SECTION CVT

CVT

CONTENTS

INDEX FOR DTC

PFP:00024

Alphabetical Index

NCS00122

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 CVT-68 .

Items (CONSULT-II screen terms)	DTC		Reference page
	OBD-II	Except OBD-II	
	CONSULT-II GST*	CONSULT-II only "TRANSMISSION"	
A/T TCC S/V FNCTN	P0744	P0744	CVT-109
ATF TEMP SEN/CIRC	P0710	P0710	CVT-84
BELT DAMG	—	P0730	CVT-102
BRAKE SW/CIRC	—	P0703	CVT-75
CAN COMM CIRCUIT	U1000	U1000	CVT-68
CVT SPD SEN/FNCTN	—	P1723	CVT-158
ENGINE SPEED SIG	—	P0725	CVT-100
ELEC TH CONTROL	—	P1726	CVT-160
ESTM VEH SPD SIG	—	P1722	CVT-156
INPUT SPD SEN/CIRC	P0715	P0715	CVT-89
L/PRESS CONTROL	—	P1745	CVT-167
L/PRESS SOL/CIRC	P0745	P0745	CVT-112
LU-SLCT SOL/CIRC	P1740	P1740	CVT-162
MANUAL MODE SWITCH	—	P0826	CVT-128
PNP SW/CIRC	P0705	P0705	CVT-77
PRESS SEN/FNCTN	—	P0841	CVT-138
PRS CNT SOL/A FCTN	P0746	P0746	CVT-117
PRS CNT SOL/B CIRC	P0778	P0778	CVT-123
PRS CNT SOL/B FCTN	P0776	P0776	CVT-120
SEC/PRESS DOWN	—	P0868	CVT-146
STARTER RELAY/CIRC	—	P0615	CVT-71
STEP MOTR CIRC	P1777	P1777	CVT-168
STEP MOTR/FNC	P1778	P1778	CVT-172
TCC SOLENOID/CIRC	P0740	P0740	CVT-104
TCM-POWER SUPPLY	—	P1701	CVT-149
TP SEN/CIRC A/T	—	P1705	CVT-154
TR PRS SENS/A CIRC	P0840	P0840	CVT-133
TR PRS SENS/B CIRC	P0845	P0845	CVT-141
VEH SPD SEN/CIR AT	P0720	P0720	CVT-94

*: These numbers are prescribed by SAE J2012.

DTC No. Index

NCS00123

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 CVT-68 .

DTC		Items (CONSULT-II screen terms)	Reference page
OBD-II	Except OBD-II		
CONSULT-II GST*	CONSULT-II only “TRANSMISSION”		
—	P0615	STARTER RELAY/CIRC	CVT-71
—	P0703	BRAKE SW/CIRC	CVT-75
P0705	P0705	PNP SW/CIRC	CVT-77
P0710	P0710	ATF TEMP SEN/CIRC	CVT-84
P0715	P0715	INPUT SPD SEN/CIRC	CVT-89
P0720	P0720	VEH SPD SEN/CIR AT	CVT-94
—	P0725	ENGINE SPEED SIG	CVT-100
—	P0730	BELT DAMG	CVT-102
P0740	P0740	TCC SOLENOID/CIRC	CVT-104
P0744	P0744	A/T TCC S/V FNCTN	CVT-109
P0745	P0745	L/PRESS SOL/CIRC	CVT-112
P0746	P0746	PRS CNT SOL/A FCTN	CVT-117
P0776	P0776	PRS CNT SOL/B FCTN	CVT-120
P0778	P0778	PRS CNT SOL/B CIRC	CVT-123
—	P0826	MANUAL MODE SWITCH	CVT-128
P0840	P0840	TR PRS SENS/A CIRC	CVT-133
—	P0841	PRESS SEN/FNCTN	CVT-138
P0845	P0845	TR PRS SENS/B CIRC	CVT-141
—	P0868	SEC/PRESS DOWN	CVT-146
—	P1701	TCM-POWER SUPPLY	CVT-149
—	P1705	TP SEN/CIRC A/T	CVT-154
—	P1722	ESTM VEH SPD SIG	CVT-156
—	P1723	CVT SPD SEN/FNCTN	CVT-158
—	P1726	ELEC TH CONTROL	CVT-160
P1740	P1740	LU-SLCT SOL/CIRC	CVT-162
—	P1745	L/PRESS CONTROL	CVT-167
P1777	P1777	STEP MOTR CIRC	CVT-168
P1778	P1778	STEP MOTR/FNC	CVT-172
U1000	U1000	CAN COMM CIRCUIT	CVT-68

*: These numbers are prescribed by SAE J2012.

PRECAUTIONS

PFP:00001

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

NCS001RO

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.

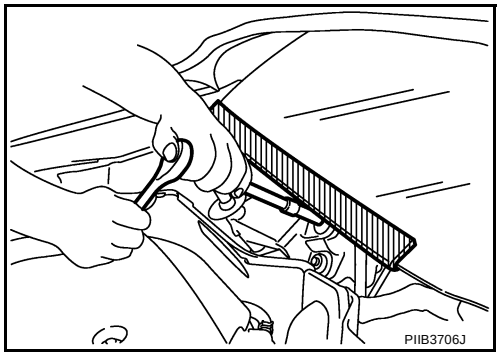
WARNING:

- **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.**

Precautions for Procedures without Cowl Top Cover

NCS001AJ

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



Precautions Necessary for Steering Wheel Rotation After Battery Disconnect

NCS00125

NOTE:

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

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

OPERATION PROCEDURE

1. Connect both battery cables.

   NOTE:
   Supply power using jumper cables if battery is discharged.
2. Use the Intelligent Key or mechanical key to turn the ignition switch to the ″ACC″ position. At this time, the steering lock will be released.

3. Disconnect both battery cables. The steering lock will remain released and the steering wheel can be rotated.
4. Perform the necessary repair operation.
5. When the repair work is completed, return the ignition switch to the "LOCK" position before connecting the battery cables. (At this time, the steering lock mechanism will engage.)
6. Perform a self-diagnosis check of all control units using CONSULT-II.

Precautions for On Board Diagnostic (OBD) System of CVT and Engine

NCS001AK

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

CAUTION:

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

Precautions for TCM and CVT Assembly Replacement

NCS00126

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.

EEPROM ERASING PATTERNS

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

METHOD FOR ERASING THE EEPROM IN THE TCM

1. Connect CONSULT-II to data link connector. Refer to CVT-58, "CONSULT-II SETTING PROCEDURE" .
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.
5. Select “SELF-DIAG RESULTS” mode for “TRANSMISSION” with CONSULT-II.
6. Press the brake pedal and turn the brake switch ON.
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”.
9. Wait 3 seconds and then release the accelerator pedal.

10. Turn ignition switch OFF.

METHOD FOR WRITING DATA FROM THE ROM ASSEMBLY IN THE TRANSAXLE

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

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

CHECK METHOD

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

CAUTION:
Perform in the “P” or “N” position.

Action for Non-standard

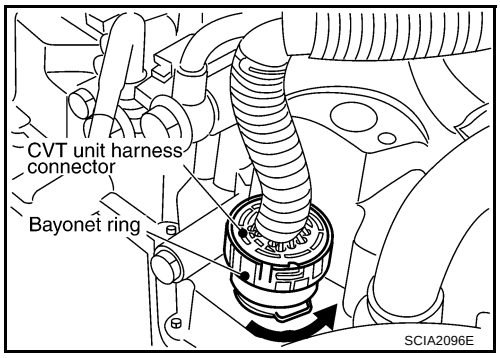
- Replace the CVT assembly.
- Replace the TCM.

Removal and Installation Procedure for CVT Unit Connector

NCS00127

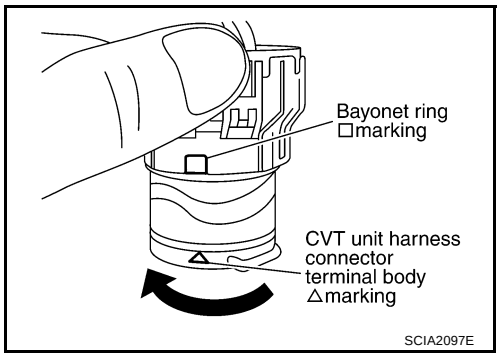
REMOVAL

Rotate bayonet ring counterclockwise, pull out CVT unit harness connector upward and remove it.

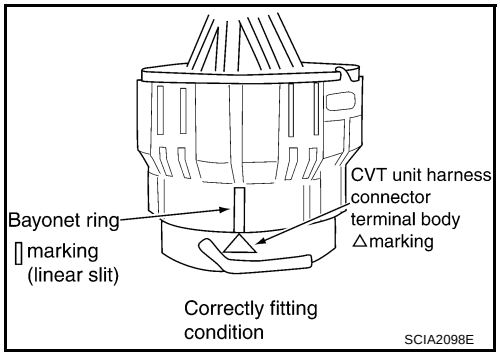


INSTALLATION

1. Align Δ marking on CVT unit harness connector terminal body with ❑ marking on bayonet ring, insert CVT unit harness connector, and then rotate bayonet ring clockwise.

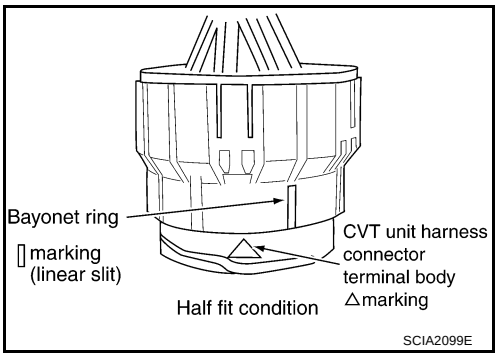


2. Rotate bayonet ring clockwise until Δ marking on CVT unit harness connector terminal body is aligned with the slit on bayonet ring as shown in the figure (correctly fitting condition), install CVT unit harness connector to CVT unit harness connector terminal body.



CAUTION:

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

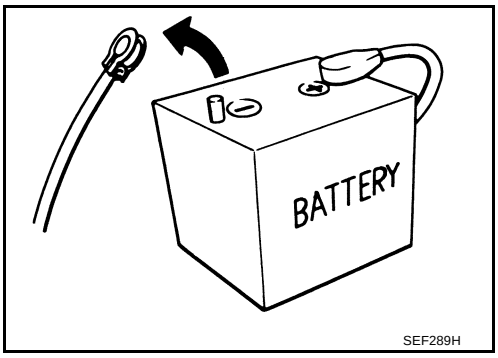


Precautions

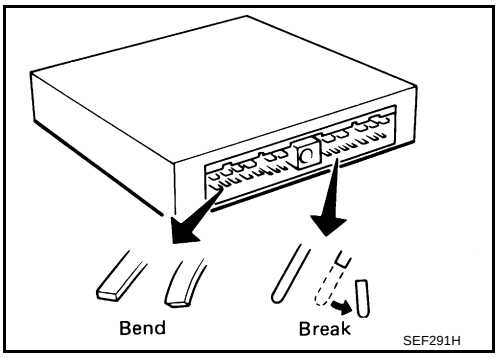
NCS00128

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

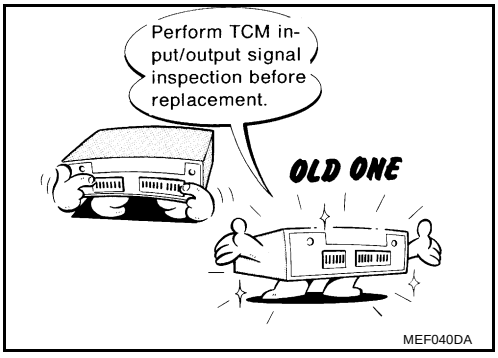
- **Before connecting or disconnecting the TCM harness connector, turn ignition switch OFF and disconnect negative battery cable. Because battery voltage is applied to TCM even if ignition switch is turned OFF.**



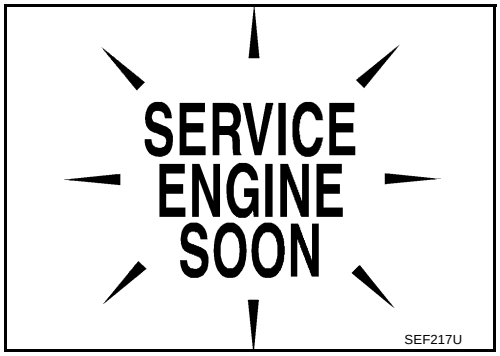
- **When connecting or disconnecting pin connectors into or from TCM, take care not to damage pin terminals (bend or break).**
  When connecting pin connectors make sure that there are not any bends or breaks on TCM pin terminal.



- **Before replacing TCM, perform TCM input/output signal inspection and make sure whether TCM functions properly or not. CVT-53, "TCM INSPECTION TABLE".**



- **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 MA-10, "Fluids and Lubricants" .
- 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

NCS00129

CVT FLUID COOLER SERVICE

If CVT fluid contains friction material (clutches, brakes, etc.), or if a CVT is replaced, inspect and clean the CVT fluid cooler mounted in the radiator or replace the radiator. Flush cooler lines using cleaning solvent and compressed air after repair. For CVT fluid cooler cleaning procedure, refer to CVT-17, "CVT Fluid Cooler Cleaning" . For radiator replacement, refer to CO-13, "RADIATOR" .

OBD-II SELF-DIAGNOSIS

- CVT self-diagnosis is performed by the TCM in combination with the ECM. The results can be read through the blinking pattern of the malfunction indicator lamp (MIL). Refer to the table on CVT-61, "Display Items List" for the indicator used to display each self-diagnostic result.
- The self-diagnostic results indicated by the MIL are automatically stored in both the ECM and TCM memories.
  Always perform the procedure on CVT-30, "HOW TO ERASE DTC" to complete the repair and avoid unnecessary blinking of the MIL.

For details of OBD-II, refer to EC-45, "ON BOARD DIAGNOSTIC (OBD) SYSTEM" .

- **Certain systems and components, especially those related to OBD, may use the new style slide-locking type harness connector. For description and how to disconnect, refer to PG-62, "HARNESS CONNECTOR" .**

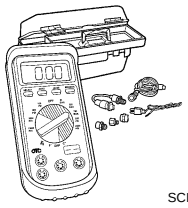
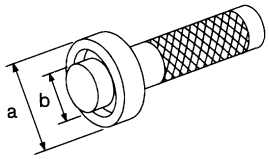
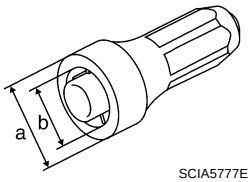
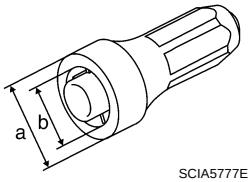
PREPARATION

PFP:00002

Special Service Tools

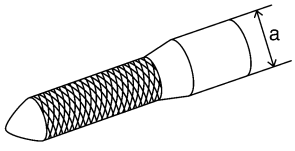
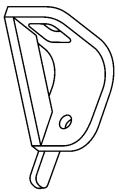
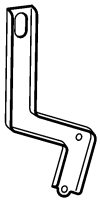
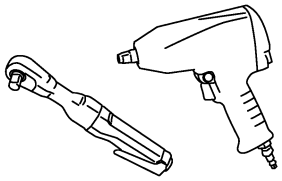
NCS0012B

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

Tool number (Kent-Moore No.) Tool name		Description
— (OTC3492) Oil pressure gauge set	 SCIA7531E	Measuring line pressure
— (J-34339-A) Drift a: 85.69 mm (3.37 in) dia. b: 50.4 mm (1.98 in) dia.	 NT084	Installing differential side oil seal ● With AWD models ● Converter housing side (right)
— (J-47244) Drift a: 65.83 mm (2.59 in) dia. b: 53.85 mm (2.12 in) dia.	 SCIA5777E	Installing differential side oil seal ● Transaxle case side (left)
ST33400001 (J-47005) Drift a: 69.85 mm (2.75 in) dia. b: 49.53 mm (1.95 in) dia.	 SCIA5777E	Installing differential side oil seal ● With 2WD models ● Converter housing side (right)

Commercial Service Tools

NCS0012C

Tool number Tool name	Description
31197CA000 Drive plate location guide a: 14 mm (0.55 in) dia.  SCIA2013E	Installing transaxle assembly
31093CA000 Slinger  SCIA2014E	Removing and installing transaxle assembly
31092CA000 Slinger  SCIA2015E	Removing and installing transaxle assembly
Power tool  PBIC0190E	Loosening nuts and bolts

CVT FLUID

PFP:KLE50

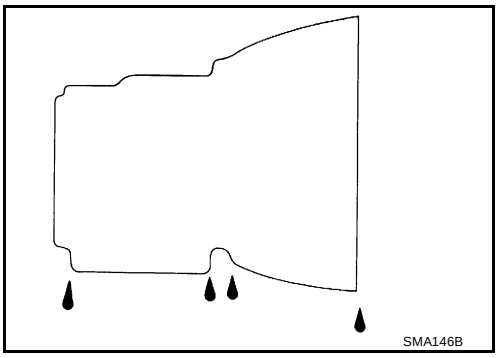
Checking CVT Fluid

NCS0012D

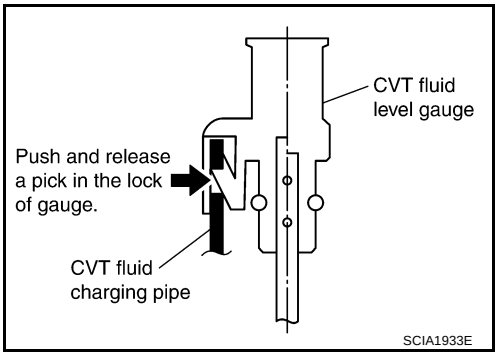
FLUID LEVEL CHECK

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

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



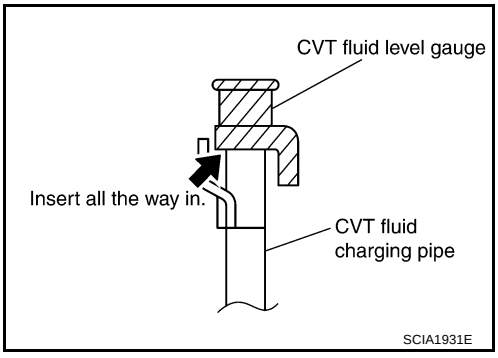
6. Pull out the CVT fluid level gauge from the CVT fluid charging pipe after pressing the tab on the CVT fluid level gauge to release the lock.



7. Wipe fluid off the CVT fluid level gauge. Insert the CVT fluid level gauge rotating 180° from the originally installed position, then securely push the CVT fluid level gauge until it meets the top end of the CVT fluid charging pipe.

CAUTION:

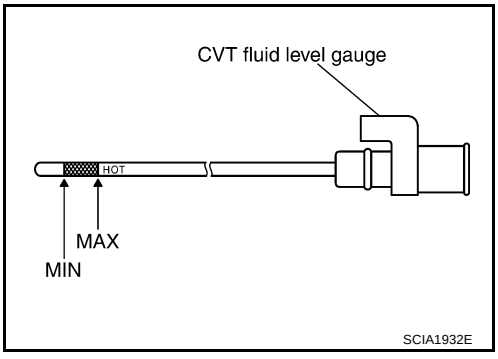
When wiping away the CVT fluid level gauge, always use lint-free paper, not a cloth rag.



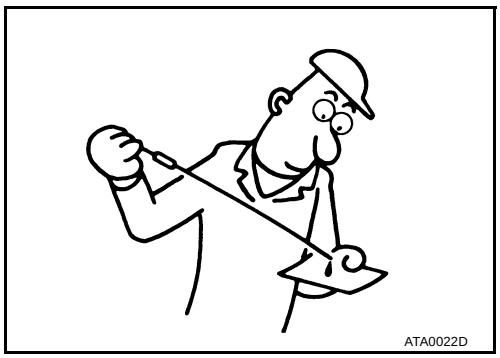
8. Place the selector lever in “P” or “N” and make sure the fluid level is within the specified range.

CAUTION:

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



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, brakes, etc.), replace radiator and flush cooler line using cleaning solvent and compressed air after repair of CVT. Refer to CO-13, "RADIATOR" and CVT-17, "CVT Fluid Cooler Cleaning" .



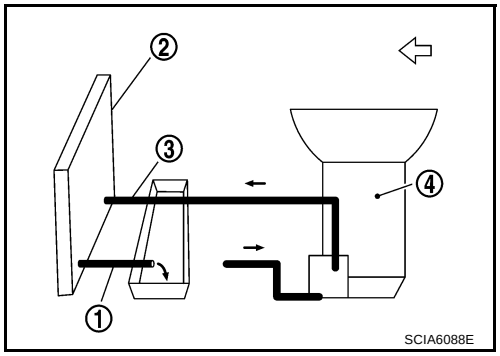
Changing CVT Fluid

NCS0012E

1. Warm up CVT fluid by driving the vehicle for 10 minutes.

- ⇦: Vehicle front
- Radiator (2)
- CVT fluid cooler hose (inlet side) (3)
- Transaxle assembly (4)

2. Drain CVT fluid from CVT fluid cooler hose (outlet side) (1) and refill with new CVT fluid at CVT fluid charging pipe with the engine running at idle speed.
3. Refill until new CVT fluid comes out from CVT fluid cooler hose (outlet side) (1).
   About 30 to 50% extra fluid will be required for this procedure.



CVT fluid:

Genuine NISSAN CVT Fluid NS-2

Fluid capacity:

Approx. 10.2 ℓ (10-6/8 US qt, 9 Imp qt)

CAUTION:

- **Use only Genuine NISSAN CVT Fluid NS-2. Do not mix with other fluid.**
- **Using CVT fluid other than Genuine NISSAN CVT Fluid NS-2 will deteriorate in driveability and CVT durability, and may damage the CVT, which is not covered by the warranty.**
- **When filling CVT fluid, take care not to scatter heat generating parts such as exhaust.**
- **Delete CVT fluid deterioration date with CONSULT-II after changing CVT fluid. Refer to CVT-59, "Check CVT Fluid Deterioration Date" .**

4. Check fluid level and condition. Refer to CVT-15, "Checking CVT Fluid" .

CVT Fluid Cooler Cleaning

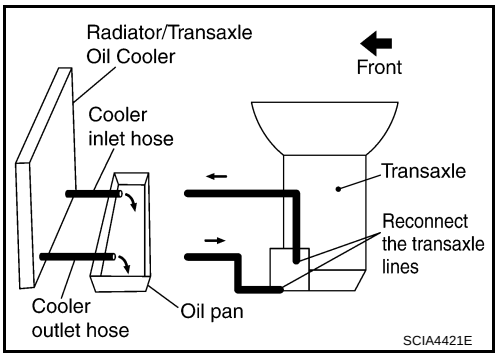
NCS0012F

Whenever an automatic transaxle is repaired, overhauled, or replaced, the CVT fluid cooler mounted in the radiator must be inspected and cleaned.
Metal debris and friction material, if present, can be trapped or become deposit in the CVT fluid cooler. This debris can contaminate the newly serviced CVT or, in severe cases, can block or restrict the flow of CVT fluid. In either case, malfunction of the newly serviced CVT may occur.
Debris, if present, may deposit as CVT fluid enters the cooler inlet. It will be necessary to back flush the cooler through the cooler outlet in order to flush out any built up debris.

CVT FLUID COOLER CLEANING PROCEDURE

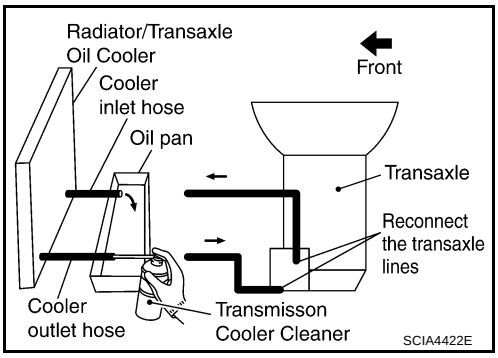
1. Position an oil pan under the transaxle's inlet and outlet cooler hoses.
2. Identify the inlet and outlet fluid cooler hoses.
3. Disconnect the fluid cooler inlet and outlet rubber hoses from the steel cooler tubes or bypass valve.

   NOTE:
   Replace the cooler hoses if rubber material from the hose remains on the tube fitting.
4. Allow any CVT fluid that remains in the cooler hoses to drain into the oil pan.

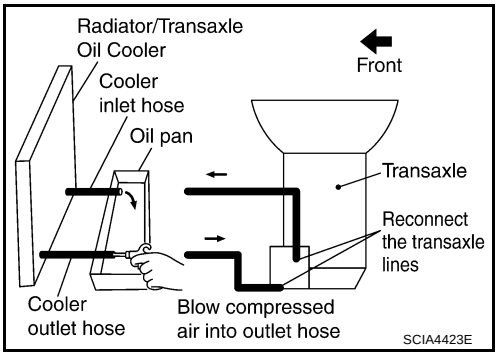


5. Insert the extension adapter hose of a can of Transmission Cooler Cleaner (Nissan P/N 999MP-AM006) into the cooler outlet hose.

   CAUTION:
   - **Wear safety glasses and rubber gloves when spraying the Transmission Cooler Cleaner.**
   - **Spray Transmission Cooler Cleaner only with adequate ventilation.**
   - **Avoid contact with eyes and skin.**
   - **Do not breath vapors or spray mist.**



6. Hold the hose and can as high as possible and spray Transmission Cooler Cleaner in a continuous stream into the cooler outlet hose until CVT fluid flows out of the cooler inlet hose for 5 seconds.
7. Insert the tip of an air gun into the end of the cooler outlet hose.
8. Wrap a shop rag around the air gun tip and end of the cooler outlet hose.
9. Blow compressed air regulated to 5 to 9 kg/cm^2 (70 to 130 psi) through the cooler outlet hose for 10 seconds to force out any remaining CVT fluid.
10. Repeat steps 5 through 9 three additional times.
11. Position an oil pan under the banjo bolts that connect the CVT fluid cooler steel lines to the transaxle.
12. Remove the banjo bolts.



13. Flush each steel line from the cooler side back toward the transaxle by spraying Transmission Cooler Cleaner in a continuous stream for 5 seconds.
14. Blow compressed air regulated to 5 to 9 kg/cm^2 (70 to 130 psi) through each steel line from the cooler side back toward the transaxle for 10 seconds to force out any remaining CVT fluid.
15. Ensure all debris is removed from the steel cooler lines.
16. Ensure all debris is removed from the banjo bolts and fittings.
17. Perform CVT-18, "CVT FLUID COOLER DIAGNOSIS PROCEDURE" .

CVT FLUID COOLER DIAGNOSIS PROCEDURE

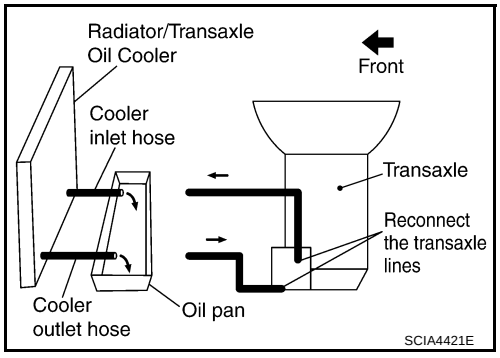
NOTE:

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

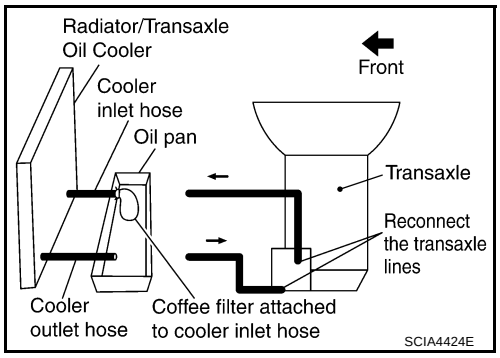
1. Position an oil pan under the transaxle's inlet and outlet cooler hoses.
2. Clean the exterior and tip of the cooler inlet hose.
3. Insert the extension adapter hose of a can of Transmission Cooler Cleaner (Nissan P/N 999MP-AM006) into the cooler outlet hose.

   CAUTION:

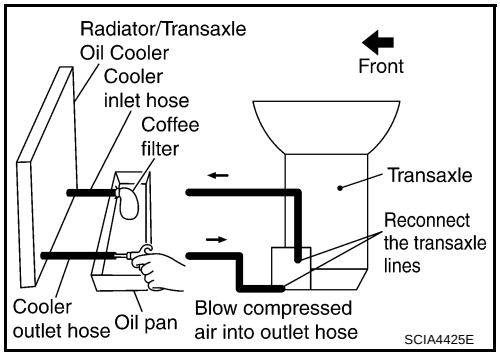
   - **Wear safety glasses and rubber gloves when spraying the Transmission Cooler Cleaner.**
   - **Spray Transmission Cooler Cleaner only with adequate ventilation.**
   - **Avoid contact with eyes and skin.**
   - **Do not breath vapors or spray mist.**



4. Hold the hose and can as high as possible and spray Transmission Cooler Cleaner in a continuous stream into the cooler outlet hose until CVT fluid flows out of the cooler inlet hose for 5 seconds.
5. Tie a common white, basket-type coffee filter to the end of the cooler inlet hose.



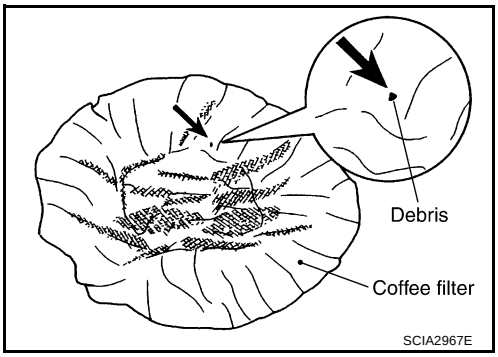
6. Insert the tip of an air gun into the end of the cooler outlet hose.
7. Wrap a shop rag around the air gun tip and end of cooler outlet hose.
8. Blow compressed air regulated to 5 to 9 kg/cm^2 (70 to 130 psi) through the cooler outlet hose to force any remaining CVT fluid into the coffee filter.
9. Remove the coffee filter from the end of the cooler inlet hose.
10. Perform CVT-19, "CVT FLUID COOLER INSPECTION PROCEDURE" .



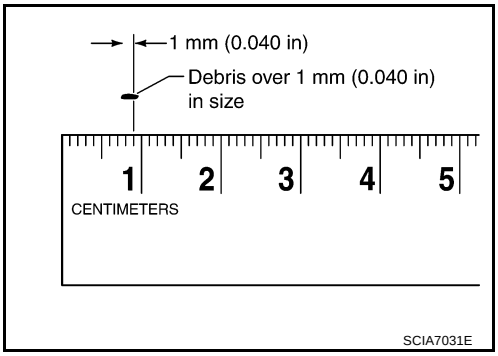
CVT FLUID COOLER INSPECTION PROCEDURE

1. Inspect the coffee filter for debris.

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



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



CVT FLUID COOLER FINAL INSPECTION

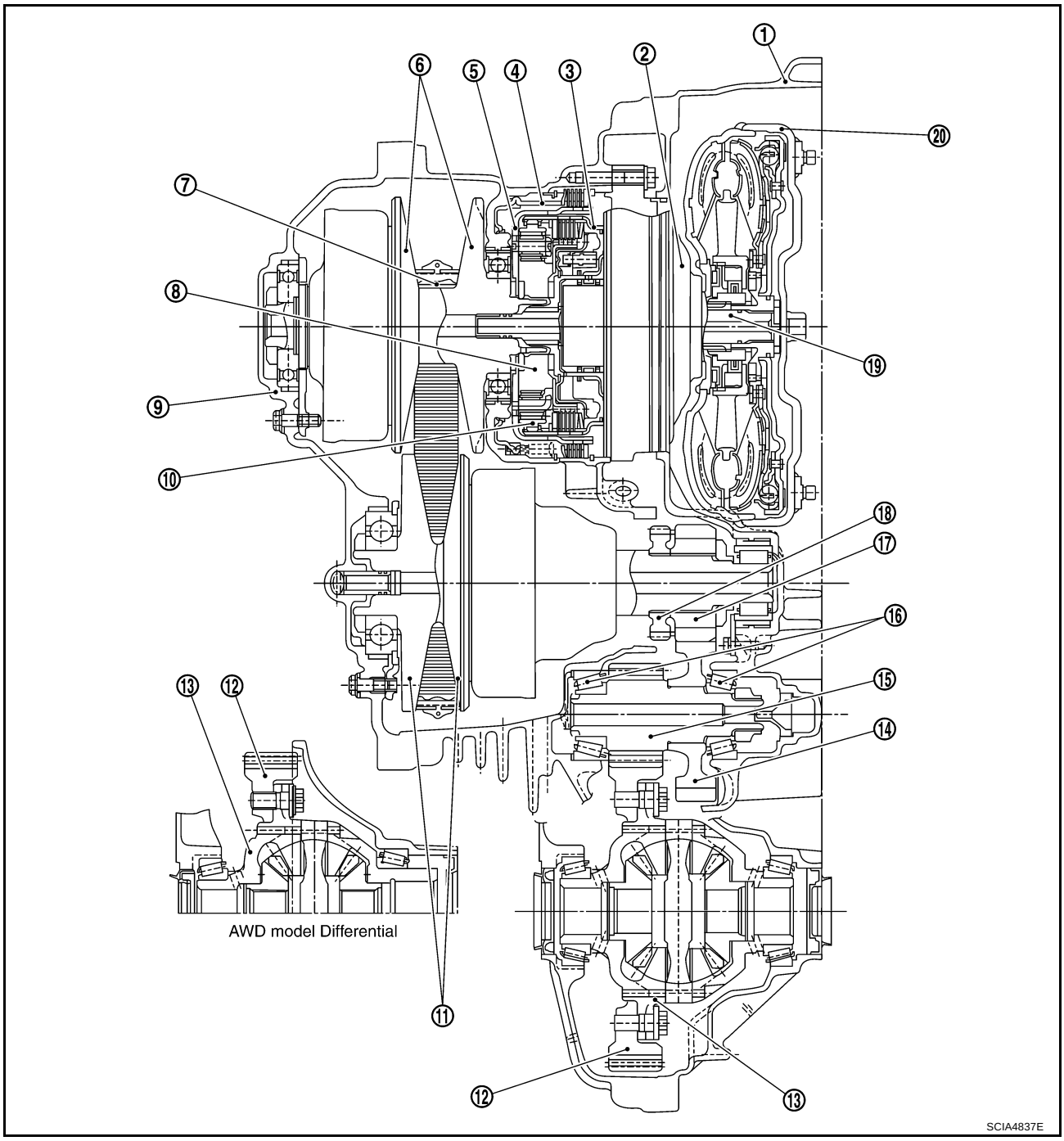
After performing all procedures, ensure that all remaining oil is cleaned from all components.

CVT SYSTEM

PFP:31036

Cross-sectional View - RE0F09A

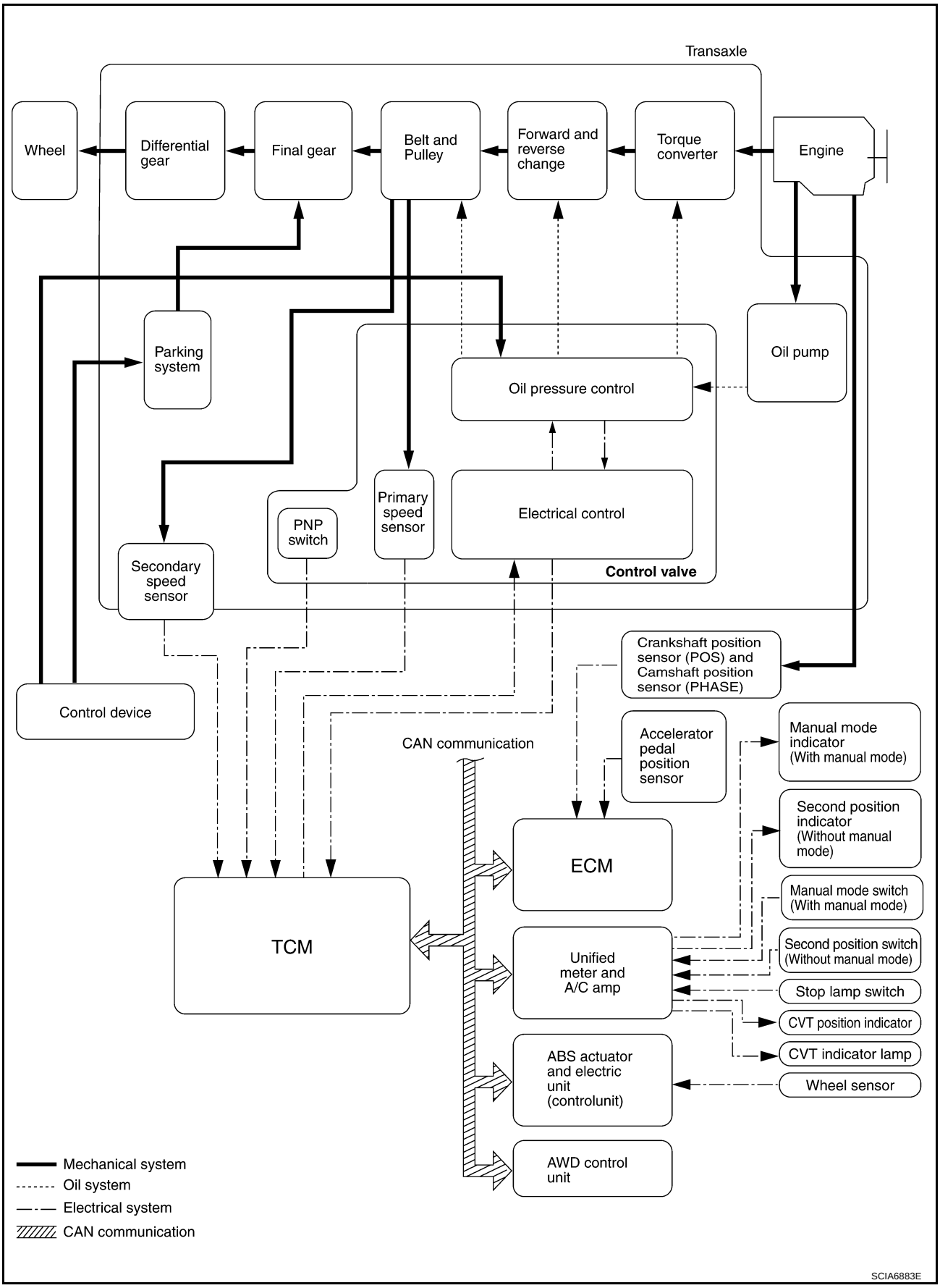
NCS0012G



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

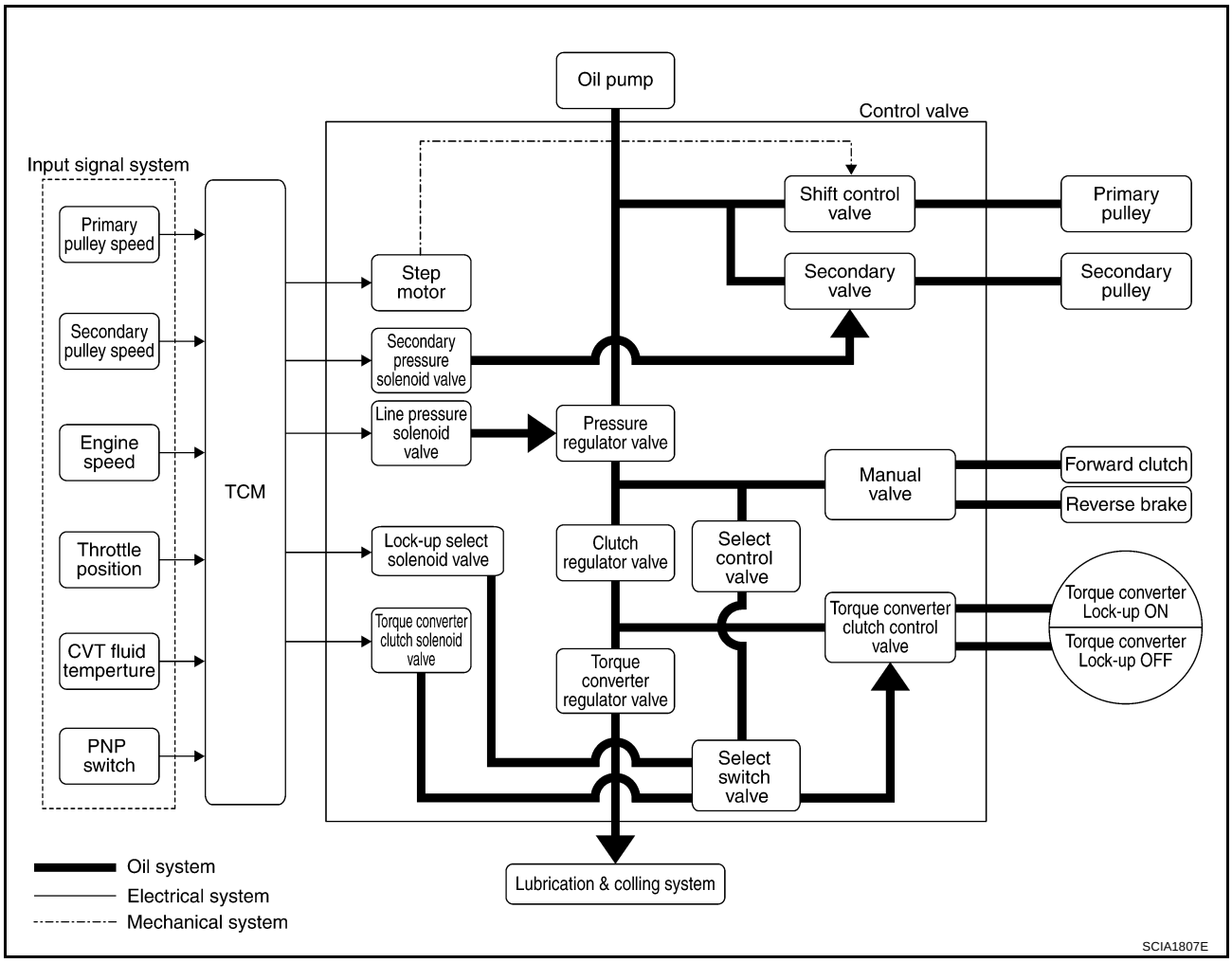
Control System

NCS0012H



Hydraulic Control System

NCS0012I



TCM Function

NCS0012J

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.

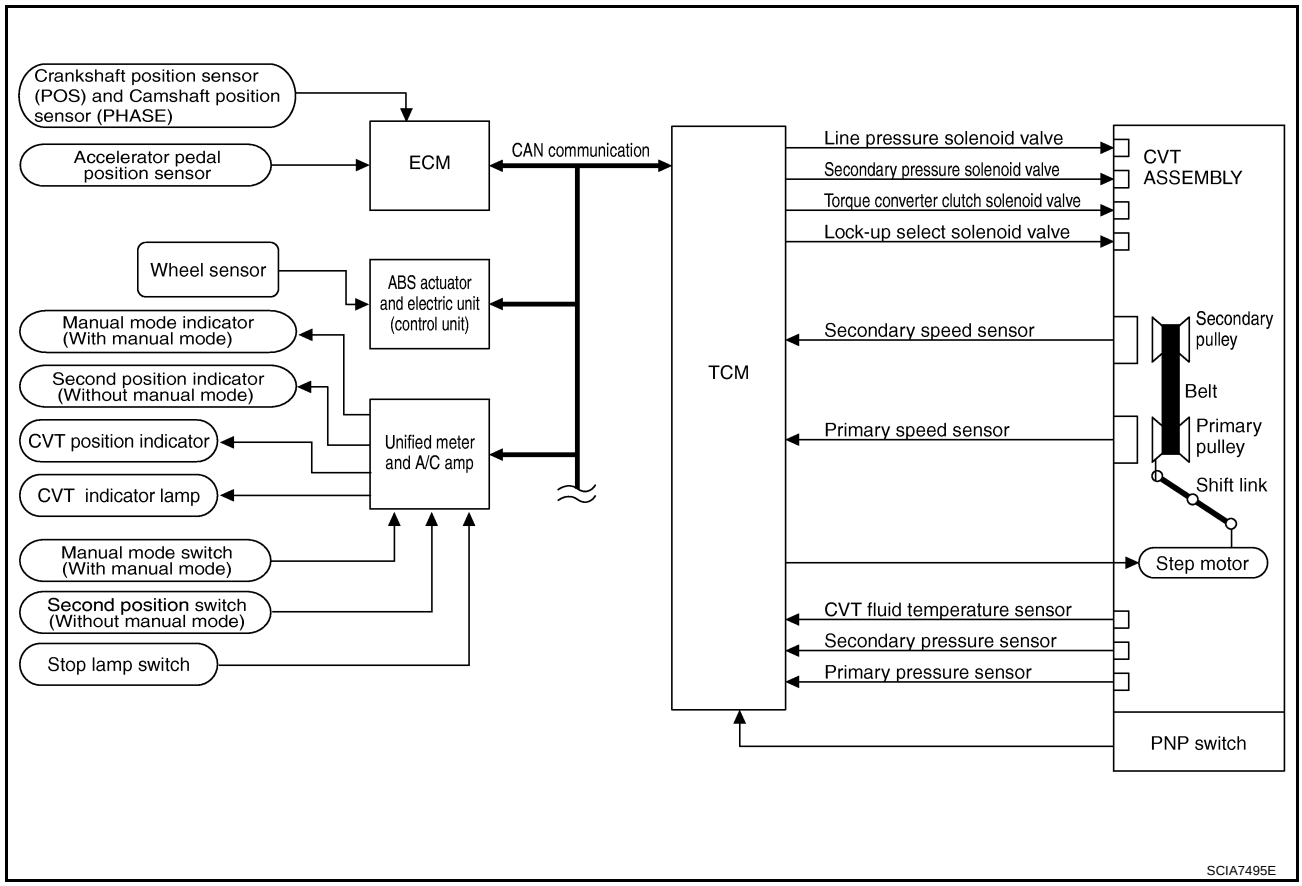
CONTROL SYSTEM OUTLINE

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
PNP switch Accelerator pedal position signal Closed throttle position signal Engine speed signal CVT fluid temperature sensor Vehicle speed signal Manual mode signal Second position 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 Second position indicator* CVT position indicator CVT indicator lamp Starter relay

*: Without manual mode.

CONTROL SYSTEM DIAGRAM



CAN Communication

NCS0012K

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 LAN-49, "CAN System Specification Chart" .

Input/Output Signal of TCM

NCS0012L

Control item		Fluid pressure control	Select control	Shift control	Lock-up control	CAN communication control	Fail-safe function(*2)
Input	PNP switch	X	X	X	X	X	X
	Accelerator pedal position signal (*1)	X	X	X	X	X	X
	Closed throttle position signal(*1)	X		X	X	X	
	Engine speed signal(*1)	X	X		X	X	X
	CVT fluid temperature sensor	X	X	X	X		X
	Manual mode signal(*1)	X		X	X	X	X
	Second position signal(*1) (*3)	X		X		X	
	Stop lamp switch signal(*1)	X		X	X	X	
	Primary speed sensor	X		X	X	X	X
	Secondary speed sensor	X	X	X	X	X	X
	Primary pressure sensor	X		X			
	Secondary pressure sensor	X		X			X
	TCM power supply voltage signal	X	X	X	X	X	X
Output	Step motor			X			X
	TCC solenoid valve		X		X		X
	Lock-up select solenoid valve		X		X		X
	Line pressure solenoid valve	X	X	X			X
	Secondary pressure solenoid valve	X		X			X

*1 : Input by CAN communications.

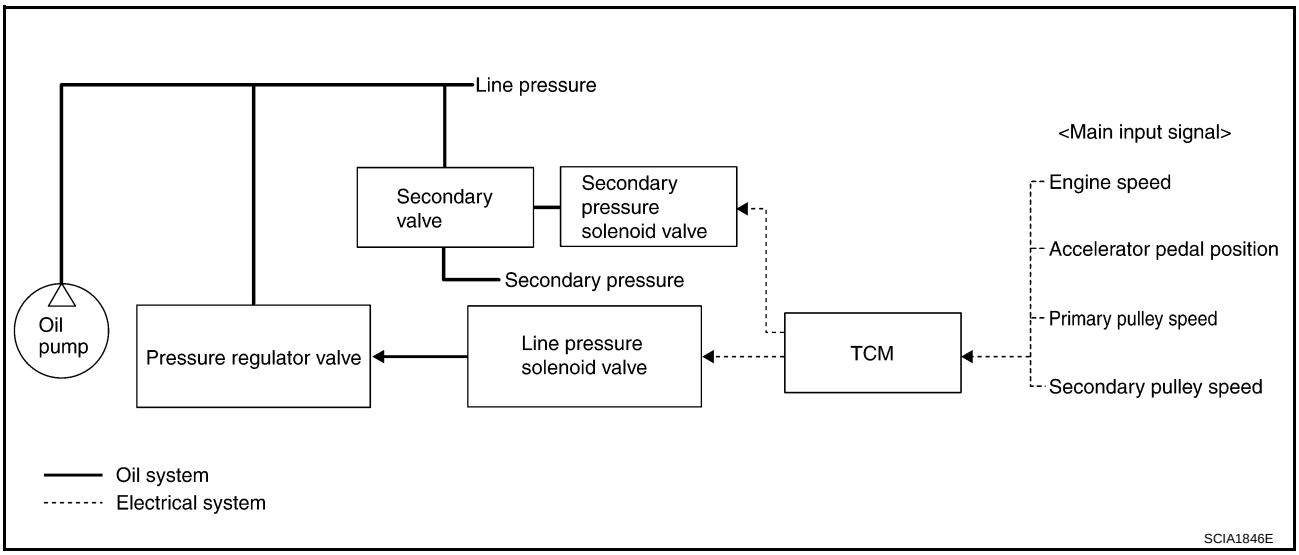
*2 : If these input and output signals are different, the TCM triggers the fail-safe function.

*3 : Without manual mode.

Line Pressure and Secondary Pressure Control

NCS0012M

- 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.

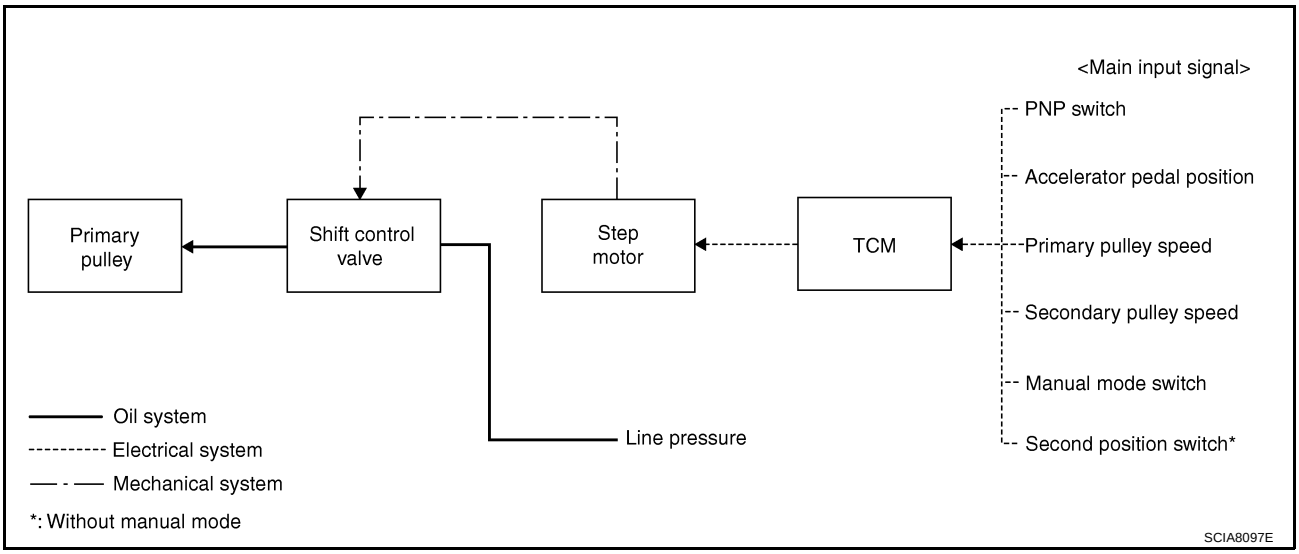
FEEDBACK CONTROL

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

NCS0012N

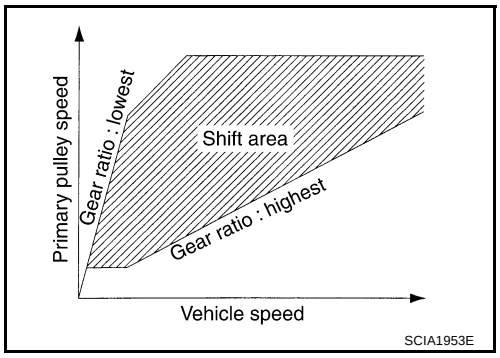
In order to select the gear ratio which can obtain the driving force in accordance with driver's intention and the vehicle condition, TCM monitors the driving conditions, such as the vehicle speed and the throttle position and selects the optimum gear ratio, and determines the gear change steps to the 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.



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.

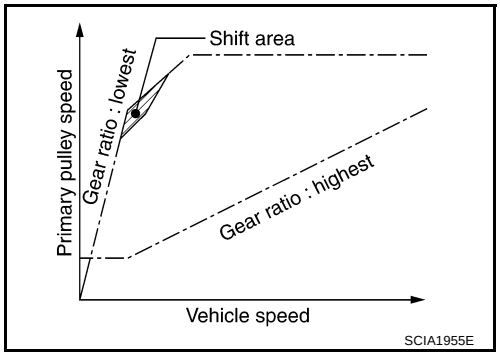


"S" POSITION (WITHOUT MANUAL MODE)

Use this position for the improved engine braking.

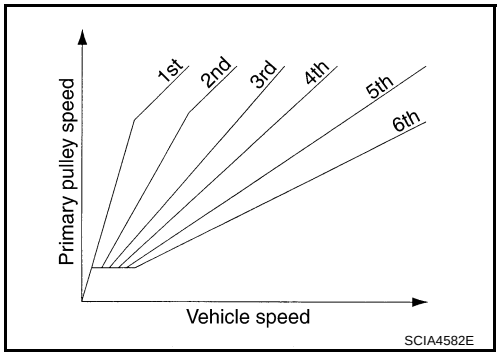
"L" POSITION (WITHOUT MANUAL MODE)

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



"M" POSITION

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.

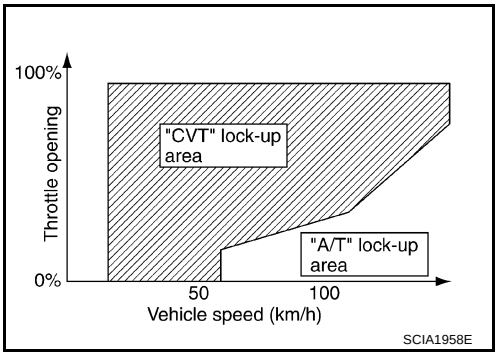
ACCELERATION CONTROL

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 driveability.

Lock-up and Select Control

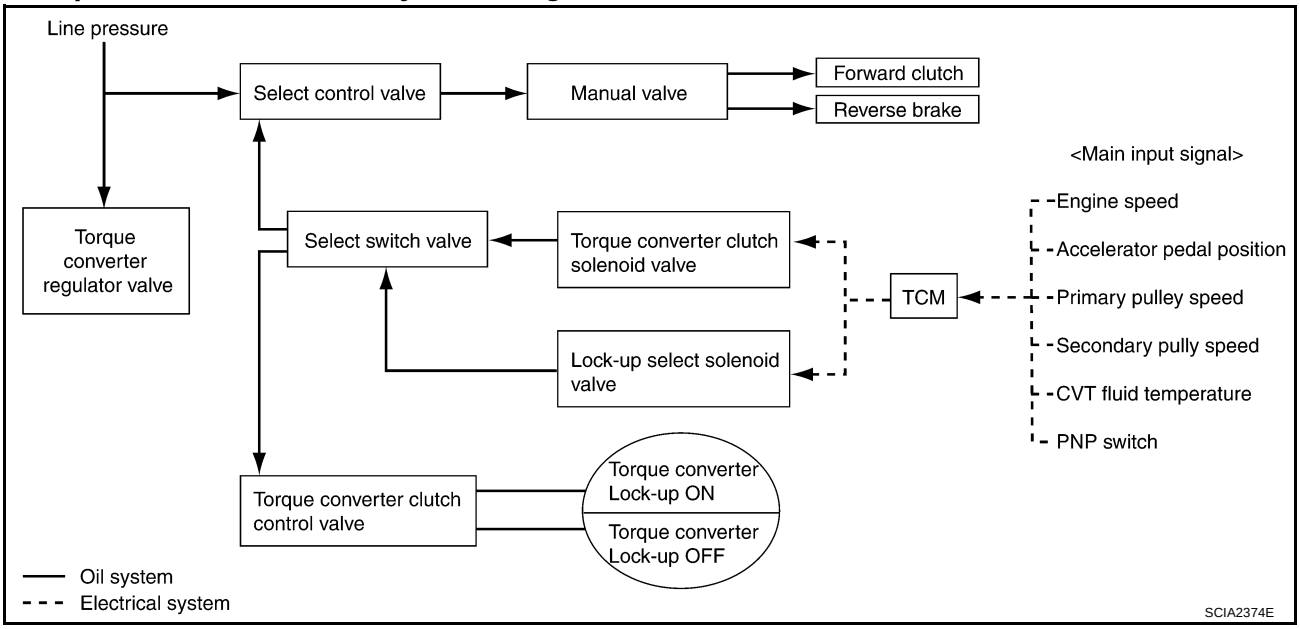
NCS0012O

- 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.

Control Valve

NCS0012P

FUNCTION OF CONTROL VALVE

Name	Function
Torque converter regulator valve	Optimizes the supply pressure for the torque converter depending on driving conditions.
Pressure regulator valve	Optimizes the discharge pressure from the oil pump depending on driving conditions.
TCC control valve	● Activates or deactivate the lock-up. ● Lock-up smoothly by opening lock-up operation excessively.
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 difference between the stepping motor and the primary pulley.
Secondary valve	Controls the line pressure from the secondary pulley depending on operating conditions.
Clutch regulator valve	Adjusts the clutch operating pressure depending on operating conditions.
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

PFP:00028

Introduction

NCS0012Q

The CVT system has two self-diagnostic systems.
The first is the emission-related on board diagnostic system (OBD-II) performed by the TCM in combination with the ECM. The malfunction is indicated by the MIL (malfunction indicator lamp) and is stored as a DTC in the ECM memory, and the TCM memory.
The second is the TCM original self-diagnosis performed by the TCM. The malfunction is stored in the TCM memory. The detected items are overlapped with OBD-II self-diagnostic items. For detail, refer to CVT-61, "Display Items List" .

OBD-II Function for CVT System

NCS0012R

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

One or Two Trip Detection Logic of OBD-II

NCS0012S

ONE TRIP DETECTION LOGIC

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

TWO TRIP DETECTION LOGIC

When a malfunction is sensed during the first test drive, it is stored in the ECM memory as a 1st trip DTC (diagnostic trouble code) or 1st trip freeze frame data. At this point, the MIL will not illuminate. — 1st trip
If the same malfunction as that experienced during the first test drive is sensed during the second test drive, the MIL will illuminate. — 2nd trip
The “trip” in the “One or Two Trip Detection Logic” means a driving mode in which self-diagnosis is performed during vehicle operation.

OBD-II Diagnostic Trouble Code (DTC)

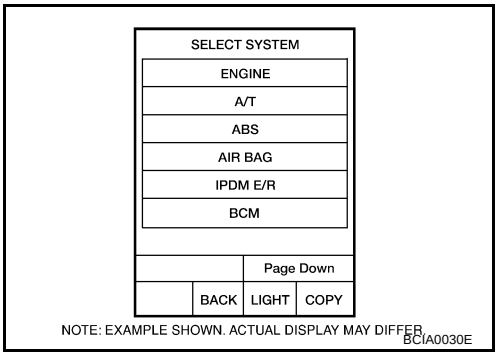
NCS0012T

HOW TO READ DTC AND 1ST TRIP DTC

DTC and 1st trip DTC can be read by the following methods.
(with CONSULT-II or GST GST) 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.)

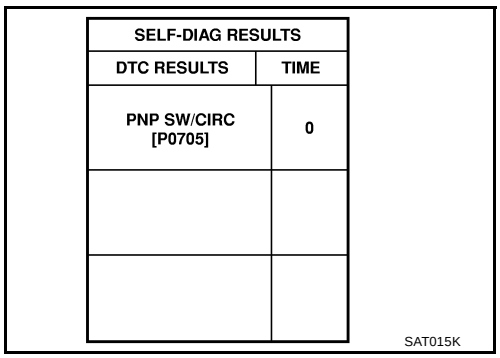
- **1st trip DTC No. is the same as DTC No.**
- **Output of the diagnostic trouble code indicates that the indicated circuit has a malfunction. However, in case of the Mode II and GST, they do not indicate whether the malfunction is still occurring or occurred in the past and returned to normal.**
  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 CONSULT-II. Time data indicates how many times the vehicle was driven after the last detection of a DTC.

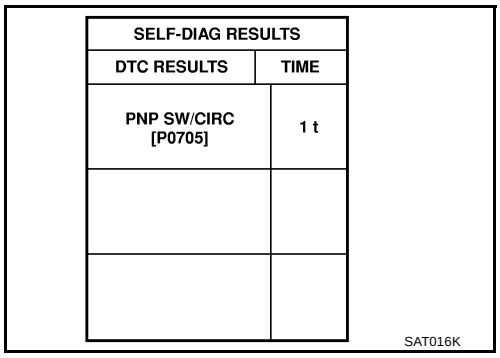


NOTE: EXAMPLE SHOWN. ACTUAL DISPLAY MAY DIFFER.
BCIA0030E

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



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



Freeze Frame Data and 1st Trip Freeze Frame Data

The ECM has a memory function, which stores the driving condition such as fuel system status, calculated load value, engine coolant temperature, short term fuel trim, long term fuel trim, engine speed and vehicle speed at the moment the ECM detects a malfunction.
Data which are stored in the ECM memory, along with the 1st trip DTC, are called 1st trip freeze frame data, and the data, stored together with the DTC data, are called freeze frame data and displayed on CONSULT-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-111, "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/MIL on) is stored in the ECM memory, 1st trip freeze frame data is no longer stored. Remember, only one set of freeze frame data can be stored in the ECM. The ECM has the following priorities to update the data.

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

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

HOW TO ERASE DTC

The diagnostic trouble code can be erased by CONSULT-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 EC-46, "Emission-Related Diagnostic Information" .

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

- **1st trip freeze frame data**
- **System readiness test (SRT) codes**
- **Test values**

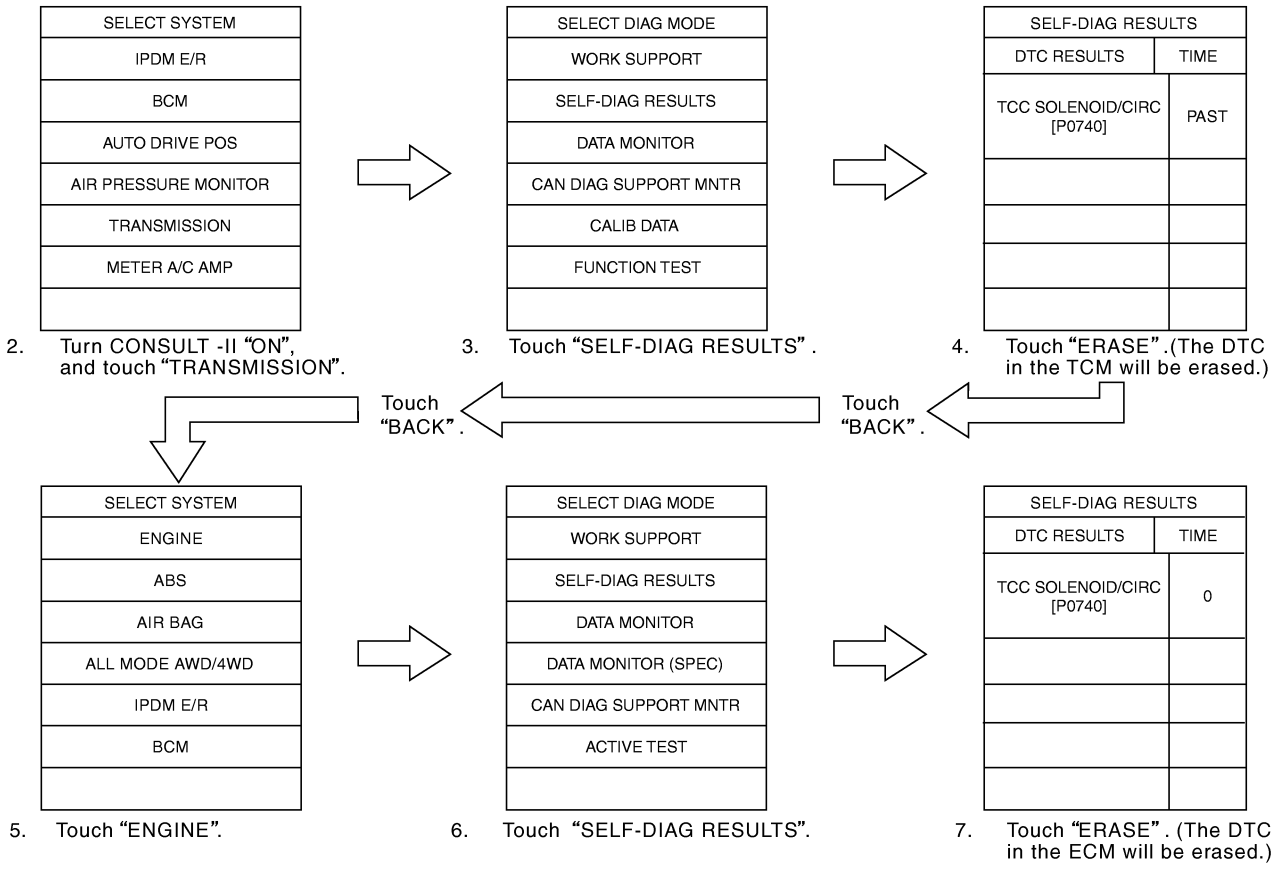
HOW TO ERASE DTC (WITH CONSULT-II)

- **If a DTC is displayed for both ECM and TCM, it is necessary to be erased for both ECM and TCM.**

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. Turn CONSULT-II ON and touch “TRANSMISSION”.
3. Touch “SELF-DIAG RESULTS”.
4. Touch “ERASE”. (The DTC in the TCM will be erased.) Then touch “BACK” twice.
5. Touch “ENGINE”.
6. Touch “SELF-DIAG RESULTS”.
7. Touch “ERASE”. (The DTC in the ECM will be erased.)

How to erase DTC (With CONSULT-II)

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.



HOW TO ERASE DTC (WITH GST)

1. If the ignition switch stays ON after repair work, be sure to turn ignition switch OFF once. Wait at least 10 seconds and then turn it ON (engine stopped) again.
2. Select Mode 4 with GST (Generic Scan Tool). For details, refer to EC-123, "Generic Scan Tool (GST) Function" .

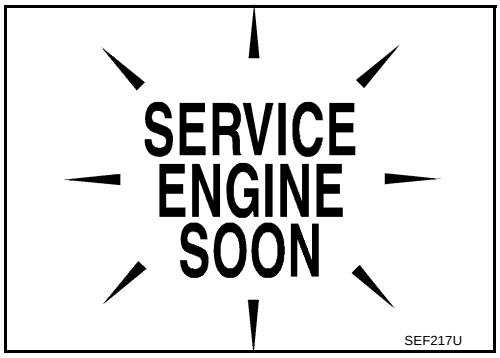
Malfunction Indicator Lamp (MIL)

NCS0012U

DESCRIPTION

The MIL is located on the instrument panel.

1. The MIL will light up when the ignition switch is turned ON without the engine running. This is a bulb check.
   - If the MIL does not light up, refer to DI-37, "WARNING LAMPS" , or see EC-662, "MIL AND DATA LINK CONNECTOR" .
2. When the engine is started, the MIL should go off.
   If the MIL remains on, the on board diagnostic system has detected an engine system malfunction.



TROUBLE DIAGNOSIS

PFP:00004

DTC Inspection Priority Chart

NCS0012V

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 CVT-68 .

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

Fail-safe

NCS0012W

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 5000 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.

Step Motor

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

CVT Lock-up Select Solenoid

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

TCM Power Supply (Memory Back-up)

Transaxle assembly is protected by limiting the engine torque when the memory back-up power supply (for controlling) from the battery is not supplied to TCM. Normal 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

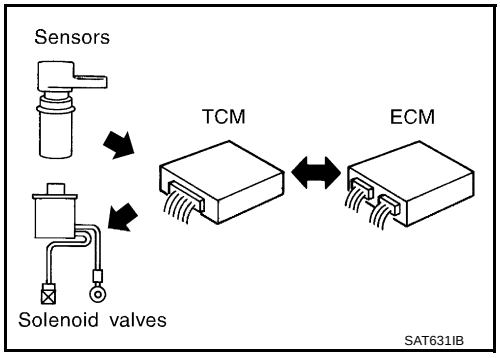
NCS0012X

INTRODUCTION

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

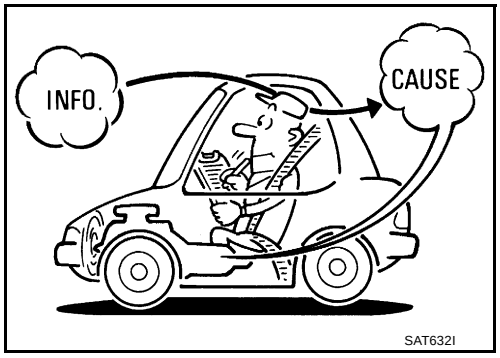
The TCM also communicates with the ECM by means of a signal sent from sensing elements used with the OBD-related parts of the CVT system for malfunction-diagnostic purposes. The TCM is capable of diagnosing malfunctioning parts while the ECM can store malfunctions in its memory.

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



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

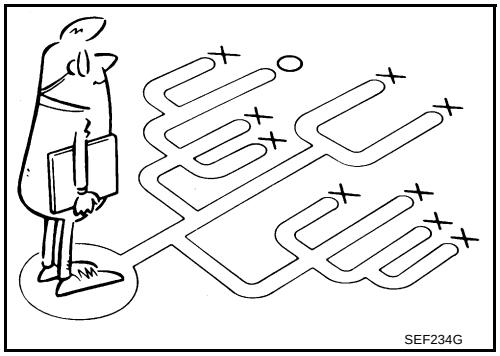
A visual check only may not find the cause of the errors. A road test with CONSULT-II (or GST) or a circuit tester connected should be performed. Follow the CVT-35, "WORK FLOW" .



Before undertaking actual checks, take a few minutes to talk with a customer who approaches with a driveability complaint. The customer can supply good information about such 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-36) should be used.

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

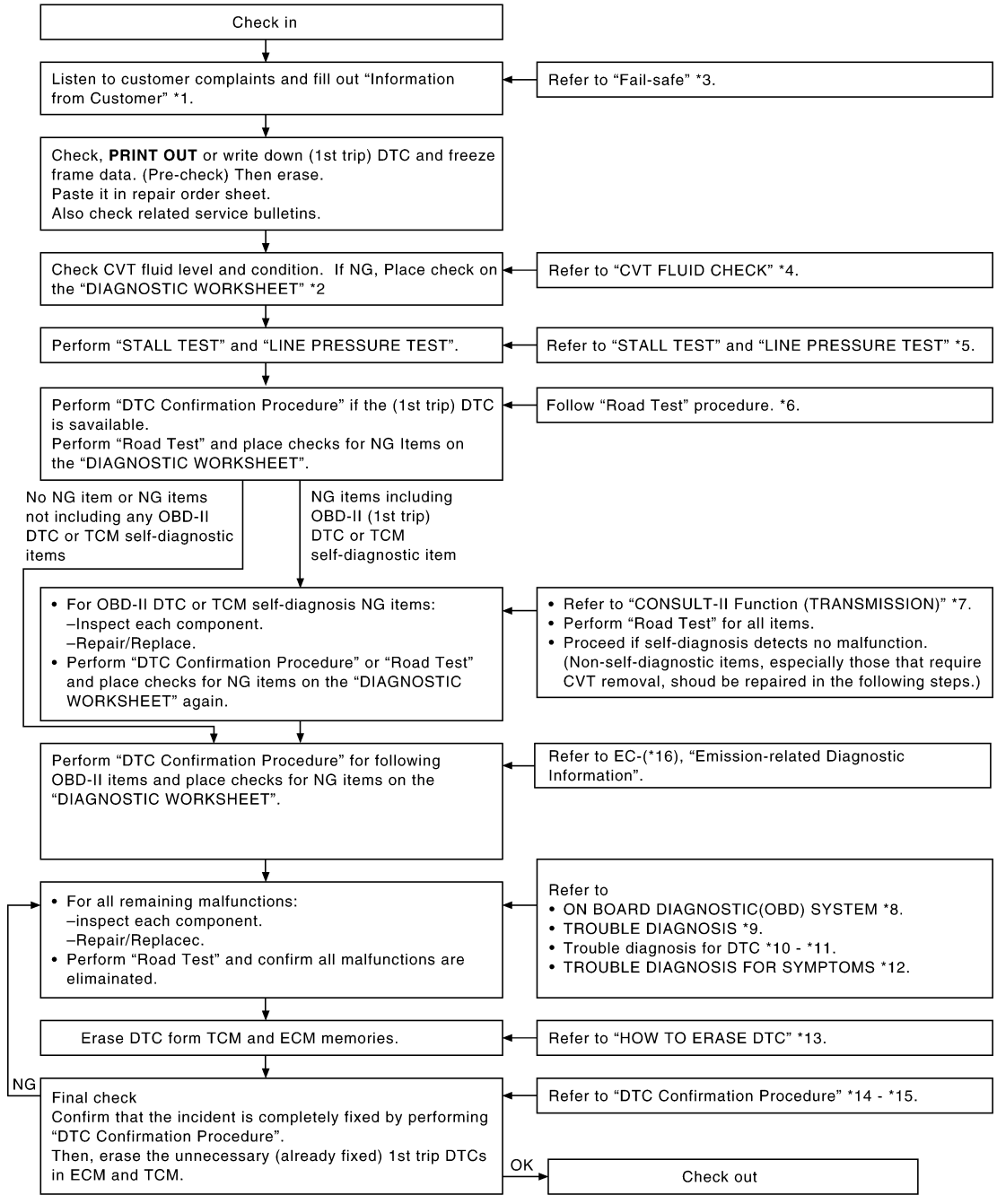
Also check related Service bulletins.



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.
Make good use of the two sheets provided, CVT-36, "Information From Customer" and CVT-36, "Diagnostic Worksheet Chart" , to perform the best troubleshooting possible.

Work Flow Chart



SCIA6877E

*1. CVT-36 *2. CVT-36 *3. CVT-33
*4. CVT-42 *5. CVT-42, CVT-43 *6. CVT-45
*7. CVT-56 *8. CVT-29 *9. CVT-33
*10. CVT-68 *11. CVT-172 *12. CVT-180
*13. CVT-30 *14. CVT-68 *15. CVT-172
*16. EC-46

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. (❑ Any position ❑ Particular position)	
	❑ No shift	
	❑ Lock-up malfunction	
	❑ Shift shock or slip (❑ N → D ❑ N → R ❑ Lock-up ❑ Any drive position)	
	❑ Noise or vibration	
	❑ No pattern select	
	❑ Others ( )	
Malfunction indicator lamp (MIL)	❑ Continuously lit	❑ Not lit

Diagnostic Worksheet Chart

1	❑ Read the item on cautions concerning fail-safe and understand the customer's complaint.			CVT-33
2	❑ CVT fluid inspection			
		❑ Leak (Repair leak location.) ❑ State ❑ Amount		CVT-42
3	❑ Stall test and line pressure test			
		❑ Stall test		
			❑ Torque converter one-way clutch ❑ Reverse brake ❑ Forward clutch ❑ Steel belt	❑ Engine ❑ Line pressure low ❑ Primary pulley ❑ Secondary pulley
		❑ Line pressure inspection - Suspected part:		

4	❑ Perform road test.			CVT-45
	4-1.	Check before engine is started		CVT-47
		❑ CVT-184, "CVT Indicator Lamp Does Not Come On" ❑ Perform self-diagnosis. Enter checks for detected items. CVT-61		
			❑ CVT-68, "DTC U1000 CAN COMMUNICATION LINE" ❑ CVT-71, "DTC P0615 START SIGNAL CIRCUIT" ❑ CVT-75, "DTC P0703 STOP LAMP SWITCH CIRCUIT" ❑ CVT-77, "DTC P0705 PARK/NEUTRAL POSITION SWITCH" ❑ CVT-84, "DTC P0710 CVT FLUID TEMPERATURE SENSOR CIRCUIT" ❑ CVT-89, "DTC P0715 INPUT SPEED SENSOR CIRCUIT (PRI SPEED SENSOR)" ❑ CVT-94, "DTC P0720 VEHICLE SPEED SENSOR CVT (SECONDARY SPEED SENSOR)" ❑ CVT-100, "DTC P0725 ENGINE SPEED SIGNAL" ❑ CVT-102, "DTC P0730 BELT DAMAGE" ❑ CVT-104, "DTC P0740 TORQUE CONVERTER CLUTCH SOLENOID VALVE" ❑ CVT-109, "DTC P0744 A/T TCC S/V FUNCTION (LOCK-UP)" ❑ CVT-112, "DTC P0745 LINE PRESSURE SOLENOID VALVE" ❑ CVT-117, "DTC P0746 PRESSURE CONTROL SOLENOID A PERFORMANCE (LINE PRESSURE SOLENOID VALVE)" ❑ CVT-120, "DTC P0776 PRESSURE CONTROL SOLENOID B PERFORMANCE (SEC PRESSURE SOLENOID VALVE)" ❑ CVT-123, "DTC P0778 PRESSURE CONTROL SOLENOID B ELECTRICAL (SEC PRESSURE SOLENOID VALVE)" ❑ CVT-128, "DTC P0826 MANUAL MODE SWITCH CIRCUIT" ❑ CVT-133, "DTC P0840 TRANSMISSION FLUID PRESSURE SENSOR A CIRCUIT (SEC PRESSURE SENSOR)" ❑ CVT-138, "DTC P0841 PRESSURE SENSOR FUNCTION" ❑ CVT-141, "DTC P0845 TRANSMISSION FLUID PRESSURE SENSOR B CIRCUIT (PRI PRESSURE SENSOR)" ❑ CVT-146, "DTC P0868 SECONDARY PRESSURE DOWN" ❑ CVT-149, "DTC P1701 TRANSMISSION CONTROL MODULE (POWER SUPPLY)" ❑ CVT-154, "DTC P1705 THROTTLE POSITION SENSOR" ❑ CVT-156, "DTC P1722 ESTM VEHICLE SPEED SIGNAL" ❑ CVT-158, "DTC P1723 CVT SPEED SENSOR FUNCTION" ❑ CVT-160, "DTC P1726 ELECTRIC THROTTLE CONTROL SYSTEM" ❑ CVT-162, "DTC P1740 LOCK-UP SELECT SOLENOID VALVE CIRCUIT" ❑ CVT-168, "DTC P1777 STEP MOTOR - CIRCUIT" ❑ CVT-172, "DTC P1778 STEP MOTOR - FUNCTION"	
	4-2.	Check at idle		CVT-47
		❑ CVT-185, "Engine Cannot Be Started in “P” and “N” Position" ❑ CVT-186, "In “P” Position, Vehicle Moves Forward or Backward When Pushed" ❑ CVT-186, "In “N” Position, Vehicle Moves" ❑ CVT-187, "Large Shock “N” → “R” Position" ❑ CVT-188, "Vehicle Does Not Creep Backward in “R” Position" ❑ CVT-190, "Vehicle Does Not Creep Forward in “D”, “S” or “L” Position"		

<table>
<tr><td rowspan="4">4</td><td rowspan="4">4-3.</td><td colspan="2">Cruise test</td><td>CVT-49</td></tr>
<tr><td colspan="2">❏ CVT-191, "CVT Does Not Shift"
❏ CVT-192, "Cannot Be Changed to Manual Mode"
❏ CVT-193, "CVT Does Not Shift in Manual Mode"
❏ CVT-194, "Cannot Be Changed to Second Position (Without Manual Mode)"
❏ CVT-195, "Cannot Be Changed to “L” Position (Without Manual Mode)"
❏ CVT-196, "Vehicle Does Not Decelerate by Engine Brake"
❏ perform self-diagnosis. Enter checks for detected items. CVT-61</td><td rowspan="2"></td></tr>
<tr><td></td><td>❏ CVT-68, "DTC U1000 CAN COMMUNICATION LINE"
❏ CVT-71, "DTC P0615 START SIGNAL CIRCUIT"
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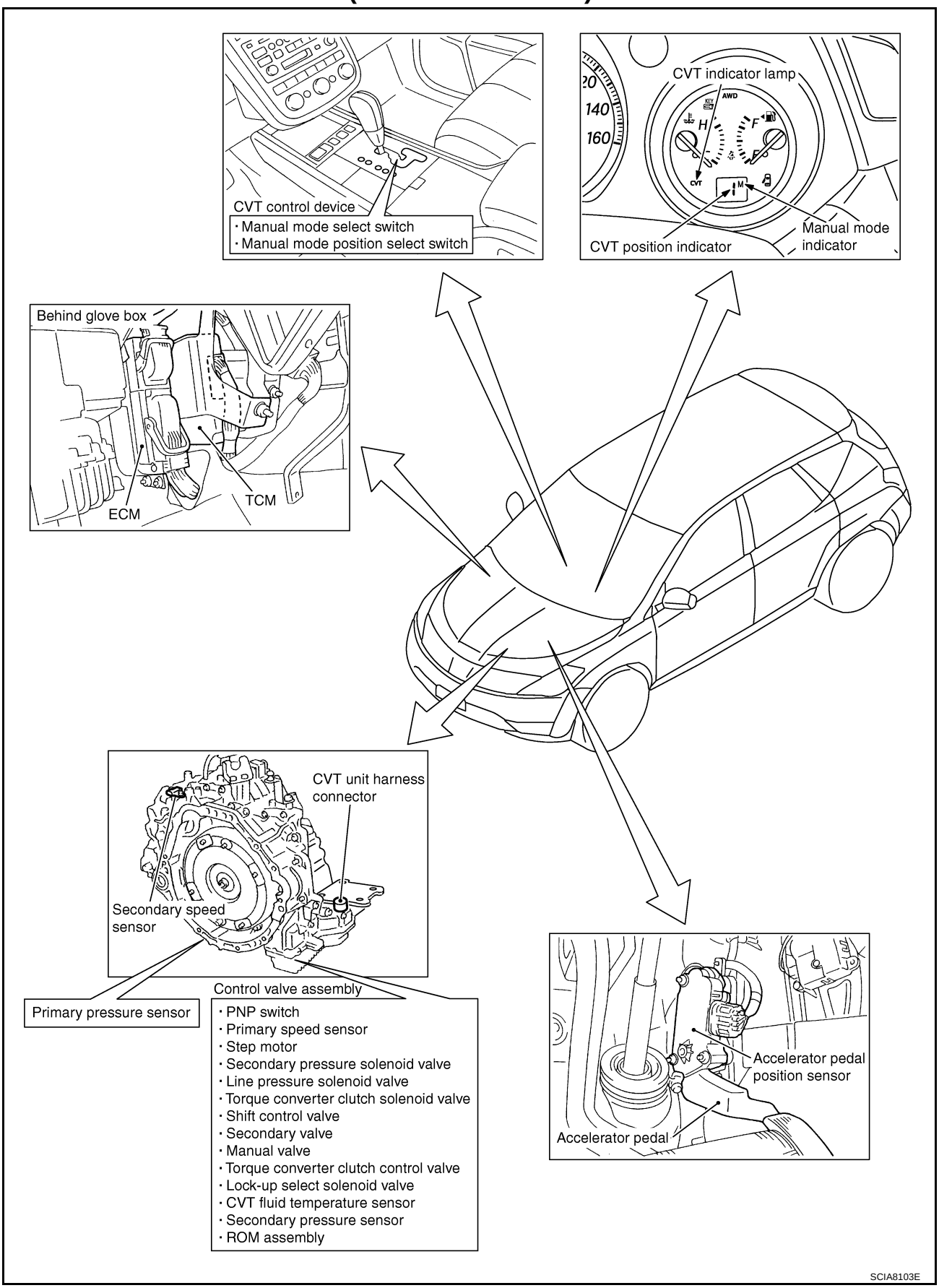
❏ CVT-172, "DTC P1778 STEP MOTOR - FUNCTION"</td><td></td></tr>
<tr><td>5</td><td colspan="3">❏ Inspect each system for items found to be NG in the self-diagnosis and repair or replace the malfunctioning parts.</td></tr>
<tr><td>6</td><td colspan="3">❏ Perform all road tests and enter the checks again for the required items.</td><td>CVT-45</td></tr>
<tr><td>7</td><td colspan="4">❏ For any remaining NG items, perform the “diagnosis procedure” and repair or replace the malfunctioning parts.</td></tr>
<tr><td>8</td><td colspan="3">❏ Erase the results of the self-diagnosis from the TCM.</td><td>CVT-31, CVT-31</td></tr>
</table>

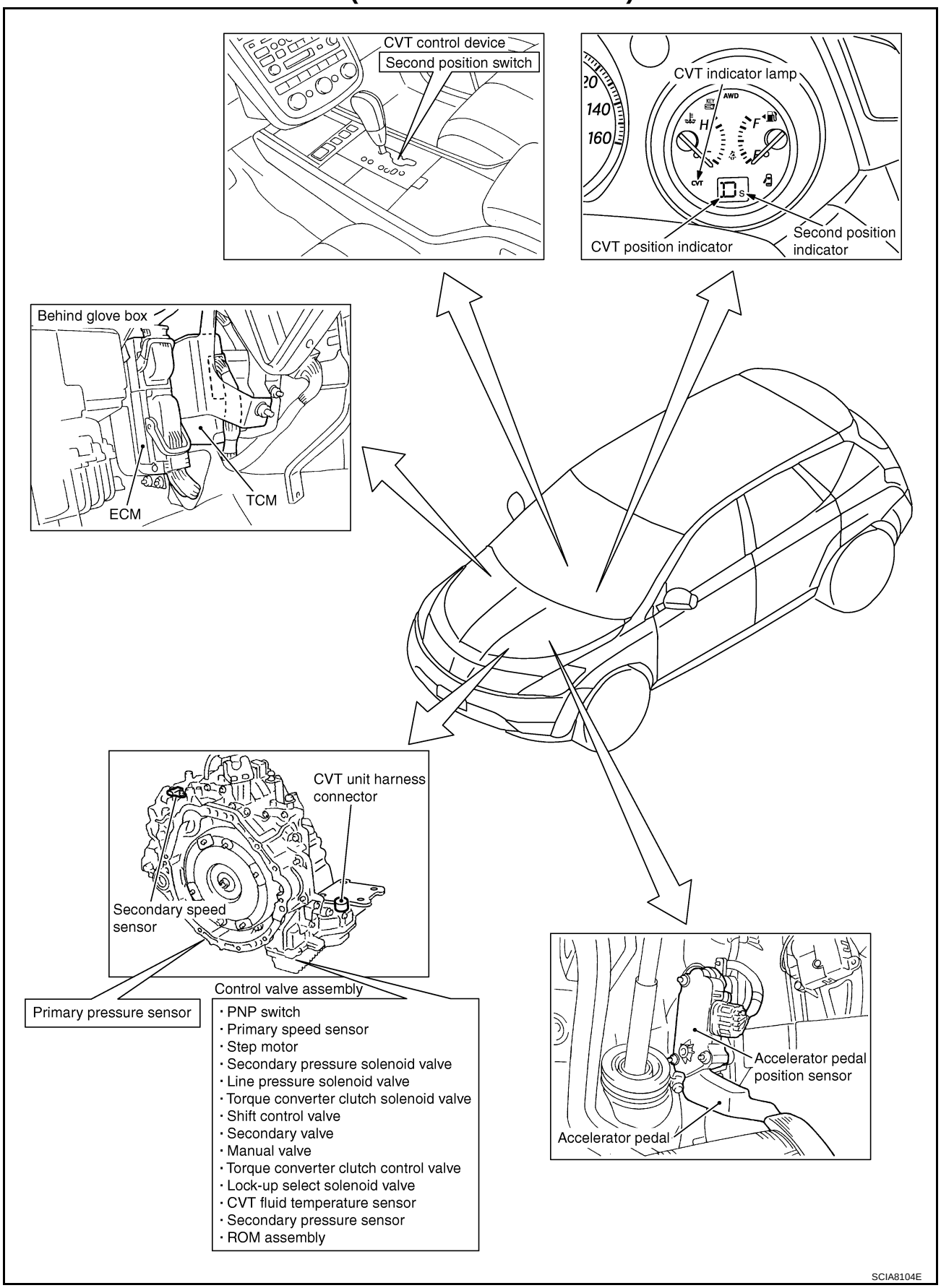
CVT Electrical Parts Location (With Manual Mode)

NCS0012Y



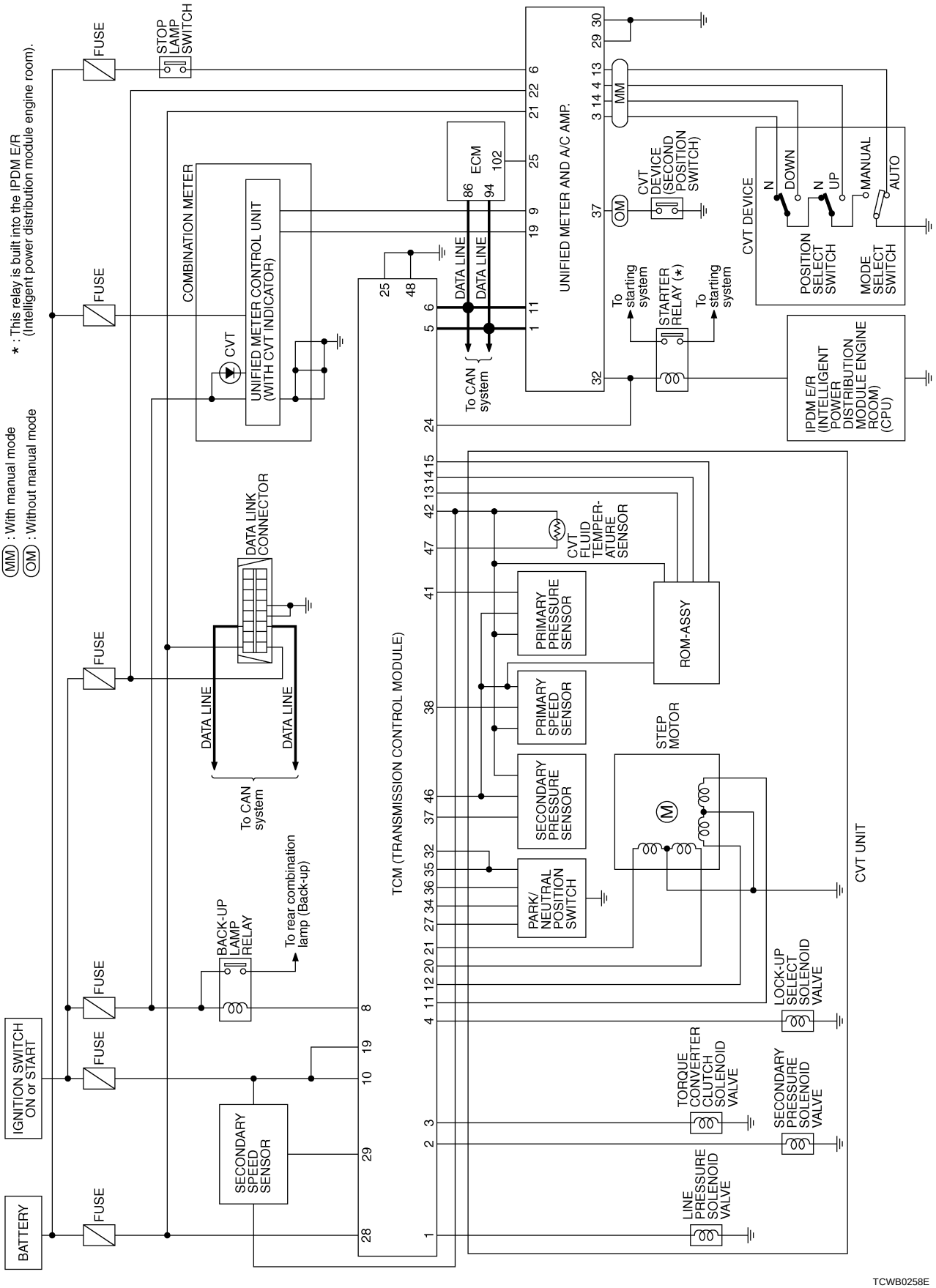
CVT Electrical Parts Location (Without Manual Mode)

NCS0012Z



Circuit Diagram

NCS00130



Inspections before Trouble Diagnosis

NCS00131

CVT FLUID CHECK

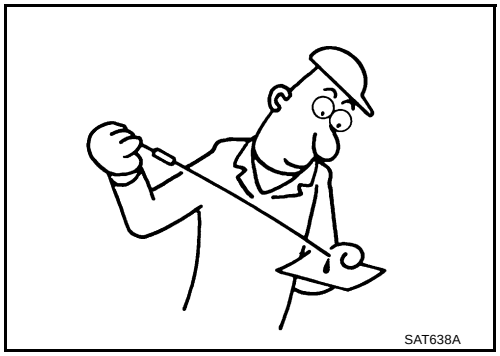
Fluid Leakage and Fluid Level Check

Inspect for fluid leakage and check the fluid level. Refer to CVT-15, "Checking CVT Fluid" .

Fluid Condition Check

Inspect the fluid condition.

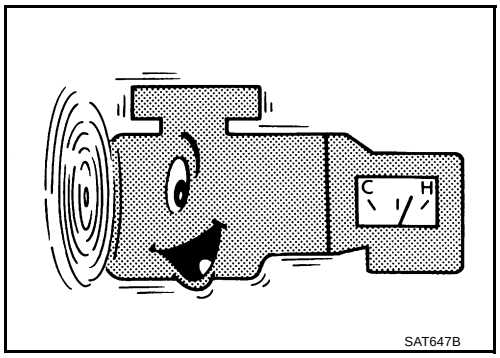
Fluid status	Conceivable cause	Required operation
Varnished (viscous varnish state)	Clutch, brake scorched	Replace the CVT fluid and check the CVT main unit and the vehicle for malfunctions (wire harnesses, cooler pipes, etc.)
Milky white or cloudy	Water in the fluid	Replace the CVT fluid and check for 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.


SAT638A

STALL TEST

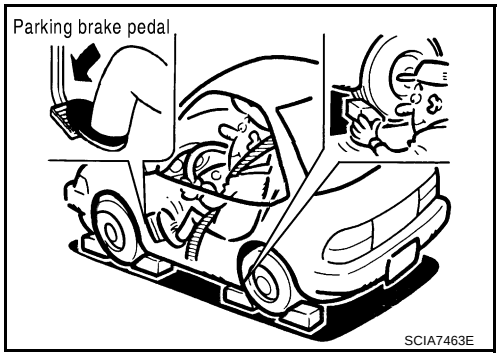
Stall Test Procedure

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.



SAT647B

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

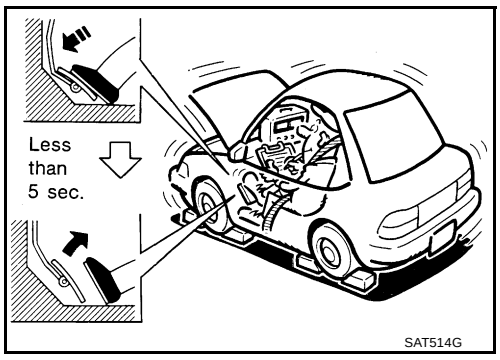


SCIA7463E

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.



SAT514G

9. Cool down the CVT fluid.

CAUTION:
Run the engine at idle for at least 1 minute.

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

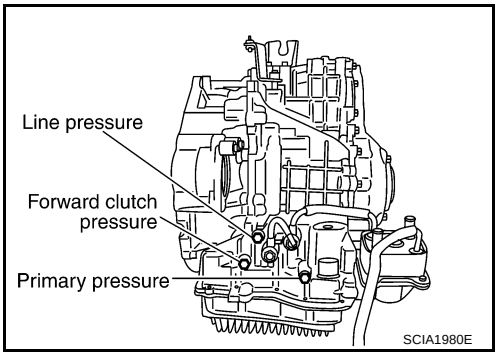
Judgment Stall Test

	Selector lever position		Expected problem location
	“D”	“R”	
Stall rotation	H	O	● Forward clutch
	O	H	● Reverse brake
	L	L	● Engine and torque converter one-way clutch
	H	H	● Line pressure low ● Primary pulley ● Secondary pulley ● Steel belt

O: Stall speed within standard value position.
H: Stall speed is higher than standard value.
L: Stall speed is lower than standard value.

LINE PRESSURE TEST

Line Pressure Test Port

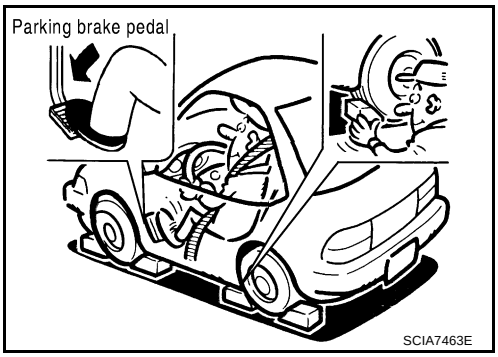


Line Pressure Test Procedure

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

   NOTE:
   The CVT fluid temperature rises in the range of 50 to 80°C (122 to 176°F) during 10 minutes of driving.
3. After warming up CVT, remove the oil pressure detection plug and install the oil pressure gauge [special service tool: — (OTC3492)].

   CAUTION:
   When using the oil pressure gauge, be sure to use the O-ring attached to the oil pressure detection plug.
4. Securely engage the parking brake so that the tires do not turn.

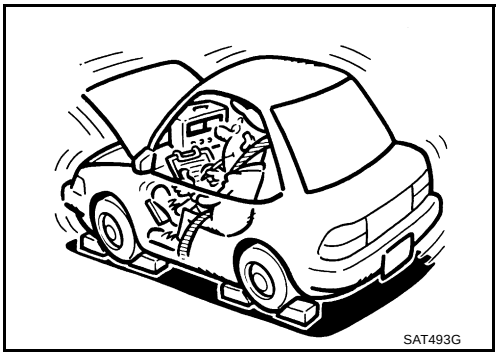


5. Start the engine, and then measure the line pressure at both idle and the stall speed.

   CAUTION:
   - **Keep the brake pedal pressed all the way down during measurement.**
   - **When measuring the line pressure at the stall speed, refer to CVT-42, "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)


SAT493G

CAUTION:
- **Do not reuse O-ring.**
- **Apply CVT fluid to O-ring.**

Line Pressure

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

*1 : Without manual mode

*2 : Reference values

Judgment of Line Pressure Test

Judgment		Possible cause
Idle speed	Low for all positions ("P", "R", "N", "D", "L"*)	Possible causes include malfunctions in the pressure supply system and low oil pump output. For example ● Oil pump wear ● Pressure regulator valve or plug sticking or spring fatigue ● Oil strainer ⇒ oil pump ⇒ pressure regulator valve passage oil leak ● Engine idle speed too low
	Only low for a specific position	Possible causes include an oil pressure leak in a passage or device related to the position after the pressure is distributed by the manual valve.
	High	Possible causes include a sensor malfunction or malfunction in the line pressure adjustment function. For example ● Accelerator pedal position signal malfunction ● CVT fluid temperature sensor malfunction ● Pressure control solenoid A (line pressure solenoid) malfunction (sticking in OFF state, filter clog, cut line) ● Pressure regulator valve or plug sticking

Judgment		Possible cause
Stall speed	Line pressure does not rise higher than the line pressure for idle.	Possible causes include a sensor malfunction or malfunction in the pressure adjustment function. For example ● Accelerator pedal position signal malfunction ● TCM malfunction ● Pressure control solenoid A (line pressure solenoid) malfunction (shorting, sticking in ON state) ● Pressure regulator valve or plug sticking
	The pressure rises, but does not enter the standard position.	Possible causes include malfunctions in the pressure supply system and malfunction in the pressure adjustment function. For example ● Accelerator pedal position signal malfunction ● Pressure control solenoid A (line pressure solenoid) malfunction (sticking, filter clog) ● Pressure regulator valve or plug sticking
	Only low for a specific position	Possible causes include an oil pressure leak in a passage or device related to the position after the pressure is distributed by the manual valve.

*: Without manual mode.

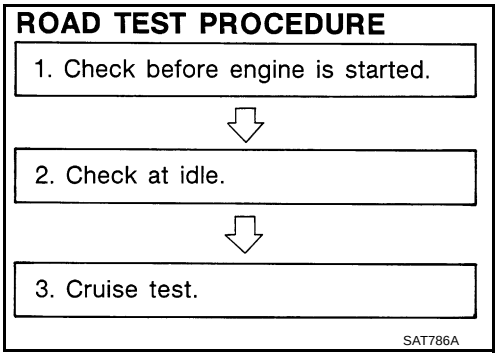
Road Test

NCS00132

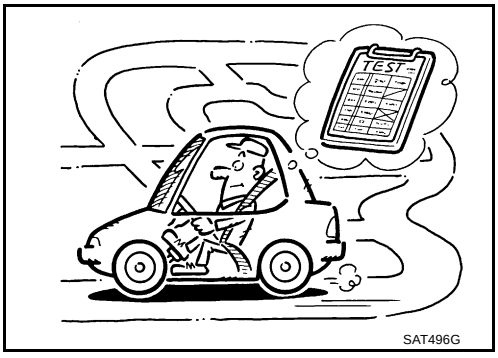
DESCRIPTION

- The purpose of the test is to determine overall performance of CVT and analyze causes of problems.
- The road test consists of the following three parts:

1. “Check Before Engine Is Started” CVT-47 .
2. “Check at Idle” CVT-47 .
3. “Cruise Test” CVT-49 .



- 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.

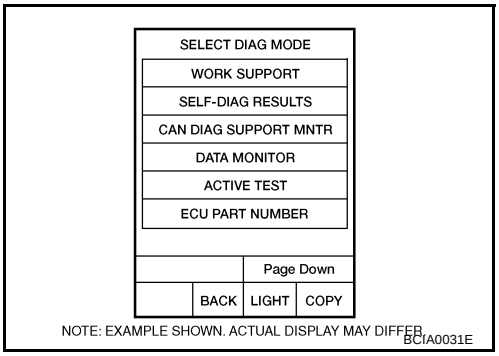


CONSULT-II SETTING PROCEDURE

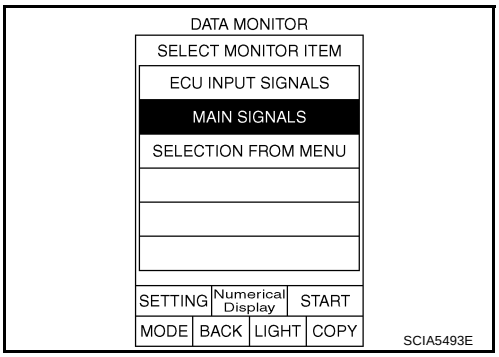
- Using CONSULT-II, perform a cruise test and record the result.
- Print the result and ensure that shifts and lock-ups take place as per Shift Schedule.

1. Set CONSULT-II. Refer to GI-37, "CONSULT-II Start Procedure" .

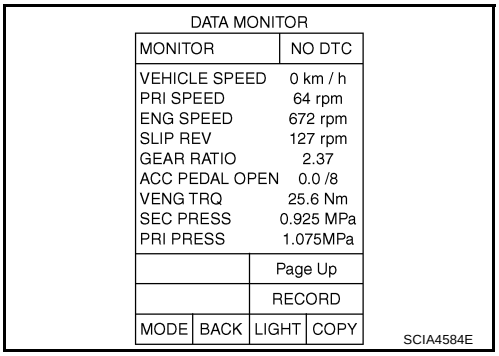
2. Touch “DATA MONITOR” on “SELECT DIAG MODE” screen.



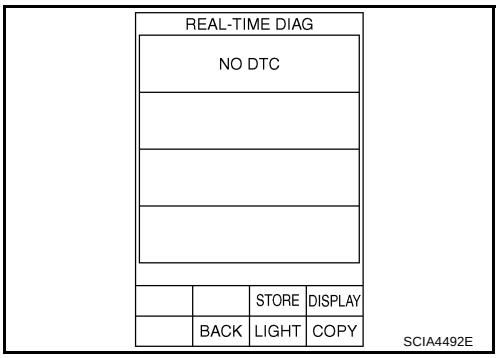
3. Touch “MAIN SIGNALS” to set recording condition.
4. See “Numerical Display”, “Barchart Display” or “Line Graph Display”.
5. Touch “START”.



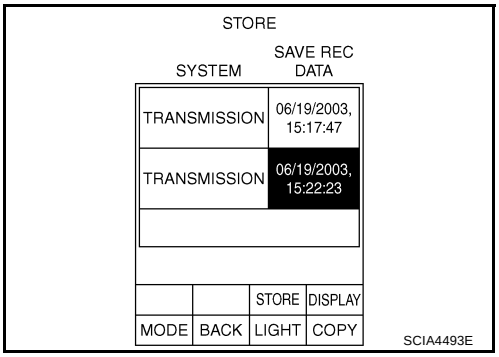
6. When performing cruise test. Refer to CVT-49, "Cruise Test" .
7. After finishing cruise test part, touch “RECORD”.



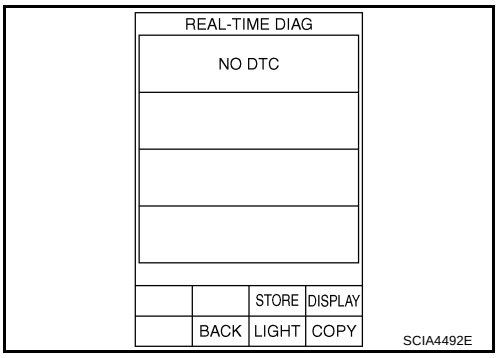
8. Touch “STORE”.



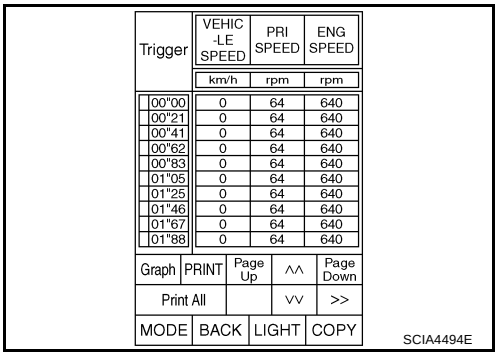
9. Touch “BACK”.



10. Touch “DISPLAY”.



11. Touch “PRINT”.
12. Check the monitor data printed out.



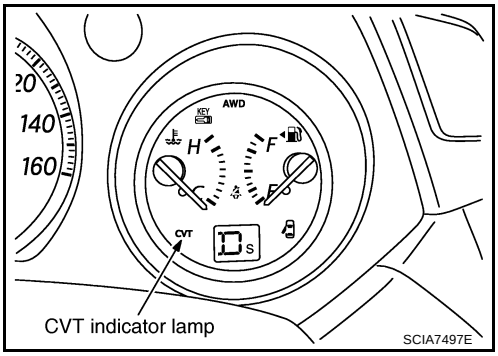
Check before Engine Is Started

NCS00133

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 CVT-61, "SELF-DIAGNOSTIC RESULT MODE" .
3. Go to CVT-47, "Check at Idle" .

NO >> Stop “Road Test”. Go to CVT-184, "CVT Indicator Lamp Does Not Come On" .

Check at Idle

NCS00134

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 CVT-185, "Engine Cannot Be Started in “P” and “N” Position" on the CVT-36, "DIAGNOSTIC WORKSHEET" . Go to CVT-185, "Engine Cannot Be Started in “P” and “N” Position" .

2. CHECK STARTING THE ENGINE

With manual mode

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

Without manual mode

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

Is engine started?

YES >> Stop “Road Test”. Mark the box CVT-185, "Engine Cannot Be Started in “P” and “N” Position" on the CVT-36, "DIAGNOSTIC WORKSHEET" . Go to CVT-185, "Engine Cannot Be Started in “P” and “N” Position" .

NO >> GO TO 3.

3. CHECK “P” POSITION FUNCTION

1. Move selector lever to “P” position.
2. Turn ignition switch OFF.
3. Release parking brake.
4. Push vehicle forward or backward.
5. Apply parking brake.

Does vehicle move when it is pushed forward or backward?

YES >> Mark the box CVT-186, "In “P” Position, Vehicle Moves Forward or Backward When Pushed" on the CVT-36, "DIAGNOSTIC WORKSHEET" . Continue “Road Test”.

NO >> GO TO 4.

4. CHECK “N” POSITION FUNCTION

1. Start engine.
2. Move selector lever to “N” position.
3. Release parking brake.

Does vehicle move forward or backward?

YES >> Mark the box CVT-186, "In “N” Position, Vehicle Moves" on the CVT-36, "DIAGNOSTIC WORKSHEET" . Continue “Road Test”.

NO >> GO TO 5.

5. CHECK SHIFT SHOCK

1. Apply foot brake.
2. Move selector lever to “R” position.

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

YES >> Mark the box CVT-187, "Large Shock “N” → “R” Position" on the CVT-36, "DIAGNOSTIC WORKSHEET" . Continue “Road Test”.

NO >> GO TO 6.

6. CHECK “R” POSITION FUNCTION

Release foot brake for several seconds.

Does vehicle creep backward when foot brake is released?

YES >> GO TO 7.

NO >> Mark the box CVT-188, "Vehicle Does Not Creep Backward in “R” Position" on the CVT-36, "DIAGNOSTIC WORKSHEET" . Continue “Road Test”.

7. CHECK “D”, “S”, “L” POSITION FUNCTION

With manual mode
Move selector lever to “D” position and check if vehicle creeps forward.
Without manual mode
Move selector lever to “D”, “S” and “L” positions and check if vehicle creeps forward.

Does vehicle creep forward in all positions?

YES >> Go to CVT-49, "Cruise Test" .
NO >> Stop “Road Test”. Mark the box CVT-190, "Vehicle Does Not Creep Forward in “D”, “S” or “L” Position" on the CVT-36, "DIAGNOSTIC WORKSHEET" . Go to CVT-190, "Vehicle Does Not Creep Forward in “D”, “S” or “L” Position" .

Cruise Test

NCS00135

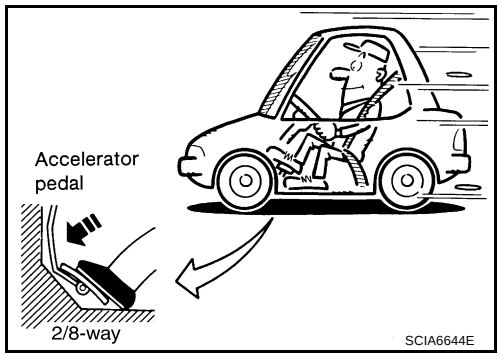
1. CHECK VEHICLE SPEED WHEN SHIFTING GEARS — PART 1

1. Drive vehicle for approximately 10 minutes to warm engine oil and CVT fluid up to operating temperature.

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

2. Park vehicle on flat surface.
3. Move selector lever to “P” position.
4. Start engine.
5. Move selector lever to “D” position.
6. Accelerate vehicle to 2/8-way throttle depressing accelerator pedal constantly.

Read vehicle speed and engine speed. Refer to CVT-52, "Vehicle Speed When Shifting Gears" .



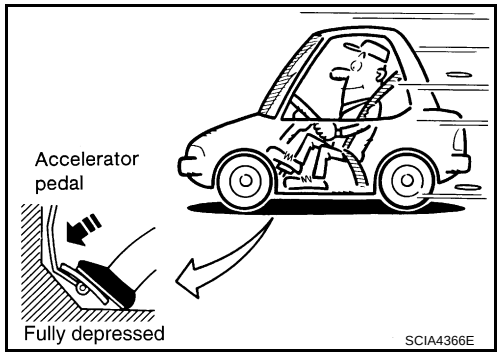
OK or NG

OK >> GO TO 2.
NG >> Mark the box of CVT-191, "CVT Does Not Shift" on the CVT-36, "DIAGNOSTIC WORKSHEET" . Continue “Road Test”.

2. CHECK VEHICLE SPEED WHEN SHIFTING GEARS — PART 2

1. Park vehicle on flat surface.
2. Move selector lever to “D” position.
3. Accelerate vehicle to full depression depressing accelerator pedal constantly.

Read vehicle speed and engine speed. Refer to CVT-52, "Vehicle Speed When Shifting Gears" .



OK or NG

OK >> GO TO 3.(With manual mode)
OK >> GO TO 7. (Without manual mode)
NG >> Mark the box of CVT-191, "CVT Does Not Shift" on the CVT-36, "DIAGNOSTIC WORKSHEET" . 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 CVT-192, "Cannot Be Changed to Manual Mode" on the CVT-36, "DIAGNOSTIC WORKSHEET" . Continue “Road Test”.

4. CHECK SHIFT-UP FUNCTION

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

Read the gear position. Refer to CVT-64, "DATA MONITOR MODE" .

Is upshifting correctly performed?

YES >> GO TO 5.
NO >> Mark the box of CVT-193, "CVT Does Not Shift in Manual Mode" on the CVT-36, "DIAGNOSTIC WORKSHEET" . Continue “Road Test”.

5. CHECK SHIFT-DOWN FUNCTION

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

Read the gear position. Refer to CVT-64, "DATA MONITOR MODE" .

Is downshifting correctly performed?

YES >> GO TO 6.
NO >> Mark the box of CVT-193, "CVT Does Not Shift in Manual Mode" on the CVT-36, "DIAGNOSTIC WORKSHEET" . Continue “Road Test”.

6. CHECK ENGINE BRAKE FUNCTION

Check engine brake.

Does engine braking effectively reduce speed in M1 position?

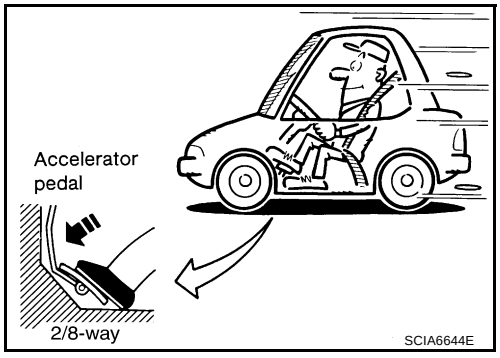
YES >> 1. Stop the vehicle.
2. Perform self-diagnosis. Refer to CVT-61, "SELF-DIAGNOSTIC RESULT MODE" .

NO >> Mark the box of CVT-196, "Vehicle Does Not Decelerate by Engine Brake" on the CVT-36, "DIAGNOSTIC WORKSHEET" . then continue trouble diagnosis.

7. CHECK “S” POSITION FUNCTION — PART 1

1. Park vehicle on flat surface.
2. Move selector lever to “S” position.
3. Accelerate vehicle to 2/8-way throttle depressing accelerator pedal constantly.

   Read vehicle speed and engine speed. Refer to CVT-52, "Vehicle Speed When Shifting Gears" .



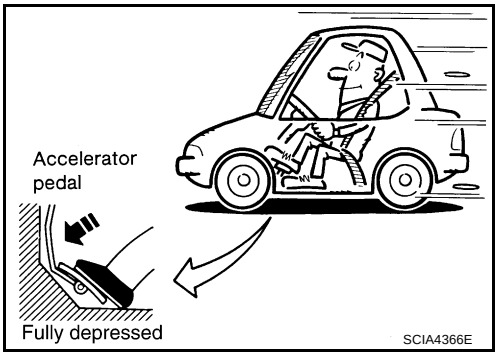
OK or NG

OK >> GO TO 8.
NG >> Mark the box of CVT-194, "Cannot Be Changed to Second Position (Without Manual Mode)" on the CVT-36, "DIAGNOSTIC WORKSHEET" . Continue “Road Test”.

8. CHECK “S” POSITION FUNCTION — PART 2

1. Park vehicle on flat surface.
2. Move selector lever to “S” position.
3. Accelerate vehicle to full depression depressing accelerator pedal constantly.

Read vehicle speed and engine speed. Refer to CVT-52, "Vehicle Speed When Shifting Gears" .



OK or NG

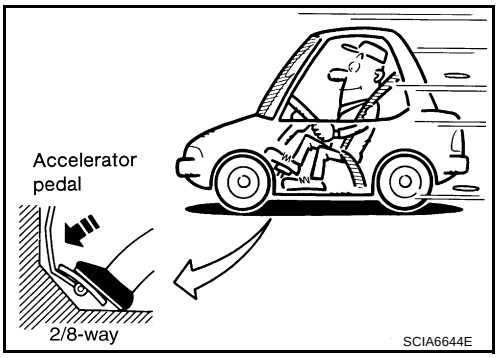
OK >> GO TO 9.

NG >> Mark the box of CVT-194, "Cannot Be Changed to Second Position (Without Manual Mode)" on the CVT-36, "DIAGNOSTIC WORKSHEET" . Continue “Road Test”.

9. CHECK “L” POSITION FUNCTION — PART 1

1. Park vehicle on flat surface.
2. Move selector lever to “L” position.
3. Accelerate vehicle to 2/8-way throttle depressing accelerator pedal constantly.

Read vehicle speed and engine speed. Refer to CVT-52, "Vehicle Speed When Shifting Gears" .



OK or NG

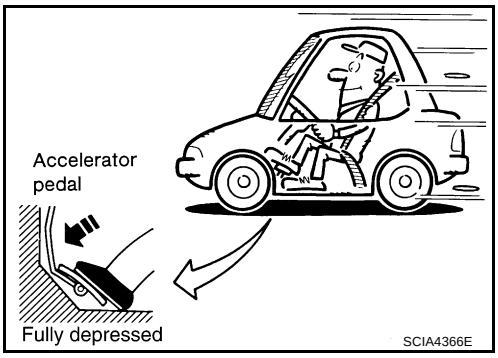
OK >> GO TO 10.

NG >> Mark the box of CVT-195, "Cannot Be Changed to “L” Position (Without Manual Mode)" on the CVT-36, "DIAGNOSTIC WORKSHEET" . Continue “Road Test”.

10. CHECK “L” POSITION FUNCTION — PART 2

1. Park vehicle on flat surface.
2. Move selector lever to “L” position.
3. Accelerate vehicle to full depression depressing accelerator pedal constantly.

Read vehicle speed and engine speed. Refer to CVT-52, "Vehicle Speed When Shifting Gears" .



OK or NG

OK >> GO TO 11.

NG >> Mark the box of CVT-195, "Cannot Be Changed to “L” Position (Without Manual Mode)" on the CVT-36, "DIAGNOSTIC WORKSHEET" . Continue “Road Test”.

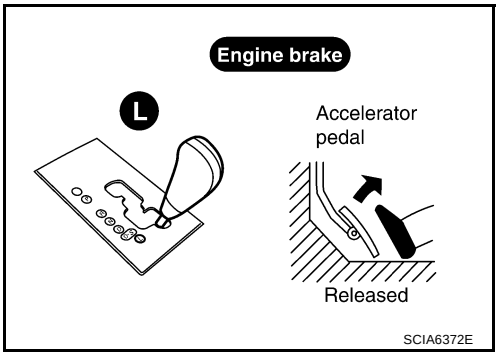
11. CHECK ENGINE BRAKE FUNCTION

Check engine brake.

Does engine braking effectively reduce speed in “L” position?

YES >> 1. Stop the vehicle.
2. Perform self-diagnosis. Refer to CVT-61, "SELF-DIAGNOSTIC RESULT MODE" .

NO >> Mark the box of CVT-196, "Vehicle Does Not Decelerate by Engine Brake" on the CVT-36, "DIAGNOSTIC WORKSHEET" . then continue trouble diagnosis.



Vehicle Speed When Shifting Gears

NCS00136

Numerical value data are reference values.

Engine type	Throttle position	Shift pattern	Engine speed (rpm)	
			At 40 km/h (25 MPH)	At 60 km/h (37 MPH)
VQ35DE	8/8	“D” position Second position* “L” position*	2,800 – 4,300	3,900 – 5,300
	2/8	“D” position	1,200 – 2,000	1,300 – 2,100
		Second position*	2,200 – 3,000	2,800 – 3,600
		“L” position*	2,800 – 3,600	3,800 – 4,600

*: Without manual mode

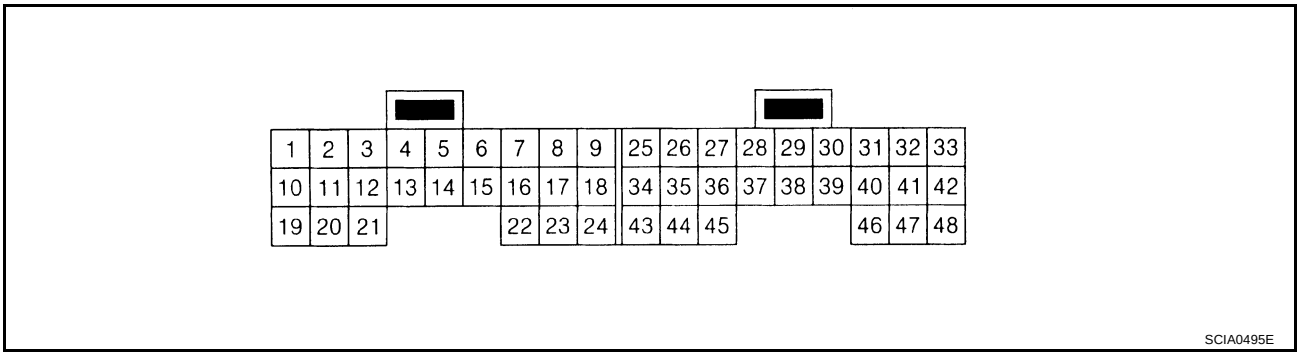
CAUTION:

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

TCM Input/Output Signal Reference Values

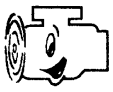
NCS00137

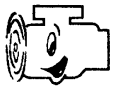
TCM TERMINAL CONNECTOR LAYOUT

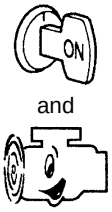


TCM INSPECTION TABLE

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

Terminal	Wire color	Item	Condition		Data (Approx.)
1	R/Y	Pressure control solenoid valve A (Line pressure solenoid valve)	 and 	Release your foot from the accelerator pedal.	5.0 – 7.0 V
				Press the accelerator pedal all the way down.	1.0 – 3.0 V
2	W/B	Pressure control solenoid valve B (Secondary pressure solenoid valve)		Release your foot from the accelerator pedal.	5.0 – 7.0 V
				Press the accelerator pedal all the way down.	3.0 – 4.0 V
3	L/W	Torque converter clutch solenoid valve		When vehicle cruises in “D” position — When CVT performs lock-up	6.0 V
				When vehicle cruises in “D” position — When CVT does not perform lock-up	1.0 V
4	L/Y	Lock-up select solenoid valve		Selector lever in “P” and “N” positions	Battery voltage
				Wait at least for 5 seconds with the selector lever in “R”, “D”, “S”*1 and “L”*1 positions.	0 V
5	L	CAN-H	—		—
6	Y	CAN-L	—		—
8	SB	Back-up lamp relay		Selector lever in “R” position	0 V
				Selector lever in other positions	Battery voltage
10	Y/L	Power supply		—	Battery voltage
				—	0 V
11	G/R	Step motor A	Within 2 seconds after ignition switch ON, the time measurement by using the pulse width measurement function (Hi level) of CONSULT-II.*2 **CAUTION: Connect the diagnosis data link cable to the vehicle diagnosis connector.**		30.0 msec
12	O/B	Step motor B			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.)
19	Y/L	Power supply		—	Battery voltage
				—	0 V
20	R	Step motor C	Within 2 seconds after ignition switch ON, the time measurement by using the pulse width measurement function (Hi level) of CONSULT-II.*2 **CAUTION:** **Connect the diagnosis data link cable to the vehicle diagnosis connector.**		30.0 msec
21	R/G	Step motor D			10.0 msec
24	G/O	Starter relay		Selector lever in “N” and “P” positions	Battery voltage
				Selector lever in other positions	0 V
25	B	Ground	Always		0 V
27	BR/W	PNP switch 1		Selector lever in “R”, “N”, “D” and “S”*1 positions	0 V
				Selector lever in “P” and “L”*1 positions	Battery voltage
28	Y/R	Power supply (memory back-up)	Always		Battery voltage
29	G	Output speed sensor (Secondary speed sensor)		When driving [“D” position, 20 km/h (12 MPH)]	350 Hz
32	GR	PNP switch 3 (monitor)		Selector lever in “D”, “S”*1 and “L”*1 positions	0 V
				Selector lever in “P”, “R” and “N” positions	8.0 V – Battery voltage
34	P/B	PNP switch 2		Selector lever in “N”, “D”, “S”*1 and “L”*1 positions	0 V
				Selector lever in “P” and “R” positions	10.0 V – Battery voltage
35	P/L	PNP switch 3		Selector lever in “D”, “S”*1 and “L”*1 positions	0 V
				Selector lever in “P”, “R” and “N” positions	8.0 V – Battery voltage
36	G	PNP switch 4		Selector lever in “R”, “D” and “S”*1 positions	0 V
				Selector lever in “P”, “N” and “L”*1 positions	10.0 V – Battery voltage
37	V/W	Transmission fluid pressure sensor A (Secondary pressure sensor)	 and 	“N” position idle	0.8 V
38	LG	Input speed sensor (Primary speed sensor)		When driving [“D” position, 20 km/h (12 MPH)]	720 Hz

Terminal	Wire color	Item	Condition		Data (Approx.)
41	V/O	Transmission fluid pressure sensor B (Primary pressure sensor)	 and	“N” position idle	0.7 – 3.5 V
42	W/R	Sensor ground	Always		0 V
46	L/O	Sensor power		—	4.5 – 5.5 V
				—	0 V
47	V	CVT fluid temperature sensor		When CVT fluid temperature is 20°C (68°F)	2.0 V
				When CVT fluid temperature is 80°C (176°F)	1.0 V
48	B	Ground	Always		0 V

*1 : Without manual mode.

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

CONSULT-II Function (TRANSMISSION)

NCS00138

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

FUNCTION

Diagnostic test mode	Function	Reference page
Work support	This mode enables a technician to adjust some devices faster and more accurately by following the indications on CONSULT-II.	CVT-58
Self-diagnostic results	Self-diagnostic results can be read and erased quickly.	CVT-61
Data monitor	Input/Output data in the TCM can be read.	CVT-64
CAN diagnostic support monitor	The results of transmit/receive diagnosis of CAN communication can be read.	CVT-66
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 reading.
ESTM VSP SIG		
PRI SPEED SEN	During driving (lock-up ON)	Approximately matches the engine speed.
ENG SPEED SIG	Engine running	Closely matches the tachometer reading.
SEC HYDR SEN	“N” position idle	0.8 – 1.0 V
PRI HYDR SEN	“N” position idle	0.7 – 3.5 V
ATF TEMP SEN	When CVT fluid temperature is 20°C (68°F)	1.8 – 2.0 V
	When CVT fluid temperature is 80°C (176°F)	0.6 – 1.0 V
VIGN SEN	Ignition switch: ON	Battery voltage
VEHICLE SPEED	During driving	Approximately matches the speedometer reading.
PRI SPEED	During driving (lock-up ON)	Approximately matches the engine speed.
SEC SPEED	During driving	45 X Approximately matches the 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 – 0.9 MPa
PRI PRESS	“N” position idle	0.3 – 0.9 MPa
STM STEP	During driving	−20 step – 190 step
ISOLT1	Lock-up OFF	0.0 A
	Lock-up ON	0.7 A
ISOLT2	Release your foot from the accelerator pedal.	0.8 A
	Press the accelerator pedal all the way down.	0.0 A
ISOLT3	Secondary pressure low – Secondary pressure high.	0.8 – 0.0 A
SOLMON1	Lock-up OFF	0.0 A
	Lock-up ON	0.6 – 0.7 A

Item name	Condition	Display value (Approx.)
SOLMON2	“N” position idle	0.8 A
	When stalled	0.3 – 0.6 A
SOLMON3	“N” position idle	0.6 – 0.7 A
	When stalled	0.4 – 0.6 A
INH SW3M	Selector lever in “D”, “S”* and “L”* positions	ON
	Selector lever in “P”, “R” and “N” positions	OFF
INH SW4	Selector lever in “R”, “D” and “S”* positions	ON
	Selector lever in “P”, “N” and “L”* positions	OFF
INH SW3	Selector lever in “D”, “S”* and “L”* positions	ON
	Selector lever in “P”, “R” and “N” positions	OFF
INH SW2	Selector lever in “N”, “D”, “S”* and “L”* positions	ON
	Selector lever in “P” and “R” positions	OFF
INH SW1	Selector lever in “R”, “N”, “D” and “S”* positions	ON
	Selector lever in “P” and “L”* positions	OFF
BRAKE SW	Depressed brake pedal	ON
	Released brake pedal	OFF
FULL SW	Fully depressed accelerator pedal	ON
	Released accelerator pedal	OFF
IDLE SW	Released accelerator pedal	ON
	Fully depressed accelerator pedal	OFF
SPORT MODE SW	Selector lever in “S”* and “L”* positions	ON
	Selector lever in other positions	OFF
DOWNLVR	Selector lever: - side	ON
	Other than the above	OFF
UPLVR	Selector lever: + side	ON
	Other than the above	OFF
NON MMODE	Manual shift gate position (neutral, +side, -side)	OFF
	Other than the above	ON
MMODE	Manual shift gate position (neutral)	ON
	Other than the above	OFF
INDDRNG	Selector lever in “D” position	ON
	Selector lever in other positions	OFF
INDLRNG	Selector lever in “L”* position	ON
	Selector lever in other positions	OFF
INDNRNG	Selector lever in “N” position	ON
	Selector lever in other positions	OFF
INDRRNG	Selector lever in “R” position	ON
	Selector lever in other positions	OFF
INDPRNG	Selector lever in “P” position	ON
	Selector lever in other positions	OFF
SMCOIL D	During driving	Changes ON ⇔ OFF.
SMCOIL C		
SMCOIL B		
SMCOIL A		

Item name	Condition	Display value (Approx.)
LUSEL SOL OUT	Selector lever in “P” and “N” positions	ON
	Wait at least for 5 seconds with the selector lever in “R”, “D”, “S”* and “L”* positions.	OFF
STRTR RLY OUT	Selector lever in “P” and “N” positions	ON
	Selector lever in other positions	OFF
STRTR RLY MON	Selector lever in “P” and “N” positions	ON
	Selector lever in other positions	OFF
VDC ON	VDC operate	ON
	Other conditions	OFF
TCS ON	TCS operate	ON
	Other conditions	OFF
ABS ON	ABS operate	ON
	Other conditions	OFF
RANGE	Selector lever in “N” or “P” position	N·P
	Selector lever in “R” position	R
	Selector lever in “D” position	D
	Selector lever in “S”* position	S
	Selector lever in “L”* position	L
M GEAR POS	During driving	1, 2, 3, 4, 5, 6

*: Without manual mode.

CONSULT-II SETTING PROCEDURE

Refer to GI-37, "CONSULT-II Start Procedure" .

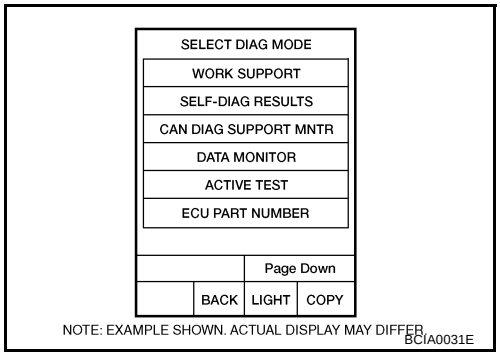
WORK SUPPORT MODE

Display Item List

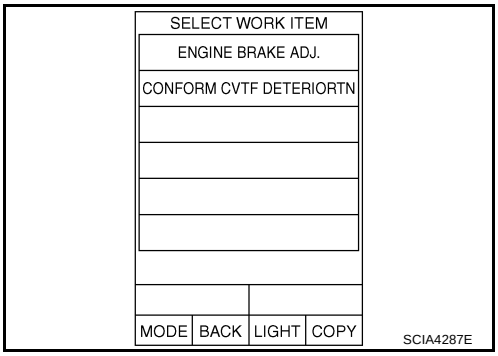
Item name	Description
ENGINE BRAKE ADJ.	The engine brake level setting can be canceled.
CONFORM CVTF DETERIORTN	The CVT fluid deterioration level can be checked.

Engine Brake Adjustment

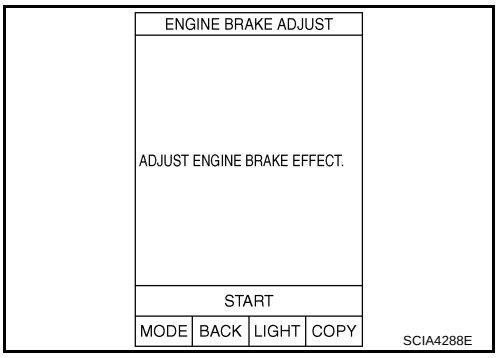
1. Touch “WORK SUPPORT” on “SELECT DIAG MODE” screen.



2. Touch “ENGINE BRAKE ADJ”.



3. Touch “START”.

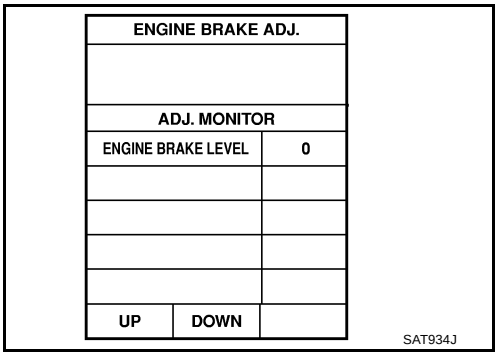


4. Set “ENGINE BRAKE LEVEL” by touching “UP” or “DOWN”.

“ENGINE BRAKE LEVEL”

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

OFF: Engine brake level control is deactivated.



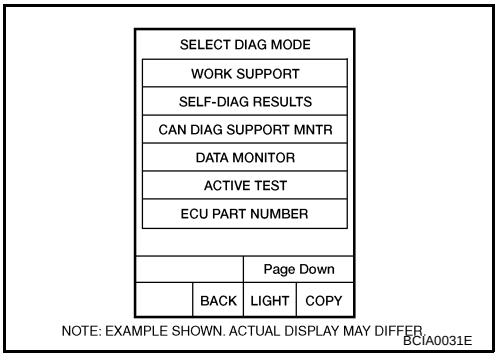
5. Turn ignition switch OFF, wait at least 5 seconds and then turn ignition switch ON.
6. Engine brake level set is completed.

CAUTION:

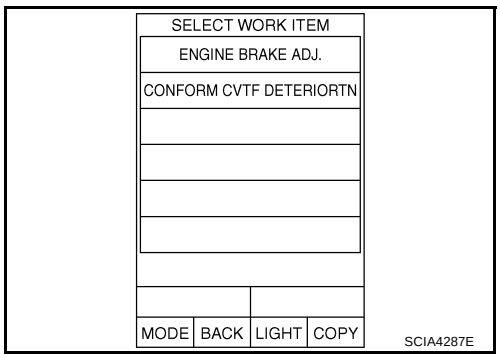
Mode of “+1” “0” “–1” “–2” “OFF” can be selected by pressing the “UP” “DOWN” on CONSULT-II screen. However, do not select mode other than “0” and “OFF”. If the “+1” or “–1” or “–2” is selected, that might cause the irregular driveability.

Check CVT Fluid Deterioration Date

1. Touch “WORK SUPPORT” on “SELECT DIAG MODE” screen.



2. Touch “CONFORM CVTF DETERIORTN”.



3. Check “CVTF DETERIORATION DATE”.

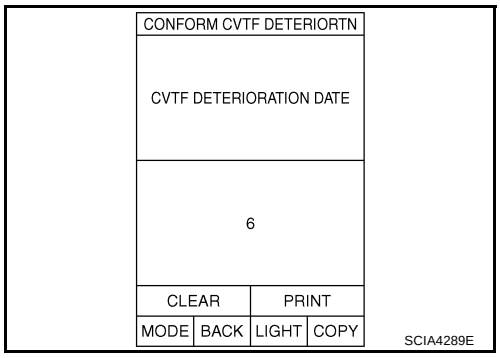
“CVTF DETERIORATION DATE”

More than 210000:

It is necessary to change CVT fluid.

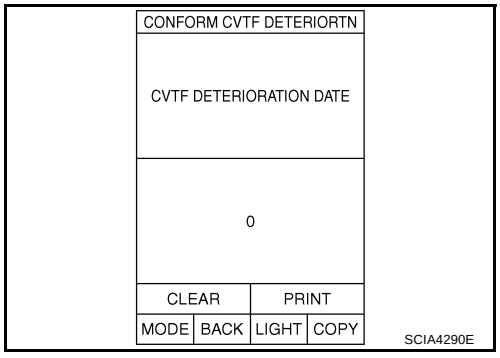
Less than 210000:

It is not necessary to change CVT fluid.



CAUTION:

Touch “CLEAR” after changing CVT fluid, and then erase “CVTF DETERIORATION DATE”.

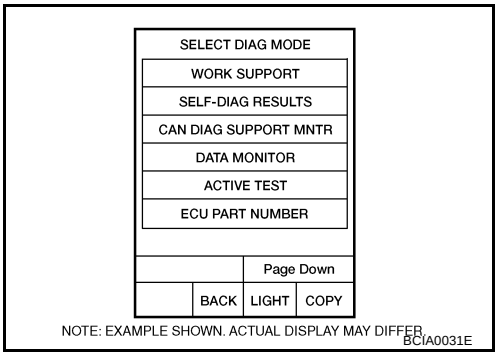


SELF-DIAGNOSTIC RESULT MODE

After performing self-diagnosis, place check marks for results on the CVT-36, "DIAGNOSTIC WORKSHEET" . Reference pages are provided following the items.

Operation Procedure

1. Touch “SELF-DIAG RESULTS” on “SELECT DIAG MODE” screen.
   Display shows malfunction experienced since the last erasing operation.



Display Items List

X: Applicable —: Not applicable

Items (CONSULT-II screen terms)	Malfunction is detected when...	TCM self-diagnosis	OBD-II (DTC)	Reference page
		“TRANSMISSION” with CONSULT-II	MIL indicator lamp*, “ENGINE” with CONSULT-II or GST	
CAN COMM CIRCUIT	When TCM is not transmitting or receiving CAN communication signal for 2 seconds or more.	U1000	U1000	CVT-68
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	—	CVT-71
BRAKE SW/CIRC	When the brake switch does not switch to ON or OFF	P0703	—	CVT-75
PNP SW/CIRC	● PNP switch 1-4 signals input with impossible pattern ● PNP switch 3 monitor terminal open or short circuit	P0705	P0705	CVT-77
ATF TEMP SEN/CIRC	During running, the CVT fluid temperature sensor signal voltage is excessively high or low	P0710	P0710	CVT-84
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	CVT-89
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	CVT-94
ENGINE SPEED SIG	TCM does not receive the CAN communication signal from the ECM.	P0725	—	CVT-100
BELT DAMG	Unexpected gear ratio detected	P0730	—	CVT-102
TCC SOLENOID/CIRC	Normal voltage not applied to solenoid due to open or short circuit	P0740	P0740	CVT-104
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	CVT-109

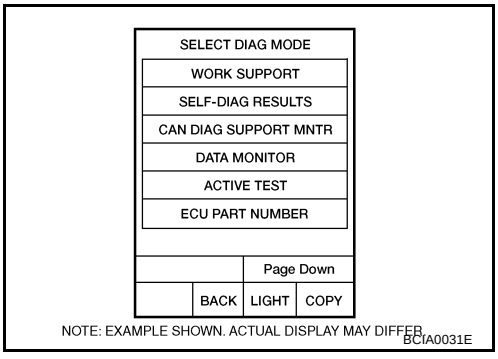
Items (CONSULT-II screen terms)	Malfunction is detected when...	TCM self-diagnosis	OBD-II (DTC)	Reference page
		"TRANSMISSION" with CONSULT-II	MIL indicator lamp*, "ENGINE" with CONSULT-II or GST	
L/PRESS SOL/CIRC	● Normal voltage not applied to solenoid due to open or short circuit ● TCM detects as irregular by comparing target value with monitor value.	P0745	P0745	CVT-112
PRS CNT SOL/A FCTN	Unexpected gear ratio was detected in the LOW side due to excessively low line pressure.	P0746	P0746	CVT-117
PRS CNT SOL/B FCTN	Secondary pressure is too high or too low compared with the commanded value while driving.	P0776	P0776	CVT-120
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	CVT-123
MANUAL MODE SWITCH	When an impossible pattern of switch signals is detected, a malfunction is detected.	P0826	—	CVT-128
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	CVT-133
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	—	CVT-138
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	CVT-141
SEC/PRESS DOWN	Secondary fluid pressure is too low compared with the commanded value while driving.	P0868	—	CVT-146
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	—	CVT-149
TP SEN/CIRC A/T	TCM does not receive the proper accelerator pedal position signals (input by CAN communication) from ECM.	P1705	—	CVT-154
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	—	CVT-156
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	—	CVT-158
ELEC TH CONTROL	The electronically controlled throttle for ECM is malfunctioning.	P1726	—	CVT-160

Items (CONSULT-II screen terms)	Malfunction is detected when...	TCM self-diagnosis	OBD-II (DTC)	Reference page
		"TRANSMISSION" with CONSULT-II	MIL indicator lamp*, "ENGINE" with CONSULT-II or GST	
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	CVT-162
L/PRESS CONTROL	TCM detects the unexpected line pressure.	P1745	—	CVT-167
STEP MOTR CIRC	Each coil of the step motor is not energized properly due to an open or a short.	P1777	P1777	CVT-168
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	CVT-172
NO DTC IS DETECTED: FURTHER TESTING MAY BE REQUIRED	No NG item has been detected.	X	X	—

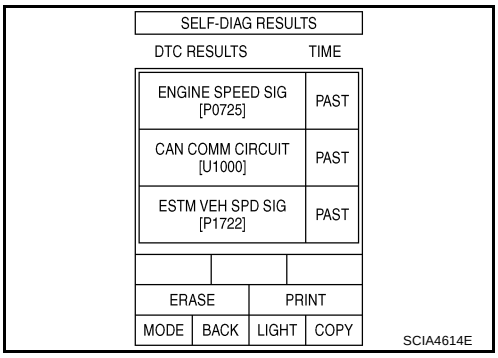
*: Refer to CVT-32, "Malfunction Indicator Lamp (MIL)" .

How to Erase Self-diagnostic Results

1. Touch "SELF-DIAG RESULTS" on "SELECT DIAG MODE" screen.



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

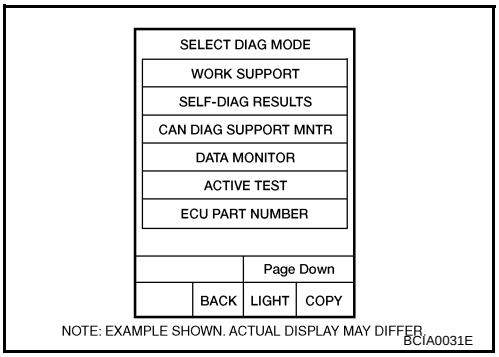


DATA MONITOR MODE

Operation Procedure

1. Touch “DATA MONITOR” on “SELECT DIAG MODE” screen.

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.



Display Items List

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

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

Monitored item (Unit)	Monitor item selection			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	
DSTM STEP (step)	—	—	▼	
STM STEP (step)	—	X	▼	
LU PRS (MPa)	—	—	▼	
LINE PRS (MPa)	—	—	▼	
TGT SEC PRESS (MPa)	—	—	▼	
ISOLT1 (A)	—	X	▼	Torque converter clutch solenoid valve output current
ISOLT2 (A)	—	X	▼	Pressure control solenoid valve A (line pressure solenoid valve) output current
ISOLT3 (A)	—	X	▼	Pressure control solenoid valve B (secondary pressure solenoid valve) output current
SOLMON1 (A)	X	X	▼	Torque converter clutch solenoid valve monitor current
SOLMON2 (A)	X	X	▼	Pressure control solenoid valve A (line pressure solenoid valve) monitor current
SOLMON3 (A)	X	X	▼	Pressure control solenoid valve B (secondary pressure solenoid valve) monitor current
INH SW3M (ON/OFF)	X	—	▼	PNP switch 3 ON-OFF status monitor
INH SW4 (ON/OFF)	X	—	▼	PNP switch 4 ON-OFF status
INH SW3 (ON/OFF)	X	—	▼	PNP switch 3 ON-OFF status
INH SW2 (ON/OFF)	X	—	▼	PNP switch 2 ON-OFF status
INH SW1 (ON/OFF)	X	—	▼	PNP switch 1 ON-OFF status
BRAKE SW (ON/OFF)	X	X	▼	Stop lamp switch (Signal input with CAN communications)
FULL SW (ON/OFF)	X	X	▼	Signal input with CAN communications
IDLE SW (ON/OFF)	X	X	▼	
SPORT MODE SW (ON/OFF)	X	X	▼	Second position switch (Signal input with CAN communications)
STRDWNSW (ON/OFF)	X	—	▼	Not mounted but displayed.
STRUPSW (ON/OFF)	X	—	▼	
DOWNLVR (ON/OFF)	X	—	▼	
UPLVR (ON/OFF)	X	—	▼	
NONMMODE (ON/OFF)	X	—	▼	
MMODE (ON/OFF)	X	—	▼	
INDLRNG (ON/OFF)	—	—	▼	“L” position indicator output*
INDDRNG (ON/OFF)	—	—	▼	“D” position indicator output
INDNRNG (ON/OFF)	—	—	▼	“N” position indicator output
INDRRNG (ON/OFF)	—	—	▼	“R” position indicator output
INDPRNG (ON/OFF)	—	—	▼	“P” position indicator output

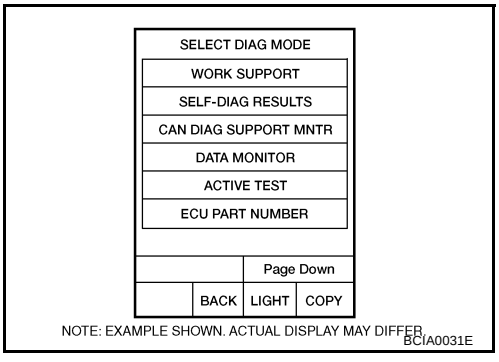
Monitored item (Unit)	Monitor item selection			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	
CVT LAMP (ON/OFF)	—	—	▼	
SPORT MODE IND (ON/OFF)	—	—	▼	
MMODE IND (ON/OFF)	—	—	▼	
SMCOIL D (ON/OFF)	—	—	▼	Step motor coil “D” energizing status
SMCOIL C (ON/OFF)	—	—	▼	Step motor coil “C” energizing status
SMCOIL B (ON/OFF)	—	—	▼	Step motor coil “B” energizing status
SMCOIL A (ON/OFF)	—	—	▼	Step motor coil “A” energizing status
LUSEL SOL OUT (ON/OFF)	—	—	▼	
REV LAMP (ON/OFF)	—	X	▼	
STRTR RLY OUT (ON/OFF)	—	—	▼	Starter relay
LUSEL SOL MON (ON/OFF)	—	—	▼	
STRTR RLY MON (ON/OFF)	—	—	▼	Starter relay
VDC ON (ON/OFF)	X	—	▼	
TCS ON (ON/OFF)	X	—	▼	
ABS ON (ON/OFF)	X	—	▼	
ACC ON (ON/OFF)	X	—	▼	Not mounted but displayed.
RANGE	—	X	▼	Indicates position is recognized by TCM. Indicates a specific value required for control when fail-safe function is activated.
M GEAR POS	—	X	▼	
Voltage (V)	—	—	▼	Displays the value measured by the voltage probe.
Frequency (Hz)	—	—	▼	The value measured by the pulse probe is displayed.
DUTY-HI (high) (%)	—	—	▼	
DUTY-LOW (low) (%)	—	—	▼	
PLS WIDTH-HI (ms)	—	—	▼	
PLS WIDTH-LOW (ms)	—	—	▼	

*: Without manual mode.

CAN DIAGNOSTIC SUPPORT MONITOR MODE

Operation Procedure

1. Touch “CAN DIAG SUPPORT MNTR” on “SELECT DIAG MODE” screen. Refer to LAN-13, "CAN Diagnostic Support Monitor" .



Diagnostic Procedure without CONSULT-II

NCS00139

OBD-II SELF-DIAGNOSTIC PROCEDURE (WITH GST)

Refer to EC-123, "Generic Scan Tool (GST) Function" .

DTC U1000 CAN COMMUNICATION LINE

PFP:23710

Description

NCS0013A

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

NCS0013B

- 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

NCS0013C

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

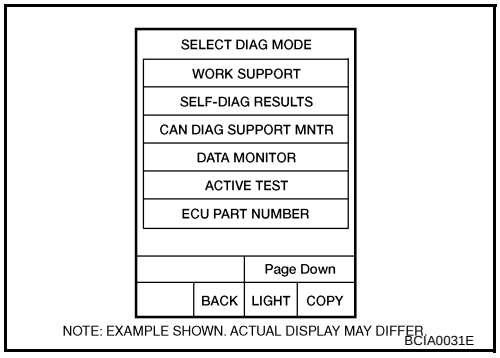
DTC Confirmation Procedure

NCS0013D

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.
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-70, "Diagnostic Procedure" .



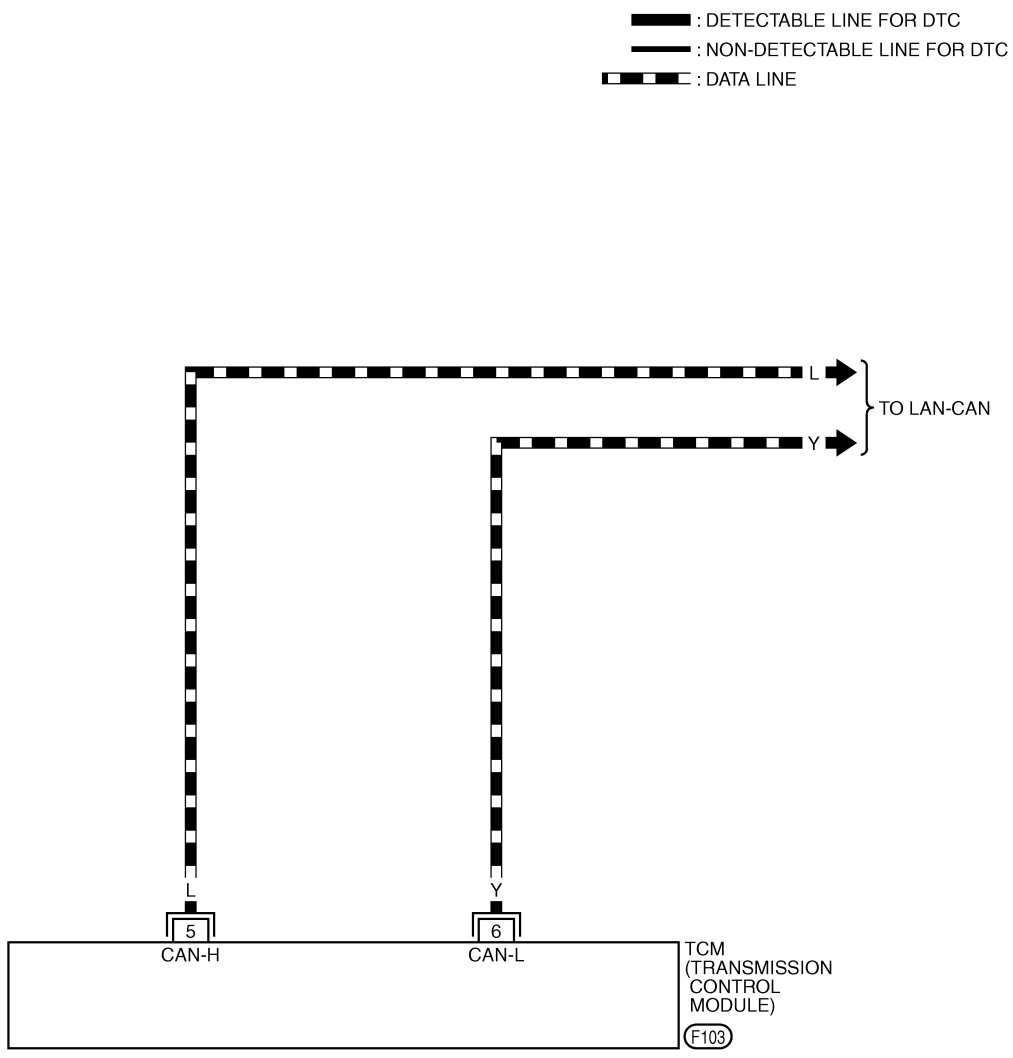
WITH GST

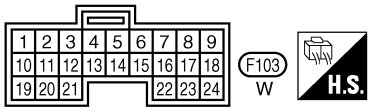
Follow the procedure “WITH CONSULT-II”.

Wiring Diagram — CVT — CAN

NCS0013E

CVT-CAN-01





TCWA0147E

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

Terminal	Wire color	Item	Condition	Data (Approx.)
5	L	CAN-H	—	—
6	Y	CAN-L	—	—

Diagnostic Procedure

NCS0013F

1. CHECK CAN COMMUNICATION CIRCUIT

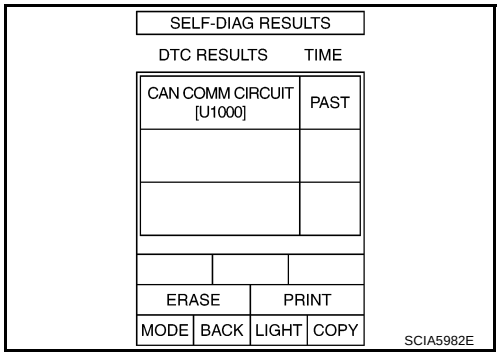
With CONSULT-II

1. Turn ignition switch ON and start engine.
2. Select “SELF-DIAG RESULTS” mode for “TRANSMISSION” with CONSULT-II.

Is any malfunction of the “U1000 CAN COMM CIRCUIT” indicated?

YES >> Print out CONSULT-II screen, go to LAN section. Refer to LAN-49, "CAN System Specification Chart" .

NO >> **INSPECTION END**



DTC P0615 START SIGNAL CIRCUIT

PFP:25230

Description

NCS0013G

- 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

NCS0013H

Remarks: Specification data are reference values.

Item name	Condition	Display value
STRTR RLY OUT	Selector lever in “P” and “N” positions	ON
	Selector lever in other positions	OFF
STRTR RLY MON	Selector lever in “P” and “N” positions	ON
	Selector lever in other positions	OFF

On Board Diagnosis Logic

NCS0013I

- 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

NCS0013J

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

DTC Confirmation Procedure

NCS0013K

CAUTION:

Always drive vehicle at a safe speed.

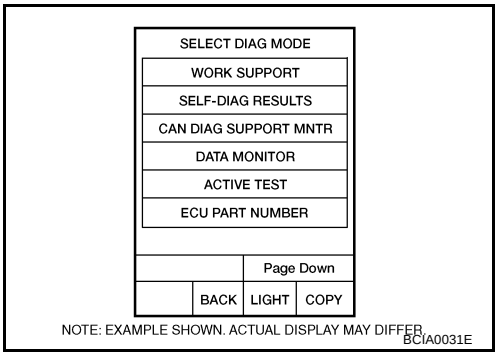
NOTE:

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.
2. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-II.
3. Start engine.
4. Drive vehicle for at least 2 consecutive seconds.
5. If DTC is detected, go to CVT-73, "Diagnostic Procedure" .



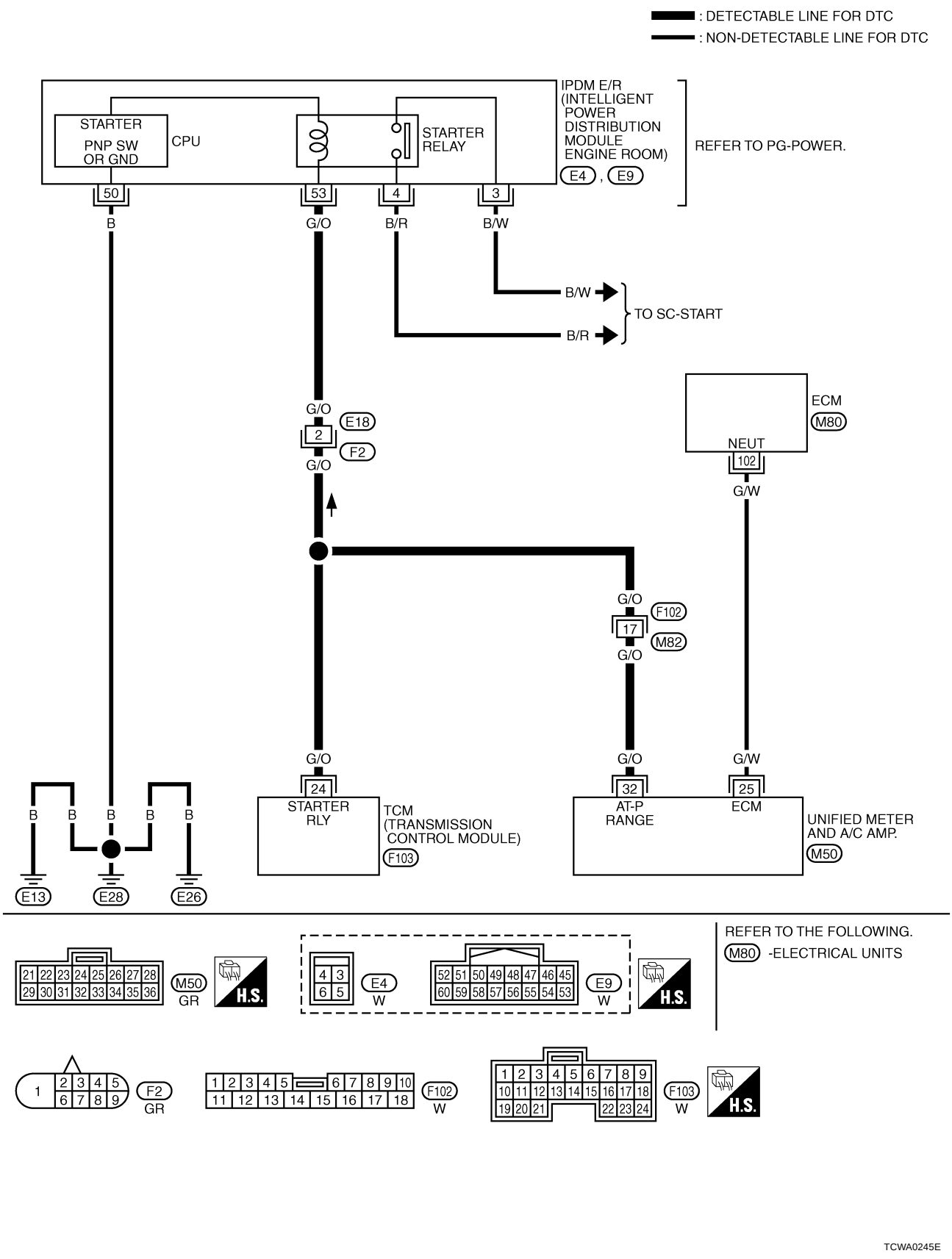
NOTE: EXAMPLE SHOWN. ACTUAL DISPLAY MAY DIFFER.

BCIA0031E

Wiring Diagram — CVT — STSIG

NCS0013L

CVT-STSIG-01



TCWA0245E

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

Terminal	Wire color	Item	Condition		Data (Approx.)
24	G/O	Starter relay		Selector lever in “N” and “P” positions	Battery voltage
				Selector lever in other positions	0 V

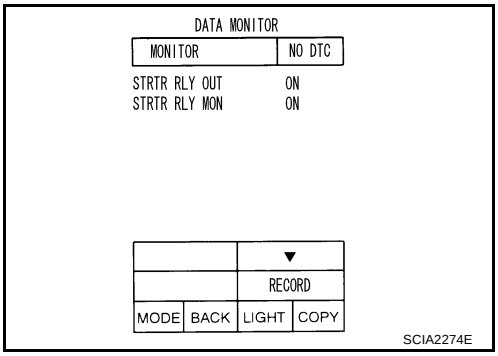
Diagnostic Procedure

NCS0013M

1. CHECK STARTER RELAY SIGNAL

With CONSULT-II

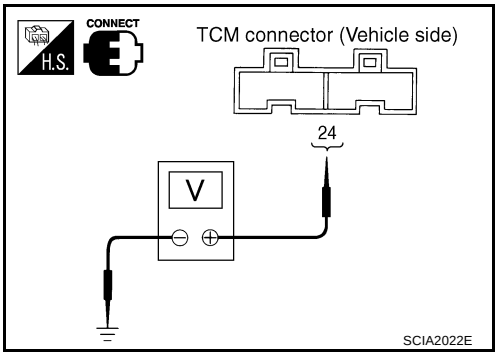
1. Turn ignition switch ON.
2. Select “SELECTION FROM MENU” in “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-II and check monitor “STRTR RLY OUT”, “STRTR RLY MON” (PNP relay) ON/OFF.



Item name	Condition	Display value
STRTR RLY OUT	Selector lever in “P” and “N” positions	ON
	Selector lever in other positions	OFF
STRTR RLY MON	Selector lever in “P” and “N” positions	ON
	Selector lever in other positions	OFF

Without CONSULT-II

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



Name	Terminal	Condition		Data (Approx.)
Starter relay	24 – Ground		Selector lever in “N” and “P” positions	Battery voltage
			Selector lever in other positions	0 V

OK or NG

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

2. DETECT MALFUNCTIONING ITEM

Check the following.

- Starter relay. Refer to PG-68, "STANDARDIZED RELAY" .
- Open or short-circuit in the harness between TCM and the starter relay. Refer to CVT-72, "Wiring Diagram — CVT — STSIG" .
- Ground circuit for the starter relay. Refer to SC-10, "Wiring Diagram — START —" .

OK or NG

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

3. CHECK DTC

Perform CVT-71, "DTC Confirmation Procedure" .

OK or NG

OK >> **INSPECTION END**
NG >> GO TO 4.

4. CHECK TCM

1. Check TCM input/output signals. Refer to CVT-53, "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 P0703 STOP LAMP SWITCH CIRCUIT

PFP:25320

Description

NCS0013N

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

NCS0013O

Remarks: Specification data are reference values.

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

On Board Diagnosis Logic

NCS0013P

- 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, OFF.

Possible Cause

NCS0013Q

- 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

NCS0013R

CAUTION:

Always drive vehicle at a safe speed.

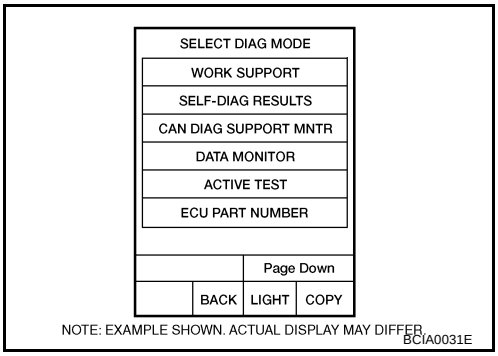
NOTE:

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.
2. 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-76, "Diagnostic Procedure" .



NOTE: EXAMPLE SHOWN. ACTUAL DISPLAY MAY DIFFER.

BCIA0031E

Diagnostic Procedure

NCS0013S

1. CHECK CAN COMMUNICATION LINE

Perform the self-diagnosis check. Refer to CVT-61, "SELF-DIAGNOSTIC RESULT MODE" .

Is any malfunction of the “U1000 CAN COMM CIRCUIT” indicated?

YES >> Check CAN communication line. Refer to CVT-68, "DTC U1000 CAN COMMUNICATION LINE" .

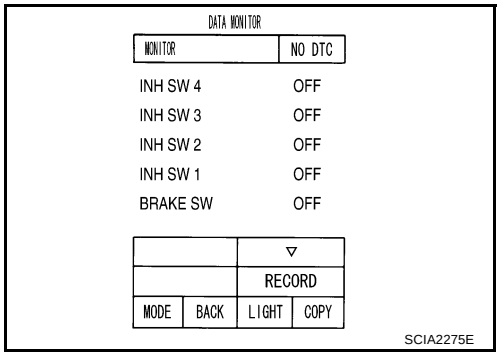
NO >> GO TO 2.

2. CHECK STOP LAMP SWITCH CIRCUIT

With CONSULT-II

1. Turn ignition switch ON.
2. Select “ECU INPUT SIGNALS” in “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-II.
3. Read out ON/OFF switching action of the “BRAKE SW”.

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



OK or NG

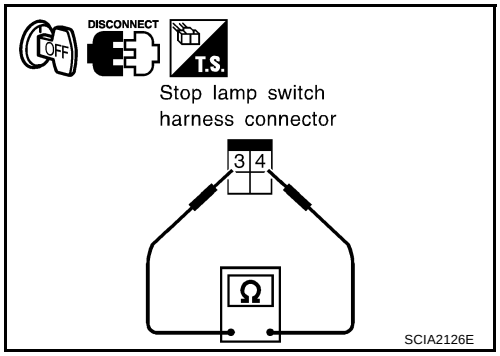
OK >> **INSPECTION END**

NG >> GO TO 3.

3. CHECK STOP LAMP SWITCH

Check continuity between stop lamp switch harness connector E116 terminals 3 and 4. Refer to CVT-180, "Wiring Diagram — CVT — NONDTC" .

Condition	Continuity
When brake pedal is depressed	Yes
When brake pedal is released	No



Check stop lamp switch after adjusting brake pedal — refer to BR-7, "BRAKE PEDAL" .

OK or NG

OK >> Check the following. If NG, repair or replace damaged parts.

- Harness for short or open between battery and stop lamp switch.
- Harness for short or open between stop lamp switch and unified meter and A/C amp.

NG >> Repair or replace the stop lamp switch.

DTC P0705 PARK/NEUTRAL POSITION SWITCH

PFP:32006

Description

NCS0013T

- The 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)
P	OFF	OFF	OFF	OFF	OFF
R	ON	OFF	OFF	ON	OFF
N	ON	ON	OFF	OFF	OFF
D · S*	ON	ON	ON	ON	ON
L*	OFF	ON	ON	OFF	ON

*: Without manual mode

CONSULT-II Reference Value

NCS0013U

Remarks: Specification data are reference values.

Item name	Condition	Display value
INH SW3M	Selector lever in “D”, “S”* and “L”* positions	ON
	Selector lever in “P”, “R” and “N” positions	OFF
INH SW4	Selector lever in “R”, “D” and “S”* positions	ON
	Selector lever in “P”, “N” and “L”* positions	OFF
INH SW3	Selector lever in “D”, “S”* and “L”* positions	ON
	Selector lever in “P”, “R” and “N” positions	OFF
INH SW2	Selector lever in “N”, “D”, “S”* and “L”* positions	ON
	Selector lever in “P” and “R” positions	OFF
INH SW1	Selector lever in “R”, “N”, “D” and “S”* positions	ON
	Selector lever in “P” and “L”* positions	OFF

*: Without manual mode

On Board Diagnosis Logic

NCS0013V

- 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

NCS0013W

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

DTC Confirmation Procedure

NCS0013X

CAUTION:

Always drive vehicle at a safe speed.

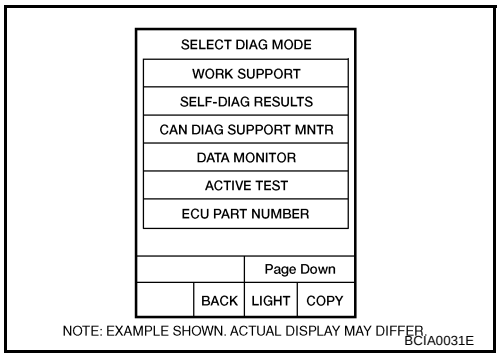
NOTE:

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.
2. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-II.
3. Start engine.
4. Drive vehicle and maintain the following conditions for at least 2 consecutive seconds.
   VEHICLE SPEED: More than 10 km/h (6 MPH)
   ENG SPEED: More than 450 rpm
   ACC PEDAL OPEN: More than 1.0/8
5. If DTC is detected, go to CVT-81, "Diagnostic Procedure" .



WITH GST

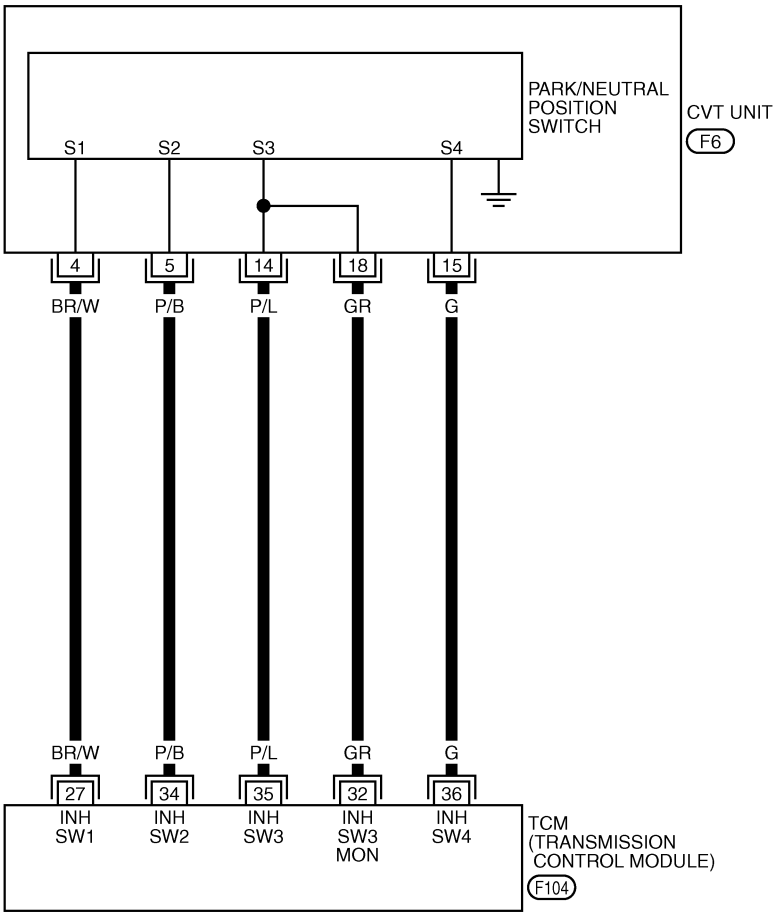
Follow the procedure “WITH CONSULT-II”.

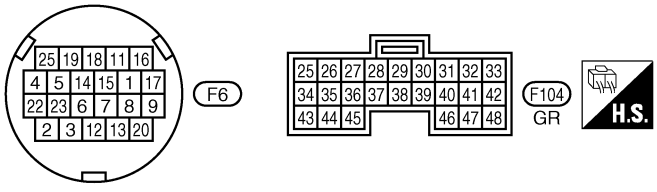
Wiring Diagram — CVT — PNP/SW

NCS0013Y

CVT-PNP/SW-01

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





TCWA0246E

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

Terminal	Wire color	Item	Condition		Data (Approx.)
27	BR/W	PNP switch 1		Selector lever in “R”, “N”, “D” and “S”* positions	0 V
				Selector lever in “P” and “L”* positions	Battery voltage
32	GR	PNP switch 3 (monitor)		Selector lever in “D”, “S”* and “L”* positions	0 V
				Selector lever in “P”, “R” and “N” positions	8.0 V – Battery voltage
34	P/B	PNP switch 2		Selector lever in “N”, “D”, “S”* and “L”* positions	0 V
				Selector lever in “P” and “R” positions	10.0 V – Battery voltage
35	P/L	PNP switch 3		Selector lever in “D”, “S”* and “L”* positions	0 V
				Selector lever in “P”, “R” and “N” positions	8.0 V – Battery voltage
36	G	PNP switch 4		Selector lever in “R”, “D” and “S”* positions	0 V
				Selector lever in “P”, “N” and “L”* positions	10.0 V – Battery voltage

*: Without manual mode

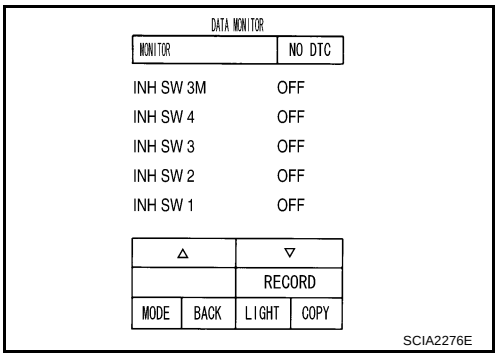
Diagnostic Procedure

NCS0013Z

1. CHECK PNP SW SIGNALS

With CONSULT-II

1. Turn ignition switch ON.
2. Select “ECU INPUT SIGNALS” in “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-II.
3. Change selector lever to “P”, “R”, “N”, “D”, “S”* and “L”* positions to check the value of “INH SW1” “INH SW2” “INH SW3” “INH SW4” and “INH SW3M”.
   *: Without manual mode

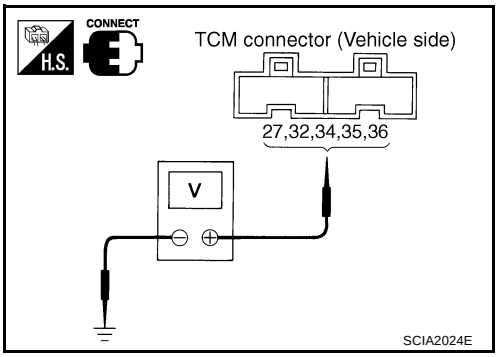


Shift position	“INH SW1”	“INH SW2”	“INH SW3”	“INH SW4”	“INH SW3M”
P	OFF	OFF	OFF	OFF	OFF
R	ON	OFF	OFF	ON	OFF
N	ON	ON	OFF	OFF	OFF
D · S*	ON	ON	ON	ON	ON
L*	OFF	ON	ON	OFF	ON

*: Without manual mode

Without CONSULT-II

1. Turn ignition switch ON.
2. Change selector lever to “P“, “R”, “N”, “D”, “S”* and “L”* positions to check voltage between the TCM connector terminals and ground.
   *: Without manual mode



Connector	Terminal	Shift position				
		P	R	N	D · S*	L*
F104	27 – Ground	Battery voltage	0 V	0 V	0 V	Battery voltage
	34 – Ground	10.0 V – Battery voltage	10.0 V – Battery voltage	0 V	0 V	0 V
	35 – Ground	8.0 V – Battery voltage	8.0 V – Battery voltage	8.0 V – Battery voltage	0 V	0 V
	36 – Ground	10.0 V – Battery voltage	0 V	10.0 V – Battery voltage	0 V	10.0 V – Battery voltage
	32 – Ground	8.0 V – Battery voltage	8.0 V – Battery voltage	8.0 V – Battery voltage	0 V	0 V

*: Without manual mode

OK or NG

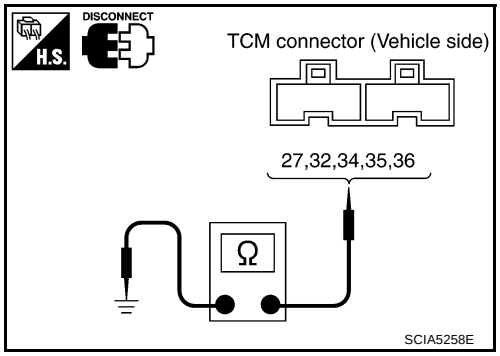
OK >> GO TO 5.
NG >> GO TO 2.

2. CHECK PNP SWITCH CIRCUIT

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

Connector	Terminal	Condition	Continuity
F104	27 – Ground	Select lever in “P” and “L”* positions	No
		Select lever in other positions	Yes
	34 – Ground	Select lever in “P” and “R” positions	No
		Select lever in other positions	Yes
	35 – Ground	Select lever in “P”, “R” and “N” positions	No
		Select lever in other positions	Yes
	36 – Ground	Select lever in “P”, “N” and “L”* positions	No
		Select lever in other positions	Yes
	32 – Ground	Select lever in “P”, “R” and “N” positions	No
		Select lever in other positions	Yes

*: Without manual mode



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

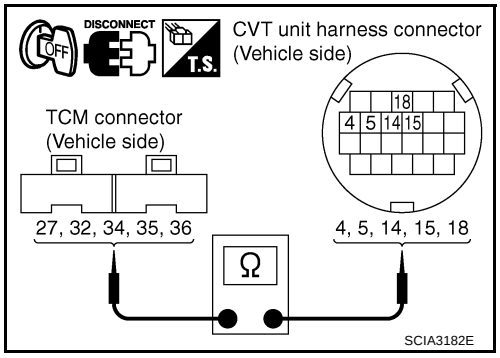
OK or NG

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 terminals and CVT unit harness connector terminals.

Item	Connector	Terminal	Continuity
TCM connector	F104	27	Yes
CVT unit harness connector	F6	4	
TCM connector	F104	34	Yes
CVT unit harness connector	F6	5	
TCM connector	F104	35	Yes
CVT unit harness connector	F6	14	
TCM connector	F104	32	Yes
CVT unit harness connector	F6	18	
TCM connector	F104	36	Yes
CVT unit harness connector	F6	15	



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 PNP switch. Refer to CVT-83, "Component Inspection" .

OK or NG

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

5. CHECK DTC

Perform CVT-77, "DTC Confirmation Procedure" .

OK or NG

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

6. CHECK TCM

1. Check TCM input/output signals. Refer to CVT-53, "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-215, "Removal and Installation" .

Component Inspection

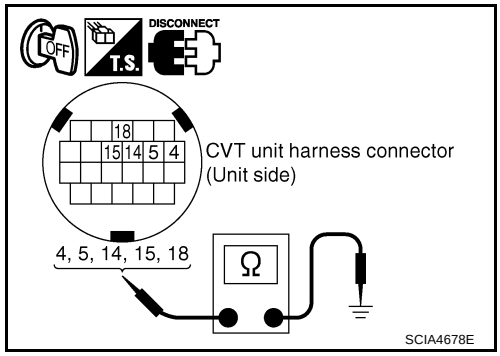
NCS00140

PNP SWITCH

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

PNP SW	Shift position	Connector	Terminal	Continuity
SW 1	“R”, “N”, “D”, “S”*	F6	4 – Ground	Yes
	other positions			No
SW 2	“N”, “D”, “S”*, “L”*		5 – Ground	Yes
	other positions			No
SW 3	“D”, “S”*, “L”*		14 – Ground	Yes
	other positions			No
SW 4	“R”, “D”, “S”*		15 – Ground	Yes
	other positions			No
SW 3 Monitor	“D”, “S”*, “L”*		18 – Ground	Yes
	other positions			No

*: Without manual mode



2. If NG, check continuity with control cable disconnected. (Refer to step 1 above.)
3. If OK, with control cable disconnected, adjust CVT position. Refer to CVT-201, "Adjustment of CVT Position" .
4. If NG, even when control cable is disconnected, replace transaxle assembly. Refer to CVT-215, "Removal and Installation" .

DTC P0710 CVT FLUID TEMPERATURE SENSOR CIRCUIT

PFP:31020

Description

NCS00141

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

CONSULT-II Reference Value

NCS00142

Remarks: Specification data are reference values.

Item name	Condition	Display value (Approx.)
ATF TEMP SEN	When CVT fluid temperature is 20°C (68°F)	1.8 – 2.0 V
	When CVT fluid temperature is 80°C (176°F)	0.6 – 1.0 V

On Board Diagnosis Logic

NCS00143

- 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

NCS00144

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

DTC Confirmation Procedure

NCS00145

CAUTION:

Always drive vehicle at a safe speed.

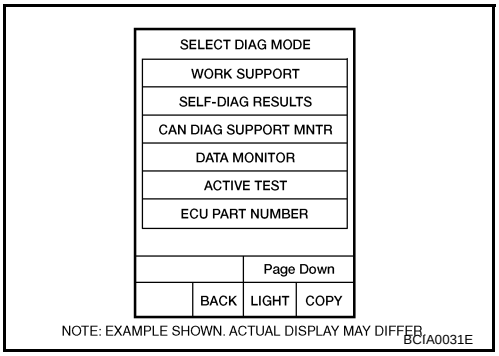
NOTE:

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.
2. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-II.
3. Start engine and maintain the following conditions for at least 10 minutes (Total).
   VEHICLE SPEED: 10 km/h (6 MPH) or more
   ENG SPEED: 450 rpm more than
   ACC PEDAL OPEN: More than 1.0/8
   RANGE: “D” position
4. If DTC is detected, go to CVT-86, "Diagnostic Procedure" .



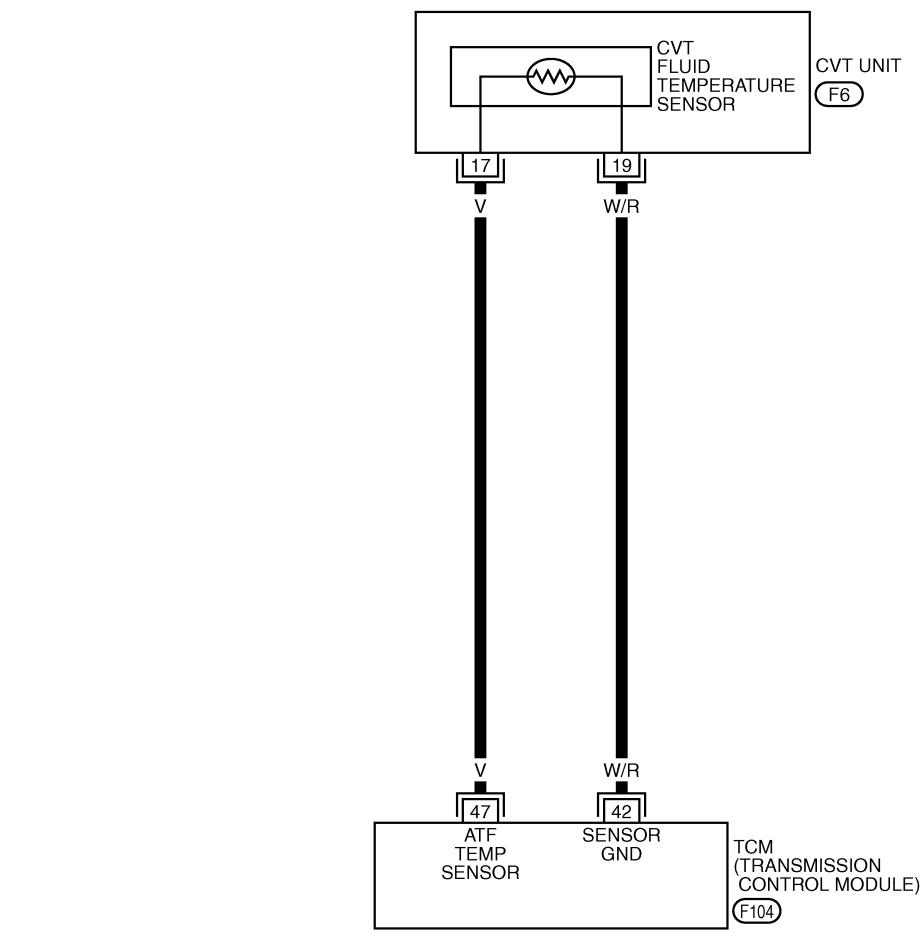
WITH GST

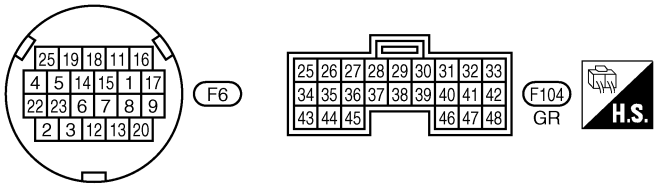
Follow the procedure “WITH CONSULT-II”.

Wiring Diagram — CVT — FTS

NCS00146

CVT-FTS-01





TCWA0247E

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

Terminal	Wire color	Item	Condition		Data (Approx.)
42	W/R	Sensor ground	Always		0 V
47	V	CVT fluid temperature sensor		When CVT fluid temperature is 20°C (68°F)	2.0 V
				When CVT fluid temperature is 80°C (176°F)	1.0 V

Diagnostic Procedure

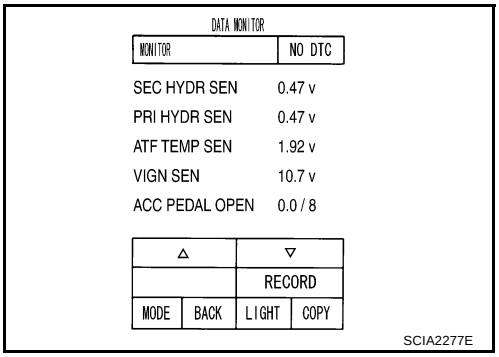
NCS00147

1. CHECK CVT FLUID TEMPERATURE SENSOR SIGNAL

With CONSULT-II

1. Start engine.
2. Select “ECU INPUT SIGNALS” in “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-II.
3. Read out the value of “ATF TEMP SEN”.

Item name	Condition	Display value (Approx.)
ATF TEMP SEN	When CVT fluid temperature is 20°C (68°F)	1.8 – 2.0 V
	When CVT fluid temperature is 80°C (176°F)	0.6 – 1.0 V

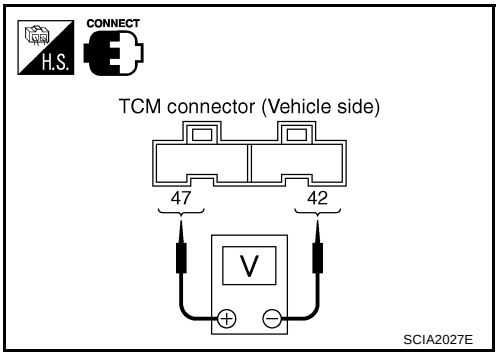


Without CONSULT-II

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

Name	Connector	Terminal	Temperature °C (°F)	Voltage (Approx.)
CVT fluid temperature sensor	F104	47 – 42	20 (68)	2.0 V
			80 (176)	1.0 V

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.

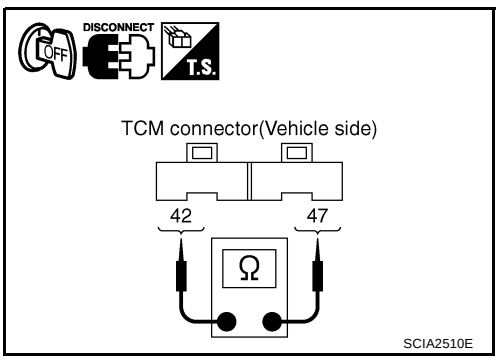
2. CHECK CVT FLUID TEMPERATURE SENSOR CIRCUIT

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

Name	Connector	Terminal	Temperature °C (°F)	Resistance (Approx.)
CVT fluid temperature sensor	F104	47 – 42	20 (68)	6.5 kΩ
			80 (176)	0.9 kΩ

OK or NG

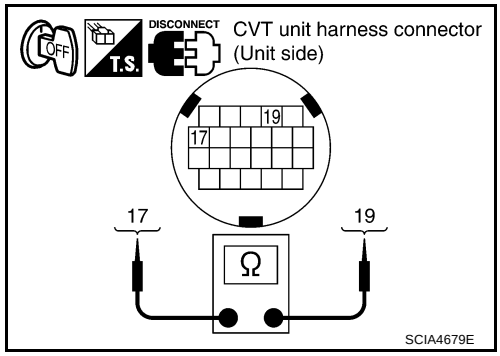
OK >> GO TO 5.
NG >> GO TO 3.



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	Temperature °C (°F)	Resistance (Approx.)
CVT fluid temperature sensor	F6	17 – 19	20 (68)	6.5 kΩ
			80 (176)	0.9 kΩ



4. Reinstall any part removed.

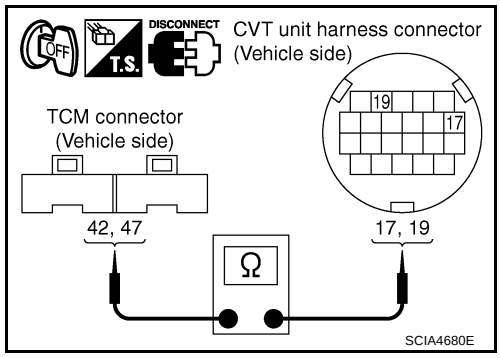
OK or NG

OK >> GO TO 4.
NG >> Replace the transaxle assembly. Refer to CVT-215, "Removal and Installation" .

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 terminals and CVT unit harness connector terminals.

Item	Connector	Terminal	Continuity
TCM connector	F104	42	Yes
CVT unit harness connector	F6	19	
TCM connector	F104	47	Yes
CVT unit harness connector	F6	17	



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. CHECK DTC

Perform CVT-84, "DTC Confirmation Procedure" .

OK or NG

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

6. CHECK TCM

1. Check TCM input/output signals. Refer to CVT-53, "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.

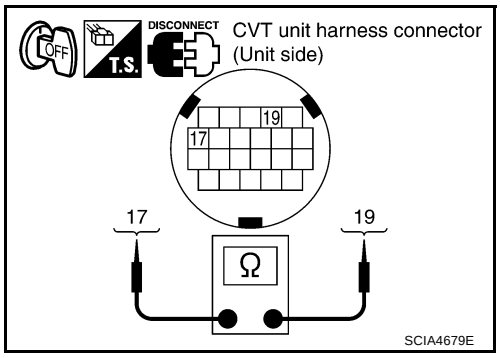
Component Inspection

NCS00148

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	Temperature °C (°F)	Resistance (Approx.)
CVT fluid temperature sensor	F6	17 – 19	20 (68)	6.5 kΩ
			80 (176)	0.9 kΩ



4. If NG, replace the transaxle assembly. Refer to CVT-215, "Removal and Installation" .

DTC P0715 INPUT SPEED SENSOR CIRCUIT (PRI SPEED SENSOR)

PFP:31935

Description

NCS00149

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

CONSULT-II Reference Value

NCS0014A

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

NCS0014B

- 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

NCS0014C

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

DTC Confirmation Procedure

NCS0014D

CAUTION:

Always drive vehicle at a safe speed.

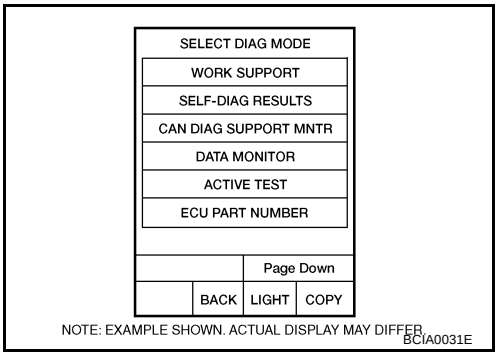
NOTE:

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 and select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-II.
2. Start engine and maintain the following conditions for at least 5 consecutive seconds.
   VEHICLE SPEED: 10 km/h (6 MPH) or more
   ACC PEDAL OPEN: More than 1.0/8
   RANGE: “D” position
   ENG SPEED: 450 rpm or more
   Driving location: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.
3. If DTC is detected, go to CVT-91, "Diagnostic Procedure" .



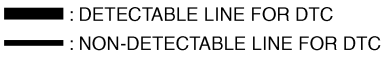
WITH GST

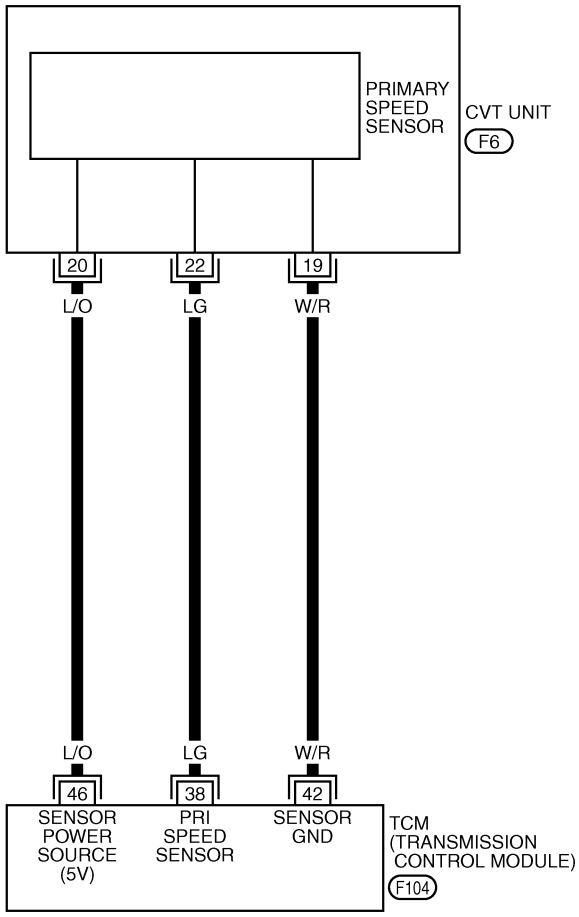
Follow the procedure “WITH CONSULT-II”.

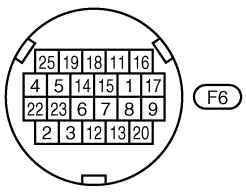
Wiring Diagram — CVT — PRSCVT

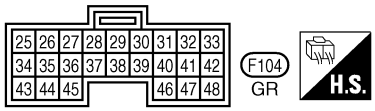
NCS0014E

CVT-PRSCVT-01









TCWA0254E

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

Terminal	Wire color	Item	Condition		Data (Approx.)
38	LG	Input speed sensor (Primary speed sensor)		When driving [“D” position, 20 km/h (12 MPH)]	720 Hz
42	W/R	Sensor ground	Always		0 V
46	L/O	Sensor power		—	4.5 – 5.5 V
				—	0 V

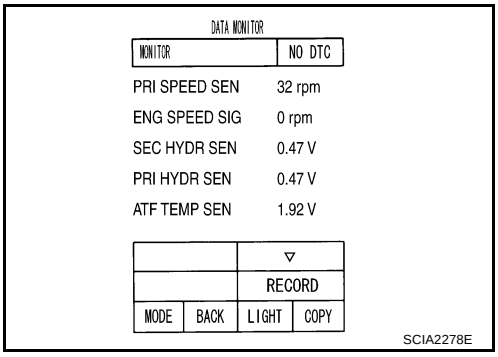
Diagnostic Procedure

NCS0014F

1. 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 “PRI SPEED SEN”.



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

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 connector	F104	46 – 42	4.5 – 5.5 V

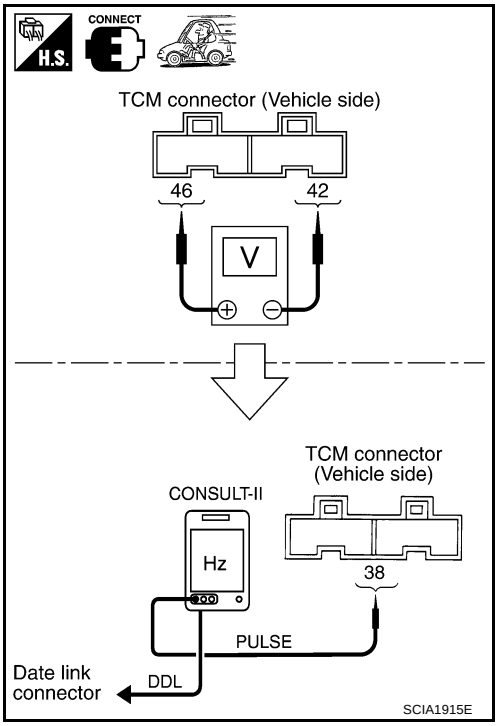
3. Check the pulse with CONSULT-II or oscilloscope, when vehicle cruises.

Name	Condition
Input speed sensor (Primary speed sensor)	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. **CAUTION:** **Connect the data link connector to the vehicle-side diagnosis connector.**

Item	Connector	Terminal	Name	Data (Approx.)
TCM connector	F104	38	Input speed sensor (Primary speed sensor)	720 Hz

OK or NG

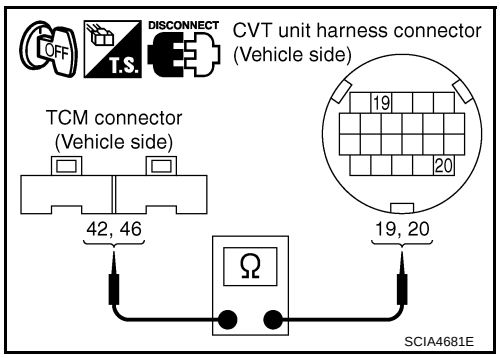
OK >> GO TO 6.
NG - 1 >> Battery voltage is not supplied: GO TO 3.
NG - 2 >> Battery voltage is supplied, but there is a malfunction in the frequency: GO TO 4.



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

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

Item	Connector	Terminal	Continuity
TCM connector	F104	42	Yes
CVT unit harness connector	F6	19	
TCM connector	F104	46	Yes
CVT unit harness connector	F6	20	



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

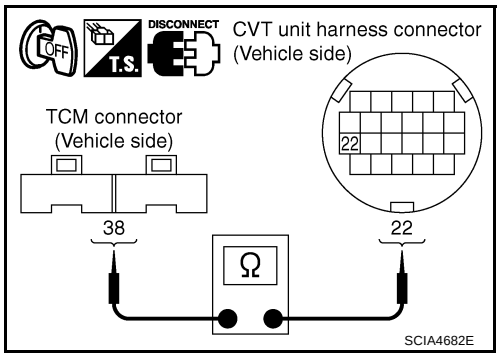
OK or NG

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 SENSOR (PRIMARY SPEED SENSOR)]

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

Item	Connector	Terminal	Continuity
TCM connector	F104	38	Yes
CVT unit harness connector	F6	22	



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. 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-89, "DTC Confirmation Procedure".

Is the “P0715 INPUT SPD SEN/CIRC” detected again?

YES >> Replace the transaxle assembly. Refer to CVT-215, "Removal and Installation".
NO >> Replace TCM. Refer to CVT-9, "Precautions for TCM and CVT Assembly Replacement".

6. CHECK DTC

Perform CVT-89, "DTC Confirmation Procedure".

OK or NG

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

7. CHECK TCM

1. Check TCM input/output signals. Refer to CVT-53, "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 P0720 VEHICLE SPEED SENSOR CVT (SECONDARY SPEED SENSOR)

PFP:31935

Description

NCS0014G

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

NCS0014H

Remarks: Specification data are reference values.

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

On Board Diagnosis Logic

NCS0014I

- 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

NCS0014J

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

DTC Confirmation Procedure

NCS0014K

CAUTION:

Always drive vehicle at a safe speed.

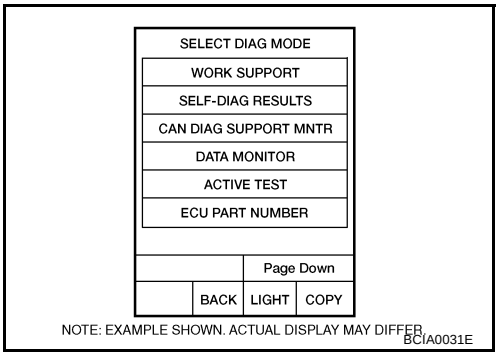
NOTE:

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 and select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-II.
2. Start engine and maintain the following conditions for at least 12 consecutive seconds.
   ACC PEDAL OPEN: More than 1.0/8
   RANGE: “D” position
   Driving location: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.
3. If DTC is detected, go to CVT-96, "Diagnostic Procedure" .



NOTE: EXAMPLE SHOWN. ACTUAL DISPLAY MAY DIFFER.

BCIA0031E

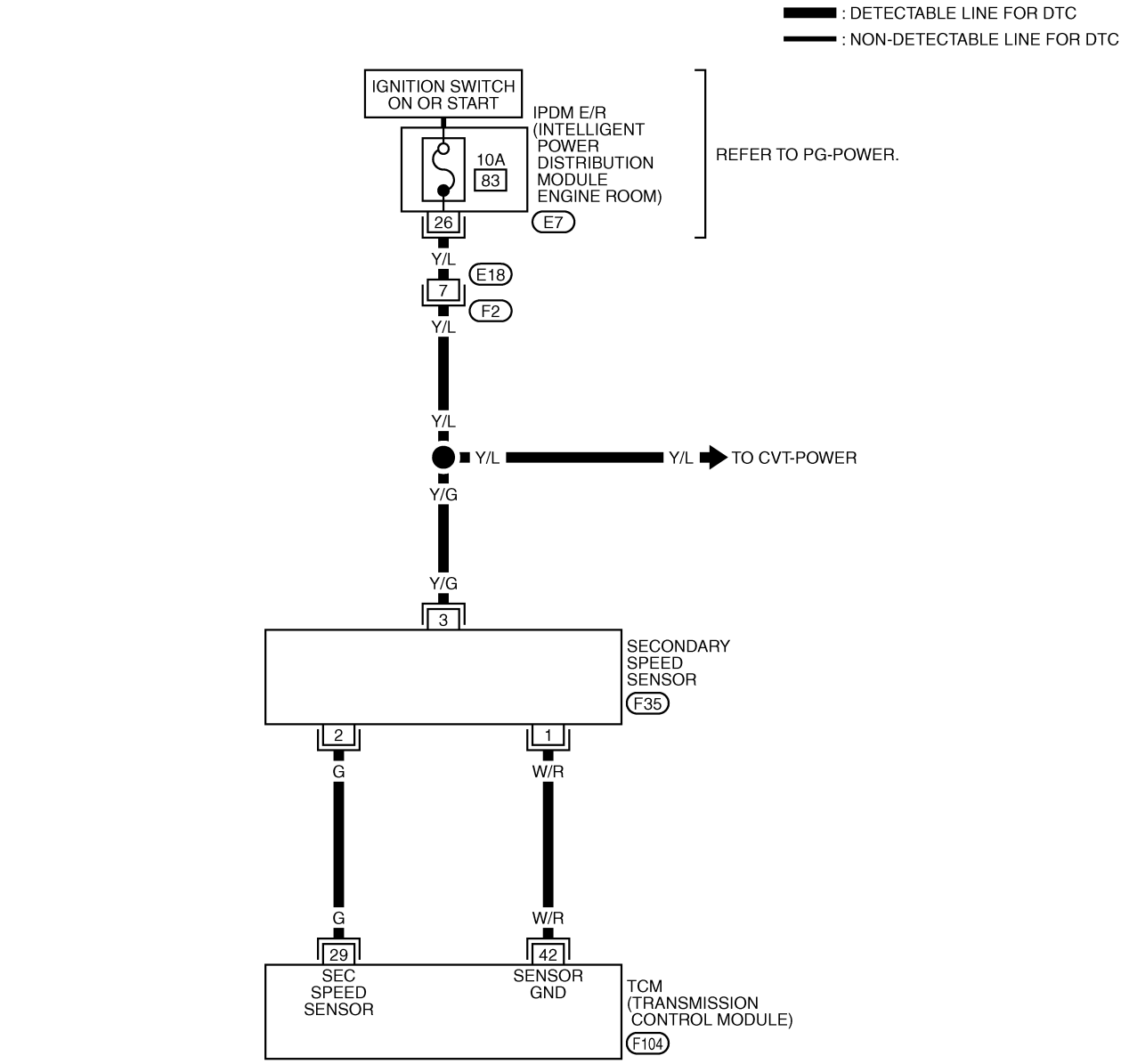
WITH GST

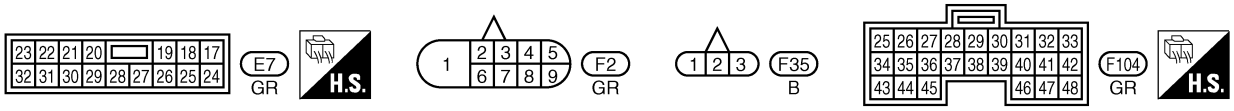
Follow the procedure “WITH CONSULT-II”.

Wiring Diagram — CVT — SESCVT

NCS0014L

CVT-SESCVT-01





TCWA0248E

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

Terminal	Wire color	Item	Condition		Data (Approx.)
29	G	Output speed sensor (Secondary speed sensor)		When driving [“D” position, 20 km/h (12 MPH)]	350 Hz
42	W/R	Sensor ground	Always		0 V

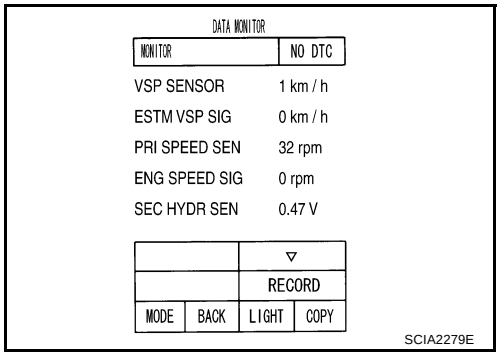
Diagnostic Procedure

NCS0014M

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 “VSP SENSOR”.



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

OK or NG

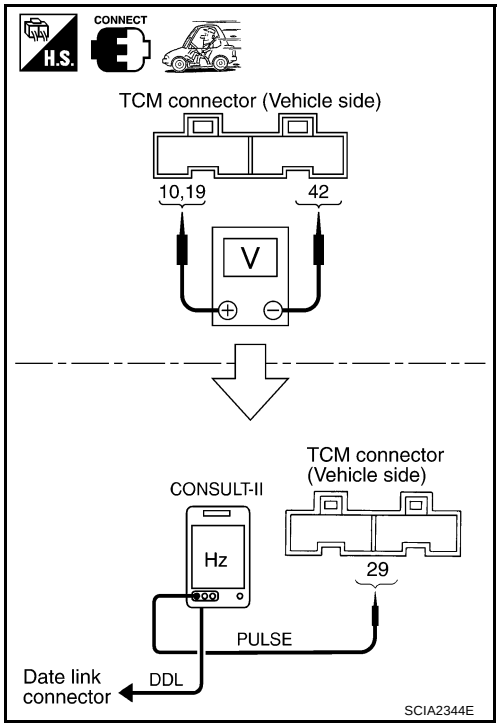
OK >> GO TO 8.
NG >> GO TO 2.

2. CHECK SECONDARY SPEED SENSOR

With CONSULT-II

1. Start engine.
2. Check power supply to output speed sensor (secondary speed sensor) by voltage between TCM connector terminals 10, 19 and 42. Refer to CVT-41, "Circuit Diagram" .

Item	Connector	Terminal	Data (Approx.)
TCM connector	F103, F104	10 – 42	Battery voltage
		19 – 42	



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

Name	Condition
Output speed sensor (Secondary speed sensor)	When running at 20 km/h (12 MPH) in “D” position, use the CONSULT-II pulse frequency measuring function. **CAUTION:** **Connect the data link connector to the vehicle-side diagnosis connector.**

Item	Connector	Terminal	Name	Data (Approx.)
TCM connector	F104	29	Output speed sensor (Secondary speed sensor)	350 Hz

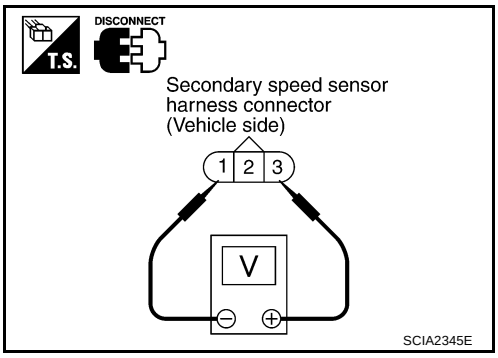
OK or NG

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

3. CHECK POWER AND SENSOR GROUND

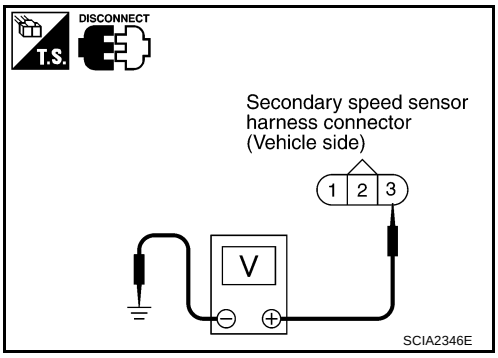
1. Turn ignition switch OFF.
2. Disconnect the output speed sensor (secondary speed sensor) harness connector.
3. Turn ignition switch ON.
4. Check voltage between output speed sensor (secondary speed sensor) harness connector terminals.

Item	Connector	Terminal	Data (Approx.)
Output speed sensor (Secondary speed sensor) harness connector	F35	1 – 3	Battery voltage



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

Item	Connector	Terminal	Data (Approx.)
Output speed sensor (Secondary speed sensor) harness connector	F35	3 – Ground	Battery voltage



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

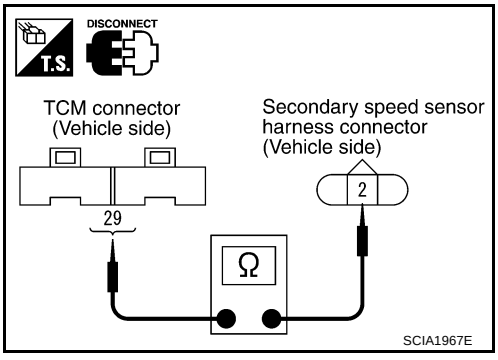
OK or NG

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

Item	Connector	Terminal	Continuity
TCM connector	F104	29	Yes
Output speed sensor (Secondary speed sensor) harness connector	F35	2	



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. 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-94, "DTC Confirmation Procedure" .

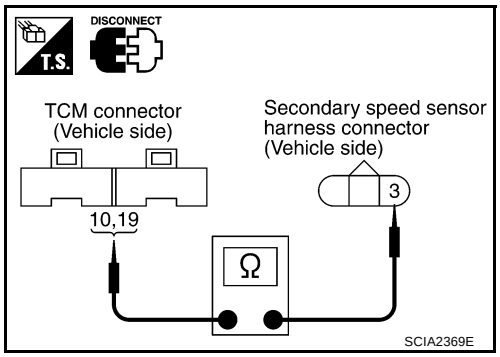
Is “P0720 VEH SPD SEN/CIR AT” detected again?

YES >> Replace the transaxle assembly. Refer to CVT-215, "Removal and Installation" .
NO >> Replace TCM. Refer to CVT-9, "Precautions for TCM and CVT Assembly Replacement" .

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

1. Turn ignition switch OFF.
2. Disconnect TCM connector and output speed sensor (secondary speed sensor) harness connector.
3. Check continuity between TCM connector terminals and output speed sensor (secondary speed sensor) harness connector terminal. Refer to CVT-41, "Circuit Diagram" .

Item	Connector	Terminal	Continuity
TCM connector	F103	10	Yes
Output speed sensor (Secondary speed sensor) harness connector	F35	3	
TCM connector	F103	19	Yes
Output speed sensor (Secondary speed sensor) harness connector	F35	3	



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

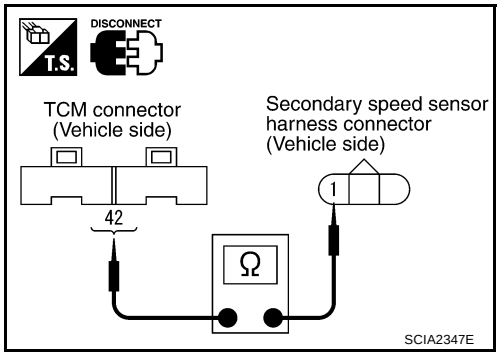
OK or NG

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

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

Item	Connector	Terminal	Continuity
TCM connector	F104	42	Yes
Output speed sensor (Secondary speed sensor) harness connector	F35	1	



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 CVT-94, "DTC Confirmation Procedure" .

OK or NG

OK >> **INSPECTION END**
NG >> GO TO 9.

9. CHECK TCM

1. Check TCM input/output signals. Refer to CVT-53, "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 P0725 ENGINE SPEED SIGNAL

PFP:24825

Description

NCS0014N

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

CONSULT-II Reference Value

NCS0014O

Remarks: Specification data are reference values.

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

On Board Diagnosis Logic

NCS0014P

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

Possible Cause

NCS0014Q

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

DTC Confirmation Procedure

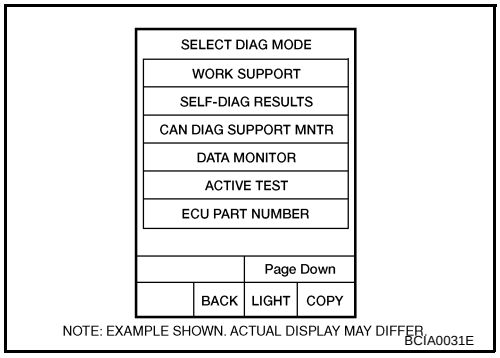
NCS0014R

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 and select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-II.
2. Start engine and maintain the following conditions for at least 10 consecutive seconds.
   PRI SPEED SEN: More than 1000 rpm
3. If DTC is detected, go to CVT-100, "Diagnostic Procedure" .



Diagnostic Procedure

NCS0014S

1. CHECK DTC WITH ECM

With CONSULT-II

1. Turn ignition switch ON.
2. Select “SELF-DIAG RESULTS” mode for “ENGINE” with CONSULT-II. Refer to EC-114, "SELF-DIAG RESULTS MODE" .

OK or NG

OK >> GO TO 2.
NG >> Check the DTC detected item. Refer to EC-114, "SELF-DIAG RESULTS MODE" .

2. CHECK DTC WITH TCM

With CONSULT-II

1. Turn ignition switch ON.
2. Select “SELF-DIAG RESULTS” mode for “TRANSMISSION” with CONSULT-II. Refer to CVT-61, "SELF-DIAGNOSTIC RESULT MODE" .

OK or NG

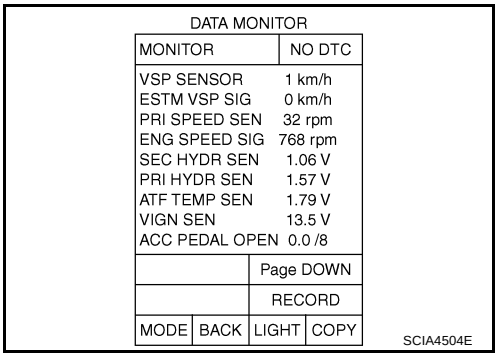
OK >> GO TO 3.
NG >> Check the DTC detected item. Refer to CVT-61, "SELF-DIAGNOSTIC RESULT MODE" .

- If DTC of CAN communication line is detected, go to CVT-68, "DTC U1000 CAN COMMUNICATION LINE" .

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

OK or NG

OK >> GO TO 4.
NG >> Check ignition signal circuit. Refer to EC-635, "IGNITION SIGNAL" .

4. CHECK DTC

Perform CVT-100, "DTC Confirmation Procedure" .

OK or NG

OK >> **INSPECTION END**
NG >> GO TO 5.

5. CHECK TCM

1. Check TCM input/output signals. Refer to CVT-53, "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

PFP:31935

Description

NCS0014T

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

NCS0014U

Remarks: Specification data are reference values.

Item name	Condition	Display value (Approx.)
GEAR RATIO	During driving	2.37 – 0.43

On Board Diagnosis Logic

NCS0014V

- 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

NCS0014W

Transaxle assembly

DTC Confirmation Procedure

NCS0014X

CAUTION:

Always drive vehicle at a safe speed.

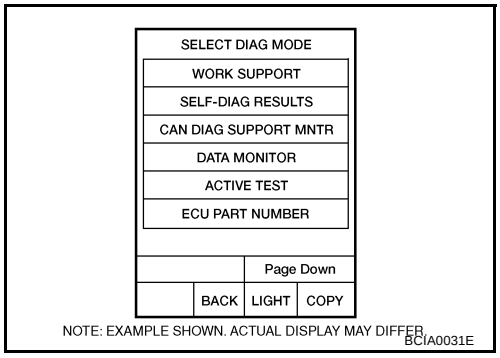
NOTE:

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

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

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 CVT fluid temperature sensor is within the range below.
   ATF TEMP SEN: 1.0 – 2.0 V
   If out of range, drive the vehicle to decrease the voltage (warm up the fluid) or stop engine to increase the voltage (cool down the fluid)
3. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-II.
4. Start engine and maintain the following conditions for at least 30 consecutive seconds.
   TEST START FROM 0 km/h (0 MPH)
   CONSTANT ACCELERATION: Keep 30 sec or more
   VEHICLE SPEED: 10 km/h (6 MPH) or more
   ACC PEDAL OPEN: More than 1.0/8
   RANGE: “D” position
   ENG SPEED: 450 rpm or more
5. If DTC is detected, go to CVT-103, "Diagnostic Procedure" .



Diagnostic Procedure

NCS0014Y

1. CHECK DTC

Perform CVT-102, "DTC Confirmation Procedure" .

Are any DTC displayed?

YES - 1>> DTC except for “P0730 BELT DAMG” is displayed: Go to Check the DTC detected item. Refer to CVT-61, "SELF-DIAGNOSTIC RESULT MODE" .

YES - 2>> DTC for “P0730 BELT DAMG” is displayed: Replace the transaxle assembly. Refer to CVT-215, "Removal and Installation" .

NO >> **INSPECTION END**

DTC P0740 TORQUE CONVERTER CLUTCH SOLENOID VALVE

PFP:31940

Description

NCS0014Z

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

CONSULT-II Reference Value

NCS00150

Remarks: Specification data are reference values.

Item name	Condition	Display value (Approx.)
ISOLT1	Lock-up OFF	0.0 A
	Lock-up ON	0.7 A

On Board Diagnosis Logic

NCS00151

- 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

NCS00152

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

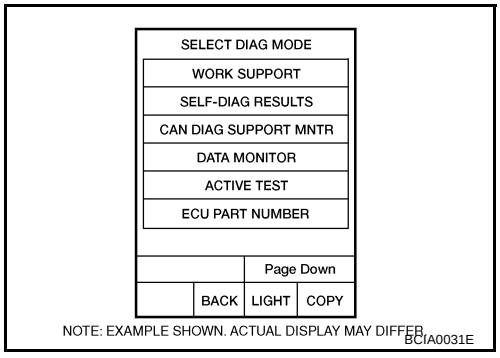
DTC Confirmation Procedure

NCS00153

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.
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-106, "Diagnostic Procedure" .



WITH GST

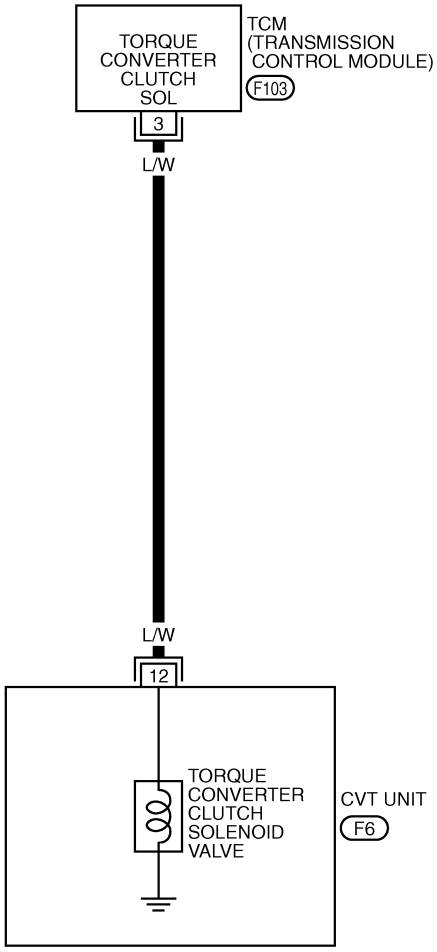
Follow the procedure “WITH CONSULT-II”.

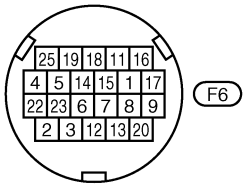
Wiring Diagram — CVT — TCV

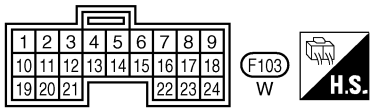
NCS00154

CVT-TCV-01

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







TCWA0251E

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

Terminal	Wire color	Item	Condition			Data (Approx.)
3	L/W	Torque converter clutch solenoid valve		When vehicle cruises in “D” position.	When CVT performs lock-up	6.0 V
					When CVT does not perform lock-up	1.0 V

Diagnostic Procedure

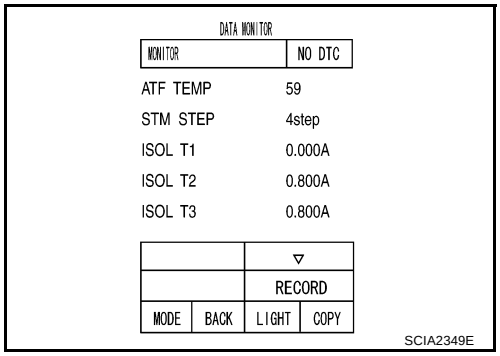
NCS00155

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 “ISOLT1”.

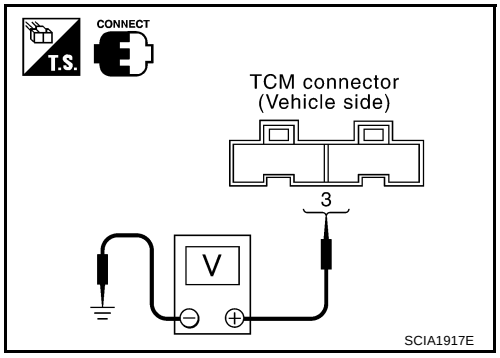
Item name	Condition	Display value (Approx.)
ISOLT1	Lock-up OFF	0.0 A
	Lock-up ON	0.7 A



Without CONSULT-II

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

Name	Connector	Terminal	Condition		Voltage (Approx.)
Torque converter clutch solenoid valve	F103	3 – Ground	When vehicle cruises in “D” position	Lock-up ON	6.0 V
				Lock-up OFF	1.0 V



3. Turn ignition switch OFF.
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 2.

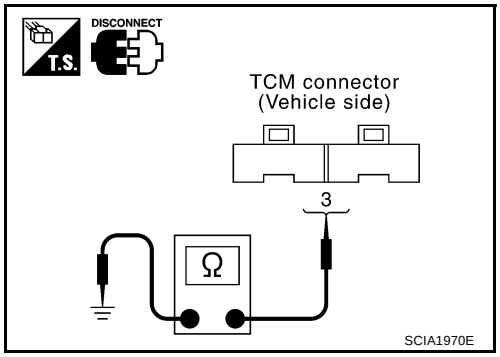
2. CHECK TORQUE CONVERTER CLUTCH SOLENOID VALVE CIRCUIT

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

Solenoid valve	Connector	Terminal	Resistance (Approx.)
Torque converter clutch solenoid valve	F103	3 – Ground	3.0 – 9.0 Ω

OK or NG

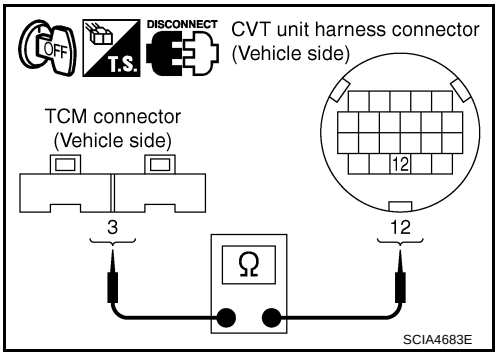
OK >> GO TO 5.
NG >> GO TO 3.



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

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

Item	Connector	Terminal	Continuity
TCM connector	F103	3	Yes
CVT unit harness connector	F6	12	



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.

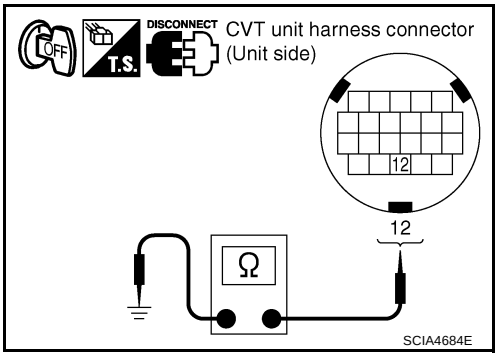
OK or NG

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.
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	3.0 – 9.0 Ω



OK or NG

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

5. CHECK DTC

Perform CVT-104, "DTC Confirmation Procedure" .

OK or NG

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

6. CHECK TCM

1. Check TCM input/output signals. Refer to CVT-53, "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.

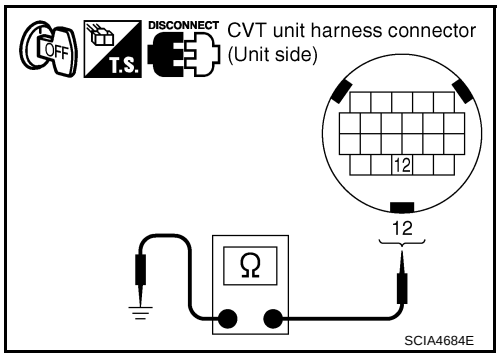
Component Inspection

NCS00156

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	3.0 – 9.0 Ω



4. If NG, replace the transaxle assembly. Refer to CVT-215, "Removal and Installation" .

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

PFP:31940

Description

NCS00157

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

NCS00158

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

NCS00159

- 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

NCS0015A

- Torque converter clutch solenoid valve
- Hydraulic control circuit

DTC Confirmation Procedure

NCS0015B

CAUTION:

Always drive vehicle at a safe speed.

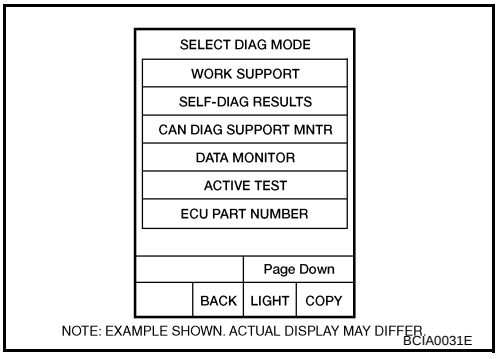
NOTE:

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.
2. 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
   RANGE: “D” position
   [Vehicle speed: Constant speed of more than 40 km/h (25 MPH)]
4. If DTC is detected go to CVT-110, "Diagnostic Procedure" .



WITH GST

Follow the procedure “WITH CONSULT-II”.

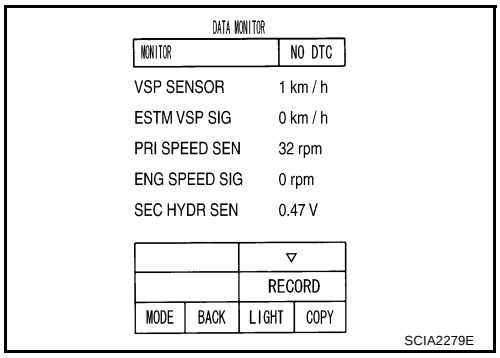
Diagnostic Procedure

NCS0015C

1. 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.
4. Check if there is a great difference between “ENG SPEED SIG” 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 the engine speed.

OK or NG

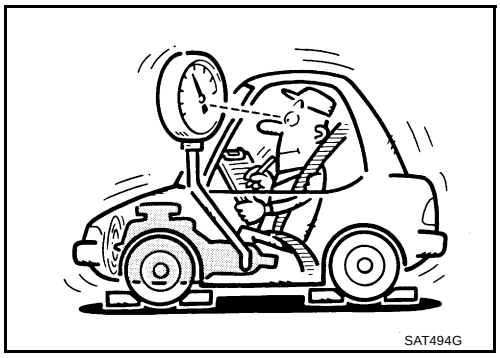
OK >> GO TO 5.
NG >> GO TO 2.

2. CHECK LINE PRESSURE

Perform line pressure test. Refer to CVT-43, "LINE PRESSURE TEST" .

OK or NG

OK >> GO TO 3.
NG >> Repair or replace damaged parts. Refer to CVT-44, "Judgment of Line Pressure Test" .



3. DETECT MALFUNCTIONING ITEM

Check the following.

- Torque converter clutch solenoid valve. Refer to CVT-108, "Component Inspection" .
- Lock-up select solenoid valve. Refer to CVT-166, "Component Inspection" .

OK or NG

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

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 CVT-94, "DTC P0720 VEHICLE SPEED SENSOR CVT (SECONDARY SPEED SENSOR)" , CVT-89, "DTC P0715 INPUT SPEED SENSOR CIRCUIT (PRI SPEED SENSOR)" .

OK or NG

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

5. CHECK DTC

Perform CVT-109, "DTC Confirmation Procedure" .

OK or NG

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

6. CHECK TCM

1. Check TCM input/output signals. Refer to CVT-53, "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-215, "Removal and Installation" .

DTC P0745 LINE PRESSURE SOLENOID VALVE

PFP:31940

Description

NCS0015D

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

NCS0015E

Remarks: Specification data are reference values.

Item name	Condition	Display value (Approx.)
ISOLT2	Release your foot from the accelerator pedal.	0.8 A
	Press the accelerator pedal all the way down.	0.0 A

On Board Diagnosis Logic

NCS0015F

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P0745 L/PRESS SOL/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

NCS0015G

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

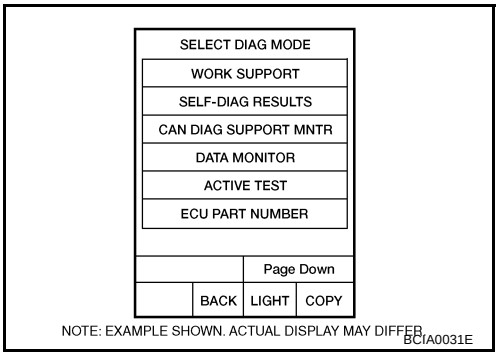
DTC Confirmation Procedure

NCS0015H

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 and select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-II.
2. Start engine and wait at least 5 seconds.
3. If DTC is detected, go to CVT-114, "Diagnostic Procedure" .



WITH GST

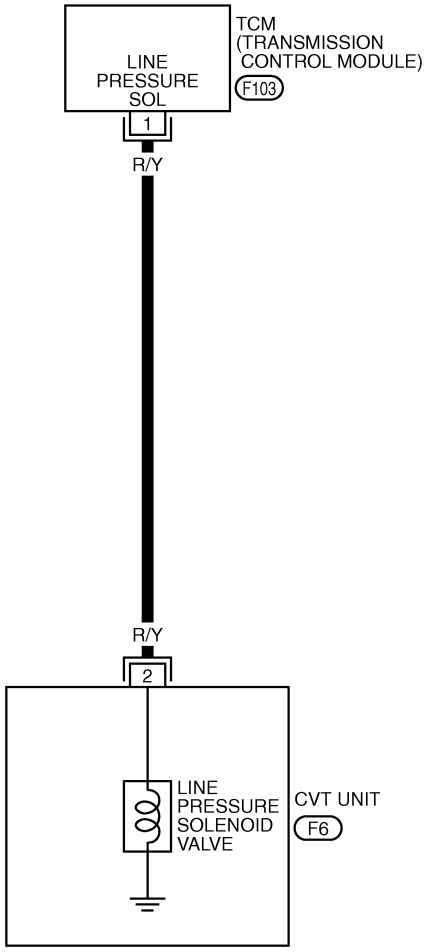
Follow the procedure “WITH CONSULT-II”.

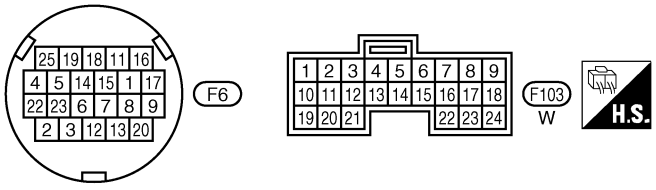
Wiring Diagram — CVT — LPSV

NCS0015I

CVT-LPSV-01

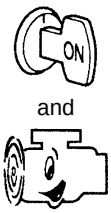
: DETECTABLE LINE FOR DTC
: NON-DETECTABLE LINE FOR DTC





TCWA0249E

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

Terminal	Wire color	Item	Condition		Data (Approx.)
1	R/Y	Pressure control solenoid valve A (Line pressure solenoid valve)		Release your foot from the accelerator pedal.	5.0 – 7.0 V
				Press the accelerator pedal all the way down.	1.0 – 3.0 V

Diagnostic Procedure

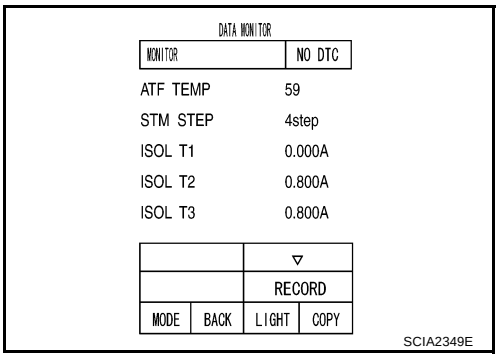
NCS0015J

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”.

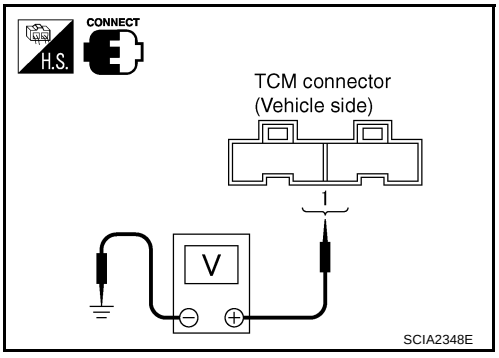
Item name	Condition	Display value (Approx.)
ISOLT2	Release your foot from the accelerator pedal.	0.8 A
	Press the accelerator pedal all the way down.	0.0 A



Without CONSULT-II

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

Name	Connector	Terminal	Condition	Voltage (Approx.)
Pressure control solenoid valve A (Line pressure solenoid valve)	F103	1 – Ground	Release your foot from the accelerator pedal.	5.0 – 7.0 V
			Press the accelerator pedal all the way down.	1.0 – 3.0 V



3. Turn ignition switch OFF.
4. Disconnect TCM connector.
5. Check if there is continuity between connector terminal and ground.

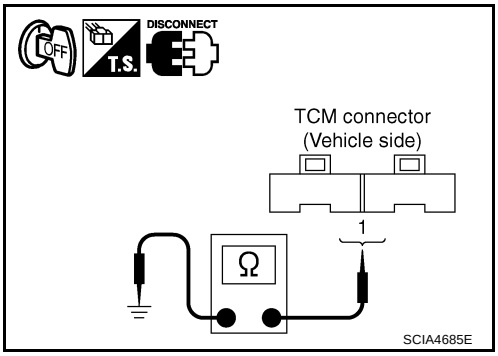
OK or NG

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 A (Line pressure solenoid valve)	F103	1 – Ground	3.0 – 9.0 Ω



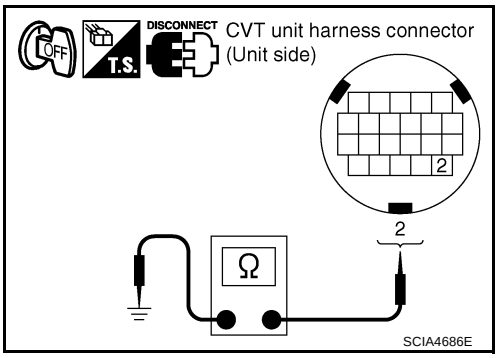
OK or NG

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

3. CHECK VALVE RESISTANCE

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 solenoid valve A (Line pressure solenoid valve)	F6	2 – Ground	3.0 – 9.0 Ω



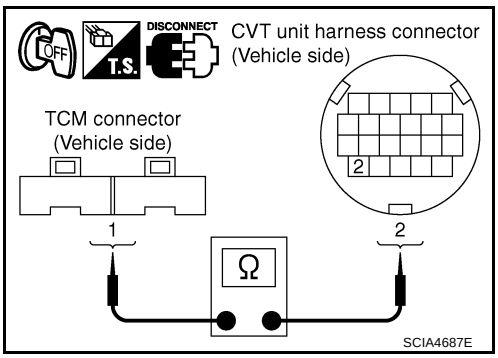
OK or NG

OK >> GO TO 4.
NG >> Replace the transaxle assembly. Refer to CVT-215, "Removal and Installation" .

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

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

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



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. CHECK DTC

Perform CVT-112, "DTC Confirmation Procedure" .

OK or NG

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

6. CHECK TCM

1. Check TCM input/output signals. Refer to CVT-53, "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-215, "Removal and Installation" .

Component Inspection

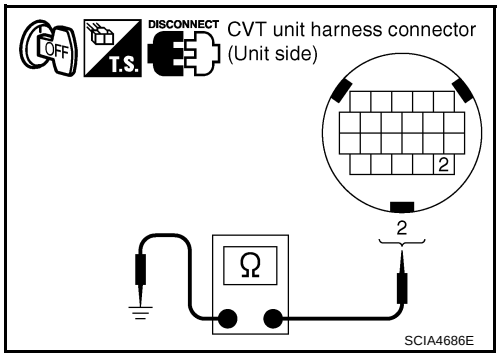
NCS0015K

PRESSURE CONTROL SOLENOID VALVE A (LINE PRESSURE SOLENOID VALVE)

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

Solenoid valve	Connector	Terminal	Resistance (Approx.)
Pressure control solenoid valve A (Line pressure solenoid valve)	F6	2 – Ground	3.0 – 9.0 Ω

4. If NG, replace the transaxle assembly. Refer to CVT-215, "Removal and Installation" .



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

PFP:31941

Description

NCS0015L

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

NCS0015M

Remarks: Specification data are reference values.

Item name	Condition	Display value (Approx.)
PRI PRESS	“N” position idle	0.3 – 0.9 MPa

On Board Diagnosis Logic

NCS0015N

- 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

NCS0015O

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

DTC Confirmation Procedure

NCS0015P

CAUTION:

Always drive vehicle at a safe speed.

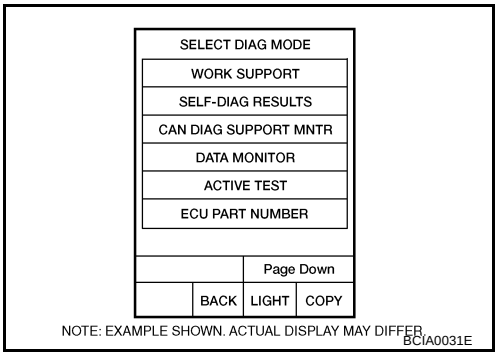
NOTE:

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 and select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-II.
2. Start engine and maintain the following conditions for at least 10 consecutive seconds. Test start from 0 km/h (0 MPH).
   ATF TEMP SEN: 1.0 – 2.0 V
   ACC PEDAL OPEN: More than 1.0/8
   RANGE: “D” position
   VEHICLE SPEED: 10 km/h (6 MPH) More than
   Driving location: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.
3. If DTC is detected, go to CVT-118, "Diagnostic Procedure" .



NOTE: EXAMPLE SHOWN. ACTUAL DISPLAY MAY DIFFER.
BCIA0031E

WITH GST

Follow the procedure “WITH CONSULT-II”.

Diagnostic Procedure

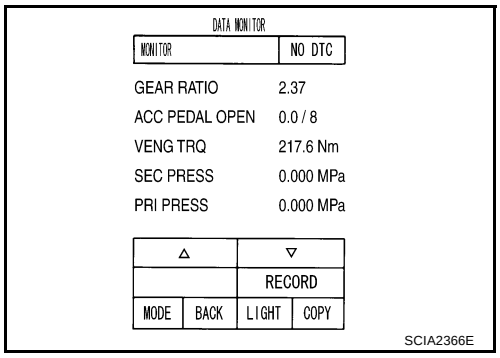
NCS0015Q

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 “PRI PRESS”.

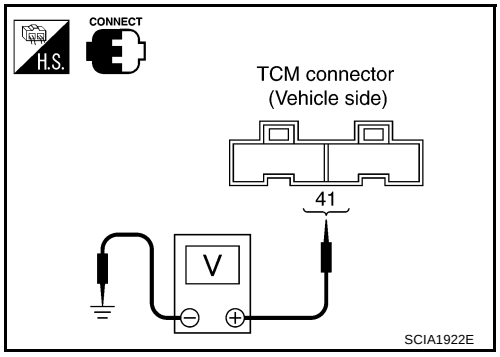
Item name	Condition	Display value (Approx.)
PRI PRESS	“N” position idle	0.3 – 0.9 MPa



Without CONSULT-II

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

Name	Connector	Terminal	Condition	Voltage (Approx.)
Transmission fluid pressure sensor B (Primary pressure sensor)	F104	41 – Ground	“N” position idle	0.7 – 3.5 V



OK or NG

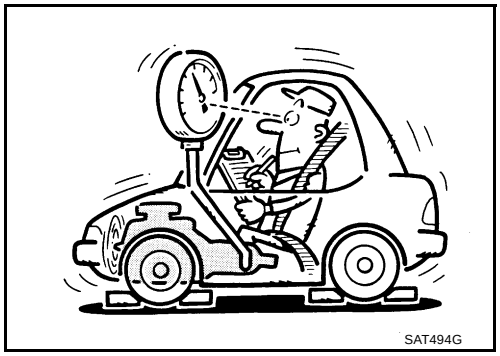
OK >> GO TO 5.
NG >> GO TO 2.

2. CHECK LINE PRESSURE

Perform line pressure test. Refer to CVT-43, "LINE PRESSURE TEST" .

OK or NG

OK >> GO TO 3.
NG >> Repair or replace damaged parts. Refer to CVT-44, "Judgment of Line Pressure Test" .



3. DETECT MALFUNCTIONING ITEM

Check Pressure control solenoid valve A (line pressure solenoid valve). Refer to CVT-116, "Component Inspection" .

OK or NG

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

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 CVT-94, "DTC P0720 VEHICLE SPEED SENSOR CVT (SECONDARY SPEED SENSOR)" , CVT-89, "DTC P0715 INPUT SPEED SENSOR CIRCUIT (PRI SPEED SENSOR)" .

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 CVT-150, "Wiring Diagram — CVT — POWER" .
- 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. CHECK DTC

Perform CVT-117, "DTC Confirmation Procedure" .

OK or NG

OK >> **INSPECTION END**
NG >> Replace the transaxle assembly or TCM. Refer to CVT-215, "Removal and Installation" .

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

PFP:31941

Description

NCS0015R

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

NCS0015S

Remarks: 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

NCS0015T

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

Possible Cause

NCS0015U

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

DTC Confirmation Procedure

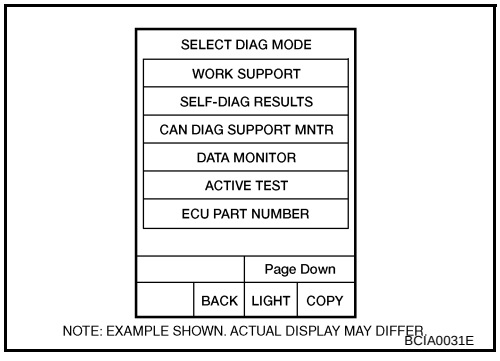
NCS0015V

CAUTION:
Always drive vehicle at a safe speed.

NOTE:
If “DTC Confirmation Procedure” has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.
After the repair, perform the following procedure to confirm the malfunction is eliminated.

WITH CONSULT-II

1. Turn ignition switch ON and select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-II.
2. Start engine and maintain the following conditions for at least 30 consecutive seconds.
   ATF TEMP SEN: 1.0 – 2.0 V
   ACC PEDAL OPEN: More than 1.0/8
   RANGE: “D” position
   VEHICLE SPEED: 10 km/h (6 MPH) More than
   Driving location: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.
3. If DTC is detected, go to CVT-121, "Diagnostic Procedure" .



WITH GST

Follow the procedure “WITH CONSULT-II”.

Diagnostic Procedure

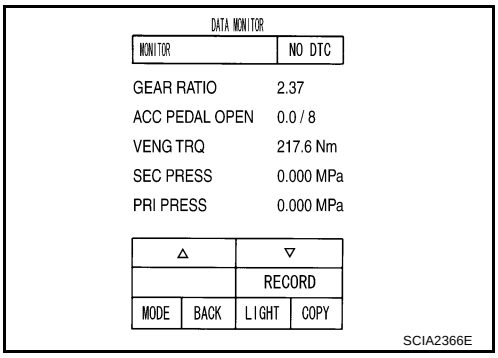
NCS0015W

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 – 0.9 MPa



OK or NG

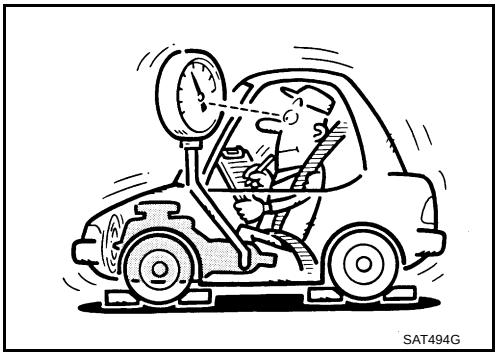
OK >> GO TO 5.
NG >> GO TO 2.

2. CHECK LINE PRESSURE

Perform line pressure test. Refer to CVT-43, "LINE PRESSURE TEST" .

OK or NG

OK >> GO TO 3.
NG >> Repair or replace damaged parts. Refer to CVT-44, "Judgment of Line Pressure Test" .



3. DETECT MALFUNCTIONING ITEM

Check the following.

- Pressure control solenoid valve B (Secondary pressure solenoid valve). Refer to CVT-127, "Component Inspection" .
- Pressure control solenoid valve A (Line pressure solenoid valve). Refer to CVT-116, "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 CVT-133, "DTC P0840 TRANSMISSION FLUID PRESSURE SENSOR A CIRCUIT (SEC PRESSURE SENSOR)" .

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 CVT-150, "Wiring Diagram — CVT — POWER" .
- 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. CHECK DTC

Perform CVT-120, "DTC Confirmation Procedure" .

OK or NG

OK >> **INSPECTION END**
NG >> Replace the transaxle assembly. Refer to CVT-215, "Removal and Installation" .

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

PFP:31941

Description

NCS0015X

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

NCS0015Y

Remarks: Specification data are reference values.

Item name	Condition	Display value (Approx.)
ISOLT3	Secondary pressure low – Secondary pressure high	0.8 – 0.0 A
SOLMON3	“N” position idle	0.6 – 0.7 A
	When stalled	0.4 – 0.6 A

On Board Diagnosis Logic

NCS0015Z

- 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

NCS00160

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

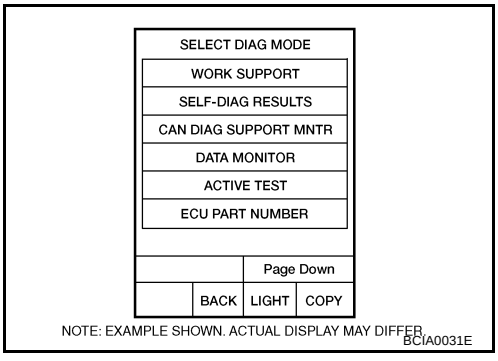
DTC Confirmation Procedure

NCS00161

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.
2. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-II.
3. Start engine and wait at least 5 seconds.
4. If DTC is detected, go to CVT-125, "Diagnostic Procedure" .



WITH GST

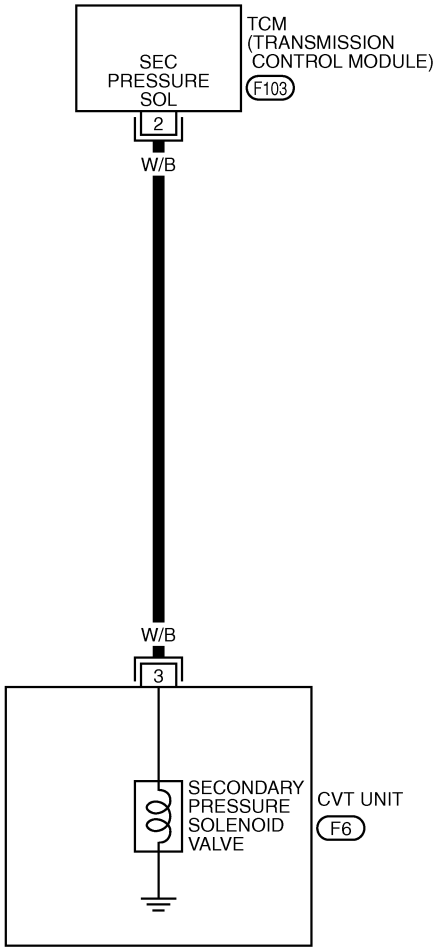
Follow the procedure “WITH CONSULT-II”.

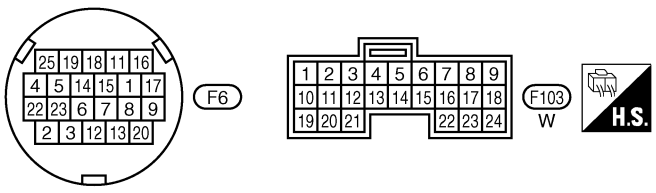
Wiring Diagram — CVT — SECPSV

NCS00162

CVT-SECPSV-01

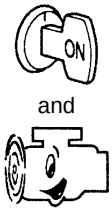
: DETECTABLE LINE FOR DTC
: NON-DETECTABLE LINE FOR DTC





TCWA0250E

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

Terminal	Wire color	Item	Condition		Data (Approx.)
2	W/B	Pressure control solenoid valve B (Secondary pressure solenoid valve)		Release your foot from the accelerator pedal.	5.0 – 7.0 V
				Press the accelerator pedal all the way down.	3.0 – 4.0 V

Diagnostic Procedure

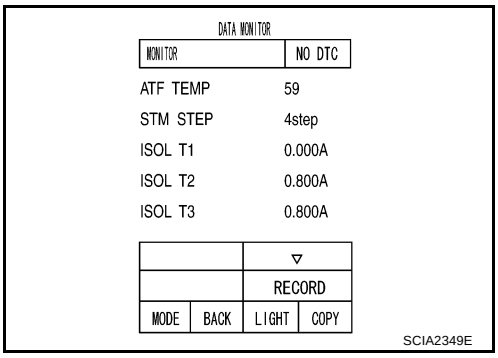
NCS00163

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”.

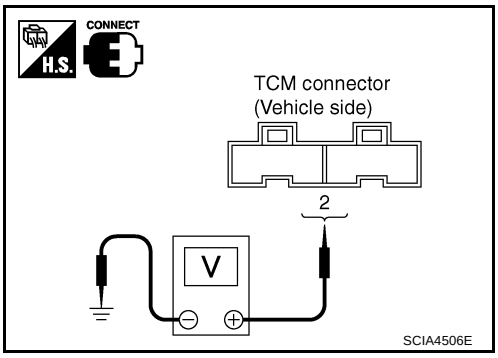
Item name	Condition	Display value (Approx.)
ISOLT3	Secondary pressure low – Secondary pressure high	0.8 – 0.0 A



Without CONSULT-II

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

Name	Connector	Terminal	Condition	Voltage (Approx.)
Pressure control solenoid valve B (Secondary pressure solenoid valve)	F103	2 – Ground	Release your foot from the accelerator pedal.	5.0 – 7.0 V
			Press the accelerator pedal all the way down.	3.0 – 4.0 V



3. Turn ignition switch OFF.
4. Disconnect TCM connector.
5. Check if there is continuity between connector terminal and ground.

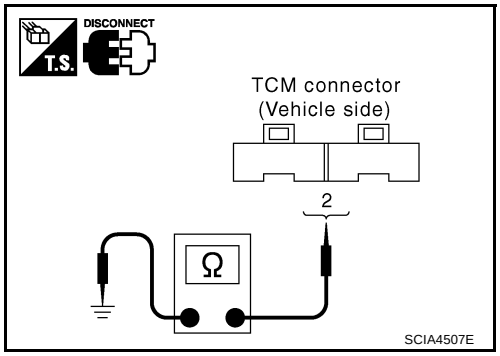
OK or NG

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

2. CHECK PRESSURE CONTROL SOLENOID VALVE B (SECONDARY 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 pressure solenoid valve)	F103	2 – Ground	3.0 – 9.0 Ω



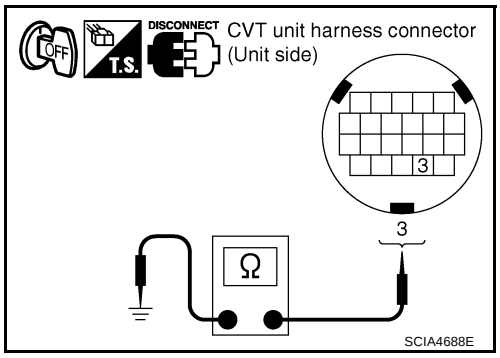
OK or NG

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

3. CHECK VALVE RESISTANCE

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 solenoid valve B (Secondary pressure solenoid valve)	F6	3 – Ground	3.0 – 9.0 Ω



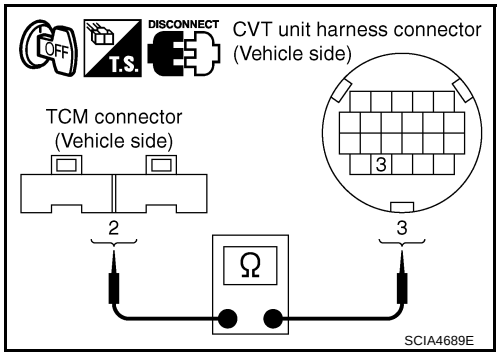
OK or NG

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

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

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

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



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. CHECK DTC

Perform CVT-123, "DTC Confirmation Procedure" .

OK or NG

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

6. CHECK TCM

1. Check TCM input/output signals. Refer to CVT-53, "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-215, "Removal and Installation" .

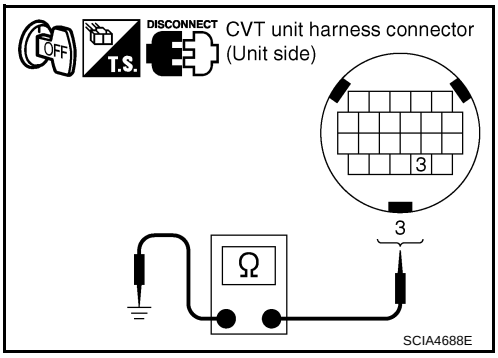
Component Inspection

NCS00164

PRESSURE CONTROL SOLENOID VALVE B (SECONDARY PRESSURE SOLENOID VALVE)

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

Solenoid Valve	Connector	Terminal	Resistance (Approx.)
Pressure control solenoid valve B (Secondary pressure solenoid valve)	F6	3 – Ground	3.0 – 9.0 Ω



4. If NG, replace the transaxle assembly. Refer to CVT-215, "Removal and Installation" .

DTC P0826 MANUAL MODE SWITCH CIRCUIT

PFP:34901

Description

NCS00165

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-178, "Diagnostic Procedure" .

CONSULT-II Reference Value

NCS00166

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

On Board Diagnosis Logic

NCS00167

- 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

NCS00168

- 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

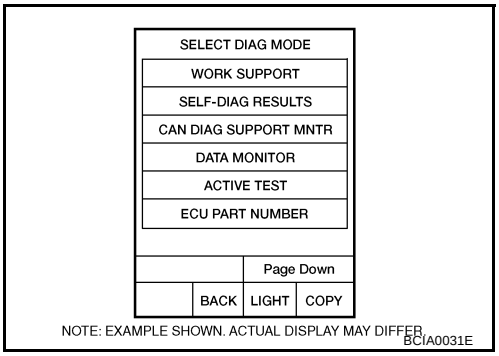
NCS00169

CAUTION:
Always drive vehicle at a safe speed.

NOTE:
If “DTC Confirmation Procedure” has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.
After the repair, perform the following procedure to confirm the malfunction is eliminated.

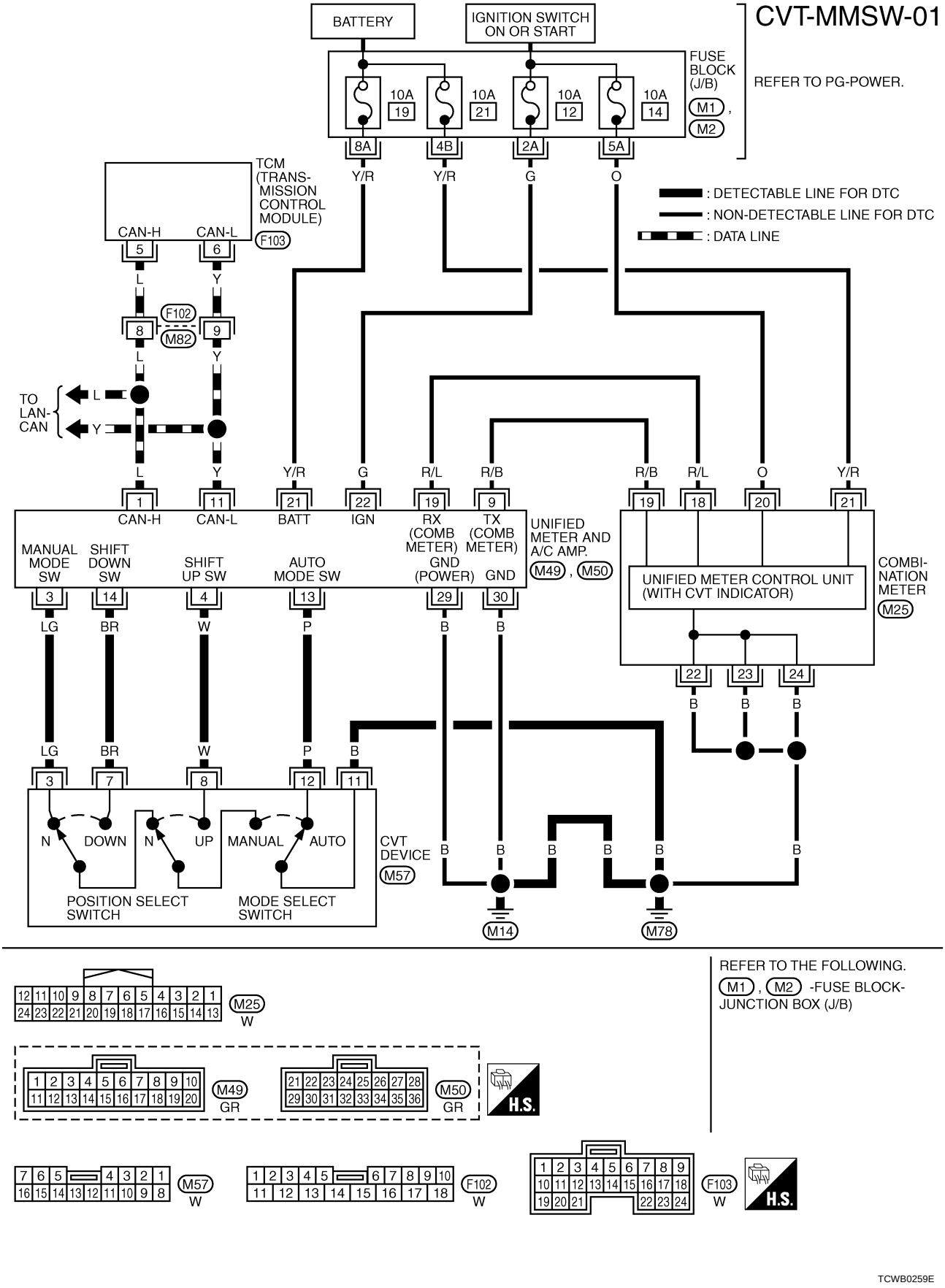
WITH CONSULT-II

1. Turn ignition switch ON.
2. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-II.
3. Start engine.
4. Move selector lever to “M” position.
5. Drive vehicle for at least 2 consecutive seconds.
6. If DTC is detected, go to CVT-130, "Diagnostic Procedure" .



Wiring Diagram — CVT — MMSW

NCS0016A



TCWB0259E

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

Terminal	Wire color	Item	Condition	Data (Approx.)
5	L	CAN-H	—	—
6	Y	CAN-L	—	—

Diagnostic Procedure

NCS0016B

1. CHECK CAN COMMUNICATION LINE

Perform the self-diagnosis check. Refer to CVT-61, "SELF-DIAGNOSTIC RESULT MODE" .

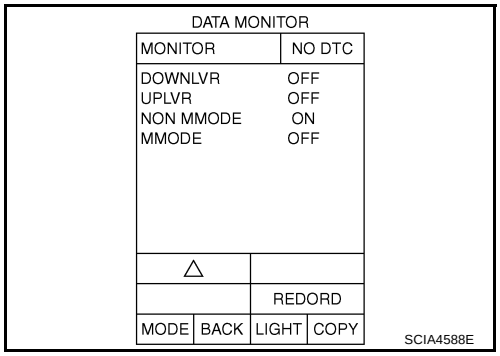
Is any malfunction of the “U1000 CAN COMM CIRCUIT” indicated?

YES >> Check CAN communication line. Refer to CVT-68, "DTC U1000 CAN COMMUNICATION LINE" .
NO >> GO TO 2.

2. CHECK MANUAL MODE SWITCH SIGNALS

With CONSULT-II

1. Turn ignition switch ON.
2. Select “ECU INPUT SIGNALS” in “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-II.
3. Read out ON/OFF switching action of the “MMODE”, “NON M-MODE”, “UPLVR”, “DOWNLVR”.



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

Without CONSULT-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 ⇔ 6th gear).

OK or NG

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

3. CHECK MANUAL MODE SWITCH

Check manual mode switch. Refer to CVT-132, "Component Inspection" .

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 DI-15, "CONSULT-II Function (METER A/C AMP)" .

Is any malfunction detected by self-diagnosis?

YES >> Check the malfunctioning system.
NO >> GO TO 5.

5. CHECK SELF-DIAGNOSTIC RESULTS (COMBINATION METER)

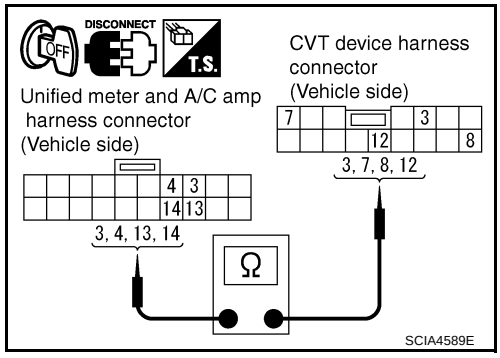
Perform self-diagnosis check. Refer to DI-15, "Self-Diagnosis Mode of Combination Meter" .

Is any malfunction detected by self-diagnosis?

YES >> Check the malfunctioning system.
NO >> GO TO 6.

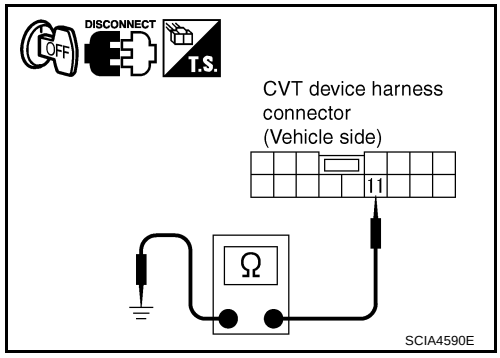
6. CHECK MANUAL MODE SWITCH CIRCUIT

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



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

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



Item	Connector	Terminal	Continuity
CVT device harness connector	M57	11 – Ground	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.
NG >> Repair open circuit or short to ground or short to power in harness or connectors.

7. CHECK DTC

Perform CVT-128, "DTC Confirmation Procedure" .

OK or NG

OK >> **INSPECTION END**
NG >> GO TO 8.

8. CHECK TCM

1. Check TCM input/output signals. Refer to CVT-53, "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.

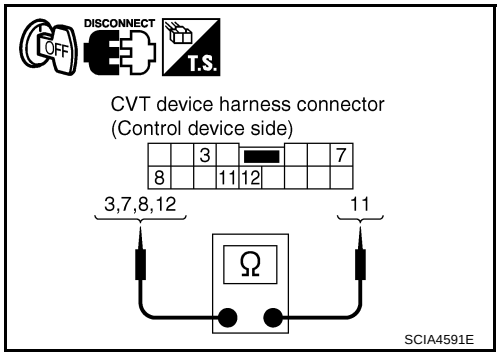
Component Inspection

NCS0016C

MANUAL MODE SWITCH

Check continuity between CVT device harness connector terminals.

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



DTC P0840 TRANSMISSION FLUID PRESSURE SENSOR A CIRCUIT (SEC PRESSURE SENSOR)

PFP:31936

Description

NCS0016D

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

CONSULT-II Reference Value

NCS0016E

Remarks: Specification data are reference values.

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

On Board Diagnosis Logic

NCS0016F

- 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

NCS0016G

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

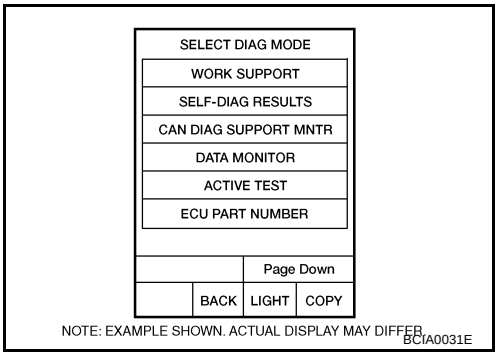
DTC Confirmation Procedure

NCS0016H

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 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 – 2.0 V
   If out of range, drive the vehicle to decrease the voltage (warm up the fluid) or stop engine to increase the voltage (cool down the fluid)
3. Start engine and wait for at least 5 consecutive seconds.
4. If DTC is detected, go to CVT-135, "Diagnostic Procedure" .



NOTE: EXAMPLE SHOWN. ACTUAL DISPLAY MAY DIFFER.
BCIA0031E

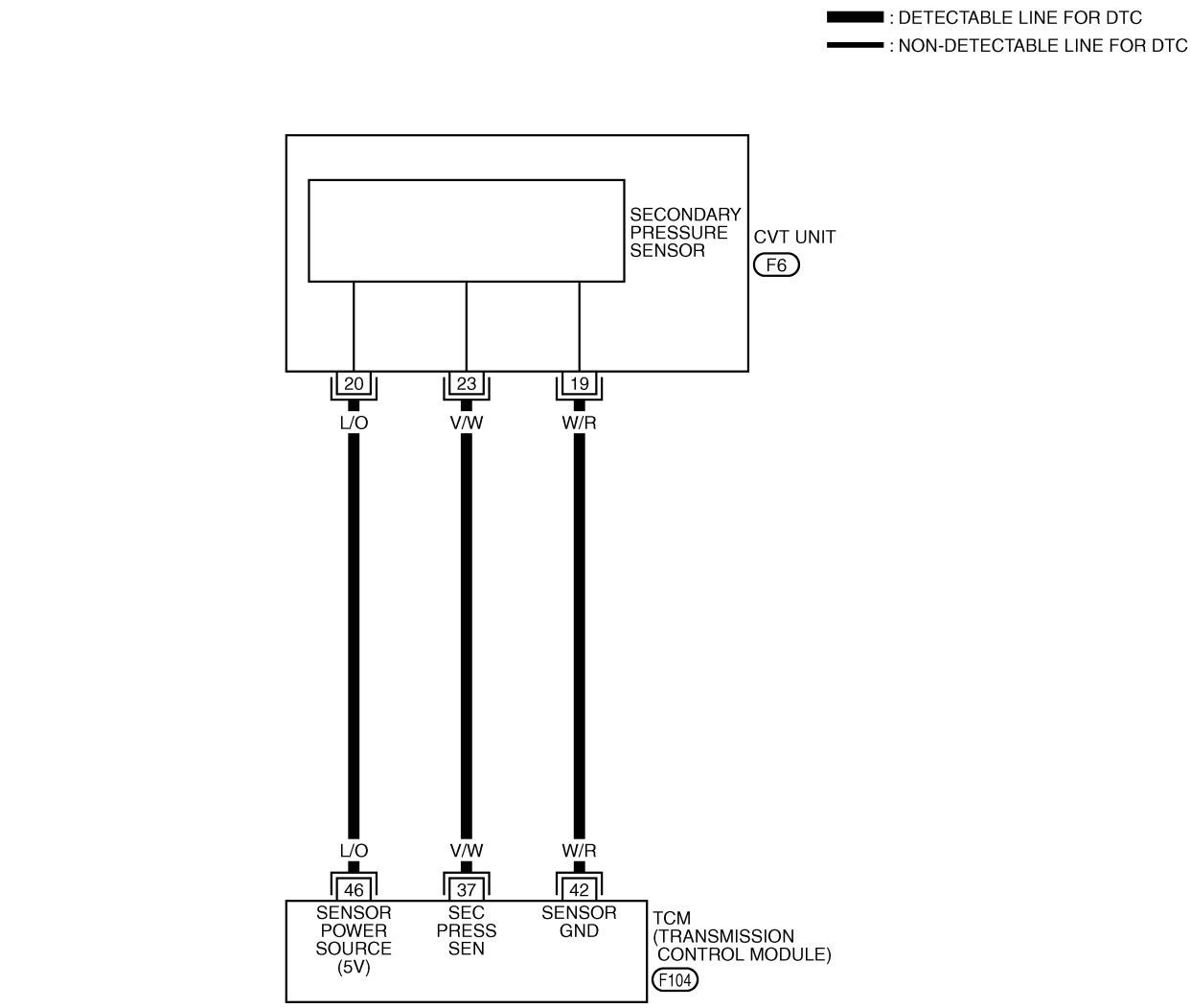
WITH GST

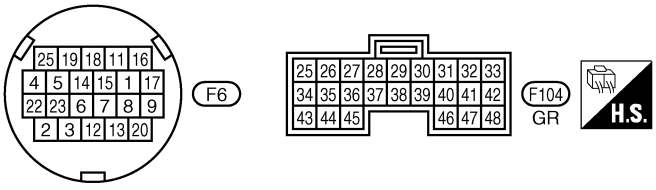
Follow the procedure "WITH CONSULT-II".

Wiring Diagram — CVT — SECPS

NCS0016I

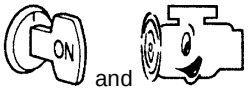
CVT-SECPS-01





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)		“N” position idle	0.8 V
42	W/R	Sensor ground	Always		0 V
46	L/O	Sensor power		—	4.5 – 5.5 V
				—	0 V

Diagnostic Procedure

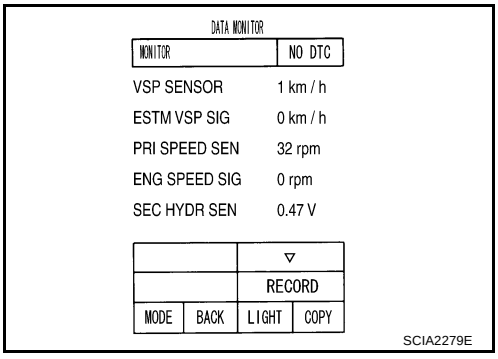
NCS0016J

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”.

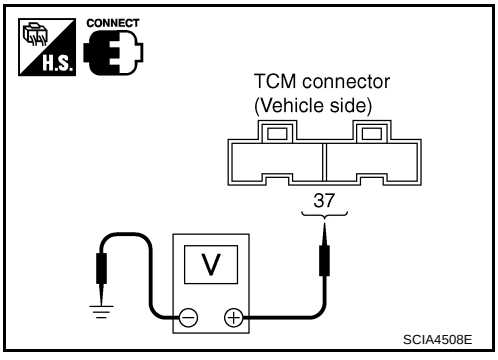
Item name	Condition	Display value (Approx.)
SEC HYDR SEN	“N” position idle	0.8 – 1.0 V



Without CONSULT-II

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

Name	Connector	Terminal	Condition	Voltage (Approx.)
Transmission fluid pressure sensor A (Secondary pressure sensor)	F104	37 – Ground	“N” position idle	0.8 V



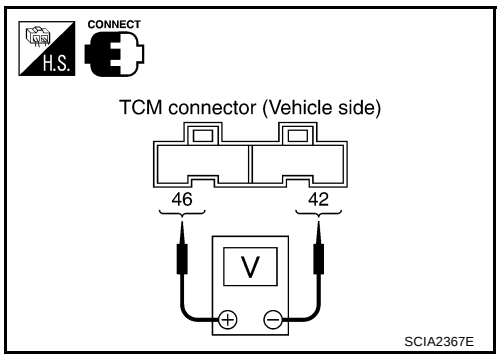
OK or NG

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

2. CHECK SENSOR POWER AND SENSOR GROUND

1. Turn ignition switch ON.
2. Check voltage between TCM connector terminals.

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



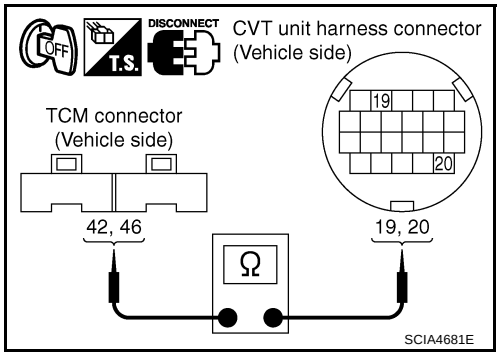
OK or NG

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

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

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

Item	Connector	Terminal	Continuity
TCM connector	F104	42	Yes
CVT unit harness connector	F6	19	
TCM connector	F104	46	Yes
CVT unit harness connector	F6	20	



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

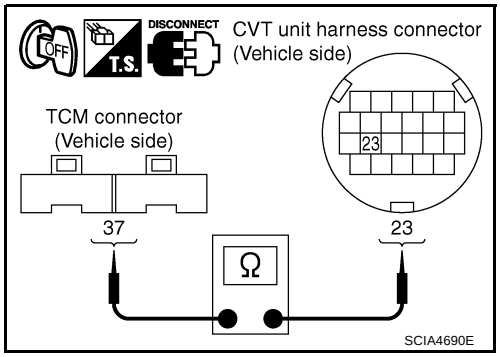
OK or NG

OK >> Replace TCM. Refer to CVT-9, "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 HARNESS BETWEEN TCM AND TRANSMISSION FLUID PRESSURE SENSOR A (SECONDARY PRESSURE SENSOR)

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

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



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. CHECK DTC

Perform CVT-133, "DTC Confirmation Procedure" .

OK or NG

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

6. CHECK TCM

1. Check TCM input/output signals. Refer to CVT-53, "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 CVT-215, "Removal and Installation" .
NG >> Repair or replace damaged parts.

DTC P0841 PRESSURE SENSOR FUNCTION

PFP:31936

Description

NCS0016K

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

NCS0016L

Remarks: Specification data are reference values.

Item name	Condition	Display value (Approx.)
PRI HYDR SEN	“N” position idle	0.7 – 3.5 V
SEC HYDR SEN		0.8 – 1.0 V

On Board Diagnosis Logic

NCS0016M

- 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

NCS0016N

- 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

NCS0016O

CAUTION:

Always drive vehicle at a safe speed.

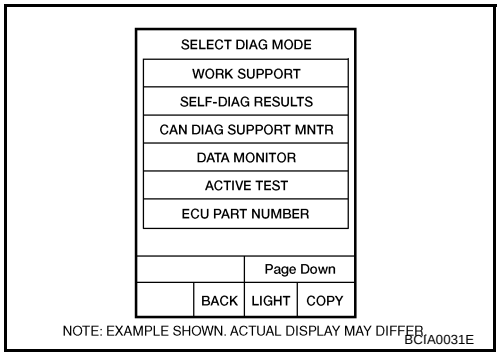
NOTE:

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

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

WITH CONSULT-II

1. Turn ignition switch ON and select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-II.
2. Start engine and maintain the following conditions for at least 12 consecutive seconds.
   VEHICLE SPEED: 40 km/h (25 MPH) More than
   RANGE: “D” position
3. If DTC is detected, go to CVT-139, "Diagnostic Procedure" .



Diagnostic Procedure

NCS0016P

1. CHECK CAN COMMUNICATION LINE

Perform the self-diagnosis. Refer to CVT-61, "SELF-DIAGNOSTIC RESULT MODE" .

Is any malfunction of the “U1000 CAN COMM CIRCUIT” indicated?

YES >> Check CAN communication line. Refer to CVT-68, "DTC U1000 CAN COMMUNICATION LINE" .

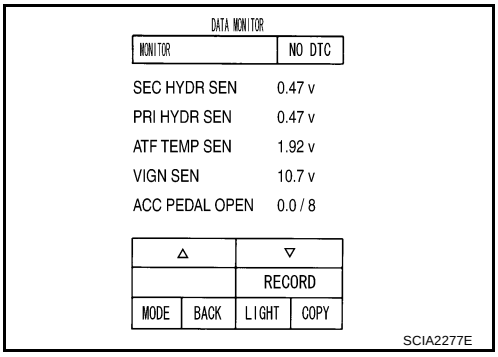
NO >> GO TO 2.

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”.

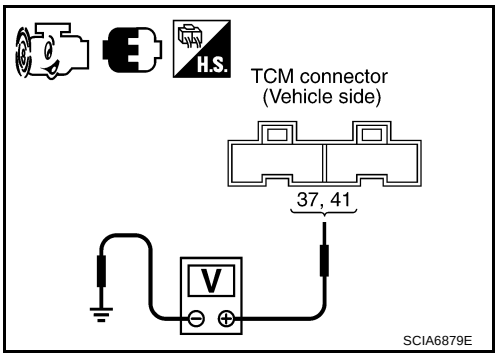
Item name	Condition	Display value (Approx.)
PRI HYDR SEN	“N” position idle	0.7 – 3.5 V
SEC HYDR SEN		0.8 – 1.0 V



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 pressure sensor)	F104	41 – Ground	“N” position idle	0.7 – 3.5 V
Transmission fluid pressure sensor A (Secondary pressure sensor)		37 – Ground		0.8 V



OK or NG

OK >> GO TO 6.

NG >> GO TO 3.

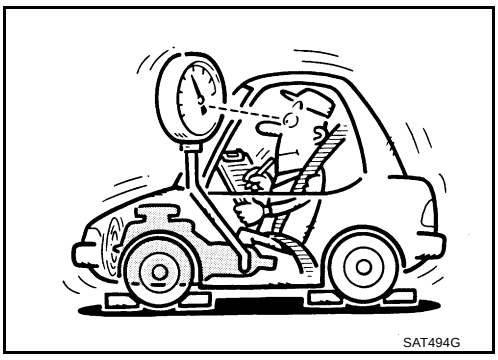
3. CHECK LINE PRESSURE

Perform line pressure test. Refer to CVT-43, "LINE PRESSURE TEST" .

OK or NG

OK >> GO TO 4.

NG >> Repair or replace damaged parts. Refer to CVT-44, "Judgment of Line Pressure Test" .



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

Check transmission fluid pressure sensor A (secondary pressure sensor) system and transmission fluid pressure sensor B (primary pressure sensor) system. Refer to CVT-133, "DTC P0840 TRANSMISSION FLUID PRESSURE SENSOR A CIRCUIT (SEC PRESSURE SENSOR)" , CVT-141, "DTC P0845 TRANSMISSION FLUID PRESSURE SENSOR B CIRCUIT (PRI PRESSURE SENSOR)" .

OK or NG

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

5. DETECT MALFUNCTIONING ITEM

Check the following.

- Line pressure solenoid valve. Refer to CVT-116, "Component Inspection" .
- Secondary pressure solenoid valve. Refer to CVT-127, "Component Inspection" .
- Step motor. Refer to CVT-171, "Component Inspection" .

OK or NG

OK >> GO TO 6.
NG >> Repair or replace damaged parts.

6. CHECK DTC

Perform CVT-138, "DTC Confirmation Procedure" .

OK or NG

OK >> **INSPECTION END**
NG >> Replace TCM or transaxle assembly. Refer to CVT-215, "Removal and Installation" .

DTC P0845 TRANSMISSION FLUID PRESSURE SENSOR B CIRCUIT (PRI PRESSURE SENSOR)

PFP:31936

Description

NCS0016Q

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

CONSULT-II Reference Value

NCS0016R

Remarks: Specification data are reference values.

Item name	Condition	Display value (Approx.)
PRI HYDR SEN	“N” position idle	0.7 – 3.5 V

On Board Diagnosis Logic

NCS0016S

- 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

NCS0016T

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

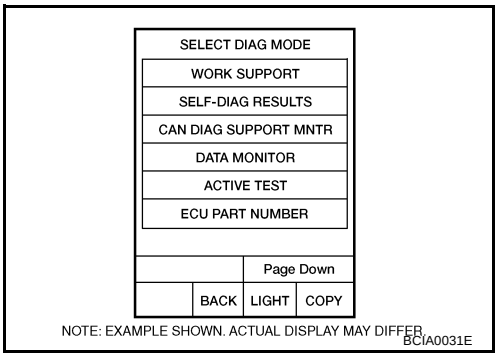
DTC Confirmation Procedure

NCS0016U

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 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 – 2.0 V
   If out of range, drive the vehicle to decrease the voltage (warm up the fluid) or stop engine to increase the voltage (cool down the fluid)
3. Start engine and wait for at least 5 consecutive seconds.
4. If DTC is detected, go to CVT-143, "Diagnostic Procedure" .



NOTE: EXAMPLE SHOWN. ACTUAL DISPLAY MAY DIFFER.
BCIA0031E

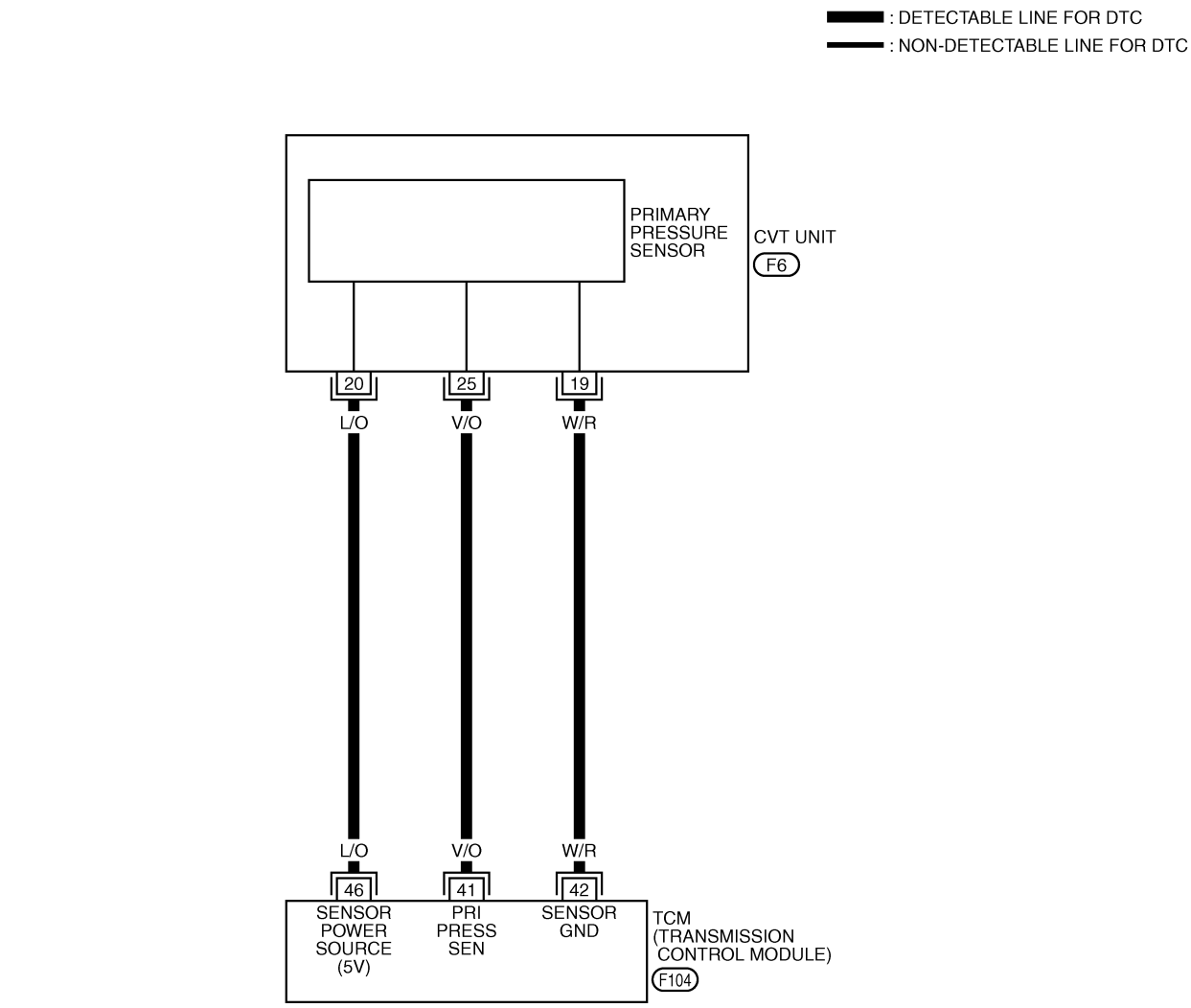
WITH GST

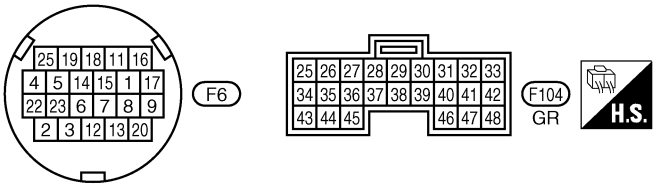
Follow the procedure “WITH CONSULT-II”.

Wiring Diagram — CVT — PRIPS

NCS0016V

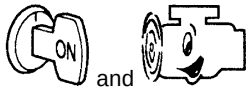
CVT-PRIPS-01





TCWA0255E

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

Terminal	Wire color	Item	Condition		Data (Approx.)
41	V/O	Transmission fluid pressure sensor B (Primary pressure sensor)		“N” position idle	0.7 – 3.5 V
42	W/R	Sensor ground	Always		0 V
46	L/O	Sensor power		—	4.5 – 5.5 V
				—	0 V

Diagnostic Procedure

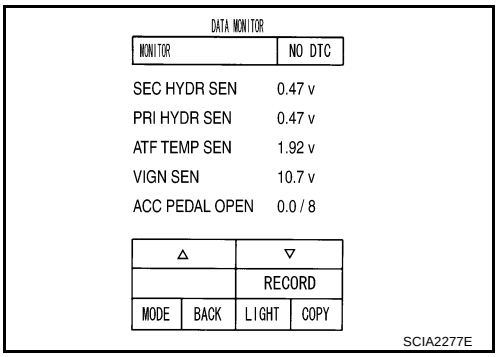
NCS0016W

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 “PRI HYDR SEN”.

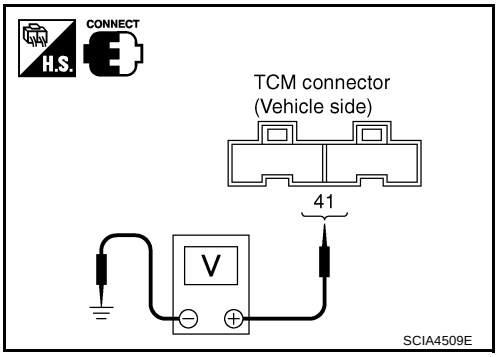
Item name	Condition	Display value (Approx.)
PRI HYDR SEN	“N” position idle	0.7 – 3.5 V



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 – 3.5 V



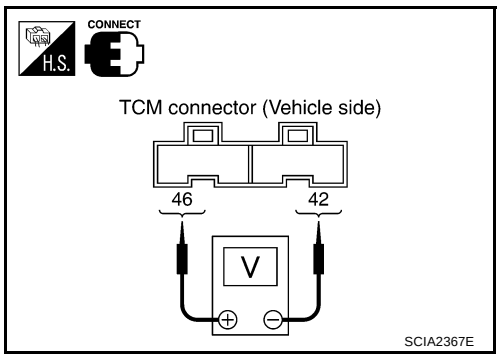
OK or NG

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

2. CHECK SENSOR POWER AND SENSOR GROUND

1. Turn ignition switch ON.
2. Check voltage between TCM connector terminals.

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



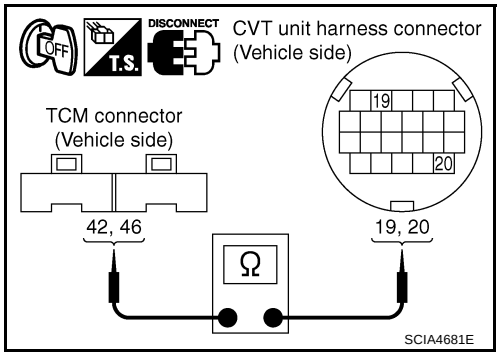
OK or NG

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

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

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

Item	Connector	Terminal	Continuity
TCM connector	F104	42	Yes
CVT unit harness connector	F6	19	
TCM connector	F104	46	Yes
CVT unit harness connector	F6	20	



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

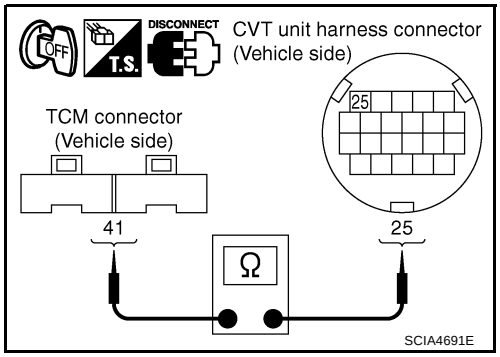
OK or NG

OK >> Replace TCM. Refer to CVT-9, "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 HARNESS BETWEEN TCM AND TRANSMISSION FLUID PRESSURE SENSOR B (PRIMARY PRESSURE SENSOR)

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

Item	Connector	Terminal	Continuity
TCM connector	F104	41	Yes
CVT unit harness connector	F6	25	



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. CHECK DTC

Perform CVT-141, "DTC Confirmation Procedure" .

OK or NG

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

6. CHECK TCM

1. Check TCM input/output signals. Refer to CVT-53, "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 CVT-215, "Removal and Installation" .
NG >> Repair or replace damaged parts.

DTC P0868 SECONDARY PRESSURE DOWN

PFP:31941

Description

NCS0016X

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

NCS0016Y

Remarks: 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

NCS0016Z

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

Possible Cause

NCS00170

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

DTC Confirmation Procedure

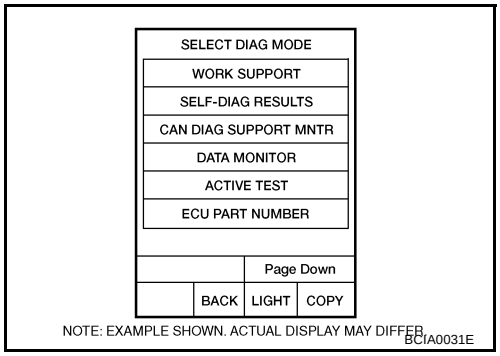
NCS00171

CAUTION:
Always drive vehicle at a safe speed.

NOTE:
If “DTC Confirmation Procedure” has been previously performed, always turn ignition switch OFF and wait at least 10 seconds before performing the next test.
After the repair, perform the following procedure to confirm the malfunction is eliminated.

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 CVT fluid temperature sensor is within the range below.
   ATF TEMP SEN: 1.0 – 2.0 V
   If out of range, drive the vehicle to decrease the voltage (warm up the fluid) or stop engine to increase the voltage (cool down the fluid)
3. Start engine and maintain the following conditions for at least 10 consecutive seconds.
   VEHICLE SPEED (accelerate slowly): 0 → 50 km/h (31 MPH)
   ACC PEDAL OPEN: 0.5/8 – 1.0/8
   RANGE: “D” position
4. If DTC is detected, go to CVT-147, "Diagnostic Procedure" .



Diagnostic Procedure

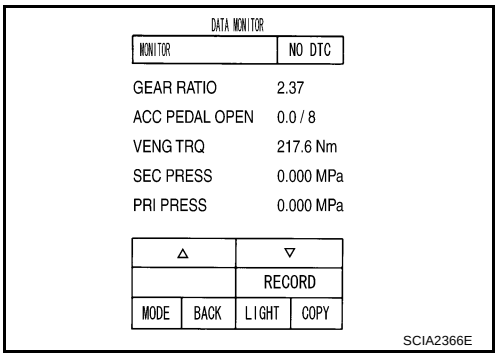
NCS00172

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 – 0.9 MPa



OK or NG

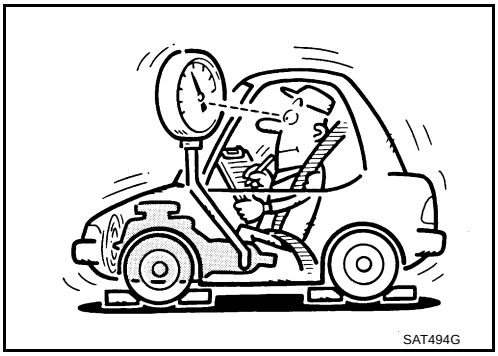
OK >> GO TO 5.
NG >> GO TO 2.

2. CHECK LINE PRESSURE

Perform line pressure test. Refer to CVT-43, "LINE PRESSURE TEST" .

OK or NG

OK >> GO TO 3.
NG >> Repair or replace damaged parts. Refer to CVT-44, "Judgment of Line Pressure Test" .



3. DETECT MALFUNCTIONING ITEM

Check the following.

- Pressure control solenoid valve B (Secondary pressure solenoid valve). Refer to CVT-127, "Component Inspection" .
- Pressure control solenoid valve A (Line pressure solenoid valve). Refer to CVT-116, "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 CVT-133, "DTC P0840 TRANSMISSION FLUID PRESSURE SENSOR A CIRCUIT (SEC PRESSURE SENSOR)" .

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 CVT-150, "Wiring Diagram — CVT — POWER" .
- 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. CHECK DTC

Perform CVT-146, "DTC Confirmation Procedure" .

OK or NG

OK >> **INSPECTION END**
NG >> Replace the transaxle assembly. Refer to CVT-215, "Removal and Installation" .

DTC P1701 TRANSMISSION CONTROL MODULE (POWER SUPPLY)

PFP:31036

Description

NCS00173

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

NCS00174

- 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

NCS00175

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

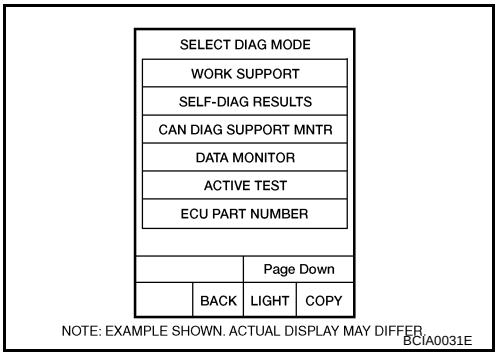
DTC Confirmation Procedure

NCS00176

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.

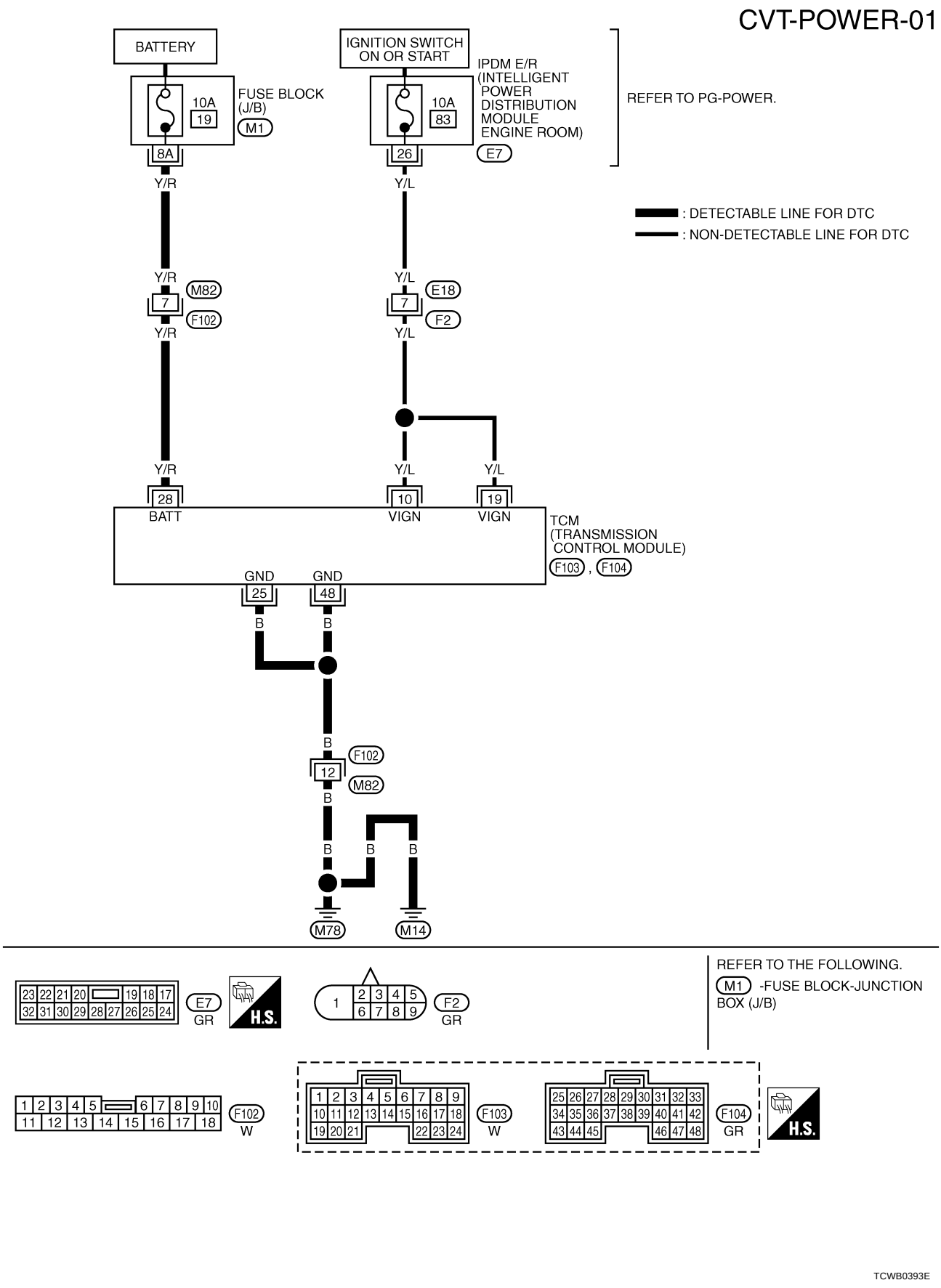
WITH CONSULT-II

1. Turn ignition switch ON.
2. 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-151, "Diagnostic Procedure" .



Wiring Diagram — CVT — POWER

NCS00177



TCWB0393E

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

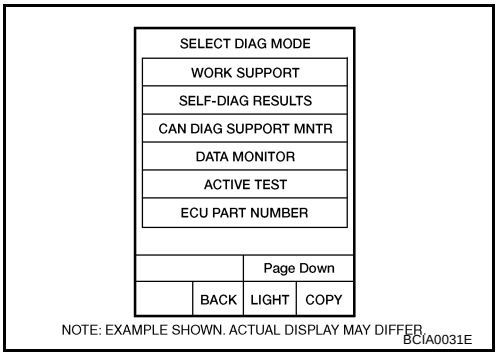
Terminal	Wire color	Item	Condition		Data (Approx.)
10	Y/L	Power supply		—	Battery voltage
				—	0 V
19	Y/L	Power supply		—	Battery voltage
				—	0 V
25	B	Ground	Always		0 V
28	Y/R	Power supply (memory back-up)	Always		Battery voltage
48	B	Ground	Always		0 V

Diagnostic Procedure

NCS00178

1. CHECK DTC

1. Turn ignition switch ON.
2. Select “SELF-DIAG RESULTS” mode for “TRANSMISSION” with CONSULT-II.
3. Erase self-diagnostic results. Refer to CVT-31, "HOW TO ERASE DTC (WITH CONSULT-II)" .
4. Turn ignition switch OFF, and wait for 5 seconds or more.
5. Start engine.
6. Confirm self-diagnostic results again. Refer to CVT-61, "SELF-DIAGNOSTIC RESULT MODE" .



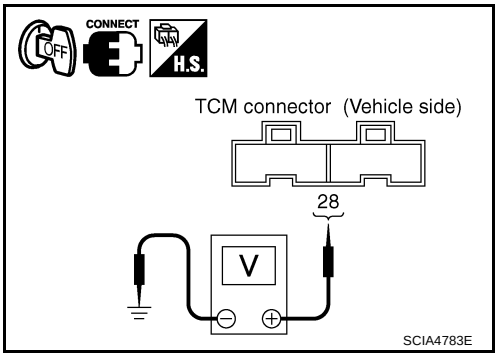
Is the “P1701 TCM-POWER SUPPLY” displayed?

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

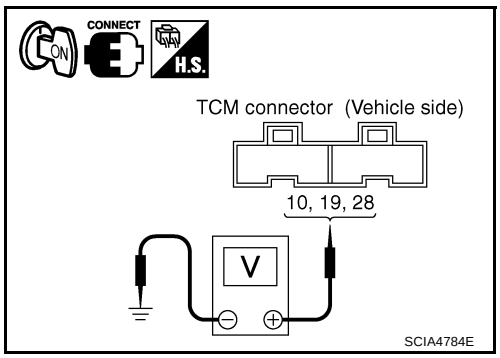


OK or NG

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

3. CHECK TCM POWER SOURCE, STEP 2

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



Name	Connector	Terminal	Condition	Voltage (Approx.)
Power supply	F103	10 – Ground	ON	Battery voltage
			OFF	0 V
		19 – Ground	ON	Battery voltage
			OFF	0 V
Power supply (memory back-up)	F104	28 – Ground	Always	Battery voltage

OK or NG

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

4. DETECT MALFUNCTIONING ITEM

Check the following.

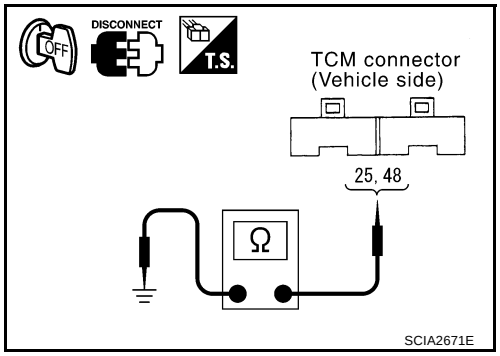
- Harness for short or open between battery and TCM connector terminal 28
- Harness for short or open between ignition switch and TCM connector terminal 10, 19
- 10 A fuse (No. 83, located in the IPDM E/R)
- 10 A fuse (No.19, located in the fuse block)
- Ignition switch. Refer to PG-3, "POWER SUPPLY ROUTING CIRCUIT" .

OK or NG

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

5. CHECK TCM GROUND CIRCUIT

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



Name	Connector	Terminal	Continuity
Ground	F104	25 – Ground	Yes
		48 – Ground	

OK or NG

OK >> GO TO 6.
NG >> Repair open circuit or short to ground or short to power in harness or connectors.

6. CHECK DTC

Perform CVT-149, "DTC Confirmation Procedure" .

OK or NG

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

7. CHECK TCM

1. Check TCM input/output signals. Refer to CVT-53, "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 P1705 THROTTLE POSITION SENSOR

PFP:22620

Description

NCS00179

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

NCS0017A

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

NCS0017B

- 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

NCS0017C

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

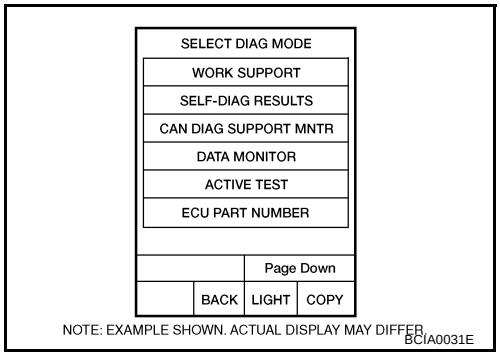
DTC Confirmation Procedure

NCS0017D

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.
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-155, "Diagnostic Procedure" .



Diagnostic Procedure

NCS0017E

1. CHECK CAN COMMUNICATION LINE

Perform the self-diagnosis check. Refer to CVT-61, "SELF-DIAGNOSTIC RESULT MODE" .

Is any malfunction of the “U1000 CAN COMM CIRCUIT” indicated?

YES >> Check the CAN communication line. Refer to CVT-68, "DTC U1000 CAN COMMUNICATION LINE" .

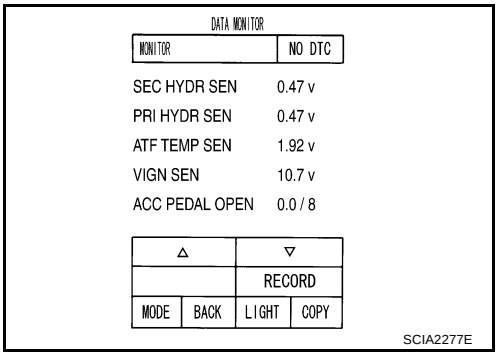
NO >> GO TO 2.

2. CHECK INPUT SIGNAL

With CONSULT-II

1. Turn ignition switch ON.
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 accelerator pedal. ↓ Fully depressed accelerator pedal	0.0/8 ↓ 8.0/8



OK or NG

OK >> GO TO 4.

NG >> GO TO 3.

3. CHECK DTC WITH ECM

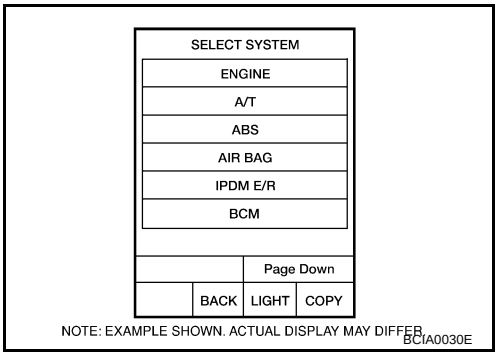
With CONSULT-II

1. Turn ignition switch ON.
2. Select “SELF-DIAG RESULTS” mode for “ENGINE” with CONSULT-II. Refer to EC-114, "SELF-DIAG RESULTS MODE" .

OK or NG

OK >> GO TO 4.

NG >> Check the DTC Detected Item. Go to EC-114, "SELF-DIAG RESULTS MODE" .



4. CHECK DTC

Perform CVT-154, "DTC Confirmation Procedure" .

OK or NG

OK >> **INSPECTION END**

NG >> Repair or replace damaged parts.

DTC P1722 ESTM VEHICLE SPEED SIGNAL

PFP:47660

Description

NCS0017F

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

CONSULT-II Reference Value

NCS0017G

Remarks: Specification data are reference values.

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

On Board Diagnosis Logic

NCS0017H

- 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

NCS0017I

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

DTC Confirmation Procedure

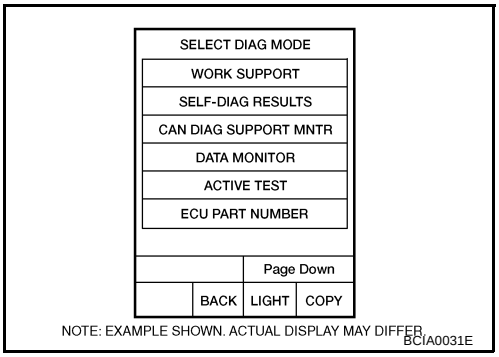
NCS0017J

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.
2. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-II.
3. Start engine and maintain the following conditions for at least 5 consecutive seconds.
   ACC PEDAL OPEN: 1.0/8 or less
   VEHICLE SPEED SE: 30 km/h (17 MPH) or more
4. If DTC is detected, go to CVT-157, "Diagnostic Procedure" .



Diagnostic Procedure

NCS0017K

1. CHECK CAN COMMUNICATION LINE

Perform the self-diagnosis check. Refer to CVT-61, "SELF-DIAGNOSTIC RESULT MODE" .

Is any malfunction of the “U1000 CAN COMM CIRCUIT” indicated?

YES >> Check CAN communication line. Refer to CVT-68, "DTC U1000 CAN COMMUNICATION LINE" .
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 BRC-20, "DESCRIPTION" (ABS models) or BRC-65, "DESCRIPTION" (VDC/TCS/ABS models).

OK or NG

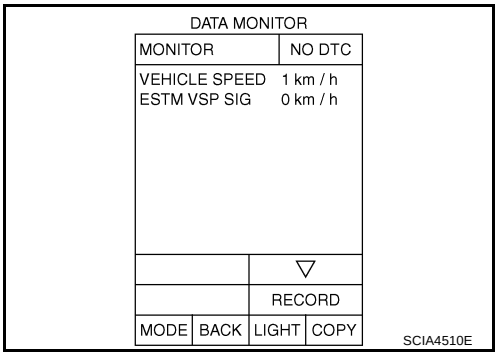
OK >> GO TO 3.
NG >> Repair or replace damaged parts.

3. CHECK INPUT SIGNALS

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 the speedometer reading.
VEHICLE SPEED		



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

OK or NG

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

4. CHECK TCM

Check TCM input/output signals. Refer to CVT-53, "TCM Input/Output Signal Reference Values" .

OK or NG

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

5. CHECK DTC

Perform CVT-156, "DTC Confirmation Procedure" .

OK or NG

OK >> **INSPECTION END**
NG >> GO TO 2.

DTC P1723 CVT SPEED SENSOR FUNCTION

PFP:31907

Description

NCS0017L

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

On Board Diagnosis Logic

NCS0017M

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

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

Possible Cause

NCS0017N

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

DTC Confirmation Procedure

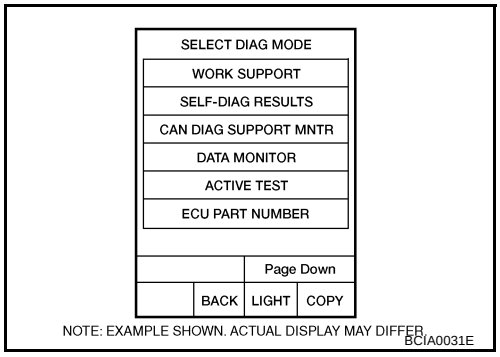
NCS0017O

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 and select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-II.
2. Start engine and maintain the following conditions for at least 5 consecutive seconds.
   VEHICLE SPEED SE: 10 km/h (6 MPH) or more
   ACC PEDAL OPEN: More than 1.0/8
   RANGE: “D” position
   ENG SPEED: 450 rpm or more
   Driving location: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.
3. If DTC is detected, go to CVT-159, "Diagnostic Procedure" .



NOTE: EXAMPLE SHOWN. ACTUAL DISPLAY MAY DIFFER.
BCIA0031E

Diagnostic Procedure

NCS0017P

1. CHECK STEP MOTOR FUNCTION

Perform the self-diagnosis check. Refer to CVT-61, "SELF-DIAGNOSTIC RESULT MODE" .

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 CVT-172, "DTC P1778 STEP MOTOR - FUNCTION" .)

NO >> GO TO 2.

2. 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 CVT-94, "DTC P0720 VEHICLE SPEED SENSOR CVT (SECONDARY SPEED SENSOR)" , CVT-89, "DTC P0715 INPUT SPEED SENSOR CIRCUIT (PRI SPEED SENSOR)" .

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-100, "DTC P0725 ENGINE SPEED SIGNAL" .

OK or NG

OK >> GO TO 4.

NG >> Repair or replace damaged parts. Refer to EC-635, "IGNITION SIGNAL" .

4. DETECT MALFUNCTIONING ITEM

Check the following.

- Power supply and ground circuit for TCM. Refer to CVT-149, "DTC P1701 TRANSMISSION CONTROL MODULE (POWER SUPPLY)" .
- 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. CHECK DTC

Perform CVT-158, "DTC Confirmation Procedure" .

OK or NG

OK >> **INSPECTION END**

NG >> Replace TCM or transaxle assembly. Refer to CVT-9, "Precautions for TCM and CVT Assembly Replacement" , CVT-215, "Removal and Installation" .

DTC P1726 ELECTRIC THROTTLE CONTROL SYSTEM

PFP:23710

Description

NCS0017Q

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.

On Board Diagnosis Logic

NCS0017R

- 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.

Possible Cause

NCS0017S

Harness or connectors
(Sensor circuit is open or shorted.)

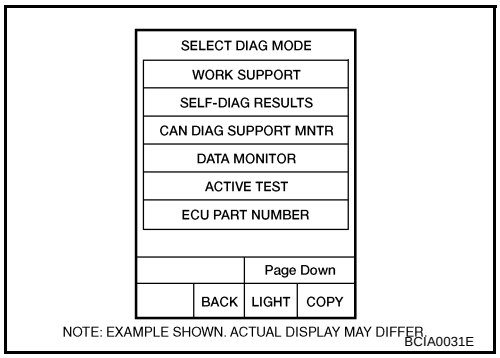
DTC Confirmation Procedure

NCS0017T

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.
2. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-II.
3. Start engine and let it idle for 5 seconds.
4. If DTC is detected, go to CVT-161, "Diagnostic Procedure" .



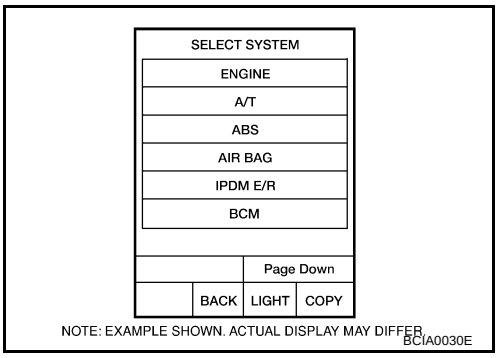
Diagnostic Procedure

NCS0017U

1. CHECK DTC WITH ECM

With CONSULT-II

1. Turn ignition switch ON.
2. Select “SELF-DIAG RESULTS” mode for “ENGINE” with CONSULT-II. Refer to EC-114, "SELF-DIAG RESULTS MODE" .



OK or NG

OK >> GO TO 2.
NG >> Check the DTC Detected Item. Refer to EC-114, "SELF-DIAG RESULTS MODE" .
- If CAN communication line is detected, go to CVT-68, "DTC U1000 CAN COMMUNICATION LINE" .

2. CHECK DTC

Perform CVT-160, "DTC Confirmation Procedure" .

OK or NG

OK >> **INSPECTION END**
NG >> GO TO 3.

3. DETECT MALFUNCTIONING ITEM

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

OK or NG

OK >> Replace TCM. Refer to CVT-9, "Precautions for TCM and CVT Assembly Replacement" .
NG >> Repair or replace damaged parts.

DTC P1740 LOCK-UP SELECT SOLENOID VALVE CIRCUIT

PFP:31941

Description

NCS0017V

- 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

NCS0017W

Item name	Condition	Display value
LUSEL SOL OUT	Selector lever in “P” and “N” positions	ON
	Wait at least for 5 seconds with the selector lever in “R”, “D”, “S”* and “L”* positions.	OFF

*: Without manual mode.

On Board Diagnosis Logic

NCS0017X

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

Possible Cause

NCS0017Y

- Lock-up select solenoid valve
- Harness or connectors
  (Solenoid circuit is open or shorted.)

DTC Confirmation Procedure

NCS0017Z

CAUTION:

Always drive vehicle at a safe speed.

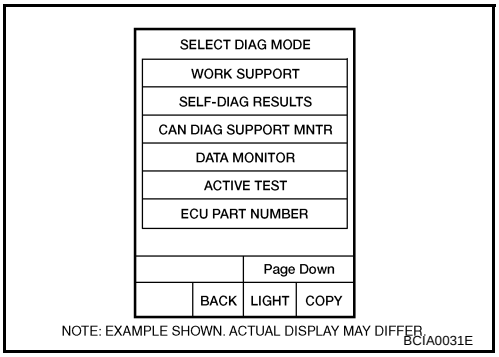
NOTE:

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.
2. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-II.
3. Start engine and maintain the following conditions for at least 5 consecutive seconds.
   RANGE: “D” position and “N” positions
   (At each time, wait for 5 seconds.)
4. If DTC is detected, go to CVT-164, "Diagnostic Procedure" .



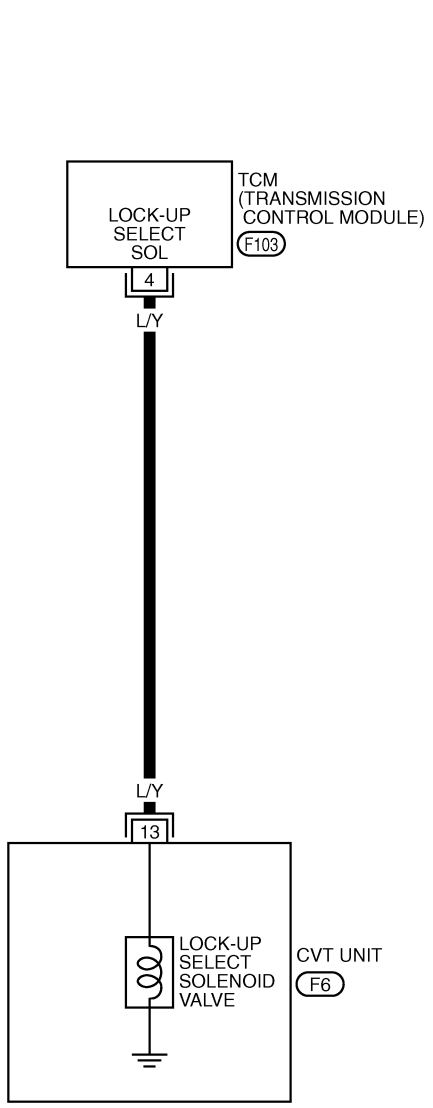
WITH GST

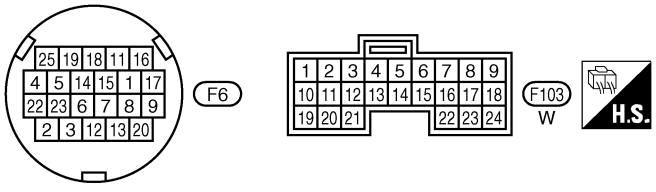
Follow the procedure “WITH CONSULT-II”.

Wiring Diagram — CVT — L/USSV

NCS00180

CVT-L/USSV-01





TCWA0252E

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

Terminal	Wire color	Item	Condition		Data (Approx.)
4	L/Y	Lock-up select solenoid valve		Selector lever in “P” and “N” positions	Battery voltage
				Wait at least for 5 seconds with the selector lever in “R”, “D”, “S”* and “L”* positions.	0 V

*: Without manual mode

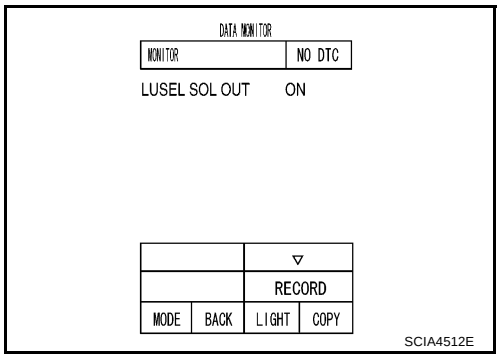
Diagnostic Procedure

NCS00181

1. CHECK INPUT SIGNAL

With CONSULT-II

1. Turn ignition switch ON.
2. Select “SELECTION FROM MENU” in “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-II.
3. Read out the value of “LUSEL SOL OUT”.

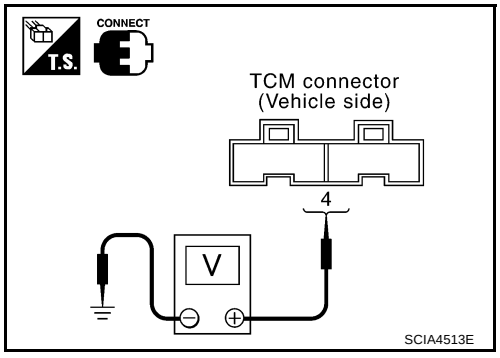


Item name	Condition	Display value
LUSEL SOL OUT	Selector lever in “P” and “N” positions	ON
	Wait at least for 5 seconds with the selector lever in “R”, “D”, “S”* and “L”* positions.	OFF

*: Without manual mode

Without CONSULT-II

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



Name	Connector	Terminal	Condition	Voltage (Approx.)
Lock-up select solenoid valve	F103	4 – Ground	Selector lever in “P” and “N” positions	Battery voltage
			Wait at least for 5 seconds with the selector lever in “R”, “D”, “S”* and “L”* positions.	0 V

*: Without manual mode

3. Turn ignition switch OFF.
4. Disconnect the TCM connector.
5. Check if there is continuity between connector terminal and ground.

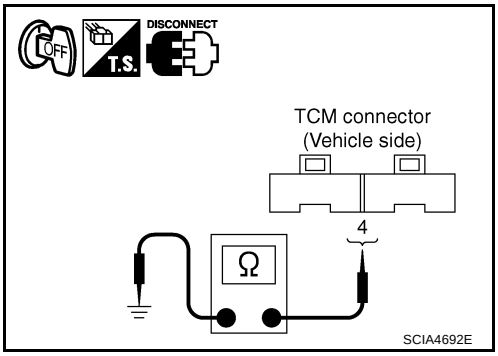
OK or NG

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

2. CHECK 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



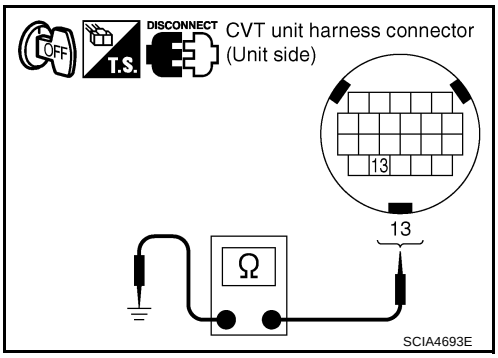
OK or NG

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

3. CHECK VALVE RESISTANCE

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.)
Lock-up select solenoid valve	F6	13 – Ground	6 – 19 Ω



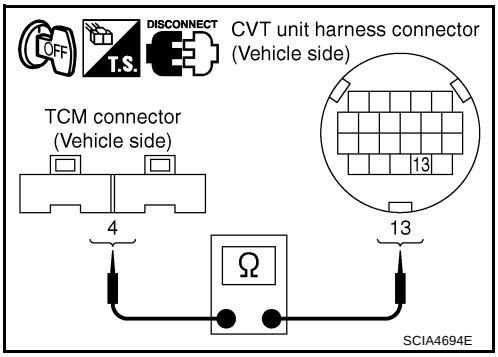
OK or NG

OK >> GO TO 4.
NG >> Replace the transaxle assembly. Refer to CVT-215, "Removal and Installation" .

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

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

Item	Connector	Terminal	Continuity
TCM connector	F103	4	Yes
CVT unit harness connector	F6	13	



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. CHECK DTC

Perform CVT-162, "DTC Confirmation Procedure" .

OK or NG

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

6. CHECK TCM

1. Check TCM input/output signals. Refer to CVT-53, "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 TCM. Refer to CVT-9, "Precautions for TCM and CVT Assembly Replacement" .

Component Inspection

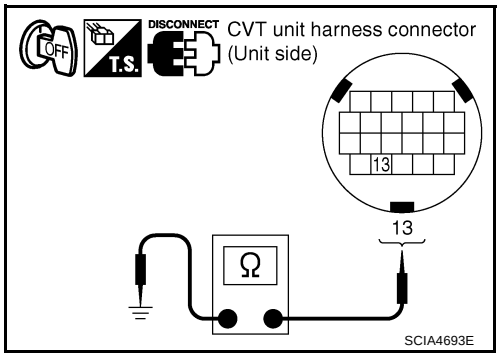
NCS00182

LOCK-UP SELECT SOLENOID VALVE

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

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

4. If NG, replace the transaxle assembly. Refer to CVT-215, "Removal and Installation" .



DTC P1745 LINE PRESSURE CONTROL

PFP:31036

Description

NCS00183

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

NCS00184

- 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

NCS00185

TCM

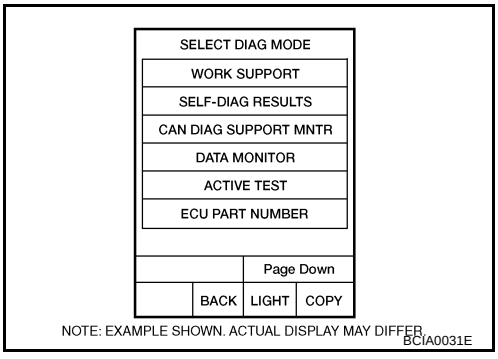
DTC Confirmation Procedure

NCS00186

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 and select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-II.
2. Make sure that output voltage of CVT fluid temperature sensor is within the range below.
   ATF TEMP SEN: 1.0 – 2.0 V
   If out of range, drive the vehicle to decrease the voltage (warm up the fluid) or stop engine to increase the voltage (cool down the fluid)
3. If DTC is detected, go to CVT-167, "Diagnostic Procedure" .



Diagnostic Procedure

NCS00187

1. CHECK DTC

1. Turn ignition switch ON.
2. Select “SELF-DIAG RESULTS” mode for “TRANSMISSION” with CONSULT-II.
3. Erase self-diagnostic results. Refer to CVT-63, "How to Erase Self-diagnostic Results" .
4. Turn ignition switch OFF, and wait for 10 seconds or more.
5. Start engine.
6. Confirm self-diagnostic results again. Refer to CVT-61, "SELF-DIAGNOSTIC RESULT MODE" .

Is the “P1745 L/PRESS CONTROL” displayed?

YES >> Replace TCM. Refer to CVT-9, "Precautions for TCM and CVT Assembly Replacement" .
NO >> **INSPECTION END**

DTC P1777 STEP MOTOR - CIRCUIT

PFP:31020

Description

NCS00188

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

CONSULT-II Reference Value

NCS00189

Remarks: Specification data are reference values.

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

On Board Diagnosis Logic

NCS0018A

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

Possible Cause

NCS0018B

- Step motor
- Harness or connectors
  (Step motor circuit is open or shorted.)

DTC Confirmation Procedure

NCS0018C

CAUTION:

Always drive vehicle at a safe speed.

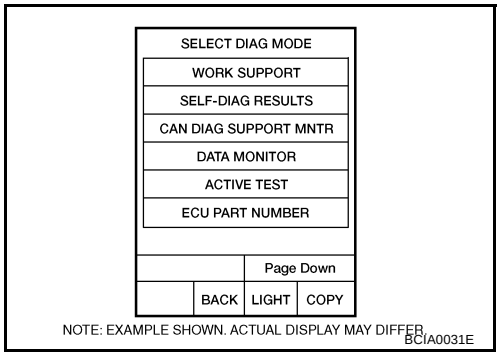
NOTE:

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 and select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-II.
2. Drive vehicle for at least 5 consecutive seconds.
3. If DTC is detected, go to CVT-170, "Diagnostic Procedure" .



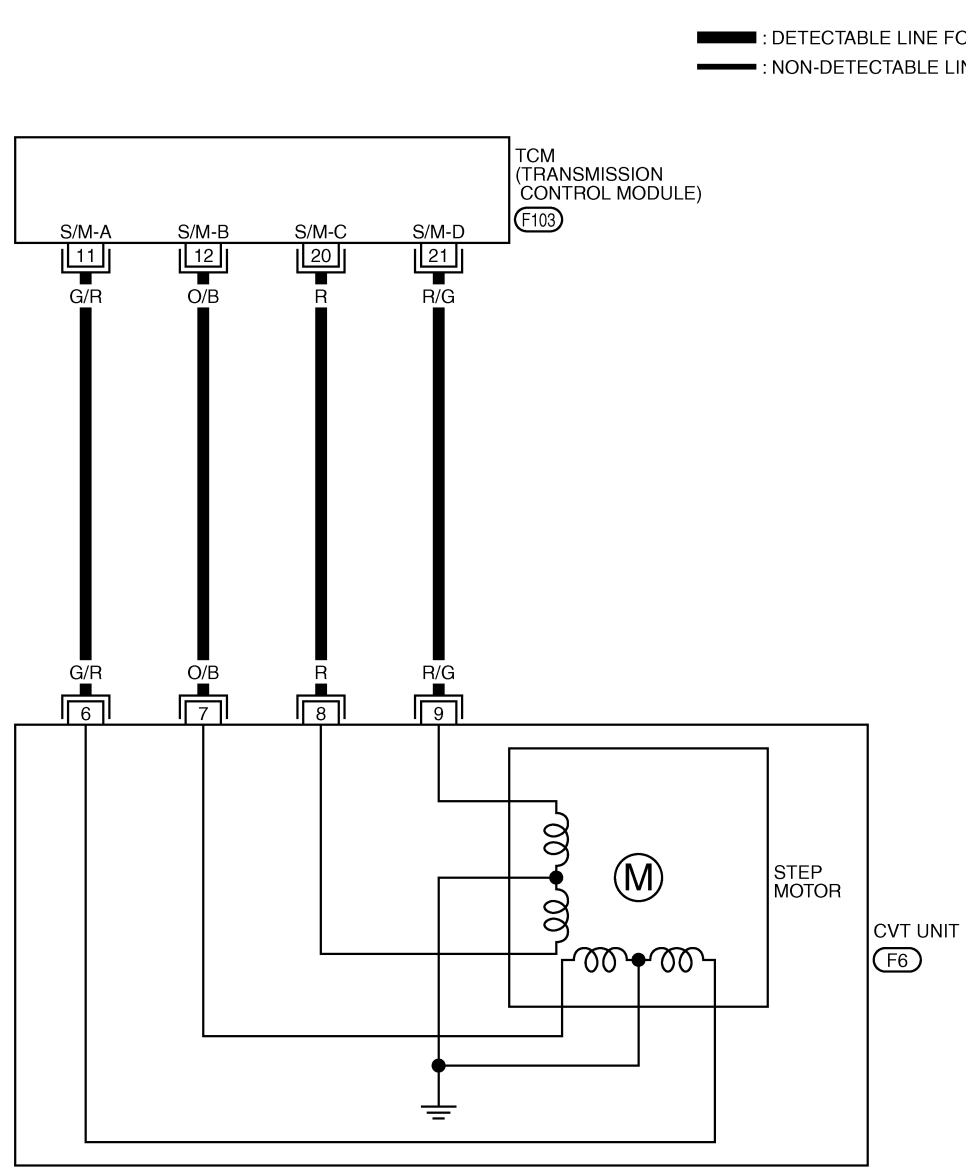
WITH GST

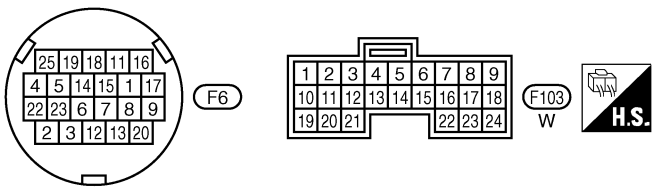
Follow the procedure “WITH CONSULT-II”.

Wiring Diagram — CVT — STM

NCS0018D

CVT-STM-01





TCWA0256E

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

Terminal	Wire color	Item	Condition	Data (Approx.)
11	G/R	Step motor A	Within 2 seconds after ignition switch ON, the time measurement by using the pulse width measurement function (Hi level) of CONSULT-II* **CAUTION:** **Connect the diagnosis data link cable to the vehicle diagnosis connector.**	30.0 msec
12	O/B	Step motor B		10.0 msec
20	R	Step motor C		30.0 msec
21	R/G	Step motor D		10.0 msec

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

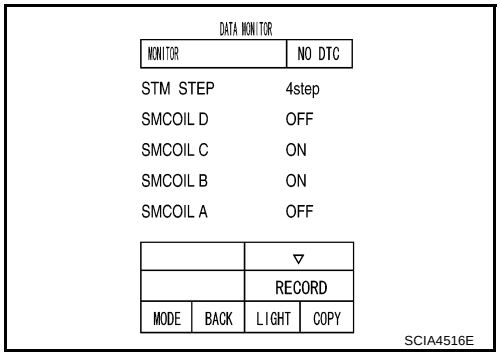
Diagnostic Procedure

NCS0018E

1. CHECK INPUT SIGNALS

With CONSULT-II

1. Start engine.
2. Select “SELECTION FROM MENU” in “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-II.
3. Start vehicle and read out the value of “STM STEP”, “SMCOIL A”, “SMCOIL B”, “SMCOIL C”, and “SMCOIL D”.



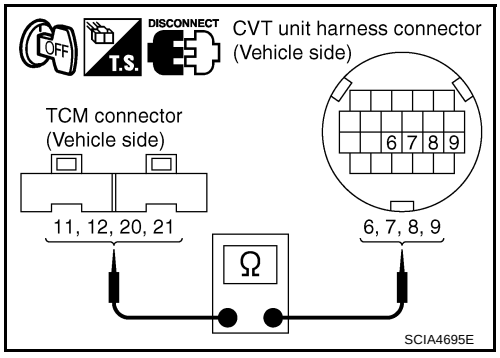
Item name	Condition	Display value (Approx.)
STM STEP	During driving	–20 step – 190 step
SMCOIL A		Changes ON⇔OFF.
SMCOIL B		
SMCOIL C		
SMCOIL D		

OK or NG

OK >> GO TO 4.
NG >> GO TO 2.

2. CHECK HARNESS BETWEEN TCM AND STEP MOTOR

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



Item	Connector	Terminal	Continuity
TCM connector	F103	11	Yes
CVT unit harness connector	F6	6	
TCM connector	F103	12	Yes
CVT unit harness connector	F6	7	
TCM connector	F103	20	Yes
CVT unit harness connector	F6	8	
TCM connector	F103	21	Yes
CVT unit harness connector	F6	9	

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

OK or NG

OK >> GO TO 3.
NG >> Repair open circuit or short to ground or short to power in harness or connectors.

3. CHECK STEP MOTOR

Check step motor. Refer to CVT-171, "Component Inspection" .

OK or NG

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

4. CHECK DTC

Perform CVT-168, "DTC Confirmation Procedure" .

OK or NG

OK >> **INSPECTION END**
NG >> GO TO 5.

5. CHECK TCM

1. Check TCM input/output signals. Refer to CVT-53, "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.

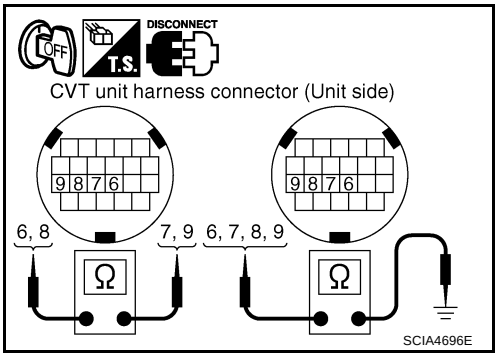
Component Inspection

NCS0018F

STEP MOTOR

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

Name	Connector	Terminal	Resistance (Approx.)
Step motor	F6	6 – 7	30 Ω
		8 – 9	
		6 – Ground	15 Ω
		7 – Ground	
		8 – Ground	
		9 – Ground	



4. If NG, replace the transaxle assembly. Refer to CVT-215, "Removal and Installation" .

DTC P1778 STEP MOTOR - FUNCTION

PFP:31947

Description

NCS0018G

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

CONSULT-II Reference Value

NCS0018H

Remarks: Specification data are reference values.

Item name	Condition	Display value (Approx.)
STM STEP	During driving	–20 step – 190 step
GEAR RATIO		2.37 – 0.43

On Board Diagnosis Logic

NCS0018I

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P1778 STEP MOTR/FNC” with CONSULT-II is detected under the following conditions.

– When not changing the pulley ratio according to the instruction of TCM.

Possible Cause

NCS0018J

Step motor

DTC Confirmation Procedure

NCS0018K

CAUTION:

- **Always drive vehicle at a safe speed.**
- **Before starting “DTC Confirmation Procedure”, confirm “Hi” or “Mid” or “Low” fixation by “PRI SPEED” and “VEHICLE SPEED” on “DATA MONITOR MODE”.**
- **If hi-geared fixation occurred, go to CVT-173, "Diagnostic Procedure" .**

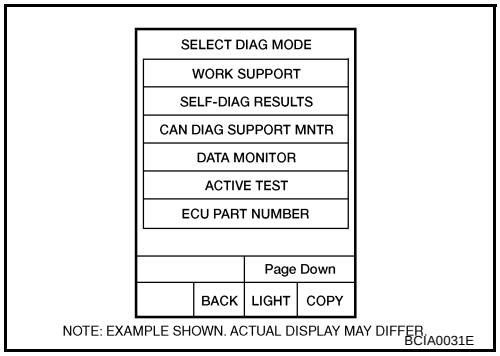
NOTE:

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.

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 CVT fluid temperature sensor is within the range below.
   ATF TEMP SEN: 1.0 – 2.0 V
   If out of range, drive the vehicle to decrease the voltage (warm up the fluid) or stop engine to increase the voltage (cool down the fluid)
3. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-II.
4. Start engine and maintain the following conditions for at least 30 consecutive seconds.
   TEST START FROM 0 km/h (0 MPH)
   CONSTANT ACCELERATION: Keep 30 sec or more
   VEHICLE SPEED: 10 km/h (6 MPH) or more
   ACC PEDAL OPEN: More than 1.0/8
   RANGE: “D” position
   ENG SPEED: 450 rpm or more
5. If DTC is detected, go to CVT-173, "Diagnostic Procedure" .



NOTE: EXAMPLE SHOWN. ACTUAL DISPLAY MAY DIFFER.
BCIA0031E

WITH GST

Follow the procedure “WITH CONSULT-II”.

Diagnostic Procedure

NCS0018L

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 CVT-64, "DATA MONITOR MODE" .

Without CONSULT-II

Inspect the engine speed (rise and descend), vehicle speed, throttle position, and check shift change. Refer to CVT-222, "Vehicle Speed When Shifting Gears" .

OK or NG

OK >> **INSPECTION END**

NG >> Replace the transaxle assembly. Refer to CVT-215, "Removal and Installation" .

SECOND POSITION SWITCH

PFP:34910

Description

NCS0018M

Second position switch is built into CVT control device. When selector lever is in “S” or “L” position, second position switch turns ON and sends a signal to unified meter and A/C amp. Then signal is transferred to TCM with CAN communications to improve engine brake performance.

CONSULT-II Reference Value

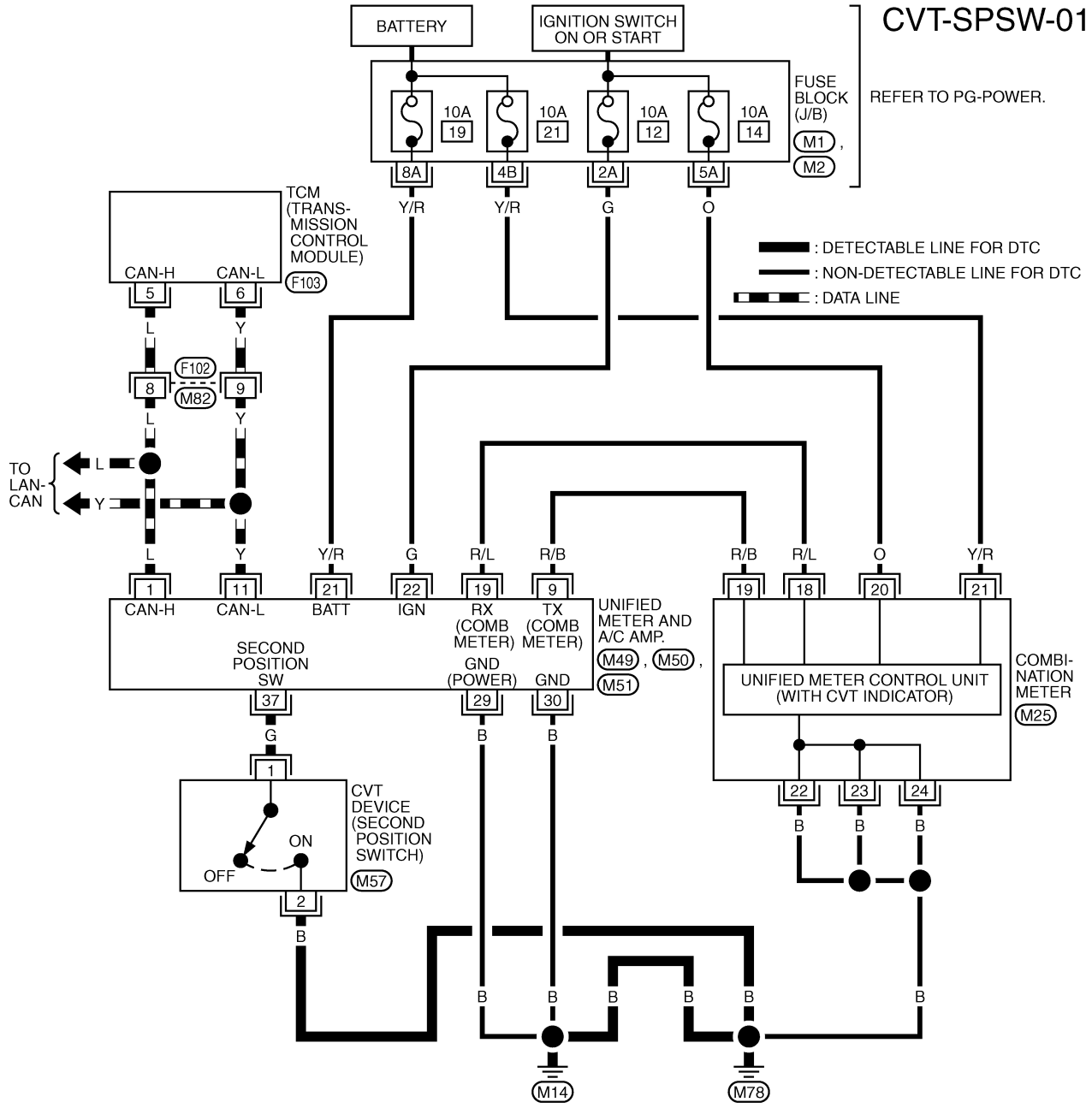
NCS0018N

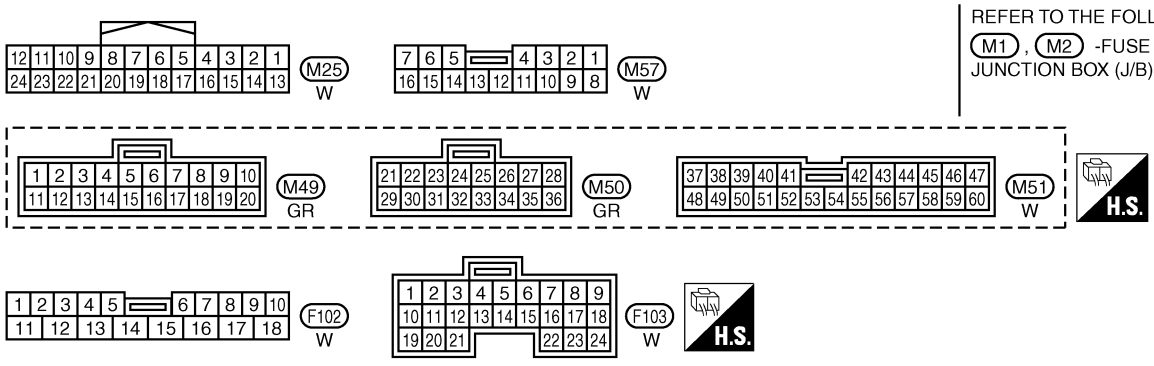
Remarks: Specification data are reference values.

Item name	Condition	Display value
SPORT MODE SW	Selector lever in “S” and “L” positions	ON
	Selector lever in other positions	OFF

Wiring Diagram — CVT — SPSW

NCS0018O





REFER TO THE FOLLOWING.
M1, M2 -FUSE BLOCK-JUNCTION BOX (J/B)

TCWA0162E

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

Terminal	Wire color	Item	Condition	Data (Approx.)
5	L	CAN-H	—	—
6	Y	CAN-L	—	—

Diagnostic Procedure

NCS0018P

1. CHECK CAN COMMUNICATION LINE

Perform the self-diagnosis check. Refer to CVT-61, "SELF-DIAGNOSTIC RESULT MODE" .

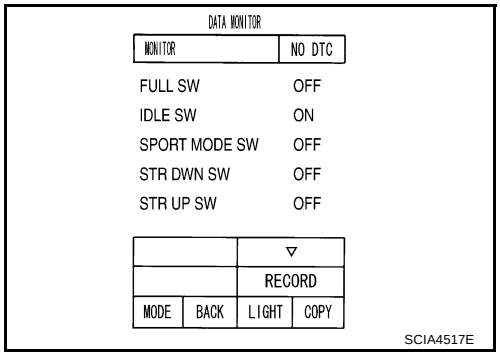
Is any malfunction of the “U1000 CAN COMM CIRCUIT” indicated in the results?

YES >> Check CAN communication line. Refer to CVT-68, "DTC U1000 CAN COMMUNICATION LINE" .
NO >> GO TO 2.

2. CHECK SECOND POSITION SWITCH SIGNAL

With CONSULT-II

1. Turn ignition switch ON.
2. Select “ECU INPUT SIGNALS” in “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-II.
3. Read out ON/OFF switching action of the “SPORT MODE SW”.



Item name	Condition	Display value
SPORT MODE SW	Selector lever in “S” and “L” positions	ON
	Selector lever in other positions	OFF

OK or NG

OK >> **INSPECTION END**
NG >> GO TO 3.

3. CHECK SECOND POSITION SWITCH

Check second position switch. Refer to CVT-177, "Component Inspection"

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 DI-15, "CONSULT-II Function (METER A/C AMP)" .

Is any malfunction detected by self-diagnostic?

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" .

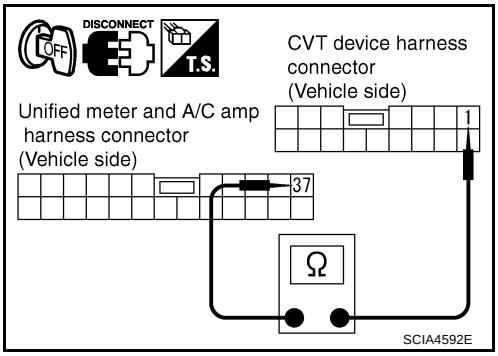
Is any malfunction detected by self-diagnostic?

YES >> Check the malfunctioning system.
NO >> GO TO 6.

6. CHECK SECOND POSITION SWITCH CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect CVT device connector and unified meter and A/C amp connector.
3. 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	1	Yes
Unified meter and A/C amp harness connector	M51	37	



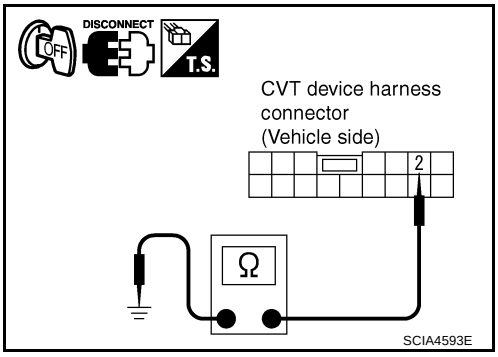
4. Check continuity between CVT device harness connector terminal and ground.

Item	Connector	Terminal	Continuity
CVT device harness connector	M57	2 – Ground	Yes

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

OK or NG

OK >> **INSPECTION END**
NG >> Repair open circuit or short to ground or short to power in harness or connectors.



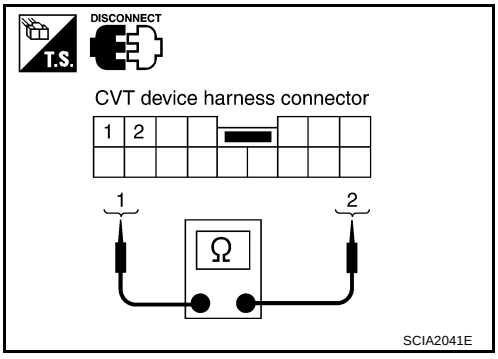
Component Inspection

NCS0018Q

SECOND POSITION SWITCH

Check continuity between CVT device harness connector terminals.

Item	Condition	Connector	Terminal	Continuity
Second position switch	Selector lever in “S” and “L” positions	M57	1 – 2	Yes
	Selector lever in other positions			No



CVT INDICATOR CIRCUIT

PFP:24810

Description

NCS0018R

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

NCS0018S

Item name	Condition	Display value
RANGE	Selector lever in “N” or “P” position	N·P
	Selector lever in “R” position	R
	Selector lever in “D” position	D
	Selector lever in “S”* position	S
	Selector lever in “L”* position	L
M GEAR POS	During driving	1, 2, 3, 4, 5, 6

*: Without manual mode

Diagnostic Procedure

NCS0018T

1. CHECK INPUT SIGNALS

With CONSULT-II

With manual mode

1. Start engine.
2. Select “MAIN SIGNALS” in “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-II and read out the value of “RANGE” and “M GEAR POS”.
3. Check if correct selector lever position (P, N, R or D) is displayed as selector lever is moved into each position.
4. Drive vehicle in the manual mode, and confirm that the actual gear position and the meter's indication of the position mutually coincide when the select lever is shifted to the “+ (up)” or “- (down)” side (1st ⇔ 6th gear).

Without manual mode

1. Start engine.
2. Select “MAIN SIGNALS” in “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-II and read out the value of “RANGE”.
3. Check if correct selector lever position (P, N, R, D, S or L) is displayed as selector lever is moved into each position.

OK or NG

OK >> **INSPECTION END**
NG >> Check CVT-179, "CVT INDICATOR SYMPTOM CHART" .

CVT INDICATOR SYMPTOM CHART

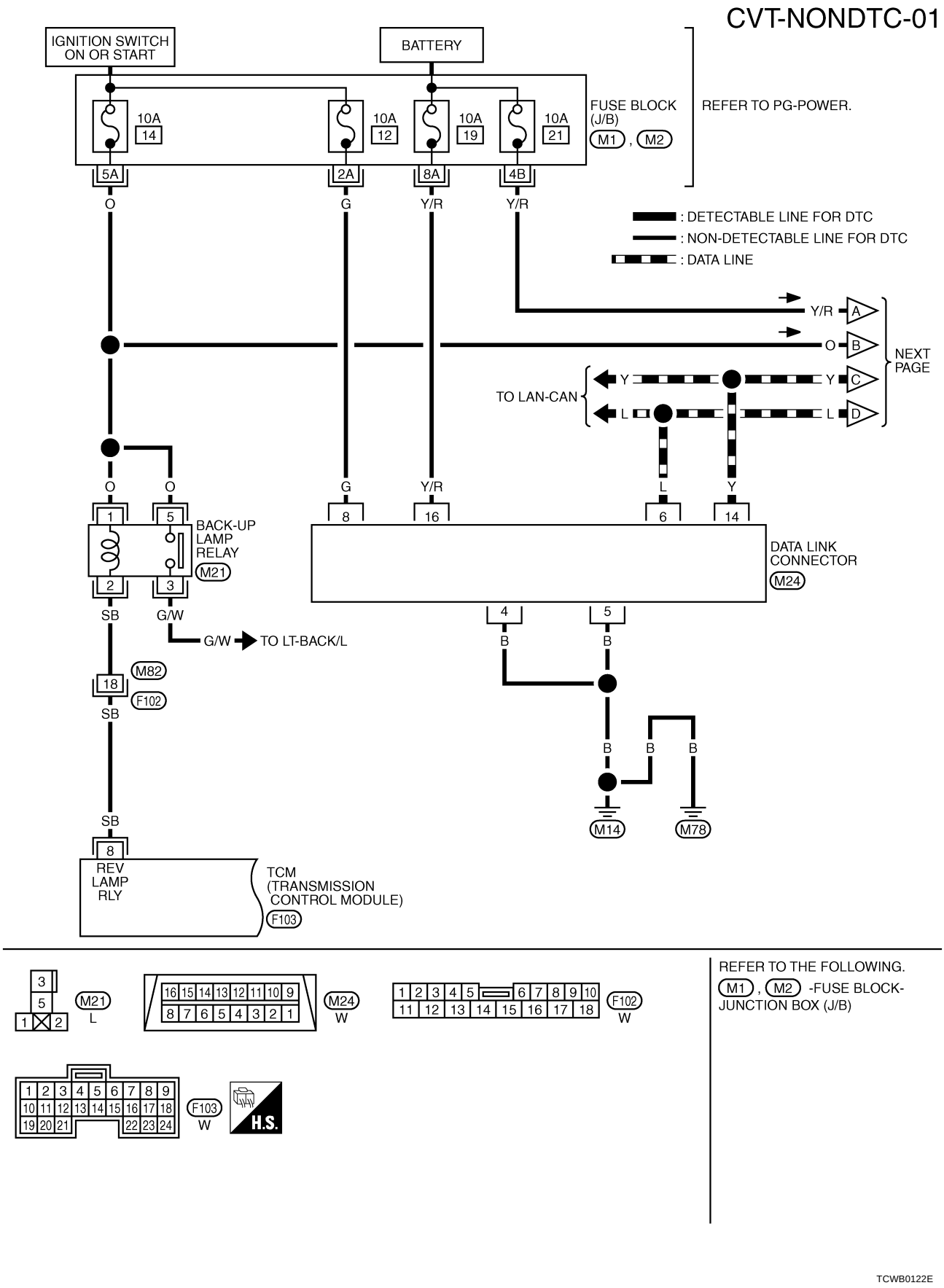
Items	Presumed location of trouble
The CVT position indicator is not indicated.	CVT main system (Fail-safe function actuated) ● Refer to CVT-61, "SELF-DIAGNOSTIC RESULT MODE" .
The actual gear position does not change, or shifting into the manual mode is not possible (no gear shifting in the manual mode possible).	Manual mode switch ● Refer to CVT-128, "DTC P0826 MANUAL MODE SWITCH CIRCUIT" .
CVT position indicator does not indicate “S” or “L” when selector lever is moved into “S” or “L”.	Second position switch ● Refer to CVT-174, "SECOND POSITION SWITCH" .
The actual gear position changes, but the CVT position indicator is not indicated.	Perform the self-diagnosis function. ● Refer to CVT-61, "SELF-DIAGNOSTIC RESULT MODE" .
The actual gear position and the indication on the CVT position indicator do not coincide.	Perform the self-diagnosis function. ● Refer to CVT-61, "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 DI-4, "COMBINATION METERS" .

TROUBLE DIAGNOSIS FOR SYMPTOMS

PFP:00007

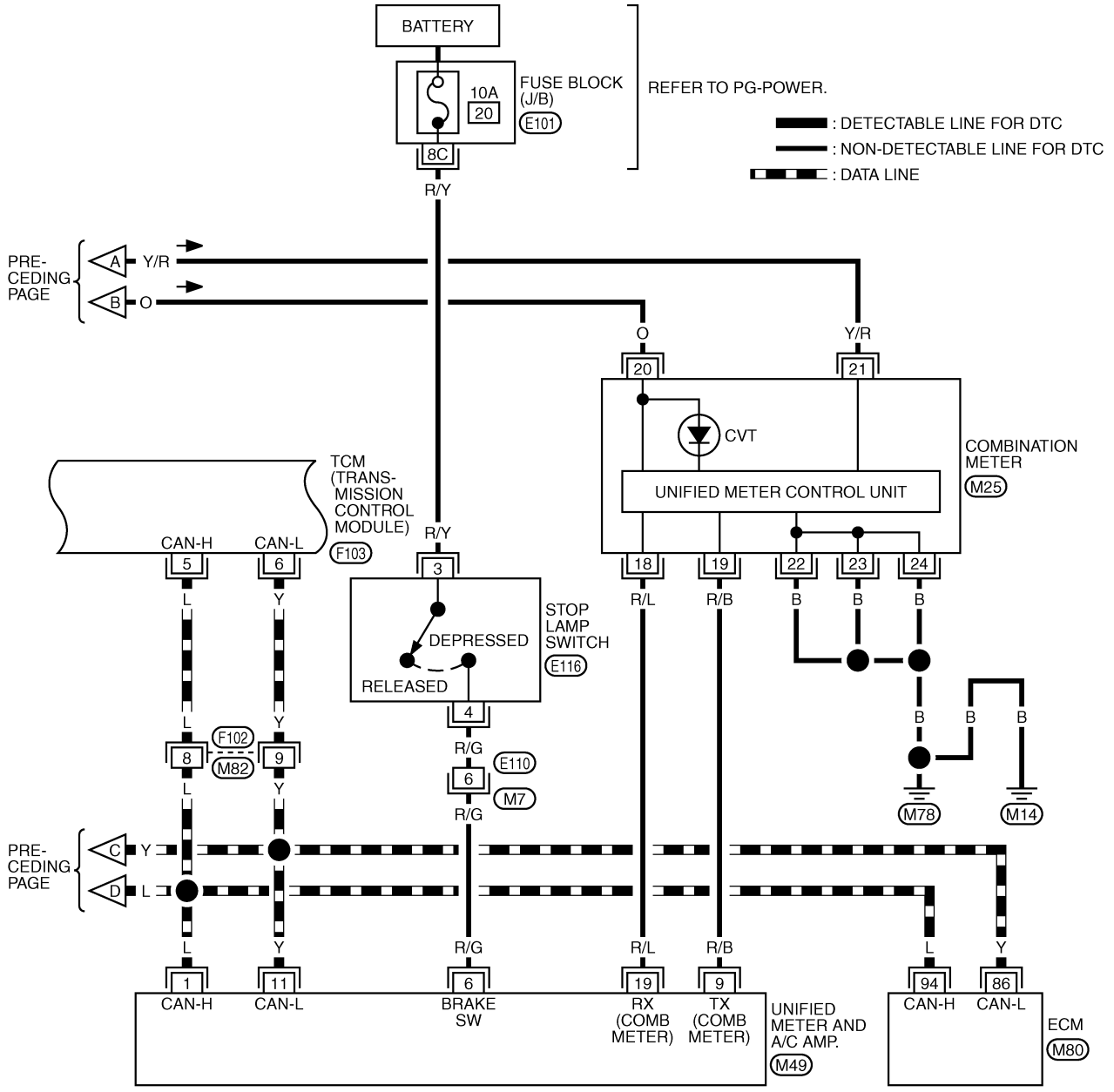
Wiring Diagram — CVT — NONDTC

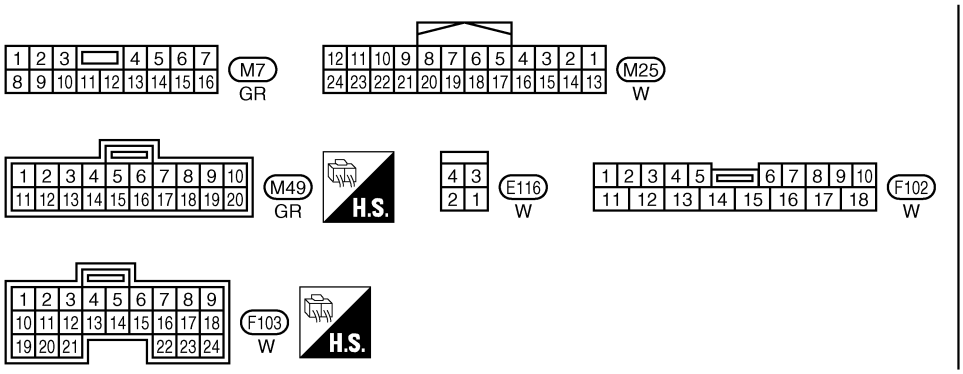
NCS0018U



TCWB0122E

CVT-NONDTC-02





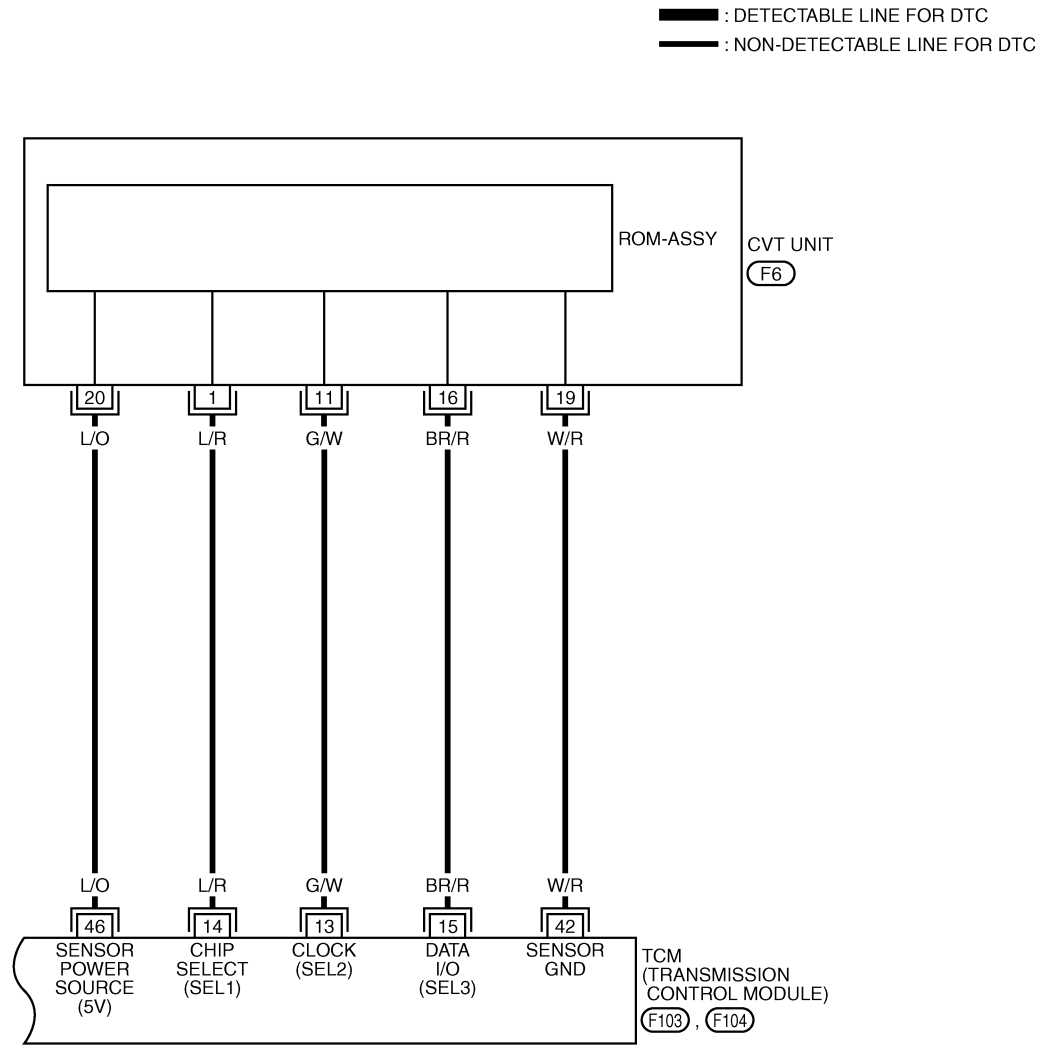
REFER TO THE FOLLOWING.

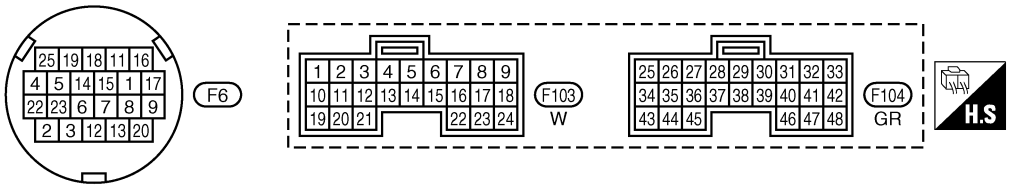
E101 -FUSE BLOCK-JUNCTION BOX (J/B)

M80 -ELECTRICAL UNITS

TCWB0260E

CVT-NONDTC-03





TCWA0258E

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

Terminal	Wire color	Item	Condition		Data (Approx.)
5	L	CAN-H	—		—
6	Y	CAN-L	—		—
8	SB	Back-up lamp relay		Selector lever in “R” position	0 V
				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		0 V
46	L/O	Sensor power		—	4.5 – 5.5 V
				—	0 V

CVT Indicator Lamp Does Not Come On

NCS0018V

SYMPTOM:

CVT indicator lamp does not come on for about 2 seconds when turning ignition switch ON.

DIAGNOSTIC PROCEDURE

1. CHECK CAN COMMUNICATION LINE

Perform the self-diagnosis check. Refer to CVT-61, "SELF-DIAGNOSTIC RESULT MODE" .

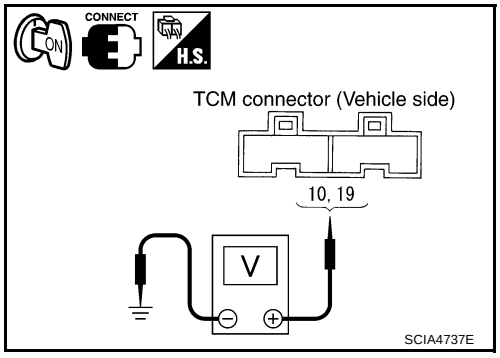
Is any malfunction of the “U1000 CAN COMM CIRCUIT” indicated in the results?

YES >> Check CAN communication line. Refer to CVT-68, "DTC U1000 CAN COMMUNICATION LINE" .
NO >> GO TO 2.

2. CHECK TCM POWER SOURCE

1. Turn ignition switch ON.
2. Check voltage between TCM connector terminals and ground. Refer to CVT-150, "Wiring Diagram — CVT — POWER" .

Name	Connector	Terminal	Voltage (Approx.)
Power supply	F103	10 – Ground	Battery voltage
		19 – Ground	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 CVT-150, "Wiring Diagram — CVT — POWER" .
- 10 A fuse (No. 83, located in the IPDM E/R). Refer to CVT-150, "Wiring Diagram — CVT — POWER" .
- Ignition switch. Refer to PG-3, "POWER SUPPLY ROUTING CIRCUIT" .

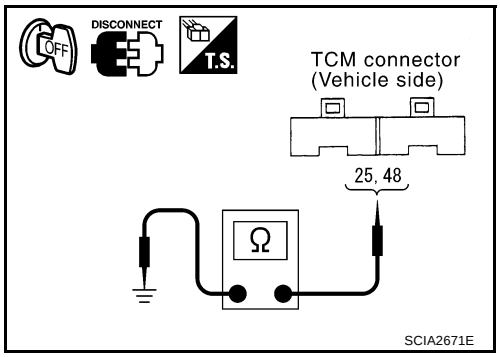
OK or NG

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

4. CHECK TCM GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect TCM connector.
3. Check continuity between TCM connector terminals and ground. Refer to CVT-150, "Wiring Diagram — CVT — POWER" .

Name	Connector	Terminal	Continuity
Ground	F104	25 – Ground	Yes
		48 – Ground	



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 Harness and fuse for short or open between ignition switch and CVT indicator lamp

OK or NG

OK >> GO TO 6.
NG >> Repair or replace damaged parts.

6. CHECK SYMPTOM

Check again. Refer to CVT-47, "Check before Engine Is Started" .

OK or NG

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

7. CHECK COMBINATION METERS

Check combination meters. Refer to DI-4, "COMBINATION METERS"

OK or NG

OK >> **INSPECTION END**
NG >> Repair or replace damaged parts.

Engine Cannot Be Started in “P” and “N” Position

NCS0018W

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. (With manual mode)**
- **Engine can be started with selector lever in “D”, “S”, “L” or “R” position. (Without manual mode)**

DIAGNOSTIC PROCEDURE

1. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis check. Refer to CVT-61, "SELF-DIAGNOSTIC RESULT MODE" .

Do the self-diagnostic results indicate PNP switch circuit or start signal circuit?

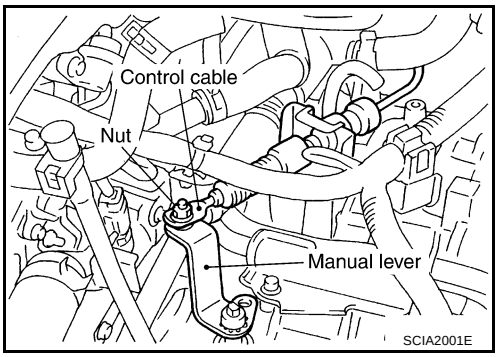
YES >> Check PNP switch circuit or start signal circuit. Refer to CVT-77, "DTC P0705 PARK/NEUTRAL POSITION SWITCH" or CVT-71, "DTC P0615 START SIGNAL CIRCUIT" .
NO >> GO TO 2.

2. CHECK CVT POSITION

Check CVT position. Refer to CVT-202, "Checking of CVT Position"

OK or NG

OK >> GO TO 3.
NG >> Adjust CVT position. Refer to CVT-201, "Adjustment of CVT Position" .



3. CHECK STARTING SYSTEM

Check starting system. Refer to SC-9, "STARTING SYSTEM" .

OK or NG

OK >> **INSPECTION END**
NG >> Repair or replace damaged parts.

In “P” Position, Vehicle Moves Forward or Backward When Pushed

NCS0018X

SYMPTOM:

Vehicle moves when it is pushed forward or backward with selector lever in “P” position.

DIAGNOSTIC PROCEDURE

1. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis check. Refer to CVT-61, "SELF-DIAGNOSTIC RESULT MODE" .

Do the self-diagnostic results indicate PNP switch circuit?

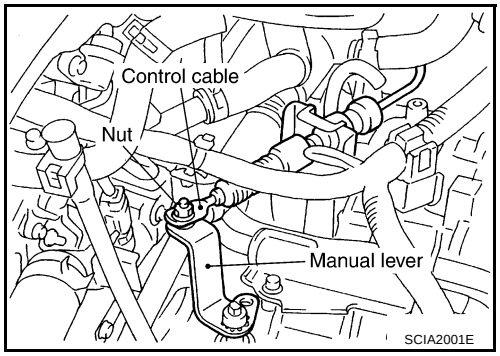
YES >> Check PNP switch circuit. Refer to CVT-77, "DTC P0705 PARK/NEUTRAL POSITION SWITCH" .
NO >> GO TO 2.

2. CHECK CVT POSITION

Check CVT position. Refer to CVT-202, "Checking of CVT Position"

OK or NG

OK >> GO TO 3.
NG >> Adjust CVT position. Refer to CVT-201, "Adjustment of CVT Position" .



3. CHECK SYMPTOM

Check again. Refer to CVT-47, "Check at Idle" .

OK or NG

OK >> **INSPECTION END**
NG >> Replace the transaxle assembly. Refer to CVT-215, "Removal and Installation" .

In “N” Position, Vehicle Moves

NCS0018Y

SYMPTOM:

Vehicle moves forward or backward when selecting “N” position.

DIAGNOSTIC PROCEDURE

1. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis check. Refer to CVT-61, "SELF-DIAGNOSTIC RESULT MODE" .

Do the self-diagnostic results indicate PNP switch circuit?

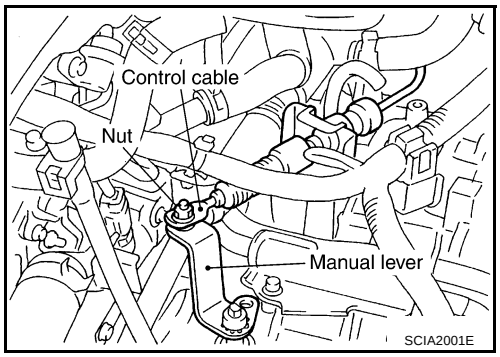
YES >> Check PNP switch circuit. Refer to CVT-77, "DTC P0705 PARK/NEUTRAL POSITION SWITCH" .
NO >> GO TO 2.

2. CHECK CVT POSITION

Check CVT position. Refer to CVT-202, "Checking of CVT Position"

OK or NG

OK >> GO TO 3.
NG >> Adjust CVT position. Refer to CVT-201, "Adjustment of CVT Position" .

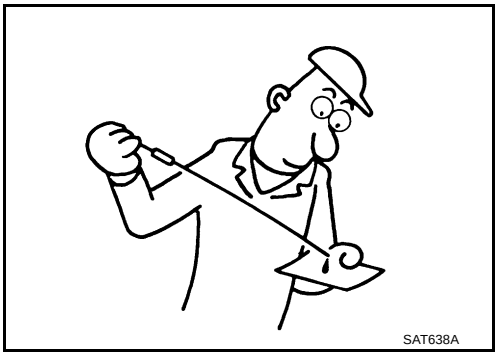


3. CHECK CVT FLUID LEVEL

Check CVT fluid level. Refer to CVT-15, "Checking CVT Fluid" .

OK or NG

OK >> GO TO 4.
NG >> Refill CVT fluid.



4. CHECK SYMPTOM

Check again. Refer to CVT-47, "Check at Idle" .

OK or NG

OK >> **INSPECTION END**
NG >> GO TO 5.

5. CHECK TCM

1. Check TCM input/output signals. Refer to CVT-53, "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 CVT-215, "Removal and Installation" .
NG >> Repair or replace damaged parts.

Large Shock “N” → “R” Position

NCS0018Z

SYMPTOM:

There is large shock when shifting from “N” to “R” position.

DIAGNOSTIC PROCEDURE

1. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis check. Refer to CVT-61, "SELF-DIAGNOSTIC RESULT MODE" .

Is any malfunction detected by self-diagnosis?

YES >> Check the malfunctioning system. Refer to CVT-61, "Display Items List" .
NO >> GO TO 2.

2. CHECK ENGINE IDLE SPEED

Check the engine idle speed. Refer to EC-73, "Idle Speed and Ignition Timing Check" .

OK or NG

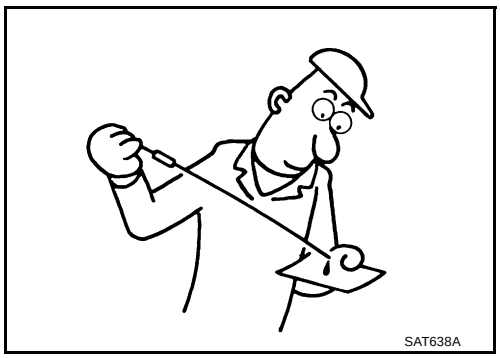
OK >> GO TO 3.
NG >> Repair.

3. CHECK CVT FLUID LEVEL

Check CVT fluid level. Refer to CVT-15, "Checking CVT Fluid" .

OK or NG

OK >> GO TO 4.
NG >> Refill CVT fluid.

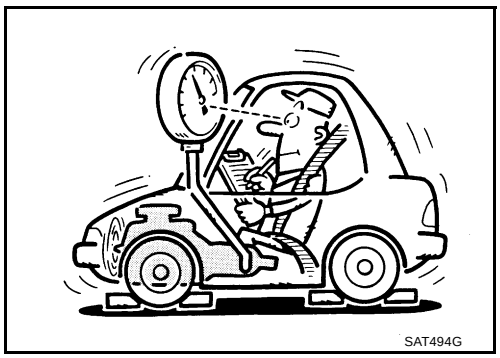

SAT638A

4. CHECK LINE PRESSURE

Check line pressure at idle. Refer to CVT-43, "LINE PRESSURE TEST" .

OK or NG

OK >> GO TO 5.
NG >> Check the malfunctioning item. Refer to CVT-44, "Judgment of Line Pressure Test" .


SAT494G

5. SYMPTOM CHECK

Check again. Refer to CVT-47, "Check at Idle" .

OK or NG

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

6. CHECK TCM

1. Check TCM input/output signals. Refer to CVT-53, "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 CVT-215, "Removal and Installation" .
NG >> Repair or replace damaged parts.

Vehicle Does Not Creep Backward in “R” Position

NCS00190

SYMPTOM:

Vehicle does not creep backward when selecting “R” position.

DIAGNOSTIC PROCEDURE

1. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis check. Refer to CVT-61, "SELF-DIAGNOSTIC RESULT MODE" .

Is any malfunction detected by self-diagnosis

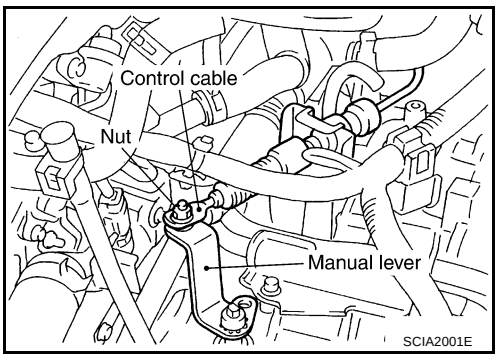
YES >> Check the malfunctioning system. Refer to CVT-61, "Display Items List" .
NO >> GO TO 2.

2. CHECK CVT POSITION

Check CVT position. Refer to CVT-202, "Checking of CVT Position"

OK or NG

OK >> GO TO 3.
NG >> Adjust CVT position. Refer to CVT-201, "Adjustment of CVT Position" .

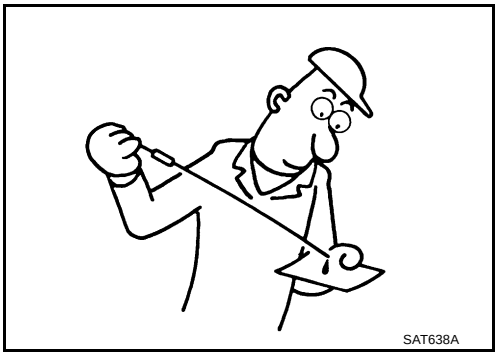


3. CHECK CVT FLUID LEVEL

Check CVT fluid level. Refer to CVT-15, "Checking CVT Fluid" .

OK or NG

OK >> GO TO 4.
NG >> Refill CVT fluid.

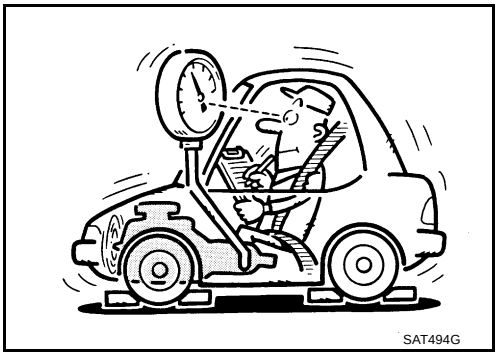


4. CHECK LINE PRESSURE

Check line pressure at idle. Refer to CVT-43, "LINE PRESSURE TEST" .

OK or NG

OK >> GO TO 5.
NG >> Check the malfunctioning item. Refer to CVT-44, "Judgment of Line Pressure Test" .



5. CHECK SYMPTOM

Check again. Refer to CVT-47, "Check at Idle" .

OK or NG

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

6. CHECK TCM

1. Check TCM input/output signals. Refer to CVT-53, "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 CVT-215, "Removal and Installation" .
NG >> Repair or replace damaged parts.

Vehicle Does Not Creep Forward in “D”, “S” or “L” Position

NCS00191

SYMPTOM:

Vehicle does not creep forward when selecting “D”, “S”*, or “L”* position.
***: Without manual mode**

DIAGNOSTIC PROCEDURE

1. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis check. Refer to CVT-61, "SELF-DIAGNOSTIC RESULT MODE" .

Is any malfunction detected by self-diagnosis?

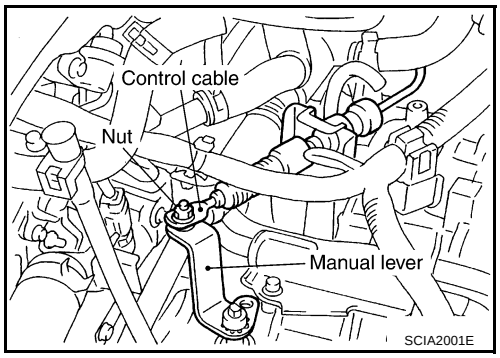
YES >> Check the malfunctioning system. Refer to CVT-61, "Display Items List" .
NO >> GO TO 2.

2. CHECK CVT POSITION

Check CVT position. Refer to CVT-202, "Checking of CVT Position"

OK or NG

OK >> GO TO 3.
NG >> Adjust CVT position. Refer to CVT-201, "Adjustment of CVT Position" .

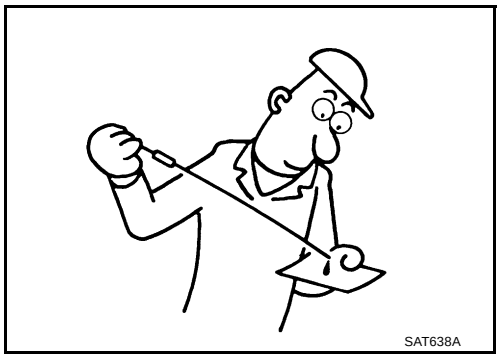


3. CHECK CVT FLUID LEVEL

Check CVT fluid level. Refer to CVT-15, "Checking CVT Fluid" .

OK or NG

OK >> GO TO 4.
NG >> Refill CVT fluid.

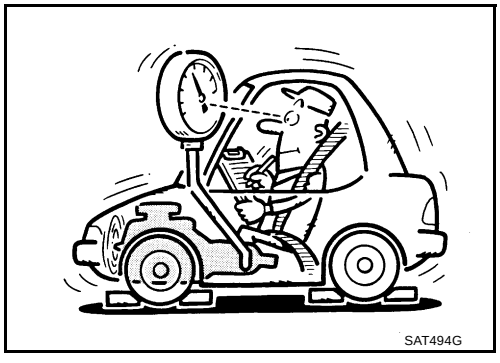


4. CHECK LINE PRESSURE

Check line pressure at idle. Refer to CVT-43, "LINE PRESSURE TEST" .

OK or NG

OK >> GO TO 5.
NG >> Check the malfunctioning item. Refer to CVT-44, "Judgment of Line Pressure Test" .



5. CHECK SYMPTOM

Check again. Refer to CVT-47, "Check at Idle" .

OK or NG

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

6. CHECK TCM

1. Check TCM input/output signals. Refer to CVT-53, "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 CVT-215, "Removal and Installation" .
NG >> Repair or replace damaged parts.

CVT Does Not Shift

NCS00192

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 CVT-61, "SELF-DIAGNOSTIC RESULT MODE" .

Is any malfunction detected by self-diagnosis?

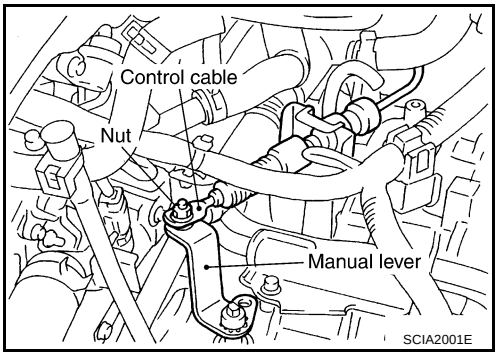
YES >> Check the malfunctioning system. Refer to CVT-61, "Display Items List" .
NO >> GO TO 2.

2. CHECK CVT POSITION

Check CVT position. Refer to CVT-202, "Checking of CVT Position"

OK or NG

OK >> GO TO 3.
NG >> Adjust CVT position. Refer to CVT-201, "Adjustment of CVT Position" .

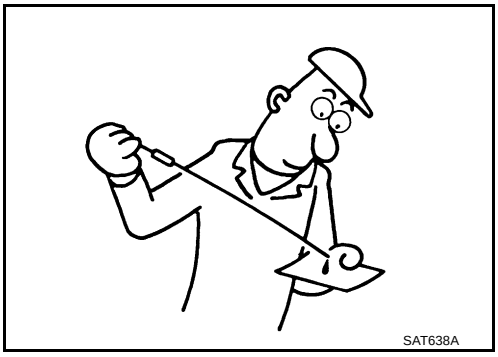


3. CHECK CVT FLUID LEVEL

Check CVT fluid level. Refer to CVT-15, "Checking CVT Fluid" .

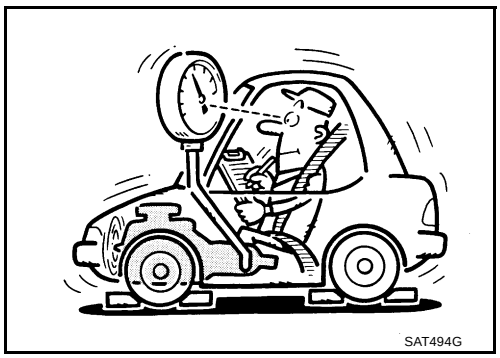
OK or NG

OK >> GO TO 4.
NG >> Refill CVT fluid.



4. CHECK LINE PRESSURE

Check line pressure at idle. Refer to CVT-43, "LINE PRESSURE TEST" .



OK or NG

OK >> GO TO 5.
NG >> Check the malfunctioning item. Refer to CVT-44, "Judgment of Line Pressure Test" .

5. CHECK SYMPTOM

Check again. Refer to CVT-49, "Cruise Test" .

OK or NG

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

6. CHECK TCM

1. Check TCM input/output signals. Refer to CVT-53, "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 CVT-215, "Removal and Installation" .
NG >> Repair or replace damaged parts.

Cannot Be Changed to Manual Mode

NCS00193

SYMPTOM:

Does not change to manual mode when manual shift gate is used.

DIAGNOSTIC PROCEDURE

1. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis check. Refer to CVT-61, "SELF-DIAGNOSTIC RESULT MODE" .

Is any malfunction detected by self-diagnosis?

YES >> Check the malfunctioning system. Refer to CVT-61, "Display Items List" .
NO >> GO TO 2.

2. CHECK MANUAL MODE SWITCH

Check the manual mode switch circuit. Refer to CVT-128, "DTC P0826 MANUAL MODE SWITCH CIRCUIT" .

OK or NG

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

3. SYMPTOM CHECK

Check again. Refer to CVT-49, "Cruise Test" .

OK or NG

OK >> **INSPECTION END**
NG >> GO TO 4.

4. CHECK TCM

1. Check TCM input/output signals. Refer to CVT-53, "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 Does Not Shift in Manual Mode

NCS00194

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-61, "SELF-DIAGNOSTIC RESULT MODE" .

Is any malfunction detected by self-diagnosis?

YES >> Check the malfunctioning system. Refer to CVT-61, "Display Items List" .
NO >> GO TO 2.

2. CHECK MANUAL MODE SWITCH

Check the manual mode switch circuit. Refer to CVT-128, "DTC P0826 MANUAL MODE SWITCH CIRCUIT" .

OK or NG

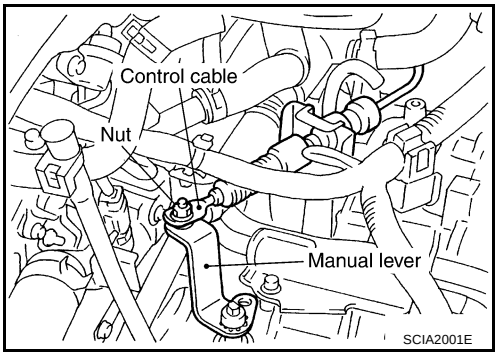
OK >> GO TO 3.
NG >> Repair or replace damaged parts.

3. CHECK CVT POSITION

Check CVT position. Refer to CVT-202, "Checking of CVT Position"

OK or NG

OK >> GO TO 4.
NG >> Adjust CVT position. Refer to CVT-201, "Adjustment of CVT Position" .

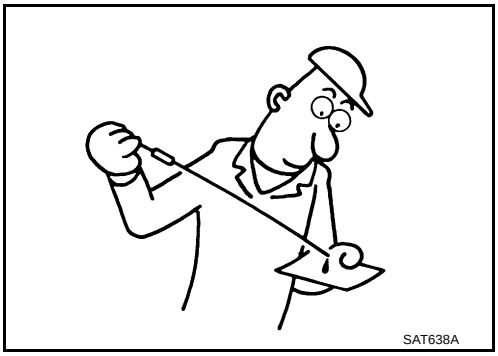


4. CHECK CVT FLUID LEVEL

Check CVT fluid level. Refer to CVT-15, "Checking CVT Fluid" .

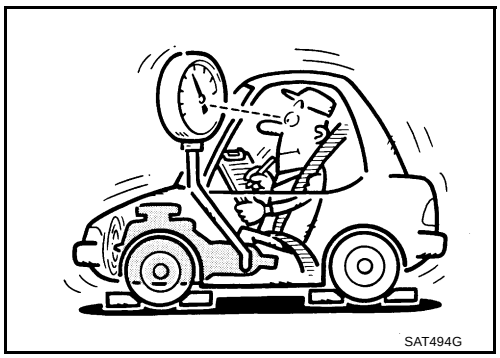
OK or NG

OK >> GO TO 5.
NG >> Refill CVT fluid.



5. CHECK LINE PRESSURE

Check line pressure at idle. Refer to CVT-43, "LINE PRESSURE TEST" .



OK or NG

OK >> GO TO 6.
NG >> Check the malfunctioning item. Refer to CVT-44, "Judgment of Line Pressure Test" .

6. CHECK SYMPTOM

Check again. Refer to CVT-49, "Cruise Test" .

OK or NG

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

7. CHECK TCM

1. Check TCM input/output signals. Refer to CVT-53, "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 CVT-215, "Removal and Installation" .
NG >> Repair or replace damaged parts.

Cannot Be Changed to Second Position (Without Manual Mode)

NCS00195

SYMPTOM:

Does not change to second position when selecting “S” position.

DIAGNOSTIC PROCEDURE

1. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis check. Refer to CVT-61, "SELF-DIAGNOSTIC RESULT MODE" .

Is any malfunction detected by self-diagnosis?

YES >> Check the malfunctioning system. Refer to CVT-61, "Display Items List" .
NO >> GO TO 2.

2. CHECK SECOND POSITION SWITCH

Check the second position switch circuit. Refer to CVT-174, "SECOND POSITION SWITCH" .

OK or NG

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

3. CHECK SYMPTOM

Check again. Refer to CVT-49, "Cruise Test" .

OK or NG

OK >> **INSPECTION END**
NG >> GO TO 4.

4. CHECK TCM

1. Check TCM input/output signals. Refer to CVT-53, "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.

Cannot Be Changed to “L” Position (Without Manual Mode)

NCS00196

SYMPTOM:

Does not change to “L” position when selecting “L” position.

DIAGNOSTIC PROCEDURE

1. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis check. Refer to CVT-61, "SELF-DIAGNOSTIC RESULT MODE" .

Is any malfunction detected by self-diagnosis?

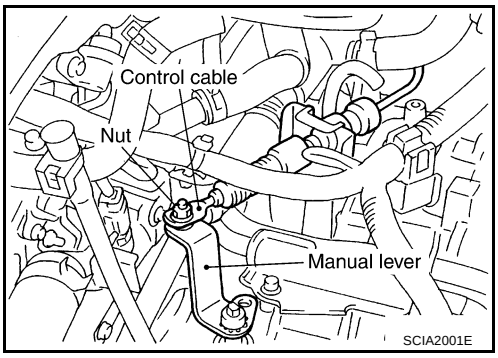
YES >> Check the malfunctioning system. Refer to CVT-61, "Display Items List" .
NO >> GO TO 2.

2. CHECK CVT POSITION

Check CVT position. Refer to CVT-202, "Checking of CVT Position"

OK or NG

OK >> GO TO 3.
NG >> Adjust CVT position. Refer to CVT-201, "Adjustment of CVT Position" .

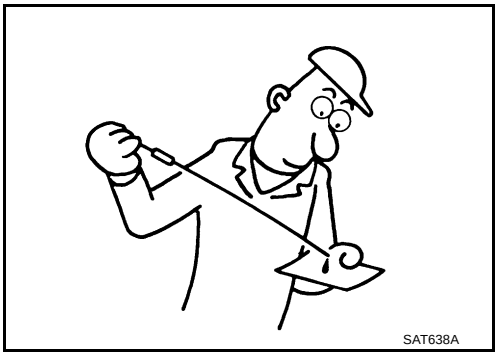


3. CHECK CVT FLUID LEVEL

Check CVT fluid level. Refer to CVT-15, "Checking CVT Fluid" .

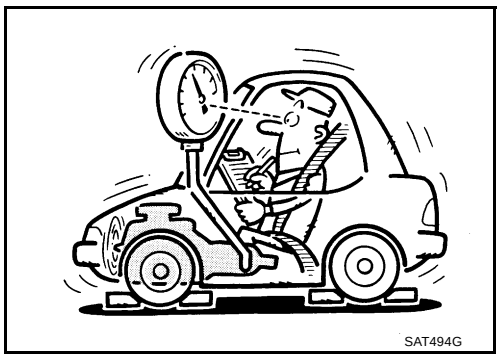
OK or NG

OK >> GO TO 4.
NG >> Refill CVT fluid.



4. CHECK LINE PRESSURE

Check line pressure at idle. Refer to CVT-43, "LINE PRESSURE TEST" .


SAT494G

OK or NG

OK >> GO TO 5.
NG >> Check the malfunctioning item. Refer to CVT-44, "Judgment of Line Pressure Test" .

5. CHECK SYMPTOM

Check again. Refer to CVT-49, "Cruise Test" .

OK or NG

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

6. CHECK TCM

1. Check TCM input/output signals. Refer to CVT-53, "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 CVT-215, "Removal and Installation" .
NG >> Repair or replace damaged parts.

Vehicle Does Not Decelerate by Engine Brake

NCS00197

SYMPTOM:

- **No engine brake is applied when the gear is shifted from the “M2” to “M1” position.**
- **No engine brake is applied when the gear is shifted from the “S”* to “L”* position.**

***: Without manual mode**

DIAGNOSTIC PROCEDURE

1. CHECK SELF-DIAGNOSTIC RESULTS

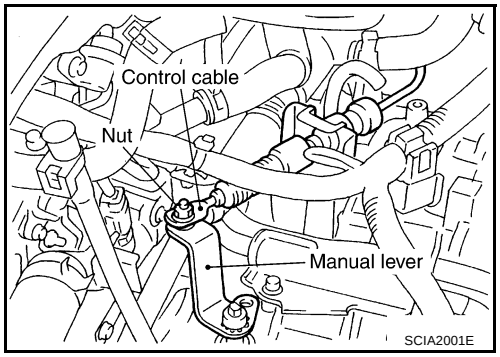
Perform self-diagnosis check. Refer to CVT-61, "SELF-DIAGNOSTIC RESULT MODE" .

Is any malfunction detected by self-diagnosis?

YES >> Check the malfunctioning system. Refer to CVT-61, "Display Items List" .
NO >> GO TO 2.

2. CHECK CVT POSITION

Check CVT position. Refer to CVT-202, "Checking of CVT Position"



SCIA2001E

OK or NG

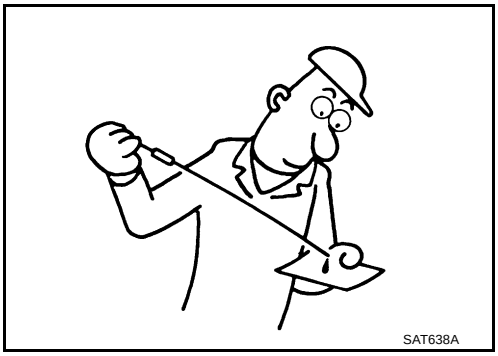
OK >> GO TO 3.
NG >> Adjust CVT position. Refer to CVT-201, "Adjustment of CVT Position" .

3. CHECK CVT FLUID LEVEL

Check CVT fluid level. Refer to CVT-15, "Checking CVT Fluid" .

OK or NG

OK >> GO TO 4.
NG >> Refill CVT fluid.

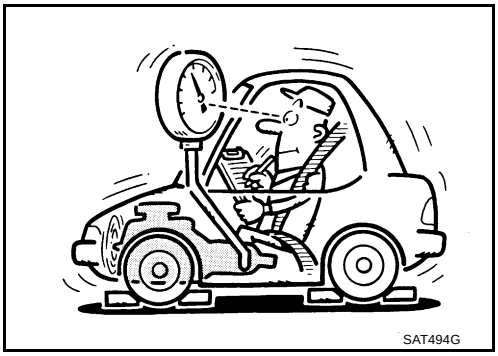


4. CHECK LINE PRESSURE

Check line pressure at idle. Refer to CVT-43, "LINE PRESSURE TEST" .

OK or NG

OK (With manual mode) >>GO TO 5.
OK (Without manual mode) >>GO TO 6.
NG >> Check the malfunctioning item. Refer to CVT-44, "Judgment of Line Pressure Test" .



5. CHECK MANUAL MODE SWITCH

Check the manual mode switch circuit. Refer to CVT-128, "DTC P0826 MANUAL MODE SWITCH CIRCUIT" .

OK or NG

OK >> GO TO 6.
NG >> Repair or replace damaged parts.

6. CHECK SYMPTOM

Check again. Refer to CVT-49, "Cruise Test" .

OK or NG

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

7. CHECK TCM

1. Check TCM input/output signals. Refer to CVT-53, "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 CVT-215, "Removal and Installation" .
NG >> Repair or replace damaged parts.

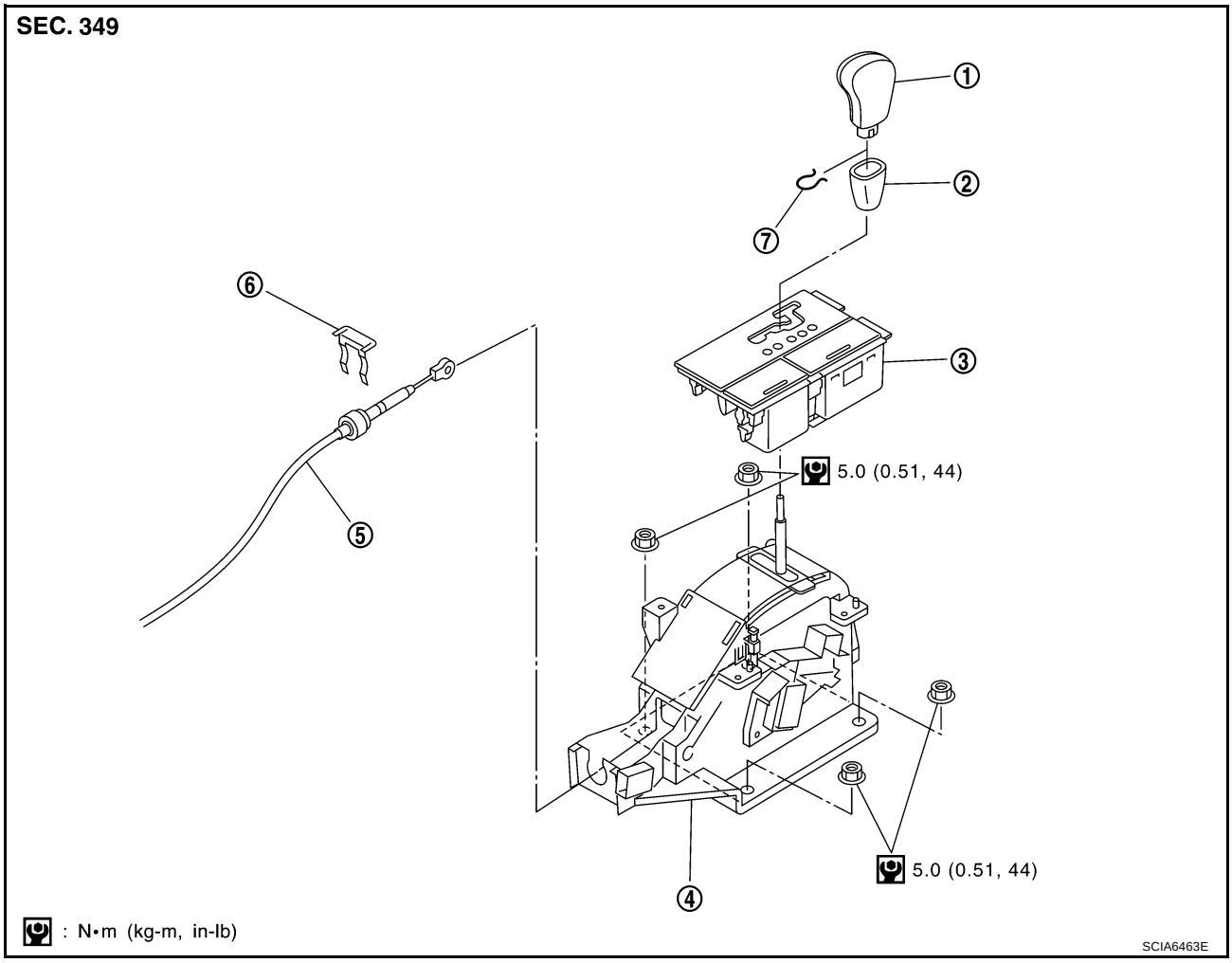
SHIFT CONTROL SYSTEM

PFP:34901

Removal and Installation

NCS00198

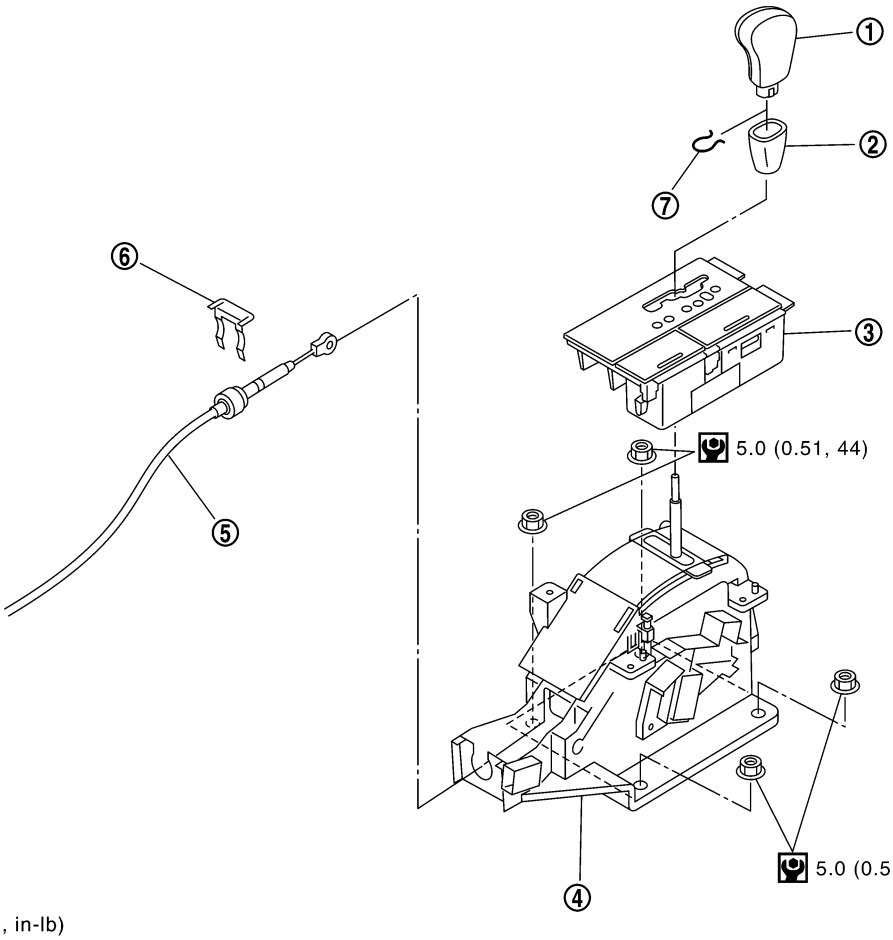
CONTROL DEVICE COMPONENTS (WITH MANUAL MODE)



1. Selector lever knob
2. Knob cover
3. A/T console finisher
4. Control device assembly
5. Control cable
6. Lock plate
7. Lock pin

CONTROL DEVICE COMPONENTS (WITHOUT MANUAL MODE)

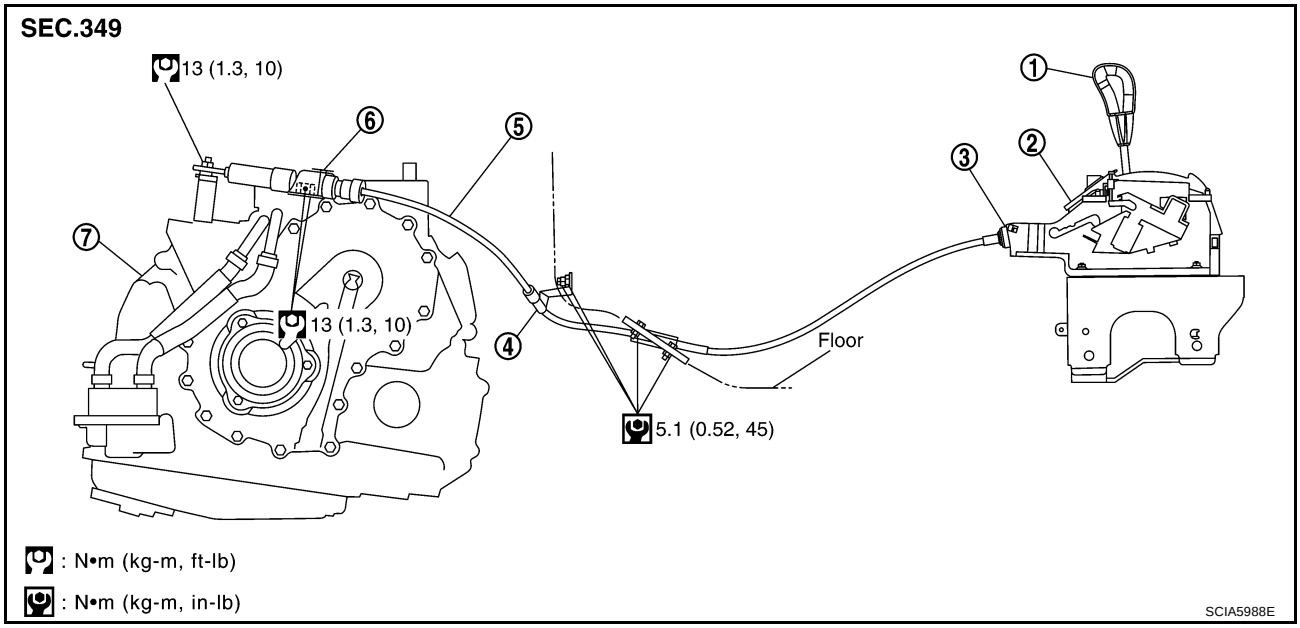
SEC. 349



1. Selector lever knob
2. Knob cover
3. A/T console finisher
4. Control device assembly
5. Control cable
6. Lock plate
7. Lock pin

CONTROL CABLE COMPONENTS

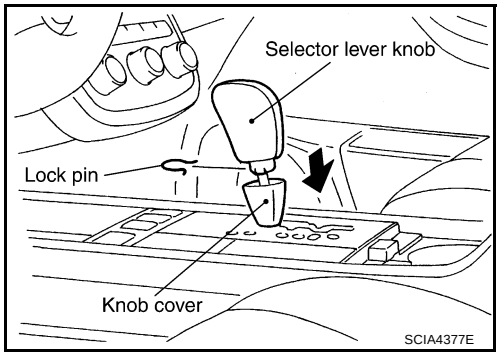
Refer to the figure below for control cable removal and installation procedure.



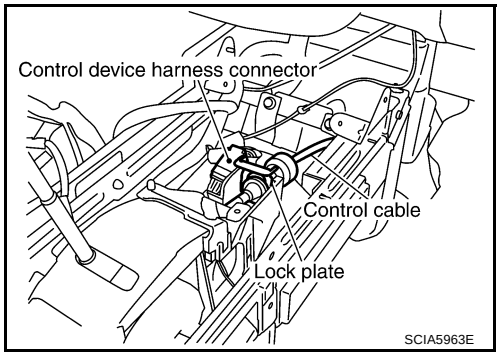
1. Selector lever knob
2. Control device assembly
3. Lock plate
4. Bracket
5. Control cable
6. Lock plate
7. Transaxle assembly

REMOVAL

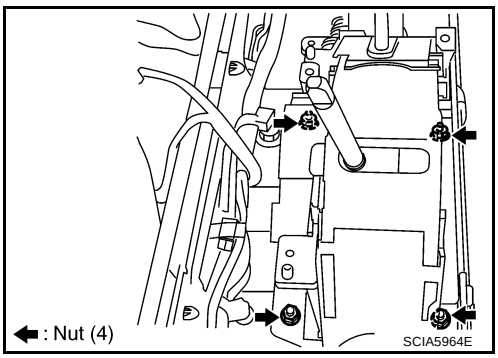
1. Remove knob cover below selector lever downward.
2. Pull lock pin out of selector lever knob.
3. Remove selector lever knob.
4. Remove A/T console finisher. Refer to IP-18, "Removal and Installation" .
5. Remove console box assembly. Refer to IP-18, "Removal and Installation" .



6. Disconnect control cable of control device.
7. Disconnect control device harness connector.



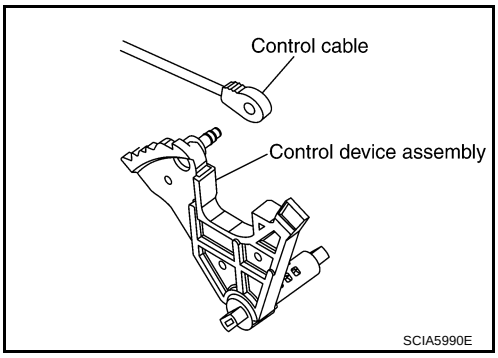
8. Remove control device assembly.



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-201, "Adjustment of CVT Position" and CVT-202, "Checking of CVT Position" .



Adjustment of CVT Position

NCS00199

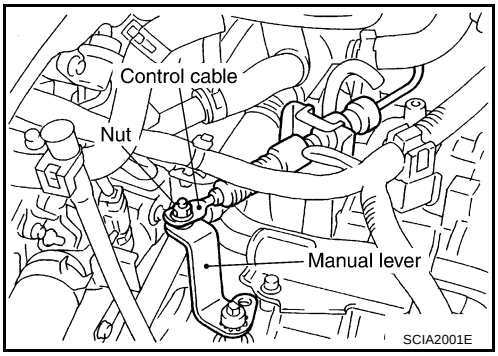
1. Place selector lever in “P” position.
2. Loosen control cable nut and place manual lever in “P” position.

   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 9.8 N (approximately 1 kg, 2.2 lb). Temporarily tighten the control cable 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.

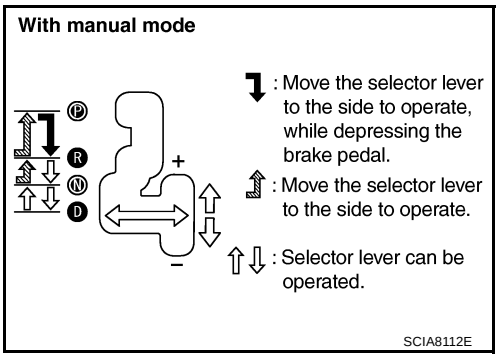
   : 13 N·m (1.3 kg-m, 10 ft-lb)



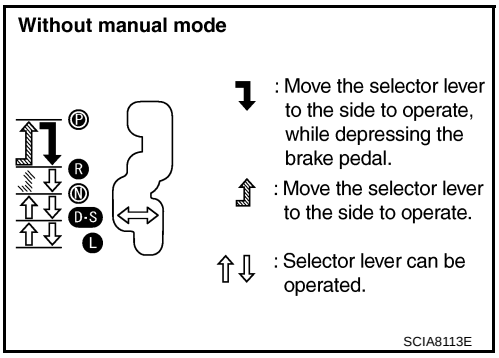
Checking of CVT Position

NCS0019A

1. Place selector lever in “P” position, and turn ignition switch ON.
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 selector lever to individual positions correctly should be as shown in the figure.
6. Confirm the back-up lamps illuminate only when selector lever is placed in the “R” position. Confirm the back-up lamps do not illuminate when the selector lever is pushed toward the “R” position 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.
9. 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.



CVT SHIFT LOCK SYSTEM

PFP:00000

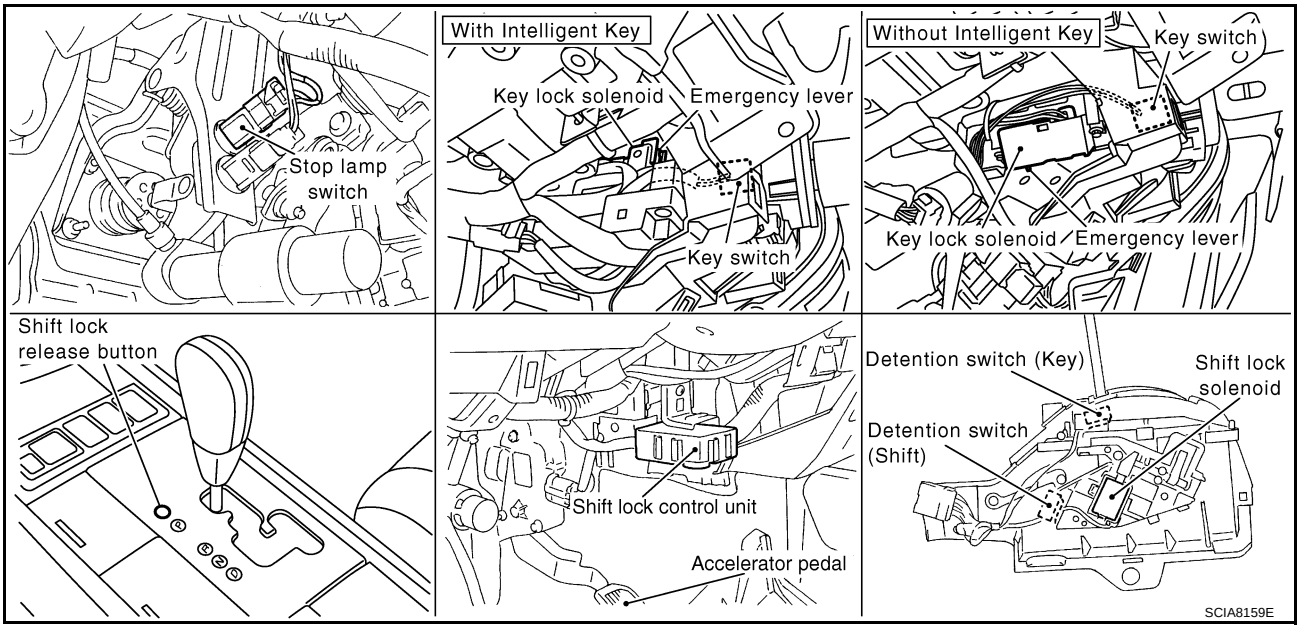
Description

NCS0019B

- 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

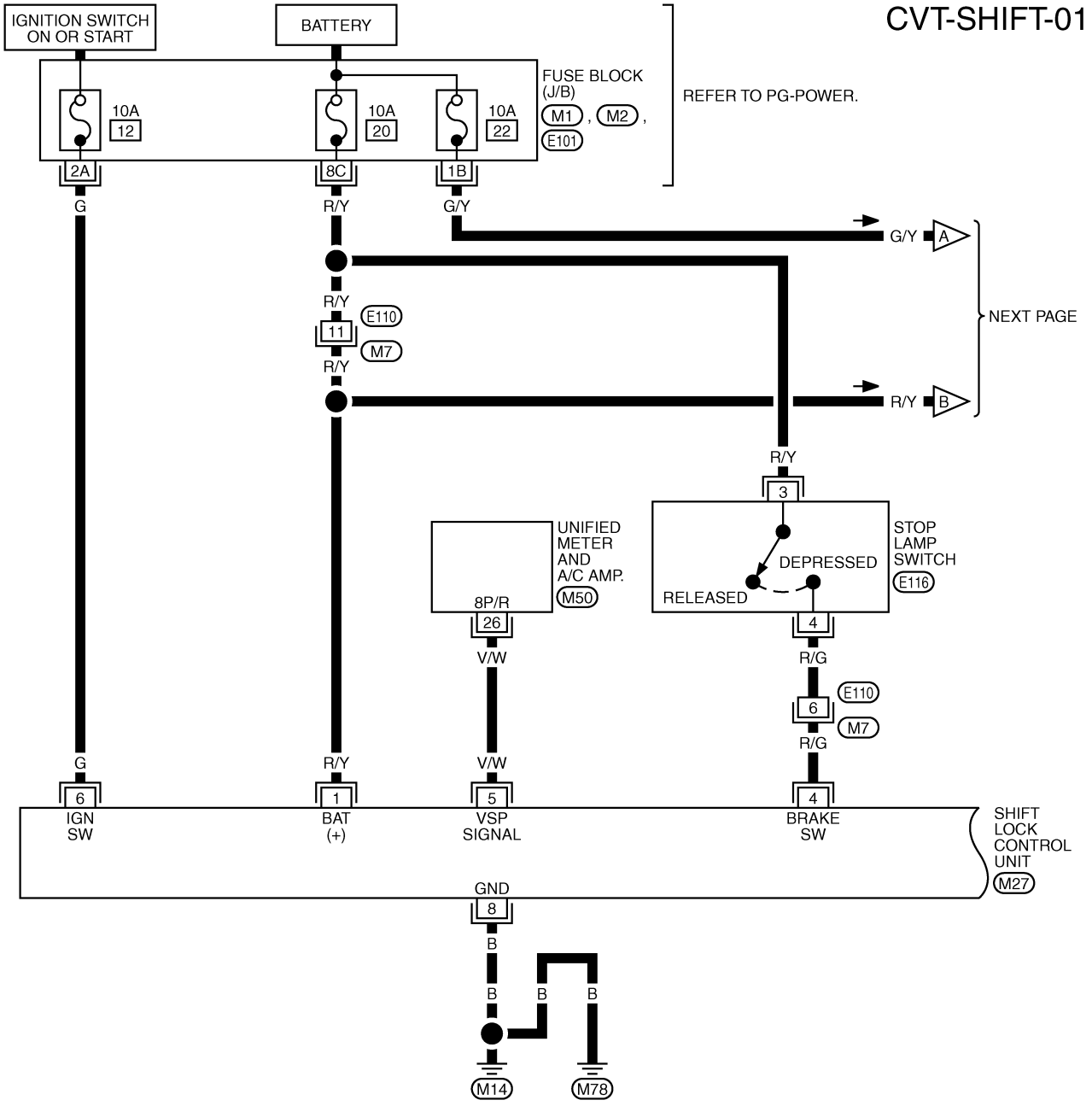
NCS0019C

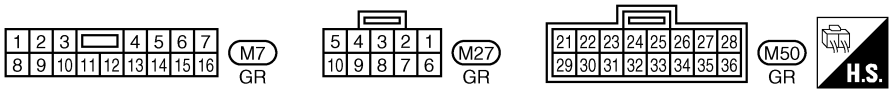


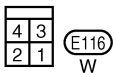
NOTE:
This emergency lever can be used when battery is off ignition key cannot be removed. In the situation like this, by operating this lever, ignition key can be removed.

Wiring Diagram — CVT — SHIFT (With Intelligent Key)

NCS0019D



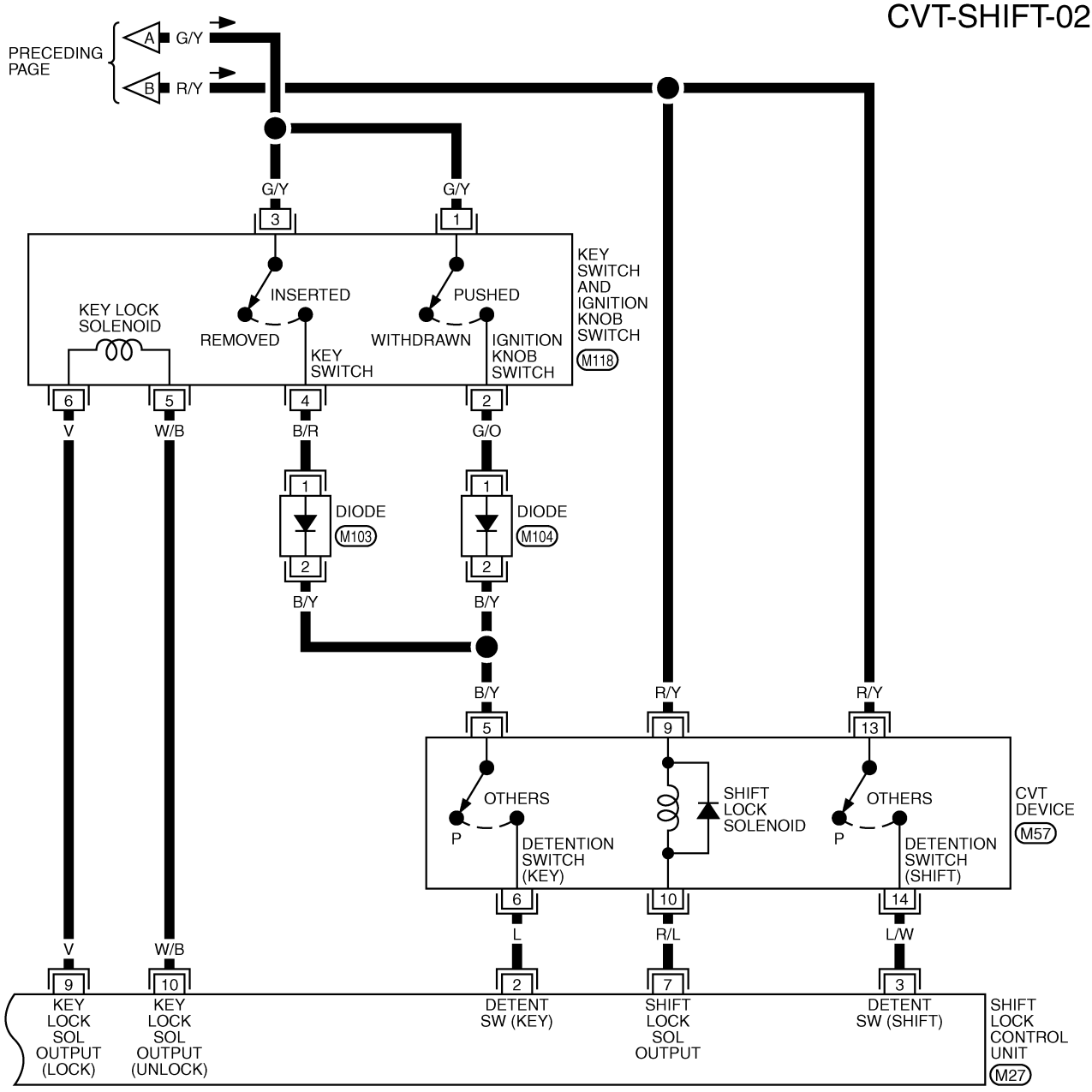




REFER TO THE FOLLOWING.
M1, M2, E101 -FUSE BLOCK-JUNCTION BOX (J/B)

TCWB0261E

CVT-SHIFT-02

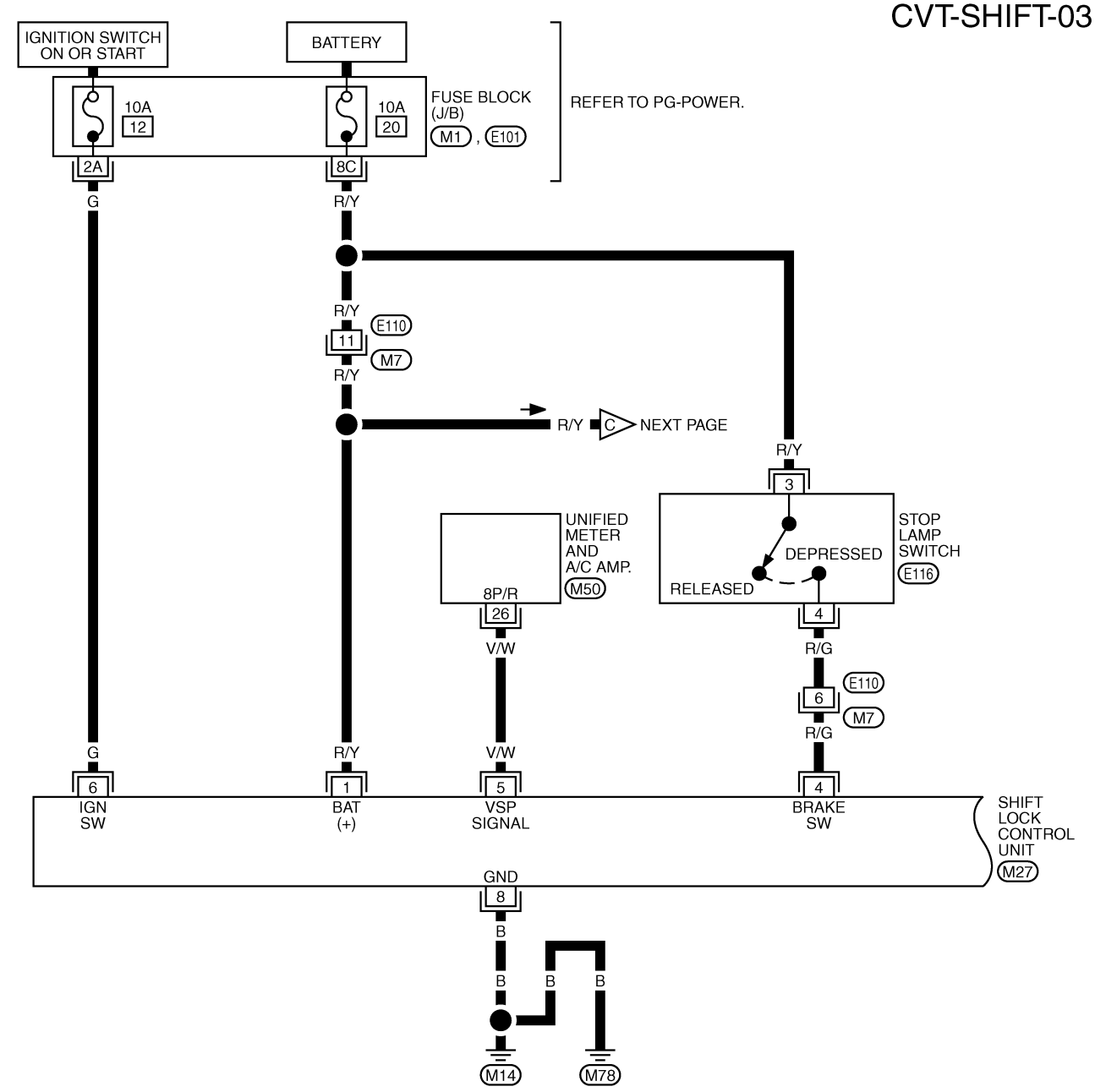


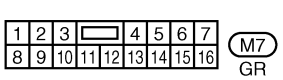
TCWB0065E

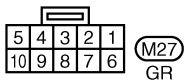
Wiring Diagram — CVT — SHIFT (Without Intelligent Key)

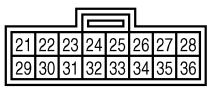
NCS0019E

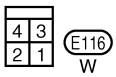
CVT-SHIFT-03







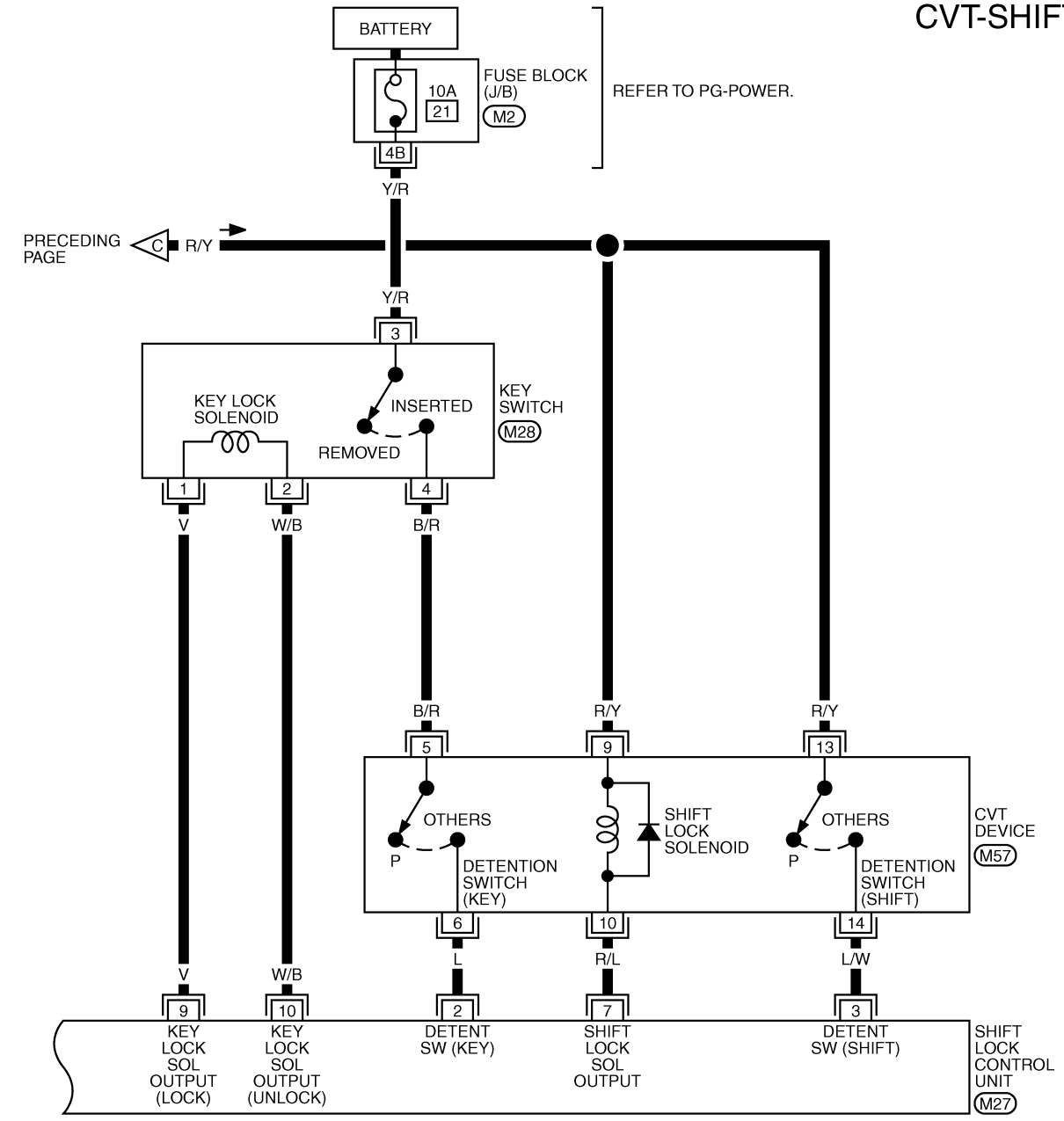


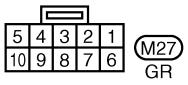


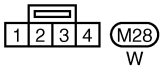
REFER TO THE FOLLOWING.
M1, E101 -FUSE BLOCK-JUNCTION BOX (J/B)

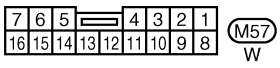
TCWB0262E

CVT-SHIFT-04









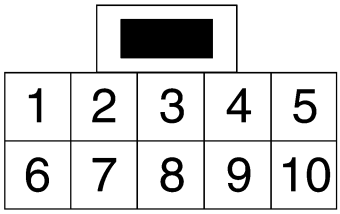
REFER TO THE FOLLOWING.
M2 -FUSE BLOCK-JUNCTION BOX (J/B)

TCWB0067E

Shift Lock Control Unit Reference Values

NCS0019F

SHIFT LOCK HARNESS CONNECTOR TERMINALS LAYOUT



SCIA2004E

SHIFT LOCK CONTROL UNIT INSPECTION TABLE

Shift lock control unit terminal data are reference values, measured between each terminal and ground.

Terminal (Wire color)	Item	Condition	Judgment 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. 0 V
3 (L/W)	Detention switch (for shift)	When selector lever is not in “P” position	Battery voltage
		When selector lever is in “P” position	Approx. 0 V
4 (R/G)	Stop lamp switch	When brake pedal is depressed	Battery voltage
		When brake pedal is released	Approx. 0 V
5 (V/W)	Vehicle speed signal (8pulse signal)	Speed meter is operated	Refer to DI-14, "Terminals and Reference Value for Unified Meter and A/C Amp." .
6 (G)	Ignition signal	Ignition switch: OFF	Approx. 0 V
		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 vehicle speed is 10 km/h (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. 0 V
		Except the above	Battery voltage
8 (B)	Ground	—	Approx. 0 V
9 (V)	Key lock solenoid	When selector lever is not in “P” position	Battery voltage for approx. 0.1 sec. (Note)
		When selector lever is in “P” position	Battery voltage
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 ignition switch OFF	Approx. 0 V

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

NCS0019G

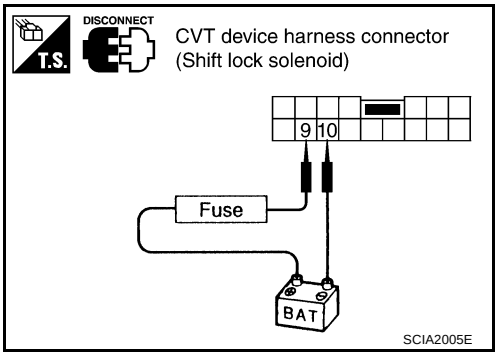
SHIFT LOCK SOLENOID

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.

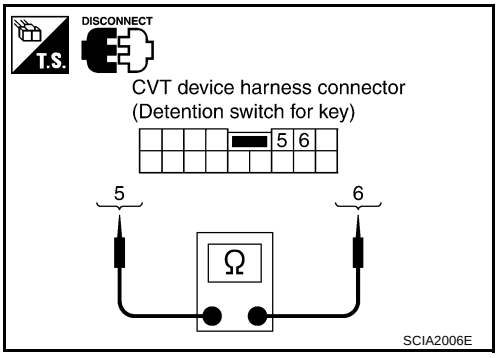
Connector	Terminal
M57	9 (Battery voltage) – 10 (Ground)



DETENTION SWITCH (FOR KEY)

Check continuity between terminals of the CVT device harness connector.

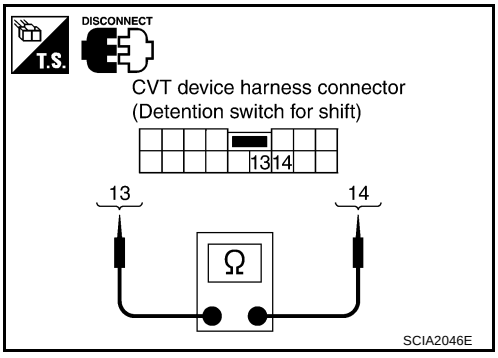
Condition	Connector	Terminal	Continuity
When selector lever is in “P” position	M57	5 – 6	No
When selector lever is not in “P” position			Yes



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 (WITH INTELLIGENT KEY)

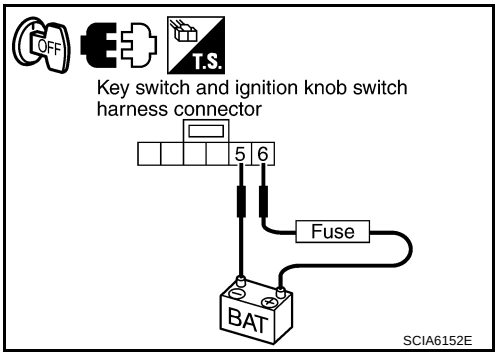
Key Lock

Check operation by applying battery voltage to key switch and ignition knob switch harness connector.

CAUTION:

Be careful not to cause burnout of the harness.

Connector	Terminal
M118	6 (Battery voltage) – 5 (Ground)

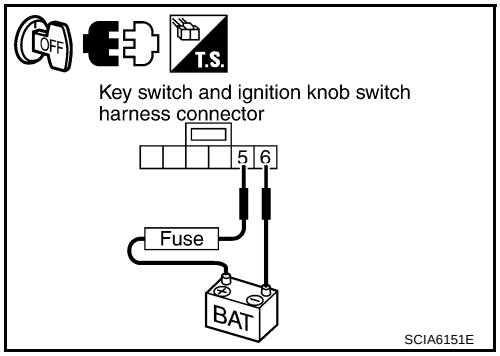


Key Unlock

Check operation by applying battery voltage to key switch and ignition knob switch harness connector.

CAUTION:
Be careful not to cause burnout of the harness.

Connector	Terminal
M118	5 (Battery voltage) – 6 (Ground)



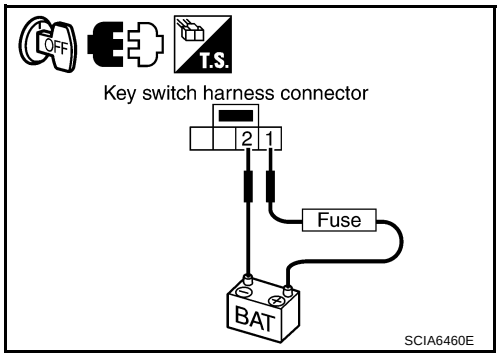
KEY LOCK SOLENOID (WITHOUT INTELLIGENT KEY)

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)

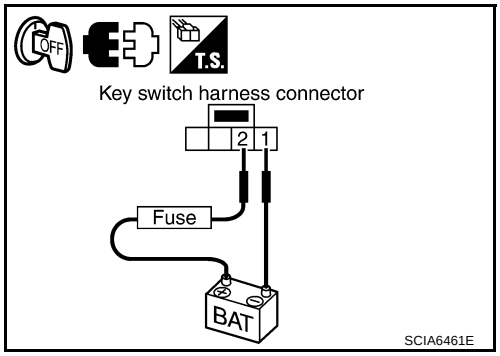


Key Unlock

Check operation by applying battery voltage to key switch harness connector.

CAUTION:
Be careful not to cause burnout of the harness.

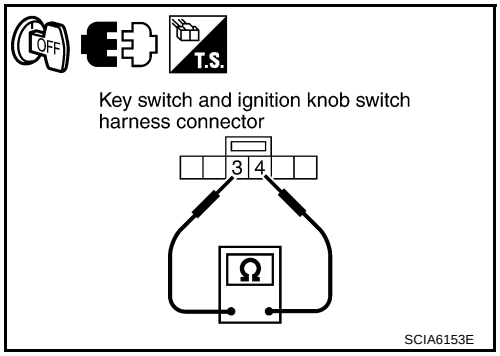
Connector	Terminal
M28	2 (Battery voltage) – 1 (Ground)



KEY SWITCH (WITH INTELLIGENT KEY)

Check continuity between terminals of the key switch and ignition knob switch harness connector.

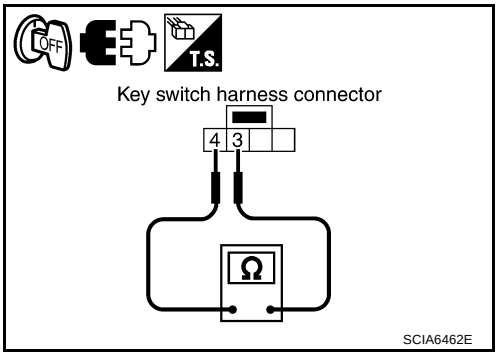
Condition	Connector	Terminal	Continuity
Key inserted	M118	3 – 4	Yes
Key withdrawn			No



KEY SWITCH (WITHOUT INTELLIGENT KEY)

Check continuity between terminals of the key switch harness connector.

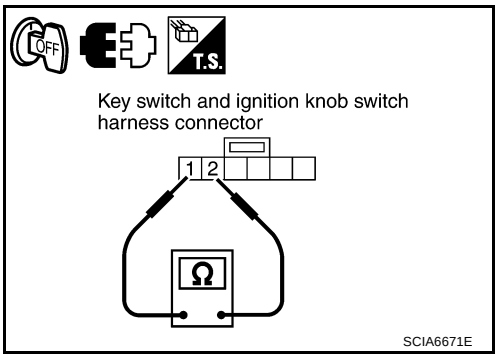
Condition	Connector	Terminal	Continuity
Key inserted	M28	3 – 4	Yes
Key withdrawn			No



IGNITION KNOB SWITCH (WITH INTELLIGENT KEY)

Check continuity between terminals of the key switch and ignition knob switch harness connector.

Condition	Connector	Terminal	Continuity
Pushed	M118	1 – 2	Yes
Released			No

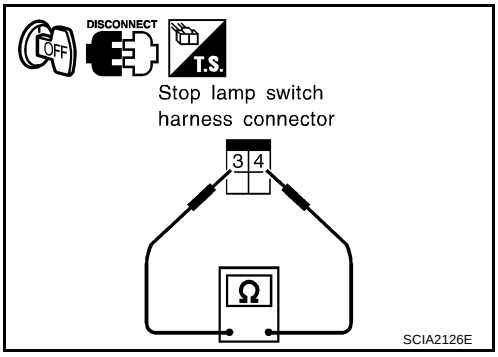


STOP LAMP SWITCH

Check continuity between terminals of the stop lamp switch harness connector.

Condition	Connector	Terminal	Continuity
When brake pedal is depressed	E116	3 – 4	Yes
When brake pedal is released			No

Check stop lamp switch after adjusting brake pedal. Refer to BR-7, "Inspection and Adjustment" .



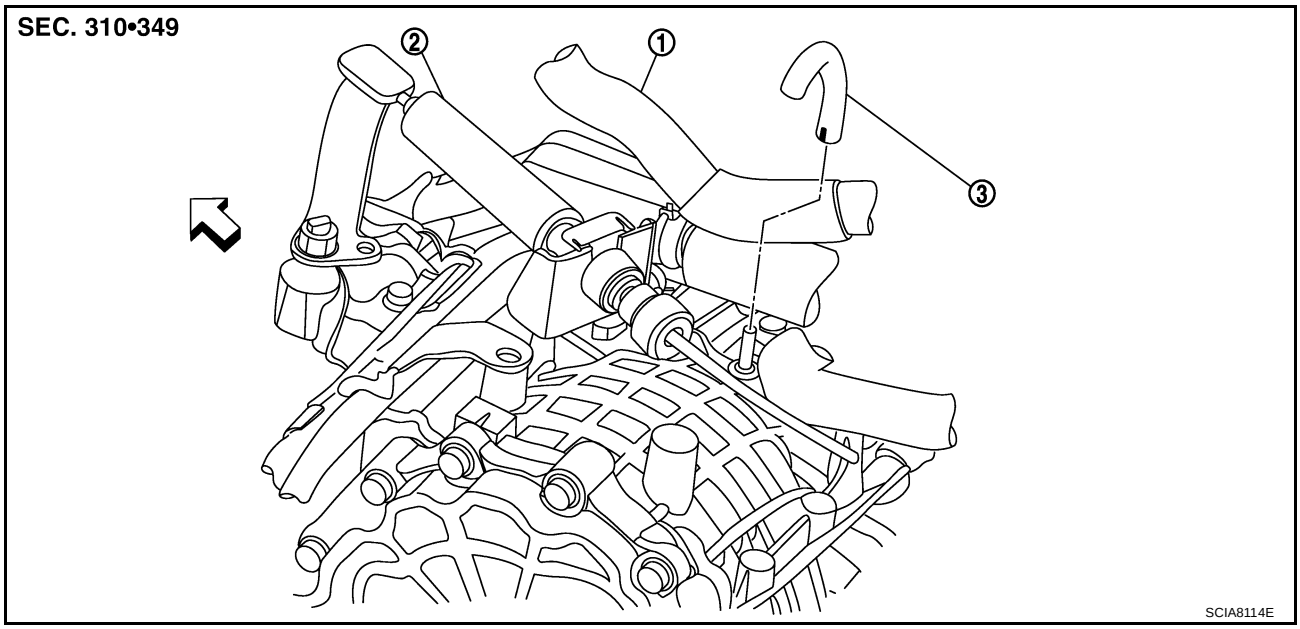
AIR BREATHER HOSE

PFP:31098

Removal and Installation

NCS0019H

Refer to the figure below for air breather hose removal and installation procedure.



1. Heater hose
2. Control cable
3. Air breather hose

⇦ : Vehicle front

CAUTION:

- **Securely insert the hose into the air breather until it touches the bottom.**
- **Set air breather hose with paint mark at vehicle left side.**

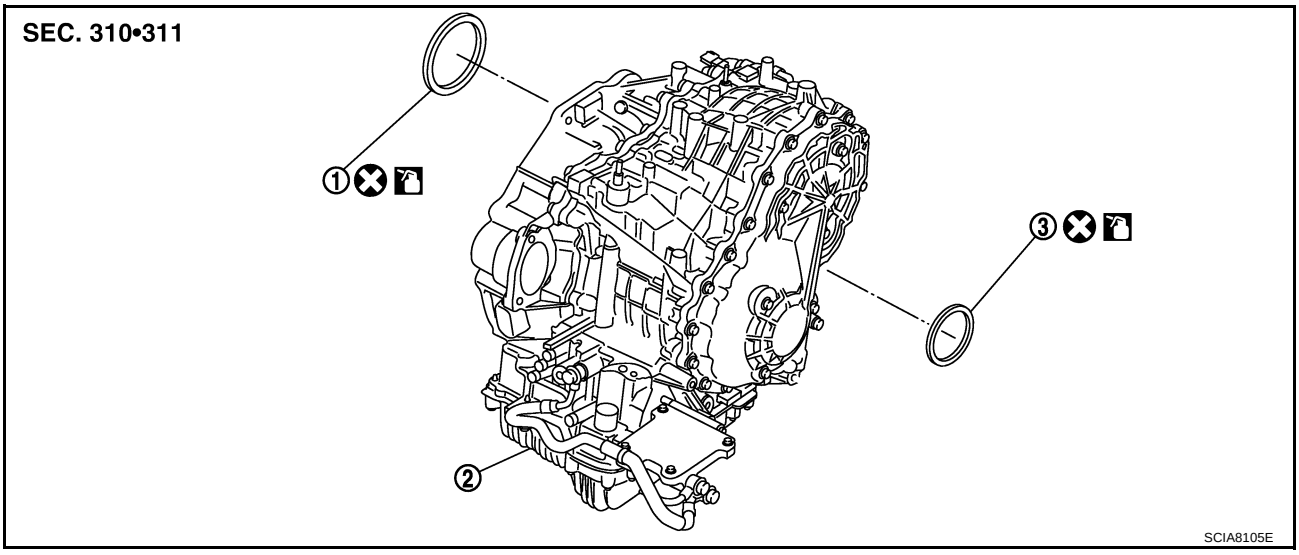
DIFFERENTIAL SIDE OIL SEAL

PFP:33111

Removal and Installation

NCS0019I

COMPONENTS



1. Differential side oil seal
2. Transaxle assembly
3. Differential side oil seal

Refer to GI section to make sure icons (symbol marks) in the figure. Refer to GI-10, "Components" .

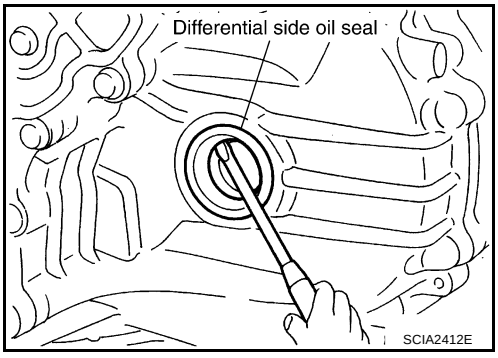
However, refer to the following symbols for others.

: CVT Fluid NS-2

REMOVAL

1. Remove drive shaft assembly. Refer to FAX-8, "FRONT DRIVE SHAFT" .
2. Remove transfer from transaxle assembly. (AWD models) Refer to TF-52, "Removal and Installation" .
3. Remove differential side oil seals using a flat-bladed screwdriver.

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



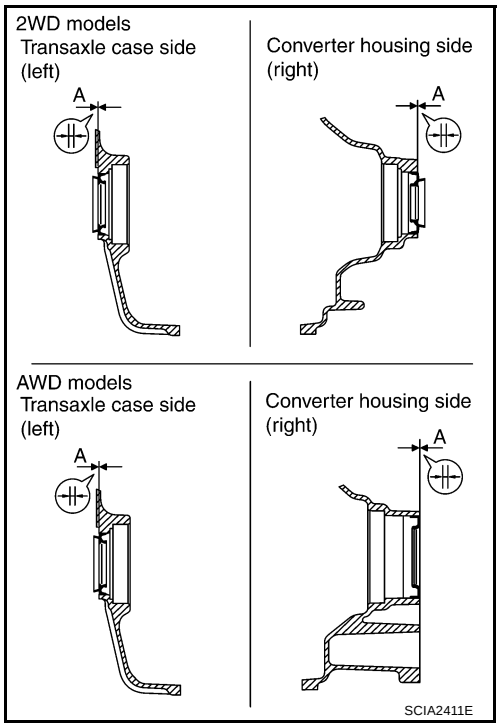
INSTALLATION

1. As shown below, use a drift to drive the differential side oil seals into the case until it is flush. Refer to dimensions A.

Unit: mm (in)

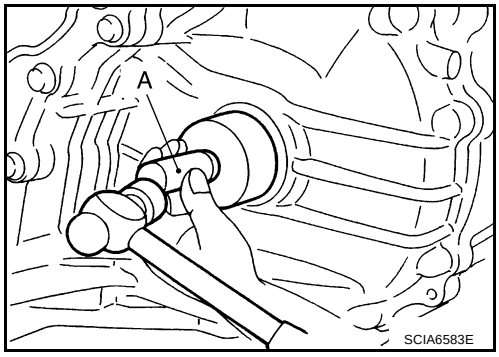
Dimensions A	0 ± 0.5 (0 ± 0.020)

NOTE:
The differential side oil seal pulling direction is used as the reference.



Drift to be used:

Location	2WD models	AWD models
Transaxle case side (left) Tool number: A (Kent-Moore No.)	— (J-47244)	— (J-47244)
Converter housing side (right) Tool number: A (Kent-Moore No.)	ST33400001 (J-47005)	— (J-34339-A)



CAUTION:
- **Do not reuse differential side oil seals.**
- **When installing differential side oil seals, apply NISSAN CVT Fluid NS-2.**

2. Reinstall any part removed.

CAUTION:
If lubricant leak has occurred, after finishing work, check fluid level. Refer to CVT-15, "Checking CVT Fluid" .

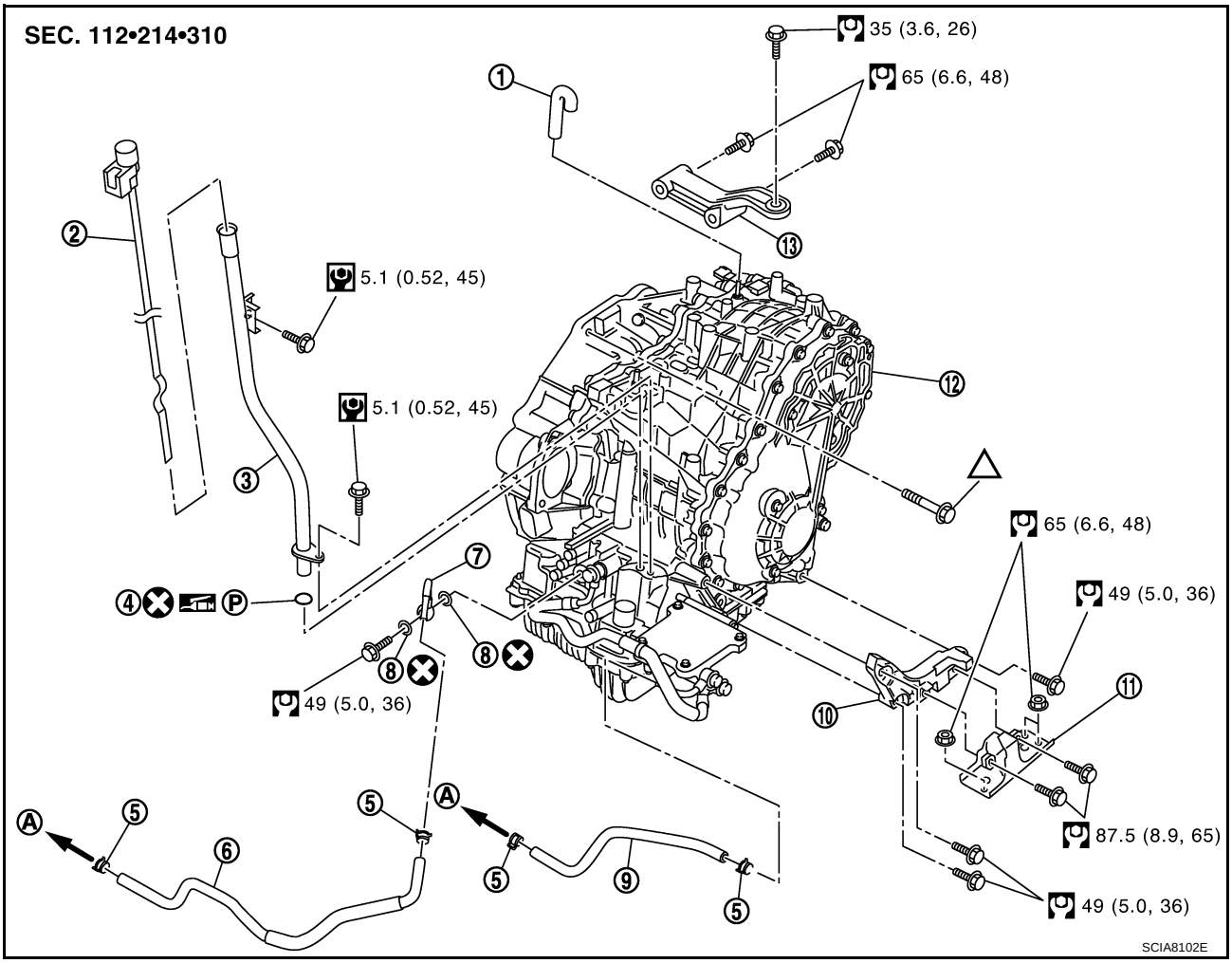
TRANSAXLE ASSEMBLY

PFP:32020

Removal and Installation

NCS0019L

COMPONENTS (2WD MODELS)



1. Air breather hose	2. CVT fluid level gauge	3. CVT fluid charging pipe
4. O-ring	5. Hose clamp	6. CVT fluid cooler hose
7. Fluid cooler tube	8. Copper washer	9. CVT fluid cooler hose
10. LH engine mounting bracket	11. LH engine mounting insulator	12. Transaxle assembly
13. Rear gusset		

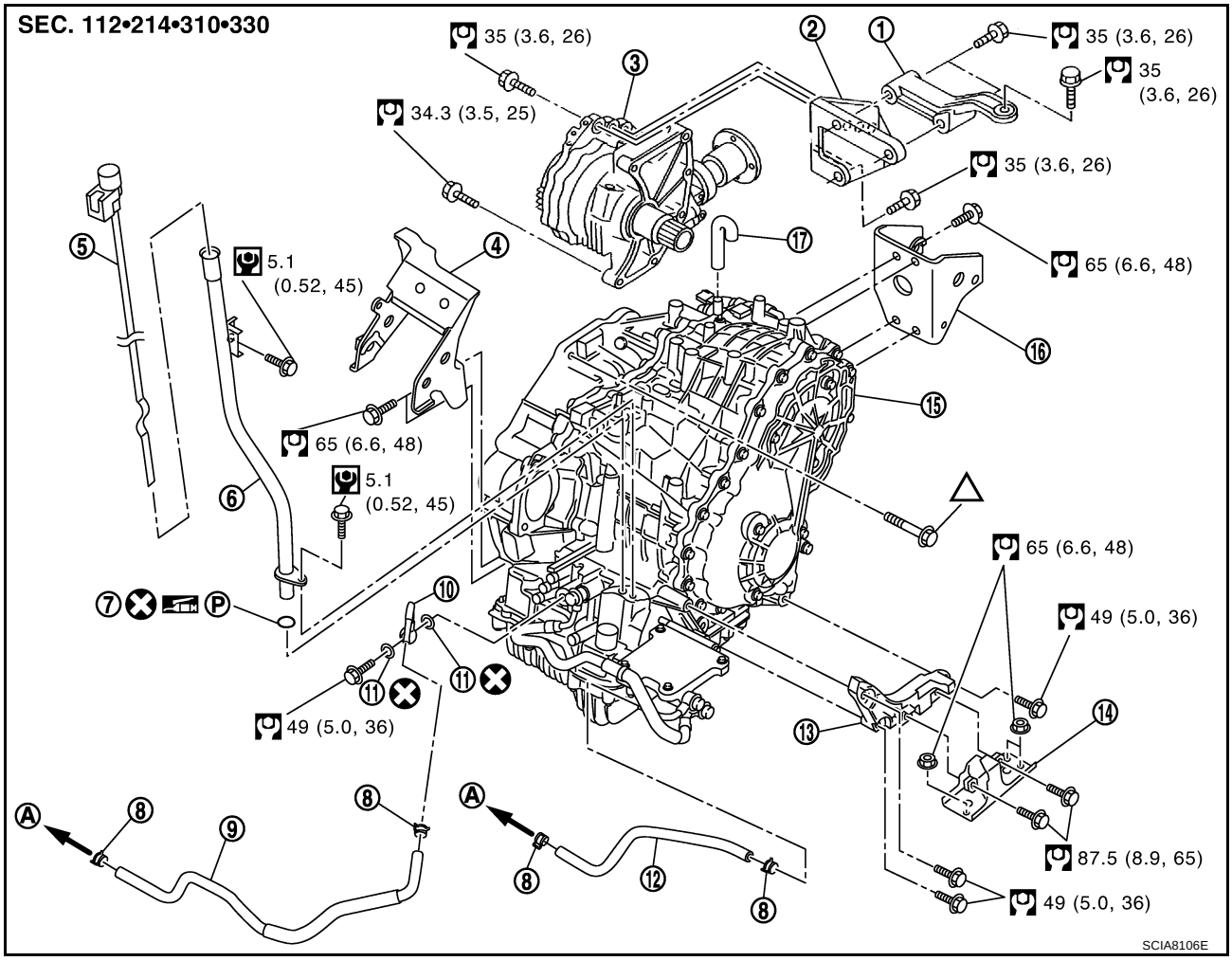
Refer to GI section to make sure icons (symbol marks) in the figure. Refer to GI-10, "Components" .

However, refer to the following symbols for others.

△ : For tightening torque, refer to CVT-220, "INSTALLATION" .

A : To radiator

COMPONENTS (AWD MODELS)



1. Rear gusset	2. Transfer gusset	3. Transfer assembly
4. Front engine mounting bracket	5. CVT fluid level gauge	6. CVT fluid charging pipe
7. O-ring	8. Hose clamp	9. CVT fluid cooler hose
10. Fluid cooler tube	11. Copper washer	12. CVT fluid cooler hose
13. LH engine mounting bracket	14. LH engine mounting insulator	15. Transaxle assembly
16. Rear engine mounting bracket	17. Air breather hose	

Refer to GI section to make sure icons (symbol marks) in the figure. Refer to GI-10, "Components" .

However, refer to the following symbols for others.

△ : For tightening torque, refer to CVT-220, "INSTALLATION" .

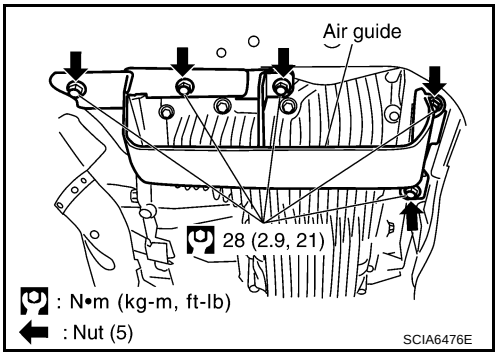
A : To radiator

REMOVAL

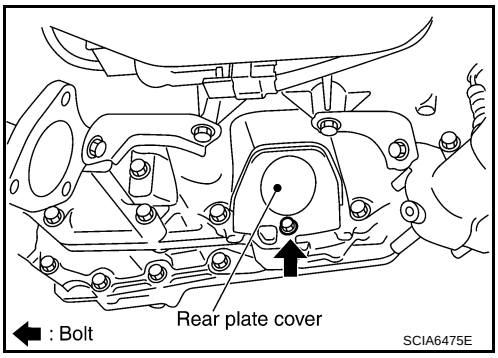
CAUTION:

The transaxle assembly itself cannot be removed from the vehicle. Remove the transaxle assembly and engine assembly together from the vehicle.

1. Disconnect the battery 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" .



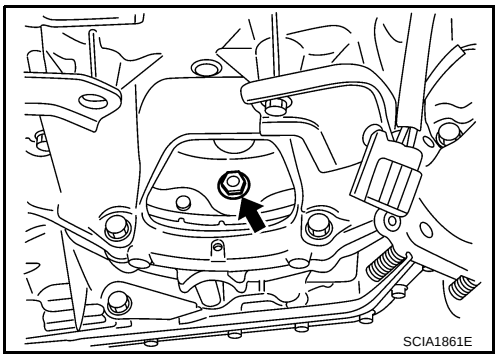
5. Remove rear plate cover. Refer to EM-29, "Removal and Installation" .



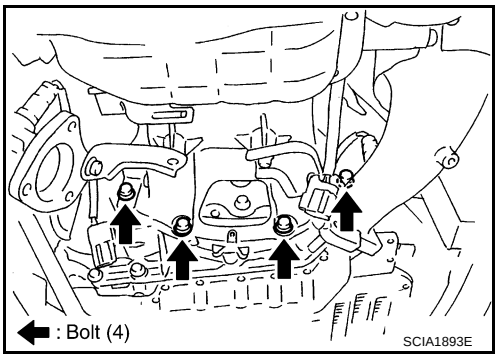
6. Turn crankshaft, and remove the four tightening nuts for drive plate and torque converter.

   CAUTION:

   The crankshaft should be rotated clockwise, viewed from the front of the engine.



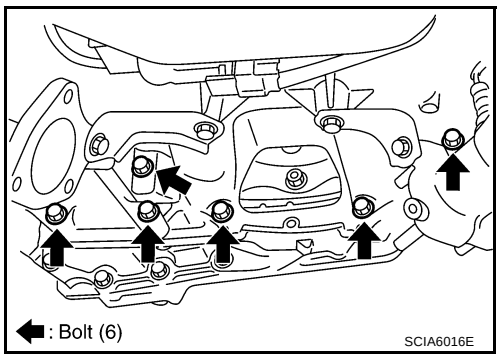
7. Remove the four bolts in the figure. (2WD models)

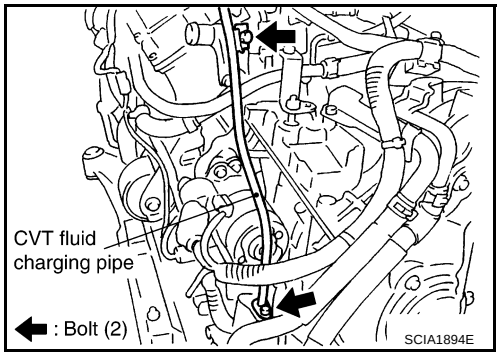


8. Remove the six bolts in the figure. (AWD models)
9. Remove transaxle assembly and engine assembly together from the vehicle. Refer to EM-108, "Removal and Installation" .
10. Remove drive shaft. Refer to FAX-11, "Removal and Installation (Left Side)" , FAX-12, "Removal and Installation (Right Side)" .

    CAUTION:
    Be sure to replace the differential side oil seal with new one at the every removal of drive shaft. Refer to CVT-213, "Removal and Installation" .
11. Remove rear gusset.
12. Remove transfer gusset. (AWD models)
13. Remove transfer assembly. Refer to TF-52, "Removal and Installation" . (AWD models)

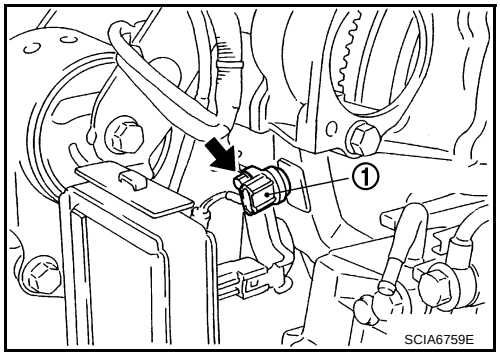
    CAUTION:
    Be sure to replace the differential side oil seal with new one (converter housing side only) at the every removal of transfer. Refer to CVT-213, "Removal and Installation" .
14. Remove CVT fluid level gauge.
15. Remove CVT fluid charging pipe.
16. Remove O-ring from CVT fluid charging pipe.
17. Disconnect harness connector and wire harness.



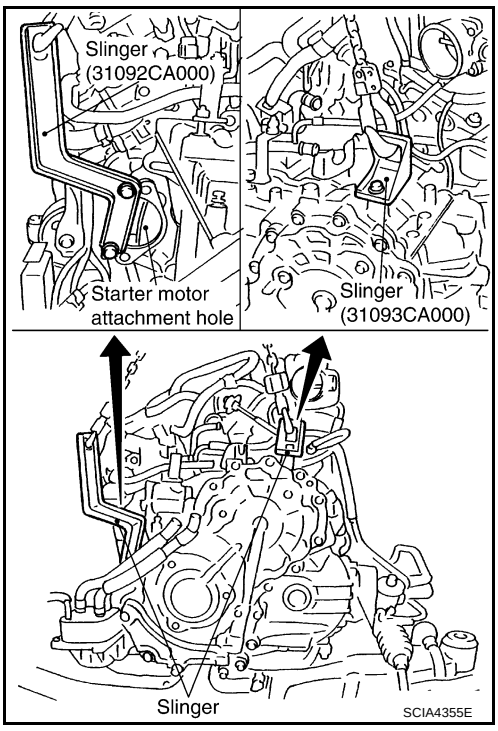


18. Remove crankshaft position sensor (POS) (1) from engine assembly. Refer to EM-29, "Removal and Installation" .

    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.**
19. Remove starter motor. Refer to SC-15, "Removal and Installation" .



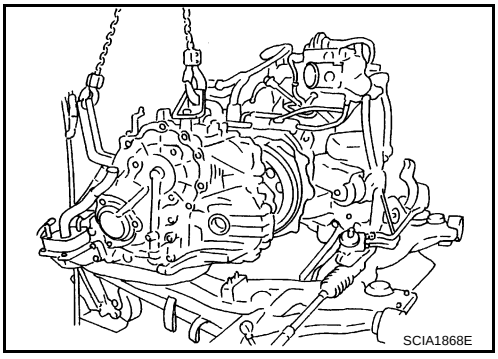
20. Install slinger to transaxle assembly.
21. Remove LH engine mounting bracket and LH engine mounting insulator.
22. Remove front suspension member from transaxle assembly and engine assembly. Refer to EM-108, "Removal and Installation" . (AWD models)
23. Remove front engine mounting bracket and rear engine mounting bracket.
24. Remove transaxle assembly fixing bolts with power tool.



25. Remove transaxle assembly from engine assembly with a hoist.

CAUTION:
Secure torque converter to prevent it from dropping.

26. Remove air breather hose. Refer to CVT-212, "Removal and Installation" .
27. Remove CVT fluid cooler hoses.
28. Remove fluid cooler tube.

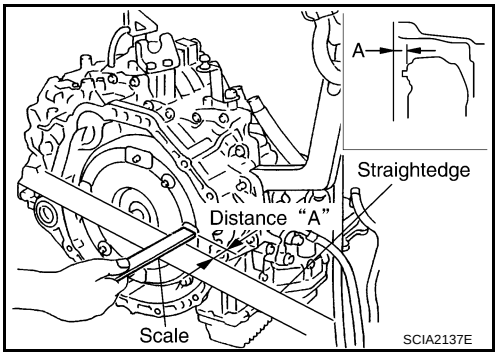


INSPECTION

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.

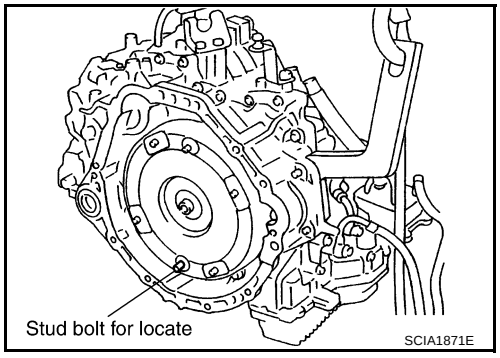
Distance “A”: 14.0 mm (0.55 in) or more



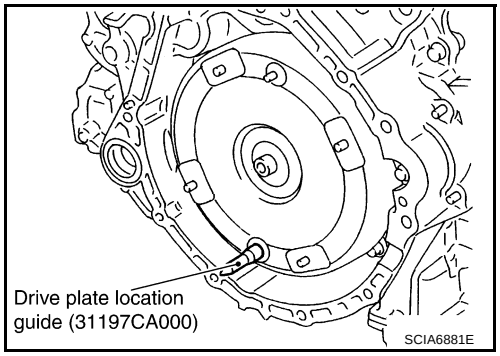
INSTALLATION

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

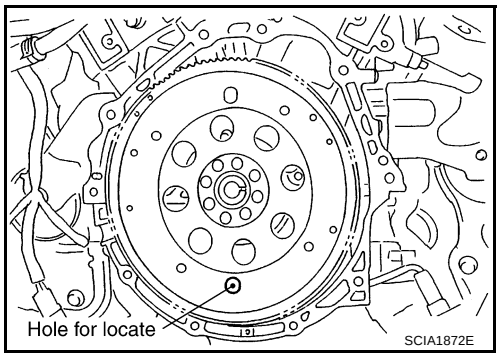
- Set and screw in the drive plate location guide onto the stud bolts for the torque converter locate.



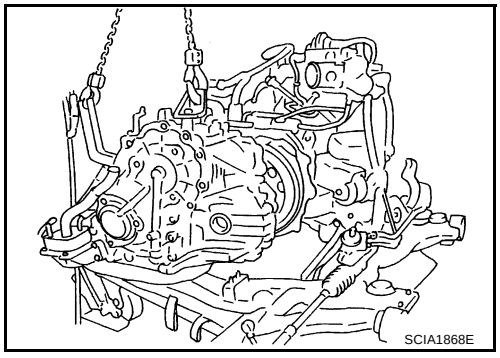
- Rotate the torque converter for the locate to go down.



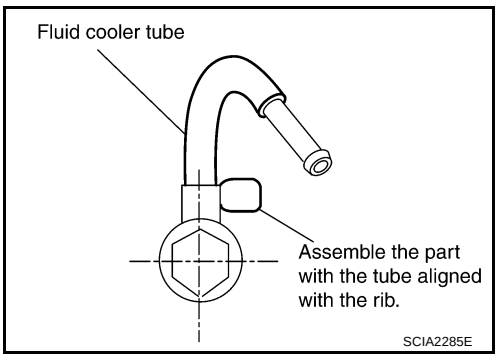
- Rotate the drive plate for the hole of the drive plate locate to go down.



- Install transaxle assembly to engine assembly with a hoist.

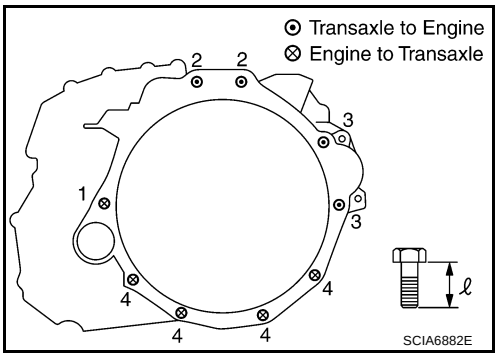


- When installing fluid cooler tube to transaxle assembly, assemble the part with the tube aligned with the rib.



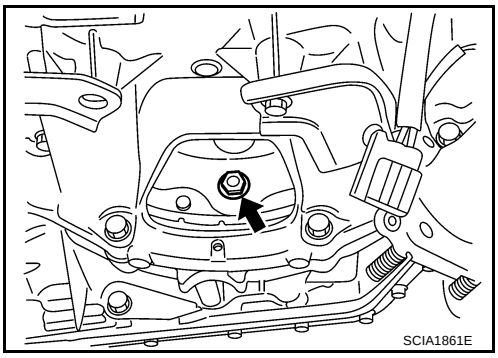
- When installing transaxle to the engine, attach the fixing bolts in accordance with the following standard.

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.

  : 51 N·m (5.2 kg-m, 38 ft-lb)



CAUTION:

- **Do not reuse O-ring and copper washers.**
- **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 EM-68, "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) sensor. Refer to EM-29, "Removal and Installation" .
- After completing installation, check for fluid leakage, fluid level, and the positions of CVT. Refer to CVT-15, "Checking CVT Fluid" , CVT-201, "Adjustment of CVT Position" , CVT-202, "Checking of CVT Position" .
- When replacing the CVT assembly, erase EEP ROM in TCM. Refer to CVT-9, "Precautions for TCM and CVT Assembly Replacement" .

SERVICE DATA AND SPECIFICATIONS (SDS)

PFP:00030

General Specifications

NCS0019M

Applied model		VQ35DE engine	
		2WD	AWD
CVT model		RE0F09A	
CVT assembly	Model code number	1XD0E	1XD0D
Transmission gear ratio	D range	Variable	
	Reverse	1.766	
	Final drive	5.173	
Recommended fluid		NISSAN CVT Fluid NS-2*1	
Fluid capacity		10.2 liter (10-6/8 US qt, 9 Imp qt)	

CAUTION:

- **Use only Genuine NISSAN CVT Fluid NS-2. Do not mix with other fluid.**
- **Using CVT fluid other than Genuine NISSAN CVT Fluid NS-2 will deteriorate in driveability and CVT durability, and may damage the CVT, which is not covered by the warranty.**

*1: Refer to MA-10, "Fluids and Lubricants" .

Vehicle Speed When Shifting Gears

NCS0019N

Numerical value data are reference values.

Engine type	Throttle position	Shift pattern	Engine speed (rpm)	
			At 40 km/h (25 MPH)	At 60 km/h (37 MPH)
VQ35DE	8/8	“D” position Second position* “L” position*	2,800 – 4,300	3,900 – 5,300
	2/8	“D” position	1,200 – 2,000	1,300 – 2,100
		Second position*	2,200 – 3,000	2,800 – 3,600
		“L” position*	2,800 – 3,600	3,800 – 4,600

*: Without manual mode

CAUTION:

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

Stall Speed

NCS0019O

Stall speed	2,700 – 3,250 rpm

Line Pressure

NCS0019P

Engine speed	Line pressure kPa (kg/cm^2 , psi)
	“R”, “D” and “L”*1 positions
At idle	750 (7.65, 108.8)
At stall	5,700 (58.14, 826.5)*2

*1: Without manual mode

*2: Reference values

Solenoid Valves

NCS0019Q

Name	Resistance (Approx.)	Terminal
Pressure control solenoid valve B (secondary pressure solenoid valve)	3.0 – 9.0 Ω	3
Pressure control solenoid valve A (line pressure solenoid valve)		2
Torque converter clutch solenoid valve		12
Lock-up select solenoid valve	6 – 19 Ω	13

CVT Fluid Temperature Sensor

NCS0019R

Name	Condition	CONSULT-II “DATA MONITOR” (Approx.)	Resistance (Approx.)
ATF TEMP SEN	20°C (68°F)	1.8 – 2.0 V	6.5 kΩ
	80°C (176°F)	0.6 – 1.0 V	0.9 kΩ

Primary Speed Sensor

NCS0019S

Name	Condition	Data (Approx.)
Primary speed sensor	When driving [“D” position, 20 km/h (12 MPH)]	720 Hz

Secondary Speed Sensor

NCS0019T

Name	Condition	Data (Approx.)
Secondary speed sensor	When driving [“D” position, 20 km/h (12 MPH)]	350 Hz

Removal and Installation

NCS0019U

Distance between end of converter housing and torque converter	14.0 mm (0.55 in) or more