	Lock-up	1.0V		

OK or NG

noid valve

OK >> GO TO 5. NG >> GO TO 2.



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2. CHECK TORQUE CONVERTER CLUTCH SOLENOID VALVE CIRCUIT

"ON"

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

tion.

Solenoid valve	Connector	Terminal	Resistance (Approx.)
Torque converter clutch solenoid valve	F103	3 - Ground	3 - 9 Ω

- 4. Disconnect TCM connector.
- 5. Check if there is continuity between the connector terminal and ground.

OK or NG

OK >> GO TO 5. NG >> GO TO 3.



$\overline{\mathbf{3.}}$ check harness between tcm and torque converter clutch solenoid value

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

Item	Connector	Terminal	Continuity
ТСМ	F103	3	Voc
CVT unit harness connector	F6	12	165

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

OK or NG

OK >> GO TO 4.

NG >> Repair or replace damaged parts.

4. CHECK VALVE RESISTANCE

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

Solenoid Valve	Connector	Terminal	Resistance (Approx.)
Torque converter clutch solenoid valve	F6	12 - Ground	3 - 9 Ω



OK or NG

OK >> GO TO 5.

NG >> Repair or replace damaged parts.

5. снеск отс

Perform "DTC Confirmation Procedure". Refer to CVT-101, "DTC Confirmation Procedure" .

OK or NG

OK >> INSPECTION END

NG >> GO TO 6.

6. снеск тсм

1. Check TCM input/output signal. Refer to CVT-50, "TCM Input/Output Signal Reference Values" .

2. If NG, re-check TCM pin terminals for damage or loose connection with harness connector.

OK or NG

OK >> INSPECTION END

NG >> Repair or replace damaged parts.



CVT-105

Component Inspection TORQUE CONVERTER CLUTCH SOLENOID VALVE

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

Solenoid Valve	Connector	Terminal	Resistance (Approx.)
Torque converter clutch solenoid valve	F6	12 - Ground	3 - 9 Ω

4. If NG, replace the transaxle assembly. Refer to <u>CVT-226</u>, <u>"Removal and Installation"</u>.



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

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

Description

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

CONSULT-II Reference Value

Remarks: Specification data are reference values.

Item name	Condition	Display value
ENG SPEED SIG	Engine running	Closely matches the tachometer reading.
PRI SPEED SEN	During driving (lock-up ON)	Approximately matches the engine speed.

On Board Diagnosis Logic

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

Possible Cause

- Torque converter clutch solenoid valve
- Hydraulic control circuit

DTC Confirmation Procedure

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

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

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

B WITH CONSULT-II

- 1. Turn ignition switch ON. (Do not start engine.)
- Select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-II.
- 3. Start engine and maintain the following condition for at least 30 seconds.

ACC PEDAL OPEN: More than 1.0/8 Selector lever: "D" position [Vehicle speed: Constant speed of more than 40 km/h (25 MPH)]

4. If DTC is detected go to CVT-107, "Diagnostic Procedure".



Follow the procedure "WITH CONSULT-II".

PFP:31940

ECS00F8B

ECS00E8C

ECS00F8D

ECS00F8F

ECS00F8E

Diagnostic Procedure

1. CHECK INPUT SIGNALS

(P) With CONSULT-II

- 1. Start engine.
- Select "ECU INPUT SIGNALS" in "DATA MONITOR" mode for 2 "TRANSMISSION" with CONSULT-II.
- Start vehicle. 3.
- Check if there is a great difference between "ENG SPEED SIG" 4 and "PRI SPEED SEN". (Lock-up ON.)

Item name	Condition	Display value
ENG SPEED SIG	Engine running	Closely matches the tachometer reading.
PRI SPEED SEN	During driving (lock-up ON)	Approximately matches

OK or NG

TEST". OK or NG OK

NG

OK >> GO TO 5. NG >> GO TO 2.

2. CHECK LINE PRESSURE

>> GO TO 3.



3. DETECT MALFUNCTIONING ITEM

Check the following:

- Torque converter clutch solenoid valve. Refer to CVT-105, "Component Inspection".
- Lock-up select solenoid valve. Refer to CVT-167, "Component Inspection" .

OK or NG

OK >> GO TO 4.

NG >> Repair or replace damaged parts.

4. CHECK SECONDARY SPEED SENSOR SYSTEM AND PRIMARY SPEED SENSOR SYSTEM

Check output speed sensor (secondary speed sensor) system and input speed sensor (primary speed sensor) system. Refer to CVT-91, "DTC P0720 VEHICLE SPEED SENSOR CVT (SECONDARY SPEED SENSOR)", CVT-86, "DTC P0715 INPUT SPEED SENSOR CIRCUIT (PRI SPEED SENSOR)".

OK or NG

OK >> GO TO 5.

NG >> Repair or replace damaged parts.

CVT-107

В DATA NONITOR MONITOR NO DTC VSP SENSOR 1 km / h CVT ESTM VSP SIG 0 km / hPRI SPEED SEN 32 rpm ENG SPEED SIG 0 rpm SEC HYDR SEN 0 47 V ∇ RECORD MODE BACK LIGHT COPY

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5. снеск отс

Perform "DTC Confirmation Procedure". Refer to <u>CVT-106, "DTC Confirmation Procedure"</u>.

OK or NG

NG

OK >> INSPECTION END

NG >> GO TO 6.

6. снеск тсм

1. Check TCM input/output signal. Refer to CVT-50, "TCM Input/Output Signal Reference Values" .

2. If NG, re-check TCM pin terminals for damage or loose connection with harness connector. OK or NG

OK >> INSPECTION END

>> 1. Repair or replace damaged parts.

2. Replace the transaxle assembly. Refer to CVT-226, "Removal and Installation" .
Description

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

CONSULT-II Reference Value

Remarks: Specification	data are reference values.		
Item name	Condition	Display value (Approx.)	CV
	Release your foot from the accelerator pedal.	0.8A	
130L12	Press the accelerator pedal all the way down.	0.0A	 D
On Board Diag	gnosis Logic	EG	CS00F8J
• This is an OBD	-II self-diagnostic item.		
 Diagnostic trou conditions 	ble code "P0745 L/PRESS SOL/CIRC" with CONSUL	T-II is detected under the follow	wing

- TCM detects an improper voltage drop when it tries to operate the solenoid valve.
- When TCM compares target value with monitor value and detects an irregularity.

Possible Cause

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

DTC Confirmation Procedure

NOTE:

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

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

B WITH CONSULT-II

- 1. Turn ignition switch ON and select "DATA MONITOR" mode for "ENGINE" with CONSULT-II.
- 2. Start engine and wait at least 5 seconds.
- 3. If DTC is detected, go to CVT-111, "Diagnostic Procedure" .

SELECT SYSTEM		
ENGINE		K
ABS		
AIR BAG		
ALL MODE AWD/4WD		L
IPDM E/R		
ВСМ		M
		101
	SCIA4823E	

WITH GST

Follow the procedure "WITH CONSULT-II".

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ECS00F8I

ECS00F8K

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Wiring Diagram — CVT — LPSV

ECS00F8M

CVT-LPSV-01

: DETECTABLE LINE FOR DTC NON-DETECTABLE LINE FOR DTC





TCWA0249E

TCM tern	ninal data a	re reference value	es, measured	between each terminal and ground.		
Terminal	Wire color	Item	Condition Data (Appro			A
			<u>A</u>	Release your foot from the accelerator pedal.	5.0 - 7.0V	
1	R/Y	Pressure control solenoid valve A (Line pressure	and	Proce the appelerator padal all the way down	10.201/	В
		solenoid valve)		Press the accelerator pedar an the way down.	1.0 - 3.00	CV

Diagnostic Procedure

1. CHECK INPUT SIGNAL

With CONSULT-II

- 1. Start engine.
- 2. Select "MAIN SIGNALS" in "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-II.
- 3. Read out the value of "ISOLT2".

Item name	Condition	Display value (Approx.)
1901 72	Release your foot from the accelerator pedal.	0.8A
	Press the accelerator pedal all the way down.	0.0A

	DATA	NONITOR				
NONITOR			NO DTC			
ATF TEI	ΛP	59)			
STM ST	EP	4s	tep			
ISOL T1		0.	000A			
ISOL T2		0.	800A			
ISOL TO		0.	800A			
		7	7			
		REC	ORD			
MODE	BACK	LIGHT	COPY			
				' s	CIA2349E	

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Without CONSULT-II

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

Name	Connector	Terminal	Condition	Voltage (Approx.)
Pressure control			Release your foot from the accelerator pedal.	5.0 - 7.0V
solenoid valve A (Line pres- sure sole- noid valve)	F103	1 - ground	Press the accelerator pedal all the way down.	1.0 - 3.0V



3. Turn ignition switch OFF.

4. Disconnect TCM connector.

5. Check if there is continuity between connector terminal and ground.

OK or NG

OK >> GO TO 5.

NG >> GO TO 2.

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$\overline{2.}$ CHECK PRESSURE CONTROL SOLENOID VALVE A (LINE PRESSURE SOLENOID VALVE) CIRCUIT

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

Solenoid valve	Connector	Terminal	Resistance (Approx.)
Pressure control solenoid valve A (Line pressure solenoid valve)	F103	1 - ground	3 - 9 Ω
OK or NG OK >> GO TO 5.			



3. CHECK VALVE RESISTANCE

1. Turn ignition switch OFF.

>> GO TO 3.

- 2. Disconnect CVT unit harness connector.
- Check resistance between CVT unit harness connector terminal and ground.

Solenoid valve	Connector	Terminal	Resistance (Approx.)
Pressure control sole- noid valve A (Line pres- sure solenoid valve)	F6	2 - Ground	3 - 9 Ω



OK or NG

NG

OK >> GO TO 4. NG >> Replace t

>> Replace the transaxle assembly. Refer to <u>CVT-226</u>, <u>"Removal and Installation"</u>.

4. CHECK HARNESS BETWEEN TCM AND PRESSURE CONTROL SOLENOID VALVE A (LINE PRES-SURE SOLENOID VALVE)

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

Item	Connector	Terminal	Continuity
TCM	F103	1	Voc
CVT unit harness connector	F6	2	165

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

- 5. If OK, check continuity between ground and CVT assembly.
- 6. Reinstall any part removed.

OK or NG

- OK >> GO TO 5.
- NG >> Repair open circuit or short to ground or short to power in harness or connectors.



5. снеск ртс					А
Perform "DTC Confirm	nation Procedu	ure". Refer to <u>C</u>	VT-109, "DTC Cor	firmation Procedure".	
OK or NG					
OK >> INSPECT NG >> GO TO 6.	ION END				В
6. снеск тсм					CVT
1. Check TCM input	/output signal.	Refer to <u>CVT-</u>	50, "TCM Input/Out	tput Signal Reference Values".	
2. If NG, re-check TC	CM pin termina	als for damage	or loose connectio	n with harness connector.	D
OK or NG					
OK >> INSPECT	ION END	naged parts			
2 Replace	of Teplace dat	nayeu pans. A assembly Re	for to CV/T_226 "P	emoval and Installation"	E
		e assembly. Re	lei lo <u>01-220, 10</u>	emoval and installation.	
					F
1. Turn ignition swite	ch OFF.				I
2. Disconnect CVT u	unit harness co	onnector.			
3. Check resistance	between CVT	unit harness c	onnector terminal		G
and ground.				(Unit side)	
Solenoid valve	Connector	Terminal	Resistance (Approx.)		Н
Pressure control sole-					
noid valve A (Line pres- sure solenoid valve)	F6	2 - Ground	3 - 9 Ω	2	
4. If NG, replace t <u>"Removal and Ins</u>	he transaxle tallation".	assembly. Re	efer to <u>CVT-226,</u>		J

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DTC P0746 PRESSURE CONTROL SOLENOID A PERFORMANCE (LINE PRES-SURE SOLENOID VALVE)

DTC P0746 PRESSURE CONTROL SOLENOID A PERFORMANCE (LINE PRES-SURE SOLENOID VALVE) PFP:31941

Description

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

CONSULT-II Reference Value

Remarks: Specification data are reference values.

Item name	Condition	Display value (Approx.)
PRI PRESS	"N" position idle	0.3 - 0.9MPa

On Board Diagnosis Logic

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

Possible Cause

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

DTC Confirmation Procedure

CAUTION:

Always drive vehicle at a safe speed.

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

NOTE:

If "DTC Confirmation Procedure" has been previously performed, always turn ignition switch OFF and wait at least 5 seconds before performing the next test.

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

(P) WITH CONSULT-II

- Turn ignition switch ON and select "DATA MONITOR" mode for 1. "TRANSMISSION" with CONSULT-II.
- Start engine and maintain the following conditions for at least 10 2. consecutive seconds. Test start from 0 km/h (0 MPH). ATF TEMP SEN: 1.0 - 2.0V ACC PEDAL OPEN: More than 1.0/8 Selector lever: "D" position VHCL SPEED: 10 km/h (6 MPH) More than Driving location: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.
- 3. If DTC is detected, go to CVT-115, "Diagnostic Procedure".

WITH GST

Follow the procedure "WITH CONSULT-II".



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ECS00E8R

ECS00E8T

ECS00F8S

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DTC P0746 PRESSURE CONTROL SOLENOID A PERFORMANCE (LINE PRES-SURE SOLENOID VALVE)

Diagnostic Procedure

1. CHECK INPUT SIGNAL

(P) With CONSULT-II

- 1. Start engine.
- Select "MAIN SIGNALS" in "DATA MONITOR" mode for 2 "TRANSMISSION" with CONSULT-II.
- Start vehicle and read out the value of "PRI PRESS". 3.

Item name	Condition	Display value (Approx.)
PRI PRESS	"N" position idle	0.3 - 0.9MPa



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Without CONSULT-II

1. Start engine.

NG

2. Check voltage between TCM connector terminal and ground.

Name	Connector	Terminal	Condition	Voltage (Approx.)
Transmission fluid pressure sensor B (Pri- mary pressure sensor)	F104	41 - Ground	"N" position idle	0.7 - 3.5V
OK or NG				



>> GO TO 2. 2. CHECK LINE PRESSURE



3. DETECT MALFUNCTIONING ITEM

Check the following:

Pressure control solenoid valve A (line pressure solenoid valve). Refer to CVT-113, "Component Inspection".

OK or NG

OK >> GO TO 4.

NG >> Repair or replace damaged parts.

DTC P0746 PRESSURE CONTROL SOLENOID A PERFORMANCE (LINE PRES-SURE SOLENOID VALVE)

4. CHECK OUTPUT SPEED SENSOR (SECONDARY SPEED SENSOR) SYSTEM AND INPUT SPEED SENSOR (PRIMARY SPEED SENSOR) SYSTEM

Check output speed sensor (secondary speed sensor) system and input speed sensor (primary speed sensor) system. Refer to <u>CVT-91, "DTC P0720 VEHICLE SPEED SENSOR CVT (SECONDARY SPEED SENSOR)"</u>, <u>CVT-86, "DTC P0715 INPUT SPEED SENSOR CIRCUIT (PRI SPEED SENSOR)"</u>.

OK or NG

OK >> GO TO 5.

NG >> Repair or replace damaged parts.

5. DETECT MALFUNCTIONING ITEM

Check the following:

- Power supply and ground circuit for TCM. Refer to <u>CVT-149</u>, "Wiring <u>Diagram CVT POWER (LHD</u> <u>Models)</u>", <u>CVT-151</u>, "Wiring <u>Diagram CVT POWER (RHD Models)</u>".
- The TCM pin terminals for damage or loose connection with harness connector.
- OK or NG
- OK >> GO TO 6.
- NG >> Repair or replace damaged parts.

6. снеск отс

Perform "DTC Confirmation Procedure". Refer to <u>CVT-114, "DTC Confirmation Procedure"</u>.

OK or NG

- OK >> INSPECTION END
- NG >> Replace the transaxle assembly or TCM. Refer to CVT-226, "Removal and Installation".

DTC P0776 PRESSURE CONTROL SOLENOID B PERFOMANCE (SEC PRES-SURE SOLENOID VALVE)

DTC P0776 PRESSURE CONTROL SOLENOID B PERFOMANCE (SEC PRES-SURE SOLENOID VALVE) PFP:31941

The pressure control solenoid valve B (secondary pressure solenoid valve) regulates the secondary pressure

Description

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to suit the driving	condition in response to a signal sent from the TCM.	, ,				
CONSULT-II F	Reference Value		ECS00F8W			
Remarks: Specification	n data are reference values.		CVT			
Item name	Condition	Display value (Approx	κ.)			
SEC PRESS	"N" position idle	0.5 - 0.9MPa	D			
On Board Dia	ignosis Logic		ECS00F8X			
• This is an OB	D-II self-diagnostic item.		-			
 Diagnostic tro pressure is to 	ouble code "P0776 PRS CNT SOL/B FCTN" with CON o high or too low compared with the commanded value	SULT-II is detected when s while driving.	econdary [□]			
Possible Cau	se		ECS00F8Y			
 Harness or co (Solenoid circ 	onnectors uit is open or shorted.)					
 Pressure cont Transmission	trol solenoid valve B (Secondary pressure solenoid valv fluid pressure sensor A (Secondary pressure sensor)	ve system)	G			
Line pressure	control system		Ц			
DTC Confirm	ation Procedure		ECS00F8Z			
CAUTION:						
Always drive	vehicle at a safe speed.					
Be careful no	ot to rev engine into the red zone on the tachometer					
If "DTC Confirma wait at least 5 se After the repair, pe	ntion Procedure" has been previously performed, all conds before performing the next test. erform the following procedure to confirm the malfunctio	ways turn ignition switch	OFF and J			
	JLT-II		K			
1. Turn ignition s	switch ON and select "DATA MONITOR" mode for	SELECT SYSTEM				
2 Start engine a	and maintain the following conditions for at least 30	IPDM E/R	L			
consecutive s	econds.	ВСМ	_			
	EN: 1.0 - 2.0V OBEN: More than 1.0/8	AUTO DRIVE POS				
Selector lever: "D" position						
VHCL SPEED	D: 10 km/h (6 MPH) More than	TRANSMISSION				
engine load) will help maintain the driving conditions	METER A/C AMP				
required for	this test.		SCIA4825E			
3. If DTC is dete	cted, go to CVT-118, "Diagnostic Procedure".					

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Follow the procedure "WITH CONSULT-II".

DTC P0776 PRESSURE CONTROL SOLENOID B PERFOMANCE (SEC PRES-SURE SOLENOID VALVE)

Diagnostic Procedure

1. CHECK INPUT SIGNAL

With CONSULT-II

1. Start engine.

- 2. Select "MAIN SIGNALS" in "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-II.
- 3. Start vehicle and read out the value of "SEC PRESS".

Item name	Condition	Display value (Approx.)	
SEC PRESS	"N" position idle	0.5 - 0.9MPa	
OK or NG			

OK >> GO TO 5. NG >> GO TO 2.

2. CHECK LINE PRESSURE





3. DETECT MALFUNCTIONING ITEM

Check the following:

- Pressure control solenoid valve B (Secondary pressure solenoid valve). Refer to <u>CVT-124</u>, "Component <u>Inspection</u>".
- Pressure control solenoid valve A (Line pressure solenoid valve). Refer to <u>CVT-113</u>, "Component Inspection".

OK or NG

OK >> GO TO 4.

NG >> Repair or replace damaged parts.

4. CHECK SECONDARY PRESSURE SENSOR SYSTEM

Check transmission fluid pressure sensor A (secondary pressure sensor) system. Refer to <u>CVT-132, "DTC</u> P0840 TRANSMISSION FLUID PRESSURE SENSOR A CIRCUIT (SEC PRESSURE SENSOR)".

OK or NG

OK >> GO TO 5.

NG >> Repair or replace damaged parts.

	DATA I	IONITOR		
NONITOR			NO DTC]
GEAR F	RATIO	2.	37	
ACC PE	DAL OP	EN 0.	0/8	
VENG T	RQ	21	17.6 Nm	
SEC PR	ESS	0.	000 MPa	í .
PRI PRI	ESS	0.	0.000 MPa	
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		DEC	חססי	
		RLU	UKU	
MODE	BACK	LIGHT	COPY	
				SCIA2366E

CVT-118

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DTC P0776 PRESSURE CONTROL SOLENOID B PERFOMANCE (SEC PRES-SURE SOLENOID VALVE)

5. DETECT MALFUNCTIONING ITEM	А
Check the following:	7.1
 Power supply and ground circuit for TCM. Refer to <u>CVT-149</u>, "Wiring <u>Diagram — CVT — POWER (LHD</u> <u>Models)</u>", <u>CVT-151</u>, "Wiring <u>Diagram — CVT — POWER (RHD Models)</u>". 	В
The TCM pin terminals for damage or loose connection with harness connector.	
OK or NG	CVT
OK >> GO TO 6. NG >> Repair or replace damaged parts.	
6. снеск ртс	D
Perform "DTC Confirmation Procedure". Refer to <u>CVT-117, "DTC Confirmation Procedure"</u> . <u>OK or NG</u> OK >> INSPECTION END NG >> Replace the transaxle assembly. Refer to <u>CVT-226, "Removal and Installation"</u> .	E
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DTC P0778 PRESSURE CONTROL SOLENOID B ELECTRICAL (SEC PRESSURE SOLENOID VALVE) PFP:31941

Description

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

CONSULT-II Reference Value

Remarks: Specification data are reference values.

Item name	Condition	Display value (Approx.)
ISOLT3	Secondary pressure low - Secondary pressure high	0.8 - 0.0A
	"N" position idle	0.6 - 0.7A
SOLINOINS	When stalled	0.4 - 0.6A

On Board Diagnosis Logic

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

Possible Cause

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

DTC Confirmation Procedure

NOTE:

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

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

(I) WITH CONSULT-II

- Turn ignition switch ON.
- Select "DATA MONITOR" mode for "TRANSMISSION" with 2. CONSULT-II.
- Start engine and wait at least 5 seconds. 3.
- 4. If DTC is detected, go to CVT-122, "Diagnostic Procedure".



WITH GST

Follow the procedure "WITH CONSULT-II".

ECS00E93

ECS00E95

ECS00F94

ECS00E01

ECS00F92



TCWA0250E

TCM term	ninal data a	re reference valu	es, measured	between each terminal and ground.	
Terminal	Wire color	Item	Condition Data (A		
			A	Release your foot from the accelerator pedal.	5.0 - 7.0V
2	W/B	Pressure control solenoid valve B (Secondary pres- sure solenoid valve)	and	Press the accelerator pedal all the way down.	3.0 - 4.0V

Diagnostic Procedure

1. CHECK INPUT SIGNAL

With CONSULT-II

- 1. Start engine.
- 2. Select "MAIN SIGNALS" in "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-II.
- 3. Read out the value of "ISOLT3".

Item name	Condition	Display value (Approx.)
ISOLT3	Secondary pressure low - Secondary pressure high	0.8 - 0.0A

	DATA I	IONITOR		
NONITOR			NO DTC	
ATF TE	MP	59)	
STM ST	ΓEP	4s	tep	
ISOL T	I	0.	000A	
ISOL T2		0.	800A	
ISOL T3		0.800A		
		-	7	l
		REC	ORD	
MODE	BACK	LIGHT	COPY	
				SCIA2349E

ECS00F97

Without CONSULT-II

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

Name	Connector	Terminal	Condition	Voltage (Approx.)
Pressure control			Release your foot from the accelerator pedal.	5.0 - 7.0V
solenoid valve B (Second- ary pres- sure solenoid valve)	F103	2 - ground	Press the accelerator pedal all the way down.	3.0 - 4.0V



3. Turn ignition switch OFF.

4. Disconnect TCM connector.

5. Check if there is continuity between connector terminal and ground.

OK or NG

OK >> GO TO 5. NG >> GO TO 2.

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

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

Solenoid valve	Connector	Terminal	Resistance (Approx.)
Pressure control solenoid valve B (Secondary pres- sure solenoid valve)	F103	2 - Ground	3 - 9 Ω
<u>OK or NG</u> OK >> GO TO 5.			



3. CHECK VALVE RESISTANCE

1. Turn ignition switch OFF.

>> GO TO 3.

- 2. Disconnect CVT unit harness connector.
- 3. Check resistance between CVT unit harness connector terminal and ground.

Solenoid valve	Connector	Terminal	Resistance (Approx.)
Pressure control sole- noid valve B (Secondary pressure solenoid valve)	F6	3 - Ground	3 - 9 Ω



NG

OK >> GO TO 4.

NG >> Repair or replace damaged parts.

4. CHECK POWER SOURCE CIRCUIT

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

Item	Connector	Terminal	Continuity
TCM connector	F103	2	Vos
CVT unit harness connector	F6	3	163

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

OK or NG

- OK >> GO TO 5.
- NG >> Repair or replace damaged parts.

5. снеск отс

Perform "DTC Confirmation Procedure". Refer to CVT-120, "DTC Confirmation Procedure" .

OK or NG

OK >> INSPECTION END

NG >> GO TO 6.





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6. снеск тсм

1. Check TCM input/output signal. Refer to CVT-50, "TCM Input/Output Signal Reference Values" .

2. If NG, re-check TCM pin terminals for damage or loose connection with harness connector. OK or NG

OK >> INSPECTION END

NG >> 1. Repair or replace damaged parts.

2. Replace the transaxle assembly. Refer to CVT-226, "Removal and Installation" .

Component Inspection PRESSURE CONTROL SORENOID VALVE B (SECONDARY PRESSURE SOLENOID VALVE)

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

Solenoid Valve	Connector	Terminal	Resistance (Approx.)
Pressure control sole- noid valve B (Secondary pressure solenoid valve)	F6	3 - Ground	3 - 9 Ω

4. If NG, replace the transaxle assembly. Refer to <u>CVT-226</u>, <u>"Removal and Installation"</u>.



DTC P0826 MANUAL MODE SWITCH CIRCUIT

Description

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

TCM sends the switch signals to unified meter and A/C amp via CAN communication line. Then manual mode switch position is indicated on the CVT position indicator. For inspection, refer to CVT-175, "Diagnostic Procedure".

CONSULT-II Reference Value

Item name	Condition	Display value	
MMODE	Manual shift gate position (neutral)	ON	D
MINODE	Other than the above	OFF	
	Manual shift gate position (neutral, +side, -side)	OFF	E
	Other than the above	ON	
	Select lever: + side	ON	
UPLVR	Other than the above	OFF	F
	Select lever: - side	ON	
DOWNLVR	Other than the above	OFF	G

On Board Diagnosis Logic

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

Possible Cause

- Harness or connectors (These switches circuit is open or shorted.) (TCM, and unified meter and A/C amp circuit are open or shorted.) (CAN communication line is open or shorted.)
- Manual mode select switch (Built into CVT control device)
- Manual mode position select switch (Built into CVT control device)

DTC Confirmation Procedure

NOTE:

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

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

WITH CONSULT-II

- 1. Turn ignition switch ON. (Do not start engine.)
- Select "DATA MONITOR" mode for "TRANSMISSION" with 2 CONSULT-II.
- 3. Start engine.
- 4. Move selector lever to "M" position.
- Drive vehicle for at least 2 consecutive seconds. 5.
- If DTC is detected, go to CVT-129, "Diagnostic Procedure" . 6.

	-
SELECT SYSTEM	
IPDM E/R	
ВСМ	
AUTO DRIVE POS	
AIR PRESSURE MONITOR	
TRANSMISSION	
METER A/C AMP	
	SCIA4825E

PFP:34901

FCS00F00

ECS00E9A

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ECS00F9B

ECS00F9C

ECS00F9D

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TCWB0141E

erminal	Wire color	Item	Condition	Data (Approx.)
5	L	CAN H	_	-
6	Ρ	CAN L	-	-

CVT-127



TCWB0142E

Terminal	Wire color	Item	Condition	Data (Approx.)	
5	L	CAN H			_
6	Р	CAN L	_		-
Diagnos I. снес	STIC PI	rocedure COMMUNICATION LI	NE		ECS00F9F
Perform th <u>s any mal</u> YES >	ie self-d <u>functior</u> > Chec	iagnosis check. Refer of the "U1000 CAN C cAN communication	to <u>CVT-58, "SELF-DIAGNOS"</u> OMM CIRCUIT" indicated? line. Refer to <u>CVT-65, "DTC I</u>	TIC RESULT MODE" . J1000 CAN COMMUNIO	CATION LINE" .
NO > 2. снес	> GO T :K MAN	U 2.	CIRCUIT		
With C . Turn iq . Select . "TRAN	ONSUL gnition s t "ECU NSMISS	T-II switch ON. (Do not star INPUT SIGNALS" in " SION" with CONSULT-I	rt engine.) DATA MONITOR" mode for I.	DATA MONITO MONITOR 1 DOWNLVR C UPLVR C	R NO DTC)FF JFF
B. Read MODE	out ON E", "UPL	/OFF switching action .VR", "DOWNLVR".	of the "MMODE", "NON M-	NON MMODE (MMODE C	ON DFF
MMODE		Manual shift gate po tion (neutral)	Display value		
		Other than the abov	e OFF	MODE BACK LIGH	
NON MMO	DE	Manual shift gate po tion (neutral, +side,	-side) OFF		SCIA4588E
Other than the above		e ON			
UPLVR Select lever: + + + + + + + + + + + + + + + + + + +		Select lever: + side	ON		
		Other than the abov	e OFF		
	1	Select lever: - side	ON		
DOWNLVR			· T		

Without CONSULT-II

Drive vehicle in the manual mode, and confirm that the actual gear position and the meter's indication of the position mutually coincide when the selector lever is shifted to the "+ (up)" or "- (down)" side (1st \Leftrightarrow 6th gear). M OK or NG

OK >> GO TO 7. NG >> GO TO 3.

3. CHECK MANUAL MODE SWITCH

Check manual mode switch.

• Refer to <u>CVT-131, "Component Inspection"</u>.

OK or NG

OK >> GO TO 4.

NG >> Repair or replace damaged parts.

4. CHECK SELF-DIAGNOSTIC RESULTS (UNIFIED METER AND A/C AMP)

Perform self-diagnosis check. Refer to <u>DI-29, "CONSULT-II Function (METER A/C AMP)"</u>. Is any malfunction detected by self-diagnosis?

YES >> Check the malfunctioning system.

NO >> GO TO 5.

5. CHECK SELF-DIAGNOSTIC RESULTS (COMBINATION METER)

Perform self-diagnosis check. Refer to DI-15, "Self-Diagnosis Mode of Combination Meter" .

Is any malfunction detected by self-diagnosis?

YES >> Check the malfunctioning system.

NO >> GO TO 6.

6. CHECK MANUAL MODE SWITCH CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect CVT device connector and unified meter and A/C amp connector.
- Check continuity between CVT device harness connector terminal and unified meter and A/C amp harness connector terminal.

Item	Connector	Terminal	Continuity
CVT device harness connector	M57	3	
Unified meter and A/C amp harness connector	M49	3	Yes
CVT device harness connector	M57	7	
Unified meter and A/C amp harness connector	M49	14	Yes
CVT device harness connector	M57	8	
Unified meter and A/C amp harness connector	M49	4	Yes
CVT device harness connector	M57	12	
Unified meter and A/C amp harness connector	M49	13	Yes



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

Item	Connector	Terminal	Continuity
CVT device harness connector	M57	11	Yes

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

6. Reinstall any part removed.

OK or NG

OK >> GO TO 7.

>> Repair open circuit or short to ground or short to power in harness or connectors.



7. снеск отс

Perform "DTC Confirmation Procedure". Refer to <u>CVT-125, "DTC Confirmation Procedure"</u>.

OK or NG

OK >> INSPECTION END

NG >> GO TO 8.

8. снеск тсм

1. Check TCM input/output signal. Refer to <u>CVT-50, "TCM Input/Output Signal Reference Values"</u>.

2. If NG, re-check TCM pin terminals for damage or loose connection with harness connector. OK or NG

OK >> INSPECTION END

NG >> Repair or replace damaged parts.

Component Inspection MANUAL MODE SWITCH

Check continuity between CVT device harness connector terminals.

Item	Position	Connector	Terminal	Continuity	
Manual mode	Auto		12 - 11		
select switch	Manual	M57	3 - 11		
Manual mode	Up		8 - 11	Yes	
position select switch	Down		7 - 11		



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ECS00E9G

DTC P0840 TRANSMISSION FLUID PRESSURE SENSOR A CIRCUIT (SEC PRESSURE SENSOR) PFP:31936

Description

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

CONSULT-II Reference Value

Remarks: Specification data are reference values.

Item name	Condition	Display value (Approx.)
SEC HYDR SEN	"N" position idlo	0.8 - 1.0V
SEC PRESS		0.5 - 0.9 MPa

On Board Diagnosis Logic

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

Possible Cause

- Transmission fluid pressure sensor A (Secondary pressure sensor)
- Harness or connectors (Switch circuit is open or shorted.)

DTC Confirmation Procedure

CAUTION:

- Always drive vehicle at a safe speed. .
- Be careful not to rev engine into the red zone on the tachometer. NOTE:

If "DTC Confirmation Procedure" has been previously performed, always turn ignition switch OFF and wait at least 5 seconds before performing the next test.

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

(P) WITH CONSULT-II

- Turn ignition switch ON and select "DATA MONITOR" mode for 1. "TRANSMISSION" with CONSULT-II.
- Make sure that output voltage of line temperature sensor is 2. within the range below. ATF TEMP SEN: 1.0 - 2.0V

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)

- 3. Start engine and wait for at least 5 consecutive seconds.
- If DTC is detected, go to CVT-134, "Diagnostic Procedure".

WITH GST

Follow the procedure "WITH CONSULT-II".

SELECT SYSTEM	
IPDM E/R	
ВСМ	
AUTO DRIVE POS	
AIR PRESSURE MONITOR	
TRANSMISSION	
METER A/C AMP	
	SCIA4825E

ECS00E9.

ECS00F9K

ECS00F9L

CVT-132

FCSOOFOH

ECS00F9





TCWA0253E

TCM terminal data are reference values, measured between each terminal and ground.						
Terminal	Wire color	Item	Condition		Data (Approx.)	
37	V/W	Transmission fluid pressure sensor A (Secondary pressure sensor)	and	and "N" position idle		
42	W/R	Sensor ground	Always		0V	
46	1/0	Sensor power	CON	_	4.5 - 5.5V	
46	ĽÖ		COFF	_	0V	

Diagnostic Procedure

1. CHECK INPUT SIGNAL

With CONSULT-II

- 1. Start engine.
- 2. Select "ECU INPUT SIGNALS" in "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-II.
- 3. Start vehicle and read out the value of "SEC HYDR SEN".

Item name	Condition	Display value (Approx.)
SEC HYDR SEN	"N" position idle	0.8 - 1.0V

		DATA N	CNITOR		
NON	ITOR			NO DTC	
VSI	P SE	NSOR	1	km / h	
ES	TM V	SP SIG	0	km / h	
PRI	I SPE	ED SEN	32	rpm	
EN	G SP	EED SIG	à Oi	rpm	
SEG	С НҮ	DR SEN	0.4	47 V	
-				/	
			KEU		
M	ODE	BACK	LIGHT	COPY	
					SCIA2279E

ECS00F9N

Without CONSULT-II

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

Transmission fluid pressure sensor A (Sec- F104 37 - Ground "N" position idle 0.8V	Name	Connector	Terminal	Condition	Voltage
ondary pres- sure sensor)	Transmission fluid pressure sensor A (Sec- ondary pres- sure sensor)	F104	37 - Ground	"N" position idle	0.8V

OK or NG

OK >> GO TO 5. NG >> GO TO 2.



CVT-134

2. CHECK SENSOR POWER AND SENSOR GROUND

- 1. Turn ignition switch ON. (Do not start engine.)
- 2. Check voltage between TCM connector terminals.

	Item	Connector	Terminal	Data (Approx.)
TCM co	onnector	F104	46 - 42	4.5 - 5.5V
OK or	NG			
OK	>> GO TO 4.			
NG	>> GO TO 3.			



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

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

Item	Connector	Terminal	Continuity
ТСМ	F104	42	Voc
CVT unit harness connector	F6	19	165
ТСМ	F104	46	Voc
CVT unit harness connector	F6	20	165



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

OK or NG

- OK >> Replace TCM. Refer to CVT-8, "Precautions for TCM and CVT Assembly Replacement" .
- NG >> Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK TRANSMISSION FLUID PRESSURE SENSOR A (SECONDARY PRESSURE SENSOR) CIR-CUIT

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

Item	Connector	Terminal	Continuity
TCM	F104	37	Vos
CVT unit harness connector	F6	23	163

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

OK or NG

- OK >> GO TO 5.
- NG >> Repair open circuit or short to ground or short to power in harness or connectors.



5. снеск отс

Perform "DTC Confirmation Procedure". Refer to <u>CVT-132, "DTC Confirmation Procedure"</u>.

OK or NG

- OK >> INSPECTION END
- NG >> GO TO 6.

6. снеск тсм

1. Check TCM input/output signal. Refer to CVT-50, "TCM Input/Output Signal Reference Values" .

2. If NG, re-check TCM pin terminals for damage or loose connection with harness connector.

OK or NG

OK >> Replace the transaxle assembly. Refer to <u>CVT-226, "Removal and Installation"</u>.

NG >> Repair or replace damaged parts.

DTC P0841 PRESSURE SENSOR FUNCTION

DTC P0841 PRESSURE SENSOR FUNCTION

Description

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

CONSULT-II Reference Value

Remarks: Specification data are reference values.			CV
Item name	Condition	Display value (Approx.)	
PRI HYDR SEN	"N" position idle	0.7 - 3.5V	D
SEC HYDR SEN		0.8 - 1.0V	D

On Board Diagnosis Logic

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

Possible Cause

- Transmission fluid pressure sensor A (Secondary pressure sensor)
- Transmission fluid pressure sensor B (Primary pressure sensor)
- Harness or connectors (Sensor circuit is open or shorted.)

DTC Confirmation Procedure

CAUTION:

- Always drive vehicle at a safe speed.
- Be careful not to rev engine into the red zone on the tachometer.

NOTE:

If "DTC Confirmation Procedure" has been previously performed, always turn ignition switch OFF and wait at least 5 seconds before performing the next test.

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

B WITH CONSULT-II

- 1. Turn ignition switch ON and select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-II.
- Start engine and maintain the following conditions for at least 12 consecutive seconds.
 VHCL SPEED: 40 km/h (25 MPH) More than Selector lever: "D" position
- 3. If DTC is detected, go to CVT-138, "Diagnostic Procedure".

SELECT SYSTEM	
IPDM E/R	L
BCM	
AUTO DRIVE POS	M
AIR PRESSURE MONITOR	
TRANSMISSION	
METER A/C AMP	
SCIA4825E	

PFP:31936

ECS00E90

ECS00F9P

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ECS00F9Q

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ECS00F9S

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Diagnostic Procedure

1. CHECK CAN COMMUNICATION LINE

Perform the self-diagnosis. Refer to <u>CVT-58, "SELF-DIAGNOSTIC RESULT MODE"</u>. Is any malfunction of the "U1000 CAN COMM CIRCUIT" indicated?

YES >> Check CAN communication line. Refer to <u>CVT-65</u>, "DTC U1000 CAN COMMUNICATION LINE" . NO >> GO TO 2.

2. CHECK INPUT SIGNALS

With CONSULT-II

- 1. Start engine.
- 2. Select "ECU INPUT SIGNALS" in "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-II.
- 3. Start vehicle and read out the value of "SEC HYDR SEN" and "PRI HYDR SEN".

Item name	Condition	Display value (Approx.)
PRI HYDR SEN	"N" position idlo	0.7 - 3.5V
SEC HYDR SEN		0.8 - 1.0V



Without CONSULT-II

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

Name	Connector	Terminal	Condition	Voltage (Approx.)
Transmission fluid pressure sensor B (Primary pres- sure sensor)	E104	41 - Ground	"N" position idlo	0.7 - 3.5V
Transmission fluid pressure sensor A (Secondary pres- sure sensor)	1 104	37 - Ground		0.8V



OK or NG

OK >> GO TO 6. NG >> GO TO 3.

3. CHECK LINE PRESSURE

Perform line pressure test. Refer to <u>CVT-39</u>, "LINE PRESSURE TEST".

OK or NG

OK >> GO TO 4.

NG >> Repair or replace damaged parts. Refer to <u>CVT-40.</u> <u>"Judgement of Line Pressure Test"</u>.



CVT-138

DTC P0841 PRESSURE SENSOR FUNCTION

4. CHECK TRANSMISSION FLUID PRESSORE SENSOR A (SECONDARY PRESSURE SENSOR) SYS- TEM AND TRANSMISSION FLUID PRESSURE SENSOR B (PRIMARY PRESSURE SENSOR) SYSTEM	А
Check secondary pressure sensor system and primary pressure sensor system. Refer to <u>CVT-132</u> , " <u>DTC</u> <u>P0840 TRANSMISSION FLUID PRESSURE SENSOR A CIRCUIT (SEC PRESSURE SENSOR)</u> ", <u>CVT-140</u> , " <u>DTC P0845 TRANSMISSION FLUID PRESSURE SENSOR B CIRCUIT (PRI PRESSURE SENSOR)</u> ".	В
OK or NG OK >> GO TO 5. NG >> Repair or replace damaged parts.	CVT
5. DETECT MALFUNCTIONING ITEM	D
 Check the following: Line pressure solenoid valve. Refer to <u>CVT-113, "Component Inspection"</u>. Secondary pressure solenoid valve. Refer to <u>CVT-124, "Component Inspection"</u>. Step motor. Refer to <u>CVT-172, "Component Inspection"</u>. <u>OK or NG6</u> OK >> GO TO 6. 	E
NG >> Repair or replace damaged parts.	G
Perform "DTC Confirmation Procedure". Refer to <u>CVT-137, "DTC Confirmation Procedure"</u> . <u>OK or NG</u> OK >> INSPECTION END NG >> Replace TCM or transaxle assembly. Refer to <u>CVT-226, "Removal and Installation"</u> .	H
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DTC P0845 TRANSMISSION FLUID PRESSURE SENSOR B CIRCUIT (PRI PRES-SURE SENSOR) PFP:31936

Description

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

CONSULT-II Reference Value

Item name Condition Condition Condition			
PRI HYDR SEN	"N" position idle	0.7 - 3.5V	

On Board Diagnosis Logic

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

Possible Cause

- Transmission fluid pressure sensor B (Primary pressure sensor)
- Harness or connectors (Sensor circuit is open or shorted.)

DTC Confirmation Procedure

CAUTION:

- Always drive vehicle at a safe speed.
- Be careful not to rev engine into the red zone on the tachometer.

NOTE:

If "DTC Confirmation Procedure" has been previously performed, always turn ignition switch OFF and wait at least 5 seconds before performing the next test.

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

(P) WITH CONSULT-II

- 1. Turn ignition switch ON and select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-II.
- 2. Make sure that output voltage of line temperature sensor is within the range below.

ATF TEMP SEN: 1.0 - 2.0V 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)

- 3. Start engine and wait for at least 5 consecutive seconds.
- If DTC is detected, go to CVT-142, "Diagnostic Procedure" . 4.

WITH GST

Follow the procedure "WITH CONSULT-II".

SELECT SYSTEM	
IPDM E/R	
ВСМ	
AUTO DRIVE POS	
AIR PRESSURE MONITOR	
TRANSMISSION	
METER A/C AMP	
	SCIA4825E

ECS00E9X

ECS00E9Y

CVT-140

FCSOOFQU

FCSOOFOV

ECS00F9W





TCWA0255E

TCM terminal data are reference values, measured between each terminal and ground.						
Terminal	Wire color	Item		Data (Approx.)		
41	V/O	Transmission fluid pressure sensor B (Primary pressure sen- sor)	and	"N" position idle	0.7 - 3.5V	
42	W/R	Sensor ground	Always		0V	
46 L/	1/0	L/O Sensor power	CON	_	4.5 - 5.5V	
	60	L/O Sensor power	COFF	_	٥V	

Diagnostic Procedure

1. CHECK INPUT SIGNAL

(P) With CONSULT-II

- 1. Start engine.
- Select "ECU INPUT SIGNALS" in "DATA MONITOR" mode for 2. "TRANSMISSION" with CONSULT-II.
- 3. Start vehicle and read out the value of "PRI HYDR SEN".

Item name	Condition	Display value (Approx.)
PRI HYDR SEN	"N" position idle	0.7 - 3.5V

_	DATA	ION I TOR		
MONITOR			NO DTC	
SEC H	DR SEN	I 0.	47 v	
PRI HY	DR SEN	0.	47 v	
ATF TE	MP SEN	1.	92 v	
VIGN S	EN	10).7 v	
ACC PE	EDAL OP	EN 0.	0/8	
[_		
	<u>م</u>	`	/	
		REC	ORD	
MODE	BACK	LIGHT	COPY	
				SCIA2277E

ECS00FA0

Without CONSULT-II

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

Name	Connector	Terminal	Condition	Voltage (Approx.)
Transmis- sion fluid pressure sensor B (Primary pressure sensor)	F104	41 - Ground	"N" position idle	0.7 - 3.5V



OK or NG

OK >> GO TO 5. NG >> GO TO 2.

CVT-142

2. CHECK SENSOR POWER AND SENSOR GROUND

- 1. Turn ignition switch ON. (Do not start engine.)
- 2. Check voltage between TCM connector terminals.

	ltem	Connector	Terminal	Data (Approx.)
TCM connector		F104	46 - 42	4.5 - 5.5V
OK or	NG			
OK	>> GO TO 4.			
NG	>> GO TO 3.			



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

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

Item	Connector	Terminal	Continuity
ТСМ	F104	42	Voc
CVT unit harness connector	F6	19	165
ТСМ	F104	46	Voc
CVT unit harness connector	F6	20	165

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



- 5. Reinstall any part removed.
- OK or NG

4.

OK >> Replace TCM. Refer to <u>CVT-8</u>, "Precautions for TCM and CVT Assembly Replacement" .

NG >> Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK TRANSMISSION FLUID PRESSURE SENSOR B (PRIMARY PRESSURE SENSOR) CIRCUIT

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

Item	Connector	Terminal	Continuity
ТСМ	F104	41	Voc
CVT unit harness connector	F6	25	165

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

OK or NG

OK >> GO TO 5.

NG >> Repair open circuit or short to ground or short to power in harness or connectors.



5. снеск отс

Perform "DTC Confirmation Procedure". Refer to <u>CVT-140, "DTC Confirmation Procedure"</u> .

OK or NG

- OK >> INSPECTION END
- NG >> GO TO 6.

6. снеск тсм

1. Check TCM input/output signal. Refer to CVT-50, "TCM Input/Output Signal Reference Values" .

2. If NG, re-check TCM pin terminals for damage or loose connection with harness connector.

OK or NG

OK >> Replace the transaxle assembly. Refer to <u>CVT-226, "Removal and Installation"</u>.

NG >> Repair or replace damaged parts.
DTC P0868 SECONDARY PRESSURE DOWN

CVT-145

DTC P0868 SECONDARY PRESSURE DOWN

Description

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

CONSULT-II Reference Value

emarks: Specification data are reference values.			
Item name	Condition	Display value (Approx.)	
SEC PRESS	"N" position idle	0.5 - 0.9 MPa	

On Board Diagnosis Logic

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

Possible Cause ECS00FA4 Harness or connectors E (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** ECS00EA5 Н **CAUTION:** Always drive vehicle at a safe speed. Be careful not to rev engine into the red zone on the tachometer. NOTE: If "DTC Confirmation Procedure" has been previously performed, always turn ignition switch OFF and wait at least 5 seconds before performing the next test. After the repair, perform the following procedure to confirm the malfunction is eliminated.

(I) WITH CONSULT-II

- 1. Turn ignition switch ON and select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-II.
- Make sure that output voltage of CVT fluid temperature sensor 2. is within the range below. FLUID TEMP SEN: 1.0 - 2.0V 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)
- Start engine and maintain the following conditions for at least 10 3. consecutive seconds. VEHICLE SPEED (accelerate slowly): $0 \rightarrow 50$ km/h (31 MPH) ACC PEDAL OPEN: 0.5/8 - 1.0/8 Selector lever: "D" position
- If DTC is detected, go to CVT-146, "Diagnostic Procedure".

SELECT SYSTEM		I.V.
IPDM E/R		
ВСМ		L
AUTO DRIVE POS		
AIR PRESSURE MONITOR		
TRANSMISSION		M
METER A/C AMP		
	SCIA4825E	

PFP:31941

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ECS00FA2

ECS00EA3

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Diagnostic Procedure

1. CHECK INPUT SIGNAL

With CONSULT-II

- 1. Start engine.
- Select "MAIN SIGNALS" in "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-II.
- 3. Start vehicle and read out the value of "SEC PRESS".

Item name	Condition	Display value (Approx.)
SEC PRESS	"N" position idle	0.5 - 0.9 MPa
OK or NG		

OK >> GO TO 5. NG >> GO TO 2.

2. CHECK LINE PRESSURE





3. DETECT MALFUNCTIONING ITEM

Check the following:

- Pressure control solenoid valve B (Secondary pressure solenoid valve). Refer to <u>CVT-124</u>, "Component <u>Inspection</u>".
- Pressure control solenoid valve A (Line pressure solenoid valve). Refer to <u>CVT-113</u>, "Component Inspection".

OK or NG

OK >> GO TO 4.

NG >> Repair or replace damaged parts.

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

Check transmission fluid pressure sensor A (secondary pressure sensor) system. Refer to <u>CVT-132, "DTC</u> <u>P0840 TRANSMISSION FLUID PRESSURE SENSOR A CIRCUIT (SEC PRESSURE SENSOR)"</u>.

OK or NG

OK >> GO TO 5.

NG >> Repair or replace damaged parts.

	DATA	ION I TOR		
NONITOR			NO DTC]
GEAR I	RATIO	2.	37	
ACC PE	EDAL OP	EN 0.	0/8	
VENG	ſRQ	2	17.6 Nm	
SEC PF	RESS	0.	000 MPa	1
PRI PR	ESS	0.	000 MPa	1
	Δ	7	7]
		REC	ORD	
MODE	BACK	LIGHT	COPY	
				SCIA2366E

CVT-146

DTC P0868 SECONDARY PRESSURE DOWN

5. DETECT MALFUNCTIONING ITEM	А	
 Check the following: Power supply and ground circuit for TCM. Refer to <u>CVT-149, "Wiring Diagram — CVT — POWER (LHD</u> 		
OK or NG		
OK >> GO TO 6.	CVT	
NG >> Repair or replace damaged parts.		
6. снеск ртс	D	
Perform "DTC Confirmation Procedure". Refer to <u>CVT-145, "DTC Confirmation Procedure"</u> .	—	
OK or NG	E	
OK >> INSPECTION END NG >> Replace the transaxle assembly. Refer to CVT-226. "Removal and Installation".		
	F	
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Description

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

NOTE:

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

On Board Diagnosis Logic

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

Possible Cause

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

DTC Confirmation Procedure

NOTE:

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

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

B WITH CONSULT-II

- 1. Turn ignition switch ON. (Do not start engine.)
- Turn ignition switch ON and select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-II.
- 3. Wait for at least 2 consecutive seconds.
- 4. If DTC is detected, go to CVT-152, "Diagnostic Procedure" .



ECS00FA8

ECS00FA9

ECS00EAA

PFP:31036



TCWB0143E

Terminal	Wire color	Item	Condition		Data (Approx.)
10	Y	Power supply	(CON)	_	Battery voltage
		Power supply	COFF	_	0V
10	v	Duuranak	(CON)	_	Battery voltage
13			COFF	_	0V
25	В	Ground		Always	0V
28	Y/R	Power supply (memory back-up)	Always Battery		Battery voltage
48	В	Ground	Always 0V		0V

TCM terminals data are reference values, measured between each terminal and ground.



Terminal	Wire color	Item		Condition	Data (Approx.)
10	10 V	Y Dumoundu	(Lor)	_	Battery voltage
10	I		OFF	_	0V
10	Υ Ροι	Power supply	CON	_	Battery voltage
13			Control of the second s	_	0V
25	В	Ground	Always		0V
28	Y/R	Power supply (memory back-up)	Always		Battery voltage
48	В	Ground	Always 0V		0V

Diagnostic Procedure 1. CHECK DTC

- 1. Turn ignition switch ON. (Do not start engine.)
- Select "SELF-DIAG RESULTS" mode for "TRANSMISSION" with CONSULT-II.
- 3. Erase self-diagnostic results. Refer to <u>CVT-60, "How to Erase</u> <u>Self-diagnostic Results"</u>.
- 4. Turn ignition switch OFF, and wait for 5 seconds or more.
- 5. Start engine.
- 6. Confirm self-diagnostic results again. Refer to <u>CVT-58, "SELF-</u> <u>DIAGNOSTIC RESULT MODE"</u>.
- Is the "P1701 TCM-POWER SUPPLY" displayed?
- YES >> GO TO 2.
- NO >> INSPECTION END

2. CHECK TCM POWER SOURCE, STEP 1

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

Name	Connector	Terminal	Condition	Voltage (Approx.)
Power supply (memory back-up)	F104	28 - Ground	Always	Battery voltage

OK or NG

OK >> GO TO 3. NG >> GO TO 4.



ECS00FAC



 Image: Calibratic data monitor

 Calibratic data

 Calibratic data

 Function test

TCM terminals data are reference values, measured between each terminal and ground.



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

Name	Connector	Terminal	Continuity
Ground	E104	25	Ves
	1104	48	163

OK or NG

OK >> GO TO 6.

NG >> Repair open circuit or short to ground or short to power in harness or connectors.



6. снеск отс

Check again. Refer to CVT-152, "Diagnostic Procedure" .

OK or NG

- OK >> INSPECTION END
- NG >> GO TO 7.

7. снеск тсм

1. Check TCM input/output signal. Refer to <u>CVT-50, "TCM Input/Output Signal Reference Values"</u>.

2. If NG, re-check TCM pin terminals for damage or loose connection with harness connector.

OK or NG

OK >> INSPECTION END

NG >> Repair or replace damaged parts.

DTC P1705 THROTTLE POSITION SENSOR

DTC P1705 THROTTLE POSITION SENSOR

Description

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

CONSULT-II Reference Value

Remarks: Specification data are reference values.

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

On Board Diagnosis Logic

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

Possible Cause

- ECM
- Harness or connectors (CAN communication line is open or shorted.)

DTC Confirmation Procedure

NOTE:

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

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

WITH CONSULT-II

- 1. Turn ignition switch ON. (Do not start engine.)
- 2. Select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-II.
- 3. Depress accelerator pedal fully and release it, then wait for 5 seconds.
- 4. If DTC is detected, go to CVT-156, "Diagnostic Procedure" .

SELECT SYSTEM		
IPDM E/R		J
ВСМ		
AUTO DRIVE POS		K
AIR PRESSURE MONITOR		
TRANSMISSION		
METER A/C AMP		L
	SCIA4825E	

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Diagnostic Procedure

ECS00FAI

1. CHECK CAN COMMUNICATION LINE

Perform the self-diagnosis check. Refer to <u>CVT-58, "SELF-DIAGNOSTIC RESULT MODE"</u>. Is any malfunction of the "U1000 CAN COMM CIRCUIT" indicated?

YES >> Check the CAN communication line. Refer to <u>CVT-65, "DTC U1000 CAN COMMUNICATION</u> LINE".

NO $>> \overline{\text{GO TO } 2}$.

2. CHECK INPUT SIGNAL

With CONSULT-II

- 1. Turn ignition switch ON. (Do not start engine.)
- 2. Select "ECU INPUT SIGNALS" in "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-II.
- 3. Read out the value of "ACC PEDAL OPEN".

Item name	Condition	Display value (Approx.)
ACC PEDAL OPEN	Release your foot from the accelerator pedal. ↓ Press the accelerator pedal all the way down.	0.0/8 ↓ 8/8

	DATA	ION I TOR		
NONITOR			NO DTC	
SEC H	SEC HYDR SEN		47 v	
PRI HY	DR SEN	0.4	47 v	
ATF TE	MP SEN	1.9	92 v	
VIGN S	EN	10).7 v	
ACC PE	EDAL OP	EN 0.	0/8	
	Δ	7	7	
			ORD	
MODE	BACK	LIGHT	COPY	
				SCIA2277E

OK or NG

OK >> GO TO 4.

NG >> GO TO 3.

3. CHECK DTC WITH ECM

With CONSULT-II

- 1. Turn ignition switch ON. (Do not start engine.)
- 2. Select "SELF-DIAG RESULTS" mode for "ENGINE" with CON-SULT-II. Refer to <u>EC-101, "SELF-DIAG RESULTS MODE"</u>.

OK or NG

- OK >> GO TO 4.
- NG >> Check the DTC Detected Item. Go to <u>EC-101, "SELF-</u> <u>DIAG RESULTS MODE"</u>.

SELECT SYSTEM	
ENGINE	
ABS	
AIR BAG	
ВСМ	
ALL MODE 4WD	
TRANSMISSION	
	SCIA2272E

4. снеск отс

Perform "DTC Confirmation Procedure". Refer to <u>CVT-155, "DTC Confirmation Procedure"</u>. OK or NG

OK >> INSPECTION END

NG >> Repair or replace damaged parts.

DTC P1722 ESTM VEHICLE SPEED SIGNAL

CVT-157

DTC P1722 ESTM VEHICLE SPEED SIGNAL

Description

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

CONSULT-II Reference Value

Remarks: Specification data are reference values.					
Item name	Condition	Display value			
ESTM VSP SIG		Approximately matches the speedometer reading			
VEHICLE SPEED		Approximately matches the speedometer reading.			

On Board Diagnosis Logic

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

Possible Cause

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

DTC Confirmation Procedure

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

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

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

(I) WITH CONSULT-II

- 1. Turn ignition switch ON. (Do not start engine.)
- 2. Select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-II.
- Start engine and maintain the following conditions for at least 5 consecutive seconds.
 ACCELE POS: 1/8 or less
 VHCL SPEED SE: 30 km/h (17 MPH) or more
- 4. If DTC is detected, go to CVT-158, "Diagnostic Procedure" .





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ECS00FAN

DTC P1722 ESTM VEHICLE SPEED SIGNAL

Diagnostic Procedure

ECS00FAO

1. CHECK CAN COMMUNICATION LINE

Perform the self-diagnosis check. Refer to <u>CVT-58, "SELF-DIAGNOSTIC RESULT MODE"</u>. Is any malfunction of the "U1000 CAN COMM CIRCUIT" indicated?

YES >> Check CAN communication line. Refer to <u>CVT-65, "DTC U1000 CAN COMMUNICATION LINE"</u>. NO >> GO TO 2.

2. CHECK ABS ACTUATOR AND ELECTRIC UNIT (CONTROL UNIT)

Perform ABS actuator and electric unit (control unit) self-diagnosis check. Refer to <u>BRC-33, "Self-Diagnosis"</u>. OK or NG

- OK >> GO TO 3.
- NG >> Repair or replace damaged parts.

3. CHECK INPUT SIGNAL

With CONSULT-II

- 1. Start engine.
- 2. Select "SELECTION FROM MENU" in "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-II.
- 3. Drive vehicle and read out the value of "VEHICLE SPEED" and "ESTM VSP SIG".

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

	DATA M	1		
MONITOR			O DTC	
VEHICI ESTM \	.E SPEE /SP SIG	ED 1 ki	m / h m / h	
		REC	7	
		ne0		
MODE	BACK	LIGHT	COPY	SCIA4510E

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

OK or NG

OK >> GO TO 5. NG >> GO TO 4.

4. снеск тсм

Check TCM input/output signal. Refer to CVT-50, "TCM Input/Output Signal Reference Values" .

OK or NG

OK >> GO TO 5.

NG >> Repair or replace damaged parts.

5. снеск отс

Perform "DTC Confirmation Procedure". Refer to CVT-157, "DTC Confirmation Procedure" .

OK or NG

OK >> INSPECTION END

NG >> GO TO 2.

DTC P1723 CVT SPEED SENSOR FUNCTION

DTC P1723 CVT SPEED SENSOR FUNCTION	PFP:31907	
Description	ECS00FAP	А
The vehicle speed sensor CVT [output speed sensor (secondary speed se idler gear parking pawl lock gear and generates a pulse signal. The pulse	ensor)] detects the revolution of the signal is sent to the TCM, which	В
The input speed sensor (primary speed sensor) detects the primary pulley nal to the TCM.	revolution speed and sends a sig-	CVT
On Board Diagnosis Logic	ECS00FAQ	
 This is not an OBD-II self-diagnostic item. Diagnostic trouble code "P1723 CVT SPD SEN/FNCTN" with CONSI great difference between the vehicle speed signal and the secondary s CAUTION: 	ULT-II is detected when there is a speed sensor signal.	D
One of the "P0720 VEH SPD SEN/CIR AT", the "P0715 INPUT SPD SE SPEED SIG" is displayed with the DTC at the same time.	EN/CIRC" or the "P0725 ENGINE	E
Possible Cause	ECS00FAR	
 Harness or connectors (Sensor circuit is open or shorted.) 		Г
Output speed sensor (Secondary speed sensor)		G
Input speed sensor (Primary speed sensor)		
Engine speed signal system DTC Confirmation Proceedure		Н
	ECS00FAS	
 Always drive vehicle at a safe speed. 		1
• Be careful not to rev engine into the red zone on the tachometer.		1
NOTE: If "DTC Confirmation Procedure" has been previously performed, alwa wait at least 5 seconds before performing the next test. After the repair, touch "ERASE" on "SELF-DIAG RESULTS" and then performed	ays turn ignition switch OFF and	J
firm the malfunction is eliminated.	5,	K
		IX.
 Turn ignition switch ON and select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-II. 	SELECT SYSTEM	
2. Start engine and maintain the following conditions for at least 5	IPDM E/R	L
consecutive seconds. VHCL SPEED SE: 10 km/h (6 MPH) or more		
THRTL POS SEN: More than 1.2V		Μ
Selector lever: "D" position ENG SPEED: 450 rpm or more	TRANSMISSION	
Driving location: Driving the vehicle uphill (increased	METER A/C AMP	
required for this test.	SCIA4825F	
3. If DTC is detected, go to <u>CVT-160, "Diagnostic Procedure"</u> .	CONMOLDE	

Diagnostic Procedure

ECS00FAT

1. CHECK STEP MOTOR FUNCTION

Perform the self-diagnosis check. Refer to <u>CVT-58</u>, "<u>SELF-DIAGNOSTIC RESULT MODE</u>". Is a malfunction in the step motor function indicated in the results?

YES >> Repair or replace damaged parts. (Check the step motor function. Refer to <u>CVT-173</u>, "<u>DTC P1778</u> <u>STEP MOTOR - FUNCTION</u>".)

NO >> GO TO 2.

2. CHECK OUTPUT SPEED SENSOR (SECONDARY SPEED SENSOR SYSTEM) AND INPUT SPEED SENSOR (PRIMARY SPEED SENSOR) SYSTEM

Check secondary speed sensor system and primary speed sensor system. Refer to <u>CVT-91, "DTC P0720</u> <u>VEHICLE SPEED SENSOR CVT (SECONDARY SPEED SENSOR)"</u>, <u>CVT-86, "DTC P0715 INPUT SPEED</u> <u>SENSOR CIRCUIT (PRI SPEED SENSOR)"</u>.

OK or NG

OK >> GO TO 3.

NG >> Repair or replace damaged parts.

3. CHECK ENGINE SPEED SIGNAL SYSTEM

Check engine speed signal system. Refer to CVT-97, "DTC P0725 ENGINE SPEED SIGNAL" .

OK or NG

- OK >> GO TO 4.
- NG >> Repair or replace damaged parts. Refer to <u>EC-606, "IGNITION SIGNAL"</u>.

4. DETECT MALFUNCTIONING ITEM

Check the following:

- Power supply and ground circuit for TCM. Refer to <u>CVT-148</u>, "<u>DTC P1701 TRANSMISSION CONTROL</u> <u>MODULE (POWER SUPPLY)</u>".
- The TCM pin terminals for damage or loose connection with harness connector.

OK or NG

- OK >> GO TO 5.
- NG >> Repair or replace damaged parts.

5. снеск отс

Perform "DTC Confirmation Procedure". Refer to <u>CVT-159, "DTC Confirmation Procedure"</u>.

OK or NG

OK >> INSPECTION END

NG >> Replace TCM or transaxle assembly. Refer to <u>CVT-8</u>, "Precautions for TCM and CVT Assembly <u>Replacement</u>", <u>CVT-226</u>, "Removal and Installation".

DTC P1726 ELECTRIC THROTTLE CONTROL SYSTEM PFP:23710 А Description ECSODEALI Electric throttle control actuator consists of throttle control motor, accelerator pedal position sensor, throttle position sensor etc. The actuator sends a signal to the ECM, and ECM sends the signal to TCM with CAN В communication. On Board Diagnosis Logic ECS00FAV CVT This is not an OBD-II self-diagnostic item. Diagnostic trouble code "P1726 ELEC TH CONTROL" with CONSULT-II is detected when the electronically controlled throttle for ECM is malfunctioning. D **Possible Cause** ECSONEAW Harness or connectors F (Sensor circuit is open or shorted.) **DTC Confirmation Procedure** ECS00FAX NOTE: F If "DTC Confirmation Procedure" has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test. After the repair, touch "ERASE" on "SELF-DIAG RESULTS" and then perform the following procedure to confirm the malfunction is eliminated. (P) WITH CONSULT-II Turn ignition switch ON. (Do not start engine.) Н SELECT SYSTEM Select "DATA MONITOR" mode for "TRANSMISSION" with IPDM E/R CONSULT-II. BCM Start engine and let it idle for 5 second. AUTO DRIVE POS If DTC is detected, go to CVT-162, "Diagnostic Procedure". AIR PRESSURE MONITOR TRANSMISSION METER A/C AMP

1.

2.

3.

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Diagnostic Procedure

1. CHECK DTC WITH ECM

With CONSULT-II

- 1. Turn ignition switch ON. (Do not start engine.)
- 2. Select "SELF-DIAG RESULTS" mode for "ENGINE" with CON-SULT-II. Refer to <u>EC-101, "SELF-DIAG RESULTS MODE"</u>.

OK or NG

OK >> GO TO 2.

- NG >> Check the DTC Detected Item. Refer to <u>EC-101, "SELF-</u> <u>DIAG RESULTS MODE"</u>.
 - If CAN communication line is detected, go to <u>CVT-65</u>, <u>"DTC U1000 CAN COMMUNICATION LINE"</u>.

SELECT SYSTEM	
ENGINE	
ABS	
AIR BAG	
ALL MODE AWD/4WD	
IPDM E/R	
BCM	
	SCIA4823E

2. снеск отс

Perform "DTC Confirmation Procedure". Refer to <u>CVT-161, "DTC Confirmation Procedure"</u>. OK or NG

OK >> INSPECTION END

NG >> GO TO 3.

3. DETECT MALFUNCTIONING ITEM

Check the following:

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

OK or NG

- OK >> Replace TCM. Refer to <u>CVT-8</u>, "Precautions for TCM and CVT Assembly Replacement" .
- NG >> Repair or replace damaged parts.

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DTC P1740 LOCK-UP SELECT SOLENOID VALVE CIRCUIT

Description

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

CONSULT-II Reference Value

				CVI
Item	name	Condition	Display value	
		Selector lever in "P", "N" positions	ON	_
LUS	EL SOL OUT	Wait at least for 5 seconds with the selector lever in "R", "D" positions	OFF	D
On	Board Diagnosis	Logic	ECS00FB1	Е
• 7	his is an OBD-II self-d	iagnostic item.		
• [Diagnostic trouble code	e "P1740 LU-SLCT SOL/CIRC" with CON	SULT-II is detected under the following	
C	conditions.			F
- \	When TCM compares to	arget value with monitor value and detects	an irregularity.	
Pos	sible Cause		ECS00FB2	C
• L	ock-up select solenoid	valve		G
• +	Harness or connectors			
(Solenoid circuit is oper	n or shorted.)		Н
DTC	Confirmation P	rocedure	ECS00FB3	
CAU	TION:			1
Alwa	ys drive vehicle at a s	safe speed.		1
	E: TC Confirmation Proc	edure" has been previously performed	always turn ignition switch OFF and	
wait	at least 10 seconds b	efore performing the next test.	always turn ignition switch of F and	J
After	the repair, touch "ERA	SE" on "SELF-DIAG RESULTS" and then	perform the following procedure to con-	
tirm t	ne maifunction is elimit	nated.		IZ.
(B) W	ITH CONSULT-II			I.
1.		. (Do not start engine.)	SELECT SYSTEM	
Z. č	CONSULT-II	JR mode for TRAINSMISSION with	IPDM E/R	L
3. 5	Start engine and mainta	ain the following conditions for at least 5	ВСМ	
C	consecutive seconds.	<u> </u>	AUTO DRIVE POS	
5	SELECTOR LEVER: "I	D" position and "N" position	AIR PRESSURE MONITOR	M
(f DTC is detected to t	o CVT-165 "Diagnostic Procedure"	TRANSMISSION	
⊣ . I			METER A/C AMP	

WITH GST

Follow the procedure "WITH CONSULT-II".

Wiring Diagram — CVT — L/USSV ECS00FB4 CVT-L/USSV-01 ■ : DETECTABLE LINE FOR DTC - : NON-DETECTABLE LINE FOR DTC L : LHD MODELS R: RHD MODELS TCM (TRANSMISSION CONTROL MODULE) LOCK-UP SELECT (F103) SOL 13 LOCK-UP SELECT SOLENOID VALVE CVT UNIT 00 (F6) ÷



TCWB0145E

DTC P1740 LOCK-UP SELECT SOLENOID VALVE CIRCUIT

Terminal	Wire color	Item			Condition		Data (Approx.)	
	L A/*1		A	Selector lever in "P", "N" po		Selector lever in "P", "N" positions		Battery voltage
4	L/Y · L ^{*2}	solenoid valve		N Wait at le lever in "	east for 5 secon R", "D" position	ds with the selector s	0V	
¹ : LHD mo ² : RHD mo	dels. dels.							
Diagno 1. сне	Stic Pro	CEDURE					ECS00FE	
With (_11						
1. Turn 2. Select for "T	ignition sw ct "SELEC RANSMIS	vitch ON. TION FROM N SION" with CO	1enu" in ' DNSULT-II	"DATA MONI I. T"	TOR" mode	MONITOR LUSEL SC	<u>NATA NUM TOR</u> NO DTC DL OUT ON	
3. Read	out the va	alue of "LUSEL	. SOL 00	Γ.				
Item nam	סו	Condition		Display value				
Item nan	ne	Condition Selector lever in positions	"P", "N"	Display value				
Item nan	OL OUT	Condition Selector lever in positions Wait at least for with the selector "R", "D" position	"P", "N" 5 seconds lever in s	Display value ON OFF		MODE	RECORD BACK LIGHT COPY SCIA4512E	
LUSEL S	OL OUT	Condition Selector lever in positions Wait at least for with the selector "R", "D" position	"P", "N" 5 seconds lever in s	Display value ON OFF		MODE	RECORD BACK LIGHT COPY SCIA4512E	
Item nan LUSEL S Witho 1. Turn 2. Chec	oL OUT ut CONSI ignition sw k voltage	Condition Selector lever in positions Wait at least for with the selector "R", "D" position JLT-II vitch ON. between TCM	"P", "N" 5 seconds lever in s	Display value ON OFF	d ground.	MODE	RECORD BACK LIGHT COPY SCIA4512E	
Item nan LUSEL S Witho 1. Turn 2. Chec Name	oL OUT ut CONSU ignition sw k voltage	Condition Selector lever in positions Wait at least for with the selector "R", "D" position JLT-II vitch ON. between TCM or Terminal	"P", "N" 5 seconds lever in s connector Co	Display value ON OFF terminal and	d ground. Voltage (Approx.)	MODE	RECORD BACK LIGHT COPY SCIA4512E	
Item nam LUSEL S Witho 1. Turn 2. Chec Name Lock-up	oL OUT ut CONSU ignition sw k voltage	Condition Selector lever in positions Wait at least for with the selector "R", "D" position JLT-II vitch ON. between TCM or Terminal	"P", "N" 5 seconds lever in s connector Co Selector le positions	Display value ON OFF terminal and ondition ver in "P", "N"	d ground. Voltage (Approx.) Battery voltage	MODE	RECORD BACK LIGHT COPY SCIA4512E	

- 5. Check if there is continuity between connector terminal and ground.
- OK or NG
 - OK >> GO TO 5. NG >> GO TO 2.



$\overline{2.}$ CHECK LOCK-UP SELECT SOLENOID VALVE CIRCUIT

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

Solenoid valve	Connector	Terminal	Resistance (Approx.)
Lock-up select solenoid valve	F103	4 - Ground	6 - 19 Ω

<u>OK or NG</u>

OK >> GO TO 5. NG >> GO TO 3.



3. CHECK VALVE RESISTANCE

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

Solenoid valve	Connector	Terminal	Resistance (Approx.)
Lock-up select solenoid valve	F6	13 - Ground	6 - 19 Ω

OK or NG

OK >> GO TO 4.

NG >> Replace the transaxle assembly. Refer to <u>CVT-226</u>, <u>"Removal and Installation"</u>.

CONVECT CVT unit harness connector (Unit side)

4. CHECK POWER SOURCE CIRCUIT

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

Item	Connector	Terminal	Continuity
ТСМ	F103	4	Vos
CVT unit harness connector	F6	13	165

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

OK or NG

OK >> GO TO 5.

NG >> Repair open circuit or short to ground or short to power in harness or connectors.

5. снеск отс

Perform "DTC Confirmation Procedure". Refer to <u>CVT-163, "DTC Confirmation Procedure"</u>.

OK or NG

- OK >> INSPECTION END
- NG >> GO TO 6.





DTC P1740 LOCK-UP SELECT SOLENOID VALVE CIRCUIT



Κ

L

Μ

DTC P1745 LINE PRESSURE CONTROL

DTC P1745 LINE PRESSURE CONTROL

Description

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

On Board Diagnosis Logic

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

Possible Cause

тсм

DTC Confirmation Procedure

CAUTION:

- Always drive vehicle at a safe speed.
- Be careful not to rev engine into the red zone on the tachometer.

NOTE:

If "DTC Confirmation Procedure" has been previously performed, always turn ignition switch OFF and wait at least 5 seconds before performing the next test.

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

B WITH CONSULT-II

- 1. Turn ignition switch ON and select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-II.
- Make sure that output voltage of CVT fluid temperature sensor is within the range below.
 FLUID TEMP SEN: 1.0 - 2.0V 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)
- 3. If DTC is detected, go to CVT-168, "Diagnostic Procedure" .



Diagnostic Procedure

1. СНЕСК DTC

- 1. Turn ignition switch ON. (Do not start engine.)
- 2. Select "SELF-DIAG RESULTS" mode for "TRANSMISSION" with CONSULT-II.
- 3. Erase self-diagnostic results. Refer to <u>CVT-60, "How to Erase</u> <u>Self-diagnostic Results"</u>.
- 4. Turn ignition switch OFF, and wait for 5 seconds or more.
- 5. Start engine.
- 6. Confirm self-diagnostic results again. Refer to <u>CVT-58, "SELF-</u> <u>DIAGNOSTIC RESULT MODE"</u>.

Is the "P1745 L/PRESS CONTROL" displayed?

- YES >> Replace TCM. Refer to <u>CVT-8</u>, "Precautions for TCM and <u>CVT Assembly Replacement"</u>.
- NO >> INSPECTION END



PFP:31036

ECS00FB7

ECS00FB8

ECS00FB9

ECS00FBA

ECS00FBB

CVT-168

DTC P1777 STEP MOTOR - CIRCUIT

DTC P1777 STEP MOTO	DR - CIRCUIT	PFP:31020
Description		A ECS00FBC
• The step motor changes the As a result, the flow of line p	e step with turning 4 coils ON/OFF acco pressure to primary pulley is changed a	ording to the signal from TCM. and pulley ratio is controlled.
CONSULT-II Reference		ECS00FBD
Item name	Condition	Display value (Approx.)
STM STEP		-20 step - 190 step
SMCOIL A		Changes ON⇔OFF.
SMCOIL B	During driving	Changes ON⇔OFF.
SMCOIL C		Changes ON⇔OFF.
SMCOIL D		Changes ON⇔OFF.
On Board Diagnosis Lo	qic	ECS00FBE
This is an OBD-II self-diagn	ostic item	F
 Diagnostic trouble code "P' conditions. 	1777 STEP MOTR CIRC" with CONS	ULT-II is detected under the following
- When operating step motor corresponds to it.	ON and OFF, there is no proper chang	ge in the voltage of TCM terminal which
Possible Cause		ECS00FBF
Step motor		
Harness or connectors (Step motor circuit is open o	r shorted.)	1
DTC Confirmation Proc	edure	ECS00FBG
CAUTION: Always drive vehicle at a safe	speed.	
NOTE: If "DTC Confirmation Procedu wait at least 5 seconds before After the repair, touch "ERASE" firm the malfunction is eliminated	re" has been previously performed, performing the next test. on "SELF-DIAG RESULTS" and then p d.	always turn ignition switch OFF and
🕑 WITH CONSULT-II		L
1. Turn ignition switch ON and "TRANSMISSION" with COI	I select "DATA MONITOR" mode for	SELECT SYSTEM
2. Drive vehicle for at least 5 c	onsecutive seconds.	IPDM E/R
3. If DTC is detected, go to \underline{CV}	T-171, "Diagnostic Procedure".	ВСМ
		AUTO DRIVE POS
		AIR PRESSURE MONITOR
		TRANSMISSION
		METER A/C AMP
		SCIA4825E
🗃 WITH GST		
Follow the procedure "WITH CO	NSULT-II".	

Wiring Diagram — CVT — STM

ECS00FBH

CVT-STM-01

DETECTABLE LINE FOR DTC NON-DETECTABLE LINE FOR DTC





TCWA0256E

DTC P1777 STEP MOTOR - CIRCUIT

	M termi	inals data a	are reference	values.				
Т	erminal	Wire color	Item	Condition			Data (Approx.)	
	11	G/R	Step motor A	Within 2 see	conds after ign	ition switch ON,	the time measure-	30.0 msec
	12	O/B	Step motor B	of CONSUL	ing the pulse w T-II *1	vidth measureme	ent function (Hi level)	10.0 msec
	20	R	Step motor C	CAUTION:	_, ,, ,			30.0 msec
	21	R/G	Step motor D	Connect th nosis conn *1: A circuit	ne diagnosis c nector. tester cannot	data link cable t o	o the vehicle diag- his item.	10.0 msec
Dia 1.	agnos CHEC	Stic Proc	Cedure Signal					ECSooFB
0	With C	ONSULT-I						
1.	Start e	engine.						DATA NONITOR
2.	Select	T "SELECT	ION FROM N	ופאט" in "I£NU" in "I וובד וו ופואר	data MON	IIOR" mode	KONITOR	NO DTC
3	Start v	vehicle and	I read out the	value of '	STM STEF	" "SMCOII	STM STEP SMCOIL D	4step OFF
0.	A", "SI	MCOIL B",	"SMCOIL C"	, and "SMC	COIL D".	, OWOOL	SMCOIL C	ON
l.t.c	mnome	,	Condition		Dioplasses	(Approx)	SMCOIL B	ON
110		•	Condition		20 ctop 4		SMCOIL A	
51				-20 step - 190 step				
51						MODE BA	CK LIGHT COPY	
51						SCIA4516E		
					Changes O			
	OF ING							
	<u> </u>	$\sim COTO 4$						
0 0 N	K > G >	> GO TO 4 > GO TO 2	· .)					
0 N N	K > G > CHEC	> GO TO 4 > GO TO 2 :K STEP M		UIT				
0 N 2 .	K > G > CHEC	> GO TO 4 > GO TO 2 :K STEP M gnition swit	OTOR CIRC	UIT				
0 N 2. 1. 2.	G > CHEC Turn iq Discor	> GO TO 4 > GO TO 2 :K STEP M gnition swit	OTOR CIRC ch OFF. unit connecto	UIT	1 connector.			
0 N 2. 1. 2. 3.	K > G > CHEC Turn iq Discor Check unit ha	> GO TO 4 > GO TO 2 CK STEP M gnition swite nnect CVT < continuity arness continuity	CTOR CIRC ch OFF. unit connector between TC nector termin	UIT or and TCM CM connect als.	I connector. ctor termina	Is and CVT		CVT unit harness connector (Vehicle side)
0 N 2. 1. 2. 3.	K > G > CHEC Turn iç Discor Check unit ha	> GO TO 4 > GO TO 2 :K STEP M gnition swit nnect CVT c continuity arness con	Ch OFF. unit connector between TC nector termin	UIT or and TCM CM connec als. ector	I connector. ctor termina Terminal	Is and CVT		CVT unit harness connector (Vehicle side)
0 N 2. 1. 2. 3.	K > G > CHEC Turn iq Discor Check unit ha	> GO TO 4 > GO TO 2 CK STEP M gnition swith nnect CVT Continuity arness con Item	Ch OFF. unit connector between TC nector termin	UIT or and TCM CM connect als. ector	A connector. ctor termina Terminal 11	Is and CVT	TCM connector (Vehicle side)	CVT unit harness connector (Vehicle side)
0 N 2. 1. 2. 3. TC CV	K > G > CHEC Turn iç Discor Check unit ha	> GO TO 4 > GO TO 2 > GO TO 2 Control of the second sec	Ch OFF. unit connector between TC nector termin Conn F1 tor F	UIT or and TCM CM connect als. ector 03 6	A connector. ctor termina Terminal 11 6	Is and CVT Continuity Yes	TCM connector (Vehicle side)	CVT unit harness connector (Vehicle side)
0 N 2. 1. 2. 3. TC TC	K > G > CHEC Turn iq Discor Check unit ha M T unit ha	> GO TO 4 > GO TO 2 CK STEP M gnition swith nnect CVT Continuity arness continuity Item Item	Ch OFF. unit connector between TC nector termin Conn f1 tor F1	UIT or and TCM CM connect als. ector 03 6 03	A connector. ctor termina Terminal 11 6 12	Is and CVT	TCM connector (Vehicle side)	CVT unit harness connector (Vehicle side) 6, 7, 8, 9
0 N 0 N 2. 1. 2. 3. TC CV TC CV	G > G > CHEC Turn iç Discor Check unit ha M T unit ha M T unit ha	> GO TO 4 > GO TO 2 > GO TO 2 Continuity Continuity	otor CIRC ch OFF. unit connector between TC nector termin Conn tor F1 tor F1 tor F1	UIT or and TCM CM connect als. ector 03 6 03 6	A connector. ctor termina Terminal 11 6 12 7	Is and CVT Continuity Yes Yes	TCM connector (Vehicle side)	CVT unit harness connector (Vehicle side) $6,7,8,9$ $6,7,8,9$
0 N 2. 1. 2. 3. TC CV TC CV TC	G > G > CHEC Turn iç Discor Check unit ha M T unit ha M T unit ha	> GO TO 4 > GO TO 2 > GO TO 2 CK STEP M gnition swith nnect CVT Continuity arness continuity arness connect Item Interss connect Interss connect	Connector termin	UIT or and TCM CM connect als. ector 03 6 03 6 03 03	A connector. ctor termina Terminal 11 6 12 7 20	Is and CVT Continuity Yes Yes	TCM connector (Vehicle side)	CVT unit harness connector (Vehicle side) 6, 7, 8, 9 6, 7, 8, 9
0 N 2. 1. 2. 3. TC CV TC CV TC CV	G > G > CHEC Turn iç Discor Check unit ha M T unit ha M T unit ha M	> GO TO 4 > GO TO 2 > GO TO 2 Continuity </td <td>otor CIRC ch OFF. unit connector between TC nector termin Conn tor F1 tor F1 tor F1 tor F1</td> <td>UIT or and TCM CM connect als. ector 03 6 03 6 03 6 03 6</td> <td>A connector. ctor terminal Terminal 11 6 12 7 20 8</td> <td>Is and CVT Continuity Yes Yes Yes</td> <td>TCM connector (Vehicle side)</td> <td>CVT unit harness connector (Vehicle side) 6,7,8,9 6,7,8,9 SCIA4695E</td>	otor CIRC ch OFF. unit connector between TC nector termin Conn tor F1 tor F1 tor F1 tor F1	UIT or and TCM CM connect als. ector 03 6 03 6 03 6 03 6	A connector. ctor terminal Terminal 11 6 12 7 20 8	Is and CVT Continuity Yes Yes Yes	TCM connector (Vehicle side)	CVT unit harness connector (Vehicle side) 6,7,8,9 6,7,8,9 SCIA4695E
OK OK ON 0 1. 2. 3. TC CV TC CV TC CV TC	G > G > CHEC Turn iç Discor Check unit ha M T unit ha M T unit ha M T unit ha M	> GO TO 4 > GO TO 2 > GO TO 2 CK STEP M gnition swith nnect CVT (continuity) arness continuity arness connect Item Inness connect Irness connect Irness connect	Connector termin tor F1 tor F1	UIT or and TCM CM connect als. ector 03 6 03 6 03 6 03 6 03	A connector. ctor terminal 11 6 12 7 20 8 21	Is and CVT Continuity Yes Yes Yes	TCM connector (Vehicle side)	CVT unit harness connector (Vehicle side) 6, 7, 8, 9 6, 7, 8, 9 SCIA4695E

6. Reinstall any part removed.

OK or NG

OK >> GO TO 3.

NG >> Repair open circuit or short to ground or short to power in harness or connectors.

CVT-171

3. CHECK STEP MOTOR

Check step motor Refer to CVT-172, "Component Inspection" .

OK or NG

OK >> GO TO 4.

NG >> Repair or replace damaged parts.

4. снеск отс

Perform "DTC Confirmation Procedure". Refer to CVT-169, "DTC Confirmation Procedure" .

OK or NG

OK >> INSPECTION END

NG >> GO TO 5.

5. снеск тсм

- 1. Check TCM input/output signal. Refer to CVT-50, "TCM Input/Output Signal Reference Values" .
- 2. If NG, re-check TCM pin terminals for damage or loose connection with harness connector.

OK or NG

OK >> INSPECTION END

NG >> Repair or replace damaged parts.

Component Inspection STEP MOTOR

1. Turn ignition switch OFF.

- 2. Disconnect CVT unit harness connector.
- Check resistance between CVT unit harness connector terminals and ground.

Control valve	Connector	Terminal	Resistance (Approx.)	
Step motor	F6	6 - 7	30Ω	
		8 - 9		
		6 - Ground		
		7 - Ground	150	
		8 - Ground	1322	
		9 - Ground		



4. If NG, replace the transaxle assembly. Refer to CVT-226, "Removal and Installation" .

ECS00FBJ

DTC P1778 STEP MOTOR - FUNCTION

Г

SCIA4825E

DTC P1778 STEP MC	TOR - FUNCTION	PFP:31947
Description		A ECS00FBK
 The step motor's 4 aspe As a result, the flow of li This diagnosis item is do This diagnosis item is o operate normally. 	ects of ON/OFF change according to the s ne pressure to primary pulley is changed etected when electrical system is OK, but detected when the state of the changing	ignal from TCM. and pulley ratio is controlled.
CONSULT-II Referen	ce Value	ECS00FBL
Remarks: Specification data are re	ference values.	_
Item name	Condition	Display value (Approx.)
STM STEP		-20 step - 190 step
GEAR RATIO	During anving	2.37 - 0.43
On Board Diagnosis	Logic	ECS00FBM
 This is an OBD-II self-di Diagnostic trouble code ditions. When not changing the 	agnostic item. "P1778 STEP MOTR/FNC" with CONSUL pulley ratio according to the instruction of	T-II is detected under the following con-
Possible Cause		ECS00FBN
Step motor		
DTC Confirmation Pr	ocedure	ECS00FBO
 CAUTION: Always drive vehicle a Be careful not to rev e Before starting "DTC 	t a safe speed. ngine into the red zone on the tachome Confirmation Procedure", confirm "Hi"	eter. " or "Mid" or "Low" fixation by "PRI
• If hi-geared fixation oc NOTE: If "DTC Confirmation Proc wait at least 5 seconds be After the repair, touch "ERAS firm the malfunction is elimin	edure" has been previously performed fore performing the next test. SE" on "SELF-DIAG RESULTS" and then hated.	<u>cedure"</u> . , always turn ignition switch OFF and perform the following procedure to con-
(P) WITH CONSULT-II		_
 Turn ignition switch ON "TRANSMISSION" with Make sure that output v is within the range belov FLUID TEMP SEN: 1.0 If out of range, drive (warm up the fluid) or 	and select "DATA MONITOR" mode for CONSULT-II. voltage of CVT fluid temperature sensor v. - 2.0V the vehicle to decrease the voltage stop engine to increase the voltage	SELECT SYSTEM IPDM E/R BCM AUTO DRIVE POS AIR PRESSURE MONITOR
(cool down the fluid)		TRANSMISSION METER A/C AMP

DTC P1778 STEP MOTOR - FUNCTION

- 3. Select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-II.
- Start engine and maintain the following conditions for at least 30 consecutive seconds. TEST START FROM 0 km/h (0 MPH) CONSTANT ACCELERATION: Keep 30 sec or more VEHICLE SPEED: 10 km/h (6 MPH) or more ACC PEDAL OPEN: More than 1/8 Selector lever: "D" position ENG SPEED: 450 rpm or more
- 5. If DTC is detected, go to CVT-174, "Diagnostic Procedure".

WITH GST

Follow the procedure "WITH CONSULT-II".

Diagnostic Procedure

1. CHECK STEP MOTOR

With CONSULT-II

It is monitoring whether "GEAR RATIO: 2.37 - 0.43" changes similarly to "STM STEP: -20 - 190" by "DATA MONITOR" mode. Refer to <u>CVT-61, "DATA MONITOR MODE"</u>.

Without CONSULT-II

Inspect the engine speed (rise and descend), vehicle speed, throttle opening angle, and check shift change. Refer to <u>CVT-232, "Vehicle Speed at Which Gear Shifting Occurs"</u>.

OK or NG

OK >> INSPECTION END

NG >> Replace the transaxle assembly. Refer to <u>CVT-226, "Removal and Installation"</u>.

 SELECT DIAG MODE

 WORK SUPPORT

 SELF-DIAG RESULTS

 DATA MONITOR

 CAN DIAG SUPPORT MNTR

 CALIB DATA

 FUNCTION TEST

ECS00FBP

CVT INDICATOR CIRCUIT

CVT INDICATOR CIRCUIT

Description

TCM sends the switch signals to unified meter and A/C amp via CAN communication line. Then manual mode switch position is indicated on the CVT indicator.

CONSULT-II Reference Value

Item name	Condition	Display value
M GEAR POS	During driving	1, 2, 3, 4, 5, 6

Diagnostic Procedure

1. CHECK INPUT SIGNAL

With CONSULT-II

- 1. Start engine.
- 2. Select "MAIN SIGNALS" in "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-II and read out the value of "M GEAR POS".
- 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 select lever is shifted to the "+ (up)" or "- (down)" side (1st ⇔ 6th gear).

OK or NG

OK >> INSPECTION END

NG >> Check the following.

CVT INDICATOR SYMPTOM CHART

Items	Presumed location of trouble	
The actual gear position does not change, or shifting into the manual mode is not possible (no gear shifting in the manual mode possible). The CVT position indicator is not indicated.	Manual mode switch Refer to <u>CVT-125, "DTC P0826 MANUAL MODE SWITCH CIR-</u> <u>CUIT"</u> . CVT main system (Fail-safe function actuated) • Refer to <u>CVT-58, "SELF-DIAGNOSTIC RESULT MODE"</u> .	l J
The actual gear position changes, but the CVT position indicator is not indicated.	 Perform the self-diagnosis function. Refer to <u>CVT-58</u>, "SELF-DIAGNOSTIC RESULT MODE". 	K
The actual gear position and the indication on the CVT position indicator do not coincide.	 Perform the self-diagnosis function. Refer to <u>CVT-58</u>, "SELF-DIAGNOSTIC RESULT MODE". 	
Only a specific position or positions is/are not indicated on the CVT position indicator.	Check the meter control unit. Refer to <u>DI-4, "COMBINATION METERS"</u> .	L

PFP:24810

ECS00FBW

ECS00FBX

ECS00FBV

В

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CVT

D

F

F

G

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TROUBLE DIAGNOSIS FOR SYMPTOMS PFP:00007 Wiring Diagram — CVT — NONDTC (LHD Models) ECS00FBY CVT-NONDTC-01 IGNITION SWITCH ON OR START BATTERY REFER TO PG-POWER. FUSE BLOCK Þ Ċ Ċ Q 10A 12 10A 21 10A 10A (J/B) 14 19 (M1), (M2)Ģ ¢ Ģ 8A 4B 5A 2A v/R V/R \cap C ■ : DETECTABLE LINE FOR DTC • : NON-DETECTABLE LINE FOR DTC ► Y/R -NEXT PAGE TO LAN-CAN Y/R 0 0 Ģ P 14 16 5 8 6 1 BACK-UP LAMP RELAY 0 00 DATA LINK CONNECTOR ol (M21) (M24) 3 2 4 5 SP G/W G/W 🔶 TO LT-BACK/L R В (M82) [18] SB (F102) В B Ī SB (M14) (M78) 8 REV LAMP TCM (TRANSMISSION CONTROL MODULE) RLY (F103) REFER TO THE FOLLOWING. M1, M2 -FUSE BLOCK-16 15 14 13 12 11 10 9 1 2 3 4 5 📻 6 7 8 9 10 (M21) (M24) 5 (F102) JUNCTION BOX (J/B) 11 12 13 14 15 16 17 18 87654321 W L 3 4 5 6 789 1 10 (F103) 12 13 14 15 16 17 18 11 19 20 ۱۸/

CVT-176

TROUBLE DIAGNOSIS FOR SYMPTOMS



TCWB0147E

CVT-NONDTC-03

: DETECTABLE LINE FOR DTC
 : NON-DETECTABLE LINE FOR DTC





TCWA0258E

TROUBLE DIAGNOSIS FOR SYMPTOMS

Terminal	Wire color	Item		Condition	Data (Approx.)
5	L	CAN H	-		-
6	Р	CAN L		-	-
		Rook up lomp	A	Selector lever in "R" position.	0V
8	SB	relay	(Lon)	Selector lever in other positions.	Battery voltage
13	G/W	ROM assembly		—	_
14	L/R	ROM assembly			_
15	BR/R	ROM assembly			_
42	W/R	Sensor ground	Always		0V
46	1/0	Songer power	CON	_	4.5 - 5.5V
46	L/O	Sensor power	COFF	_	0V

Н

J

Κ

L

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TROUBLE DIAGNOSIS FOR SYMPTOMS

Wiring Diagram — CVT — NONDTC (RHD Models) ECS00G4I CVT-NONDTC-04 IGNITION SWITCH ON OR START BATTERY FUSE BLOCK REFER TO PG-POWER. Q Q م Q 10A 12 10A 10A 10A (J/B) 14 21 19 (M1), (M2) • 5A 2A 8A 4B Y/R Т Y/R 0 G ■ : DETECTABLE LINE FOR DTC - : NON-DETECTABLE LINE FOR DTC DATA LINE → Y/R -NEXT PAGE TO LAN-CAN Y/R Ρ G L 16 14 5 8 6 BACK-UP LAMP ЬI <u>____</u> DATA LINK CONNECTOR RELAY γl (M21) (M24) 3 SB 4 G/W 5 Т ∎ B 🗕 G/W 🔶 TO LT-BACK/L в (M82) 8 SB (F102) ₿ Ē B SB (M78) (M14) 8 REV тсм LAMP (TRANSMISSION CONTROL MODULE) (F103) REFER TO THE FOLLOWING. 3 5 1 🗙 2 (M1), (M2) -FUSE BLOCK-16 15 14 13 12 11 10 9 1230 4567 (M82) W (M21) (M24) JUNCTION BOX (J/B) 8 9 10 11 12 13 14 15 16 8 7 6 5 4 3 2 1 W L 3 4 5 6 8 9 (F103) W 10 13 14 16 17 18 19 20

TCWB0148E
TROUBLE DIAGNOSIS FOR SYMPTOMS



TCWB0149E

CVT-NONDTC-06

: DETECTABLE LINE FOR DTC
 : NON-DETECTABLE LINE FOR DTC





TCWB0150E

CVT-182

TROUBLE DIAGNOSIS FOR SYMPTOMS

Terminal	Wire color	Item		Condition Data (Approx.)		
5	L	CAN H				
6	Р	CAN L		-	-	
		Rook un lomp	A	Selector lever in "R" position.	0V	
8	SB	relay	(LON)	Selector lever in other positions.	Battery voltage	
13	G/W	ROM assembly			-	
14	L/R	ROM assembly			-	
15	BR/R	ROM assembly		-	-	
42	W/R	Sensor ground		Always	0V	
46	1/0	Songer power	CON	_	4.5 - 5.5V	
40	LU	Sensor power	COFF	_	0V	

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CVT Indicator Lamp Does Not Come On SYMPTOM:

CVT indicator lamp does not come on for about 2 seconds when turning ignition switch to ON.

DIAGNOSTIC PROCEDURE

1. CHECK CAN COMMUNICATION LINE

Perform the self-diagnosis check. Refer to <u>CVT-58, "SELF-DIAGNOSTIC RESULT MODE"</u>. Is any malfunction of the "U1000 CAN COMM CIRCUIT" indicated in the results?

YES >> Check CAN communication line. Refer to <u>CVT-65, "DTC U1000 CAN COMMUNICATION LINE"</u>. NO >> GO TO 2.

2. CHECK TCM POWER SOURCE

- 1. Turn ignition switch ON.
- Check voltage between TCM connector terminals and ground. Refer to <u>CVT-149</u>, "Wiring Diagram — <u>CVT</u> — <u>POWER (LHD</u> <u>Models)</u>", <u>CVT-151</u>, "Wiring Diagram — <u>CVT</u> — <u>POWER (RHD</u> <u>Models)</u>".

Name	Connec- tor	Terminal	Voltage (Approx.)
Power supply	F103	10	Battery voltage
Fower suppry		19	Battery voltage



OK or NG

OK >> GO TO 4.

NG >> GO TO 3.

3. DETECT MALFUNCTIONING ITEM

Check the following.

- Harness for short or open between ignition switch and TCM connector terminal 10, 19 Refer to <u>CVT-149</u>, "Wiring <u>Diagram</u> — <u>CVT</u> — <u>POWER</u> (<u>LHD Models</u>)", <u>CVT-151</u>, "Wiring <u>Diagram</u> — <u>CVT</u> — <u>POWER</u> (<u>RHD Models</u>)".
- 10A fuse (No.83, located in the IPDM E/R). Refer to <u>CVT-149, "Wiring Diagram CVT POWER (LHD Models)"</u>, <u>CVT-151, "Wiring Diagram CVT POWER (RHD Models)"</u>.
- Ignition switch. Refer to <u>PG-3, "POWER SUPPLY ROUTING CIRCUIT"</u>.

OK or NG

- OK >> GO TO 4.
- NG >> Repair or replace damaged parts.

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4. CHECK TCM GROUND CIRCUIT

- 1. Turn ignition switch OFF.
- 2. Disconnect TCM connector.
- Check continuity between TCM connector terminal and ground. Refer to <u>CVT-149</u>, "Wiring Diagram — CVT — POWER (LHD <u>Models</u>)", <u>CVT-151</u>, "Wiring Diagram — CVT — POWER (RHD <u>Models</u>)".

Name	Connec- tor	Terminal	Continuity
Ground	id F104	25	Voc
Ground		48	Tes



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OK or NG

OK >> GO TO 5.

NG >> Repair open circuit or short to ground or short to power in harness or connectors.

5. DETECT MALFUNCTIONING ITEM

Check the following.

 Harness and fuse for short or open between ignition switch and CVT indicator lamp Refer to <u>PG-3</u>, "<u>POWER SUPPLY ROUTING CIRCUIT</u>".

OK or NG

OK	>> GO	TO 6.
----	-------	-------

NG >> Repair or replace damaged parts.

6. снеск зумртом

Check <u>OK or</u>	again. Refer to <u>CVT-44, "Check Before Engine Is Started"</u> . <u>NG</u>	
OK NG	>> INSPECTION END >> GO TO 7.	
7. ci	HECK COMBINATION METERS	
Check	combination meters. efer to <u>DI-4, "COMBINATION METERS"</u> .	

<u>OK or NG</u>

OK >> INSPECTION END

NG >> Repair or replace damaged parts.

Engine Cannot Be Started in "P" or "N" Position SYMPTOM:

- Engine cannot be started with selector lever in "P" or "N" position.
- Engine can be started with selector lever in "D", "M" or "R" position.

DIAGNOSTIC PROCEDURE

1. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis check. Refer to CVT-58, "SELF-DIAGNOSTIC RESULT MODE" .

Do the self-diagnostic results indicate PNP switch circuit or start signal circuit?

- YES >> Check PNP switch circuit or start signal circuit. Refer to <u>CVT-74</u>, "<u>DTC P0705 PARK/NEUTRAL</u> <u>POSITION SWITCH</u>" or <u>CVT-68</u>, "<u>DTC P0615 START SIGNAL CIRCUIT</u>".
- NO >> GO TO 2.

2. CHECK CONTROL CABLE

Check control cable. Refer to <u>CVT-205, "Checking of CVT Position"</u>

OK or NG

OK >> GO TO 3.

NG >> Adjust control cable. Refer to <u>CVT-204</u>, "Adjustment of <u>CVT Position"</u>.



3. CHECK STARTING SYSTEM

Check starting system. Refer to SC-13, "STARTING SYSTEM" .

OK or NG

- OK >> INSPECTION END
- NG >> Repair or replace damaged parts.

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In "N" Position, Vehicle Moves SYMPTOM:

Vehicle moves forward or backward when selecting "N" position.

DIAGNOSTIC PROCEDURE

1. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis check. Refer to CVT-58, "SELF-DIAGNOSTIC RESULT MODE" .

Do the self-diagnostic results indicate PNP switch circuit?

YES >> Check PNP switch circuit. Refer to <u>CVT-74, "DTC P0705 PARK/NEUTRAL POSITION SWITCH"</u>. NO >> GO TO 2.

2. CHECK CONTROL CABLE

Check control cable. Refer to <u>CVT-205, "Checking of CVT Position"</u> <u>OK or NG</u>

OK >> GO TO 3.

NG >> Adjust control cable. Refer to <u>CVT-204</u>, "Adjustment of <u>CVT Position"</u>.



3. CHECK CVT FLUID LEVEL

Check CVT fluid level. Refer to <u>CVT-14, "Checking CVT Fluid"</u>. <u>OK or NG</u>

OK >> GO TO 4. NG >> Refill CVT fluid.



4. снеск сумртом

Check again. Refer to <u>CVT-44, "Check at Idle"</u>. <u>OK or NG</u>

OK >> INSPECTION END

NG >> GO TO 5.

5. снеск тсм

1. Check TCM input/output signal. Refer to CVT-50, "TCM Input/Output Signal Reference Values" .

2. If NG, re-check TCM pin terminals for damage or loose connection with harness connector.

OK or NG

OK >> Replace the transaxle assembly. Refer to <u>CVT-226, "Removal and Installation"</u>.

NG >> Repair or replace damaged parts.

CVT-188

TROUBLE DIAGNOSIS FOR SYMPTOMS

Large Shoe SYMPTOM:	k "N" \rightarrow "R" Position	ECS00FC3	А
There is large	shock when shifting from "N" to "R" position.		
DIAGNOSTIC	PROCEDURE		D
1. снеск s	ELF-DIAGNOSTIC RESULTS		D
Perform self-di <u>Is any malfunc</u>	agnosis check. Refer to <u>CVT-58, "SELF-DIAGNOSTIC RESULT MODE"</u> . tion detected by self-diagnosis?		CVT
YES >> Ch NO >> G0	eck the malfunctioning system.) TO 2.		D
2. снеск е	NGINE IDLE SPEED		
Check engine	dle speed. Refer to EC-61, "Idle Speed and Ignition Timing Check".		Е
OK or NG			
OK >> G0 NG >> R6) TO 3. pair.		F
3. снеск с	VT FLUID LEVEL		
Check CVT flu	d level. Refer to <u>CVT-14, "Checking CVT Fluid"</u> .		G
OK or NG	\sim		
OK >> G(NG >> Re) TO 4. fill CVT fluid.		Н

4. CHECK LINE PRESSURE

		K
Check line pressure at idle. Refer to CVT-39, "LINE PRESSURE [
<u>TEST"</u> .		
OK or NG		L
OK >> GO TO 5.	JICO SE VI	
NG >> Check the malfunctioning item. Refer to <u>CVT-40</u> ,		
"Judgement of Line Pressure Test" .		M
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5. снеск сумртом

6. снеск тсм

1. Check TCM input/output signals. Refer to <u>CVT-50, "TCM Input/Output Signal Reference Values"</u>.

2. If NG, re-check TCM pin terminals for damage or loose connection with harness connector. OK or NG

OK >> Replace the transaxle assembly. Refer to <u>CVT-226, "Removal and Installation"</u>.

NG >> Repair or replace damaged parts.

Vehicle Does Not Creep Backward in "R" Position	A
Vehicle does not creep backward when selecting "R" position. DIAGNOSTIC PROCEDURE 1. CHECK SELF-DIAGNOSTIC RESULTS	В
Perform self-diagnosis check. Refer to <u>CVT-58, "SELF-DIAGNOSTIC RESULT MODE"</u> . Is any malfunction detected by self-diagnosis?	CV1
YES >> Check the malfunctioning system. NO >> GO TO 2.	D
2. CHECK CONTROL CABLE	
Check control cable. Refer to <u>CVT-205, "Checking of CVT Position"</u> OK or NG	E
OK >> GO TO 3. NG >> Adjust control cable. Refer to <u>CVT-204</u> , "Adjustment of <u>CVT Position"</u> .	F
Manual lever	G
CIA2001E	Н
3. CHECK CVT FLUID LEVEL	
Check CVT fluid level. Refer to <u>CVT-14, "Checking CVT Fluid"</u> .	

OK >> GO TO 4.

NG >> Refill CVT fluid.



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4. CHECK LINE PRESSURE

Check line pressure at idle. Refer to <u>CVT-39</u>, "LINE PRESSURE <u>TEST</u>". <u>OK or NG</u> OK >> GO TO 5. NG >> Check the malfunctioning item. Refer to <u>CVT-40</u>, <u>"Judgement of Line Pressure Test</u>".



5. снеск сумртом

Check again. Refer to CVT-44, "Check at Idle" .

OK or NG

OK >> INSPECTION END

NG >> GO TO 6.

6. снеск тсм

1. Check TCM input/output signals. Refer to CVT-50, "TCM Input/Output Signal Reference Values" .

2. If NG, re-check TCM pin terminals for damage or loose connection with harness connector.

OK or NG

- OK >> Replace the transaxle assembly. Refer to <u>CVT-226, "Removal and Installation"</u>.
- NG >> Repair or replace damaged parts.

Vehicle Does Not Creep Forward in "D" Position ECSOUPES SYMPTOM: Vehicle does not creep forward when selecting "D" position. DIAGNOSTIC PROCEDURE 1. CHECK SELF-DIAGNOSTIC RESULTS	A
Perform self-diagnosis check. Refer to <u>CVT-58, "SELF-DIAGNOSTIC RESULT MODE"</u> . <u>Is any malfunction detected by self-diagnosis?</u> YES >> Check the malfunctioning system. NO >> GO TO 2.	CVT
2. CHECK CONTROL CABLE	
Check control cable. Refer to <u>CVT-205, "Checking of CVT Position"</u> <u>OK or NG</u> OK >> GO TO 3. NG >> Adjust control cable. Refer to <u>CVT-204, "Adjustment of</u> <u>CVT Position"</u> .	E F
3. CHECK CVT FLUID LEVEL	Н
Check CVT fluid level. Refer to <u>CVT-14</u> , " <u>Checking CVT Fluid</u> ". <u>OK or NG</u> OK >> GO TO 4. NG >> Refill CVT fluid.	l J

4. CHECK LINE PRESSURE





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5. снеск сумртом

Check again. Refer to CVT-44, "Check at Idle" .

OK or NG

- OK >> INSPECTION END
- NG >> GO TO 6.

6. снеск тсм

1. Check TCM input/output signals. Refer to CVT-50, "TCM Input/Output Signal Reference Values" .

2. If NG, re-check TCM pin terminals for damage or loose connection with harness connector.

OK or NG

- OK >> Replace the transaxle assembly. Refer to <u>CVT-226, "Removal and Installation"</u>.
- NG >> Repair or replace damaged parts.

TROUBLE DIAGNOSIS FOR SYMPTOMS

CVT Does Not Shift SYMPTOM:

CVT does not shift at the specified speed on "Cruise Test".

DIAGNOSTIC PROCEDURE

1. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis check. Refer to <u>CVT-58, "SELF-DIAGNOSTIC RESULT MODE"</u>. Is any malfunction detected by self-diagnosis?

YES >> Check the malfunctioning system.

NO >> GO TO 2.

2. CHECK CONTROL CABLE

Check control cable. Refer to <u>CVT-205, "Checking of CVT Position"</u> <u>OK or NG</u>

OK >> GO TO 3.

NG >> Adjust control cable. Refer to <u>CVT-204</u>, "Adjustment of <u>CVT Position"</u>.



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3. CHECK CVT FLUID LEVEL

Check CVT fluid level. Refer to <u>CVT-14, "Checking CVT Fluid"</u>. <u>OK or NG</u> OK >> GO TO 4.

NG >> Refill CVT fluid.



4. CHECK LINE PRESSURE

Check line pressure at idle. Refer to <u>CVT-39</u>, "LINE PRESSURE <u>TEST</u>". <u>OK or NG</u> OK >> GO TO 5. NG >> Check the malfunctioning item. Refer to <u>CVT-40</u>, "Judgement of Line Pressure Test".



5. снеск сумртом

Check again. Refer to CVT-47, "Cruise Test" .

OK or NG

OK >> INSPECTION END

NG >> GO TO 6.

6. снеск тсм

1. Check TCM input/output signals. Refer to CVT-50, "TCM Input/Output Signal Reference Values" .

2. If NG, re-check TCM pin terminals for damage or loose connection with harness connector.

OK or NG

- OK >> Replace the transaxle assembly. Refer to <u>CVT-226, "Removal and Installation"</u>.
- NG >> Repair or replace damaged parts.

TROUBLE DIAGNOSIS FOR SYMPTOMS

Cannot Be Changed to Manual Mode	А
Does not change to manual mode when manual shift gate is used.	
DIAGNOSTIC PROCEDURE	R
1. CHECK SELF-DIAGNOSTIC RESULTS	D
Perform self-diagnosis check. Refer to <u>CVT-58, "SELF-DIAGNOSTIC RESULT MODE"</u> . Is any malfunction detected by self-diagnosis?	CVT
NO >> GO TO 2.	D
2. CHECK MANUAL MODE SWITCH	
Check manual mode switch circuit. Refer to <u>CVT-125, "DTC P0826 MANUAL MODE SWITCH CIRCUIT"</u> . <u>OK or NG</u> OK >> GO TO 3.	E
3. CHECK SYMPTOM	F
Check again. Refer to <u>CVT-47, "Cruise Test"</u> . <u>OK or NG</u> OK >> INSPECTION END NG >> GO TO 4.	G H
4. снеск тсм	
 Check TCM input/output signal. Refer to <u>CVT-50</u>, <u>"TCM Input/Output Signal Reference Values"</u>. If NG, re-check TCM pin terminals for damage or loose connection with harness connector. OK or NG 	J
OK >> INSPECTION END NG >> Repair or replace damaged parts.	K

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CVT Does Not Shift in Manual Mode SYMPTOM:

Speed does not change even if the selector lever is put in the manual shift gate position and the selector lever is operated to + side or to - side.

DIAGNOSTIC PROCEDURE

1. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis check. Refer to CVT-58, "SELF-DIAGNOSTIC RESULT MODE" .

Is any malfunction detected by self-diagnosis?

YES >> Check the malfunctioning system.

NO >> GO TO 2.

2. CHECK MANUAL MODE SWITCH

Check manual mode switch circuit. Refer to <u>CVT-125, "DTC P0826 MANUAL MODE SWITCH CIRCUIT"</u>. OK or NG

OK >> GO TO 3.

NG >> Repair or replace damaged parts.

3. CHECK CONTROL CABLE

Check control cable. Refer to <u>CVT-205, "Checking of CVT Position"</u> OK or NG

- OK >> GO TO 4.
- NG >> Adjust control cable. Refer to <u>CVT-204</u>, "Adjustment of <u>CVT Position"</u>.



4. CHECK CVT FLUID LEVEL

Check CVT fluid level. Refer to <u>CVT-14, "Checking CVT Fluid"</u>. <u>OK or NG</u>

OK >> GO TO 5.

NG >> Refill CVT fluid.



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Vehicle Does Not Decelerate by Engine Brake SYMPTOM:

No engine brake is applied when the gear is shifted from the "M2" to "M1" position.

DIAGNOSTIC PROCEDURE

1. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis check. Refer to CVT-58, "SELF-DIAGNOSTIC RESULT MODE" .

Is any malfunction detected by self-diagnosis?

YES >> Check the malfunctioning system.

NO >> GO TO 2.

2. CHECK CONTROL CABLE

Check control cable. Refer to <u>CVT-205, "Checking of CVT Position"</u> <u>OK or NG</u>

OK >> GO TO 3.

NG >> Adjust control cable. Refer to <u>CVT-204</u>, "Adjustment of <u>CVT Position"</u>.



3. CHECK CVT FLUID LEVEL

Check CVT fluid level. Refer to <u>CVT-14, "Checking CVT Fluid"</u>. <u>OK or NG</u>

OK >> GO TO 4. NG >> Refill CVT fluid.



4. CHECK LINE PRESSURE

Check line pressure at idle. Refer to <u>CVT-39, "LINE PRESSURE</u> <u>TEST"</u>.

OK or NG

OK >> GO TO 5.

NG >> Check the malfunctioning item. Refer to <u>CVT-40</u>, <u>"Judgement of Line Pressure Test"</u>.



TROUBLE DIAGNOSIS FOR SYMPTOMS

5. CHECK MANUAL MODE SWITCH	А
Check manual mode switch circuit. Refer to CVT-125, "DTC P0826 MANUAL MODE SWITCH CIRCUIT".	_
OK or NG OK >> GO TO 6. NG >> Repair or replace damaged parts.	В
6. снеск зумртом	CVT
Check again. Refer to <u>CVT-47, "Cruise Test"</u> . <u>OK or NG</u> OK >> INSPECTION END NG >> GO TO 7.	D
7. снеск тсм	E
 Check TCM input/output signals. Refer to <u>CVT-50</u>, <u>"TCM Input/Output Signal Reference Values"</u>. If NG, re-check TCM pin terminals for damage or loose connection with harness connector. OK or NG 	F
OK >> Replace the transaxle assembly. Refer to <u>CVT-226, "Removal and Installation"</u> . NG >> Repair or replace damaged parts.	G
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SHIFT CONTROL SYSTEM

Removal and Installation CONTROL DEVICE COMPONENTS



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SHIFT CONTROL SYSTEM

CONTROL CABLE COMPONENTS

Refer to the figure below for control cable removal and installation procedure.



REMOVAL

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- 1. Remove knob cover below selector lever downward.
- 2. Pull lock pin out of selector lever knob.
- 3. Remove selector lever knob.
- 4. Remove A/T console finisher.
 - Refer to IP-17, "Removal and Installation" .
- 5. Remove console box assembly.
 - Refer to IP-17, "Removal and Installation" .

Disconnect control cable of control device.

Disconnect control device harness connector.



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Remove control device assembly. 8.



Control cable

Control device assembly

INSTALLATION

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

- The knurled surface of rib should be upward when installing the control cable to the control device assembly. And insert the control cable securely.
- After installation is completed, adjust and check CVT position. Refer to CVT-204, "Adjustment of CVT Position" and CVT-205, "Checking of CVT Position"



- 1. Place selector lever in "P" position.
- 2. Loosen control cable nut and place manual lever in "P" position. **CAUTION:**

Turn wheels more than 1/4 rotations and apply the park lock.

- 3. Hold the control cable at the end. Push and pull it twice or three times, and then push it with a load of 9.8N (approximately 1 kg, 2.2 lb). Temporarily tighten the lock nut with the control cable loose.
- 4. Connect control cable on manual lever.

CAUTION:

No application of a force to the manual lever.

5. Tighten control cable nut.

CAUTION:

Fix the manual lever when tightening.

(C) : 13 N-m (1.3 kg-m, 10 ft-lb)

Control cable Manual lever



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Checking of CVT Position

- 1. Place selector lever in "P" position, and turn ignition switch ON (engine stop).
- 2. Make sure selector lever can be shifted to other than "P" position when brake pedal is depressed. Also make sure selector lever can be shifted from "P" position only when brake pedal is depressed.
- 3. Move the selector lever and check for excessive effort, sticking, noise or rattle.
- 4. Confirm the selector lever stops at each position with the feel of engagement when it is moved through all the positions. Check whether or not the actual position the selector lever is in matches the position shown by the shift position indicator and the transaxle body.
- 5. The method of operating the lever to individual positions correctly should be as shown in the figure.
- 6. Confirm the back-up lamps illuminate only when lever is placed in the "R" position. Confirm the back-up lamps do not illuminate when the selector lever is pushed toward the "R" position side with the gear position remained in the "P" or "N" position.
- 7. Confirm the engine can only be started with the selector lever in the "P" and "N" positions.
- 8. Make sure transaxle is locked completely in "P" position.
- When selector lever is set to manual shift gate, make sure manual mode is displayed on combination meter.
 Shift selector lever to "+" and "-" sides, and make sure set shift position changes.



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CVT-205

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CVT SHIFT LOCK SYSTEM

Description

- The electrical key interlock mechanism also operates as a shift lock: With the ignition switch turned to ON, the selector lever cannot be shifted from "P" (parking) to any other position unless the brake pedal is depressed. With the key removed, the selector lever cannot be shifted from "P" to any other position. The key cannot be removed unless the selector lever is placed in "P".
- The shift lock and key interlock mechanisms are controlled by the ON-OFF operation of the shift lock solenoid and by the operation of the rotator and slider located inside the key cylinder, respectively.

Shift Lock System Electrical Parts Location



NOTE:

This emergency lever can be used when battery is off ignition key cannot be removed. In the situation like this, by operating this lever, ignition key can be removed.

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TCWA0166E



TCWB0152E



Shift Lock Control Unit Reference Values SHIFT LOCK HARNESS CONNECTOR TERMINALS LAYOUT



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SHIFT LOCK CONTROL UNIT INSPECTION TABLE

Shift lock control unit terminal data are reference values, measured between each terminal and ground.

Terminal (Wire color)	ltem	Condition	Judgement standard
1 (R/Y)	Power source	Always	Battery voltage
2 (L)	Detention switch (for key)	When selector lever is not in "P" position with key inserted or ignition knob switch pushed.	Battery voltage
		When selector lever is in "P" position with key inserted.	Approx. 0V
3	Detention switch (for	When selector lever is not in "P" position.	Battery voltage
(L/W)	shift)	When selector lever is in "P" position.	Approx. 0V
4	Otan lanan awitah	When brake pedal is depressed	Battery voltage
(R/G)	Stop lamp switch	When brake pedal is released	Approx. 0V
5 (V/W)	Vehicle speed signal (8pulse signal)	Speed meter is operated	(V) 6 4 2 0 • • • 20ms ELF1084D
6	Ignition signal	Ignition switch: OFF	Approx. 0V
(G)	Ignition signal	Ignition switch: ON	Battery voltage
7 (R/L)	Shift lock solenoid	 When selector lever is in "P" position, brake pedal is depressed, and ignition switch is ON. When selector lever is not in "P" position, ignition switch is ON and vahiele speed is 10 km/b 	
		 (6 MPH) or less. For 3 minutes after selector lever is not in "P" position, vehicle speed is 10 km/h (6 MPH) or less, and ignition switch is ON → OFF. 	Approx. 0V
		Except the above	Battery voltage
8 (B)	Ground	_	Approx. 0V
9 (V)	Key lock solenoid	When selector lever is not "P" position.	Battery voltage for approx. 0.1 sec. (Note)
		When selector lever is in "P" position.	Approx. 0V
10 (W/B)	Key unlock solenoid	When selector lever is in "P" position with ignition switch OFF.	Battery voltage for approx. 0.1 sec. (Note)
		When selector lever is not in "P" position with igni- tion switch OFF.	Approx. 0V



NOTE:

Take care that the pointer swings only momentarily because the output time is so short. If the inspection is done with an oscilloscope, it should be observed that the power source voltage lasts for 3.5 to 10 ms.

Component Inspection SHIFT LOCK SOLENOID

 Check operation by applying battery voltage to the CVT device harness connector.

CAUTION:

Be sure to apply the voltage of the correct polarity to the respective terminals. Otherwise, the part may be damaged.

Connector	Terminal
M57	9 (Battery voltage) - 10 (Ground)



DETENTION SWITCH

For Key:

• Check continuity between terminals of the CVT device harness connector.

Condition	Connector	Terminal	Continuity
When selector lever is in "P" position.	M57	5 - 6	No
When selector lever is not in "P" position.			Yes



DETENTION SWITCH

For Shift:

Check continuity between terminals of the CVT device harness connector.

Condition	Connector	Terminal	Continuity
When selector lever is in "P" position.	M57	13 - 14	No
When selector lever is not in "P" position.			Yes



KEY LOCK SOLENOID

Key Lock

• Check operation by applying battery voltage to key switch harness connector.

CAUTION:

Be careful not to cause burnout of the harness.

Connector	Terminal
M28	1 (Battery voltage) - 2 (Ground)



ECS00FCK

Key Unlock

• Check operation by applying battery voltage to key switch harness connector.

CAUTION:

Be careful not to cause burnout of the harness.

Connector	Terminal
M28	2 (Battery voltage) - 1 (Ground)



KEY SWITCH

• Check continuity between terminals of the key switch harness connector.

Condition	Connector	Terminal	Continuity
Key inserted	MOO	3 - 4	Yes
Key withdrawn	IVI20		No



STOP LAMP SWITCH

 Check continuity between terminals of the stop lamp switch harness connector.

Condition	Connector	Terminal	Continuity
When brake pedal is depressed	E116* or	1 - 2	Yes
When brake pedal is released	M114**	1-2	No

*: LHD models

**: RHD models

Check stop lamp switch after adjusting brake pedal. Refer to <u>BR-6</u>, <u>"Inspection and Adjustment"</u>.



AIR BREATHER HOSE

PFP:31098

ECS00FCL

Removal and Installation

Refer to the figure below for air breather hose removal and installation procedure.



CAUTION:

• Securely insert the hose into the air breather until it touches the bottom.

DIFFERENTIAL SIDE OIL SEAL



- 2. Remove transfer from transaxle assembly. Refer to <u>TF-56</u>, <u>"Removal and Installation"</u>.
- Remove differential side oil seal using a flat-bladed screwdriver.
 CAUTION: Be careful not to scratch transaxle case.



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INSTALLATION

1. As shown below, use a drift to drive the differential side oil seal into the case until it is flush. Refer to dimensions A.

Unit: mm (in)

Dimensions A	
--------------	--

0± 0.5 (0±0.020)

NOTE:

The differential side oil seal pulling direction is used as the reference.



Drift to be used:

Location	Tool number: A
Transaxle case side (left)	ST33400001
Converter housing side (right)	KV40100621



CAUTION:

- When installing differential side oil seal, apply NISSAN CVT Fluid NS-2.
- Do not reuse differential side oil seal.
- 2. Reinstall any part removed.

CAUTION:

If lubricant leak has occurred, after finishing work, check fluid level. Refer to <u>CVT-14, "Checking</u> <u>CVT Fluid"</u>.
CVT Fluid Cooler Removal and Installation COMPONENTS



Refer to GI section to make sure icons (symbol marks) in the figure. Refer to GI-8, "Components" .

REMOVAL

- 1. Remove front bumper from vehicle. Refer to EI-17, "Removal and Installation" .
- 2. Remove CVT fluid cooler hose (upper) (1) from CVT fluid cooler bypass valve (2).



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3. Remove clip (1) from CVT fluid cooler bracket (2).

4. Remove CVT fluid cooler hose (lower) (1) from CVT fluid cooler (2).

5. Remove CVT fluid cooler (1) from CVT fluid cooler bracket (2).
Nut (3)

Remove CVT fluid cooler hose (upper) (1) from CVT fluid cooler (2).





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INSTALLATION

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

- Note the following instruction when inserting CVT fluid cooler hose (upper) into CVT fluid cooler.
- When inserting CVT fluid cooler hose (upper) into CVT fluid cooler, insert it so as to fit the paint mark (A).
- When inserting CVT fluid cooler hose (upper) into CVT fluid cooler, insert it with the paint mark (B) facing upward.
- Install a pawl of hose clamp (1) with it facing upward.
- Note the following instruction when inserting CVT fluid cooler hose (upper) into CVT fluid cooler bypass valve.
- When inserting CVT fluid cooler hose (upper) into CVT fluid cooler bypass valve, insert it so as to fit the paint mark (A).
- When inserting CVT fluid cooler hose (upper) into CVT fluid cooler, insert it with the paint mark (B) facing 45 degrees forward of the left side of the vehicle.
- Install a pawl of hose clamp (1) with it facing 45 degrees forward of the left side of the vehicle.
- Insert a clip (1) into bracket mounting hole, and fix CVT fluid cooler hose (upper) securely.

- Note the following instruction when inserting CVT fluid cooler hose (lower) into CVT fluid cooler.
- When inserting CVT fluid cooler hose (lower) into CVT fluid cooler, insert it so as to fit the paint mark (A).
- When inserting CVT fluid cooler hose (lower) into CVT fluid cooler, insert it with the paint mark (B) facing backward of the vehicle.
- Install a pawl of hose clamp (1) with it facing backward of the vehicle.





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- Note the following instruction when inserting CVT fluid cooler hose (lower) into CVT fluid cooler bypass valve.
- When inserting CVT fluid cooler hose (lower) into CVT fluid cooler bypass valve, insert it so as to fit the paint mark (A).
- When inserting CVT fluid cooler hose (lower) into CVT fluid cooler bypass valve, insert it with the paint mark (B) facing backward of the vehicle.
- Install a pawl of hose clamp (1) with it facing backward of the vehicle.
- Install hoses clamp on the position of 5 mm (0.20 in) from the edge of CVT fluid cooler hose.

Distance A: 5 mm (0.20 in)

CVT Fluid Cooler Bypass Valve Removal and Installation REMOVAL

- 1. Remove front bumper from vehicle. Refer to EI-17, "Removal and Installation" .
- 2. Remove CVT fluid cooler hose (1), (2), (3) and (4) from CVT fluid cooler bypass valve (5).

Remove CVT fluid cooler bracket (1) from radiator core support (LH) (2).
 Bolt (1)









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4 Remove CVT fluid cooler bracket (1) from side member (2). **•**: Bolt (3)

5. Remove CVT fluid cooler bypass valve (1) from CVT fluid cooler bracket (2). **(**2)



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

- Note the following instruction when inserting CVT fluid cooler hose (radiator to CVT fluid cooler bypass valve) into CVT fluid cooler bypass valve.
- When inserting CVT fluid cooler hose (radiator to CVT fluid cooler bypass valve) into CVT fluid cooler bypass valve, insert it to the two-stage bulge.
- When inserting CVT fluid cooler hose (radiator to CVT fluid cooler bypass valve) into CVT fluid cooler bypass valve, insert it with the paint mark (A) facing 45 degrees backward of the downside of the vehicle.
- Install a pawl of hose clamp (1) with it facing 45 degrees backward of the downside of the vehicle.
- Note the following instruction when inserting CVT fluid cooler hose (CVT fluid cooler bypass valve to transaxle) into CVT fluid cooler bypass valve.
- When inserting CVT fluid cooler hose (CVT fluid cooler bypass valve to transaxle) into CVT fluid cooler bypass valve, insert it to the two-stage bulge.
- When inserting CVT fluid cooler hose (CVT fluid cooler bypass valve to transaxle) into CVT fluid cooler bypass valve, insert it with the paint mark (A) facing 45 degrees leftward of the downside of the vehicle.
- Install a pawl of hose clamp (1) with it facing 45 degrees leftward of the downside of the vehicle.







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 Install hoses clamp (1) on the position of 5 mm (0.20 in) from the edge of CVT fluid cooler hose.

Distance A: 5 mm (0.20 in)

• Refer to <u>CVT-219</u>, "INSTALLATION" when installing CVT fluid cooler hose (upper and lower) to CVT fluid cooler bypass valve.



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CVT Fluid Cooler Valve Removal and Installation COMPONENTS



CVT fluid cooler inlet tube assembly 3.

CVT FLUID COOLER SYSTEM

- 1. Harness bracket
- 4. Hose clamp
- Outlet water hose 7.
- 10. CVT fluid cooler outlet tube assem- 11. CVT fluid cooler valve assembly bly
- Hose clamp

Inlet water hose

2.

5.

8.

REMOVAL

WARNING:

Never remove the radiator cap when the engine is hot. Serious burns could occur from high pressure engine coolant escaping from the radiator.

- 1. Remove engine undercover.
- 2. Drain engine coolant. Refer to CO-9, "Changing Engine Coolant". **CAUTION:**

Perform when the engine is cold.

- 3. Remove air duct (inlet). Refer to EM-15, "Removal and Installation" .
- Remove battery. Refer to SC-12, "Removal and Installation" . 4.
- Remove air cleaner case (upper and lower), resonator, mass air flow sensor and air duct assembly. Refer 5. to EM-15, "Removal and Installation".
- 6. Remove fuse and fusible link block from battery bracket.

7. Remove battery bracket.

Remove battery bracket mounting. 8.



SCIA2751

- Transaxle assembly
- 6. Hose clamp
- 9. Heater hose

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- 9. Remove air cleaner bracket. Refer to EM-15, "Removal and Installation" .
- 10. Remove control cable from transaxle assembly. Refer to CVT-202, "Removal and Installation" .

11. Remove water bypass hose from water bypass pipe. Refer to CO-29, "Removal and Installation"

- 12. Remove harness bracket and control cable bracket from transaxle assembly. Refer to CVT-202, "Removal and Installation" and CVT-222, "COMPONENTS" .
- 13. Remove inlet water hose and outlet water hose. Refer to CVT-222, "COMPONENTS" .
- 14. Remove heater hose from heater pipe. Refer to CO-29, "Removal and Installation" .
- 15. Remove CVT fluid cooler valve assembly from transaxle assembly. Refer to CVT-222, "COMPONENTS"
- 16. Remove heater hose from CVT fluid cooler valve assembly.

17. Remove CVT fluid cooler inlet tube assembly and CVT fluid cooler outlet tube assembly from CVT fluid cooler valve assembly.





CVT fluid cooler valve assembly

SCIA4350E



CVT fluid cooler valve assembly

SCIA4348E

: Bolt (2)



■ : Hose clamp

INSTALLATION

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

• After completing installation, check for engine coolant leakage, engine coolant level, and the positions of CVT. Refer to <u>CO-9</u>, "Inspection" and <u>CVT-205</u>, "Checking of CVT Position".

CAUTION:

- Install hose clamp with tabs aligned with markings of CVT fluid cooler valve assembly and each hose.
- Do not reuse CVT fluid cooler inlet tube assembly and CVT fluid cooler outlet tube assembly.
- Apply LLC around O-ring when installing CVT fluid cooler inlet tube and CVT fluid cooler outlet tube assembly to CVT fluid cooler valve assembly.

COMPONENT INSPECTION

1. Make sure that CVT fluid cooler valve is fully opened at room temperature.

Standard

Dimension A from CVT fluid cooler valve port end to tip of valve shaft (At room temperature): Approx 72.0 mm (2.835 in) or more



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2. Put CVT fluid cooler valve into a water-filled container, and then heat it up to 82°C (180°F) or more for 10 minutes or more.



3. Make sure that CVT fluid cooler valve is fully closed.

Standard

Dimension A from CVT fluid cooler valve port end to tip of valve shaft (When heating to 82°C (180°F) or more for 10 minutes or more):

Approx 66.5 mm (2.618 in) or less



TRANSAXLE ASSEMBLY

TRANSAXLE ASSEMBLY

Removal and Installation

PFP:32020

ECS00FCP

SEC.112 • 214 • 310 • 330 36 (3.7, 27) 2 ⓓ 36 (3.7, 27) (4) 36 (3.7, 27) 6 35 (3.6, 26) 36 (3.7, 27) 5.0 (0.51, 44) 3 65 (6.6, 48) 5.0 (0.51, 44) 00 C $\widehat{}$ (19) 8 **O** 65 (6.6, 48) 49 (5.0, 36) 9 49 (5.0, 36) 49 (5.0, 36). 18 (II) 12 ി (16) (14) 88 (9.0, 65) (15) 1 SCIA6573E Transfer gusset 1. Rear gusset 2. 3. Air breather hose 4. Transfer assembly 5. Front engine mounting bracket 6. CVT fluid level gauge CVT fluid charging pipe 7. 8. O-ring 9. Hose clamp 10. Copper washer 11. Fluid cooler tube 12. CVT fluid cooler hose 13. Hose clamp 14. Clip 15. CVT fluid cooler hose 16. Hose clamp 17. LH engine mounting bracket 18. LH engine mounting insulator 19. Transaxle assembly 20. Rear engine mounting bracket

Refer to GI section to make sure icons (symbol marks) in the figure. Refer to GI-8, "Components" .

 \triangle : For tightening torque, refer to <u>CVT-230, "INSTALLATION"</u>.

REMOVAL

CAUTION:

The transaxle assembly itself cannot be removed from the vehicle. Remove the transaxle assembly and engine assembly together from the vehicle.

- 1. Disconnect the batter cable from the negative terminal.
- 2. Remove engine undercover.
- 3. Remove air guide.
- 4. Remove exhaust front tube with power tool. Refer to EX-3, "Removal and Installation" .

5. Remove rear plate cover. Refer to EM-28, "Removal and Installation".

6. Turn crankshaft, and remove the four tightening nuts for drive plate and torque converter.

CAUTION:

The crankshaft should be rotated clockwise, viewed from the front of the engine.

Air guide CVT D VILLIN 28 (2.9, 21) F 💟 : N•m (kg-m, ft-lb) 🛑 : Nut (5) SCIA6476E F





- 7. Remove the six bolts in the figure.
- Remove transaxle assembly and engine assembly together 8. from the vehicle. Refer to EM-104, "Removal and Installation" .
- 9. Remove drive shaft. Refer to FAX-11, "Removal and Installation (Left Side)", FAX-13, "Removal and Installation (Right Side)". **CAUTION:**

Be sure to replace the differential side oil seal with new one at the every removal of drive shaft. Refer to CVT-215. "Removal and Installation" .

- Remove transfer gusset.
- 11. Remove transfer assembly. Refer to TF-56, "Removal and Installation".

CAUTION:

Be sure to replace the differential side oil seal with new one (converter housing side only) at the every removal of transfer. Refer to CVT-215, "Removal and Installation" .

🛑 : Bolt (6)

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TRANSAXLE ASSEMBLY

- 12. Remove CVT fluid charging pipe.
- 13. Remove O-ring from CVT fluid charging pipe.
- 14. Disconnect harness connector and wire harness.

15. Remove crankshaft position sensor (POS) (1) from engine assembly. Refer to <u>EM-28, "Removal and Installation"</u>.

CAUTION:

- Do not subject it to impact by dropping or hitting it.
- Do not disassemble.
- Do not allow metal filings, etc., to get on the sensor's front edge magnetic area.
- Do not place in an area affected by magnetism.
- 16. Remove starter motor. Refer to <u>SC-16, "Removal and Installa-</u> tion".
- 17. Remove CVT fluid cooler valve assembly (1). (With CVT fluid cooler tube assembly and heater hose). Refer to <u>CVT-222, "CVT Fluid Cooler Valve Removal and Installation"</u>. (A): Bolt (4)
 - (B): Hose clamp (3)

- 18. Install slinger to transaxle assembly.
- 19. Remove rear gusset.
- 20. Remove LH engine mounting bracket and LH engine mounting insulator.
- 21. Remove front suspension member from transaxle assembly and engine assembly. Refer to $\underline{\sf EM-104}$, "Removal and Installation".
- 22. Remove transaxle assembly fixing bolts with power tool.









- 23. Remove transaxle assembly from engine assembly with a hoist.
 - Secure torque converter to prevent it from dropping.



INSPECTION

Installation and Inspection of Torque Converter

• After inserting a torque converter to a transaxle, be sure to check distance "A" to ensure it is within the reference value limit.

Distance "A": 14.0 mm (0.55 in) or more



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INSTALLATION

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

• Set and screw in the drive plate location guide onto the stud bolts for the torque converter locate.

• Rotate the torque converter for the locate to go down.

• Rotate the drive plate for the hole of the drive plate locate to go down.

• Install transaxle assembly to engine assembly with a hoist.









TRANSAXLE ASSEMBLY

• When installing fluid cooler tube to transaxle assembly, assemble the part with the tube aligned with the rib.



• When installing transaxle to the engine, attach the fixing bolts in accordance with the following standard.

Bolt No.	1	2	3	4
Number of bolts	1	2	2	4
Bolt length " ℓ "mm (in)	52 (2.05)	36 (1.42)	105 (4.13)	35 (1.38)
Tightening torque N⋅m (kg-m, ft-lb)	75 (7.7, 55)		47 (4.8, 35)	

• Align the positions of tightening nuts for drive plate with those of the torque converter, and temporarily tighten the nuts. Then, tighten the nuts with the specified torque.

• : 51N·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 tightening nuts for the torque converter after fixing the crankshaft pulley bolts, be sure to confirm the tightening torque of the crankshaft pulley mounting bolts. Refer to <u>EM-64</u>, "INSTALLATION".
- After converter is installed to drive plate, rotate crankshaft several turns and check to be sure that transaxle rotates freely without binding.
- Install crankshaft position sensor (POS). Refer to EM-28, "Removal and Installation".
- After completing installation, check for fluid leakage, fluid level, and the positions of CVT. Refer to <u>CVT-14</u>, <u>"Checking CVT Fluid"</u>, <u>CVT-204</u>, "Adjustment of <u>CVT Position"</u>, <u>CVT-205</u>, "Checking of <u>CVT Position"</u>.
- When replacing the CVT assembly, erase EEP ROM in TCM. Refer to <u>CVT-8</u>, "Precautions for TCM and <u>CVT Assembly Replacement"</u>.

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SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

General Specifications

oplied model		VQ35DE engine	
		4WD	
CVT model		RE0F09A	
CVT assembly	Model code number	1XD0A	
	D range	Variable	
Transmission gear ratio	Reverse	1.766	
	Final drive	5.173	
Recommended fluid		NISSAN CVT fluid NS-2*1	
Fluid capacity		10.0 liter (8-3/4 Imp qt)	

CAUTION:

• Use only Genuine NISSAN CVT fluid NS-2. Do not mix with other fluid.

• Using CVT fluid other than Genuine NISSAN CVT fluid NS-2 will deteriorate in driveability and CVT durability, and may damage the CVT, which is not covered by the warranty.

*1: Refer to MA-14, "Fluids and Lubricants" .

Vehicle Speed at Which Gear Shifting Occurs

Numerical value data are reference values.

Engine type	Throttle position	Shift pattern	Engine speed (rpm)		
Engine type		onn patient	At 40 km/h (25 MPH)	At 60 km/h (37 MPH)	
	8/8	"D" position	2,800 - 4,300	3,900 - 5,300	
VQ35DE	2/8	"D" position	1,200 - 2,000	1,300 - 2,100	

CAUTION:

Lock-up clutch is engaged when vehicle speed is approximately 18 km/h (11 MPH) to 90 km/h (56 MPH).

Stall Speed

Stall speed	2,700 - 3,250 rpm
Line Pressure	ECS00FC1

Engine	Engine speed	Line pressure kPa (kg/cm ² , psi)
Liigiilo		"R", "D" positions
VQ35DE	At idle speed	750 (7.65, 108.8)
	At stall speed	5,700 (58.14, 826.5)* ¹

*1 : Reference values

Solenoid Valves

Name	Resistance (Approx.) (Ω)	Terminal
Pressure control solenoid valve B (Secondary pressure solenoid valve)		3
Pressure control solenoid valve A (Line pressure solenoid valve)	3 - 9	2
Torque converter clutch solenoid valve		12
Lock-up select solenoid valve	6 - 19	13

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ECS00FCR

ECS00FCS

SERVICE DATA AND SPECIFICATIONS (SDS)

CVT Fluid Tempe	rature Sensor		ECS00F	CV
Item name	Condition	CONSULT-II "DATA MONITOR" (Approx.) (V)	Resistance (Approx.) (kΩ)
ATF TEMP SEN	20°C (68°F)	1.8 - 2.0	6.5	
	80°C (176°F)	0.6 - 1.0	0.9	_
Primary Speed Se	ensor		ECS00FC	w.
Name	Condition		Data (Approx.)	C
Primary speed sensor	When driving ["D" position, 20 km/h (12 MPH)].		600 (Hz)	_
Secondary Speed	l Sensor		ECS00F	сх
Name		Condition		-
Secondary speed sensor	When driving ["D" position, 20 km/h (12 MPH)].		300 (Hz)	
Removal and Inst	allation		ECS00F	CY
Distance between end of converter housing and torque converter 14.0 mm (0.55 in)) or more	—	
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