SECTION CVT

CVT

CONTENTS

INDEX FOR DTC

PFP:00024

Alphabetical Index

ACS001S6

NOTE:
If DTC U1000 is displayed with other DTC, first perform the trouble diagnosis for DTC U1000. Refer to CVT-76 .

Items (CONSULT-II screen terms)	DTC		Reference page
	OBD-II	Except OBD-II	
	CONSULT-II GST*1	CONSULT-II only "TRANSMISSION"	
A/T TCC S/V FNCTN	P0744	P0744	CVT-117
ATF TEMP SEN/CIRC	P0710	P0710	CVT-90
BELT DAMG	—	P0730	CVT-110
BRAKE SW/CIRC	—	P0703	CVT-83
CAN COMM CIRCUIT	U1000	U1000	CVT-76
CVT SPD SEN/FNCTN	—	P1723	CVT-159
ENGINE SPEED SIG	—	P0725	CVT-108
ELEC TH CONTROL	—	P1726	CVT-161
ESTM VEH SPD SIG	—	P1722	CVT-157
INPUT SPD SEN/CIRC (IN PY SPD SEN/CIRC)*2	P0715	P0715	CVT-95
L/PRESS CONTROL	—	P1745	CVT-167
L/PRESS SOL/CIRC	P0745	P0745	CVT-120
PRS CNT SOL/A FCTN (L/PRESS SOL/FNCTN)*2	P0746	P0746	CVT-125
LU-SLCT SOL/CIRC	P1740	P1740	CVT-163
PNP SW/CIRC	P0705	P0705	CVT-85
PRESS SEN/FNCTN	—	P0841	CVT-140
TR PRS SENS/B CIRC (PRI PRS SEN/CIRC)*2	P0845	P0845	CVT-143
SEC/PRESS DOWN	—	P0868	CVT-147
PRS CNT SOL/B CIRC (SEC/PRESS SOL/CIRC)*2	P0778	P0778	CVT-131
PRS CNT SOL/B FCTN (SEC/PRESS SOL/FNCTN)*2	P0776	P0776	CVT-128
TR PRS SENS/A CIRC (SEC PRS SEN/CIRC)*2	P0840	P0840	CVT-135
STARTER RELAY/CIRC	—	P0615	CVT-79
STEP MOTOR/CIRC	P1777	P1777	CVT-168
STEP MOTOR/FNCTN	P1778	P1778	CVT-173
TCC SOLENOID/CIRC	P0740	P0740	CVT-112
TCM-POWER SUPPLY	—	P1701	CVT-150
TP SEN/CIRC A/T	—	P1705	CVT-155
VEH SPD SEN/CIR AT	P0720	P0720	CVT-101

*1: These numbers are prescribed by SAE J2012.
*2: CONSULT-II screen terms are shown differently depending on the version of CONSULT-II card.

DTC No. Index

ACS001S7

NOTE:
If DTC U1000 is displayed with other DTC, first perform the trouble diagnosis for DTC U1000. Refer to CVT-76 .

DTC		Items (CONSULT-II screen terms)	Reference page
OBD-II	Except OBD-II		
CONSULT-II GST*1	CONSULT-II only "TRANSMISSION"		
—	P0615	STARTER RELAY/CIRC	CVT-79
—	P0703	BRAKE SW/CIRC	CVT-83
P0705	P0705	PNP SW/CIRC	CVT-85
P0710	P0710	ATF TEMP SEN/CIRC	CVT-90
P0715	P0715	INPUT SPD SEN/CIRC (IN PY SPD SEN/CIRC)*2	CVT-95
P0720	P0720	VEH SPD SEN/CIR AT	CVT-101
—	P0725	ENGINE SPEED SIG	CVT-108
—	P0730	BELT DAMG	CVT-110
P0740	P0740	TCC SOLENOID/CIRC	CVT-112
P0744	P0744	A/T TCC S/V FNCTN	CVT-117
P0745	P0745	L/PRESS SOL/CIRC	CVT-120
P0746	P0746	PRS CNT SOL/A FCTN (L/PRESS SOL/FNCTN)*2	CVT-125
P0776	P0776	PRS CNT SOL/B FCTN (SEC/PRESS SOL/FNCTN)*2	CVT-128
P0778	P0778	PRS CNT SOL/B CIRC (SEC/PRESS SOL/CIRC)*2	CVT-131
P0840	P0840	TR PRS SENS/A CIRC (SEC PRS SEN/CIRC)*2	CVT-135
—	P0841	PRESS SEN/FNCTN	CVT-140
P0845	P0845	TR PRS SENS/B CIRC (PRI PRS SEN/CIRC)*2	CVT-143
—	P0868	SEC/PRESS DOWN	CVT-147
—	P1701	TCM-POWER SUPPLY	CVT-150
—	P1705	TP SEN/CIRC A/T	CVT-155
—	P1722	ESTM VEH SPD SIG	CVT-157
—	P1723	CVT SPD SEN/FNCTN	CVT-159
—	P1726	ELEC TH CONTROL	CVT-161
P1740	P1740	LU-SLCT SOL/CIRC	CVT-163
—	P1745	L/PRESS CONTROL	CVT-167
P1777	P1777	STEP MOTOR/CIRC	CVT-168
P1778	P1778	STEP MOTOR/FNCTN	CVT-173
U1000	U1000	CAN COMM CIRCUIT	CVT-76

*1: These numbers are prescribed by SAE J2012.
*2: CONSULT-II screen terms are shown differently depending on the version of CONSULT-II card.

PRECAUTIONS

PFP:00001

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

ACS003KX

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 TCM and CVT Assembly Replacement

ACS001SA

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.
2. Turn ignition switch “ON”. Confirm that CONSULT-II is turned “ON”.
3. Move selector lever to “R” position.
4. Touch “START” on CONSULT-II.
5. Select “SELF-DIAG RESULTS” mode for “TRANSMISSION” with CONSULT-II.
6. 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 TRANSMISSION

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

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

CHECK METHOD

- Normal: About 2 seconds after the ignition is switched to “ON” position, the CVT indicator lamp lights up for 2 seconds.
- Non-standard: Even after the ignition is switched to “ON” position, the CVT indicator lamp does not light up after 2 seconds or illuminates immediately.

CAUTION:
Perform in the P or N position.

Cope for non-standard

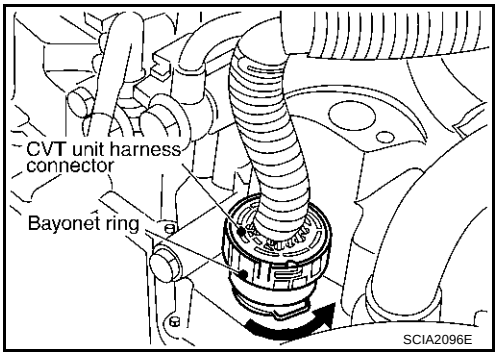
- Replace the CVT assembly.
- Replace the TCM.

Removal and Installation Procedure for CVT Unit Connector

ACS003L1

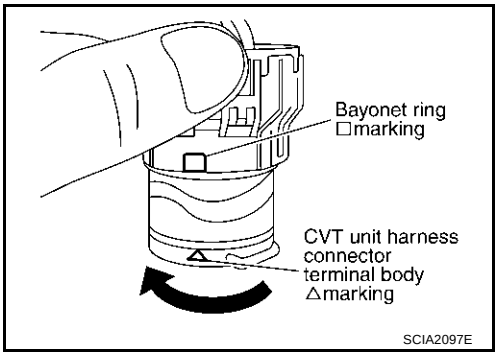
REMOVAL

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

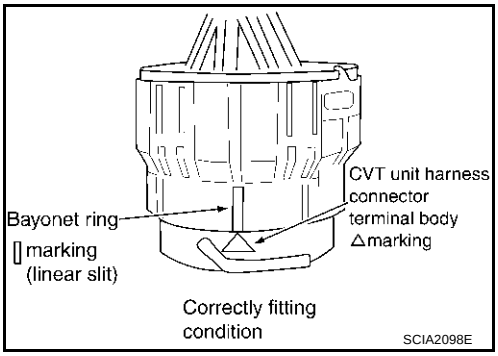


INSTALLATION

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.

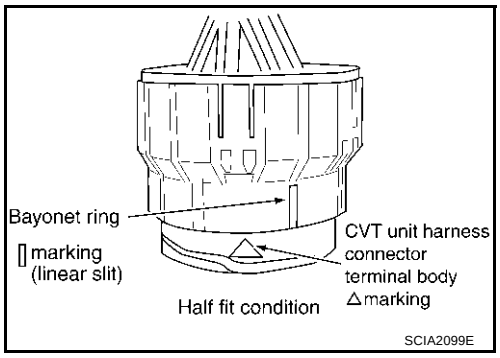


2. Rotate bayonet ring clockwise until Δ marking on CVT unit harness connector terminal body is aligned with the slit on bayonet ring as shown in the figure (correctly fitting condition), install CVT unit harness connector to CVT unit harness connector terminal body.



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.**

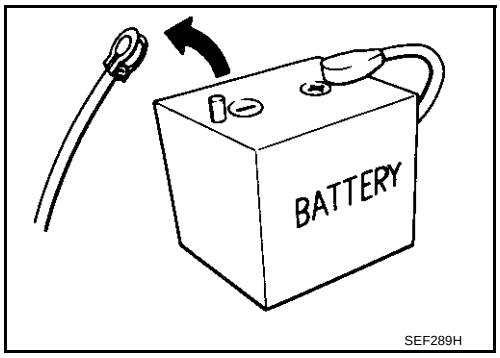


Precautions

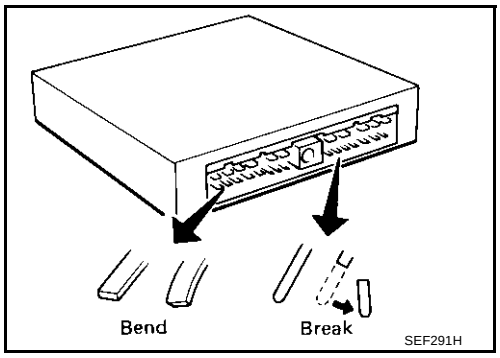
ACS001SB

NOTE:
If any malfunctions occur in the RE0F09A model transaxle, replace the entire transaxle assembly.

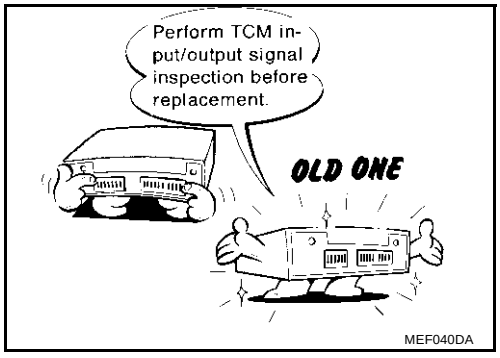
- **Before connecting or disconnecting the TCM harness connector, turn ignition switch "OFF" and disconnect negative battery cable. Because battery voltage is applied to TCM even if ignition switch is turned "OFF".**



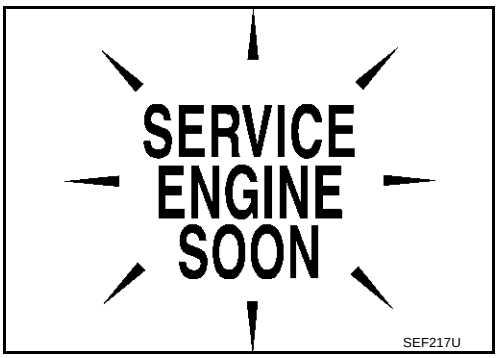
- **When connecting or disconnecting pin connectors into or from TCM, take care not to damage pin terminals (bend or break).**
  When connecting pin connectors make sure that there are not any bends or breaks on TCM pin terminal.



- **Before replacing TCM, perform TCM input/output signal inspection and make sure whether TCM functions properly or not.** **CVT-63, "TCM INSPECTION TABLE"**.



- **After performing each TROUBLE DIAGNOSIS, perform "DTC (Diagnostic Trouble Code) 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-11, "Fluids and Lubricants" .
- Use paper rags, 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

ACS001SC

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 CVT indicator or the malfunction indicator lamp (MIL). Refer to the table on CVT-71, "Self-Diagnostic Result Test Mode" 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-46, "HOW TO ERASE DTC" to complete the repair and avoid unnecessary blinking of the MIL.

For details of OBD-II, refer to EC-68, "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-79, "HARNESS CONNECTOR".**

Wiring Diagrams and Trouble Diagnosis

ACS001SD

When you read wiring diagrams, refer to the following:

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

When you perform trouble diagnosis, refer to the following:

- GI-10, "How to Follow Trouble Diagnoses".
- GI-26, "How to Perform Efficient Diagnosis for an Electrical Incident".

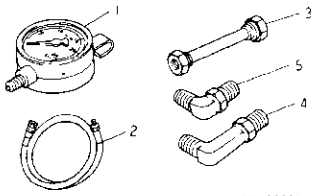
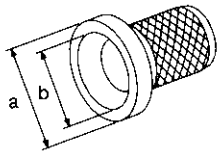
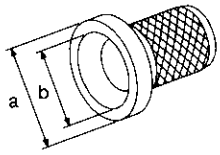
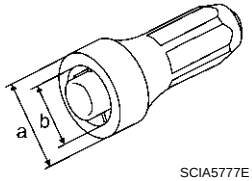
PREPARATION

PFP:00002

Special Service Tools

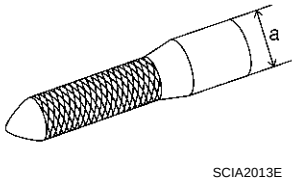
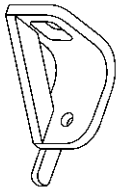
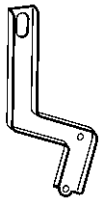
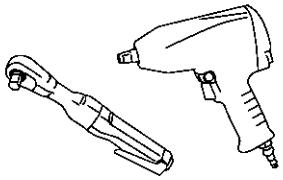
ACS001SE

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
ST2505S001 (J34301-C) Oil pressure gauge set 1 ST25051001 (—) Oil pressure gauge 2 ST25052000 (—) Hose 3 ST25053000 (—) Joint pipe 4 ST25054000 (—) Adapter 5 ST25055000 (—) Adapter  ZZA0600D	Measuring line pressure
KV40100621 (J25273) Drift a: 76 mm (2.99 in) dia. b: 69 mm (2.72 in) dia  NT086	Installing differential side oil seal ● With AWD models ● Converter housing side (right)
ST33400001 (J26082) Drift a: 60 mm (2.36 in) dia. b: 47 mm (1.85 in) dia.  NT086	Installing differential side oil seal ● Transaxle case side (left)
ST33400001 (J47005) 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

ACS001SF

(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 bolts and nuts

CVT FLUID

PFP:KLE50

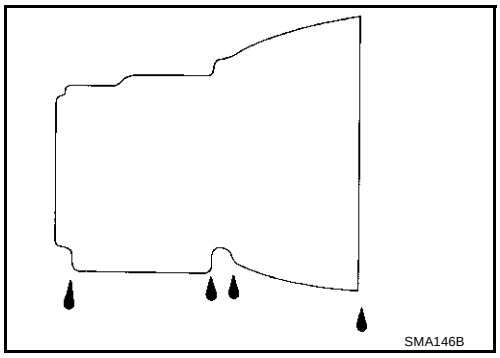
Checking CVT Fluid

ACS002KW

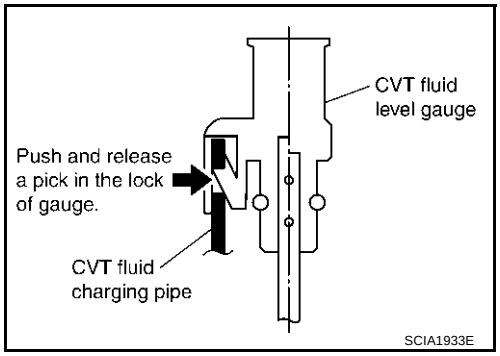
FLUID LEVEL CHECK

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 - 80°C (122 - 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.



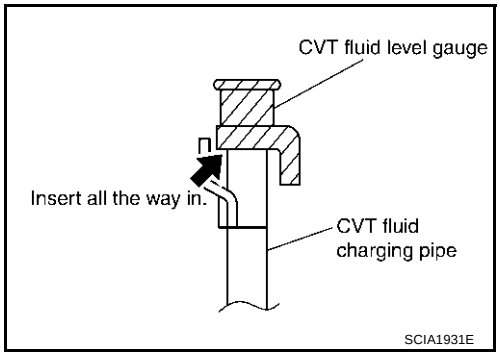
6. Pull out the dipstick from the CVT fluid charging pipe after pressing the tab on the dipstick to release the lock.



7. Wipe fluid off the dipstick and rotate the dipstick attached for 180° to securely insert the dipstick until it meets the end of the CVT fluid charging pipe.

   CAUTION:

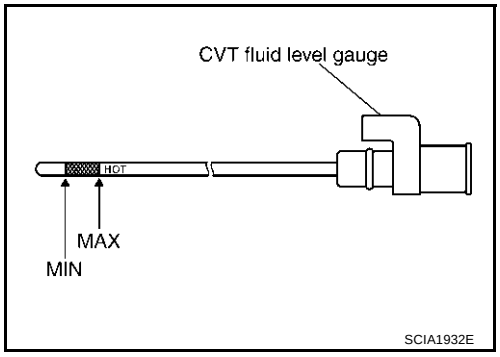
   Always use paper towels to wipe fluid off the dipstick.



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

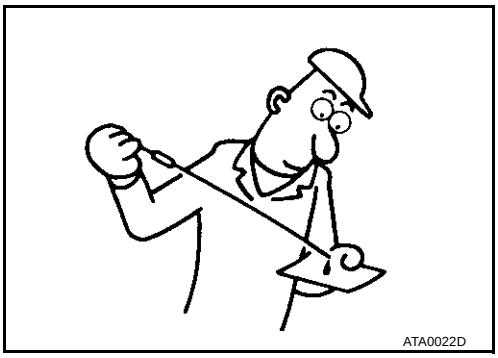
   CAUTION:

   - **When CVT fluid level gauge reinstall, insert CVT fluid charging pipe until CVT fluid level gauge is locking surely.**



FLUID CONDITION CHECK

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.



ACS002KX

Changing CVT Fluid

1. Warm up CVT fluid by driving the vehicle for 10 minutes.
2. Drain CVT fluid from CVT fluid cooler hose (return side) 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 (return side).
   About 30 to 50% extra fluid will be required for this procedure.

   Fluid capacity

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

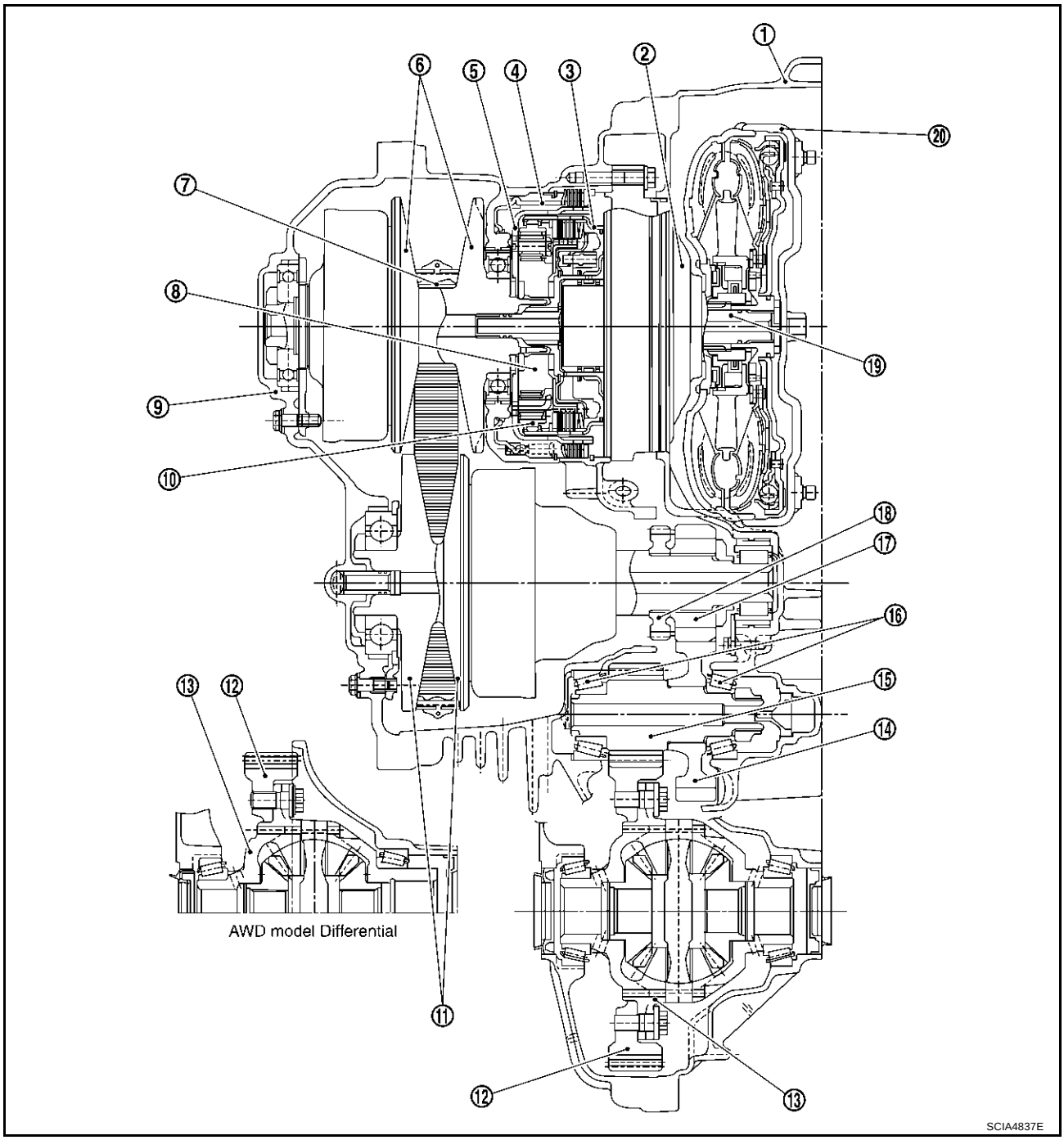
   CAUTION:
   - **Use genuine NISSAN CVT fluid NS-2.**
   - **Delete CVT fluid deterioration date with CONSULT-II after changing CVT fluid. Refer to CVT-68, "Check CVT Fluid Deterioration Date" .**
4. Check fluid level and condition.

CVT SYSTEM

PFP:31036

Cross-Sectional View - RE0F09A

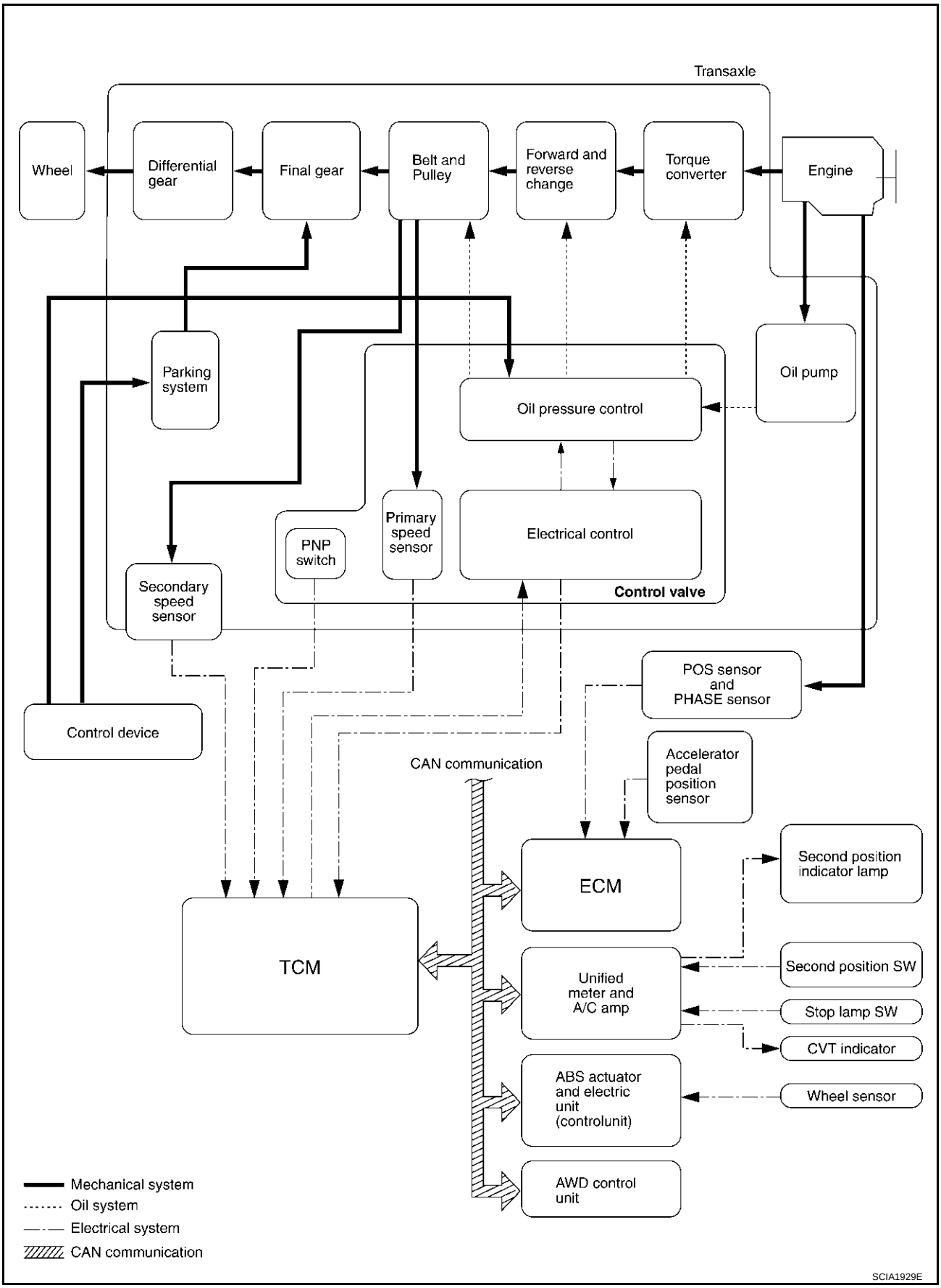
ACS0020F



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

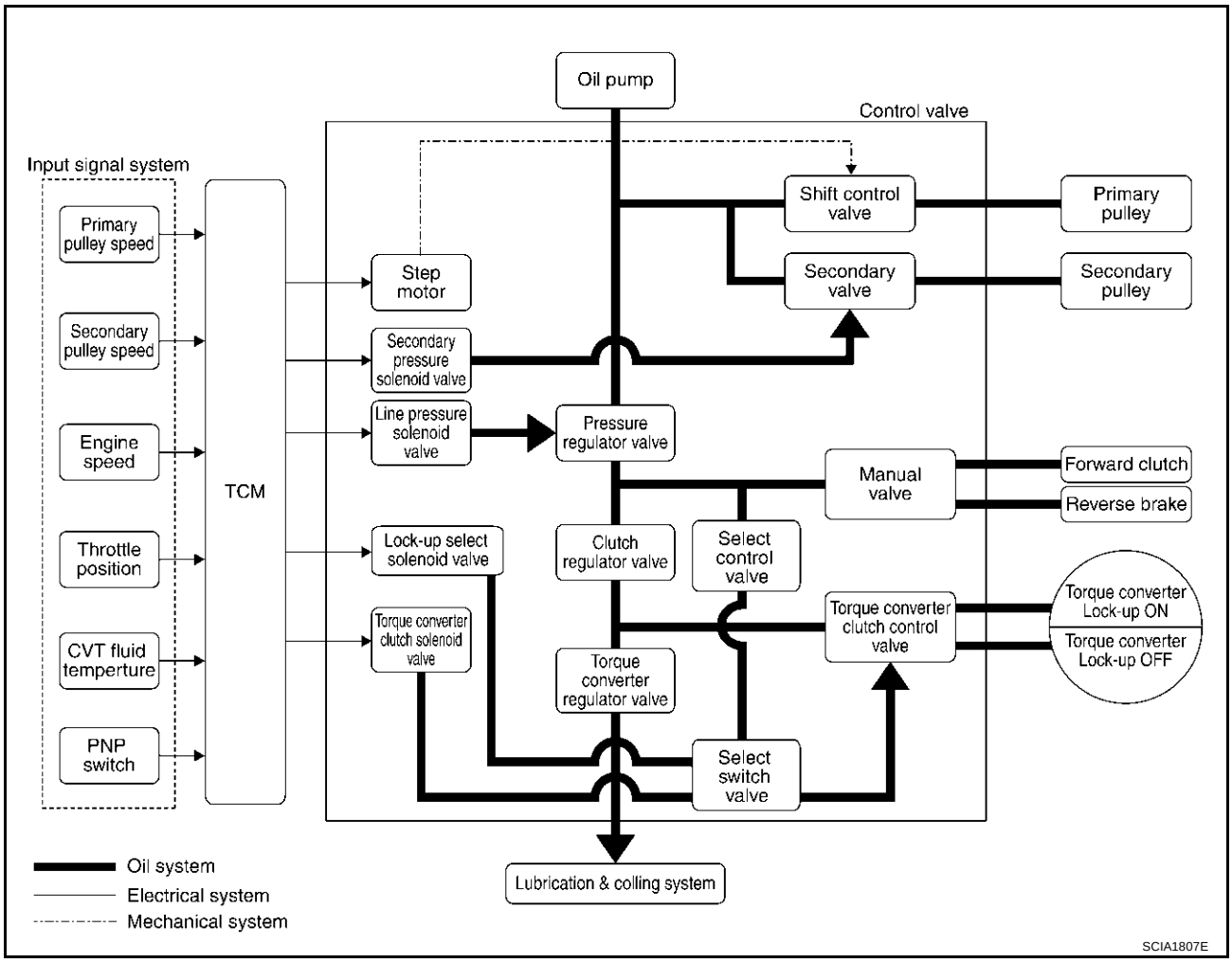
Control System

ACS0029J



Hydraulic Control System

ACS002IN



TCM Function

ACS0020H

The function of the TCM is to:

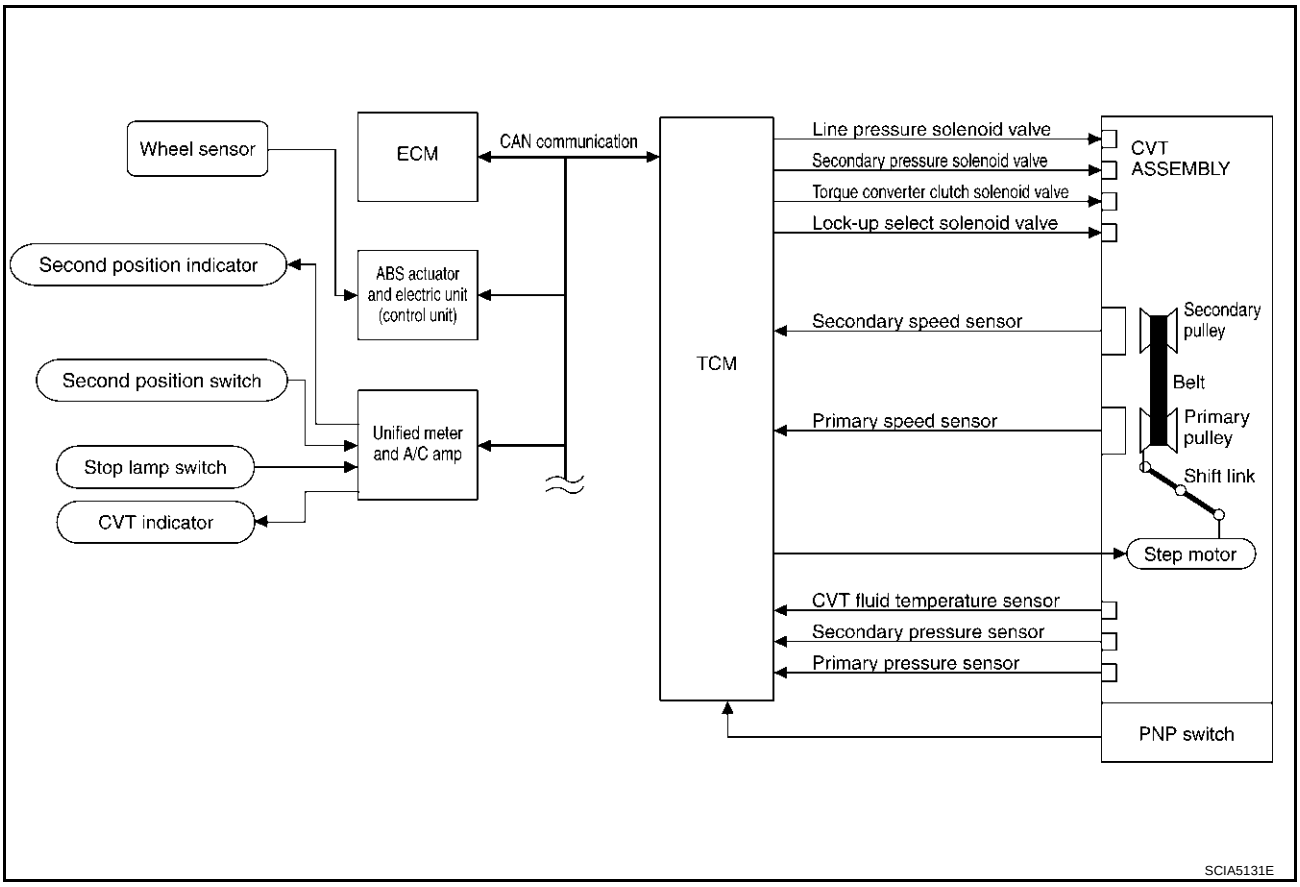
- Receive input signals sent from various switches and sensors.
- Determine required line pressure, shifting point, and lock-up operation.
- Send required output signals to the step motor and the respective solenoids.

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 Engine torque signal CVT fluid temperature sensor Vehicle speed signal Second position switch signal Stop lamp switch signal Primary speed sensor Secondary speed sensor Primary pressure sensor Secondary pressure sensor	⇒	Shift control Line pressure control Primary pressure control Secondary pressure control Lock-up control Engine brake control Vehicle speed control Fail-safe control Self-diagnosis CONSULT-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 Second position indicator lamp

CONTROL SYSTEM DIAGRAM



CAN Communication Unit For 2WD Models

ACS003L3

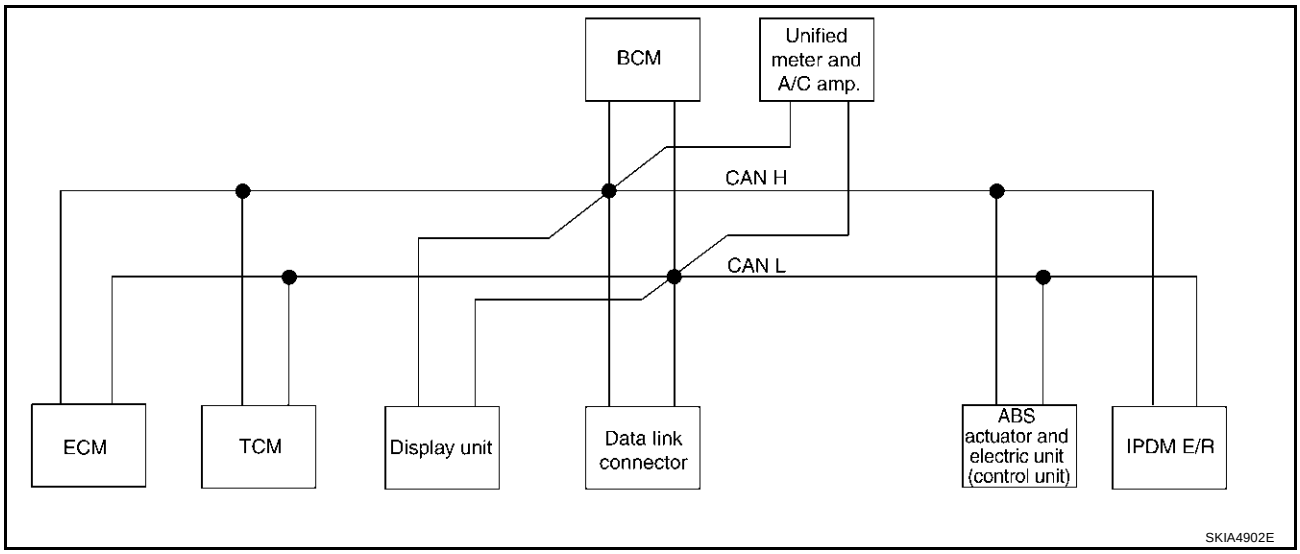
SYSTEM DESCRIPTION

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.

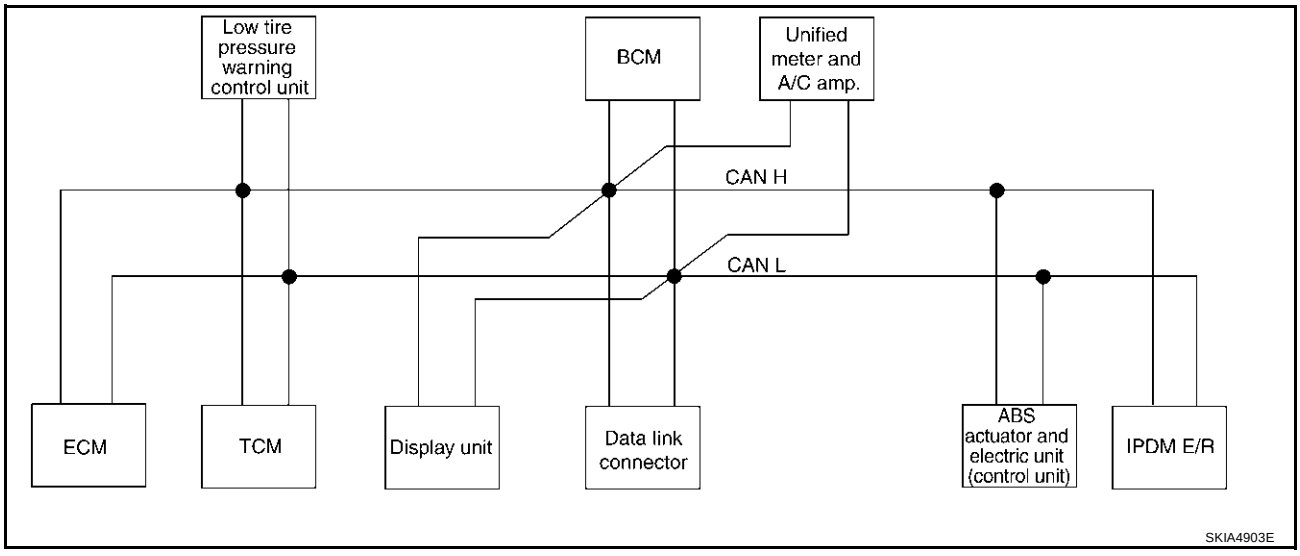
TYPE 1/TYPE 2/TYPE 3/TYPE 4/TYPE 5/TYPE 6/TYPE 7/TYPE 8

System Diagram

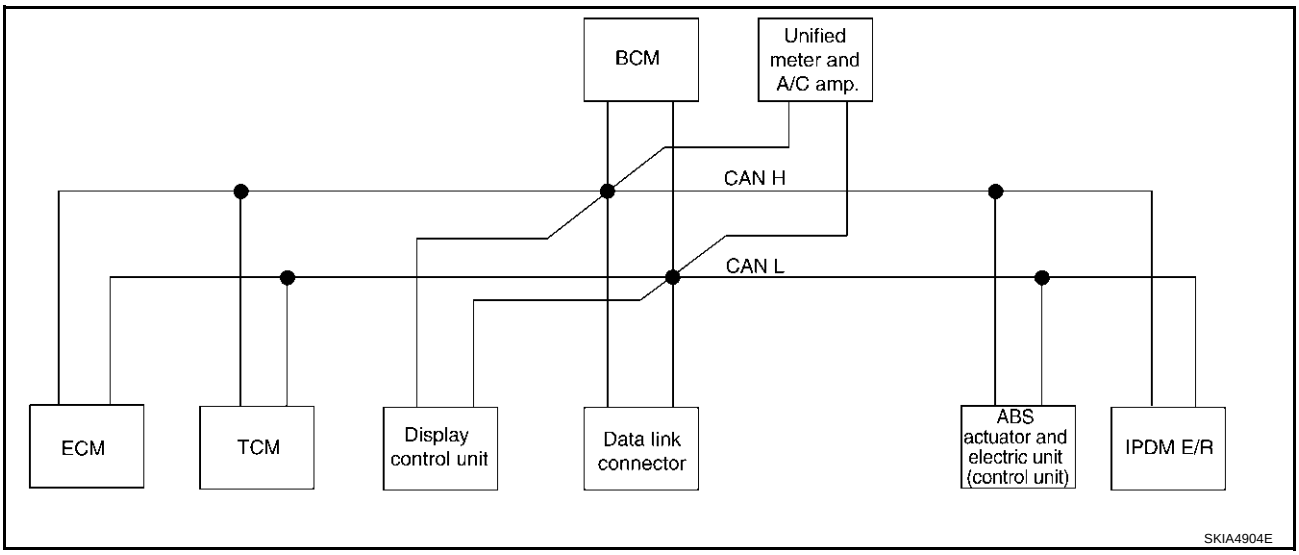
- Type1



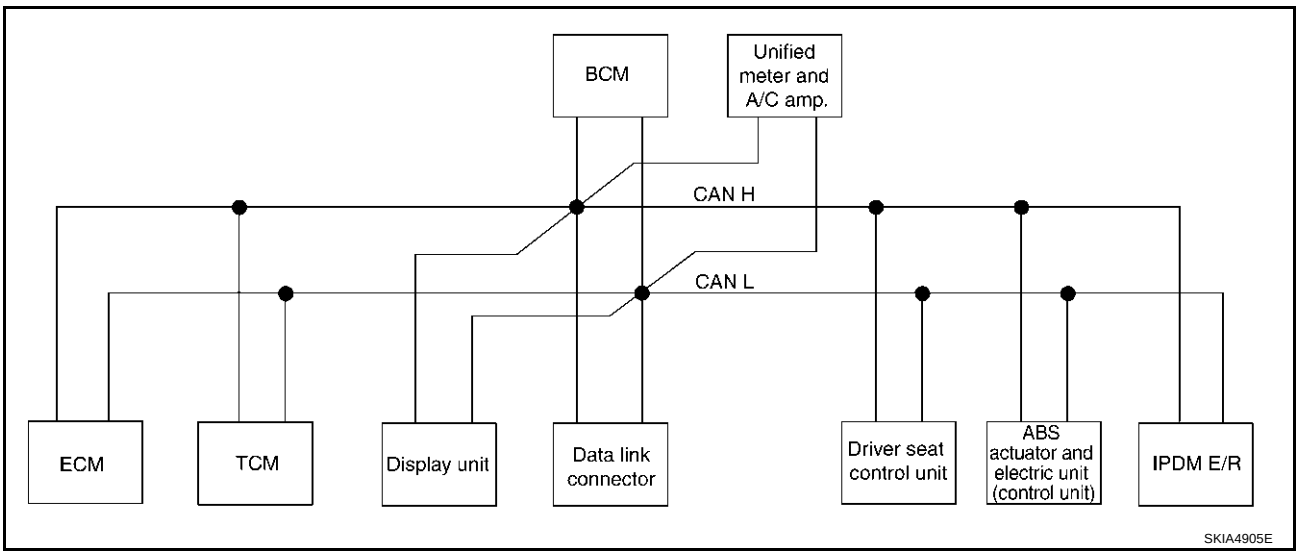
- Type2



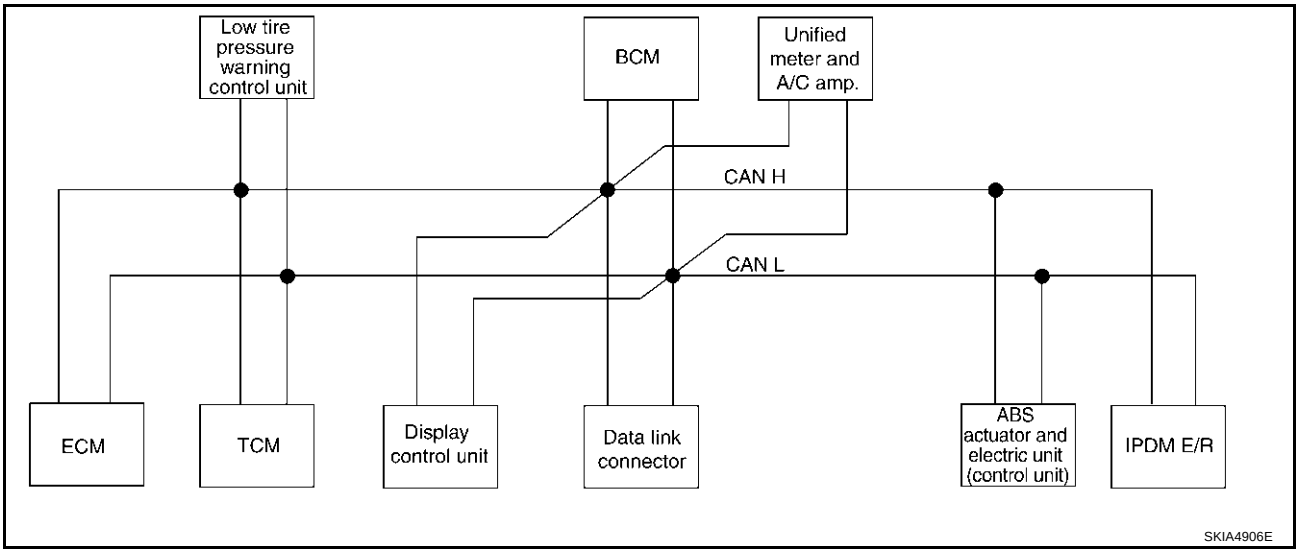
- Type3



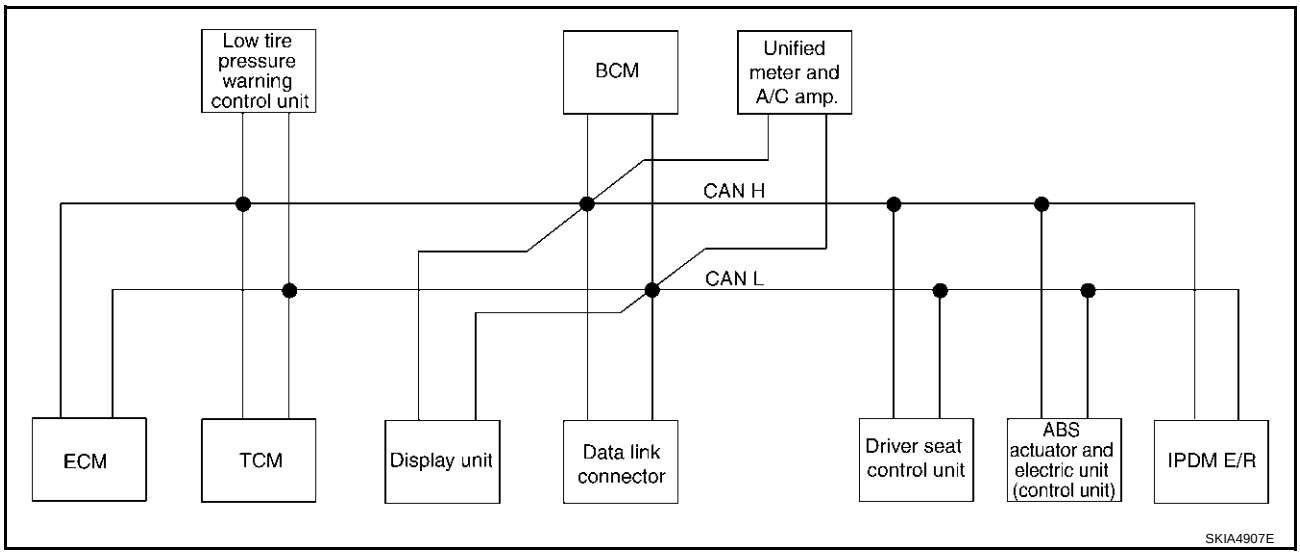
- Type4



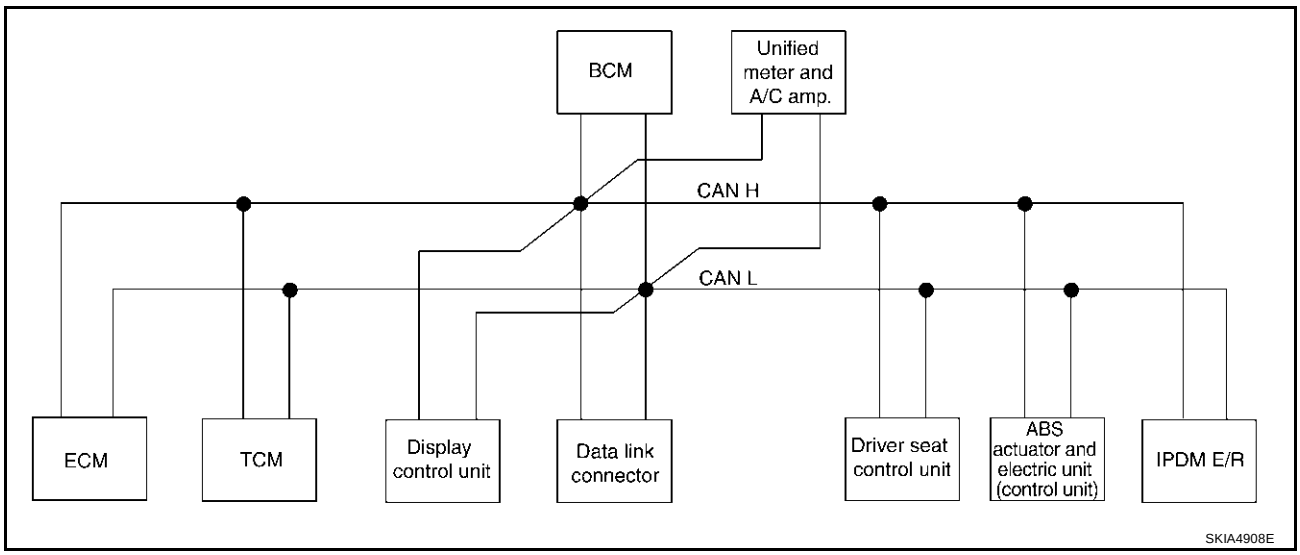
- Type5



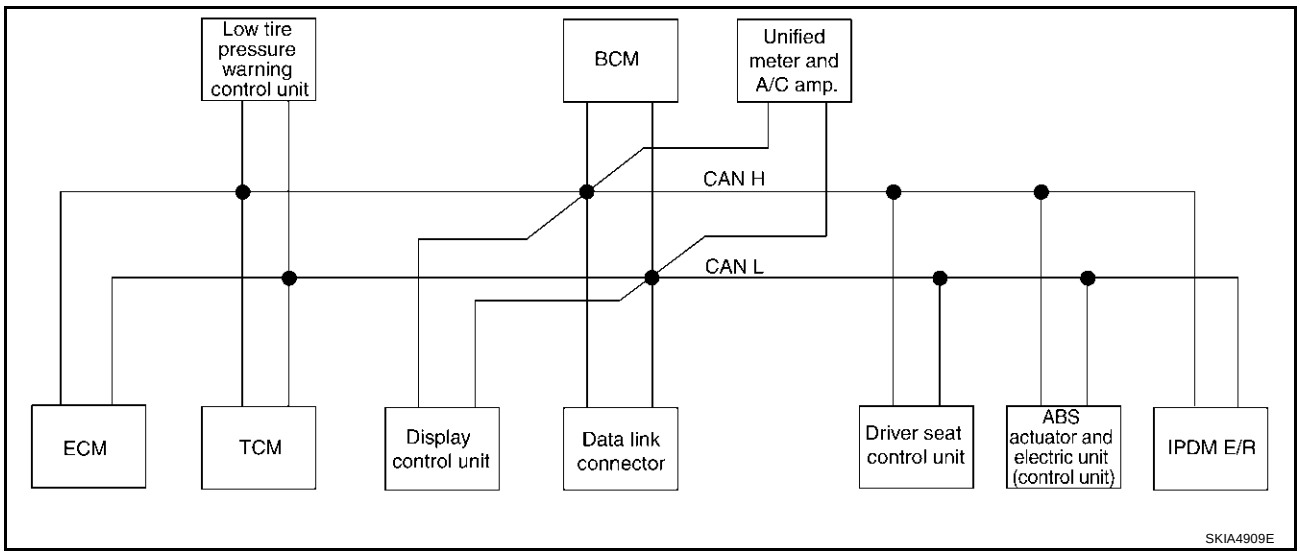
- Type6



- Type7



- Type8



Input/Output Signal Chart

T: Transmit R: Receive

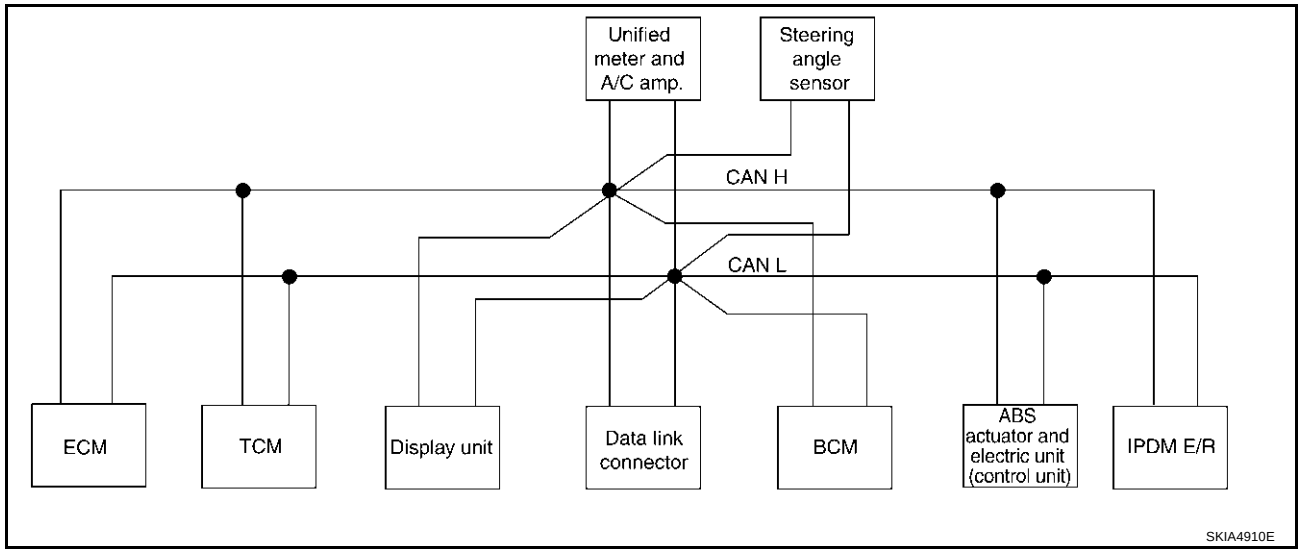
Signals	ECM	TCM	Low tire pressure warning control unit	Display unit	Display control unit	BCM	Unified meter and A/C amp.	Driver seat control unit	ABS actuator and electric unit (control unit)	IPDM E/R
Engine speed signal	T	R			R	R	R			
Engine status signal	T					R				
Engine coolant temperature signal	T						R			
CVT position indicator signal		T					R			
Second position signal		R					T			
Second position indicator signal		T					R			
Engine and CVT integrated control signal	T	R								
	R	T								
Accelerator pedal position signal	T	R								
Closed throttle position signal	T	R								
Wide open throttle position signal	T	R								
Key switch signal						T		R		
Ignition switch signal						T		R		R
P range signal		T						R		
Stop lamp switch signal		R					T			
Fuel consumption monitor signal	T						R			
CVT self-diagnosis signal	R	T								
ABS operation signal		R							T	
Air conditioner switch signal	R					T				
A/C compressor request signal	T									R
A/C compressor feedback signal	T						R			
Blower fan motor switch signal	R					T				
A/C control signal				T	T		R			
				R	R		T			
Cooling fan speed request signal	T									R
Position lights request signal						T	R			R
Low beam request signal						T				R
Low beam status signal	R									T
High beam request signal						T	R			R
High beam status signal	R									T
Front fog lights request signal						T				R
Vehicle speed signal		R					R		T	
	R		R		R	R	T	R		
Sleep request 1 signal						T	R			
Sleep request 2 signal						T				R
Door switch signal						R	T			
				R	R	T	R	R		R
Turn indicator signal						T	R			

Signals	ECM	TCM	Low tire pressure warning control unit	Display unit	Display control unit	BCM	Unified meter and A/C amp.	Driver seat control unit	ABS actuator and electric unit (control unit)	IPDM E/R
Key fob ID signal						T		R		
Key fob door unlock signal						T		R		
Seat belt buckle switch signal						R	T			
Oil pressure switch signal						R				T
						T	R			
Buzzer output signal						T	R			
Fuel level sensor signal	R						T			
Fuel level low warning signal				R	R		T			
Malfunction indicator lamp signal	T						R			
ASCD SET lamp signal	T						R			
ASCD CRUISE lamp signal	T						R			
Input shaft revolution signal	R	T								
Output shaft revolution signal	R	T								
Front wiper request signal						T				R
Front wiper stop position signal						R				T
Rear window defogger switch signal						T				R
Rear window defogger control signal	R			R	R					T
Hood switch signal						R				T
Theft warning horn request signal						T				R
Horn chirp signal						T				R
Tire pressure signal			T				R			
Tire pressure data signal			T	R	R					
ABS warning lamp signal							R		T	
Brake warning lamp signal							R		T	
System setting signal				T	T			R		
Parking brake switch signal						R	T			

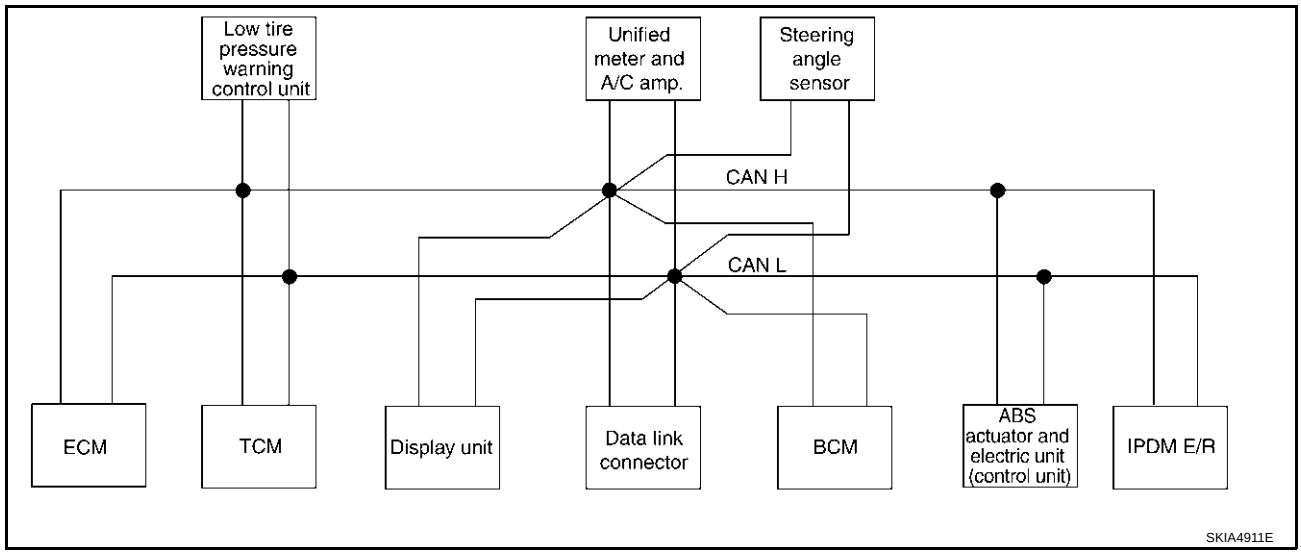
TYPE 9/TYPE10/TYPE 11/TYPE 12/TYPE 13/TYPE 14/TYPE 15/TYPE 16

System Diagram

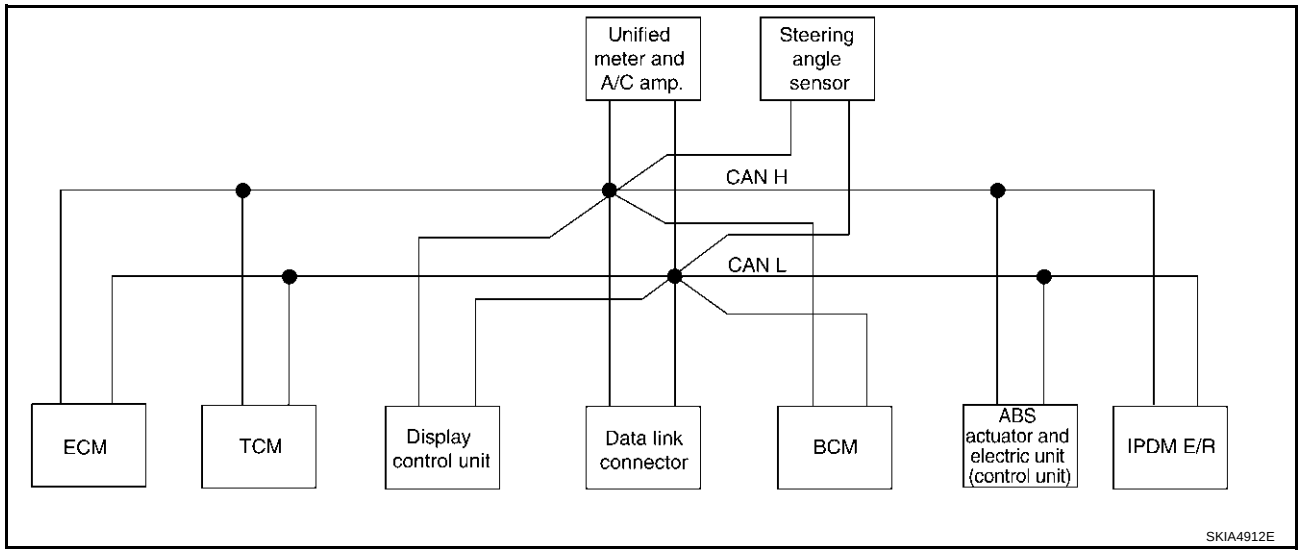
- Type9



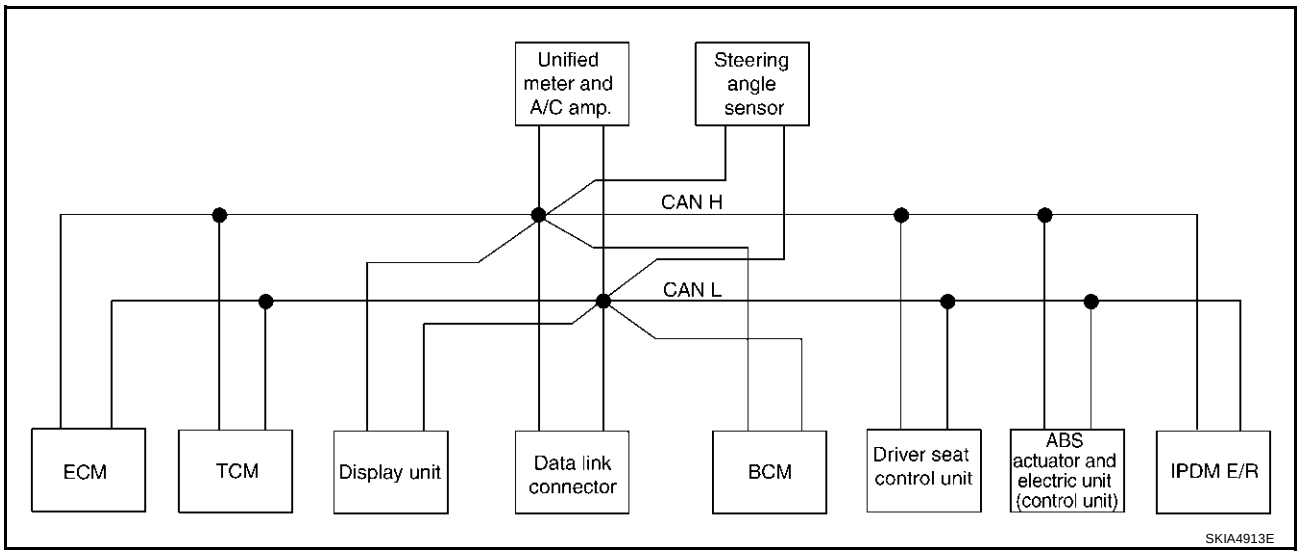
- Type10



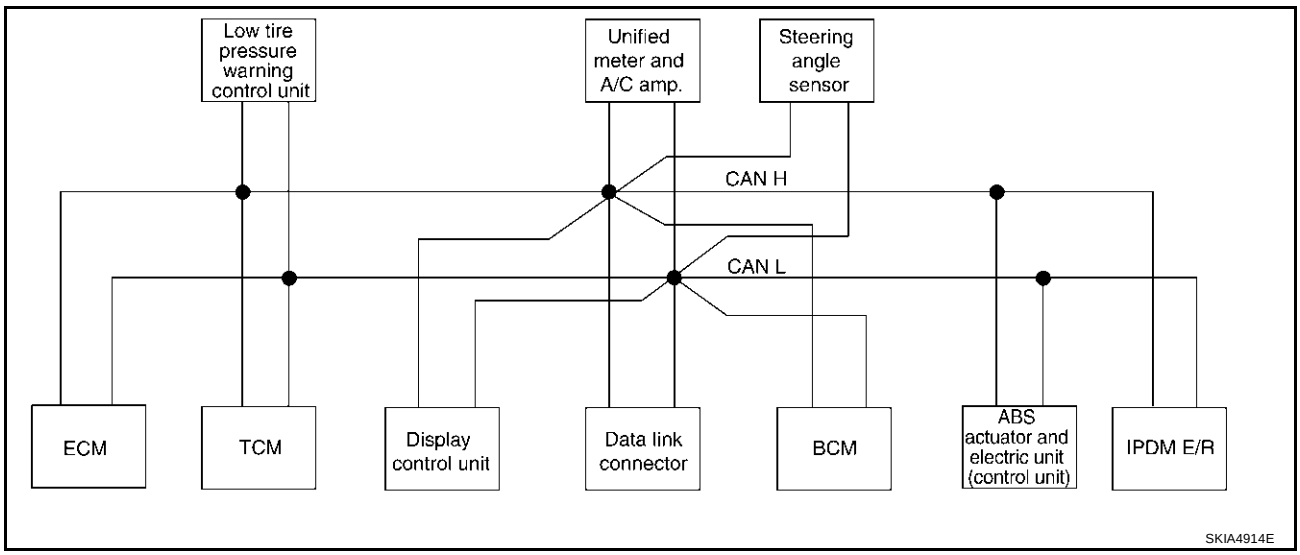
- Type11



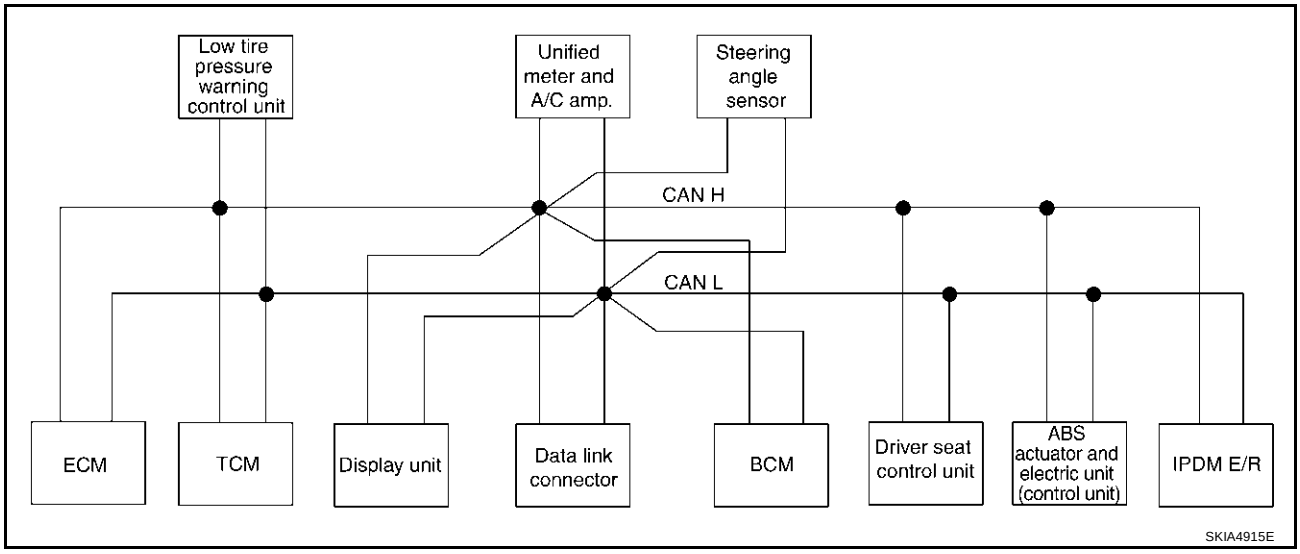
- Type12



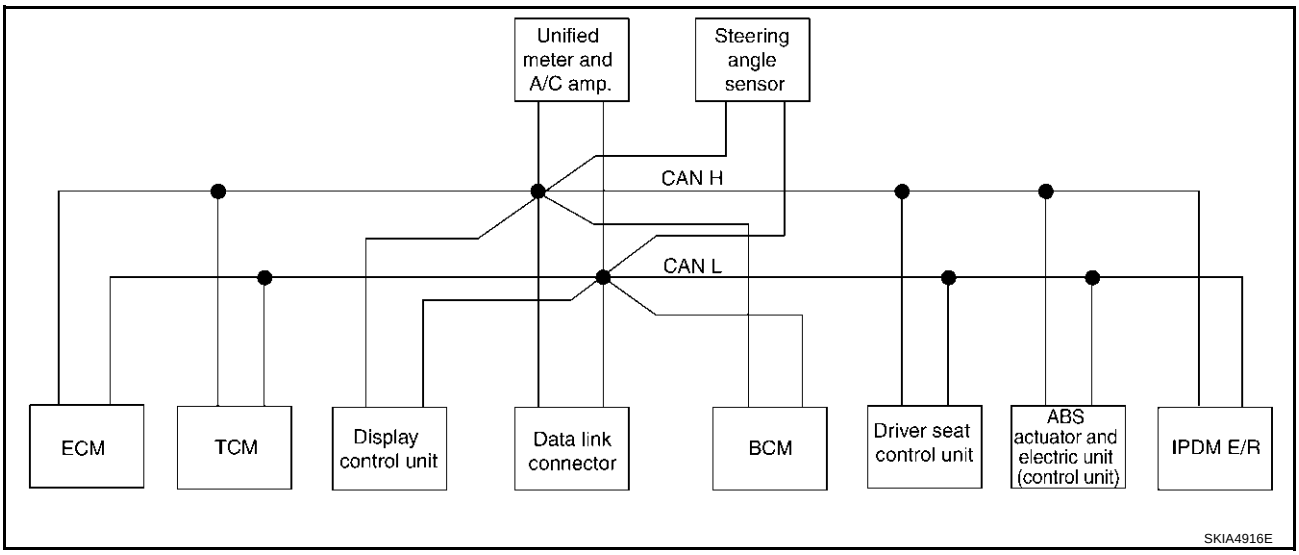
- Type13



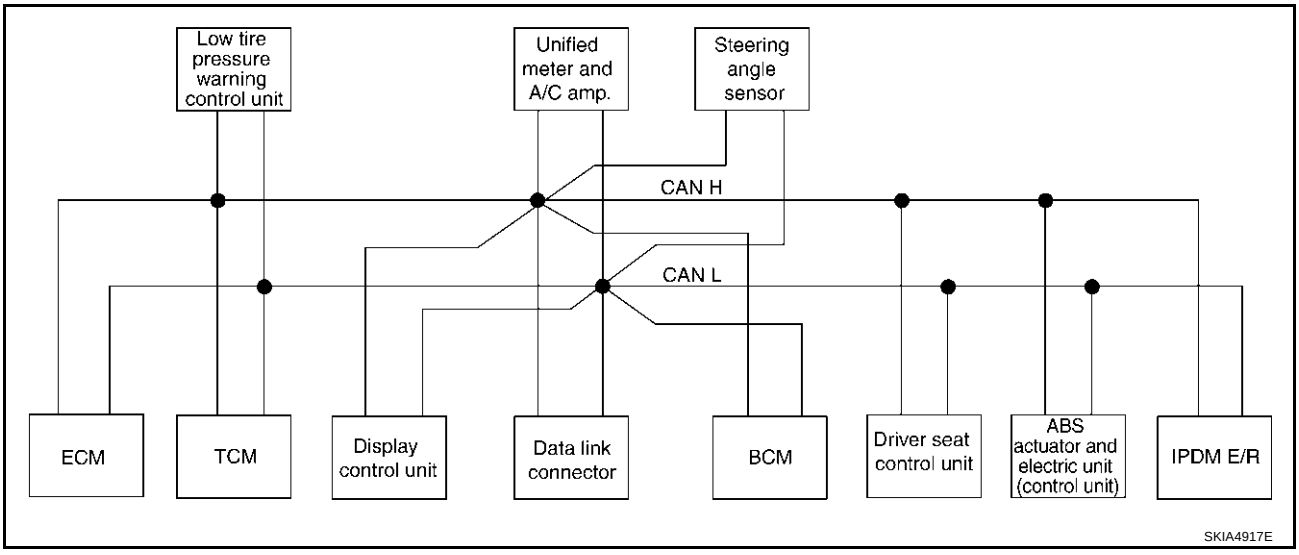
- Type14



- Type15



- Type16



Input/Output Signal Chart

T: Transmit R: Receive

Signals	ECM	TCM	Low tire pressure warning control unit	Display unit	Display control unit	BCM	Unified meter and A/C amp.	Steering angle sensor	Driver seat control unit	ABS actuator and electric unit (control unit)	IPDM E/R
Engine speed signal	T	R			R	R	R			R	
Engine status signal	T					R					
Engine coolant temperature signal	T						R				
Engine and CVT integrated control signal	T	R									
	R	T									
Accelerator pedal position signal	T	R								R	
Closed throttle position signal	T	R									
Wide open throttle position signal	T	R									
Key switch signal						T			R		
Ignition switch signal						T			R		R
P range signal		T							R	R	
Stop lamp switch signal		R					T				
VDC operation signal		R								T	
Second position indicator signal		T					R			R	
Second position signal		R					T				
Fuel consumption monitor signal	T						R				
CVT self-diagnosis signal	R	T									
Input shaft revolution signal	R	T								R	
Output shaft revolution signal	R	T								R	
Air conditioner switch signal	R					T					
A/C compressor request signal	T										R
A/C compressor feedback signal	T						R				
Blower fan motor switch signal	R					T					
A/C control signal				T	T		R				
				R	R		T				
Cooling fan speed request signal	T										R
Position lights request signal						T	R				R
Low beam request signal						T					R
Low beam status signal	R										T
High beam request signal						T	R				R
High beam status signal	R										T
Front fog lights request signal						T					R
Vehicle speed signal		R					R			T	
	R		R		R	R	T		R		
Sleep request 1 signal						T	R				
Sleep request 2 signal						T					R

Signals	ECM	TCM	Low tire pressure warning control unit	Display unit	Display control unit	BCM	Unified meter and A/C amp.	Steering angle sensor	Driver seat control unit	ABS actuator and electric unit (control unit)	IPDM E/R
Door switch signal						R	T				
				R	R	T	R		R		R
Turn indicator signal						T	R				
Key fob ID signal						T			R		
Key fob door unlock signal						T			R		
Seat belt buckle switch signal						R	T				
Oil pressure switch signal						R					T
						T	R				
Buzzer output signal						T	R				
Fuel level sensor signal	R						T				
Fuel level low warning signal				R	R		T				
Malfunction indicator signal	T						R				
ASCD SET lamp signal	T						R				
ASCD CRUISE lamp signal	T						R				
Front wiper request signal						T					R
Front wiper stop position signal						R					T
Rear window defogger switch signal						T					R
Rear window defogger control signal	R			R	R						T
Hood switch signal						R					T
Theft warning horn request signal						T					R
Horn chirp signal						T					R
Steering angle sensor signal								T		R	
Tire pressure signal			T				R				
Tire pressure data signal			T	R	R						
CVT position indicator signal		T					R			R	
ABS warning lamp signal							R			T	
VDC OFF indicator lamp signal							R			T	
SLIP indicator lamp signal							R			T	
Brake warning lamp signal							R			T	
System setting signal				T	T				R		
Parking brake switch signal						R	T				

CAN Communication Unit For AWD Models

ACS003L4

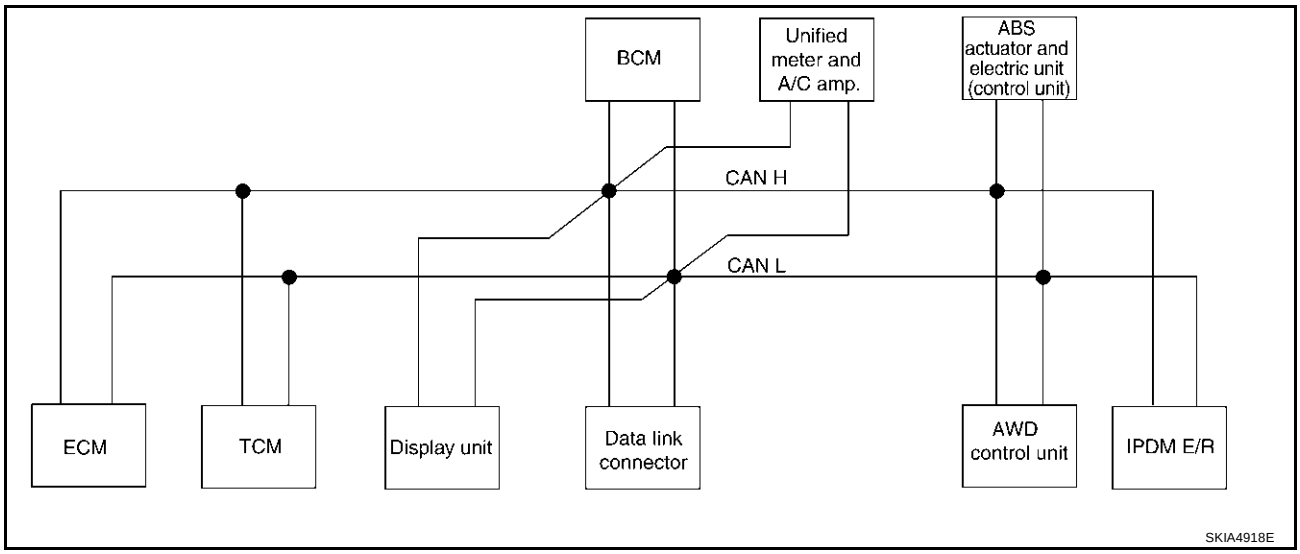
SYSTEM DESCRIPTION

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.

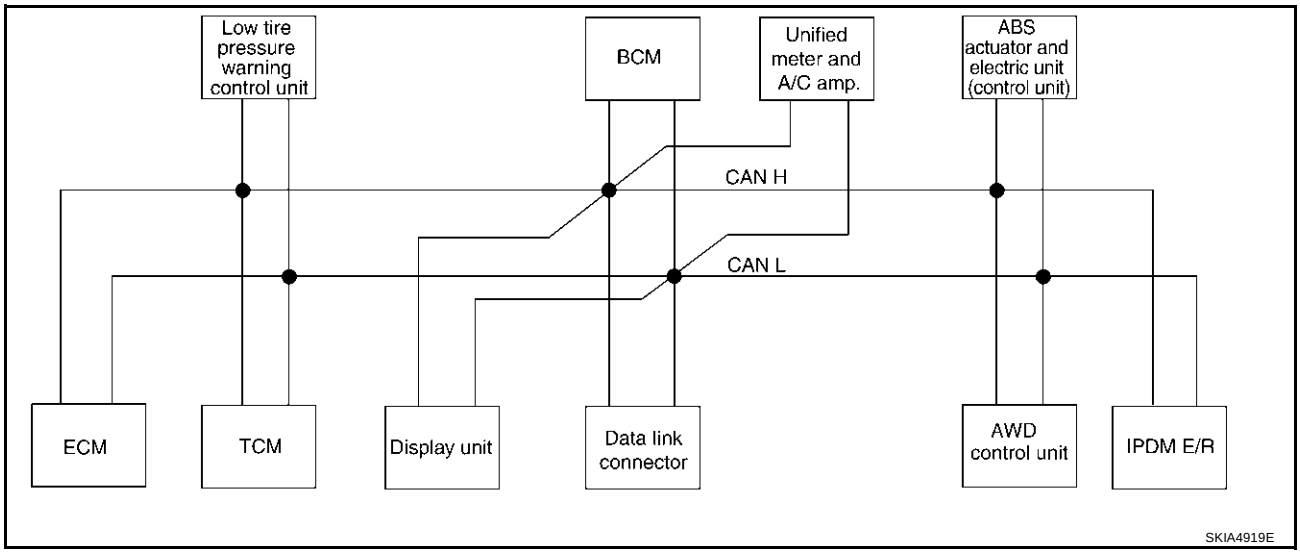
TYPE 17/TYPE 18/TYPE 19/TYPE 20/TYPE 21/TYPE 22/TYPE 23/TYPE 24

System Diagram

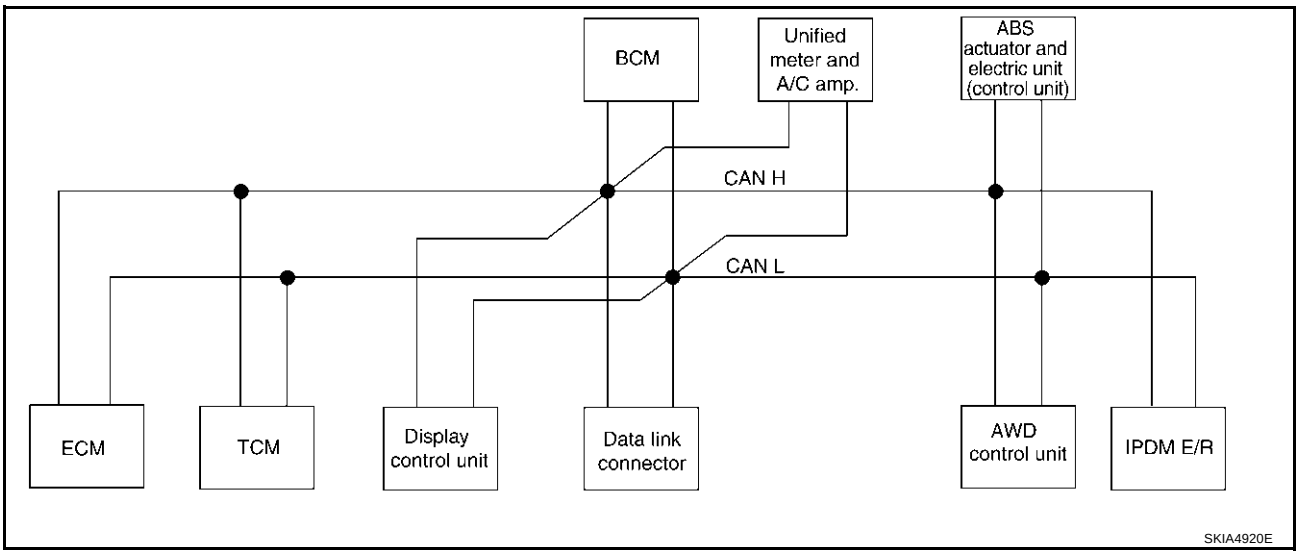
- Type17



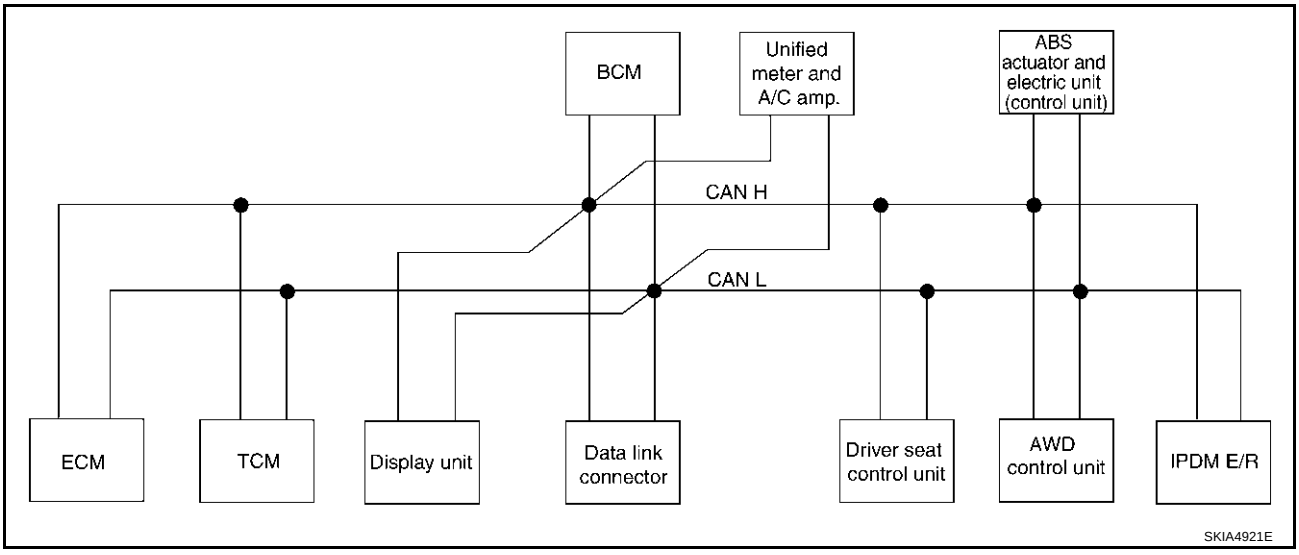
- Type18



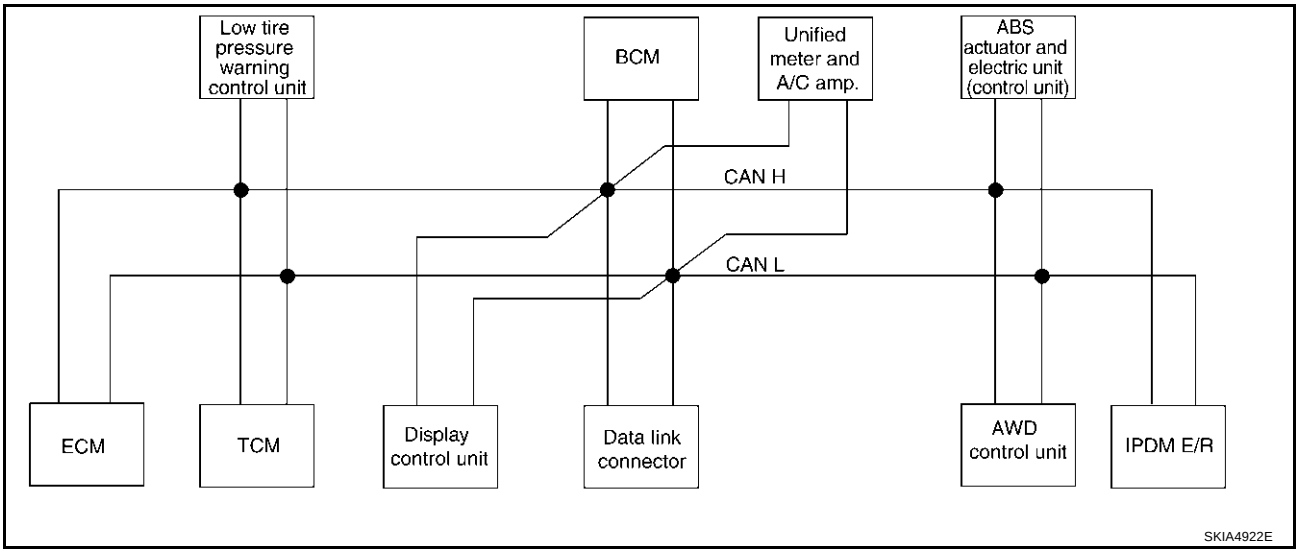
- Type19



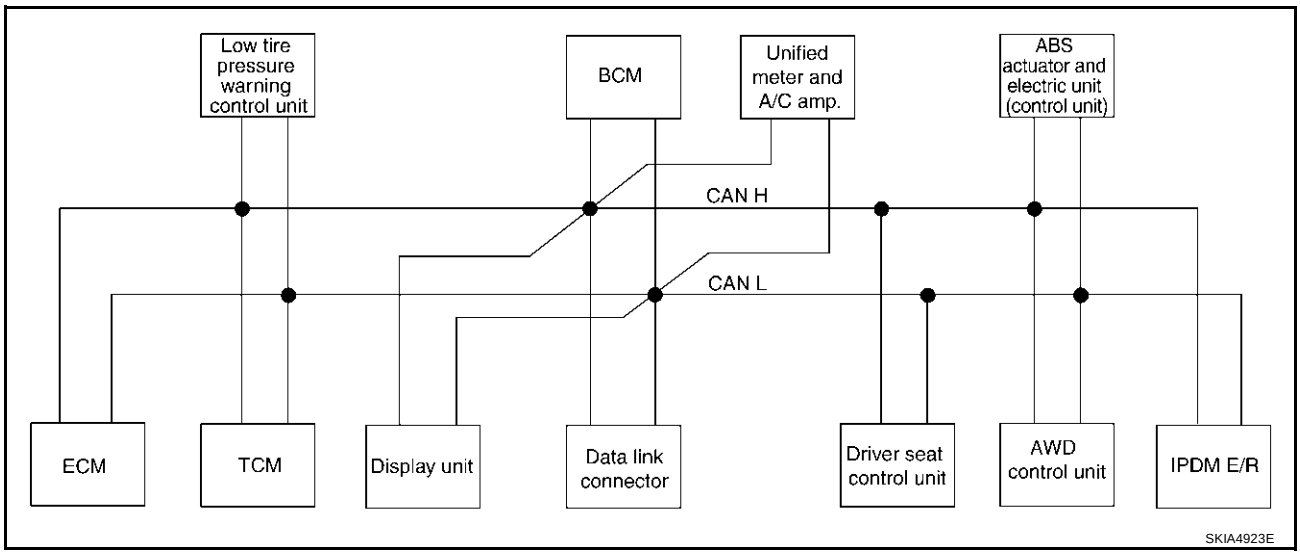
- Type20



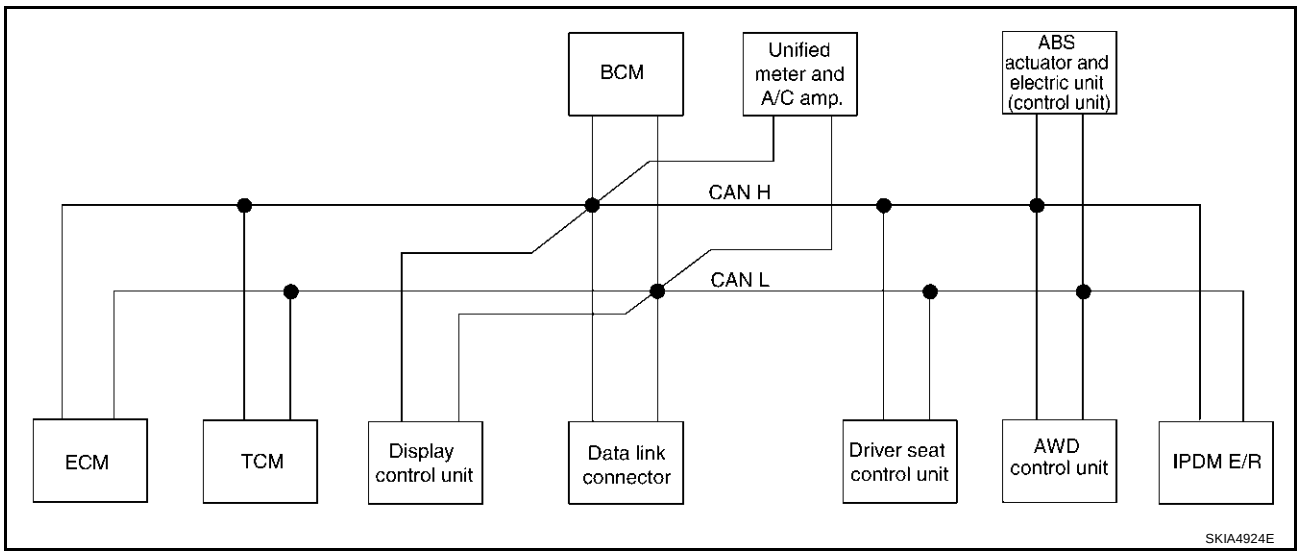
- Type21



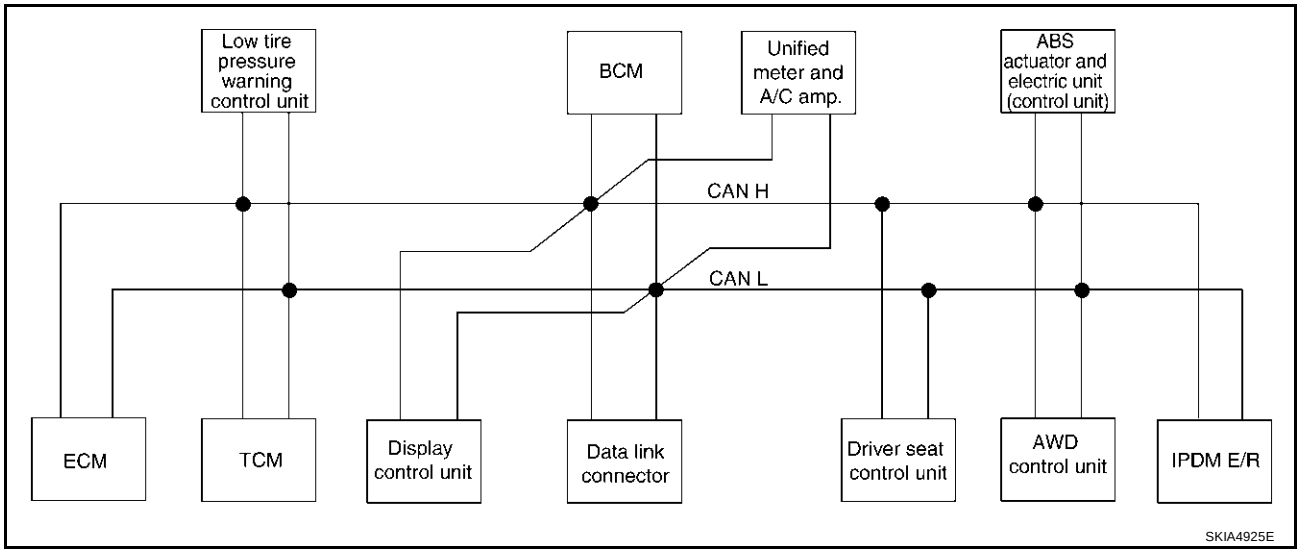
- Type22



- Type23



- Type24



Input/Output Signal Chart

T: Transmit R: Receive

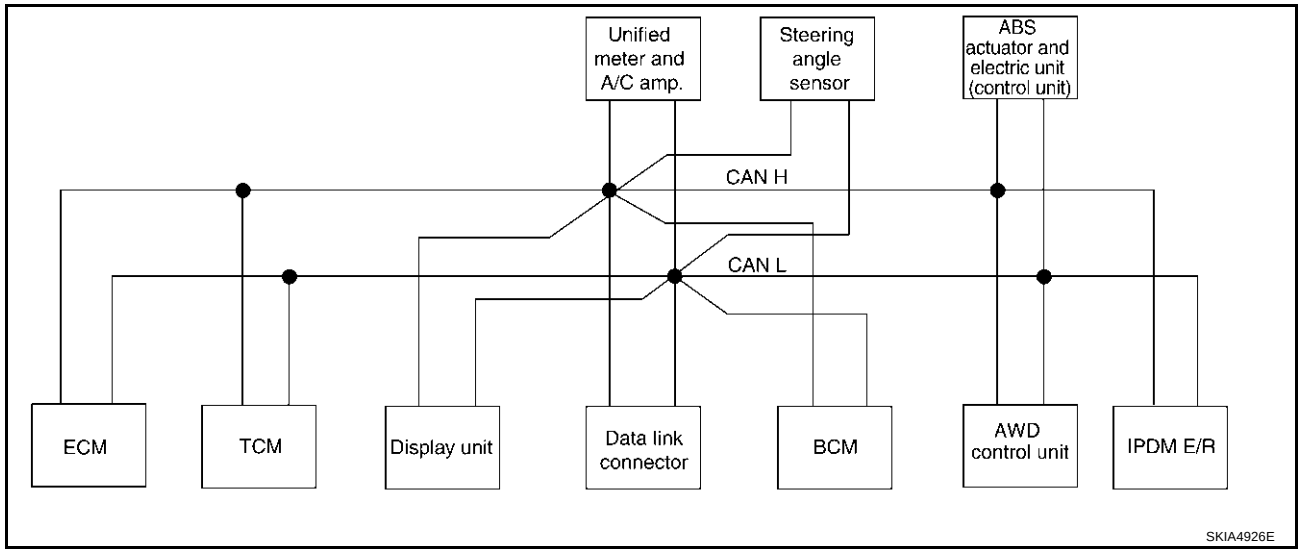
Signals	ECM	TCM	Low tire pressure warning control unit	Display unit	Display control unit	BCM	Unified meter and A/C amp.	Driver seat control unit	AWD control unit	ABS actuator and electric unit (control unit)	IPDM E/R
CVT position indicator signal		T					R				
Second position signal		R					T				
Second position indicator signal		T					R				
Engine speed signal	T	R	R		R	R	R		R		
Engine status signal	T					R					
Engine coolant temperature signal	T						R				
Accelerator pedal position signal	T	R							R		
Closed throttle position signal	T	R									
Wide open throttle position signal	T	R									
Key switch signal						T		R			
Ignition switch signal						T		R			R
P range signal		T						R			
Stop lamp switch signal		R					T		R		
Fuel consumption monitor signal	T						R				
CVT self-diagnosis signal	R	T									
ABS operation signal		R							R	T	
Air conditioner switch signal	R					T					
A/C compressor request signal	T										R
A/C compressor feedback signal	T						R				
Blower fan motor switch signal	R					T					
A/C control signal				T	T		R				
				R	R		T				
Cooling fan speed request signal	T										R
Position lights request signal						T	R				R
Low beam request signal						T					R
Low beam status signal	R										T
High beam request signal						T	R				R
High beam status signal	R										T
Front fog lights request signal						T					R
Vehicle speed signal		R					R		R	T	
	R		R		R	R	T	R			
Sleep request 1 signal						T	R				
Sleep request 2 signal						T					R
Door switch signal						R	T				
				R	R	T	R	R			R
Key fob ID signal						T		R			
Key fob door unlock signal						T		R			

Signals	ECM	TCM	Low tire pressure warning control unit	Display unit	Display control unit	BCM	Unified meter and A/C amp.	Driver seat control unit	AWD control unit	ABS actuator and electric unit (control unit)	IPDM E/R
Turn indicator signal						T	R				
Seat belt buckle switch signal						R	T				
Oil pressure switch signal						R					T
						T	R				
Buzzer output signal						T	R				
Fuel level sensor signal	R						T				
Fuel level low warning signal				R	R		T				
Malfunction indicator lamp signal	T						R				
ASCD SET lamp signal	T						R				
ASCD CRUISE lamp signal	T						R				
Input shaft revolution signal	R	T									
Output shaft revolution signal	R	T									
Front wiper request signal						T					R
Front wiper stop position signal						R					T
Rear window defogger switch signal						T					R
Rear window defogger control signal	R			R	R						T
Engine and CVT integrated control signal	T	R									
	R	T									
Hood switch signal						R					T
Theft warning horn request signal						T					R
Horn chirp signal						T					R
Tire pressure signal			T				R				
Tire pressure data signal			T	R	R						
ABS warning lamp signal							R			T	
Brake warning lamp signal							R			T	
System setting signal				T	T			R			
AWD warning lamp signal							R		T		
AWD lock indicator lamp signal							R		T		
AWD lock switch signal							T		R		
Parking brake switch signal						R	T		R		

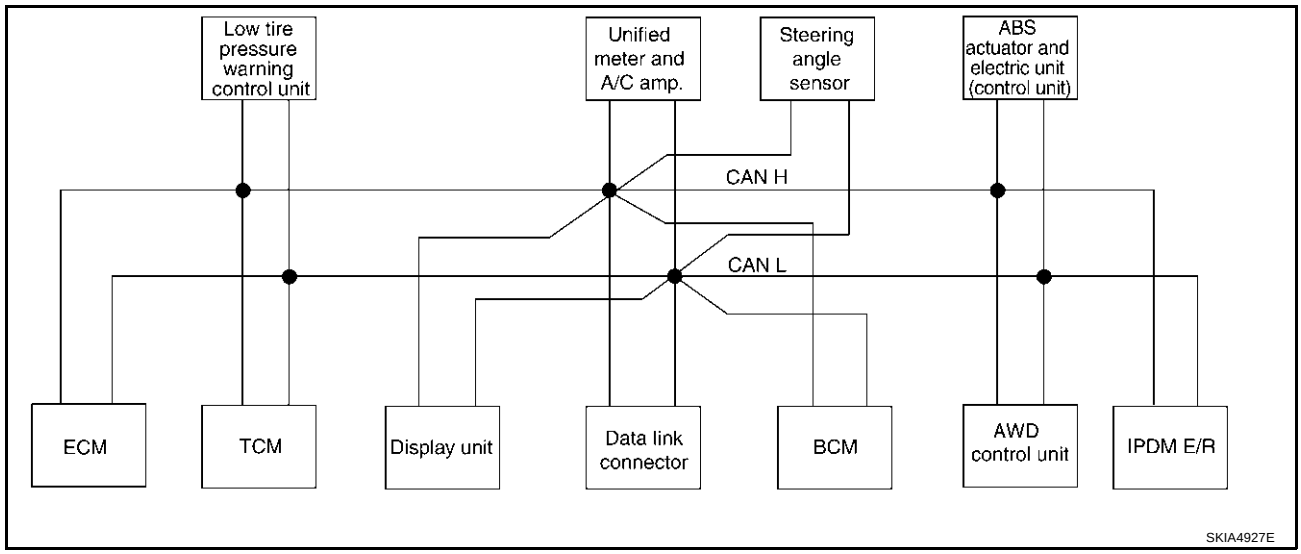
TYPE 25/TYPE26/TYPE 27/TYPE 28/TYPE 29/TYPE 30/TYPE 31/TYPE 32

System Diagram

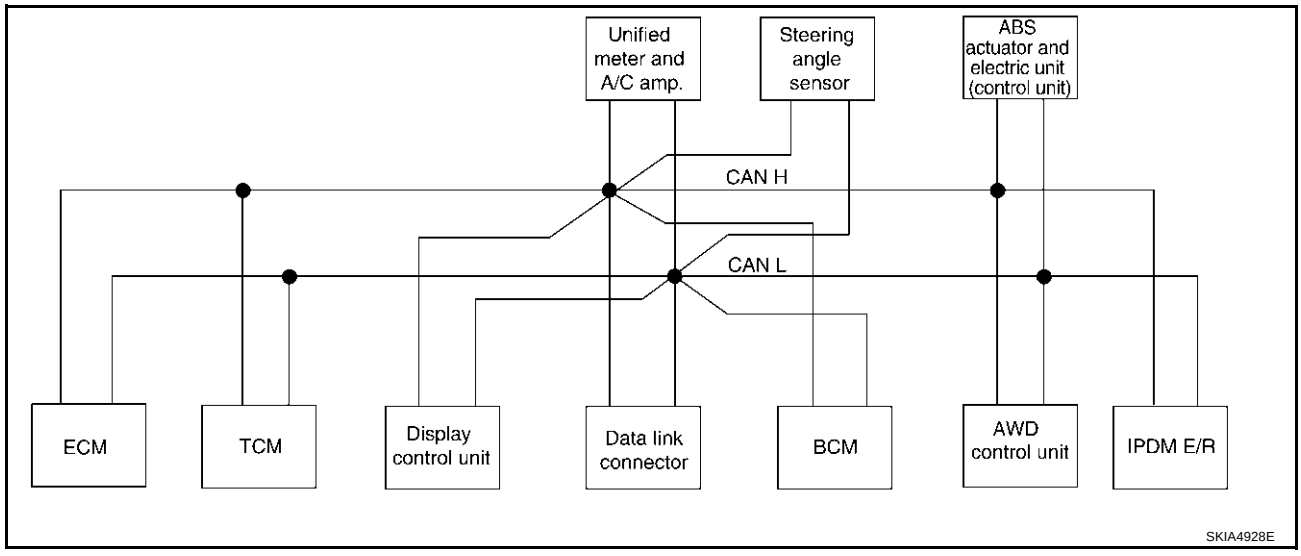
- Type25



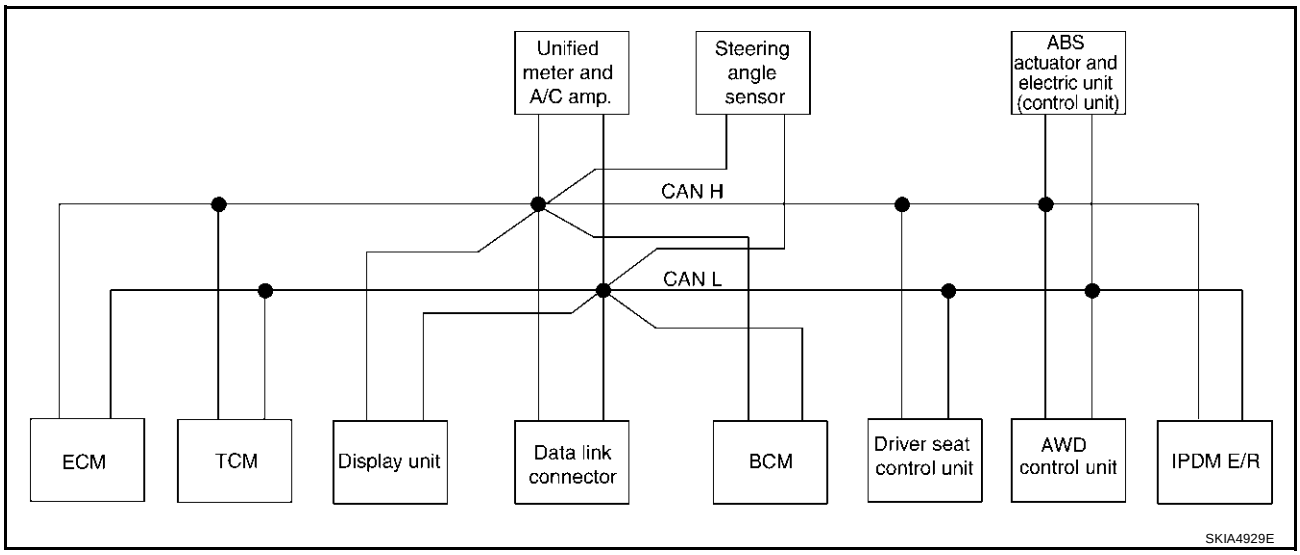
- Type26



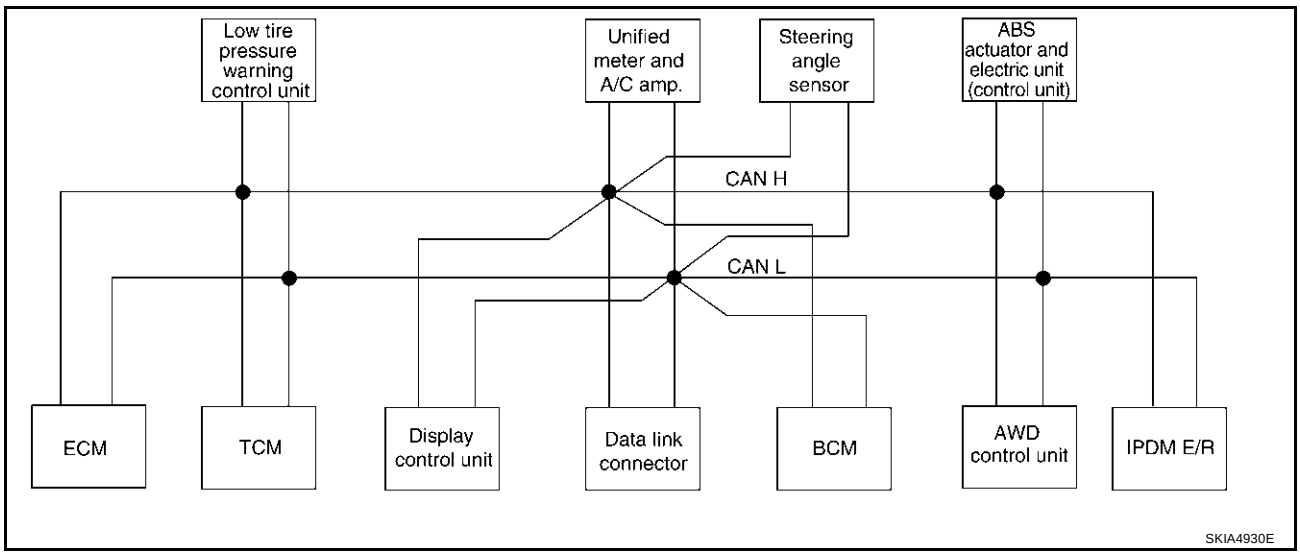
- Type27



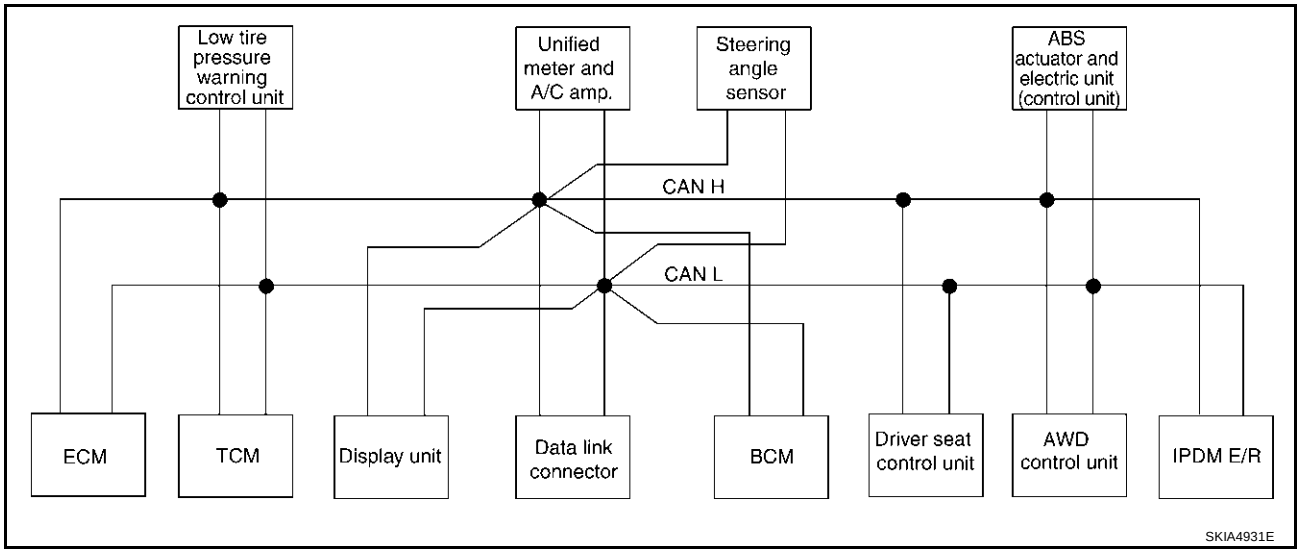
- Type28



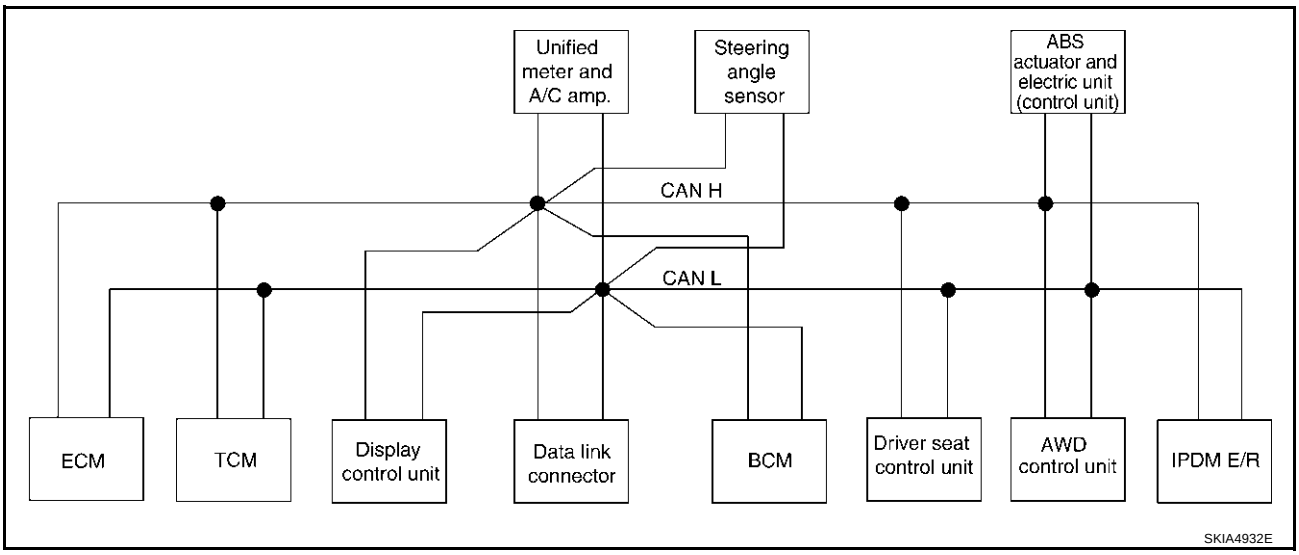
- Type29



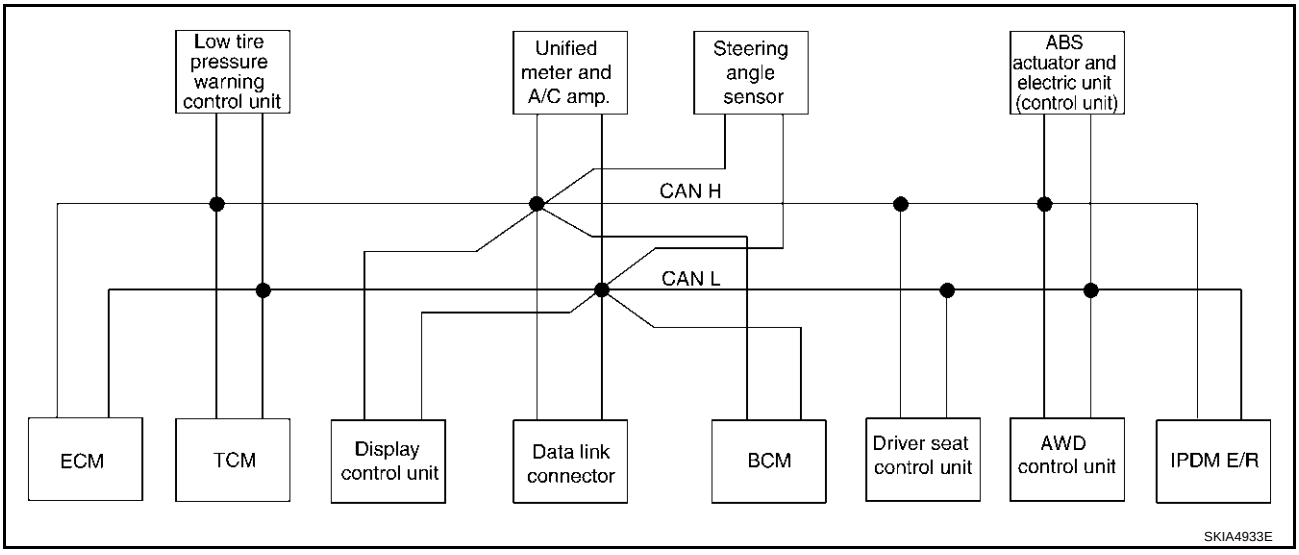
- Type30



- Type31



- Type32



Input/Output Signal Chart

T: Transmit R: Receive

Signals	ECM	TCM	Low tire pressure warning control unit	Display unit	Display control unit	BCM	Unified meter and A/C amp.	Steering angle sensor	Driver seat control unit	AWD control unit	ABS actuator and electric unit (control unit)	IPDM E/R
Engine and CVT integrated control signal	T	R										
	R	T										
Second position signal		R					T					
VDC operation signal		R								R	T	
Stop lamp switch signal		R					T			R		
Key switch signal						T			R			
Ignition switch signal						T			R			R
P range signal		T							R		R	
Closed throttle position signal	T	R										
Wide open throttle position signal	T	R										
Second position indicator signal		T					R				R	
Engine speed signal	T	R			R	R	R			R	R	
Engine status signal	T					R						
Engine coolant temperature signal	T						R					
Accelerator pedal position signal	T	R								R	R	
Fuel consumption monitor signal	T						R					
CVT self-diagnosis signal	R	T										
Input shaft revolution signal	R	T									R	
Output shaft revolution signal	R	T									R	
Air conditioner switch signal	R					T						
A/C compressor request signal	T											R
A/C compressor feedback signal	T						R					T
Blower fan motor switch signal	R					T						
A/C control signal				T	T		R					
				R	R		T					
Cooling fan speed request signal	T											R
Position lights request signal						T	R					R
Low beam request signal						T						R
Low beam status signal	R											T
High beam request signal						T	R					R
High beam status signal	R											T
Front fog lights request signal						T						R
Vehicle speed signal		R					R			R	T	
	R		R		R	R	T		R			
Sleep request 1 signal						T	R					
Sleep request 2 signal						T						R

Signals	ECM	TCM	Low tire pressure warning control unit	Display unit	Display control unit	BCM	Unified meter and A/C amp.	Steering angle sensor	Driver seat control unit	AWD control unit	ABS actuator and electric unit (control unit)	IPDM E/R
Door switch signal						R	T					
				R	R	T	R		R			R
Turn indicator signal						T	R					
Key fob ID signal						T			R			
Key fob door unlock signal						T			R			
Seat belt buckle switch signal						R	T					
Oil pressure switch signal						R						T
						T	R					
Buzzer output signal						T	R					
Fuel level sensor signal	R						T					
Fuel level low warning signal				R	R		T					
Malfunction indicator signal	T						R					
ASCD SET lamp signal	T						R					
ASCD CRUISE lamp signal	T						R					
Front wiper request signal						T						R
Front wiper stop position signal						R						T
Rear window defogger switch signal						T						R
Rear window defogger control signal	R			R	R							T
Hood switch signal						R						T
Theft warning horn request signal						T						R
Horn chirp signal						T						R
Steering angle sensor signal								T			R	
Tire pressure signal			T				R					
Tire pressure data signal			T	R	R							
CVT position indicator signal		T					R				R	
ABS warning lamp signal							R				T	
VDC OFF indicator lamp signal							R				T	
SLIP indicator lamp signal							R				T	
Brake warning lamp signal							R				T	
System setting signal				T	T				R			
AWD warning lamp signal							R			T		
AWD lock indicator lamp signal							R			T		
AWD lock switch signal							T			R		
Parking brake switch signal						R	T			R		

Input/Output Signal of TCM

ACS0020J

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
	Second position switch signal(*1)		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			X
	Secondary pressure sensor	X		X			X
	TCM power supply voltage signal	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

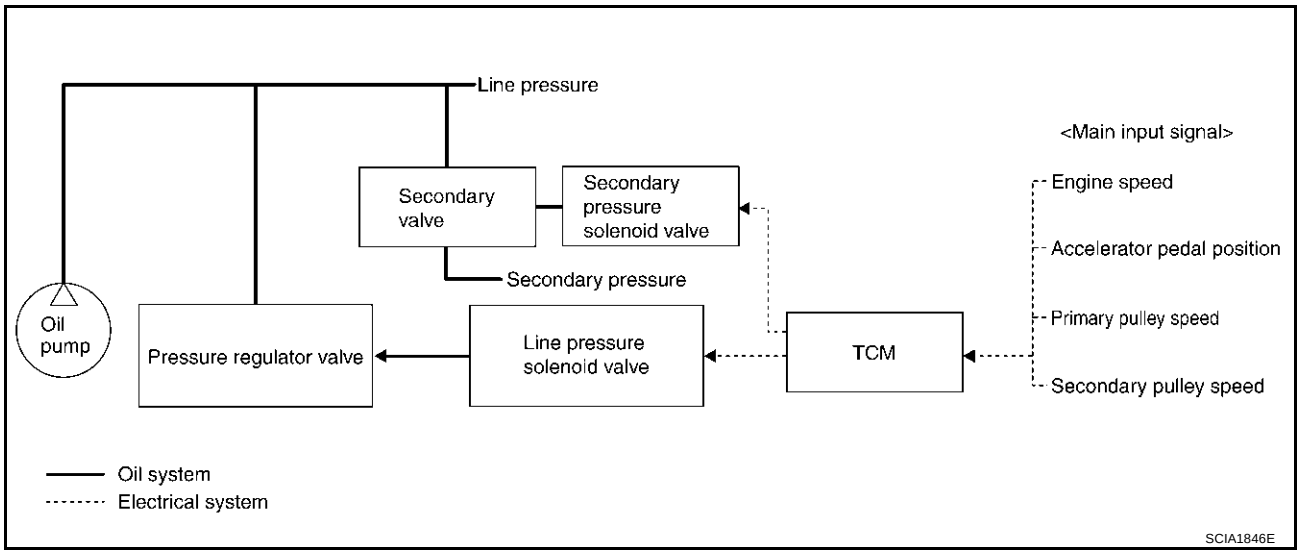
*1: Input by CAN communications.

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

Line Pressure and Secondary Pressure Control

ACS0020K

- 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 made by line pressure decreasing.



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.

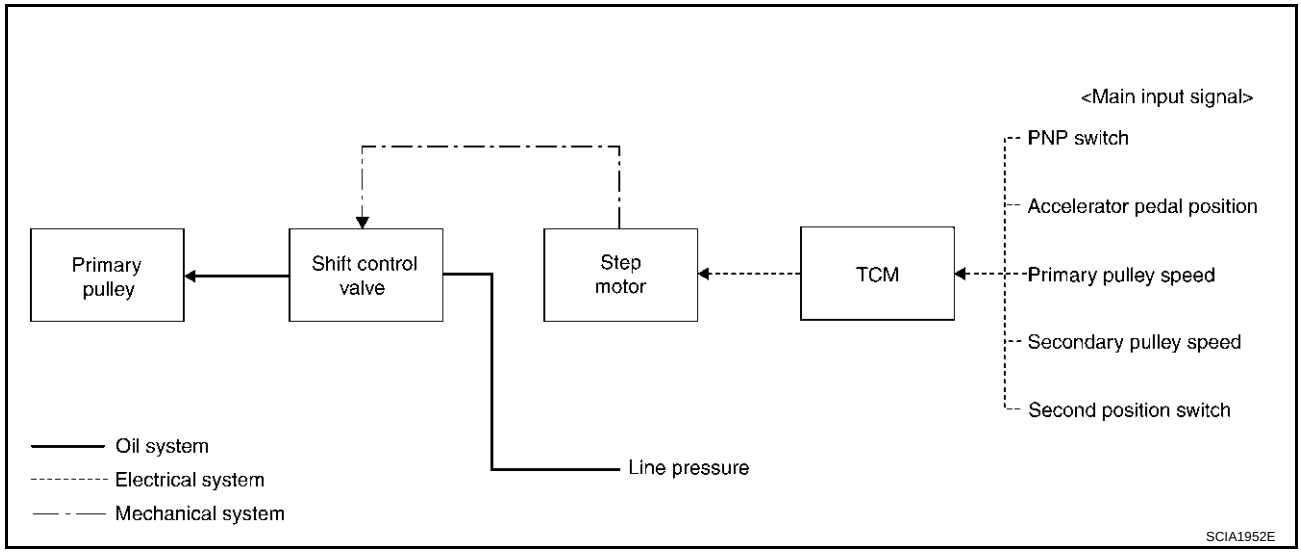
FEEDBACK CONTROL

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

ACS0020L

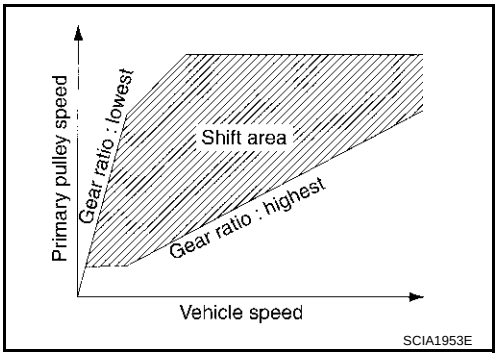
In order to select the gear ratio which can obtain the driving force in accordance with driver's intention and the vehicle condition, monitor the driving conditions, such as the vehicle speed and the throttle position, select the appropriate gear ratio, and determine how to change the gear before reaching it in the TCM. 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.

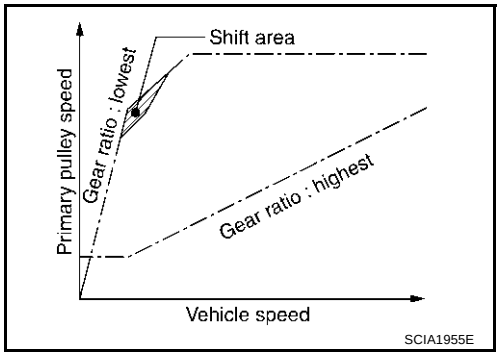


"S"POSITION

Use this position for the improved engine braking.

“L” POSITION

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



DOWNHILL ENGINE BRAKE CONTROL (AUTO ENGINE BRAKE CONTROL)

When 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.

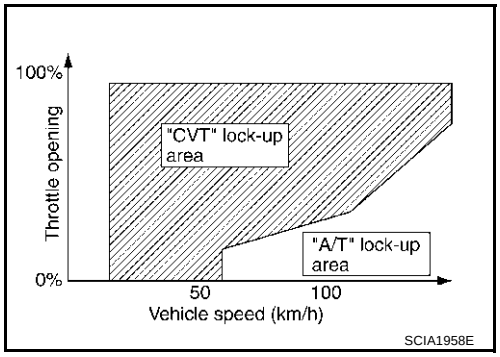
KICKDOWN CONTROL

During sudden deceleration, determine if it is a sudden deceleration from the throttle position to secure the highly responsive driving force as necessary. When it is judged as sudden deceleration, speed up the shift pattern faster than normal depression for a certain period of time, and slowly shift gears to get highly responsive shift pattern.

Lock-Up and Select Control

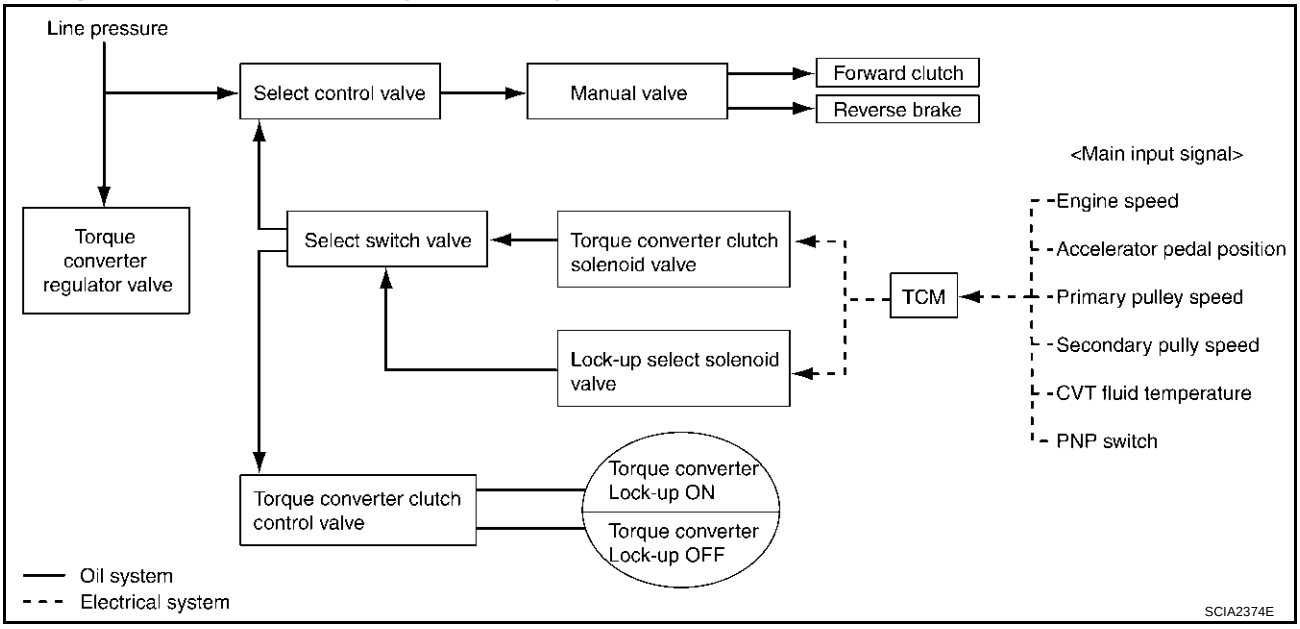
ACS002S9

- 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.
- Switch lock-up control or select control with torque converter clutch solenoid valve to switching select valve switch with lock-up select solenoid valve.

Control Valve

ACS002S8

FUNCTION OF CONTROL VALVE

Name	Function
Torque converter regulator valve	Optimize the supply pressure for the torque converter depending on driving conditions.
Pressure regulator valve	Optimize the discharge pressure from the oil pump depending on driving conditions.
TCC control valve	● Activate 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	Adjust 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	Transmit the clutch operating pressure to each circuit in accordance with the selected position.
Select control valve	Engage forward clutch, reverse brake smoothly depending on select operation.
Select switch valve	Switch 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

ACS001SS

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-71, "Self-Diagnostic Result Test Mode" .

OBD-II Function for CVT System

ACS001ST

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

ACS001SU

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. — First Trip
If the same malfunction as that experienced during the first test drive is sensed during the second test drive, the MIL will illuminate. — Second 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)

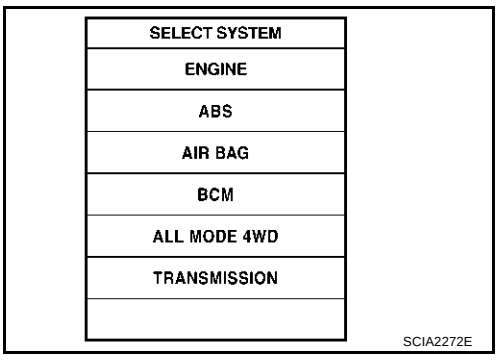
ACS001SV

HOW TO READ DTC AND 1ST TRIP DTC

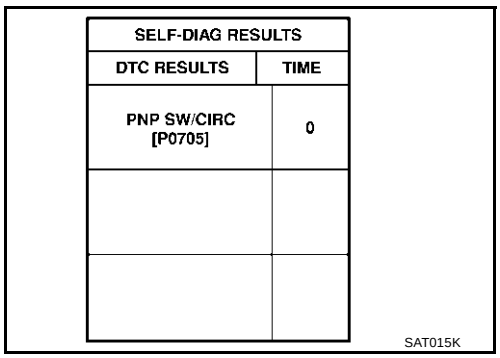
DTC and 1st trip DTC can be read by the following methods.
(with CONSULT-II or GST) GST) CONSULT-II or GST (Generic Scan Tool) Examples: P0705, P0720 etc.
These DTC are prescribed by SAE J2012.
(CONSULT-II also displays the malfunctioning component or system.)

- **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.

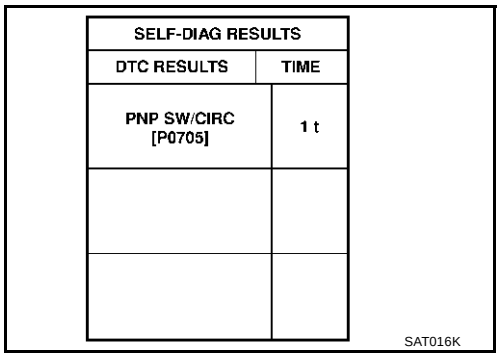
A sample of CONSULT-II display for DTC and 1st trip DTC is shown on the next page. DTC or 1st trip DTC of a malfunction is displayed in SELF-DIAGNOSTIC RESULTS mode for “ENGINE” with CONSULT-II. Time data indicates how many times the vehicle was driven after the last detection of a DTC.



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-125, "CONSULT-II Function" .
Only one set of freeze frame data (either 1st trip freeze frame data or freeze frame data) can be stored in the ECM. 1st trip freeze frame data is stored in the ECM memory along with the 1st trip DTC. There is no priority for 1st trip freeze frame data, and it is updated each time a different 1st trip DTC is detected. However, once freeze frame data (2nd trip detection/MIL on) is stored in the ECM memory, 1st trip freeze frame data is no longer stored. Remember, only one set of freeze frame data can be stored in the ECM. The ECM has the following priorities to update the data.

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

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

HOW TO ERASE DTC

The diagnostic trouble code can be erased by CONSULT-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-69, "Emission-related Diagnostic Information" .

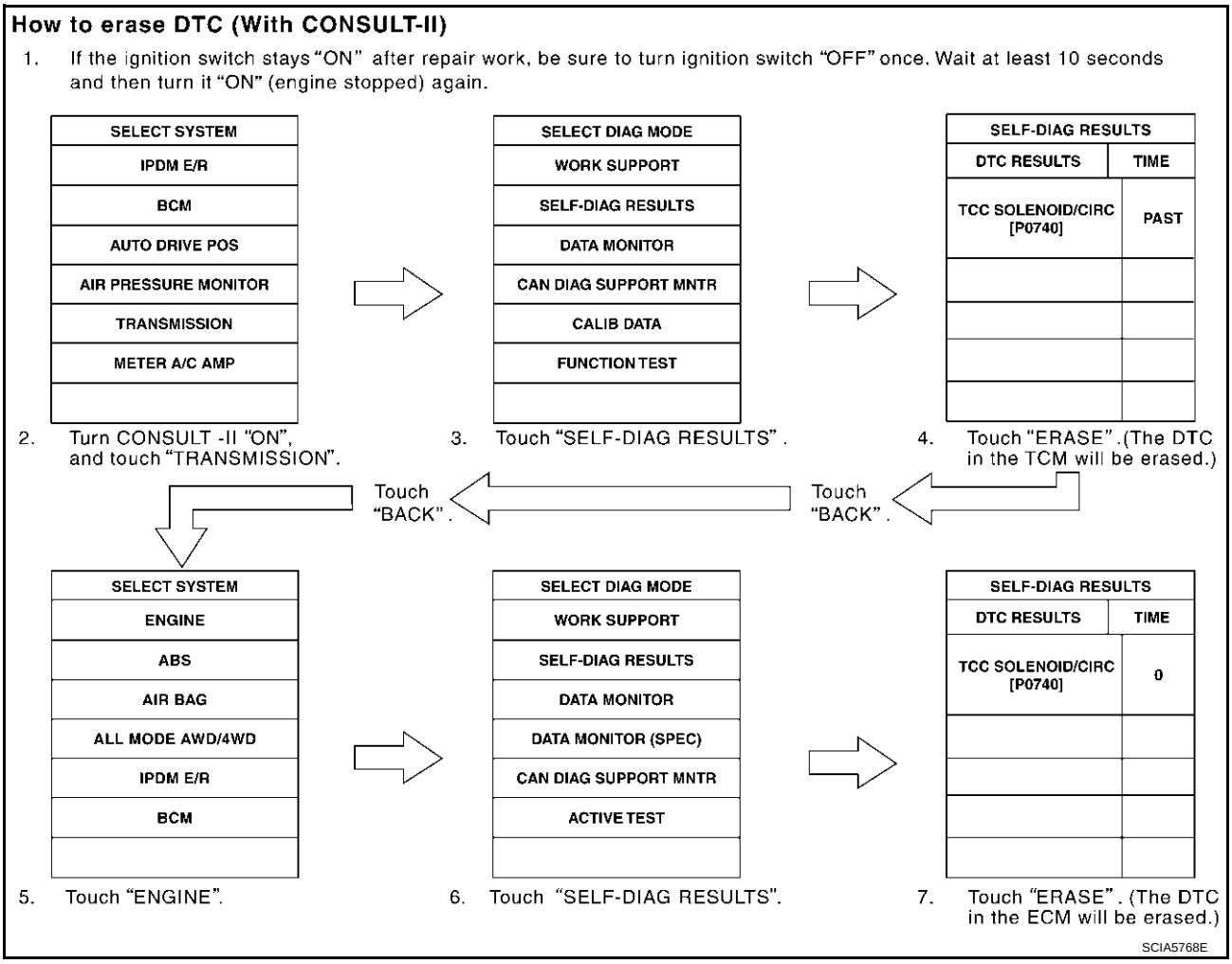
- **Diagnostic trouble codes (DTC)**
- **1st trip diagnostic trouble codes (1st trip DTC)**
- **Freeze frame data**

- **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 GST)

1. If the ignition switch stays “ON” after repair work, be sure to turn ignition switch “OFF” once. Wait at least 10 seconds and then turn it “ON” (engine stopped) again.
2. Select Mode 4 with Generic Scan Tool (GST). For details, refer to EC-138, "Generic Scan Tool (GST) Function" .

Malfunction Indicator Lamp (MIL)

ACS001SW

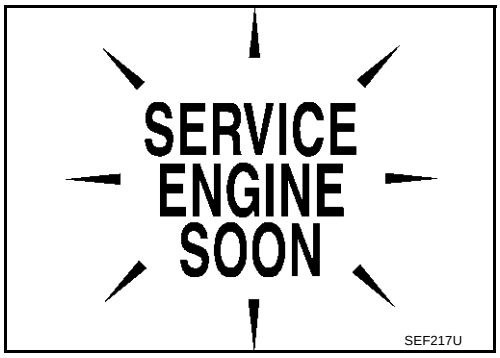
DESCRIPTION

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-61, "WARNING LAMPS" , or see EC-650, "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

ACS001SX

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

NOTE:
If DTC U1000 is displayed with other DTCs, first perform the trouble diagnosis for DTC U1000. Refer to CVT-76 .

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

Fail-Safe

ACS001SY

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 Second position is inhibited, and the transmission is put in “D” if “S” is selected.

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 Second position is inhibited and the transmission is put in “D” if “S” is selected.

PNP Switch

- If an unexpected signal is sent from the PNP switch to the TCM, the transmission 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 lock-up select solenoid is turned “off” to cancel the lock-up.

How To Perform Trouble Diagnosis For Quick and Accurate Repair

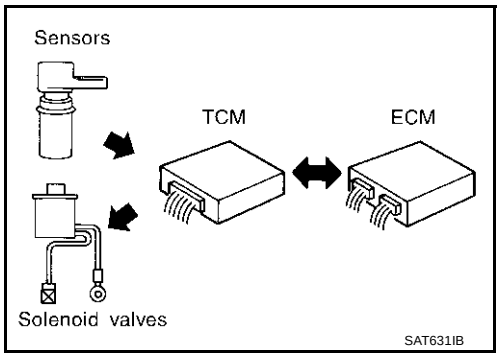
ACS001SZ

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.

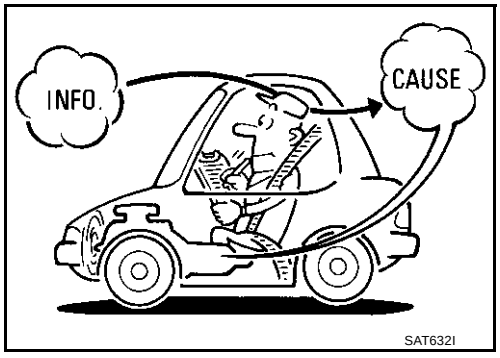
The TCM also communicates with the ECM by means of a signal sent from sensing elements used with the OBD-related parts of the CVT system for malfunction-diagnostic purposes. The TCM is capable of diagnosing malfunctioning parts while the ECM can store malfunctions in its memory.

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.

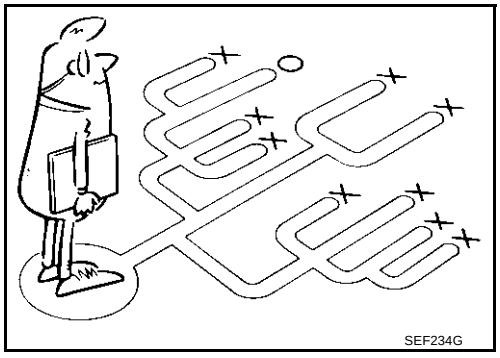
A visual check only may not find the cause of the errors. A road test with CONSULT-II (or GST) or a circuit tester connected should be performed. Follow the CVT-51, "WORK FLOW" .



Before undertaking actual checks, take a few minutes to talk with a customer who approaches with a drivability 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-52) should be used.

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

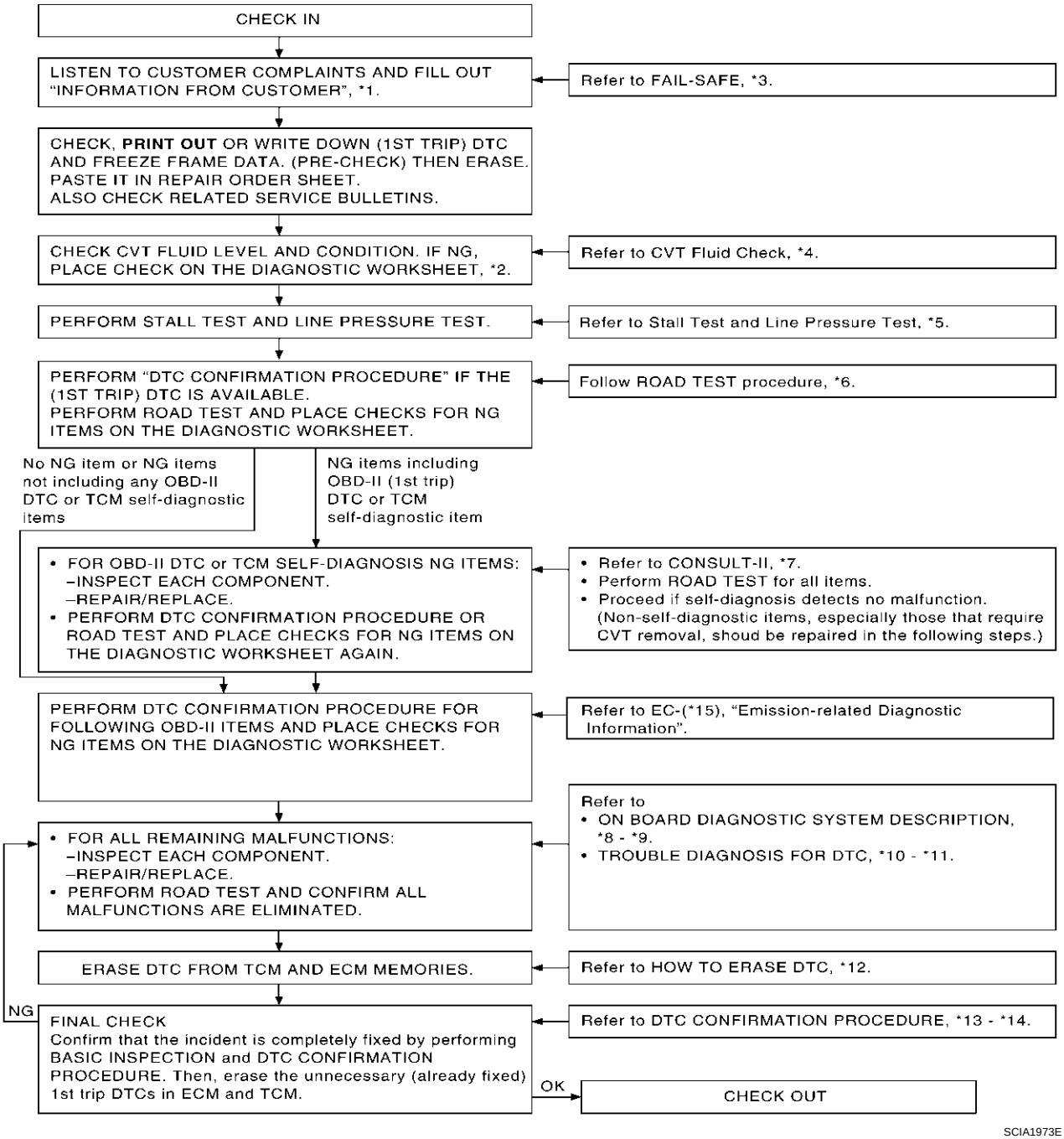
Also check related Service bulletins.



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, “Information From Customer” (Refer to CVT-52) and “Diagnostic Worksheet” (Refer to CVT-52), to perform the best troubleshooting possible.

Work Flow Chart



SCIA1973E

*1. CVT-52	*2. CVT-52	*3. CVT-49
*4. CVT-56	*5. CVT-56, CVT-57	*6. CVT-59
*7. CVT-66	*8. CVT-45	*9. CVT-75
*10. CVT-76	*11. CVT-173	*12. CVT-178
*13. CVT-76	*14. CVT-173	*15. EC-69

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

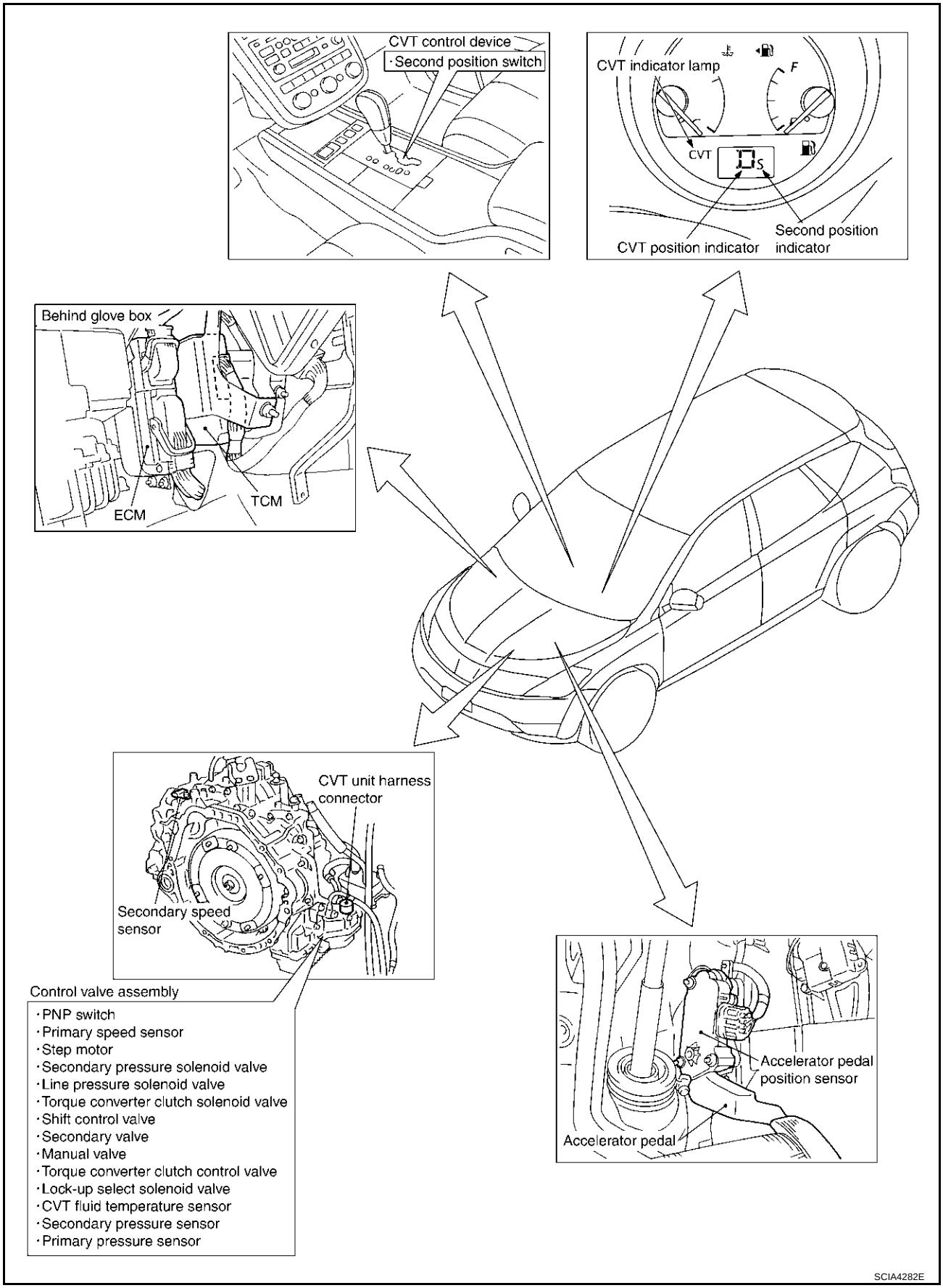
Diagnostic Worksheet Chart

1	❑ Read the item on “cautions concerning fail-safe and understand the customer's complaint.			CVT-49
2	❑ CVT fluid inspection			
		❑ Leak (Repair leak location.) ❑ State ❑ Amount		CVT-56
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 all road tests and enter checks in required inspection items.			CVT-59
	4-1.	Check before engine is started		
		❑ perform self-diagnostics. Enter checks for detected items.		
			❑ Output speed sensor (secondary speed sensor). CVT-101 . ❑ Input speed sensor (primary speed sensor). CVT-95 . ❑ TCC solenoid valve. CVT-112 . ❑ Pressure control solenoid valve A (line pressure solenoid valve).CVT-120 . ❑ Pressure control solenoid valve B (secondary pressure solenoid valve). CVT-131 . ❑ Transmission fluid pressure sensor A (secondary pressure sensor).CVT-135 . ❑ Transmission fluid pressure sensor B (primary pressure sensor).CVT-143 . ❑ Lock-up select solenoid valve. CVT-163 . ❑ Step motor. CVT-168 . ❑ PNP switch. CVT-85 . ❑ CVT fluid temperature sensors. CVT-90 . ❑ Stop lamp switch signal. CVT-83 . ❑ Start signal. CVT-79 . ❑ Accelerator pedal position signal. CVT-155 . ❑ Vehicle speed signal. CVT-157 . ❑ Engine speed signal. CVT-108 . ❑ CAN communication. CVT-76 . ❑ TCM power supply. CVT-150 . ❑ Steel belt. CVT-110 ❑ Battery ❑ Other	
	4-2.	Driving tests		CVT-59
		❑ Cannot Be Changed To Second position. CVT-175 . ❑ CVT Does Not Shift. CVT-59 . ❑ perform self-diagnostics. Enter checks for detected items.		
			❑ Output speed sensor (secondary speed sensor). CVT-101 . ❑ Input speed sensor (primary speed sensor). CVT-95 . ❑ TCC solenoid valve. CVT-112 . ❑ Pressure control solenoid valve A (line pressure solenoid valve).CVT-120 . ❑ Pressure control solenoid valve B (secondary pressure solenoid valve). CVT-131 . ❑ Transmission fluid pressure sensor A (secondary pressure sensor).CVT-135 . ❑ Transmission fluid pressure sensor B (primary pressure sensor).CVT-143 . ❑ Lock-up select solenoid valve. CVT-163 . ❑ Step motor. CVT-168 . ❑ PNP switch. CVT-85 . ❑ CVT fluid temperature sensors. CVT-90 . ❑ Stop lamp switch signal. CVT-83 . ❑ Start signal. CVT-79 . ❑ Accelerator pedal position signal. CVT-155 . ❑ Vehicle speed signal. CVT-157 . ❑ Engine speed signal. CVT-108 . ❑ CAN communication. CVT-76 . ❑ TCM power supply. CVT-150 . ❑ Steel belt. CVT-110 ❑ Battery ❑ Other	
5	❑ Inspect each system for items found to be NG in the self-diagnostics and repair or replace the malfunctioning parts.			
6	❑ perform all road tests and enter the checks again for the required items.			CVT-59
7	❑ For any remaining NG items, perform the “diagnostics procedure” and repair or replace the malfunctioning parts.			
8	❑ Erase the results of the self-diagnostics from the TCM.			CVT-66, CVT-75

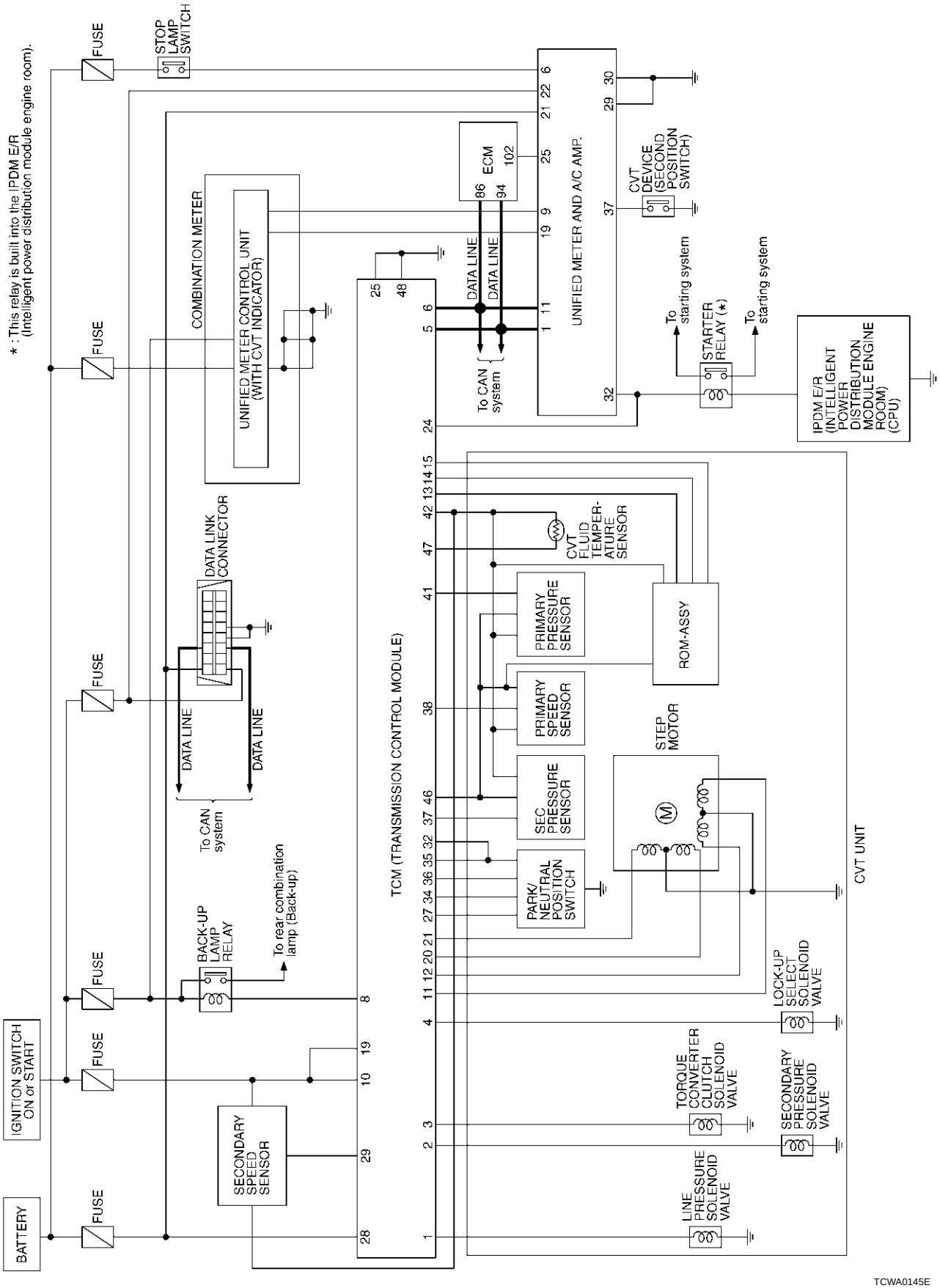
CVT Electrical Parts Location

ACS001T0



Circuit Diagram

ACS001T1



Inspections Before Trouble Diagnosis

ACS001T2

CVT FLUID CHECK

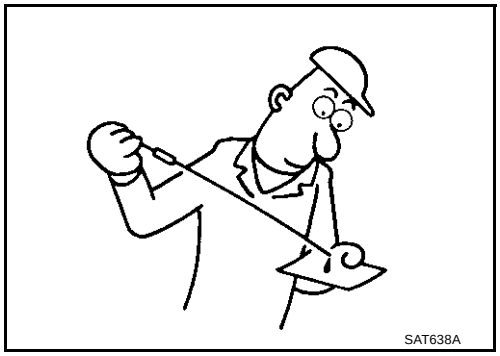
Fluid Leakage and Fluid Level Check

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

Fluid Condition Check

Inspect the fluid condition.

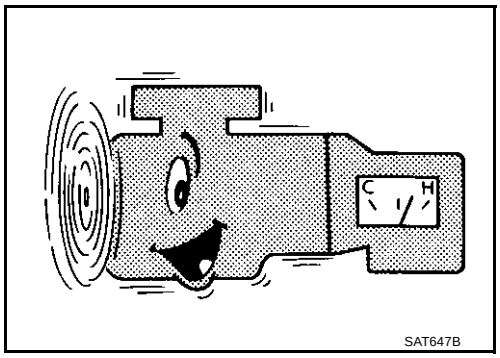
Fluid status	Conceivable Cause	Required Operation
Varnished (viscous varnish state)	Clutch, brake scorched	Replace the ATF and check the CVT main unit and the vehicle for malfunctions (wire harnesses, cooler pipes, etc.)
Milky white or cloudy	Water in the fluid	Replace the ATF and check for places where water is getting in.
Large amount of metal powder mixed in	Unusual wear of sliding parts within CVT	Replace the ATF and check for improper operation of the CVT.


SAT638A

STALL TEST

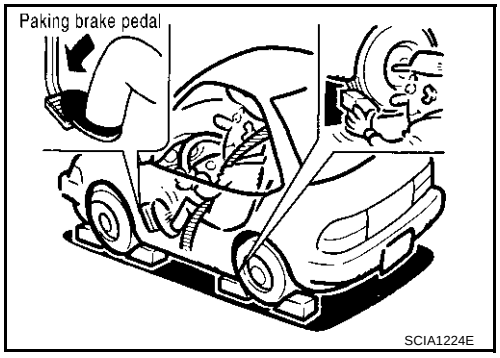
Stall Test Procedure

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 - 80°C (122 - 176°F). Inspect the amount of CVT fluid. Replenish if necessary.



SAT647B

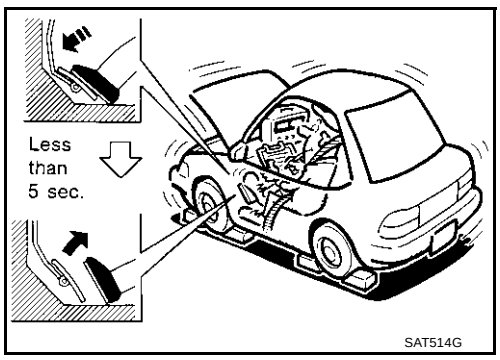
3. Securely engage the parking brake so that the tires do not turn.



SCIA1224E

4. Engine start, apply foot brake, and place selector lever in “D” position.
5. While holding down the foot brake, gradually press down the accelerator pedal.
6. 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.
7. Move the selector lever to the “N” position.
8. Cool down the CVT fluid.



SAT514G

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

Stall speed :2,700 - 3,250 rpm

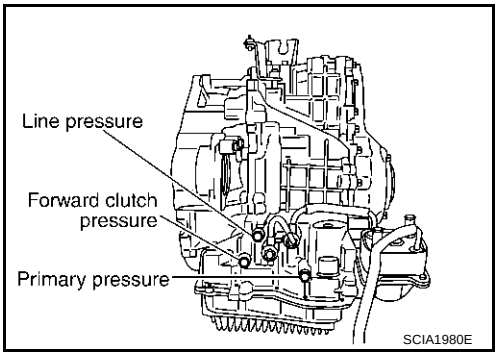
Judgement Stall Test

	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 higher than standard value
L: Stall speed lower than standard value

LINE PRESSURE TEST

Line Pressure Test Port

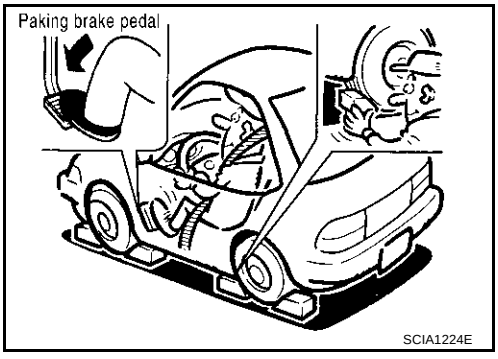


Line Pressure Test Procedure

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 - 80°C (122 - 176°F), then inspect the amount of CVT fluid and replenish if necessary.

   NOTE:
   The automatic fluid temperature rises in the range of 50 - 80°C (122 - 176°F) during 10 minutes of driving.
3. After warming up CVT, remove the oil pressure detection plug and install the oil pressure gauge [special service tool: ST2505S001 (J34301-C)].

   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.

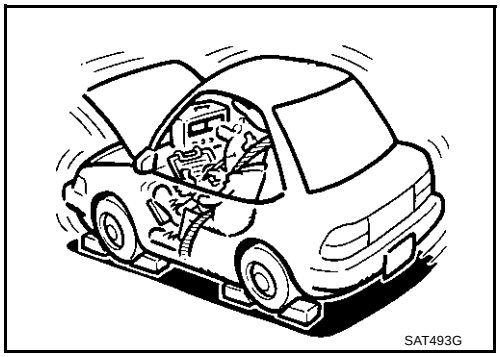


5. Start the engine, and then measure the line pressure at both idle and the stall speed.

   CAUTION:
   - **Keep the brake pedal pressed all the way down during measurement.**
   - **When measuring the line pressure at the stall speed, refer to CVT-56, "STALL TEST" .**

6. After the measurements are complete, install the oil pressure detection plug and tighten to the regulation torque below.

   :5.0 - 10 N-m (0.51 - 1.0 kg-m, 45 - 88 in-lb)



CAUTION:
Do not reuse the O-ring.

Line Pressure

Engine	Engine speed	Line Pressure kPa (kg/cm^2 , psi)
		R,D,L positions
VQ35DE	At idle speed	750 (7.65, 108.8)
	At stall speed	5300 - 5700 (54.06 - 58.14, 768.5 - 826.5)*1

*1: Reference values.

Judgement of Line Pressure Test

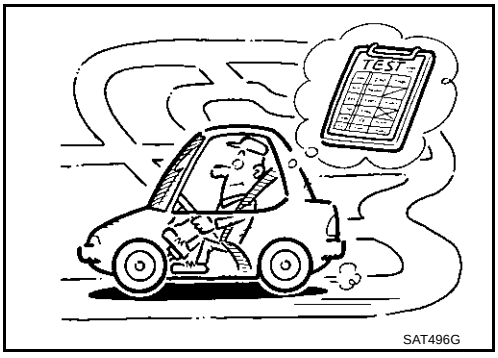
Judgement		Possible cause
Idle speed	Low for all positions (P, R, N, D, L)	Possible causes include malfunctions in the pressure supply system and low oil pump output. For example ● Oil pump wear ● Pressure regulator valve or plug sticking or spring fatigue ● Oil strainer ⇒ oil pump ⇒ pressure regulator 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

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

ROAD TEST

Description

- The purpose of the test is to determine overall performance of CVT and analyze causes of problems.
- Before road test, familiarize yourself with all test procedures and items to check.
- perform tests on all items until specified symptom is found. Troubleshoot items which check out No Good after road test. Refer to CVT-45, "ON BOARD DIAGNOSTIC (OBD) SYSTEM" .

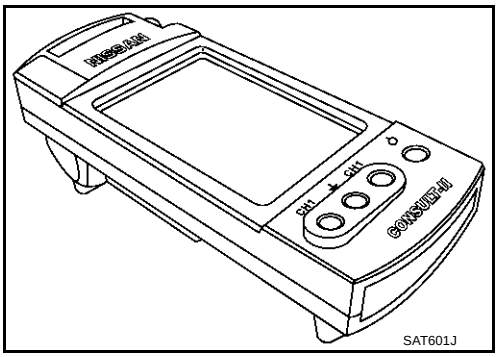


SAT496G

Cruse Test

With CONSULT-II

- 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.



SAT601J

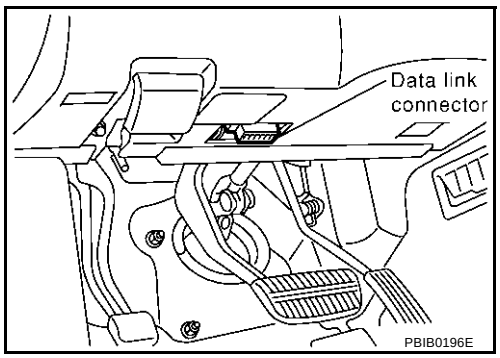
CONSULT-II Setting Procedure

CAUTION:

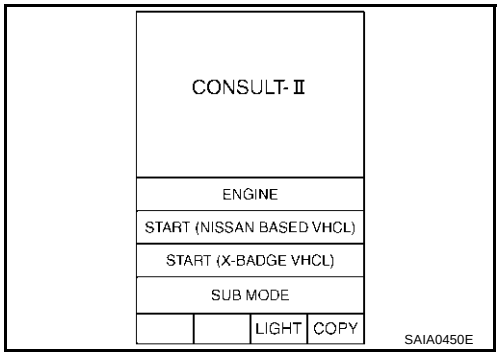
If CONSULT-II is used with no connection of CONSULT-II CONVERTER, malfunctions might be detected in self-diagnosis depending on control unit which carry out CAN communication.

1. Turn ignition switch “OFF”.

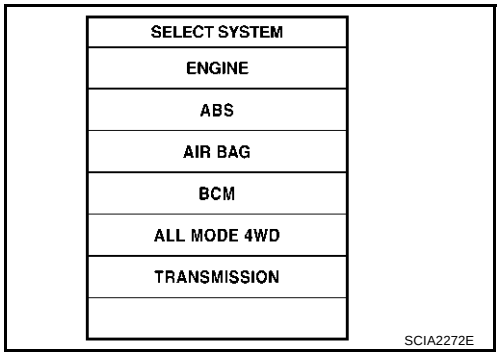
2. Connect CONSULT-II and CONSULT-II CONVERSTER to data link connector, which is located in lower instrument panel on driver side.



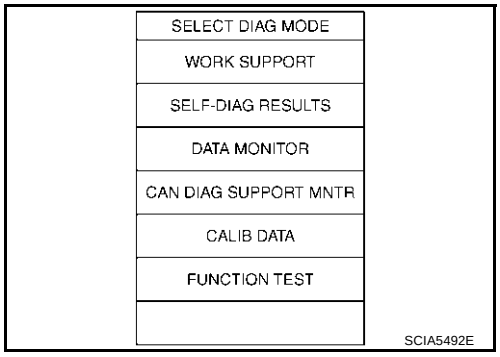
3. Turn ignition switch “ON”.
4. Touch “START (NISSAN BASED VHCL)”.



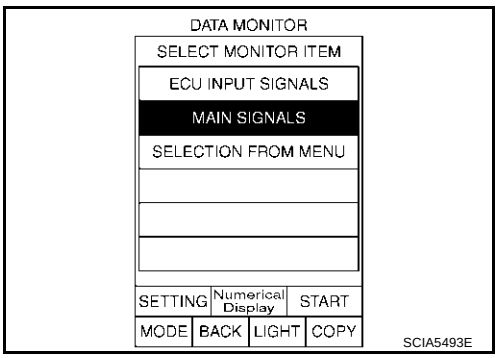
5. Touch “TRANSMISSION”.
If “TRANSMISSION” or “ENGINE” is not indicated, go to GI-38, "CONSULT-II Data Link Connector (DLC) Circuit" .



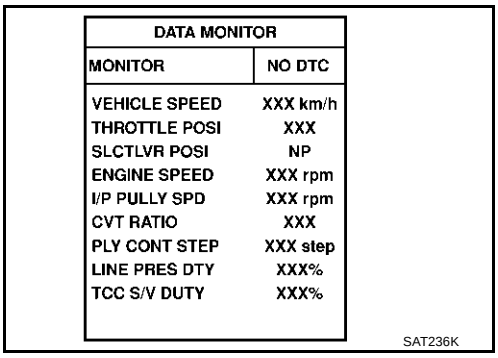
6. Touch “DATA MONITOR”.



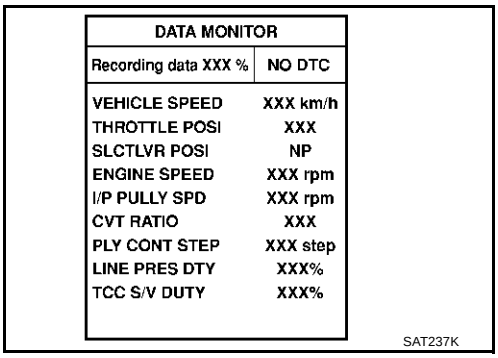
7. Touch “MAIN SIGNALS” to set recording condition.
8. See “Numerical Display”, “Barchart Display” or “Line Graph Display”.
9. Touch “START”.



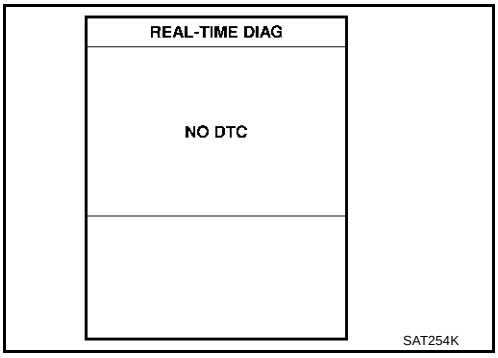
10. When performing cruise test, touch “Store Data”.



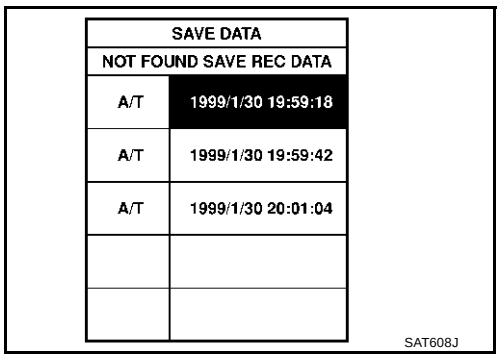
11. After finishing cruise test part 1, touch “STOP”.

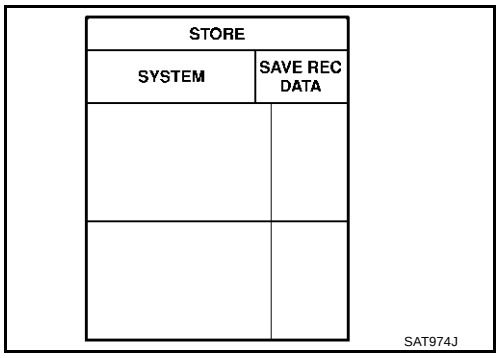


12. Touch “STORE”.

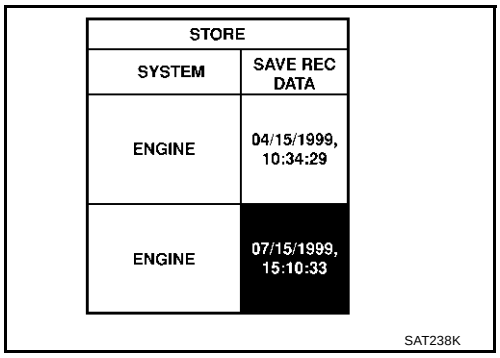


13. Touch “DISPLAY”.





14. Touch “PRINT”.
15. Check the monitor data printed out.



Vehicle Speed When Shifting Gears

ACS001T8

Numerical value data are reference values.

Engine type	Throttle position	Shift pattern	Engine speed (rpm)	
			At 40 km/h (25MPH)	At 60 km/h (37MPH)
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

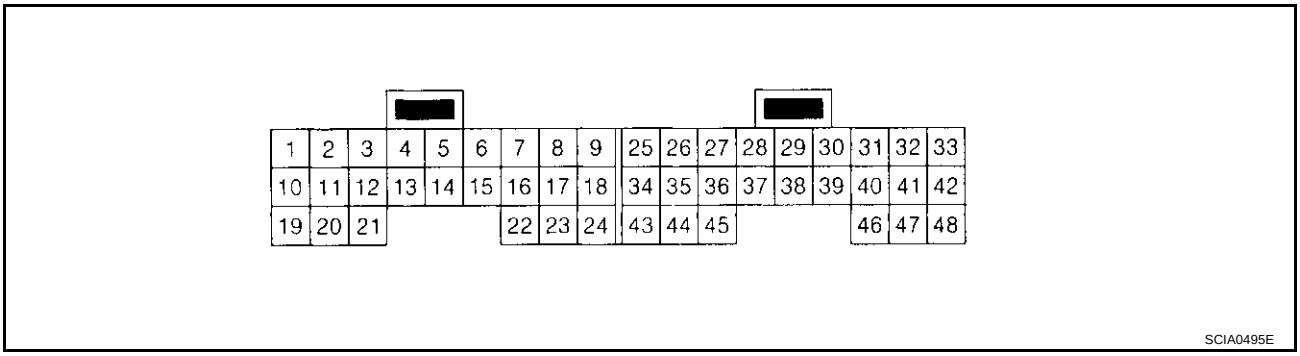
CAUTION:

Lock-up clutch is engaged when vehicle speed is approximately 18 km/h (11MPH) to 40 km/h (25MPH).

TCM Input/Output Signal Reference Values

ACS001TC

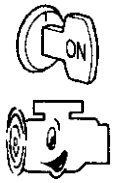
TCM TERMINAL CONNECTOR LAYOUT

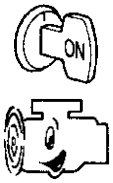


TCM INSPECTION TABLE

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

Terminal No.	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 - 7.0V
				Press the accelerator pedal all the way down.	1.0V
2	W/B	Pressure control solenoid valve B (secondary pressure solenoid valve)		Release your foot from the accelerator pedal.	5.0 - 7.0V
				Press the accelerator pedal all the way down.	3.0 - 4.0V
3	L/W	TCC solenoid valve	When vehicle cruises	Lock-up applied to lock-up cancelled	6.0 - 1.0V
4	L/Y	Lock-up select solenoid valve		N position	Battery voltage
				Wait at least for 5 seconds with the selector lever in D position	0V
5	L	CAN H	–		–
6	Y	CAN L	–		–
8	SB	Back-up lamp relay		Selector lever in “R” position.	Battery voltage
				Selector lever in other positions.	0V
10	Y/L	Power supply		—	Battery voltage
				—	0V
11	G/R	Step motor A	Within 2 seconds after key switch “ON”, the time measurement by using the pulse width measurement function (Hi level) of CONSULT-II.*1 **CAUTION:** **Connect the diagnosis data link cable to the vehicle diagnosis connector.** *1: A circuit tester cannot be used to test this item.		30.0 msec
12	O/B	Step motor B			10.0 msec
13	G/W	ROM assembly	—		—
			—		—
14	L/R	ROM assembly	—		—
			—		—

Terminal No.	Wire color	Item	Condition		Data (Approx.)
15	BR/R	ROM assembly	—		—
			—		—
19	Y/L	Power supply		—	Battery voltage
				—	0V
20	R	Step motor C	Within 2 seconds after key switch “ON”, the time measurement by using the pulse width measurement function (Hi level) of CONSULT-II.*1 **CAUTION:** **Connect the diagnosis data link cable to the vehicle diagnosis connector.** *1: A circuit tester cannot be used to test this item.		30.0 msec
21	R/G	Step motor D			10.0 msec
24	G/O	Starter relay		Selector lever in “N”,“P”position.	Battery voltage
				Selector lever in other position.	0V
				—	0V
25	B	Ground	—		0V
27	BR/W	PNP switch 1		Selector lever in “R”,“N”,“D”position.	0V
				Selector lever in other position.	Battery voltage
28	Y/R	Power supply (Memory back-up)	—		Battery voltage
29	LG/R	Output speed sensor (secondary speed sensor)	When vehicle cruises	When driving [D position, 20 km/h (12 MPH)]	300 (Hz)
32	GR	PNP switch 3 (monitor)		Selector lever in “D”,“L” position.	0V
				Selector lever in other positions.	Battery voltage
34	P/B	PNP switch 2		Selector lever in “N”,“D”,“L”position.	0V
				Selector lever in other positions.	Battery voltage
35	P/L	PNP switch 3		Selector lever in “D”,“L” position.	0V
				Selector lever in other positions.	Battery voltage
36	G	PNP switch 4		Selector lever in “R”, “D”position.	0V
				Selector lever in other positions.	Battery voltage
37	V/W	Transmission fluid pressure sensor A (secondary pressure sensor)		N position idle	0.8V
38	LG	Input speed sensor (primary speed sensor)	When vehicle cruises	When driving [L position, 20 km/h (12 MPH)]	600 (Hz)

Terminal No.	Wire color	Item	Condition		Data (Approx.)
41	V/O	Transmission fluid pressure sensor B (primary pressure sensor)		N position idle	0.7 - 1.2V
42	W/R	Sensor ground	—		0V
46	L/O	Sensor power		—	4.5 - 5.5V
47	V	CVT fluid temperature sensor		When CVT fluid temperature is 20°C (68°F)	2.0V
				When CVT fluid temperature is 80°C (176°F)	1.0V
48	B	Ground	—		0V

CONSULT-II

ACS004LP

After performing CVT-70, "SELF-DIAGNOSTIC PROCEDURE (WITH CONSULT-II)" , place check marks for results on the CVT-52, "DIAGNOSTIC WORKSHEET" . Reference pages are provided following the items.

NOTICE:

- Additional CONSULT-II information can be found in the Operation Manual supplied with the CONSULT-II unit.

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-66
Self-diagnostic results	Self-diagnostic results can be read and erased quickly.	CVT-71
Data monitor	Input/Output data in the ECM can be read.	CVT-73
CAN diagnostic support monitor	The results of transmit/receive diagnosis of CAN communication can be read.	—
CALIB data	Characteristic information for TCM and CVT assembly can be read. Do not use, but displayed.	—
Function test	Conducted by CONSULT-II instead of a technician to determine whether each system is “OK” or “NG”.	—
ECU (TCM) part number	ECU (TCM) part number can be read.	—

WORK SUPPORT MODE WITH CONSULT-II

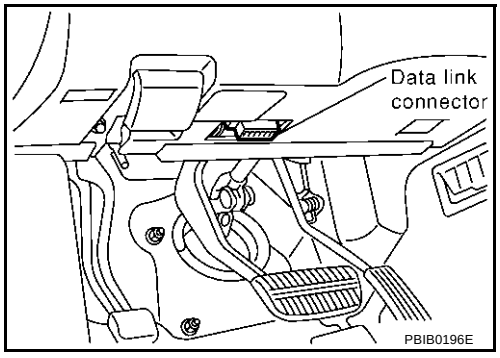
Work support item	Description
ENGINE BRAKE ADJ.	The engine brake level setting can be canceled.
CONFORM CVTF DETERIORTN	The CVT fluid deterioration level can be checked.

Engine Brake Adjustment

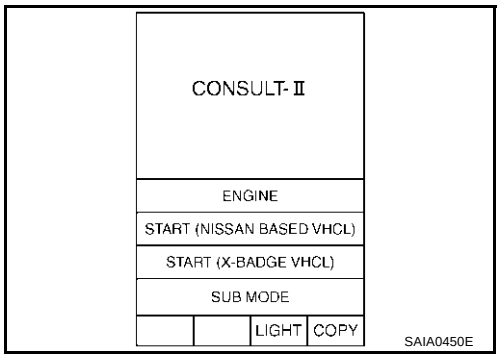
CAUTION:

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

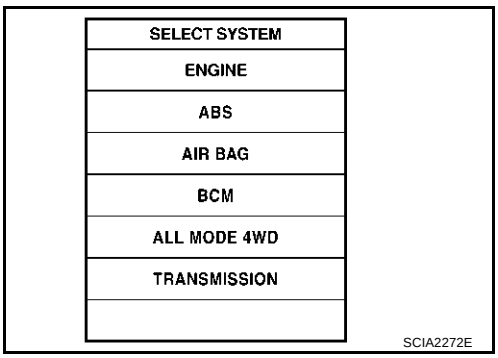
1. Turn ignition switch “OFF”.
2. Connect CONSULT-II and CONSULT-II CONVERSTER to data link connector, which is located in lower instrument panel on driver side.
3. Turn ignition switch “ON”.



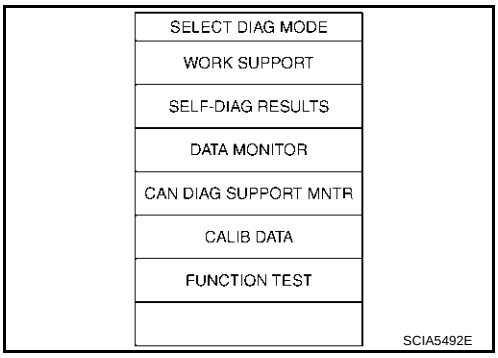
4. Touch “START (NISSAN BASED VHCL)”.



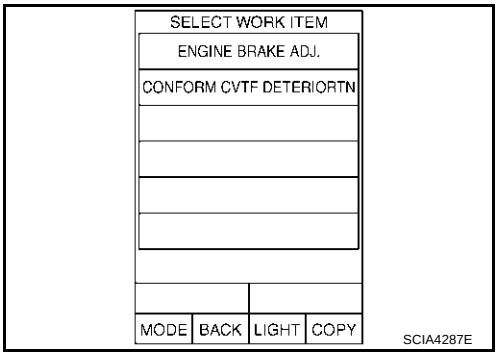
5. Touch “TRANSMISSION”.



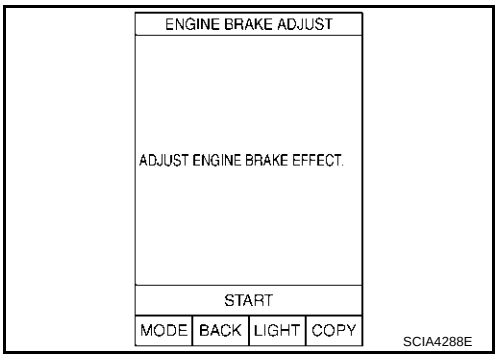
6. Touch “WORK SUPPORT”.



7. Touch “ENGINE BRAKE ADJUSTMENT”.



8. Touch “START”.



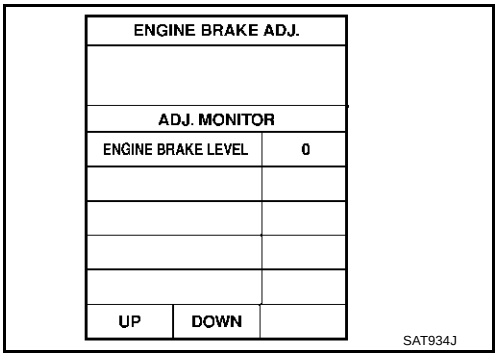
9. Set “ENGINE BRAKE LEVEL” by touching “UP” or “DOWN”.

ENGINE BRAKE LEVEL

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

OFF: Engine brake level control is deactivated.

10. Turn ignition switch “OFF”, wait at least 5 seconds and then turn ignition switch “ON”.



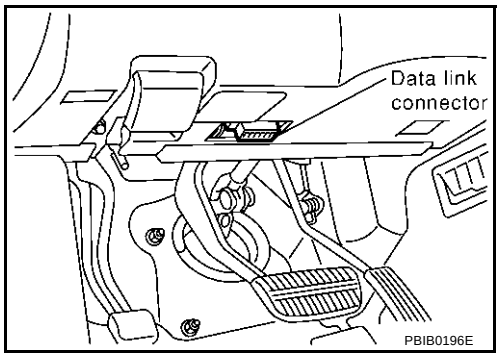
11. Engine brake level set is completed.

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

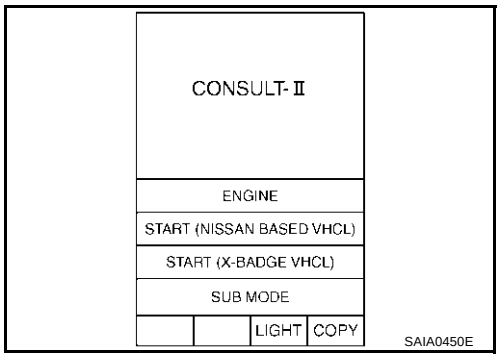
Check CVT Fluid Deterioration Date

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

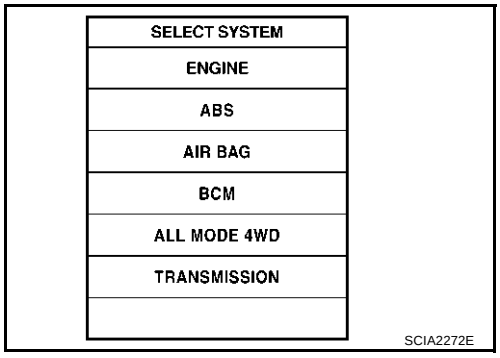
1. Turn ignition switch “OFF”.
2. Connect CONSULT-II and CONSULT-II CONVERSTER to data link connector, which is located in lower instrument panel on driver side.
3. Turn ignition switch “ON”.



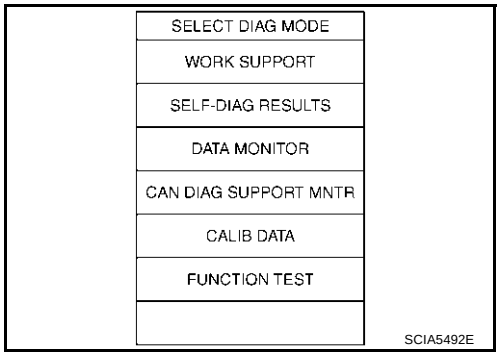
4. Touch “START (NISSAN BASED VHCL)”.



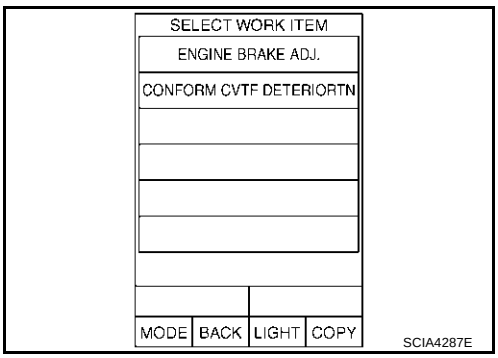
5. Touch “TRANSMISSION”.



6. Touch “WORK SUPPORT”.



7. Touch “CONFORM CVTF DETERIORTN”.



8. Check“CVTF DETERIORATION DATE”

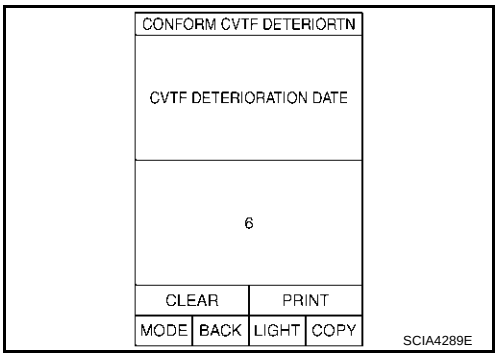
CVTF DETERIORATION DATE

More than 210000

: It is necessary to change CVT fluid.

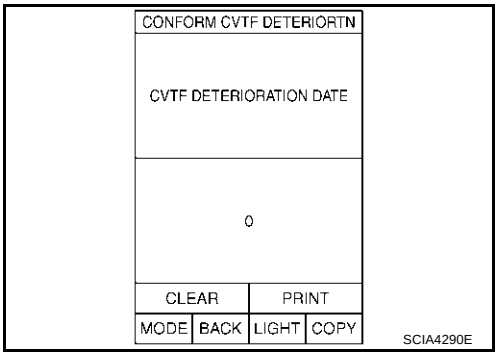
Less than 210000

: It is not necessary to change CVT fluid.



CAUTION:

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



SELF-DIAGNOSTIC PROCEDURE (WITH CONSULT-II)

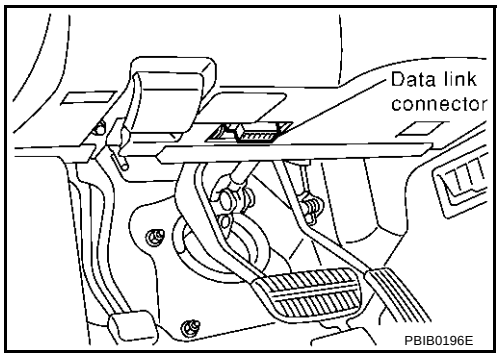
CONSULT-II Setting Procedure

CAUTION:

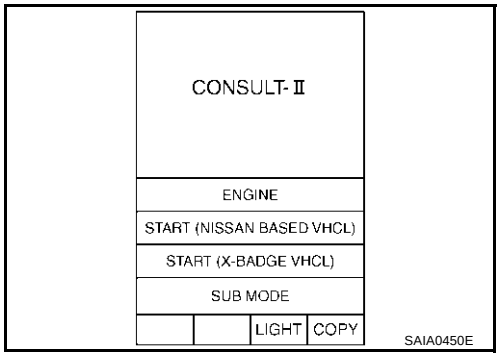
If CONSULT-II is used with no connection of CONSULT-II CONVERTER, malfunctions might be detected in self-diagnosis depending on control unit which carry out CAN communication.

- For details, refer to the separate “CONSULT-II Operations Manual”.

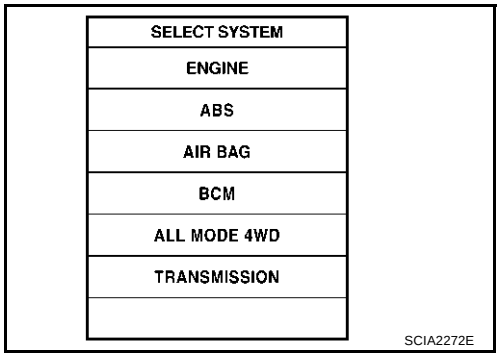
1. Turn ignition switch “OFF”.
2. Connect CONSULT-II and CONSULT-II CONVERSTER to data link connector, which is located in lower instrument panel on driver side.
3. Turn ignition switch “ON”.



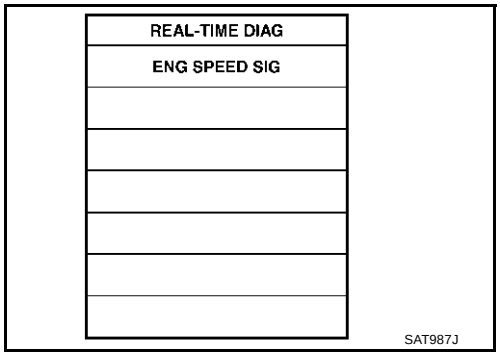
4. Touch “START (NISSAN BASED VHCL)”.



5. Touch “ENGINE” for OBD-II detected items or touch “TRANSMISSION” for TCM self-diagnosis.
   If “TRANSMISSION” or “ENGINE” is not indicated, go to GI-38, "CONSULT-II Data Link Connector (DLC) Circuit" .



6. Touch “SELF-DIAG RESULTS”.
   Display shows malfunction experienced since the last erasing operation.
   CONSULT-II performs REAL-TIME SELF-DIAGNOSIS.
   Also, any malfunction detected while in this mode will be displayed at real time.



Self-Diagnostic Result Test Mode

Items (CONSULT-II screen terms)	Malfunction is detected when...	TCM self-diagnosis	OBD-II (DTC)
		"TRANSMISSION" with CONSULT-II	MIL indicator lamp*1, "ENGINE" with CONSULT-II or GST
CAN COMM CIRCUIT	● When a malfunction is detected in CAN communications	U1000	U1000
STARTER RELAY/CIRC	● If this signal is ON other than in P or N position, this is judged to be a malfunction. (And if it is OFF in P or N position, this is judged to be a malfunction too.)	P0615	—
BRAKE SW/CIRC	● When the brake switch does not switch to ON or OFF	P0703	—
PNP SW/CIRC	● PNP switch 1-4 signals input with impossible pattern ● PNP switch 3 monitor terminal open or short circuit	P0705	P0705
ATF TEMP SEN/CIRC	● During running, the CVT fluid temperature sensor signal voltage is excessively high or low	P0710	P0710
INPUT SPD SEN/CIRC (IN PY SPD SEN/CIRC)*2	● 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
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
ENGINE SPEED SIG	● TCM does not receive the CAN communication signal from the ECM.	P0725	—
BELT DAMG	● Unexpected gear ratio detected	P0730	—
TCC SOLENOID/CIRC	● Normal voltage not applied to solenoid due to open or short circuit	P0740	P0740
A/T TCC S/V FNCTN	● CVT cannot perform lock-up even if electrical circuit is good. ● TCM detects as irregular by comparing difference value with slip rotation.	P0744	P0744
L/PRESS SOL/CIRC	● Normal voltage not applied to solenoid due to open or short circuit ● TCM detects as irregular by comparing target value with monitor value.	P0745	P0745
PRS CNT SOL/A FCTN (L/PRESS SOL/FNCTN)*2	● Unexpected gear ratio was detected in the LOW side due to excessively low line pressure.	P0746	P0746
PRS CNT SOL/B FCTN (SEC/PRESS SOL/FNCTN)*2	● Secondary pressure is too high or too low compared with the commanded value while driving.	P0776	P0776
PRS CNT SOL/B CIRC (SEC/PRESS SOL/CIRC)*2	● 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
TR PRS SENS/A CIRC (SEC PRS SEN/CIRC)*2	● Signal voltage of the transmission fluid pressure sensor A (secondary pressure sensor) is too high or too low while driving.	P0840	P0840
PRESS SEN/FNCTN	● Correlation between the values of the transmission fluid pressure sensor A (secondary pressure sensor) and the transmission fluid pressure sensor B (primary pressure sensor) is out of specification.	P0841	—

Items (CONSULT-II screen terms)	Malfunction is detected when...	TCM self-diagnosis	OBD-II (DTC)
		"TRANSMISSION" with CONSULT-II	MIL indicator lamp*1, "ENGINE" with CONSULT-II or GST
TR PRS SENS/B CIRC (PRI PRS SEN/CIRC)*2	● Signal voltage of the transmission fluid pressure sensor B (primary pressure sensor) is too high or too low while driving.	P0845	P0845
SEC/PRESS DOWN	● Secondary fluid pressure is too low compared with the commanded value while driving.	P0868	—
TCM-POWER SUPPLY	● When the power supply to the TCM is cut "OFF", for example because the battery is removed, and the self-diagnostics 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	—
TP SEN/CIRC A/T	● TCM does not receive the proper accelerator pedal position signals (input by CAN communication) from ECM.	P1705	—
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 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 secondary rotation, the primary rotation, or the engine speed is displayed at the same time.**	P1723	—
ELEC TH CONTROL	● The electronically controlled throttle for ECM is malfunctioning.	P1726	—
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
L/PRESS CONTROL	● TCM detects the unexpected line pressure.	P1745	—
STEP MOTOR/CIRC	● Each coil of the step motor is not energized properly due to an open or a short.	P1777	P1777
STEP MOTOR/FNCTN	● There is a great difference between the number of steps for the stepping motor and for the actual gear ratio.	P1778	P1778
NO DTC IS DETECTED: FURTHER TESTING MAY BE REQUIRED	● No NG item has been detected.	X	X

*1: Refer to CVT-48, "Malfunction Indicator Lamp (MIL)" .
*2: CONSULT-II screen terms are shown differently depending on the version of CONSULT-II card.

Data Monitor Mode (CVT)

X: Standard, —: Not applicable

Monitored item (Unit)	Monitor Item Selection			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	
VSP SENSOR (km/h)	X	—	X	Output speed sensor (secondary speed sensor).
ESTM VSP SIG (km/h)	X	—	X	
PRI SPEED SEN (rpm)	X	—	X	
ENG SPEED SIG (rpm)	X	—	X	
SEC HYDR SEN (V)	X	—	X	
PRI HYDR SEN (V)	X	—	X	
ATF TEMP SEN (V)	X	—	X	
VVIGN SEN (V)	X	—	X	
VEHICLE SPEED (km/h)	—	X	X	Vehicle speed recognized by the TCM.
PRI SPEED (rpm)	—	X	X	Primary pulley speed.
SEC SPEED (rpm)	—	—	X	Secondary pulley speed.
ENG SPEED (rpm)	—	X	X	
SLIP REV (rpm)	—	X	X	Difference between engine speed and primary pulley speed
GEAR RATIO	—	X	X	
G SPEED (G)	—	—	X	
ACC PEDAL OPEN (0.0/8)	X	X	X	Degree of opening for accelerator recognized by the TCM For fail-safe operation, the specific value used for control is displayed.
ENG TRQ ACT (N-m)	—	—	X	
VENG TRQ (N-m)	—	X	X	
PRI TRQ (N-m)	—	—	X	
TRQ RTO	—	—	X	
SEC PRESS (MPa)	—	X	X	
PRI PRESS (MPa)	—	X	X	
ATF TEMP	—	X	X	
DSR REV (rpm)	—	—	X	
DGEAR RATIO	—	—	X	
DSTM STEP (step)	—	—	X	
STM STEP (step)	—	X	X	
LU PRS (MPa)	—	—	X	
LINE PRS (MPa)	—	—	X	
SEC PRS (MPa)	—	—	X	
ISOLT1 (A)	—	X	X	Torque converter clutch solenoid valve output current
ISOLT2 (A)	—	X	X	Pressure control solenoid valve A (line pressure solenoid valve) output current
ISOLT3 (A)	—	X	X	Pressure control solenoid valve B (secondary pressure solenoid valve) output current
SOLMON1 (A)	X	X	X	Torque converter clutch solenoid valve monitor current

Monitored item (Unit)	Monitor Item Selection			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	
SOLMON2 (A)	X	X	X	Pressure control solenoid valve A (line pressure solenoid valve) monitor current
SOLMON3 (A)	X	X	X	Pressure control solenoid valve B (secondary pressure solenoid valve) monitor current
INH SW3M (ON-OFF display)	X	—	X	PNP switch 3 ON-OFF status monitor
INH SW4 (ON-OFF display)	X	—	X	PNP switch 4 ON-OFF status
INH SW3 (ON-OFF display)	X	—	X	PNP switch 3 ON-OFF status
INH SW2 (ON-OFF display)	X	—	X	PNP switch 2 ON-OFF status
INH SW1 (ON-OFF display)	X	—	X	PNP switch 1 ON-OFF status
BRAKESW (ON-OFF display)	X	X	X	Stop lamp switch
FULL SW (ON-OFF display)	X	X	X	Signal input with CAN communications
IDLE SW (ON-OFF display)	X	X	X	
SECOND POS SW (ON-OFF display)	X	X	X	
STRDWNSW (ON-OFF display)	X	—	X	Not mounted but displayed.
STRUPSW (ON-OFF display)	X	—	X	
DOWNLVR (ON-OFF display)	X	—	X	
UPLVR (ON-OFF display)	X	—	X	
NONMMODE (ON-OFF display)	X	—	X	
MMODE (ON-OFF display)	X	—	X	
INDLRNG (ON-OFF display)	—	—	X	“L” position indicator output
INDDRNG (ON-OFF display)	—	—	X	“D” position indicator output
INDNRNG (ON-OFF display)	—	—	X	“N” position indicator output
INDRRNG (ON-OFF display)	—	—	X	“R” position indicator output
INDPRNG (ON-OFF display)	—	—	X	“P” position indicator output
CVTLAMP (ON-OFF display)	—	—	X	
SECOND POS IND (ON-OFF display)	—	—	X	
MMODE IND (ON-OFF display)	—	—	X	Not mounted but displayed.
SMCOIL D (ON-OFF display)	—	—	X	Step motor coil “D” energizing status
SMCOIL C (ON-OFF display)	—	—	X	Step motor coil “C” energizing status
SMCOIL B (ON-OFF display)	—	—	X	Step motor coil “B” energizing status
SMCOIL A (ON-OFF display)	—	—	X	Step motor coil “A” energizing status
LUSEL SOL OUT (ON-OFF display)	—	—	X	
REV LAMP (ON-OFF display)	—	X	X	
STRTR RLY OUT (ON-OFF display)	—	—	X	PNP relay
LU SEL SOL MON (ON-OFF display)	—	—	X	
STRTR RLY MON (ON-OFF display)	—	—	X	PNP relay
VDC ON (ON-OFF display)	X	—	X	
TCS ON (ON-OFF display)	X	—	X	
ABS ON (ON-OFF display)	X	—	X	
ACC ON (ON-OFF display)	X	—	X	Not mounted but displayed.

Monitored item (Unit)	Monitor Item Selection			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	
RENGE	—	X	X	Indicates position is recognized by TCM. Indicates a specific value required for control when fail-safe function is activated.
M GEAR POS	—	X	X	Not mounted but displayed.
Voltage (V)	—	—	X	Displays the value measured by the voltage probe.
Frequency (Hz)	—	—	X	The value measured by the pulse probe is displayed.
DUTY·HI (high) (%)	—	—	X	
DUTY·LOW (low) (%)	—	—	X	
PLS WIDTH·HI (ms)	—	—	X	
PLS WIDTH·LOW (ms)	—	—	X	

Diagnostic Procedure Without CONSULT-II

ACS001TE

OBD-II SELF-DIAGNOSTIC PROCEDURE (WITH GST)

Refer to EC-138, "Generic Scan Tool (GST) Function" .

DTC U1000 CAN COMMUNICATION LINE

PFP:23710

Description

ACS001TF

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

ACS001TG

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “CAN COMM CIRCUIT” with CONSULT-II or U1000 without CONSULT-II is detected when TCM cannot communicate to other control units.

Possible Cause

ACS001TH

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

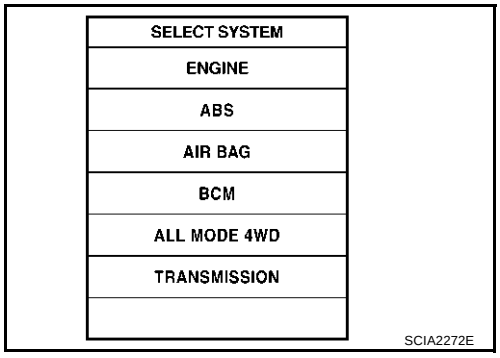
DTC Confirmation Procedure

ACS001TI

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

WITH CONSULT-II

1. Turn ignition switch “ON”. (Do not start engine.)
2. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-II.
3. Start engine and wait for at least 6 seconds.
4. If DTC is detected, go to CVT-78, "Diagnostic Procedure" .



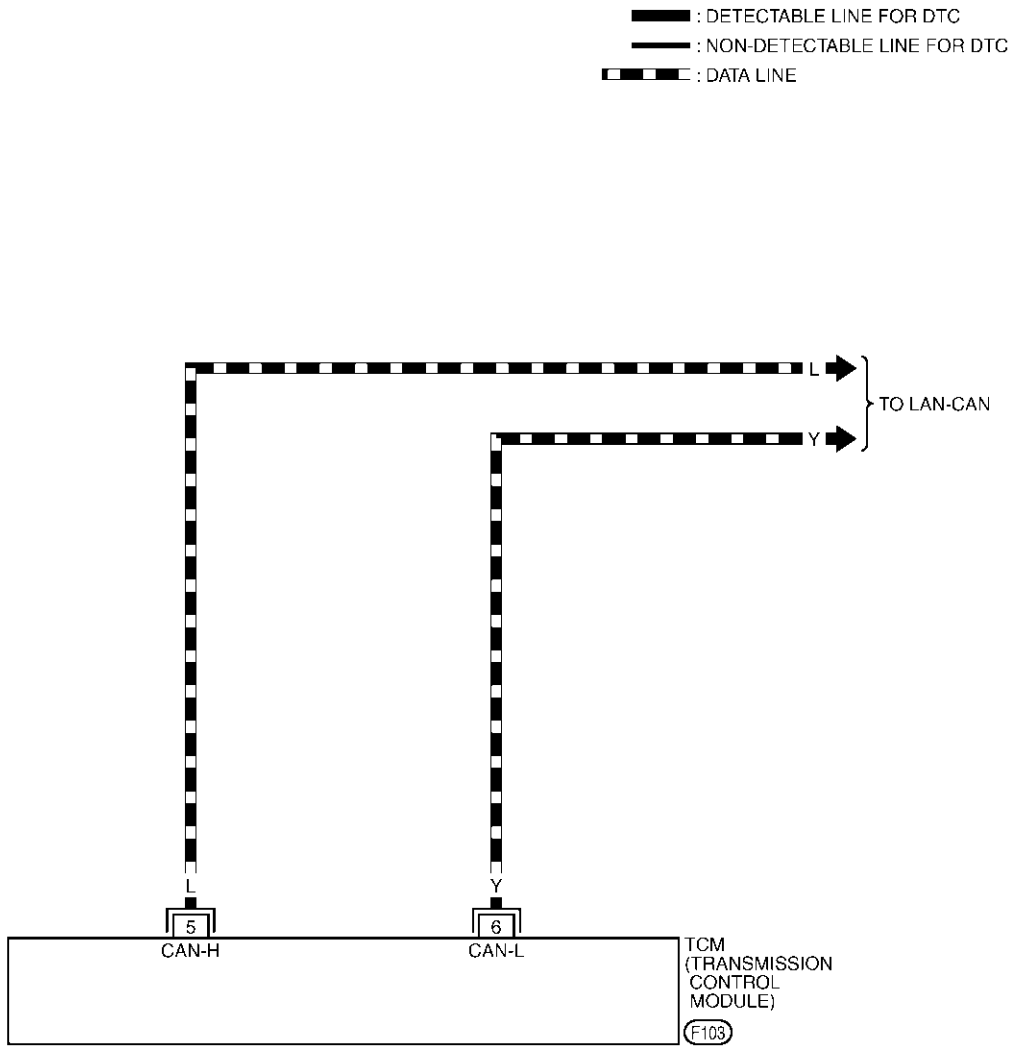
WITH GST

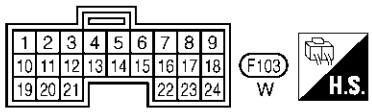
Follow the procedure “WITH CONSULT-II”.

Wiring Diagram — CVT — CAN

ACS001TJ

CVT-CAN-01





TCWA0147E

TCM terminals and data are reference values.

Terminal No.	Wire color	Item	Condition	Data (Approx.)
5	L	CAN H	–	–
6	Y	CAN L	–	–

Diagnostic Procedure

ACS001TK

1. CHECK CAN COMMUNICATION CIRCUIT

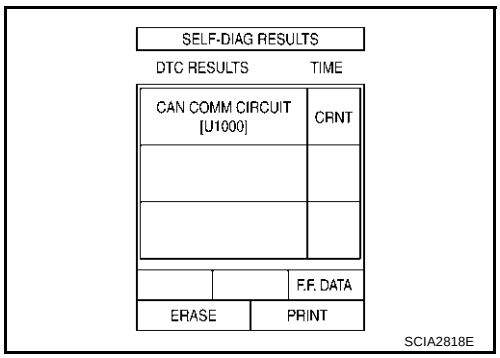
With CONSULT-II

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

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

YES >> Print out CONSULT-II screen, GO TO LAN section. Refer to LAN-10, "Precautions When Using CONSULT-II" .

NO >> **INSPECTION END**



DTC P0615 START SIGNAL CIRCUIT

PFP:25230

Description

ACS001TL

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

On Board Diagnosis Logic

ACS001TM

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

Possible Cause

ACS001TN

- Harness or connectors
  [The park/neutral position (PNP) relay (starter relay) and TCM circuit is open or shorted.]
- Park/neutral position (PNP) relay (starter relay)

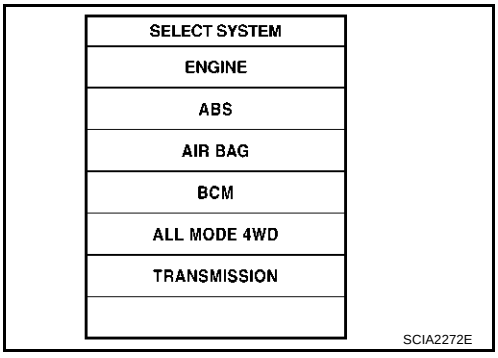
DTC Confirmation Procedure

ACS001TO

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

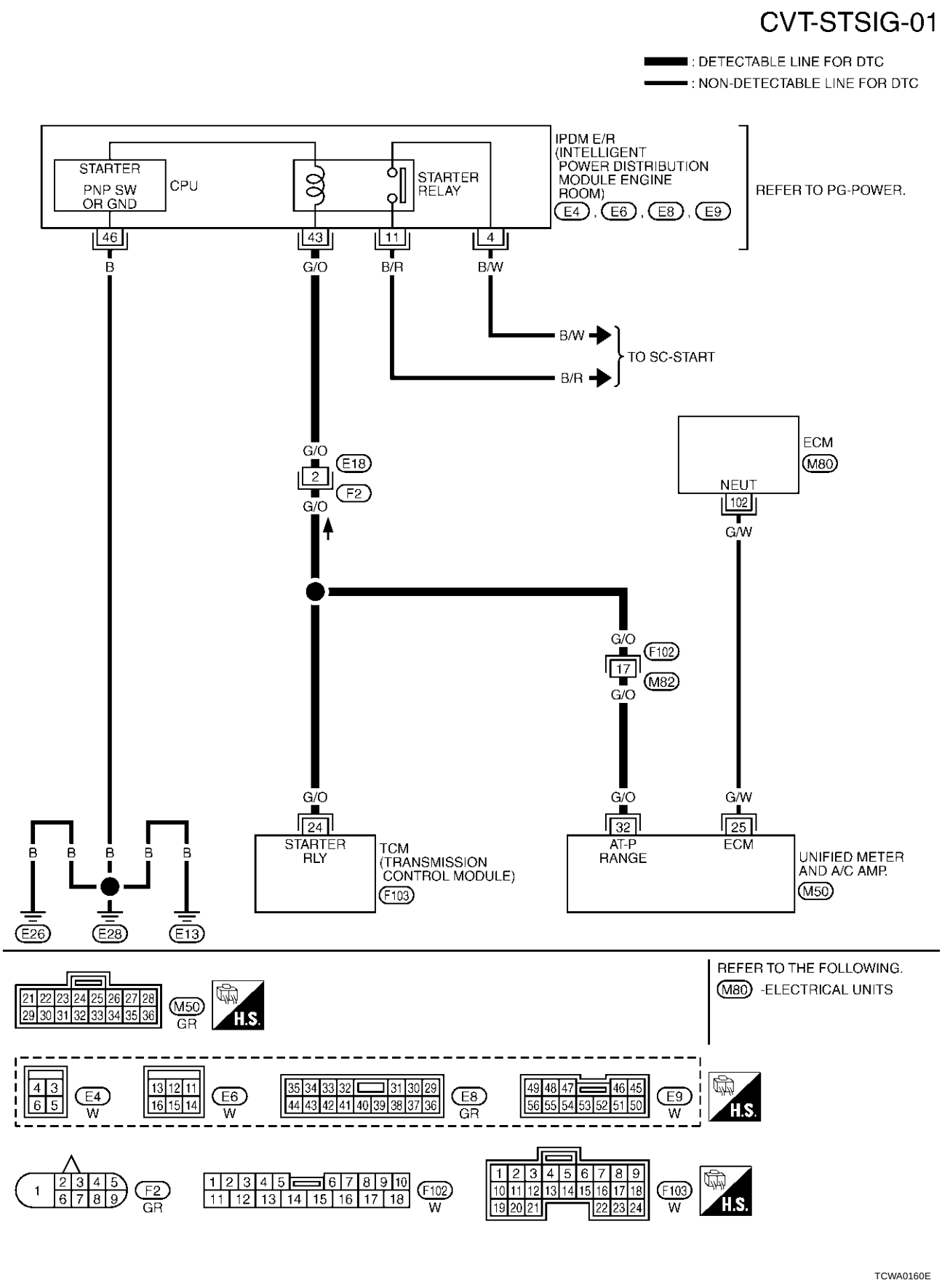
WITH CONSULT-II

1. Turn ignition switch “ON”. (Do not start engine.)
2. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-II.
3. Start engine.
4. Drive vehicle for at least 2 consecutive seconds.
5. If DTC is detected, go to CVT-81, "Diagnostic Procedure" .



Wiring Diagram — CVT — STSIG

ACS001TP



TCWA0160E

TCM terminal and data are reference values. Measured between each terminal and ground.

Terminal No.	Wire color	Item	Condition		Data (Approx.)
24	G/O	PNP relay (Starter relay)	IGN ON	Selector lever in “N”, “P” position.	Battery voltage
				Selector lever in other position.	0V

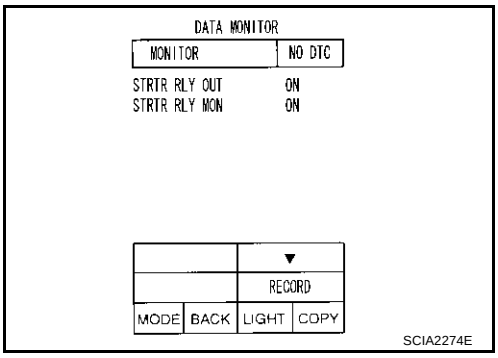
Diagnostic Procedure

ACS001TQ

1. CHECK PNP RELAY (STARTER RELAY) (WITH CONSULT-II)

With CONSULT-II

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



Shift position	Item	
	“STRTR RLY OUT”	“STRTR RLY MON”
N and P	ON	ON
R, D and L	OFF	OFF

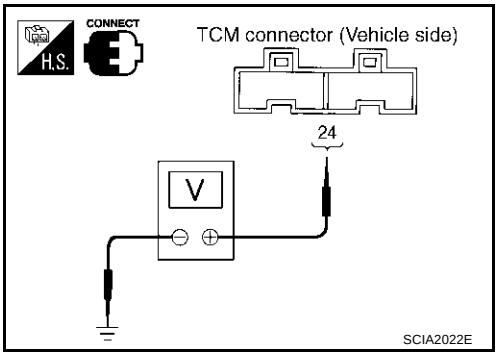
OK or NG

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

2. CHECK PNP RELAY (STARTER RELAY) (WITHOUT CONSULT-II)

Without CONSULT-II

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



Item	Connector No.	Terminal No. (Wire color)		Shift position	Voltage (Approx.)
PNP relay (Starter relay)	F103	24 (G/O)	Ground	N and P	Battery voltage
				R, D and L	0V

OK or NG

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

3. DETECT MALFUNCTIONING ITEM

Check the following:

- PNP relay (starter relay). Refer to PG-85, "STANDARDIZED RELAY" .
- Open or short-circuits in the harness between TCM and the PNP relay
- Ground circuit for the PNP relay (starter relay)

OK or NG

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

4. CHECK DTC

Check again.

- Refer to CVT-79, "DTC Confirmation Procedure" .

OK or NG

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

5. CHECK TCM INSPECTION

1. Perform TCM input/output signal inspection.
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

ACS002SJ

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

On Board Diagnosis Logic

ACS002SK

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code “BRAKE SW/CIRC” with CONSULT-II is detected when the brake switch does not switch to “ON” and “OFF”.
  - The brake switch does not switch to “ON”, “OFF”.

Possible Cause

ACS002SL

- Harness or connectors
  [The stop lamp switch and unified meter and A/C amp circuit is open or shorted.]
  [CAN communication line is open or shorted.]
- Stop lamp switch

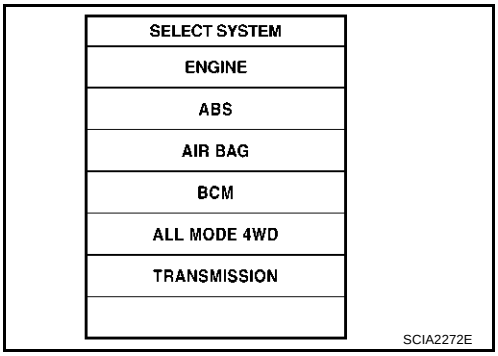
DTC Confirmation Procedure

ACS002SM

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

WITH CONSULT-II

1. Turn ignition switch “ON”. (Do not start engine.)
2. Select “DATA MONITOR” mode for “TRANSMISSON” with CONSULT-II.
3. Start engine.
4. Start vehicle for at least 3 consecutive seconds.
5. If DTC is detected, go to CVT-83, "Diagnostic Procedure" .



Diagnostic Procedure

ACS002IT

1. CHECK CAN COMMUNICATION LINE

Perform the self-diagnosis.

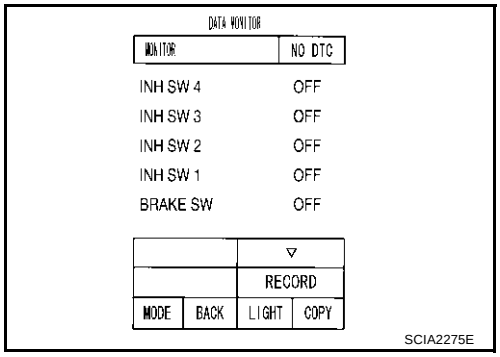
Is any malfunction of the “CAN COMM CIRCUIT” indicated?

YES >> Check CAN communication line. Refer to CVT-76, "DTC U1000 CAN COMMUNICATION LINE" .
NO >> GO TO 2.

2. CHECK STOP LAMP SWITCH CIRCUIT

With CONSULT-II

1. Turn ignition switch “ON”. (Do not start engine.)
2. Select “ECU INPUT SIGNALS” in “DATA MONITOR” mode for “TRANSMISSON” with CONSULT-II.
3. Read out ON/OFF switching action of the “BRAKE SW”.

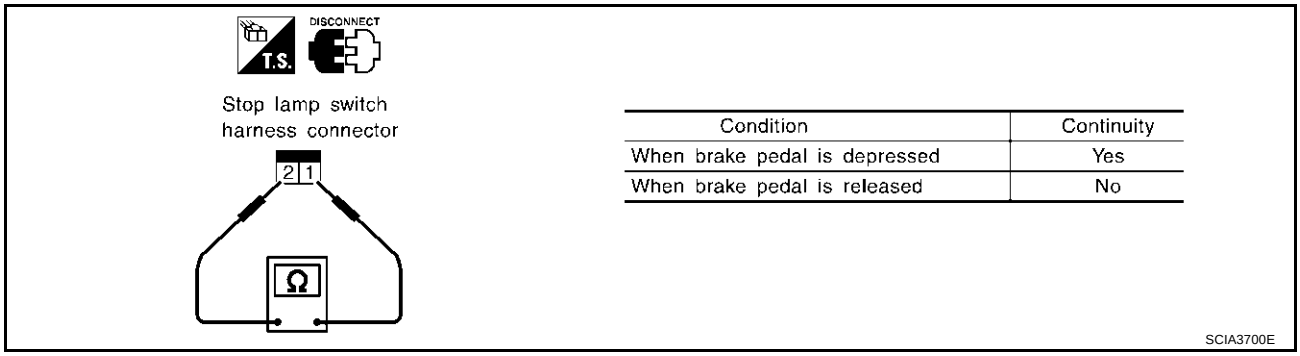


OK or NG

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

3. CHECK STOP LAMP SWITCH

Check continuity between stop lamp switch harness connector E116 terminals 1 (R/Y) and 2 (R/G).



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-6, "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

ACS001TR

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

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

On Board Diagnosis Logic

ACS001TS

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “PNP SW/CIRC” with CONSULT-II or P0705 without 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

ACS001TT

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

DTC Confirmation Procedure

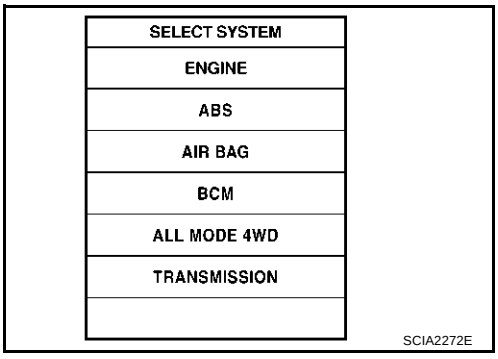
ACS001TU

CAUTION:
Always drive vehicle at a safe speed.

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

WITH CONSULT-II

1. Turn ignition switch “ON”. (Do not start engine.)
2. Select “DATA MONITOR” mode for “ENGINE” with CONSULT-II.
3. Start engine.
4. Drive vehicle and maintain the following conditions for at least 2 consecutive seconds.
   VHCL SPEED SE: More than 10km/h (6 MPH)
   ENG SPEED SIG: More than 450rpm
   ACC PEDAL OPEN: More than 1/8
5. If DTC is detected, go to CVT-87, "Diagnostic Procedure" .



WITH GST

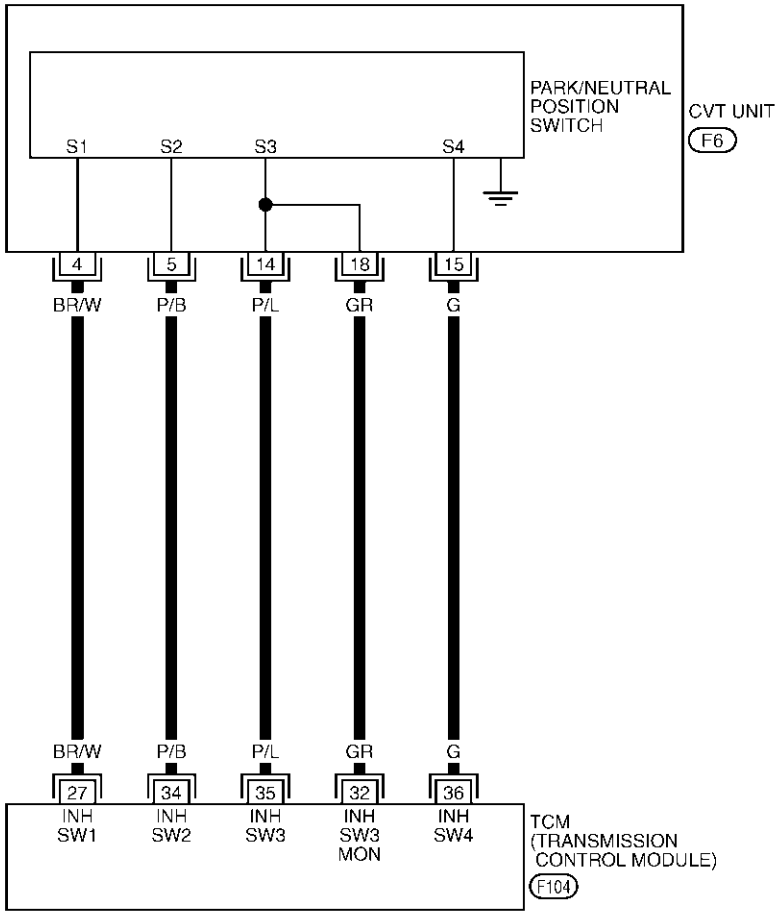
Follow the procedure “With CONSULT-II”.

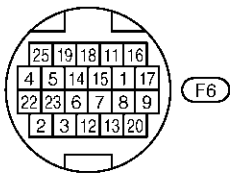
Wiring Diagram — CVT — PNP/SW

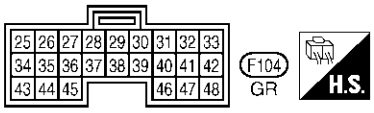
ACS001TV

CVT-PNP/SW-01

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







TCWA0148E

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

Terminal No.	Wire color	Item	Condition		Data (Approx.)
27	BR/W	PNP switch 1	IGN ON	Selector lever in “P”, “L” position.	Battery voltage
				Selector lever in other position.	0V
34	P/B	PNP switch 2		Selector lever in “P”, “R” position.	Battery voltage
				Selector lever in other position.	0V
35	P/L	PNP switch 3		Selector lever in “P”, “R”, “N” position.	Battery voltage
				Selector lever in other position.	0V
36	G	PNP switch 4		Selector lever in “P”, “N”, “L” position.	Battery voltage
				Selector lever in other position.	0V
32	GR	PNP switch 3 (monitor)		Selector lever in “P”, “R”, “N” position.	Battery voltage
				Selector lever in other position.	0V

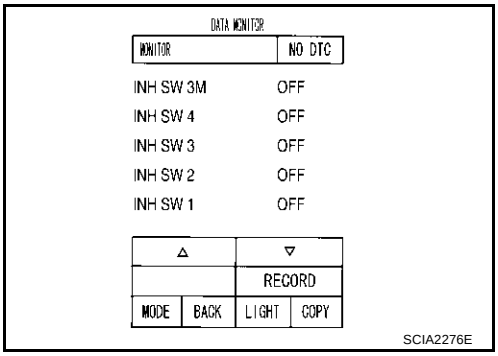
Diagnostic Procedure

ACS001TW

1. CHECK PNP SW CIRCUIT (WITH CONSULT-II)

With CONSULT-II

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



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	ON	ON	ON	ON	ON
L	OFF	ON	ON	OFF	ON

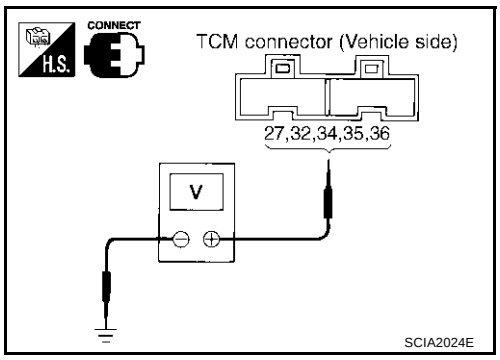
OK or NG

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

2. CHECK PNP SW CIRCUIT (WITHOUT CONSULT-II)

Without CONSULT-II

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



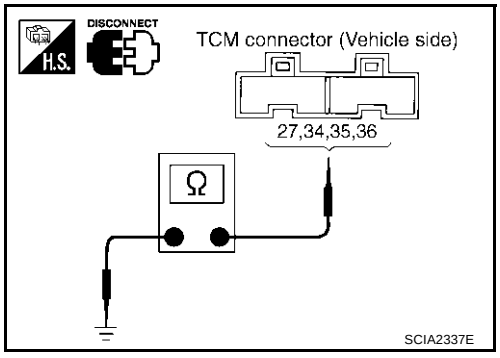
Shift position	Connector No.	F104			
	Terminal No. (Wire color)				
	27 (BR/W) - Ground	34 (P/B) - Ground	35 (P/L) - Ground	36 (G) - Ground	32 (GR) - Ground
P	Battery voltage	Battery voltage	Battery voltage	Battery voltage	Battery voltage
R	0V	Battery voltage	Battery voltage	0V	Battery voltage
N	0V	0V	Battery voltage	Battery voltage	Battery voltage
D	0V	0V	0V	0V	0V
L	Battery voltage	0V	0V	Battery voltage	0V

OK or NG

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

3. CHECK THE HARNESS BETWEEN TCM AND PNP SWITCH

1. Turn ignition switch “OFF”.
2. Disconnect the TCM connector.
3. Check the continuity between TCM connector terminals (vehicle side) 27 (BR/W), 34 (P/B), 35 (P/L), 36 (G), 32 (GR) and ground.



Connector No.	Terminal No. (Wire color)	Condition	Continuity
F104	27 (BR/W) - ground	Select lever in “P”, “L” position.	No
		Select lever in other position.	Yes
	34 (P/B) - ground	Select lever in “P”, “R” position.	No
		Select lever in other position.	Yes
	35 (P/L) - ground	Select lever in “P”, “R”, “N” position.	No
		Select lever in other position.	Yes
	36 (G) - ground	Select lever in “P”,“N”, “L” position.	No
		Select lever in other position.	Yes
	32 (GR) - ground	Select lever in “P”, “R”, “N” position.	No
		Select lever in other position.	Yes

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

OK or NG

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

4. DETECT MALFUNCTIONING ITEM

Check the following items.

- Open or short-circuit in the harness between TCM and PNP switch 1, 2, 3, 4.
- Open or short-circuit in the harness between TCM and PNP switch 3 monitor.
- Open-circuit in ground between TCM and PNP switch (transaxle assembly).
- PNP switch. Refer to CVT-89, "Component Inspection" .

OK or NG

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

5. CHECK DTC

Check again.

- Refer to CVT-85, "DTC Confirmation Procedure" .

OK or NG

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

6. CHECK TCM INSPECTION

1. Perform TCM input/output signal inspection.
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-197, "Removal and Installation" .

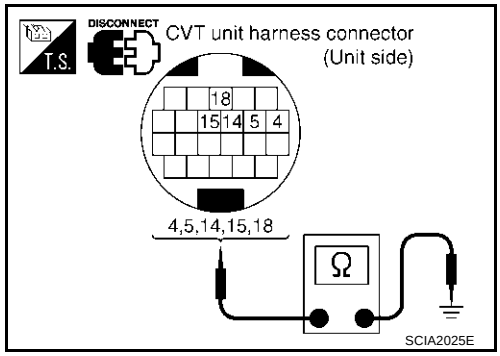
Component Inspection

ACS001TX

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 No.	Terminal No.	Continuity
SW 1	R, N, D	F6	4 - Ground	Yes
	other position.			No
SW 2	N, D, L		5 - Ground	Yes
	other position.			No
SW 3	D, L		14 - Ground	Yes
	other position.			No
SW 4	R, D		15 - Ground	Yes
	other position.			No
SW 3 Monitor	D, L		18 - Ground	Yes
	other position.			No



2. If NG, check the continuity with the control linkage disconnected. (Refer to Step 1 above.)
3. If OK with the control linkage disconnected, adjust the control linkage. Refer to CVT-183, "Adjustment of CVT Position" .
4. If NG even when the control linkage is disconnected, replace the transaxle assembly. Refer to CVT-197, "Removal and Installation" .

DTC P0710 CVT FLUID TEMPERATURE SENSOR CIRCUIT

PFP:31020

Description

ACS002SN

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

CONSULT-II Reference Value

ACS002SO

Remarks: Specification data are reference values.

Monitor item	Condition	Specification (Approximately)
CVT fluid temperature sensor	Cold [20°C (68°F)]	2.0V
	Hot [80°C (176°F)]	1.0V

On Board Diagnosis Logic

ACS002SP

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “ATF TEMP SEN/CIRC” with CONSULT-II or P0710 without CONSULT-II is detected when TCM receives an excessively low or high voltage from the sensor.

Possible Cause

ACS002SQ

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

DTC Confirmation Procedure

ACS002SR

CAUTION:

Always drive vehicle at a safe speed.

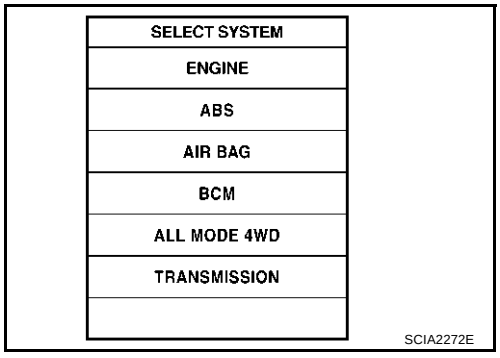
NOTE:

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

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

WITH CONSULT-II

1. Turn ignition switch “ON”. (Do not start engine.)
2. Select “DATA MONITOR” mode for “ENGINE” with CONSULT-II.
3. Start engine and maintain the following conditions for at least 10 minutes (Total). (It is not necessary to maintain continuously.)
   VHCL SPEED SE: 10 km/h (6 MPH) or more
   ENG SPEED: 450rpm more than
   ACC PEDAL OPEN: More than 1/8
   Selector lever: “D” position
4. If DTC is detected, go to CVT-92, "Diagnostic Procedure" .



WITH GST

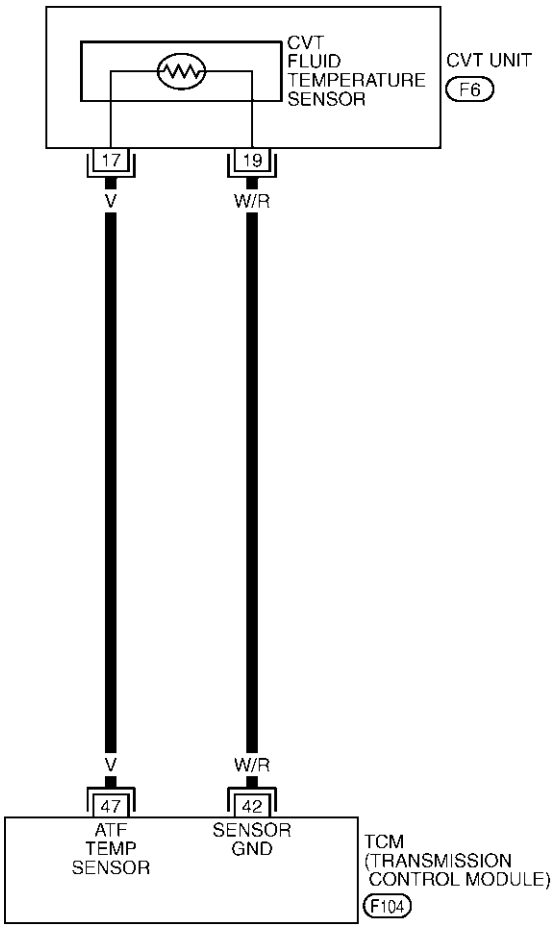
Follow the procedure “With CONSULT-II”.

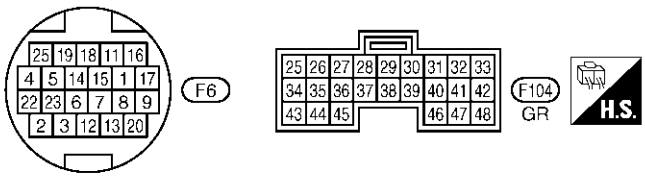
Wiring Diagram - CVT - FTS

ACS0020Q

CVT-FTS-01

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





TCWA0149E

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

Terminal No.	Wire color	Item	Condition		Judgement standard (Approx.)
42	W/R	Sensor ground	—		—
47	V	CVT fluid temperature sensor		When CVT fluid temperature is 20°C (68°F).	2.0V
				When CVT fluid temperature is 80°C (176°F).	1.0V

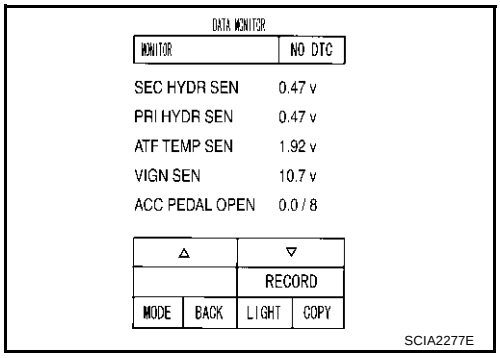
Diagnostic Procedure

ACS002SS

1. CHECK FLUID TEMPERATURE SENSOR SIGNAL (WITH CONSULT-II)

With CONSULT-II

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



Item name	Condition °C (°F)	Display value (Approx.) V
CVT fluid temperature sensor	20 (68)	2.0
	80 (176)	1.0

OK or NG

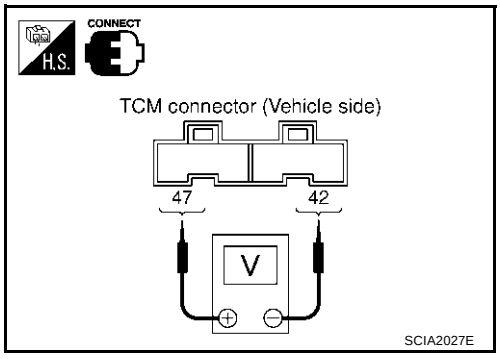
OK >> GO TO 6.
NG >> GO TO 3.

2. CHECK FLUID TEMPERATURE SENSOR SIGNAL (WITHOUT CONSULT-II)

Without CONSULT-II

1. Start engine.
2. Check voltage between TCM connector and ground while warming up CVT. Refer to CVT-91, "Wiring Diagram - CVT - FTS" .

Name	Connector No.	Terminal No.	Temperature °C (°F)	Voltage (V) (Approx.)
Fluid temperature sensor 1	F104	47 (V) - 42 (W/R) (ground)	20 (68)	2.0
			80 (176)	1.0



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

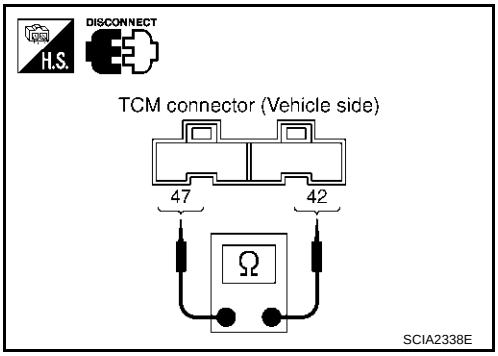
OK or NG

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

3. CHECK FLUID TEMPERATURE SENSOR CIRCUIT

1. Turn ignition switch “OFF”.
2. Disconnect the TCM connector.
3. Check resistance between terminals 47 and 42.

Name	Connector No.	Terminal No. (Wire color)	Temperature °C (°F)	Resistance (KΩ) (Approx.)
CVT fluid temperature sensor	F104	47 (V) - 42 (W/R) (ground)	20 (68)	2.5
			80 (176)	0.3



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

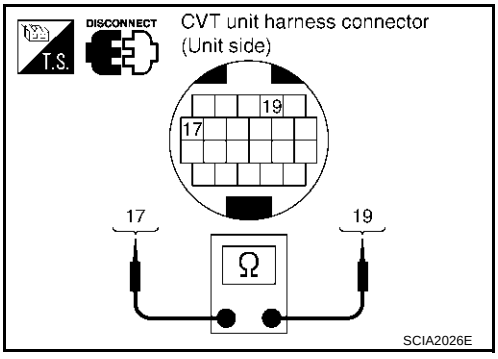
OK or NG

OK >> GO TO 6.
NG >> GO TO 4.

4. CHECK FLUID TEMPERATURE SENSOR

1. Turn ignition switch “OFF”.
2. Disconnect CVT unit harness connector.
3. Check resistance between terminals 17 and 19.

Name	Connector No.	Terminal No.	Temperature °C (°F)	Resistance (KΩ) (Approx.)
CVT fluid temperature sensor	F6	17 - 19	20 (68)	2.5
			80 (176)	0.3



4. Reinstall any part removed.

OK or NG

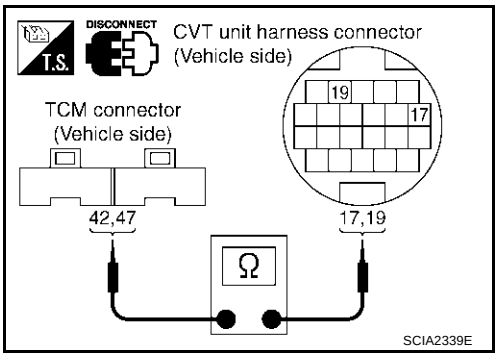
OK >> GO TO 5.
NG >> Replace the transaxle assembly. Refer to CVT-197, "Removal and Installation" .

5. CHECK THE 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 and CVT unit harness connector.

Item	Connector No.	Terminal No. (Wire color)	Continuity
TCM	F104	42 (W/R)	Yes
CVT unit harness connector	F6	19 (W/R)	

Item	Connector No.	Terminal No. (Wire color)	Continuity
TCM	F104	47 (V)	Yes
CVT unit harness connector	F6	17 (V)	



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

OK or NG

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

6. CHECK DTC

Perform “DTC Confirmation Procedure”. Refer to CVT-90, "DTC Confirmation Procedure" .

OK or NG

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

7. PERFORM TCM INSPECTION

1. Perform TCM input/output signal inspection.
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.

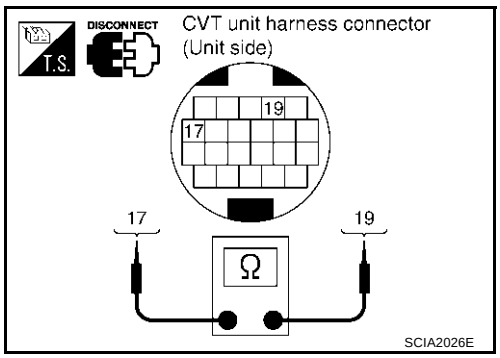
Component Inspection

ACS003KY

CVT FLUID TEMPERATURE SENSOR

1. Turn ignition switch “OFF”.
2. Disconnect CVT unit harness connector.
3. Check resistance between terminals 17 and 19.

Name	Connector No.	Terminal No. (Wire color)	Temperature °C (°F)	Resistance (KΩ) (Approx.)
CVT fluid temperature sensor	F6	17 (V) - 19 (W/R)	20 (68)	2.5
			80 (176)	0.3



4. If NG, replace transaxle assembly. Refer to CVT-197, "Removal and Installation" .

DTC P0715 INPUT SPEED SENSOR CIRCUIT (PRI SPEED SENSOR)

PFP:31935

Description

ACS002ST

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

NOTE:
CONSULT-II screen terms are shown differently depending on the version of CONSULT-II card.

CONSULT-II Reference Value

ACS002SU

Remarks: Specification data are reference values.

Monitor item	Condition	Specification (Approximately)
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

ACS002SV

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “IN PY SPD SEN/CIRC” with CONSULT-II or P0715 without CONSULT-II is detected when TCM does not receive the proper signal from the sensor.

Possible Cause

ACS002SW

- Harness or connectors
  (The sensor circuit is open or shorted.)
- Input speed sensor (primary speed sensor)

DTC Confirmation Procedure

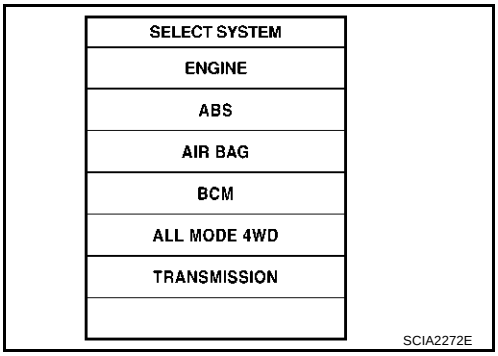
ACS002SX

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

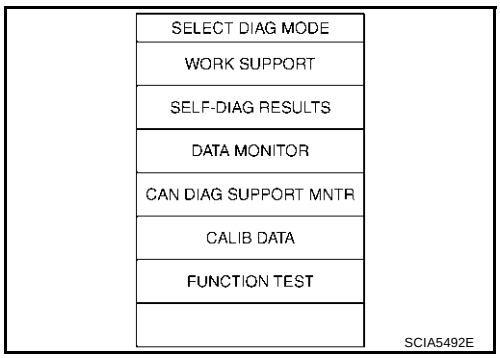
NOTE:
If “DTC Confirmation Procedure” has been previously performed, always turn ignition switch “OFF” and wait at least 5 seconds before performing the next test.
After the repair, touch “ERASE” on “SELF-DIAG RESULTS” and then perform the following procedure to confirm the malfunction is eliminated.

WITH CONSULT-II

1. Turn ignition switch “ON” and select “DATA MONITOR” mode for “ENGINE” with CONSULT-II.
2. Start engine and maintain the following conditions for at least 5 consecutive seconds.
   VHCL SPEED SE: 10 km/h (6 MPH) or more
   ACC PEDAL OPEN: More than 1/8
   Selector lever: D position
   ENG SPEED: 450 rpm or more
   Driving location: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.



If the check result is NG, go to “Diagnostic Procedure”, CVT-98 .



WITH GST

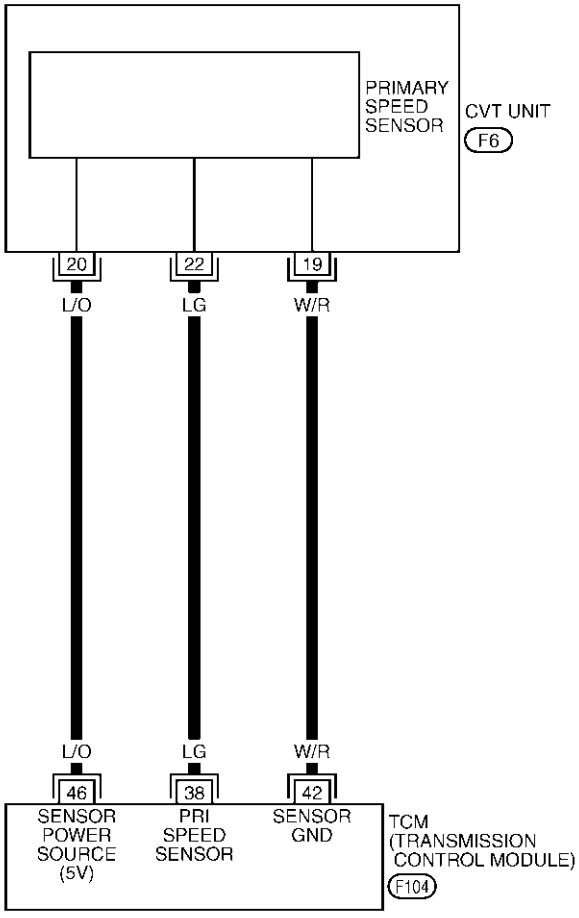
Follow the procedure “With CONSULT-II”.

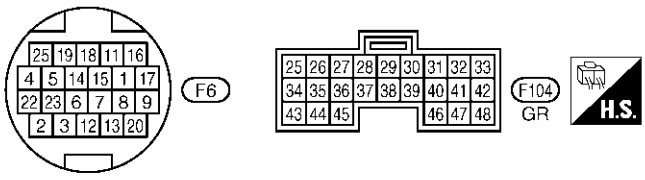
Wiring Diagram - CVT - PRSCVT

ACS0020X

CVT-PRSCVT-01

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





TCWA0156E

Remarks: Specification data are reference values.

Terminal No.	Wire color	Item	Condition	Judgement standard (Approx.)
38	G/Y	Input speed sensor (primary speed sensor)	When driving [L position, 20 km/h (12 MPH)]	600 Hz

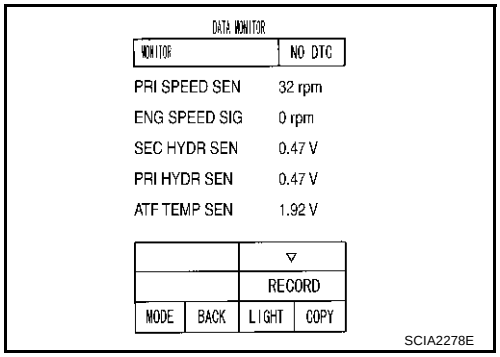
Diagnostic Procedure

ACS0020Y

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”.



Monitor item	Condition	Specification (Approximately)
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 46 (L/O) and 42 (W/R).

Item	Connector No.	Terminal No. (Wire color)	Data (Approx.)
TCM	F104	46 (L/O) - 42 (W/R)	4.5 - 5.5 (V)

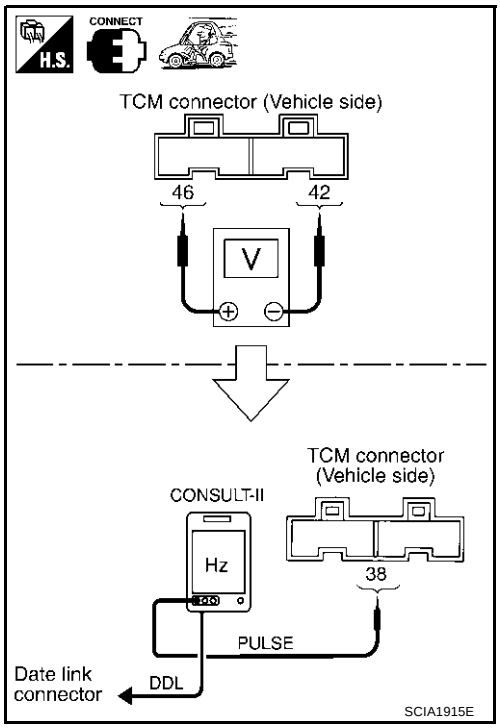
3. Check the pulse with CONSULT-II or oscilloscope. When vehicle cruises.

Name	Condition
Input speed sensor (primary speed sensor)	When running at 20 km/h (12 MPH) in “L” 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 No.	Terminal No. (Wire color)	Name	Data (Approx.)
TCM	F104	38 (LG)	Input speed sensor (primary speed sensor)	600 (Hz)

OK or NG

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

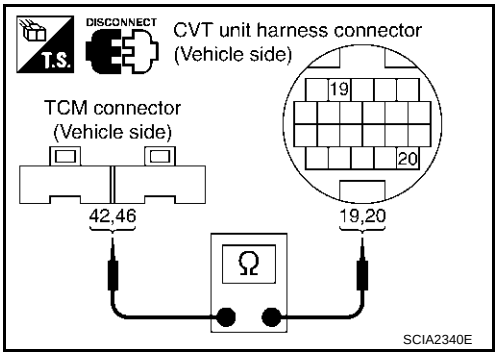


3. CHECK THE HARNESS BETWEEN TCM AND CVT UNIT HARNESS CONNECTOR (SENSOR POWER AND SENSOR GROUND)

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

Item	Connector No.	Terminal No. (Wire color)	Continuity
TCM	F104	42 (W/R)	Yes
CVT unit harness connector	F6	19 (W/R)	

Item	Connector No.	Terminal No. (Wire color)	Continuity
TCM	F104	46 (L/O)	Yes
CVT unit harness connector	F6	20 (L/O)	



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

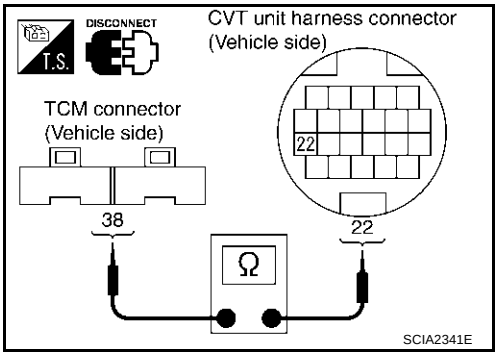
OK or NG

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

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

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

Item	Connector No.	Terminal No. (Wire color)	Continuity
TCM	F104	38 (LG)	Yes
CVT unit harness connector	F6	22 (LG)	



4. If OK, check harness for short to ground and short 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. Erase self-diag result and them drive the vehicle [10km/h (6MPH) or more], perform self-diagnosis. Refer to CVT-95, "DTC Confirmation Procedure" .

Is the “IN PY SPD SEN/CIR” detected again?

YES >> Replace the transaxle assembly. Refer to CVT-197, "Removal and Installation" .
NO >> Replace the TCM. Refer to CVT-8, "Precautions for TCM and CVT Assembly Replacement" .

6. CHECK DTC

Perform “DTC Confirmation Procedure”. Refer to CVT-95, "DTC Confirmation Procedure" .

OK or NG

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

7. PERFORM TCM INSPECTION

1. Perform TCM input/output signal inspection.
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

ACS002SY

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.

NOTE:
CONSULT-II screen terms are shown differently depending on the version of CONSULT-II card.

CONSULT-II Reference Value

ACS002SZ

Remarks: Specification data are reference values.

Monitor item	Condition	Specification (Approximately)
Vehicle speed	During driving	Approximately matches the speedometer reading.

On Board Diagnosis Logic

ACS002T0

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “VEH SPD SEN/CIR AT” with CONSULT-II or P0720 without CONSULT-II is detected TCM does not receive the proper signal from the sensor.

Possible Cause

ACS002T1

- Harness or connectors
  (The sensor circuit is open or shorted.)
- Output speed sensor (secondary speed sensor)

DTC Confirmation Procedure

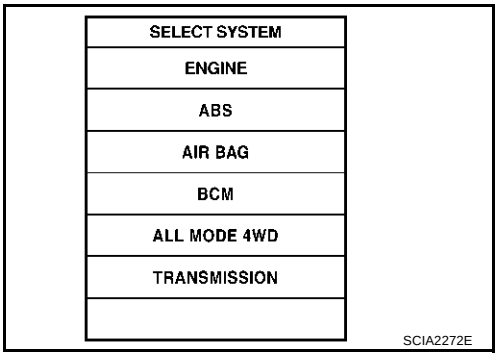
ACS002T2

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

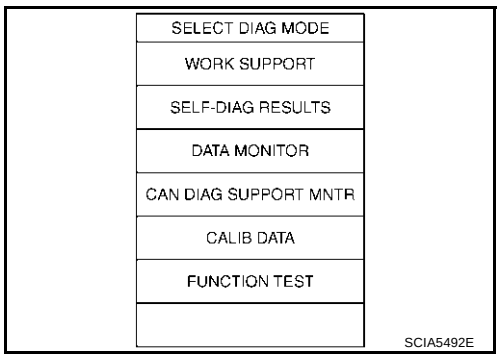
NOTE:
If “DTC Confirmation Procedure” has been previously performed, always turn ignition switch “OFF” and wait at least 5 seconds before performing the next test.
After the repair, touch “ERASE” on “SELF-DIAG RESULTS” and then perform the following procedure to confirm the malfunction is eliminated.

WITH CONSULT-II

1. Turn ignition switch “ON” and select “DATA MONITOR” mode for “ENGINE” with CONSULT-II.
2. Start engine and maintain the following conditions for at least 12 consecutive seconds.
   ACC PEDAL OPEN: More than 1/8
   Selector lever: D position
   Driving location: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.



If the check result is NG, go to “SELF-DIAG RESULTS”, CVT-104 .



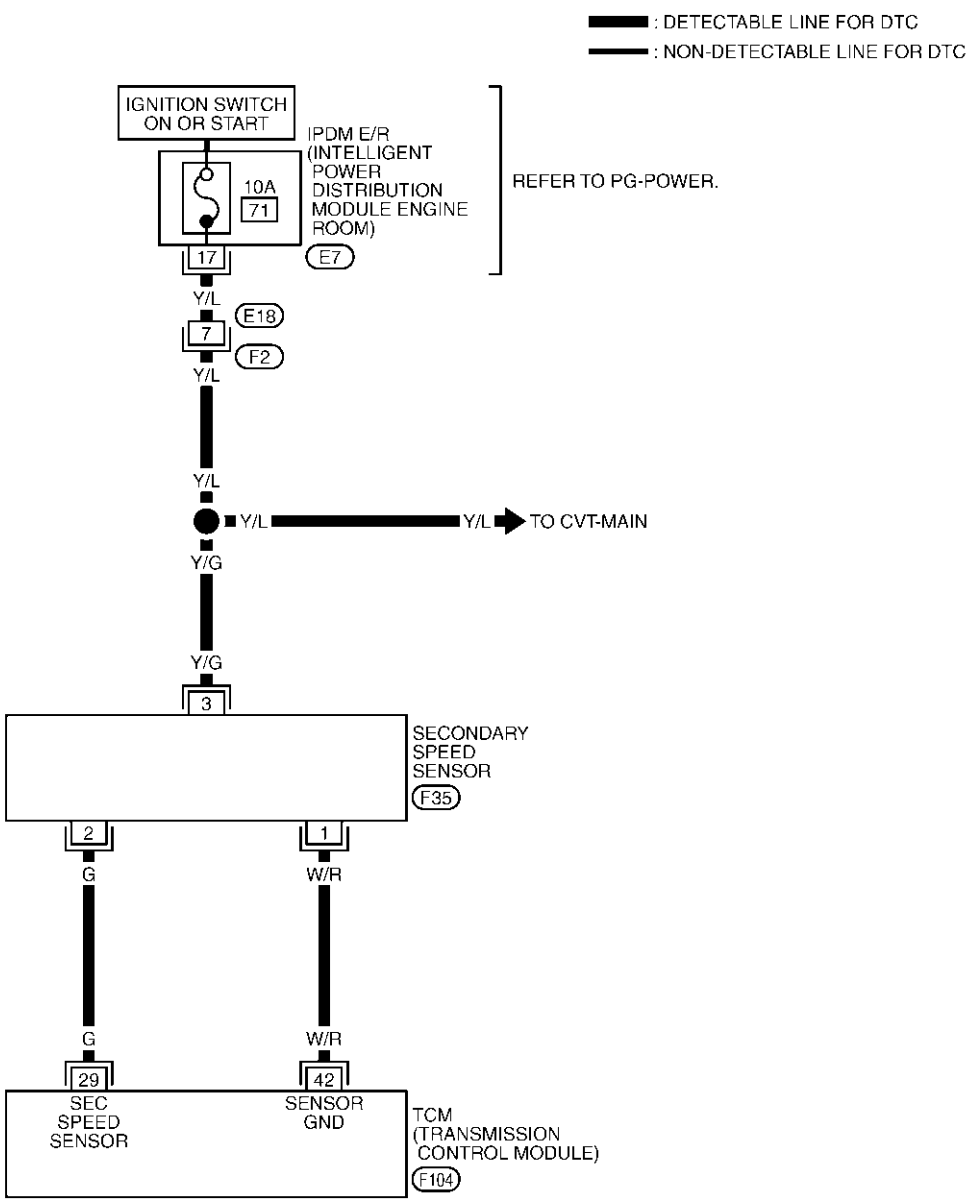
WITH GST

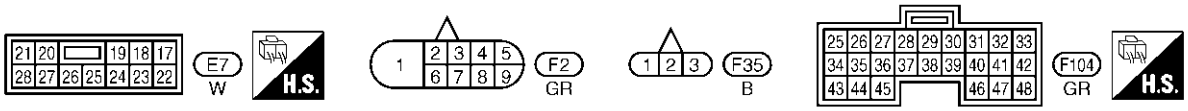
Follow the procedure “With CONSULT-II”.

Wiring Diagram - CVT - SESCVT

ACS002IQ

CVT-SESCVT-01





TCWA0150E

Remarks: Specification data are reference values.

Terminal No.	Wire color	Item	Condition	Judgement standard (Approx.)
29	G	Output speed sensor (secondary speed sensor)	When driving [D position, 20 km/h (12 MPH)]	300 Hz
42	W/R	Sensor ground	—	—

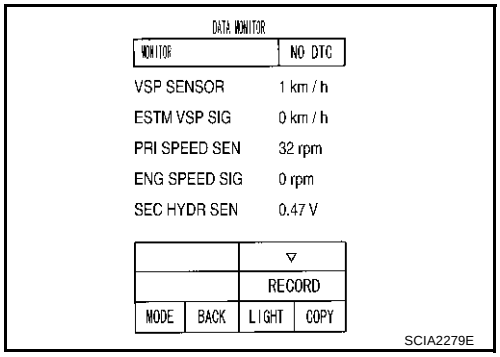
Diagnostic Procedure

ACS002T3

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”.



Monitor item	Condition	Specification (Approximately)
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

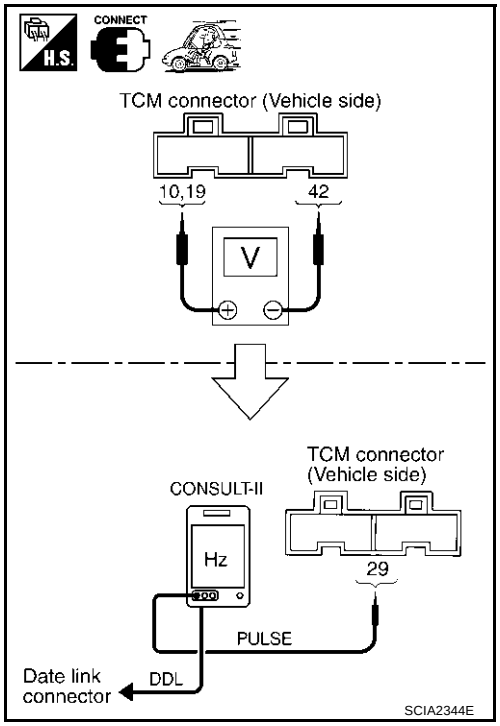
With CONSULT-II

1. Start engine.
2. Check power supply to output speed sensor (secondary speed sensor) by voltage between TCM connector terminals 10 (Y/L), 19 (Y/L) and 42 (W/R). Refer to CVT-55, "Circuit Diagram" .

Item	Connector No.	Terminal No. (Wire color)	Data (Approx.)
TCM	F103, F104	10 (Y/L) - 42 (W/R)	Battery voltage
		19 (Y/L) - 42 (W/R)	

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 No.	Terminal No. (Wire color)	Name	Data (Approx.)
TCM	F104	29 (G)	Output speed sensor (secondary speed sensor)	300 (Hz)

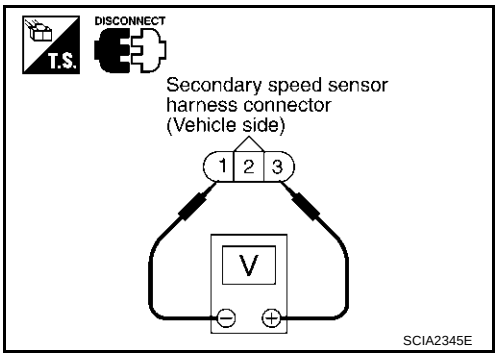
OK or NG

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

3. CHECK THE POWER AND SENSOR GROUND

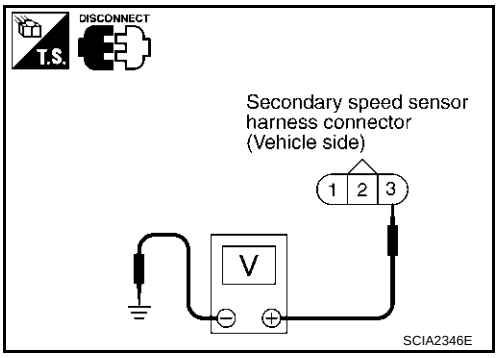
1. Turn ignition switch “OFF”.
2. Disconnect the output speed sensor (secondary speed sensor) harness connector.
3. Turn ignition switch “ON”.
4. Check voltage between output speed sensor (secondary speed sensor) harness connector 1 (W/R) and 3 (Y/G).

Item	Connector No.	Terminal No. (Wire color)	Data (Approx.)
Output speed sensor (secondary speed sensor)	F35	1 (W/R) - 3 (Y/G)	Battery voltage



5. Check voltage between output speed sensor (secondary speed sensor) harness connector 3 (Y/G) and ground.

Item	Connector No.	Terminal No. (Wire color)	Data (Approx.)
Output speed sensor (secondary speed sensor)	F35	3 (Y/G) - ground	Battery voltage



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

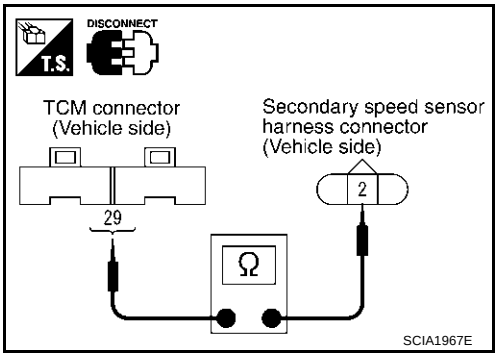
OK or NG

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 THE HARNESS BETWEEN TCM AND OUTPUT SPEED SENSOR (SECONDARY SPEED SENSOR)

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

Item	Connector No.	Terminal No. (Wire color)	Continuity
TCM	F104	29 (G)	Yes
Output speed sensor (secondary speed sensor)	F35	2 (G)	



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

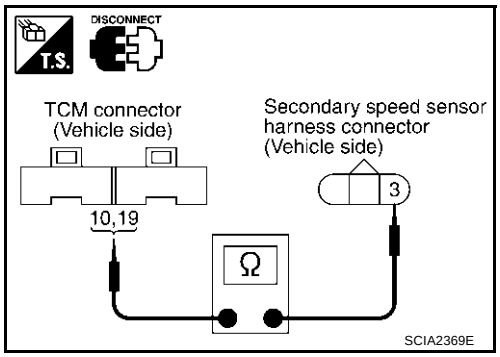
Replace same type TCM, perform self-diagnosis. Erase self-diag result and them drive the vehicle [more than 40km/h (25MPH)], perform self-diagnosis. Refer to CVT-101, "DTC Confirmation Procedure" .

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

YES >> Replace the transaxle assembly. Refer to CVT-197, "Removal and Installation" .
NO >> Replace the TCM. Refer to CVT-8, "Precautions for TCM and CVT Assembly Replacement" .

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

1. Turn ignition switch “OFF”.
2. Disconnect the TCM connector and output speed sensor (secondary speed sensor) harness connector.
3. Check continuity between TCM connector and output speed sensor (secondary speed sensor) harness connector. Refer to CVT-55, "Circuit Diagram" .



Item	Connector No.	Terminal No. (Wire color)	Continuity
TCM	F103	10 (Y/L)	Yes
Output speed sensor (secondary speed sensor)	F35	3 (Y/G)	

Item	Connector No.	Terminal No. (Wire color)	Continuity
TCM	F103	19 (Y/L)	Yes
Output speed sensor (secondary speed sensor)	F35	3 (Y/G)	

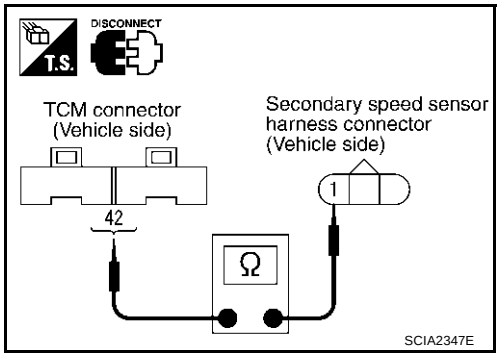
4. If OK, check harness for short to ground and short power.
5. Reinstall any part removed.

OK or NG

OK >> 10A fuse (No.71, 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 THE HARNESS BETWEEN TCM AND OUTPUT SPEED SENSOR (SECONDARY SPEED SENSOR) (SENSOR GROUND)

1. Turn ignition switch “OFF”.
2. Disconnect the TCM connector and output speed sensor (secondary speed sensor) harness connector.
3. Check continuity between TCM connector and output speed sensor (secondary speed sensor) harness connector. Refer to CVT-55, "Circuit Diagram" .



Item	Connector No.	Terminal No. (Wire color)	Continuity
TCM	F104	42 (W/R)	Yes
Output speed sensor (secondary speed sensor)	F35	1 (W/R)	

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

OK or NG

OK >> GO TO 9.
NG >> Repair open circuit or short to ground or short to power in harness or connectors.

8. CHECK DTC

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

OK or NG

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

9. PERFORM TCM INSPECTION

1. Perform TCM input/output signal inspection.
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

ACS001U4

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

On Board Diagnosis Logic

ACS001U5

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code “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

ACS001U6

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

DTC Confirmation Procedure

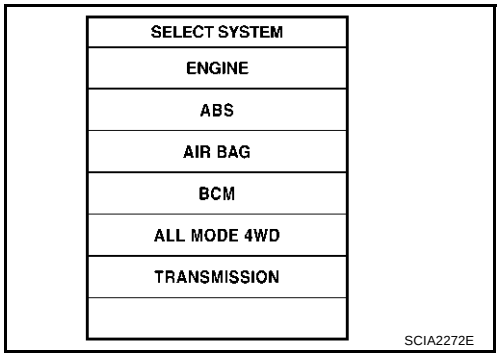
ACS001U7

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 1000rpm
3. If DTC is detected, go to CVT-108, "Diagnostic Procedure" .



Diagnostic Procedure

ACS001U8

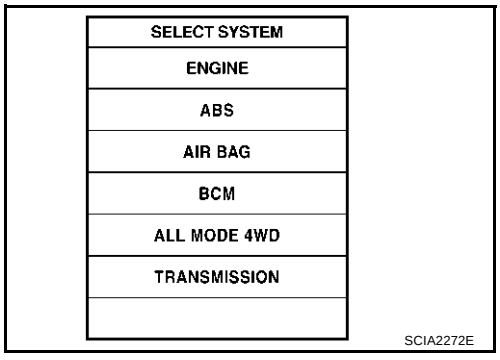
1. CHECK DTC WITH TCM

With CONSULT-II

1. Turn ignition switch “ON”. (Do not start engine.)
2. Select “SELF-DIAG RESULTS” mode for “TRANSMISSION” with CONSULT-II. Refer to CVT-71, "Self-Diagnostic Result Test Mode" .

OK or NG

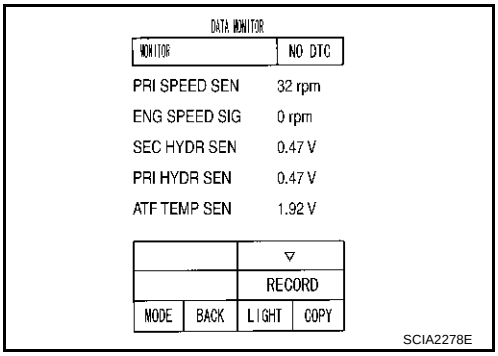
OK >> GO TO 2.
NG >> Check the DTC Detected Item, Go to CVT-70, "SELF-DIAGNOSTIC PROCEDURE (WITH CONSULT-II)" .
- If CAN communication line is detected, go to CVT-76, "DTC U1000 CAN COMMUNICATION LINE" .



2. CHECK INPUT SIGNALS

With CONSULT-II

1. Start engine.
2. Select “ECM INPUT SIGNALS” in “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-II.
3. While monitoring engine speed, check for engine speed change corresponding to “ACC PEDAL OPEN”.



OK or NG

OK >> GO TO 3.
NG >> Check the Ignition Signal Circuit.
- Refer to EC-596, "IGNITION SIGNAL" .

3. CHECK DTC

Perform “DTC Confirmation Procedure”. Refer to CVT-108, "DTC Confirmation Procedure" .

OK or NG

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

4. PERFORM TCM INSPECTION

1. Perform TCM input/output signal inspection. Refer to CVT-63, "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

ACS002IU

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 change the operating pressure of the primary pulley and the secondary pulley and change the groove width of the pulley.

CONSULT-II Reference Value

ACS002T4

Remarks: Specification data are reference values.

Monitor item	Condition	Specification (Approximately)
GEAR RATIO	During driving	2.37 - 0.43

On Board Diagnosis Logic

ACS002IV

- 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 “BELT DAMAGE” with CONSULT-II is detected, when TCM receives the unexpected gear ratio detected.

Possible Cause

ACS002IW

- Transaxle assembly

DTC Confirmation Procedure

ACS002T5

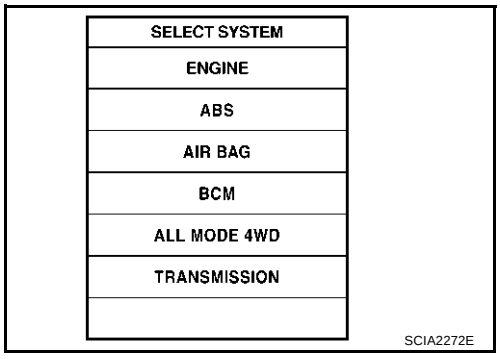
CAUTION:

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

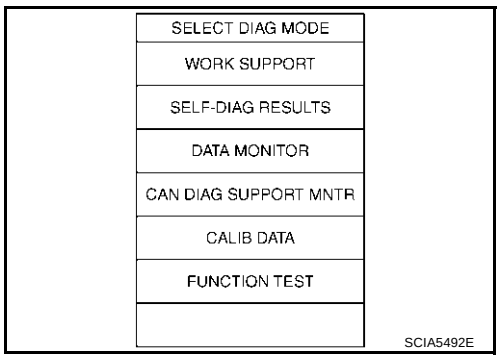
NOTE:
If “DTC Confirmation Procedure” has been previously performed, always turn ignition switch “OFF” and wait at least 5 seconds before performing the next test.
After the repair, perform the following procedure to confirm the malfunction is eliminated.

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.
   FLUID TEMP SEN: 1.0 - 2.0V
   If out of range, drive the vehicle to decrease the voltage (warm up the fluid) or stop engine to increase the voltage (cool down the fluid)



3. 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 1/8
   Selector lever: D position
   ENG SPEED: 450 rpm or more
5. If the check result is NG, GO TO CVT-111, "Diagnostic Procedure" .



Diagnostic Procedure

ACS002IY

1. CHECK DTC

Perform DTC Confirmation Procedure.

- Refer to CVT-110, "DTC Confirmation Procedure" .

Are any DTC displayed?

YES - 1>> DTC except for “BELT DAMG” is displayed: Go to Check the DTC detected item. Refer to CVT-71, "Self-Diagnostic Result Test Mode" .

YES - 2>> DTC for “BELT DAMG” is displayed: Replace the transaxle assembly. Refer to CVT-197, "Removal and Installation" .

NO >> **INSPECTION END**

DTC P0740 TORQUE CONVERTER CLUTCH SOLENOID VALVE

PFP:31940

Description

ACS00210

- The torque converter clutch solenoid valve is activated by the TCM in response to signals sent from the vehicle speed and throttle position sensors. Lock-up piston operation will then be controlled.
- Lock-up operation, however, is prohibited when CVT fluid temperature is too low.
- When the accelerator pedal is depressed (less than 2/8) in lock-up condition, the engine speed should not change abruptly. If there is a big jump in engine speed, there is no lock-up.

CONSULT-II Reference Value

ACS00211

Remarks: Specification data are reference values.

Monitor item	Condition		Specification
ISOLT1	When vehicle cruises in “D” position	Lock-up “OFF”	Approximately 0.7A
		Lock-up “ON”	Approximately 0.0A

On Board Diagnosis Logic

ACS00212

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “TCC SOLENOID/CIRC” with CONSULT-II or P0740 without CONSULT-II is detected under the following conditions.

– When TCM detects an improper voltage drop when it tries to operate the solenoid valve.

Possible Cause

ACS00213

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

DTC Confirmation Procedure

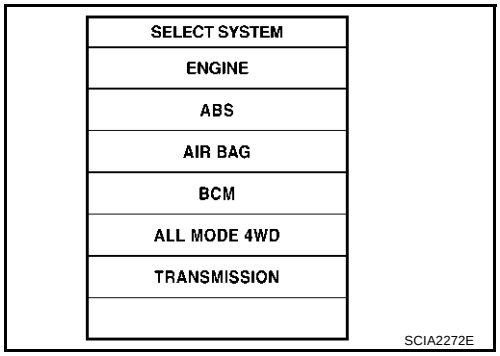
ACS00214

CAUTION:
Always drive vehicle at a safe speed.

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

WITH CONSULT-II

1. Turn ignition switch “ON”. (Do not start engine.)
2. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-II and wait at least 10 consecutive seconds.
3. If DTC is detected, go to CVT-114, "Diagnostic Procedure" .



WITH GST

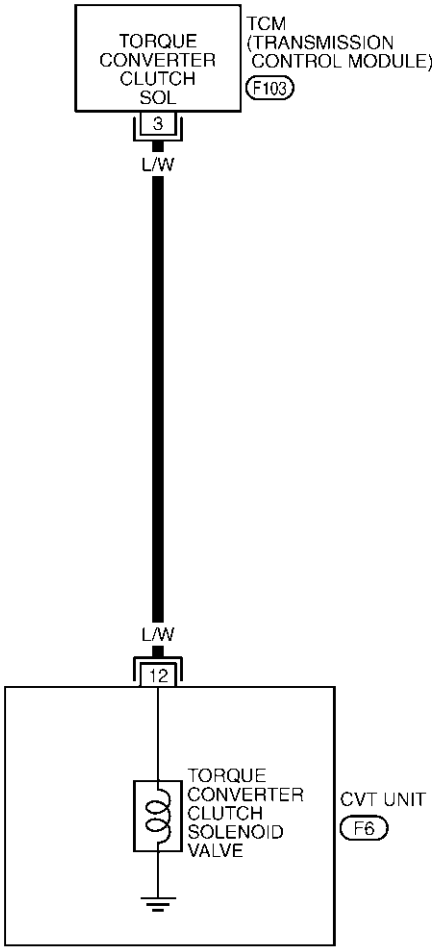
Follow the procedure “With CONSULT-II”.

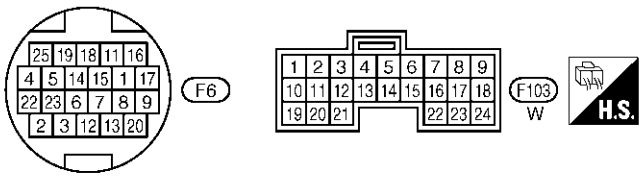
Wiring Diagram - CVT - TCV

ACS002T6

CVT-TCV-01

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





TCWA0153E

Remarks: Specification data are reference values.

Terminal No.	Wire color	Item	Condition		Judgement standard (Approx.)
3	L/W	Torque converter clutch solenoid valve	When vehicle cruises in “D” position	When CVT performs lock-up	6.0V
				When CVT does not perform lock-up	1.0V

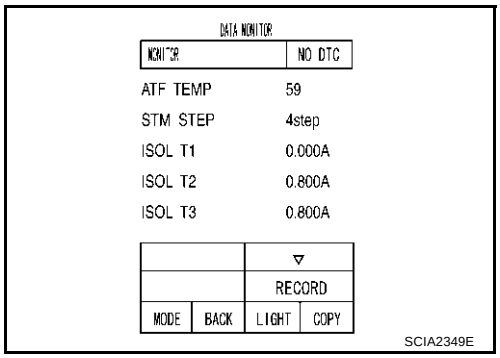
Diagnostic Procedure

ACS00215

1. CHECK INPUT SIGNAL (WITH CONSULT-II)

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”.



Monitor item	Condition		Specification
ISOLT1	When vehicle cruises in “D” position	Lock-up “OFF”	Approximately 0.7A
		Lock-up “ON”	Approximately 0.0A

OK or NG

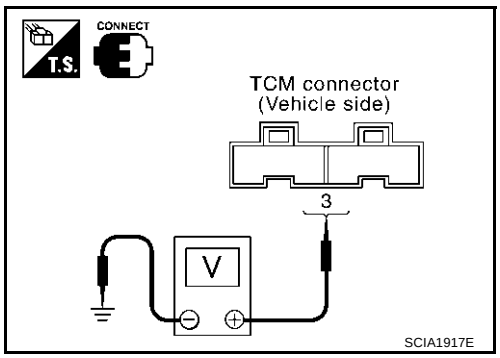
OK >> GO TO 6.
NG >> GO TO 3.

2. CHECK INPUT SIGNAL (WITHOUT CONSULT-II)

Without CONSULT-II

1. Start engine.
2. Check voltage between TCM connector and ground while warming up CVT. Refer to CVT-113, "Wiring Diagram - CVT - TCV" .

Name	Connector No.	Terminal No.	Condition		Voltage (V) (Approx.)
Torque converter clutch solenoid valve	F103	3 (L/W) - ground	When vehicle cruises in “D” position	Lock-up “OFF”	6.0
				Lock-up “ON”	1.0



OK or NG

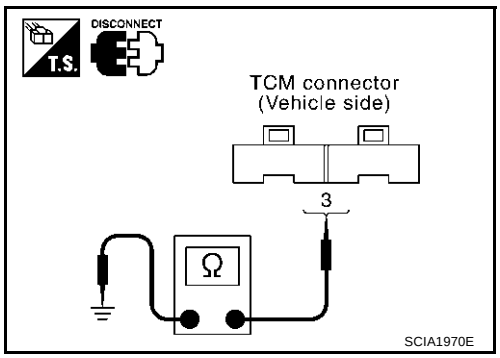
OK >> GO TO 6.
NG >> GO TO 3.

3. CHECK TORQUE CONVERTER CLUTCH SOLENOID VALVE CIRCUIT

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

Name	Connector No.	Terminal No. (Wire color)	Resistance (Ω) (Approx.)
Torque converter clutch solenoid valve	F103	3 (L/W) - ground	3 - 9

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



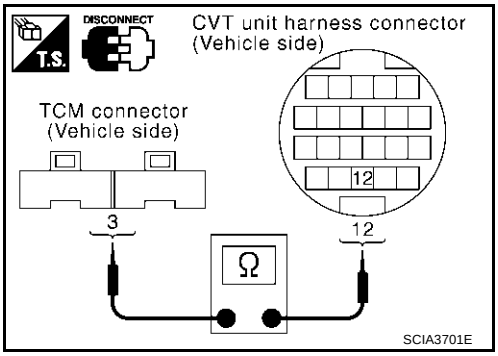
OK or NG

OK >> GO TO 6.
NG >> GO TO 4.

4. CHECK THE HARNESS BETWEEN TCM AND TORQUE CONVERTER CLUTCH SOLENOID VALVE

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

Item	Connector No.	Terminal No. (Wire color)	Continuity
TCM	F103	3 (L/W)	Yes
CVT unit harness connector	F6	12 (L/W)	



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

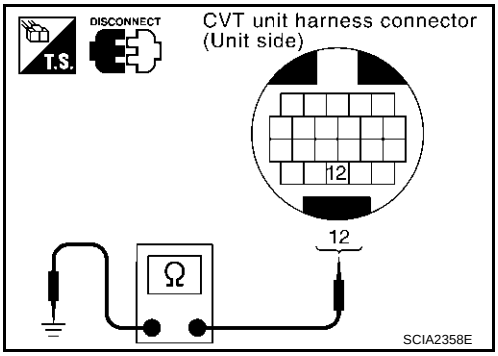
OK or NG

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

5. CHECK TORQUE CONVERTER CLUTCH SOLENOID VALVE RESISTANCE

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

Solenoid Valve	Connector No.	Terminal No.	Resistance (Ω) (Approx.)
Torque converter clutch solenoid valve	F6	12 - Ground	3 - 9



OK or NG

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

6. CHECK DTC

Perform “DTC Confirmation Procedure”. Refer to CVT-112, "DTC Confirmation Procedure" .

OK or NG

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

7. PERFORM TCM INSPECTION

1. Perform TCM input/output signal inspection.
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.

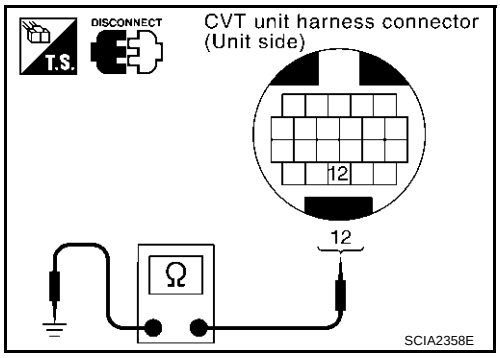
Component Inspection

ACS003KZ

TORQUE CONVERTER CLUTCH SOLENOID VALVE

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

Solenoid Valve	Connector No.	Terminal No.	Resistance (Ω) (Approx.)
Torque converter clutch solenoid valve	F6	12 - Ground	3 - 9



4. If NG, replace transaxle assembly. Refer to CVT-197, "Removal and Installation" .

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

PFP:31940

Description

ACS001UG

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

ACS002T7

Remarks: Specification data are reference values.

Monitor item	Condition	Specification (Approximately)
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

ACS001UH

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “A/T TCC S/V FNCTN” with CONSULT-II or P0744 without 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

ACS001UI

- Torque converter clutch solenoid valve
- Hydraulic control circuit

DTC Confirmation Procedure

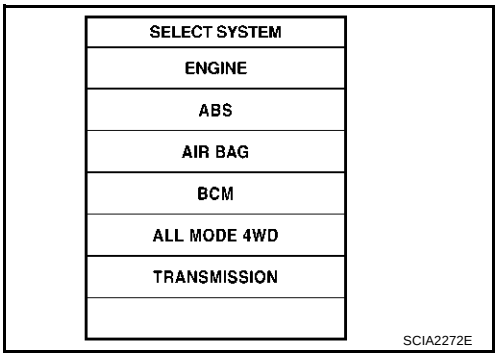
ACS001UJ

CAUTION:
Always drive vehicle at a safe speed.

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

WITH CONSULT-II

1. Turn ignition switch “ON”. (Do not start engine.)
2. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-II.
3. Start engine and maintain the following condition for at least 30 seconds.
   ACC PEDAL OPEN: More than 1.0/8
   Selector lever: “D” position
   [Vehicle speed: Constant speed of more than 40 km/h (25 MPH)]
4. If DTC is detected go to “Diagnostic Procedure”, CVT-118 .



WITH GST

Follow the procedure “With CONSULT-II”.

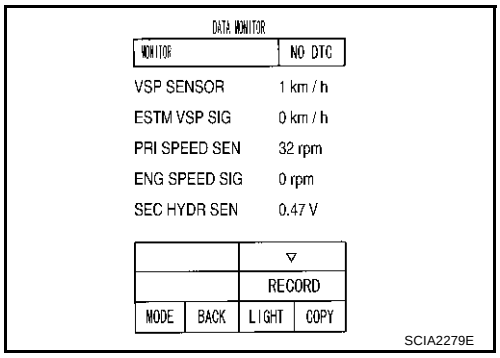
Diagnostic Procedure

ACS001UL

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.)



Monitor item	Condition	Specification (Approximately)
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-57, "LINE PRESSURE TEST" .

OK or NG

OK >> GO TO 3.
NG >> Repair or replace damaged parts. Refer to CVT-58, "Judgement of Line Pressure Test" .

3. DETECT MALFUNCTIONING ITEM

Check the following:

- Torque converter clutch solenoid valve. Refer to CVT-116, "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 SECONDARY SPEED SENSOR SYSTEM AND PRIMARY SPEED SENSOR SYSTEM

Check output speed sensor (secondary speed sensor) system and input speed sensor (primary speed sensor) system. Refer to CVT-101, "DTC P0720 VEHICLE SPEED SENSOR CVT (SECONDARY SPEED SENSOR)" , CVT-95, "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 “DTC Confirmation Procedure”. Refer to CVT-117, "DTC Confirmation Procedure" .

OK or NG

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

6. PERFORM TCM INSPECTION

1. Perform TCM input/output signal inspection.
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-197, "Removal and Installation" .

DTC P0745 LINE PRESSURE SOLENOID VALVE

PFP:31940

Description

ACS001UM

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

ACS002T8

Remarks: Specification data are reference values.

Monitor item	Condition	Specification (Approximately)
ISOLT2	Release your foot from the accelerator pedal.	0.8A
	Press the accelerator pedal all the way down.	0.3 - 0.6A

On Board Diagnosis Logic

ACS001UN

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “L/PRESS SOL/CIRC” with CONSULT-II or P0745 without CONSULT-II is detected under the following conditions.
  - When 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

ACS001UO

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

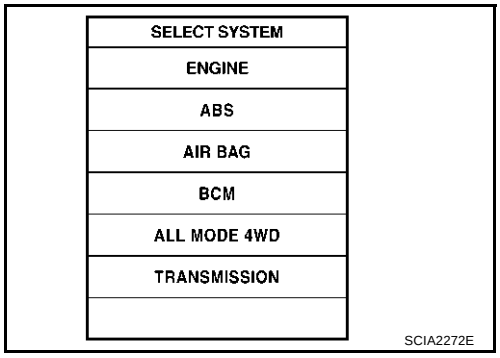
DTC Confirmation Procedure

ACS001UP

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 “ENGINE” with CONSULT-II.
2. Start engine and wait at least 5 seconds.
3. If DTC is detected, go to CVT-122, "Diagnostic Procedure" .



WITH GST

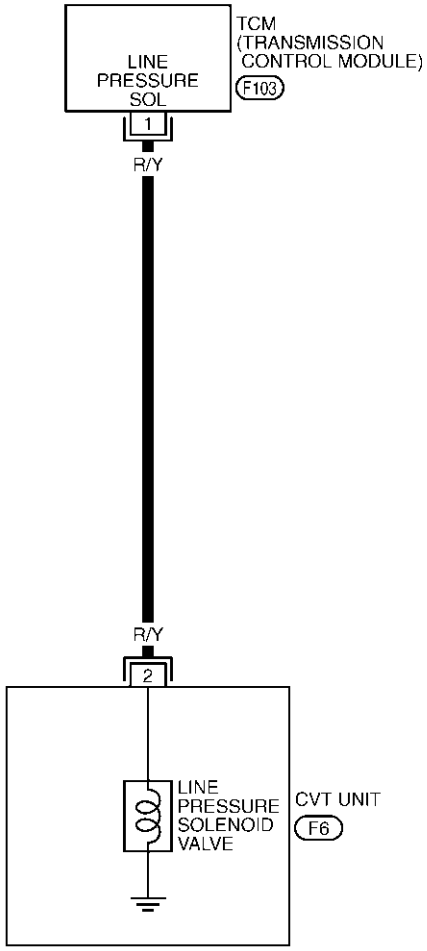
Follow the procedure “With CONSULT-II”.

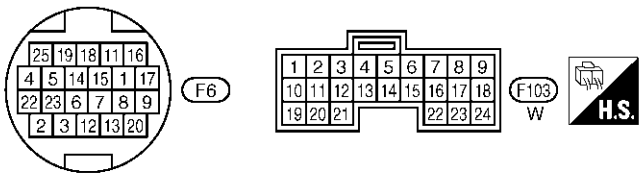
Wiring Diagram — CVT — LPSV

ACS001UQ

CVT-LPSV-01

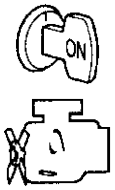
: DETECTABLE LINE FOR DTC
: NON-DETECTABLE LINE FOR DTC





TCWA0151E

Remarks: Specification data are reference values.

Terminal No.	Wire color	Item	Condition		Judgement standard (Approx.)
1	R/Y	Pressure control solenoid valve A (line pressure solenoid valve)		Release your foot from the accelerator pedal.	5.0 - 7.0V
				Press the accelerator pedal all the way down.	1.0V

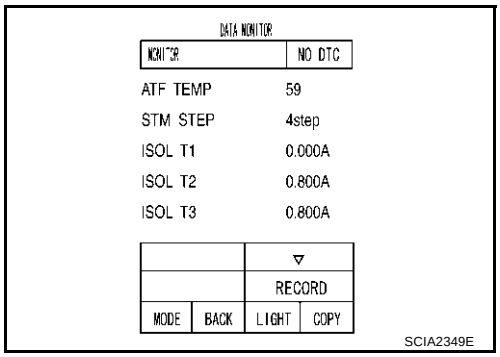
Diagnostic Procedure

ACS001UR

1. CHECK INPUT SIGNAL (WITH CONSULT-II)

With CONSULT-II

1. After warming up the engine, turn ignition switch “ON” position (Do not 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.	0.8A
	Press the accelerator pedal all the way down.	0.3 - 0.6A

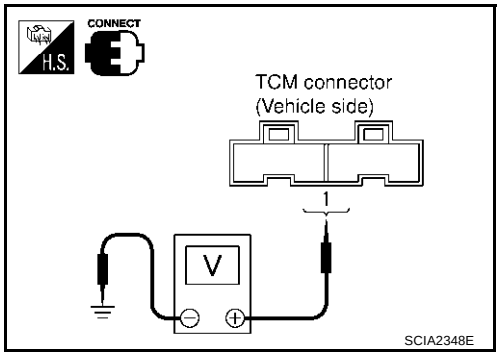
OK or NG

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

2. CHECK INPUT SIGNAL (WITHOUT CONSULT-II)

Without CONSULT-II

1. After warming up the engine, turn ignition switch “ON” position (Do not start engine).
2. Check voltage between TCM connector and ground.



Name	Connector No.	Terminal No.	Condition	Voltage (Approx.)
Pressure control solenoid valve A (line pressure solenoid valve)	F103	1 (R/Y) - ground	Release your foot from the accelerator pedal.	5.0 - 7.0V
			Press the accelerator pedal all the way down.	1.0V

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

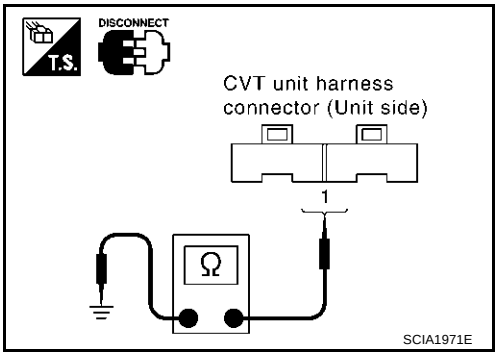
OK or NG

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

3. 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 No.	Terminal No. (Wire color)	Resistance (Approx.)
Pressure control solenoid valve A (line pressure solenoid valve)	F103	1 (R/Y) - ground	3.0 - 9.0 Ω



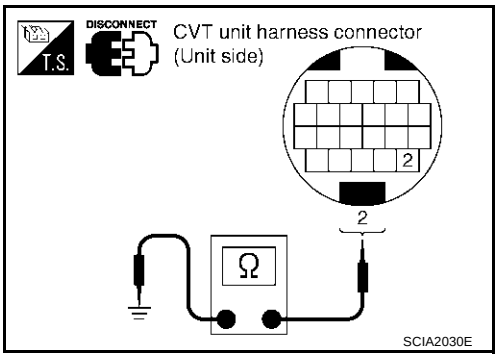
OK or NG

OK >> GO TO 6.
NG >> GO TO 4.

4. CHECK VALVE RESISTANCE

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

Solenoid Valve	Connector No.	Terminal No.	Resistance (Approx.)
Pressure control solenoid valve A (line pressure solenoid valve)	F6	2 - Ground	3.0 - 9.0 Ω



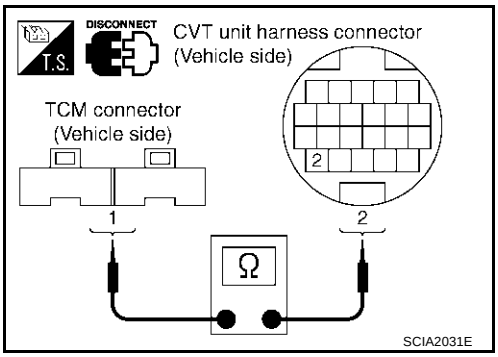
OK or NG

OK >> GO TO 5.
NG >> Replace the transaxle assembly. Refer to CVT-197, "Removal and Installation" .

5. CHECK THE 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 CVT unit harness connector and TCM connector.

Item	Connector No.	Terminal No. (Wire color)	Continuity
TCM	F103	1 (R/Y)	Yes
CVT unit harness connector	F6	2 (R/Y)	



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

6. CHECK DTC

Check again.

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

OK or NG

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

7. CHECK TCM INSPECTION

1. Perform TCM input/output signal inspection.
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-197, "Removal and Installation" .

Component Inspection

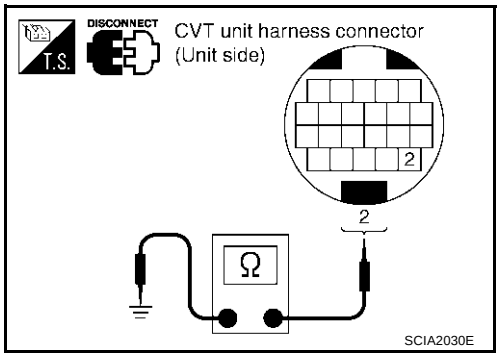
ACS002T9

PRESSURE CONTROL SOLENOID VALVE A (LINE PRESSURE SOLENOID VALVE)

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

Solenoid Valve	Connector No.	Terminal No.	Resistance (Approx.)
Pressure control solenoid valve A (line pressure solenoid valve)	F6	2 - Ground	3.0 - 9.0 Ω

4. If NG, replace transaxle assembly. Refer to CVT-197, "Removal and Installation" .



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

PFP:31941

Description

ACS002IZ

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.

NOTE:
CONSULT-II screen terms are shown differently depending on the version of CONSULT-II card.

On Board Diagnosis Logic

ACS002J0

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “L/PRESS SOL/FNCTN” with CONSULT-II or P0746 without 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

ACS002J1

- Line pressure control system
- Output speed sensor (secondary speed sensor)
- Input speed sensor (primary speed sensor)

DTC Confirmation Procedure

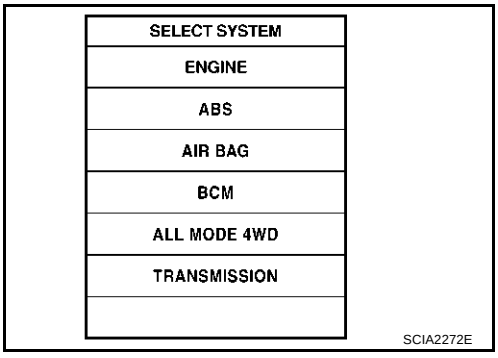
ACS002TA

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

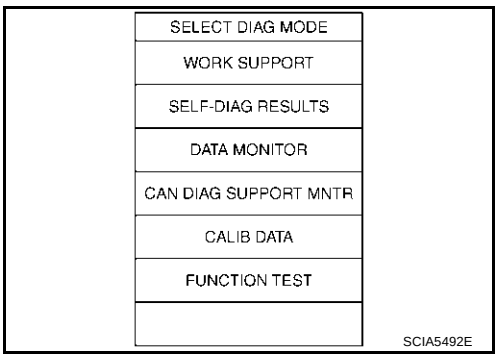
NOTE:
If “DTC Confirmation Procedure” has been previously performed, always turn ignition switch “OFF” and wait at least 5 seconds before performing the next test.
After the repair, touch “ERASE” on “SELF-DIAG RESULTS” and then perform the following procedure to confirm the malfunction is eliminated.

WITH CONSULT-II

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



   If the check result is NG, go to “Diagnostic Procedure”, CVT-126
   .



WITH GST

Follow the procedure “With CONSULT-II”.

Diagnostic Procedure

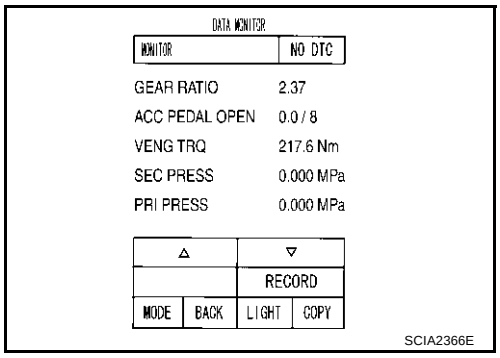
ACS002J3

1. CHECK INPUT SIGNAL (WITH CONSULT-II)

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”.

Monitor item	Condition	Specification
PRI PRESS	“ N” position idle	0.3 - 0.7MPa



OK or NG

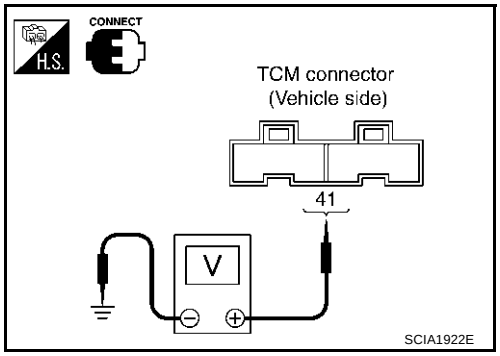
OK >> GO TO 6.
NG >> GO TO 3.

2. CHECK INPUT SIGNAL (WITHOUT CONSULT-II)

Without CONSULT-II

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

Name	Connector No.	Terminal No.	Condition	Voltage (Approx.)
Input speed sensor (primary pressure sensor)	F104	41 (V/O) - ground	“ N” position idle	0.7 - 1.2V



OK or NG

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

3. CHECK LINE PRESSURE

Perform line pressure test. Refer to CVT-57, "LINE PRESSURE TEST" .

OK or NG

OK >> GO TO 4.
NG >> Repair or replace damaged parts. Refer to CVT-58, "Judgement of Line Pressure Test" .

4. DETECT MALFUNCTIONING ITEM

Check the following:

- Pressure control solenoid valve A (line pressure solenoid valve). Refer to CVT-124, "Component Inspection" .

OK or NG

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

5. 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-101, "DTC P0720 VEHICLE SPEED SENSOR CVT (SECONDARY SPEED SENSOR)" , CVT-95, "DTC P0715 INPUT SPEED SENSOR CIRCUIT (PRI SPEED SENSOR)" .

OK or NG

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

6. DETECT MALFUNCTIONING ITEM

Check the following:

- Power supply and ground circuit for TCM.
- The TCM pin terminals for damage or loose connection with harness connector.

OK or NG

OK >> GO TO 7.
NG >> Repair or replace damaged parts.

7. CHECK DTC

Perform DTC Confirmation Procedure.

- Refer to CVT-125, "DTC Confirmation Procedure" .

OK or NG

OK >> **INSPECTION END**
NG >> Replace the transaxle assembly or TCM. Refer to CVT-197, "Removal and Installation" .

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

PFP:31941

Description

ACS002J4

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.

NOTE:
CONSULT-II screen terms are shown differently depending on the version of CONSULT-II card.

CONSULT-II Reference Value

ACS002TB

Remarks: Specification data are reference values.

Monitor item	Condition	Specification (Approximately)
SEC PRESS	N position idle	0.5MPa

On Board Diagnosis Logic

ACS002TC

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “SECONDARY PRESSURE SOLENOID VALVE FUNCTION” with CONSULT-II or P0776 without CONSULT-II is detected when secondary pressure is too high or too low compared with the commanded value while driving.

Possible Cause

ACS002J6

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

DTC Confirmation Procedure

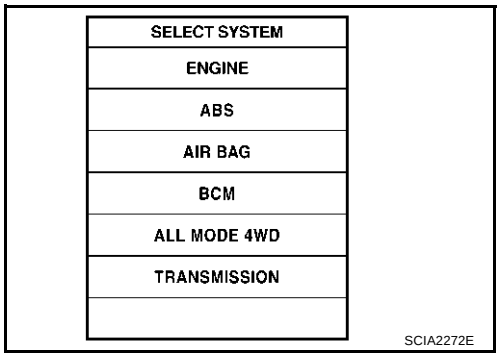
ACS002TD

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

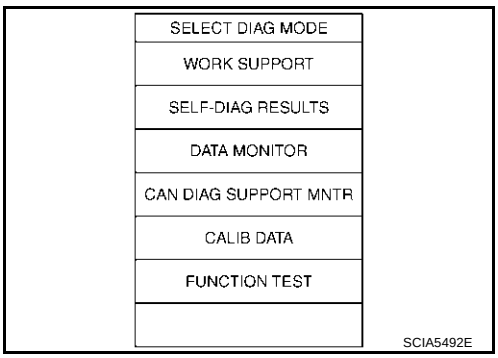
NOTE:
If “DTC Confirmation Procedure” has been previously performed, always turn ignition switch “OFF” and wait at least 5 seconds before performing the next test.
After the repair, perform the following procedure to confirm the malfunction is eliminated.

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 - 2V
   ACC PEDAL OPEN: More than 1.0/8
   Selector lever: D position
   VHCL SPEED: 10 km/h (6 MPH) More than
   Driving location: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.



If the check result is NG, go to “Diagnostic Procedure”, CVT-129 .



WITH GST

Follow the procedure “With CONSULT-II”.

Diagnostic Procedure

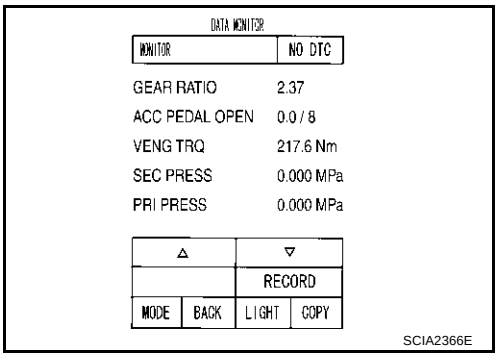
ACS002TE

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”.

Monitor item	Condition	Specification (Approximately)
SEC PRESS	N position idle	0.5MPa



OK or NG

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

2. CHECK LINE PRESSURE

Perform line pressure test. Refer to CVT-57, "LINE PRESSURE TEST" .

OK or NG

OK >> GO TO 3.
NG >> Repair or replace damaged parts. Refer to CVT-58, "Judgement of Line Pressure Test" .

3. DETECT MALFUNCTIONING ITEM

Check the following:

- Pressure control solenoid valve B (secondary pressure solenoid valve). Refer to CVT-134, "Component Inspection" .
- Pressure control solenoid valve A (line pressure solenoid valve). Refer to CVT-124, "Component Inspection" .

OK or NG

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

4. CHECK SECONDARY PRESSURE SENSOR SYSTEM

Check transmission pressure sensor A (secondary pressure sensor) system. Refer to CVT-135, "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.
- 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 DTC Confirmation Procedure.

- Refer to CVT-128, "DTC Confirmation Procedure" .

OK or NG

OK >> **INSPECTION END**
NG >> Replace the transaxle assembly. Refer to CVT-197, "Removal and Installation" .

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

PFP:31941

Description

ACS002J9

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.

The secondary pressure duty cycle value is not consistent when the closed throttle position signal is "ON". To confirm the secondary pressure duty cycle at low-pressure, the accelerator (throttle) should be open until the closed throttle position signal is "OFF".

NOTE:

CONSULT-II screen terms are shown differently depending on the version of CONSULT-II card.

CONSULT-II Reference Value

ACS002TF

Remarks: Specification data are reference values.

Monitor item	Condition	Specification (Approximately)
ISOLT3	N position idle	0.6 - 0.7A
	When stalled	0.4 - 0.6A
SOLMON3	N position idle	0.6 - 0.7A
	When stalled	0.4 - 0.6A

On Board Diagnosis Logic

ACS002JA

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "SEC/PRESS SOL/CIRC" with CONSULT-II or P0778 without CONSULT-II is detected under the following conditions.
  - When 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

ACS002JB

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

DTC Confirmation Procedure

ACS002JC

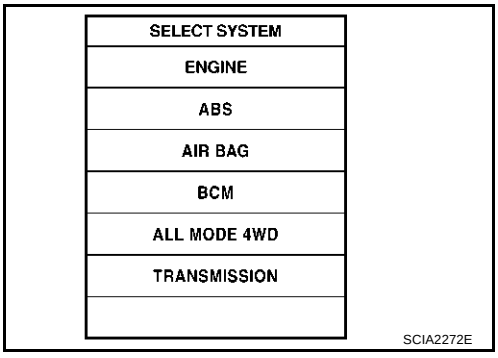
NOTE:

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-133, "Diagnostic Procedure" .



WITH GST

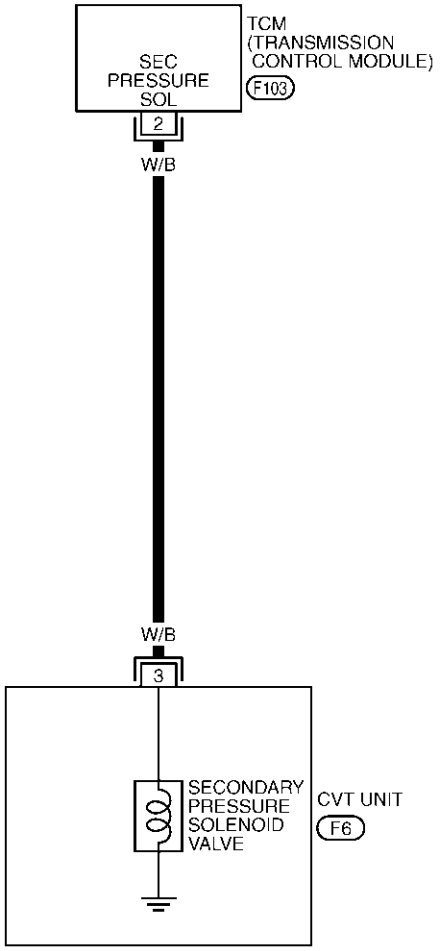
Follow the procedure "With CONSULT-II".

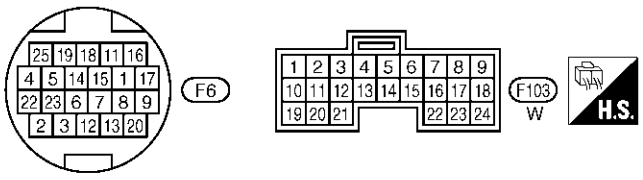
Wiring Diagram — CVT — SECPSV

ACS002TG

CVT-SECPSV-01

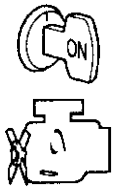
: DETECTABLE LINE FOR DTC
: NON-DETECTABLE LINE FOR DTC





TCWA0152E

Remarks: Specification data are reference values.

Terminal No.	Wire color	Item	Condition		Judgement standard (Approx.)
2	W/B	Pressure control solenoid valve B (secondary pressure solenoid valve)		Release your foot from the accelerator pedal.	5.0 - 7.0V
				Press the accelerator pedal all the way down.	3.0 - 4.0V

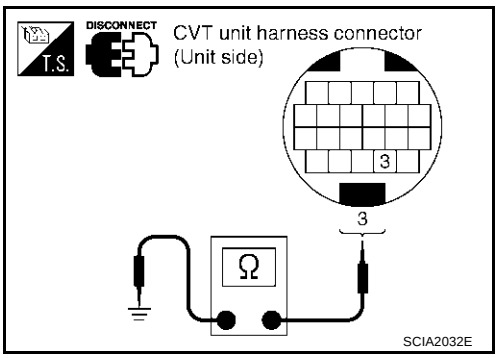
Diagnostic Procedure

ACS002TH

1. CHECK VALVE RESISTANCE

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

Solenoid Valve	Connector No.	Terminal No.	Resistance (Approx.)
Pressure control solenoid valve B (secondary pressure solenoid valve)	F6	3 - Ground	3.0 - 9.0 Ω



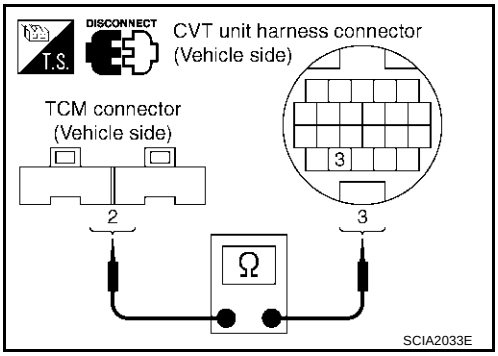
OK or NG

OK >> GO TO 2.
NG >> Repair or replace damaged parts.

2. CHECK POWER SOURCE CIRCUIT

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

Item	Connector No.	Terminal No. (Wire color)	Continuity
TCM connector	F103	2 (W/B)	Yes
CVT unit harness connector	F6	3 (W/B)	



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

OK or NG

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

3. CHECK DTC

Check again.

- Refer to CVT-131, "DTC Confirmation Procedure" .

OK or NG

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

4. CHECK TCM INSPECTION

1. Perform TCM input/output signal inspection.
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-197, "Removal and Installation" .

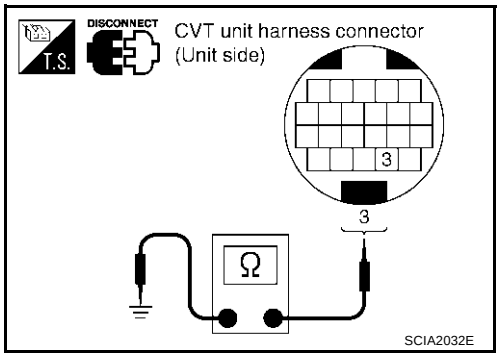
Component Inspection

ACS002TI

PRESSURE CONTROL SORENOID VALVE B (SECONDARY PRESSURE SOLENOID VALVE)

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

Solenoid Valve	Connector No.	Terminal No.	Resistance (Approx.)
Pressure control solenoid valve B (secondary pressure solenoid valve)	F6	3 - Ground	3.0 - 9.0 Ω



4. If NG, replace transaxle assembly. Refer to CVT-197, "Removal and Installation" .

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

PFP:31936

Description

ACS002JM

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

NOTE:
CONSULT-II screen terms are shown differently depending on the version of CONSULT-II card.

CONSULT-II Reference Value

ACS002TJ

Remarks: Specification data are reference values.

Monitor item	Condition	Specification (Approximately)
SEC HYDR SEN	N position idle	0.8V
SEC PRS	During driving [40km/h (25 MPH)]	0.4MPa

On Board Diagnosis Logic

ACS002TK

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “SEC PRS SEN/CIRC” with CONSULT-II or P0840 without CONSULT-II is detected when TCM detects an improper voltage drop when it tries to operate the sensor.

Possible Cause

ACS002JO

- Transmission fluid pressure sensor A (secondary pressure sensor)
- Harness or connectors
  (The switch circuit is open or shorted.)

DTC Confirmation Procedure

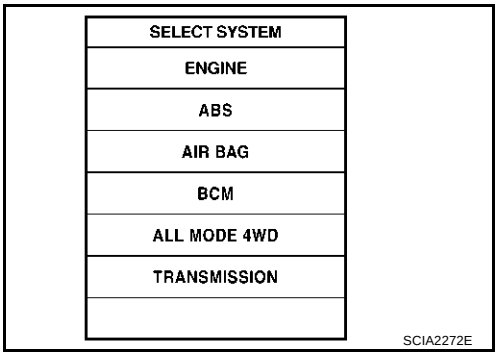
ACS002JP

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

NOTE:
If “DTC Confirmation Procedure” has been previously performed, always turn ignition switch “OFF” and wait at least 5 seconds before performing the next test.
After the repair, perform the following procedure to confirm the malfunction is eliminated.

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 - 2V
   If out of range, drive the vehicle to decrease the voltage (warm up the fluid) or stop engine to increase the voltage (cool down the fluid)
3. Start engine and wait for at least 5 consecutive seconds.
   If the check result is NG, go to “Diagnostic Procedure”, CVT-137, "Diagnostic Procedure" .



WITH GST

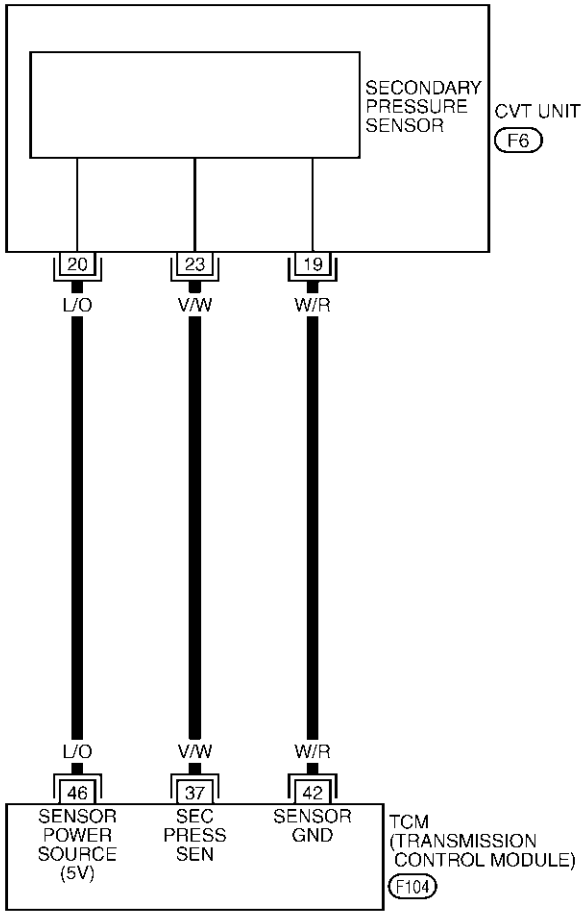
Follow the procedure “With CONSULT-II”.

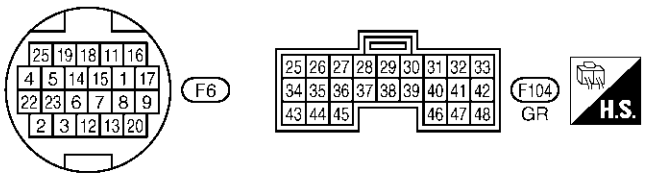
Wiring Diagram - CVT - SECPS

ACS002TL

CVT-SECPS-01

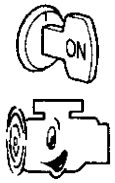
: DETECTABLE LINE FOR DTC
: NON-DETECTABLE LINE FOR DTC





TCWA0155E

Remarks: Specification data are reference values.

Terminal No.	Wire color	Item	Condition		Judgement standard (Approx.)
37	V/W	Transmission fluid pressure sensor A (secondary pressure sensor)		N position idle	0.8V

Diagnostic Procedure

ACS002JQ

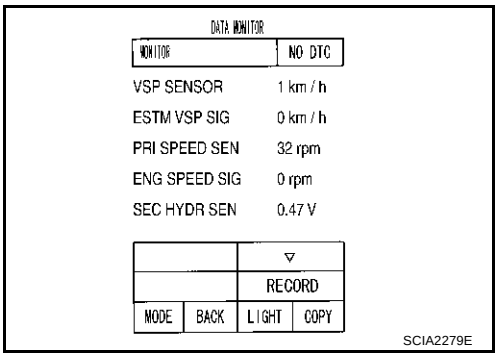
1. CHECK INPUT SIGNAL

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”.

OK or NG

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



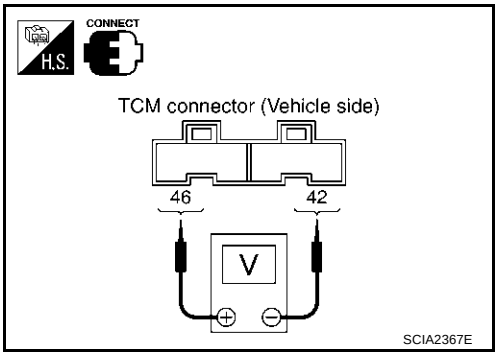
2. CHECK SENSOR POWER AND SENSOR GROUND

1. Turn ignition switch “ON”. (Do not start engine)
2. Check voltage between TCM connector 46 and 42.

Item	Connector No.	Terminal No. (Wire color)	Data (Approx.)
TCM connector	F104	46 (L/O) - 42 (W/R)	5V

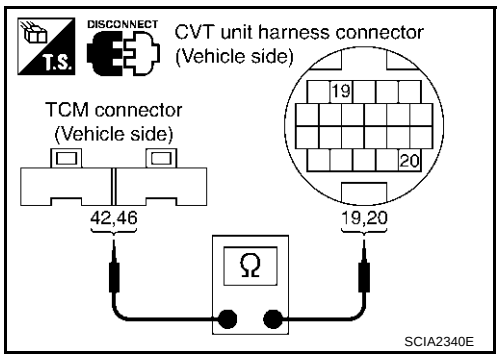
OK or NG

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



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

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



Item	Connector No.	Terminal No. (Wire color)	Continuity
TCM	F104	42 (W/R)	Yes
CVT unit harness connector	F6	19 (W/R)	

Item	Connector No.	Terminal No. (Wire color)	Continuity
TCM	F104	46 (L/O)	Yes
CVT unit harness connector	F6	20 (L/O)	

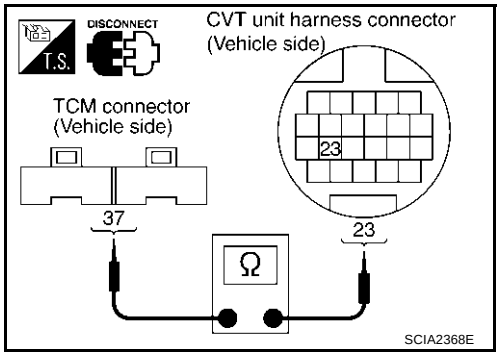
4. If OK, check harness for short to ground and short power.
5. Reinstall any part removed.

OK or NG

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

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

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



Item	Connector No.	Terminal No. (Wire color)	Continuity
TCM	F104	37 (V/W)	Yes
CVT unit harness connector	F6	23 (V/W)	

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 DTC Confirmation Procedure.

- Refer to CVT-135, "DTC Confirmation Procedure" .

OK or NG

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

6. PERFORM TCM INSPECTION

1. Perform TCM input/output signal inspection.
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-197, "Removal and Installation" .
NG >> Repair or replace damaged parts.

DTC P0841 PRESSURE SENSOR FUNCTION

PFP:31936

Description

ACS002TM

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

CONSULT-II Reference Value

ACS002TN

Remarks: Specification data are reference values.

Monitor item	Condition	Specification (Approximately)
PRI HYDR SEN	N position idle	0.7V - 1.2V
	During driving [40km/h (25 MPH)]	1.0V
SEC HYDR SEN	N position idle	0.8V
	During driving	0.7V

On Board Diagnosis Logic

ACS002JS

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code “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

ACS002JT

- Transmission pressure sensor A (secondary pressure sensor)
- Transmission pressure sensor B (primary pressure sensor)
- Harness or connectors
  (The sensor circuit is open or shorted.)

DTC Confirmation Procedure

ACS002TO

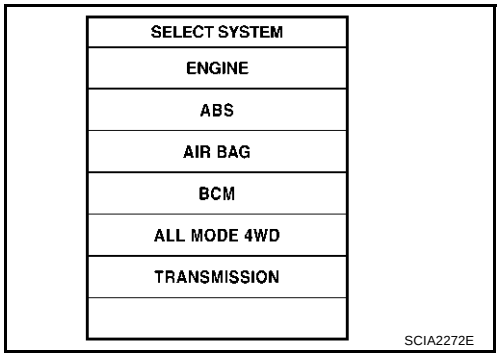
CAUTION:

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

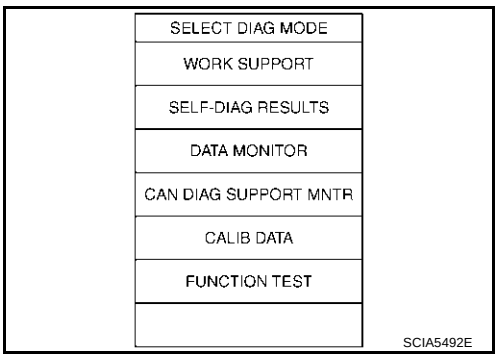
NOTE:
If “DTC Confirmation Procedure” has been previously performed, always turn ignition switch “OFF” and wait at least 5 seconds before performing the next test.
After the repair, perform the following procedure to confirm the malfunction is eliminated.

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.
   VHCL SPEED: 40 km/h (25 MPH) More than
   Selector lever: D position



If the check result is NG, go to “Diagnostic Procedure”, CVT-141 .



Diagnostic Procedure

ACS002TP

1. CHECK CAN COMMUNICATION CIRCUIT

Perform the self-diagnosis.

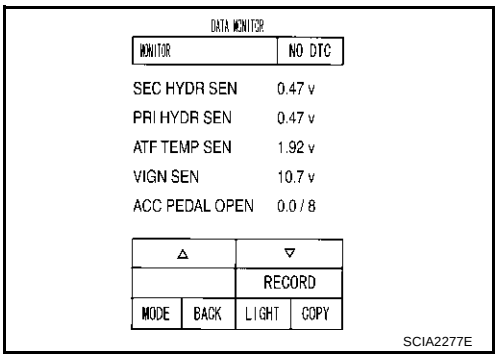
Is any malfunction of the “CAN COMM CIRCUIT” indicated?

YES >> Refer to CVT-76, "DTC U1000 CAN COMMUNICATION LINE" .
NO >> GO TO 2.

2. CHECK INPUT SIGNAL (WITH CONSULT-II)

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”.



Monitor item	Condition	Specification (Approximately)
PRI HYDR SEN	N position idle	0.7V - 1.2V
	During driving [40km/h (25 MPH)]	1.0V
SEC HYDR SEN	N position idle	0.8V
	During driving	0.7V

OK or NG

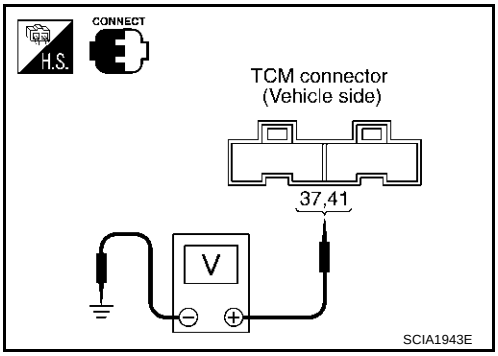
OK >> GO TO 7.
NG >> GO TO 4.

3. CHECK INPUT SIGNAL (WITHOUT CONSULT-II)

Without CONSULT-II

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

Name	Connector No.	Terminal No.	Condition	Voltage (Approx.)
Transmission pressure sensor B (primary pressure sensor)	F104	41 (V/O) - ground	“ N” position idle	0.7 - 1.2V
Transmission pressure sensor A (secondary pressure sensor)		37 (V/W) - ground		0.8V



OK or NG

OK >> GO TO 7.
NG >> GO TO 4.

4. CHECK LINE PRESSURE

Perform line pressure test. Refer to CVT-57, "LINE PRESSURE TEST" .

OK or NG

OK >> GO TO 5.
NG >> Repair or replace damaged parts. Refer to CVT-58, "Judgement of Line Pressure Test" .

5. CHECK TRANSMISSION PRESSORE SENSOR A (SECONDARY PRESSURE SENSOR) SYSTEM AND TRANSMISSION PRESSURE SENSOR B (PRIMARY PRESSURE SENSOR) SYSTEM

Check secondary pressure sensor system and primary pressure sensor system. Refer to CVT-135, "DTC P0840 TRANSMISSION FLUID PRESSURE SENSOR A CIRCUIT (SEC PRESSURE SENSOR)" , CVT-143, "DTC P0845 TRANSMISSION FLUID PRESSURE SENSOR B CIRCUIT (PRI PRESSURE SENSOR)" .

OK or NG

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

6. DETECT MALFUNCTIONING ITEM

Check the following:

- Line pressure solenoid valve. Refer to CVT-124, "Component Inspection" .
- Secondary pressure solenoid valve. Refer to CVT-134, "Component Inspection" .
- Step motor. Refer to CVT-172, "Component Inspection" .

OK or NG

OK >> GO TO 7.
NG >> Repair or replace damaged parts.

7. CHECK DTC

Perform DTC Confirmation Procedure.

- Refer to CVT-140, "DTC Confirmation Procedure" .

OK or NG

OK >> **INSPECTION END**
NG >> Replace the TCM or transaxle assembly. Refer to CVT-197, "Removal and Installation" .

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

PFP:31936

Description

ACS002TQ

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

NOTE:
CONSULT-II screen terms are shown differently depending on the version of CONSULT-II card.

CONSULT-II Reference Value

ACS002TR

Remarks: Specification data are reference values.

Monitor item	Condition	Specification (Approximately)
PRI HYDR SEN	N position idle	0.7 - 1.2V
	During driving [40 km/h (25 MPH)]	1.0V

On Board Diagnosis Logic

ACS002TS

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “PRI PRS SEN/CIRC” with CONSULT-II or P0845 without CONSULT-II is detected under the following conditions.
  - When TCM detects an improper voltage drop when it tries to operate the sensor.
  - When TCM compares target value with monitor value and detects an irregularity.

Possible Cause

ACS002TT

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

DTC Confirmation Procedure

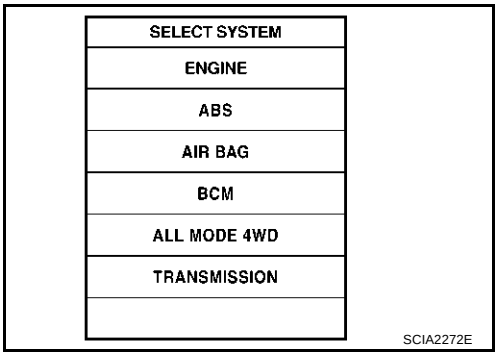
ACS002TU

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

NOTE:
If “DTC Confirmation Procedure” has been previously performed, always turn ignition switch “OFF” and wait at least 5 seconds before performing the next test.
After the repair, perform the following procedure to confirm the malfunction is eliminated.

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 - 2V
   If out of range, drive the vehicle to decrease the voltage (warm up the fluid) or stop engine to increase the voltage (cool down the fluid).
3. Start engine and wait for at least 5 consecutive seconds.
   If the check result is NG, go to “Diagnostic Procedure”, CVT-145
   .



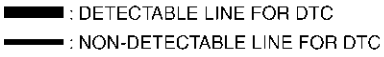
WITH GST

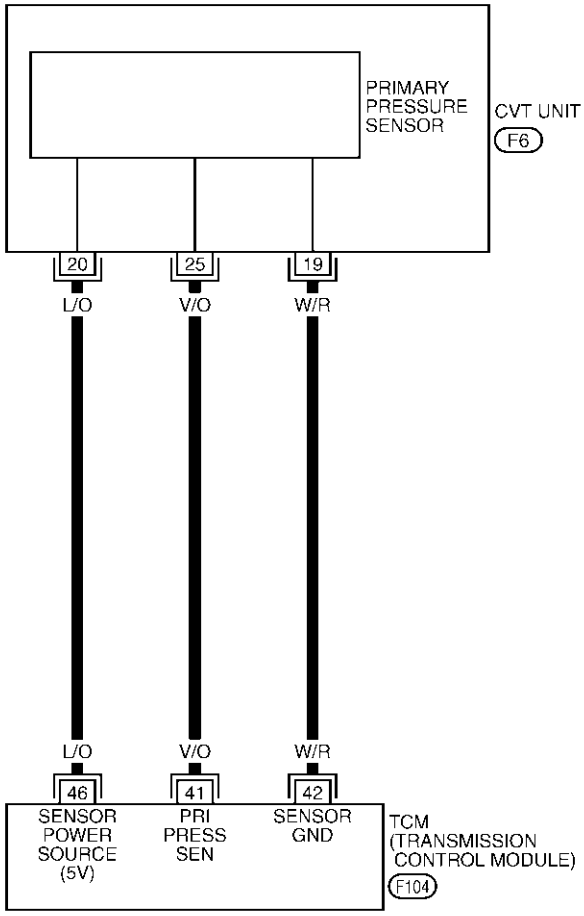
Follow the procedure “With CONSULT-II”.

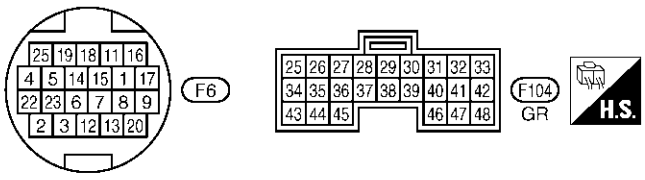
Wiring Diagram - CVT - PRIPS

ACS002TV

CVT-PRIPS-01

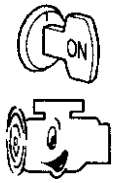






TCWA0157E

Remarks: Specification data are reference values.

Terminal No.	Wire color	Item	Condition		Judgement standard (Approx.)
41	V/O	Transmission fluid pressure sensor B (primary pressure sensor)		N position idle	0.7 - 1.2V

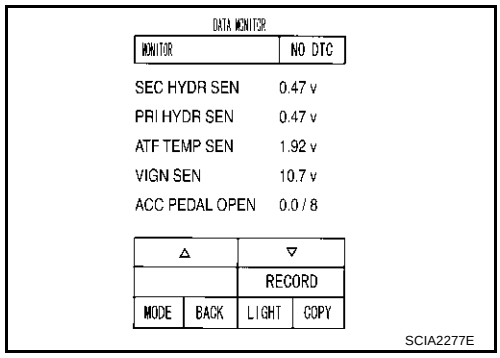
Diagnostic Procedure

ACS002TW

1. CHECK INPUT SIGNAL (WITH CONSULT-II)

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”.



Monitor item	Condition	Specification (Approximately)
PRI HYDR SEN	N position idle	0.7V - 1.2V
	During driving [40 km/h (25 MPH)]	1.0V

OK or NG

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

2. CHECK INPUT SIGNAL (WITHOUT CONSULT-II)

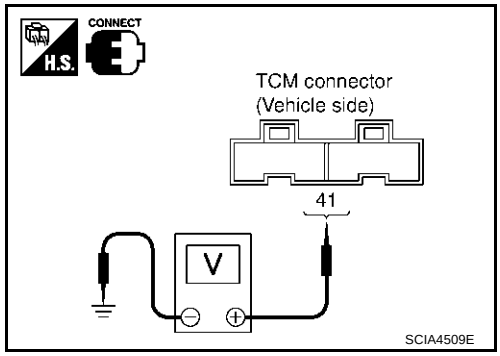
Without CONSULT-II

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

Name	Connector No.	Terminal No.	Condition	Voltage (Approx.)
Transmission fluid pressure sensor B (primary pressure sensor)	F104	41 (V/O) - ground	“ N” position idle	0.7 - 1.2V

OK or NG

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



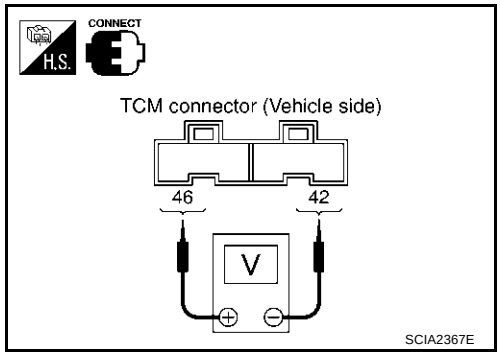
3. CHECK SENSOR POWER AND SENSOR GROUND

1. Turn ignition switch “ON”. (Do not start engine)
2. Check voltage between TCM connector 46 and 42.

Item	Connector No.	Terminal No. (Wire color)	Data (Approx.)
TCM connector	F104	46 (L/O) - 42 (W/R)	5V

OK or NG

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

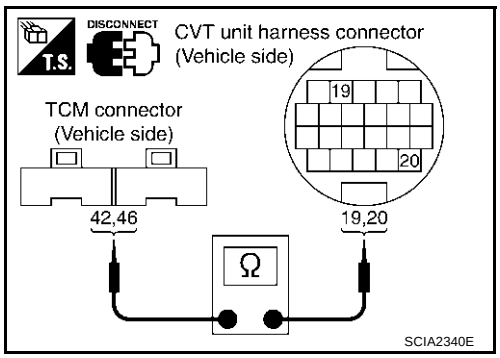


4. CHECK THE HARNESS BETWEEN TCM AND CVT UNIT HARNESS CONNECTOR (SENSOR POWER AND SENSOR GROUND)

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

Item	Connector No.	Terminal No. (Wire color)	Continuity
TCM	F104	42 (W/R)	Yes
CVT unit harness connector	F6	19 (W/R)	

Item	Connector No.	Terminal No. (Wire color)	Continuity
TCM	F104	46 (L/O)	Yes
CVT unit harness connector	F6	20 (L/O)	



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

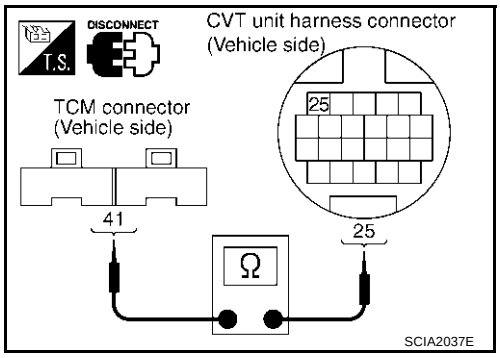
OK or NG

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

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

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

Item	Connector No.	Terminal No. (Wire color)	Continuity
TCM	F104	41 (V/O)	Yes
CVT unit harness connector	F6	25 (V/O)	



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.

6. CHECK DTC

Perform DTC Confirmation Procedure.

- Refer to CVT-143, "DTC Confirmation Procedure" .

OK or NG

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

7. PERFORM TCM INSPECTION

1. Perform TCM input/output signal inspection.
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-197, "Removal and Installation" .
NG >> Repair or replace damaged parts.

DTC P0868 SECONDARY PRESSURE DOWN

PFP:31941

Description

ACS002TX

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.
The secondary pressure duty cycle value is not consistent when the closed throttle position signal is "ON". To confirm the secondary pressure duty cycle at low-pressure, the accelerator (throttle) should be open until the closed throttle position signal is "OFF".

CONSULT-II Reference Value

ACS002TY

Remarks: Specification data are reference values.

Monitor item	Condition	Specification (Approximately)
SEC PRESS	N position idle	0.5MPa

On Board Diagnosis Logic

ACS002TZ

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

Possible Cause

ACS002U0

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

DTC Confirmation Procedure

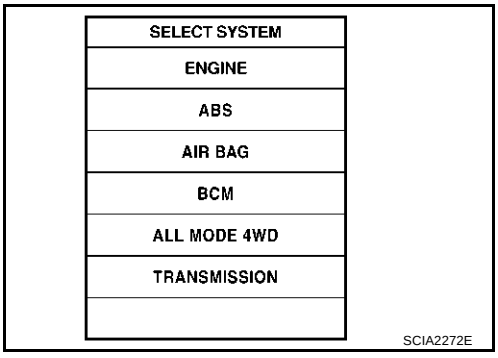
ACS002U1

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

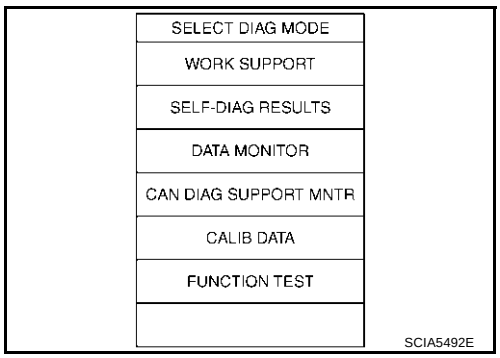
NOTE:
If "DTC Confirmation Procedure" has been previously performed, always turn ignition switch "OFF" and wait at least 5 seconds before performing the next test.
After the repair, perform the following procedure to confirm the malfunction is eliminated.

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.
   FLUID TEMP SEN: 1.0 - 2.0V
   If out of range, drive the vehicle to decrease the voltage (warm up the fluid) or stop engine to increase the voltage (cool down the fluid)
3. Start engine and maintain the following conditions for at least 10 consecutive seconds.
   VEHICLE SPEED (accelerate slowly): 0 → 50km/h (31 MPH)
   ACC PEDAL OPEN: 0.5/8 - 1.0/8
   Selector lever: D position



If the check result is NG, go to CVT-148, "Diagnostic Procedure" .



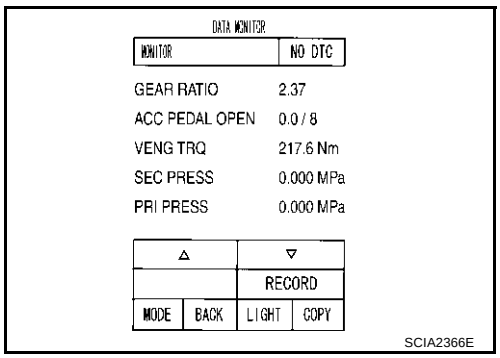
Diagnostic Procedure

ACS002U2

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”.



OK or NG

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

2. CHECK LINE PRESSURE

Perform line pressure test. Refer to CVT-57, "LINE PRESSURE TEST" .

OK or NG

OK >> GO TO 3.
NG >> Repair or replace damaged parts. Refer to CVT-58, "Judgement of Line Pressure Test" .

3. DETECT MALFUNCTIONING ITEM

Check the following:

- Pressure control solenoid valve B (secondary pressure solenoid valve). Refer to CVT-134, "Component Inspection" .
- Pressure control solenoid valve A (line pressure solenoid valve). Refer to CVT-124, "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-135, "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.
- 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 DTC Confirmation Procedure.

- Refer to CVT-147, "DTC Confirmation Procedure" .

OK or NG

OK >> **INSPECTION END**
NG >> Replace the transaxle assembly. Refer to CVT-197, "Removal and Installation" .

DTC P1701 TRANSMISSION CONTROL MODULE (POWER SUPPLY)

PFP:31036

Description

ACS006C5

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

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

On Board Diagnosis Logic

ACS006C6

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code “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

ACS006C7

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

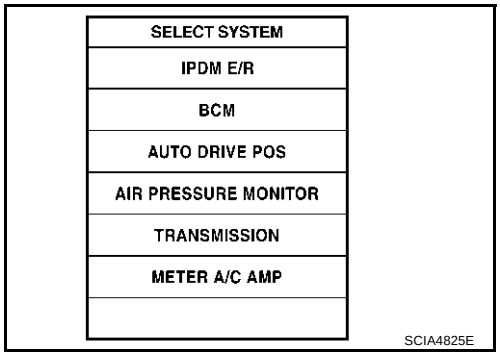
DTC Confirmation Procedure

ACS006C8

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

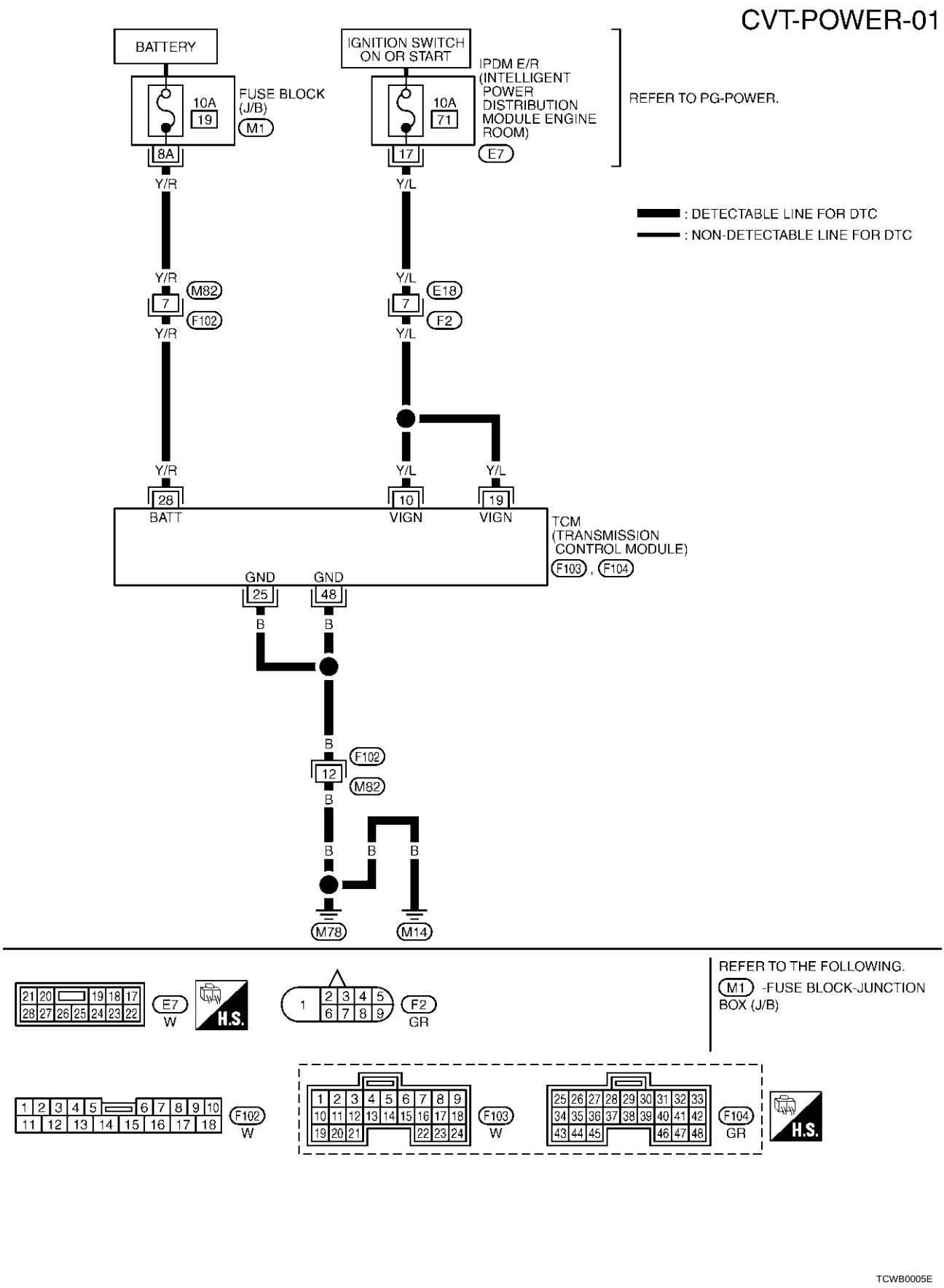
WITH CONSULT-II

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



Wiring Diagram — CVT — POWER

ACS006C9



TCWB0005E

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

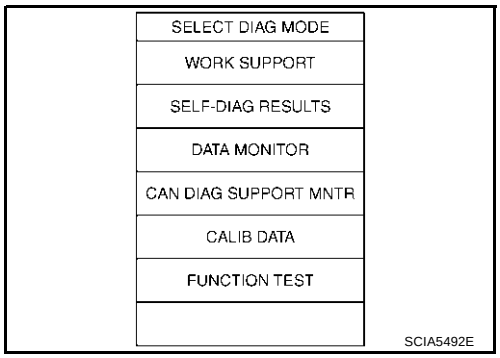
Terminal	Wire color	Item	Condition		Data (Approx.)
10	Y/L	Power supply		–	Battery voltage
				–	0V
19	Y/L	Power supply		–	Battery voltage
				–	0V
25	B	Ground	–		–
28	Y/R	Power supply (memory back-up)	Always		Battery voltage
48	B	Ground	–		–

Diagnostic Procedure

ACS006CA

1. CHECK DTC

1. Turn ignition switch ON. (Do not start engine.)
2. Select “SELF-DIAG RESULTS” mode for “TRANSMISSION” with CONSULT-II.
3. Erase self-diagnostic results. Refer to CVT-47, "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-66, "CONSULT-II" .



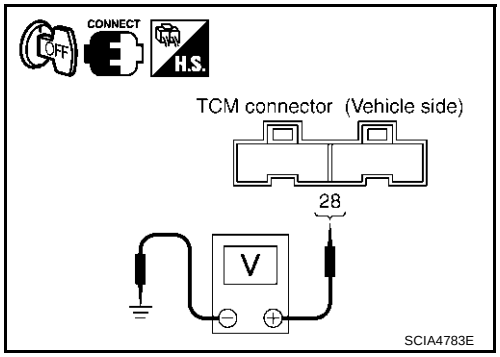
Is the “TCM-POWER SUPPLY” displayed?

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 (Wire color)	Condition	Voltage (Approx.)
Power supply (memory back-up)	F104	28 (Y/R) - Ground	Always	Battery voltage

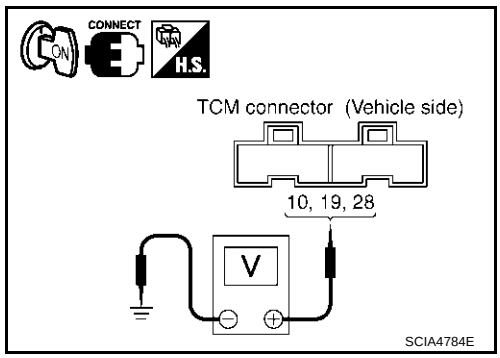


OK or NG

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

3. CHECK TCM POWER SOURCE, STEP 2

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



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

OK or NG

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

4. DETECT MALFUNCTIONING ITEM

Check the following items:

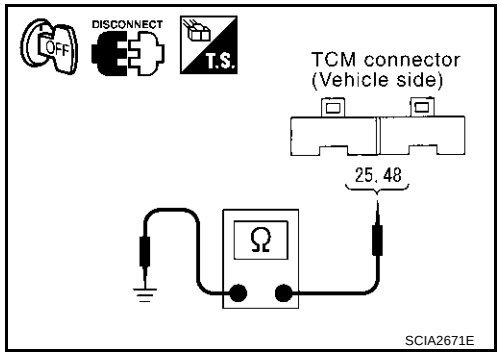
- Harness for short or open between battery and TCM connector terminal 28
- Harness for short or open between ignition switch and TCM connector terminal 10, 19
- 10A fuse (No19, located in the fuse block)
- 10A fuse (No71, located in the IPDM E/R)
- Ignition switch. Refer to PG-3, "POWER SUPPLY ROUTING 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 terminal and ground.



Name	Connector	Terminal (Wire color)	Continuity
Ground	F104	25 (B)	Yes
		48 (B)	

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

Check again. Refer to CVT-150, "DTC Confirmation Procedure" .

OK or NG

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

7. CHECK TCM

1. Check TCM input/output signal. Refer to CVT-63, "TCM Input/Output Signal Reference Values" .
2. If NG, recheck 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

ACS001VE

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 signals to TCM with CAN communication.

On Board Diagnosis Logic

ACS001VF

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code “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

ACS001VG

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

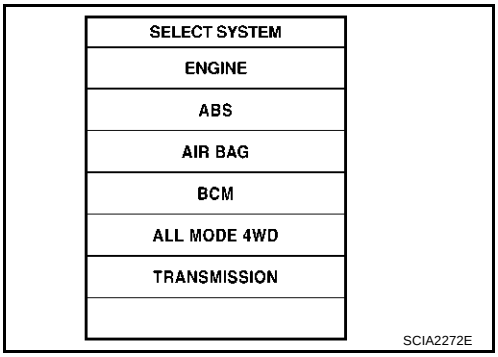
DTC Confirmation Procedure

ACS001VH

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

WITH CONSULT-II

1. Turn ignition switch “ON”. (Do not start engine.)
2. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-II.
3. In fully depressed and fully released conditions, wait for 5 seconds.
4. If DTC is detected, go to CVT-155, "Diagnostic Procedure" .



Diagnostic Procedure

ACS001VI

1. CHECK CAN COMMUNICATION LINE

Perform the self-diagnosis.

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

YES >> Check the CAN communication line. Refer to CVT-76, "DTC U1000 CAN COMMUNICATION LINE" .

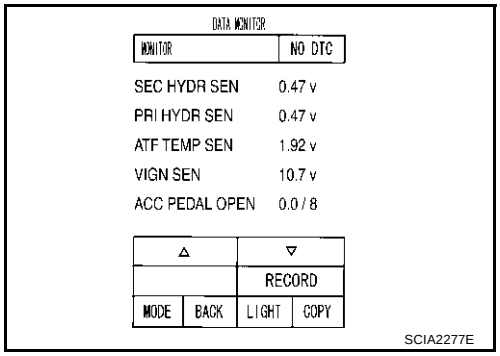
NO >> GO TO 2.

2. CHECK INPUT SIGNAL

With CONSULT-II

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

Monitor item	Condition	Specification (Approximately)
ACC PEDAL OPEN	Release your foot from the accelerator pedal. ↓ Press the accelerator pedal all the way down.	0.0/8 ↓ 8/8



OK or NG

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

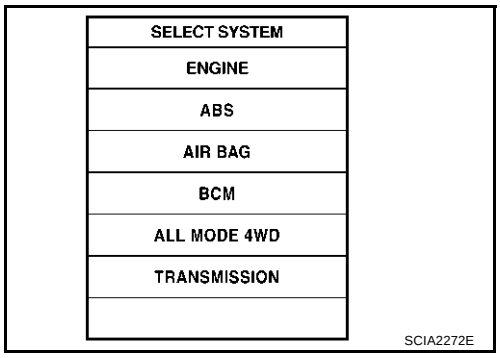
3. CHECK DTC WITH ECM

With CONSULT-II

1. Turn ignition switch “ON”. (Do not start engine.)
2. Select “SELF-DIAG RESULTS” mode for “ENGINE” with CONSULT-II. Refer to EC-125, "CONSULT-II Function" .

OK or NG

OK >> GO TO 4.
NG >> Check the DTC Detected Item. Go to EC-125, "CONSULT-II Function" .



4. CHECK DTC

Check again.

- Refer to CVT-155, "DTC Confirmation Procedure" .

OK or NG

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

DTC P1722 ESTM VEHICLE SPEED SIGNAL

PFP:47660

Description

ACS002K6

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

On Board Diagnosis Logic

ACS002K7

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code “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

ACS002K8

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

DTC Confirmation Procedure

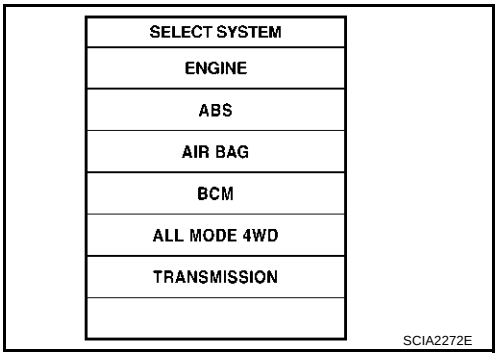
ACS002K9

CAUTION:
Always drive vehicle at a safe speed.

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

WITH CONSULT-II

1. Turn ignition switch “ON”. (Do not start engine.)
2. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-II.
3. Start engine and maintain the following conditions for at least 5 consecutive seconds.
   ACCELE POS: 1/8 or less
   VHCL SPEED SE: 30 km/h (17 MPH) or more
4. If DTC is detected, go to CVT-157, "Diagnostic Procedure" .



Diagnostic Procedure

ACS002KA

1. CHECK CAN COMMUNICATION LINE

Perform the self-diagnosis. Is a malfunction in the CAN communication indicated in the results?

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

YES >> Check CAN communication line. Refer to CVT-76, "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. Refer to BRC-40, "Control Unit Input/Output Signal Standard" , BRC-109, "Control Unit Input/Output Signal Standard" .

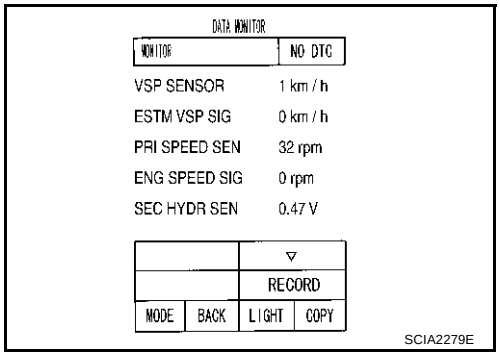
OK or NG

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

3. CHECK INPUT SIGNAL

With CONSULT-II

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

Perform TCM input/output signal inspection. Refer to CVT-63, "TCM Input/Output Signal Reference Values" .

OK or NG

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

5. CHECK DTC

Perform DTC Confirmation Procedure.

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

OK or NG

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

DTC P1723 CVT SPEED SENSOR FUNCTION

PFP:31907

Description

ACS002KB

The vehicle speed sensor CVT [output speed sensor (secondary speed sensor)] detects the revolution of the idler gear parking pawl lock gear and emits 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

ACS002U3

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code “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 “secondary rotation”, the “primary rotation or the “engine speed“ is displayed at the same time.

Possible Cause

ACS002KD

- Harness or connectors
  (The 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

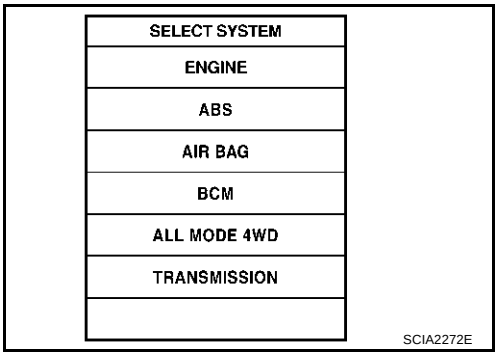
ACS002U4

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

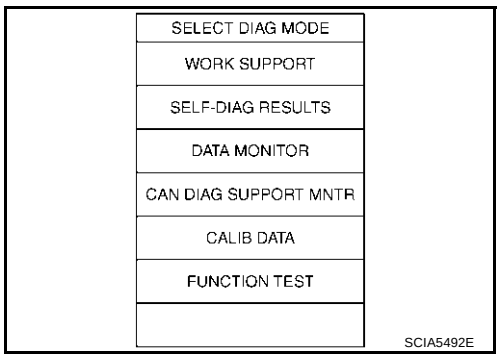
NOTE:
If “DTC Confirmation Procedure” has been previously performed, always turn ignition switch “OFF” and wait at least 5 seconds before performing the next test.
After the repair, touch “ERASE” on “SELF-DIAG RESULTS” and then perform the following procedure to confirm the malfunction is eliminated.

WITH CONSULT-II

1. Turn ignition switch “ON” and select “DATA MONITOR” mode for “ENGINE” with CONSULT-II.
2. Start engine and maintain the following conditions for at least 5 consecutive seconds.
   VHCL SPEED SE: 10 km/h (6 MPH) or more
   THRTL POS SEN: More than 1.2V
   Selector lever: D position
   ENG SPEED: 450 rpm or more
   Driving location: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.



If the check result is NG, go to CVT-160, "Diagnostic Procedure" .



Diagnostic Procedure

ACS002KF

1. CHECK STEP MOTOR FUNCTION

Perform the self-diagnosis. Refer to CVT-70, "SELF-DIAGNOSTIC PROCEDURE (WITH CONSULT-II)" .

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-173, "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 secondary speed sensor system and primary speed sensor system. Refer to CVT-101, "DTC P0720 VEHICLE SPEED SENSOR CVT (SECONDARY SPEED SENSOR)" , CVT-95, "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-108, "DTC P0725 ENGINE SPEED SIGNAL" .

OK or NG

OK >> GO TO 4.

NG >> Repair or replace damaged parts. Refer to EC-596, "IGNITION SIGNAL" .

4. DETECT MALFUNCTIONING ITEM

Check the following:

- Power supply and ground circuit for TCM.
- 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 DTC Confirmation Procedure.

- Refer to CVT-159, "DTC Confirmation Procedure" .

OK or NG

OK >> **INSPECTION END**

NG >> Replace the TCM or transaxle assembly. Refer to CVT-8, "Precautions for TCM and CVT Assembly Replacement" , CVT-197, "Removal and Installation" .

DTC P1726 ELECTRIC THROTTLE CONTROL SYSTEM

PFP:23710

Description

ACS002KG

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 signals to TCM with CAN communication.

On Board Diagnosis Logic

ACS002U5

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

Possible Cause

ACS002KI

Harness or connectors
(The sensor circuit is open or shorted.)

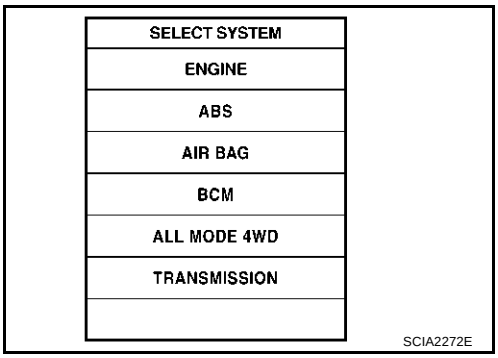
DTC Confirmation Procedure

ACS002KJ

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

WITH CONSULT-II

1. Turn ignition switch “ON”. (Do not start engine.)
2. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-II.
3. Start engine and let it idle for 5 second.
4. If DTC is detected, go to CVT-161, "Diagnostic Procedure" .



Diagnostic Procedure

ACS002KK

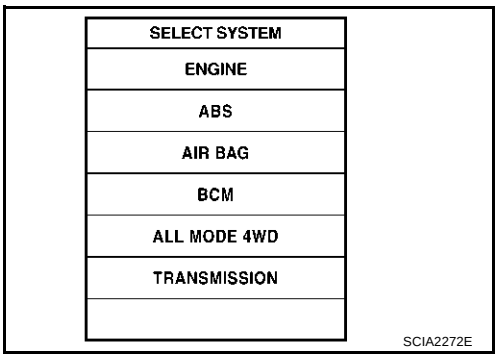
1. CHECK DTC WITH ECM

With CONSULT-II

1. Turn ignition switch “ON”. (Do not start engine.)
2. Select “SELF-DIAG RESULTS” mode for “ENGINE” with CONSULT-II. Refer to EC-125, "CONSULT-II Function" .

OK or NG

OK >> GO TO 2.
NG >> Check the DTC Detected Item. Refer to EC-125, "CONSULT-II Function" .
- If CAN communication line is detected, go to CVT-76, "DTC U1000 CAN COMMUNICATION LINE" .



2. CHECK DTC

Perform DTC Confirmation Procedure.

- Refer to CVT-161, "DTC Confirmation Procedure" .

OK or NG

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

3. DETECT MALFUNCTIONING ITEM

Check the following:

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

OK or NG

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

DTC P1740 LOCK-UP SELECT SOLENOID VALVE CIRCUIT

PFP:31941

Description

ACS002U6

- Lock-up select solenoid valve switches, which controls lock-up clutch pressure or forward clutch pressure (reverse brake pressure).
- When controlling lock-up clutch, turns OFF. When controlling forward clutch, turns ON.

CONSULT-II Reference Value

ACS002KM

Item name	Condition	Display value
LUSEL SOL OUT	N position	ON
	Wait at least for 5 seconds with the selector lever in D position	OFF

On Board Diagnosis Logic

ACS002KN

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “LU-SLCT SOL/CIRC” with CONSULT-II or P1740 without CONSULT-II is detected under the following conditions.

– When TCM compares target value with monitor value and detects an irregularity.

Possible Cause

ACS002KO

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

DTC Confirmation Procedure

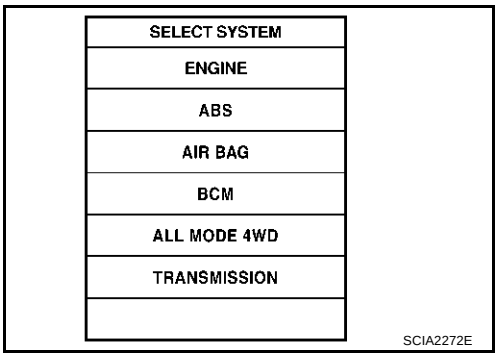
ACS002U7

CAUTION:
Always drive vehicle at a safe speed.

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

WITH CONSULT-II

1. Turn ignition switch “ON”. (Do not start engine.)
2. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-II.
3. Start engine and maintain the following conditions for at least 5 consecutive seconds.
   SELECTOR LEVER: “D” position and “N” position
   (At each time, wait for 5 seconds.)
4. If DTC is detected, go to CVT-165, "Diagnostic Procedure" .



WITH GST

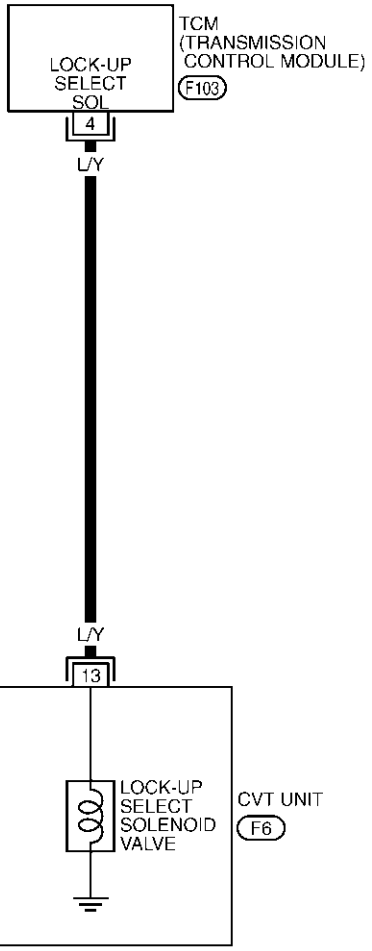
Follow the procedure “With CONSULT-II”.

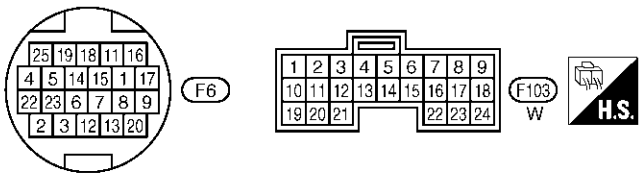
Wiring Diagram - CVT - L/USSV

ACS002U8

CVT-L/USSV-01

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





TCWA0154E

Remarks: Specification data are reference values.

Terminal No.	Wire color	Item	Condition	Judgement standard (Approx.)
4	L/Y	Lock-up select solenoid valve	N position	Battery voltage
			Wait at least for 5 seconds with the selector lever in D position.	0V

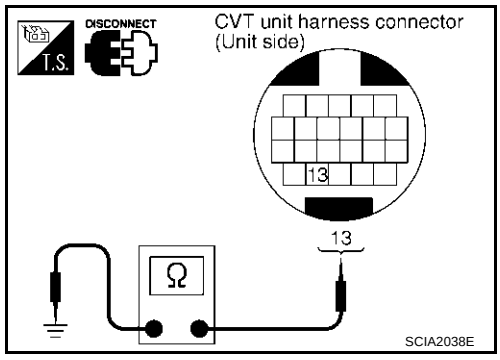
Diagnostic Procedure

ACS002U9

1. CHECK VALVE RESISTANCE

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

Solenoid Valve	Connector No.	Terminal No.	Resistance (Approx.)
Lock-up select solenoid valve	F6	13 - Ground	6.0 - 19.0 Ω



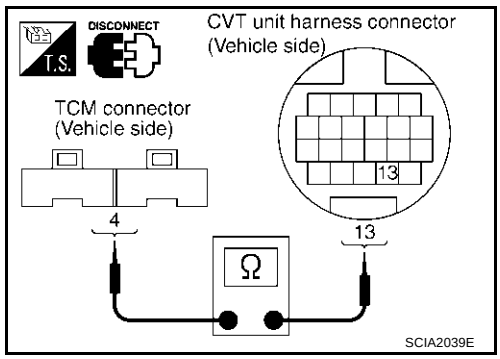
OK or NG

OK >> GO TO 2.
NG >> Replace the transaxle assembly. Refer to CVT-197, "Removal and Installation" .

2. CHECK POWER SOURCE CIRCUIT

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

Item	Connector No.	Terminal No. (Wire color)	Continuity
TCM	F103	4 (L/Y)	Yes
CVT unit harness connector	F6	13 (L/Y)	



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

Check again.

- Refer to CVT-163, "DTC Confirmation Procedure" .

OK or NG

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

4. PERFORM TCM INSPECTION

1. Perform TCM input/output signal inspection.
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 TCM. Refer to CVT-8, "Precautions for TCM and CVT Assembly Replacement" .

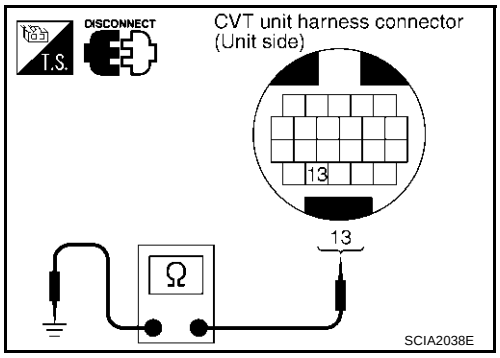
Component Inspection

ACS002UA

LOCK-UP SELECT SOLENOID VALVE

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

Solenoid Valve	Connector No.	Terminal No.	Resistance (Approx.)
Lock-up select solenoid valve	F6	13 - Ground	6.0 - 19.0 Ω



4. If NG, replace transaxle assembly. Refer to CVT-197, "Removal and Installation" .

DTC P1745 LINE PRESSURE CONTROL

PFP:31036

Description

ACS002KR

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

ACS002UB

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

Possible Cause

ACS002KT

- TCM

DTC Confirmation Procedure

ACS002UC

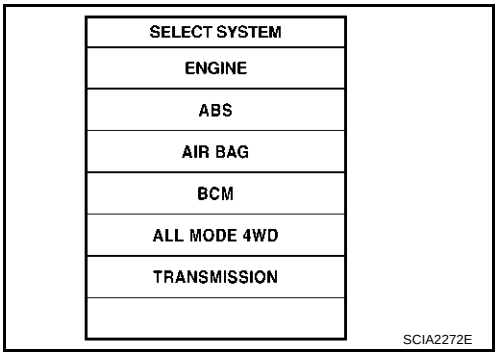
CAUTION:

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

NOTE:
If “DTC Confirmation Procedure” has been previously performed, always turn ignition switch “OFF” and wait at least 5 seconds before performing the next test.
After the repair, touch “ERASE” on “SELF-DIAG RESULTS” and then perform the following procedure to confirm the malfunction is eliminated.

WITH CONSULT-II

1. Turn ignition switch “ON” and select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-II.
2. Make sure that output voltage of CVT fluid temperature sensor is within the range below.
   FLUID TEMP SEN: 1.0 - 2.0V
   If out of range, drive the vehicle to decrease the voltage (warm up the fluid) or stop engine to increase the voltage (cool down the fluid)
   If the check result is NG, go to “Diagnostic Procedure”, CVT-167 .



Diagnostic Procedure

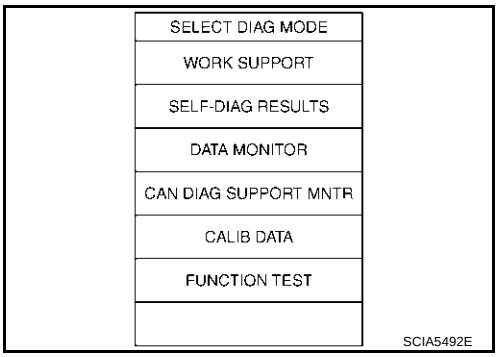
ACS002UD

1. CHECK DTC

1. Turn ignition switch “ON”. (Do not start engine.)
2. Select SELF-DIAG RESULTS item at SELECT DIAG MODE.
3. Erase self-diagnostic results. Refer to CVT-47, "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-71, "Self-Diagnostic Result Test Mode" .

Is the line pressure control displayed?

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



DTC P1777 STEP MOTOR - CIRCUIT

PFP:31020

Description

ACS00216

- 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

ACS0032M

Remarks: Specification data are reference values.

Monitor item	Condition	Specification
STM STEP	The vehicle runs a safe condition and press/depress accelerator pedal.	-20 step - 190 step
SMCOIL A		Changes ON⇔OFF.
SMCOIL B		Changes ON⇔OFF.
SMCOIL C		Changes ON⇔OFF.
SMCOIL D		Changes ON⇔OFF.

On Board Diagnosis Logic

ACS0032N

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “STEP MOTOR/CIRC” with CONSULT-II or P1777 without CONSULT-II is detected under the following conditions.
  - When in operating step motor ON and OFF, there is no proper change in the voltage of the terminal TCM which corresponds to it.

Possible Cause

ACS0032O

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

DTC Confirmation Procedure

ACS0032P

CAUTION:

Always drive vehicle at a safe speed.

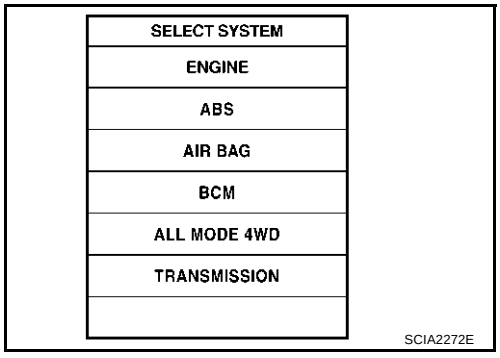
NOTE:

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

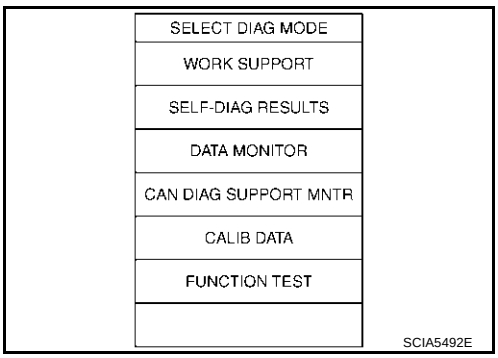
After the repair, touch “ERASE” on “SELF-DIAG RESULTS” and then perform the following procedure to confirm the malfunction is eliminated.

WITH CONSULT-II

1. Turn ignition switch “ON” and select “DATA MONITOR” mode for “TRANMISSION” with CONSULT-II.



2. Drive vehicle for at least 5 consecutive seconds.
   If the check result is “NG”, go to CVT-171, "Diagnostic Procedure" .



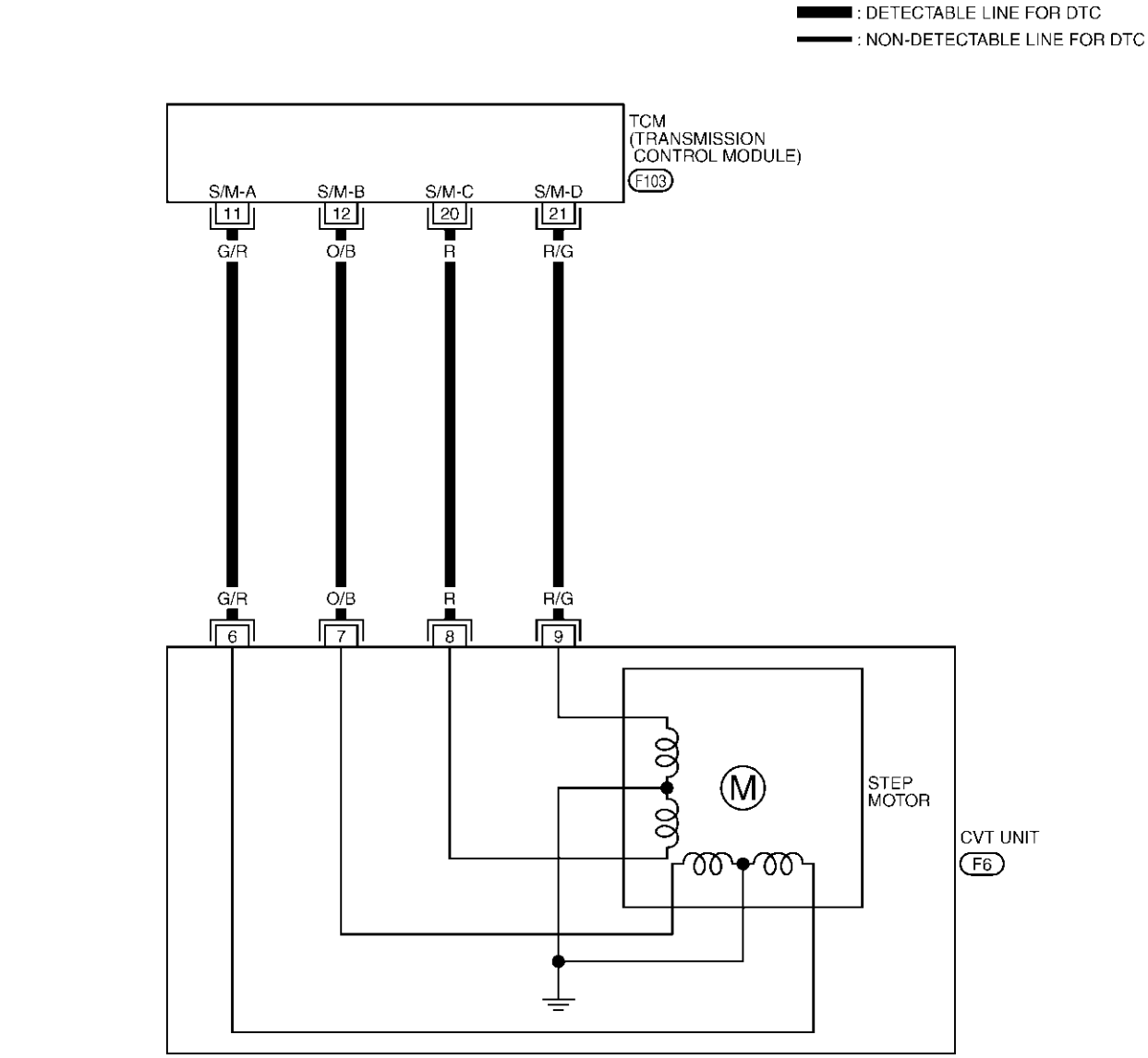
WITH GST

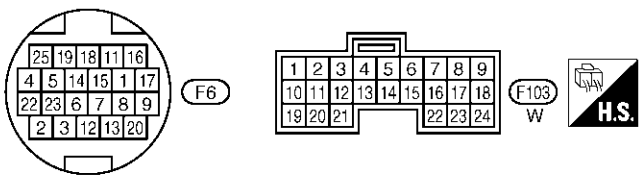
Follow the procedure “With CONSULT-II”.

Wiring Diagram — CVT — STM

ACS00217

CVT-STM-01





TCWA0158E

Remarks: Specification data are reference values.

Terminal No.	Wire color	Item	Condition	Judgement standard (Approx.)
11	G/R	Step motor	Within 2 seconds after key switch “ON”, check the time measurement by using the pulse width measurement function (Hi level) of CONSULT-II. ● CONSULT-II cable connect to data link connector. ● This inspection cannot be measured by circuit tester.	30.0 msec
12	O/B			10.0 msec
20	R			30.0 msec
21	R/G			10.0 msec

Diagnostic Procedure

ACS00218

1. CHECK INPUT SIGNAL

With CONSULT-II

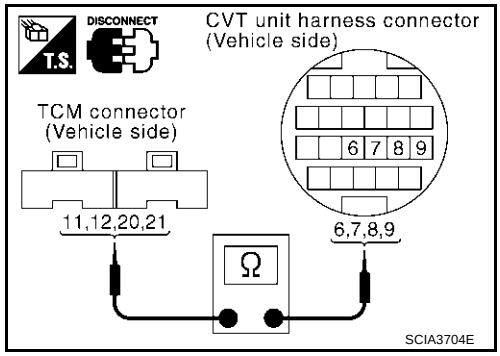
1. Start engine.
2. Select “SELECTION FROM MENU” in “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-II.
3. Vehicle start and read out the value of “STM STEP”, “SMCOIL A”, “SMCOIL B”, “SMCIOL C”, and “SMCOIL D”.

OK or NG

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

2. CHECK STEP MOTOR CIRCUIT

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



Item	Connector No.	Terminal No. (Wire color)	Continuity
TCM	F103	11 (G/R)	Yes
CVT unit harness connector	F6	6 (G/R)	
TCM	F103	12 (O/B)	Yes
CVT unit harness connector	F6	7 (O/B)	
TCM	F103	20 (R)	Yes
CVT unit harness connector	F6	8 (R)	
TCM	F103	21 (R/G)	Yes
CVT unit harness connector	F6	9 (R/G)	

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-172, "Component Inspection" .

OK or NG

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

4. CHECK DTC

Check again.

- Refer to CVT-168, "DTC Confirmation Procedure" .

OK or NG

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

5. CHECK TCM INSPECTION

1. Perform TCM input/output signal inspection.
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.

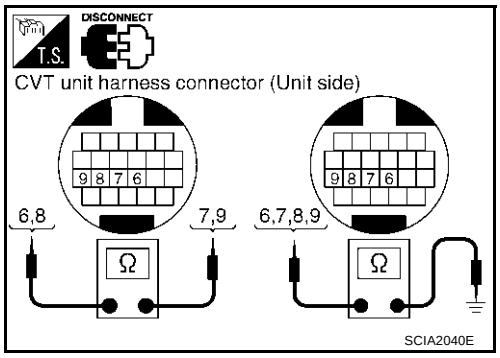
Component Inspection

ACS00219

STEP MOTOR

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

Control valve	Connector No.	Terminal No.	Resistance (Approx.)
Step motor	F6	6 - 7	30Ω
		8 - 9	
		6 - Ground	15Ω
		7 - Ground	
		8 - Ground	
		9 - Ground	



4. If NG, replace transaxle assembly. Refer to CVT-197, "Removal and Installation" .

DTC P1778 STEP MOTOR - FUNCTION

PFP:31947

Description

ACS0021D

- 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 detects when electrical system is OK, but mechanical system is NG.
- This diagnosis item detects when the state of the changing the speed mechanism in unit does not operate normally.

CONSULT-II Reference Value

ACS0032Q

Remarks: Specification data are reference values.

Monitor item	Condition	Specification (Approximately)
STM STEP	The vehicle runs a safe condition and press/depress accelerator pedal.	-20 step - 190 step
GEAR RATIO		2.37 - 0.43

On Board Diagnosis Logic

ACS0032R

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “STEP MOTOR/FNCTN” with CONSULT-II or P1778 without CONSULT-II is detected under the following conditions.

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

Possible Cause

ACS0032S

- Step motor

DTC Confirmation Procedure

ACS0032T

CAUTION:

- **Always drive vehicle at a safe speed.**
- **Be careful not to rev engine into the red zone on the tachometer.**
- **Before starting “DIAGNOSTIC TROUBLE CODE (DTC) CONFIRMATION PROCEDURE”, confirm “Hi” or “Mid” or “Low” fixation by “PRI SPEED” and “VEHICLE SPEED” on “DATA MONITOR MODE”.**
- **If hi-geared fixation, go to diagnostic procedure soon.**

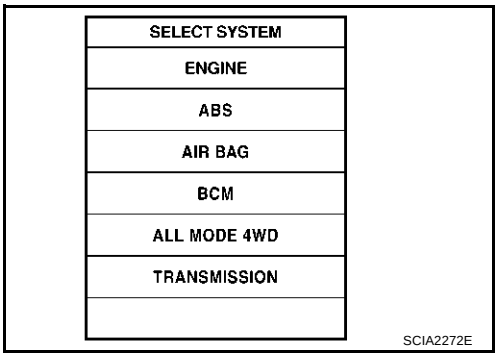
NOTE:

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

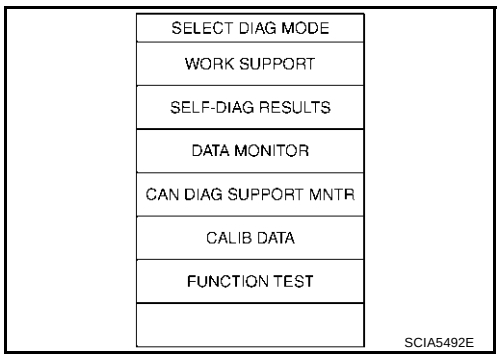
After the repair, touch “ERASE” on “SELF-DIAG RESULTS” and then perform the following procedure to confirm the malfunction is eliminated.

WITH CONSULT-II

1. Turn ignition switch “ON” and select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-II.
2. Make sure that output voltage of CVT fluid temperature sensor is within the range below.
   FLUID TEMP SEN: 1.0 - 2.0V
   If out of range, drive the vehicle to decrease the voltage (warm up the fluid) or stop engine to increase the voltage (cool down the fluid)



3. 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 1/8
   Selector lever: D position
   ENG SPEED: 450 rpm or more
   If the check result is NG, GO TO CVT-174, "Diagnostic Procedure" .



WITH GST

Follow the procedure “With CONSULT-II”.

Diagnostic Procedure

ACS0032U

1. CHECK STEP MOTOR

- It is monitoring whether “CVT ratio: 2.37 - 0.43” changes similarly to “STM STEP: -20 - 190” by DATA MONITOR mode.
- If no CONSULT-II, inspect the engine speed (rise and descend), vehicle speed, throttle opening angle, and check shift change.

OK or NG

OK >> **INSPECTION END**
NG >> Replace the transaxle assembly. Refer to CVT-197, "Removal and Installation" .

SECOND POSITION SWITCH

PFP:34910

Description

ACS0032V

Second position switch is built into CVT control device.
When selector lever is in “S” or “L” positions, 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

ACS00332

Remarks: Specification data are reference values.

Monitor item	Condition	Specification
SECOND POS SW	Selector lever in “S” position	ON
	Other than the above (except “L” position)	OFF

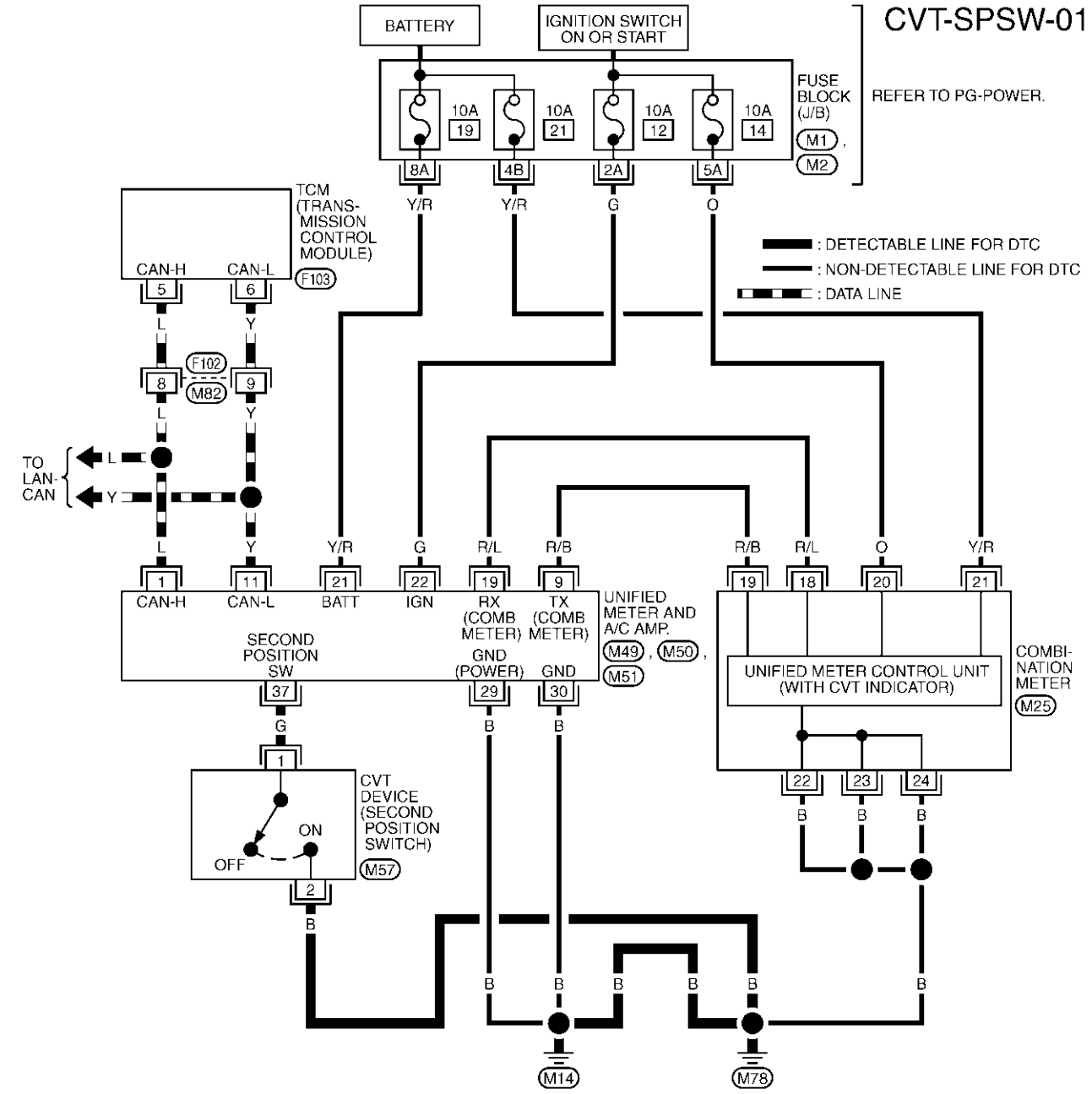
Possible Cause

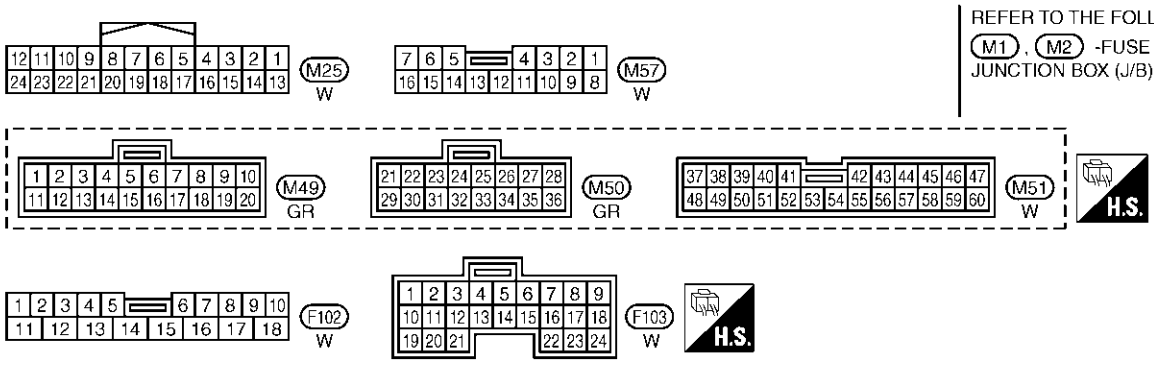
ACS0032Y

- Harness or connectors
  (These switch circuits are open or shorted.)
- Second position switch (Into control device)

Wiring Diagram — CVT — SPSW

ACS00333





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

TCWA0162E

Diagnostic Procedure

ACS00330

1. CHECK CAN COMMUNICATION LINE

Perform the self-diagnosis.

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

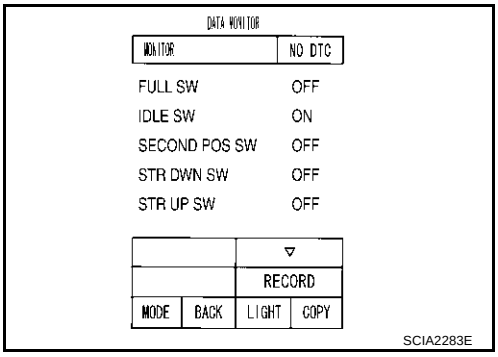
YES >> Check CAN communication line. Refer to CVT-76, "DTC U1000 CAN COMMUNICATION LINE" .

NO >> GO TO 2.

2. CHECK SECOND POSITION SWITCH CIRCUIT

With CONSULT-II

1. Turn ignition switch “ON”. (Do not start engine.)
2. Select “ECU INPUT SIGNALS” in “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-II.
3. Read out ON/OFF switching action of the “SECOND POS SW”.



OK or NG

OK >> **INSPECTION END**

NG >> GO TO 3.

3. CHECK SECOND POSITION SWITCH

Check continuity between CVT device (Second position switch) connector M57 terminals 1 (G) and 2 (B).

- Refer to CVT-177, "Component Inspection" .

OK or NG

OK >>
- Check the following item. If NG, repair or replace damaged parts.
  - Unified meter and A/C amp. Refer to DI-57, "CONSULT-II Function" .
  - Combination meter. Refer to DI-14, "Meter/Gauge Operation and Odo/Trip Meter" .

NG >> Repair or replace damaged parts.

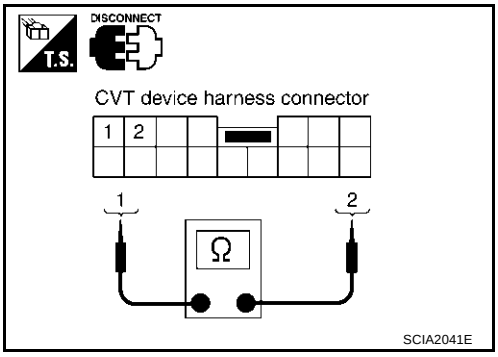
Component Inspection

ACS00331

SECOND POSITION SWITCH

Check continuity between terminals.

Item	Condition	Connector No.	Terminal No. (Unit side)	Continuity
Second position switch	Selector lever in “S” position	M57	1 - 2	Yes
	Other than the above except “L” position			No

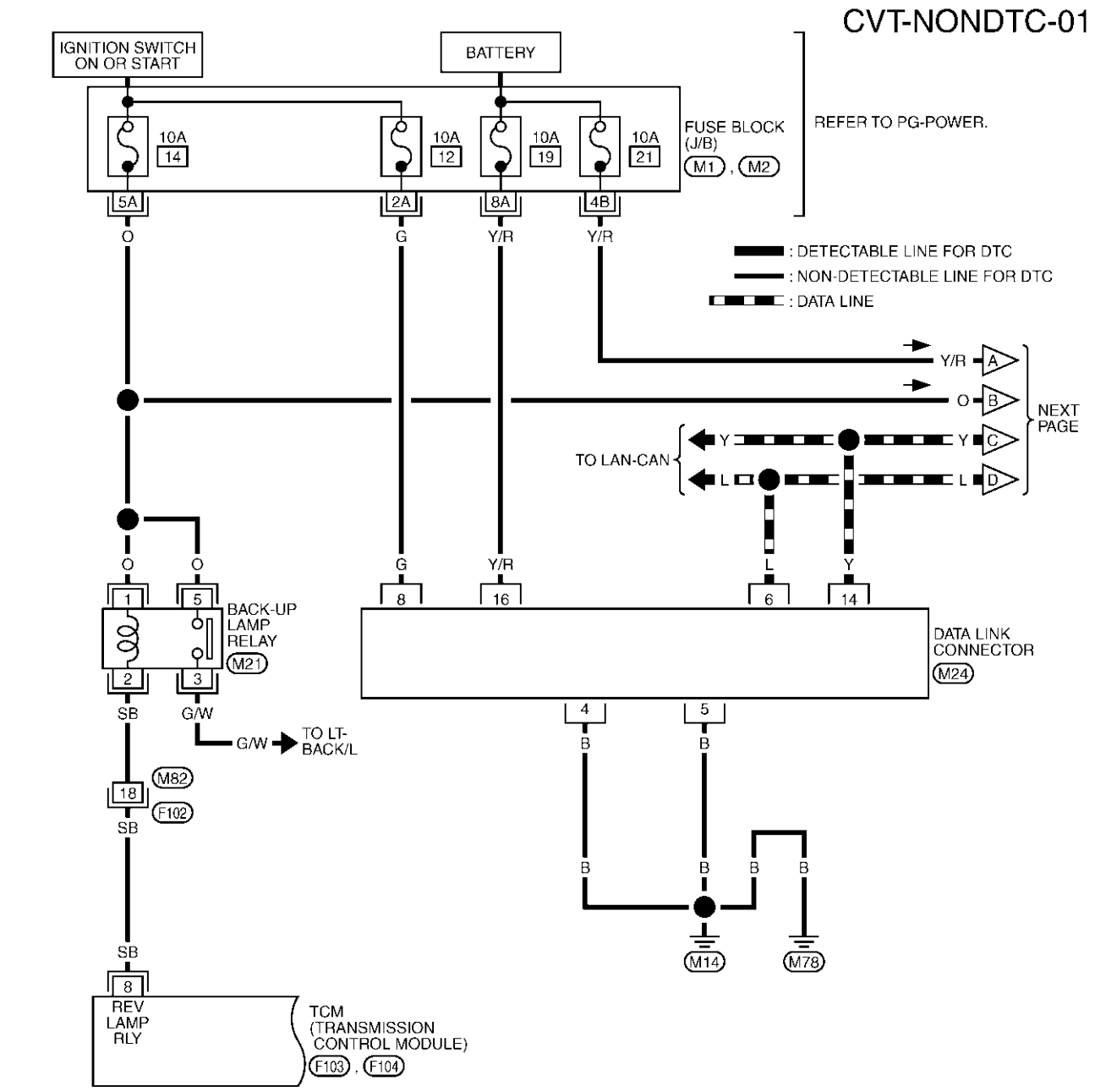


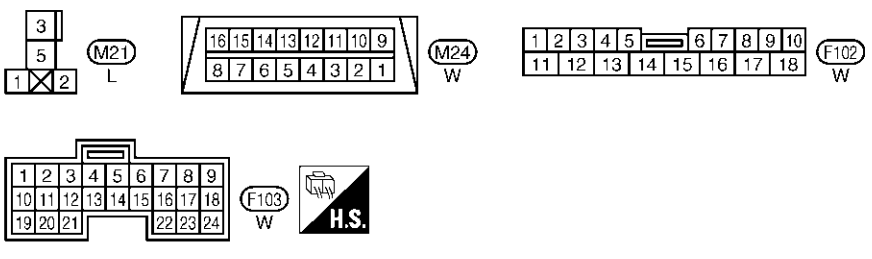
TROUBLE DIAGNOSIS FOR SYMPTOMS

PFP:00007

Wiring Diagram — CVT — NONDTC

ACS001Z0

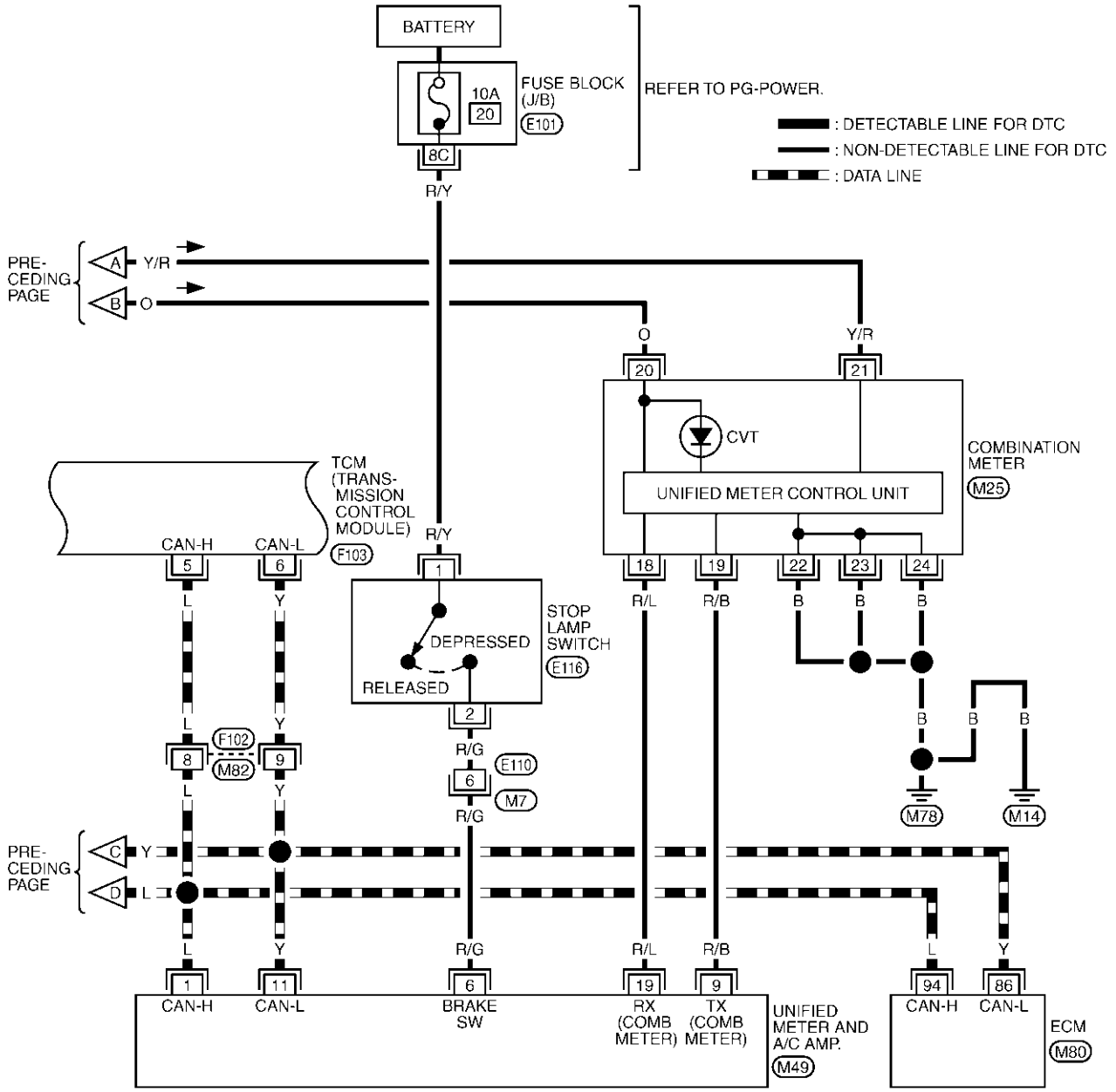


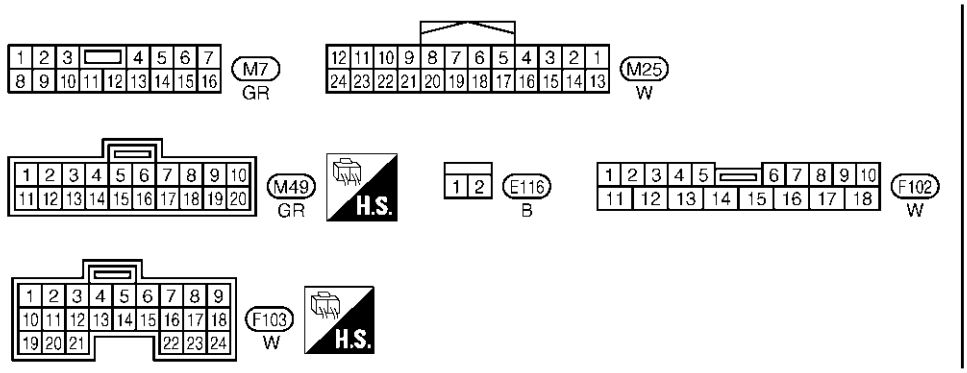


REFER TO THE FOLLOWING.
M1, M2 -FUSE BLOCK-JUNCTION BOX (J/B)

TCWA0163E

CVT-NONDTC-02



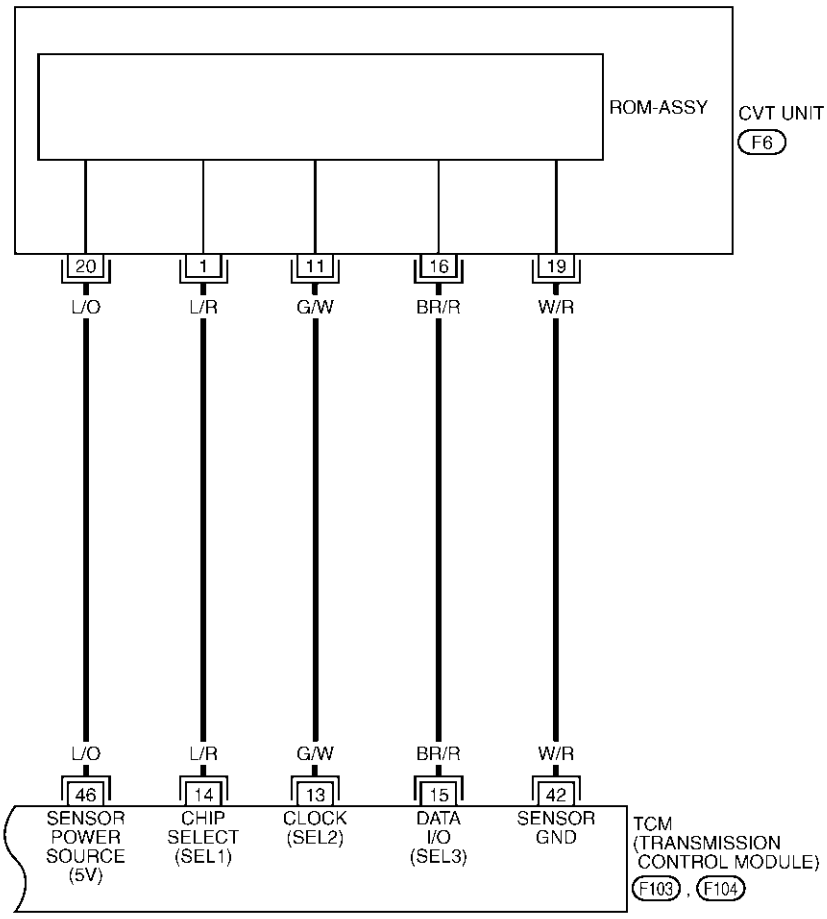


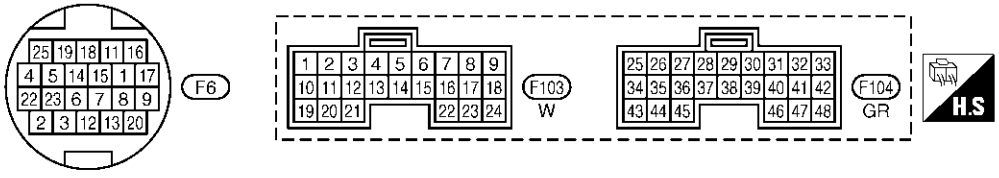
REFER TO THE FOLLOWING.
E101 -FUSE BLOCK-JUNCTION BOX (J/B)
M80 -ELECTRICAL UNITS

TCWA0164E

CVT-NONDTC-03

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





TCWA0159E

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

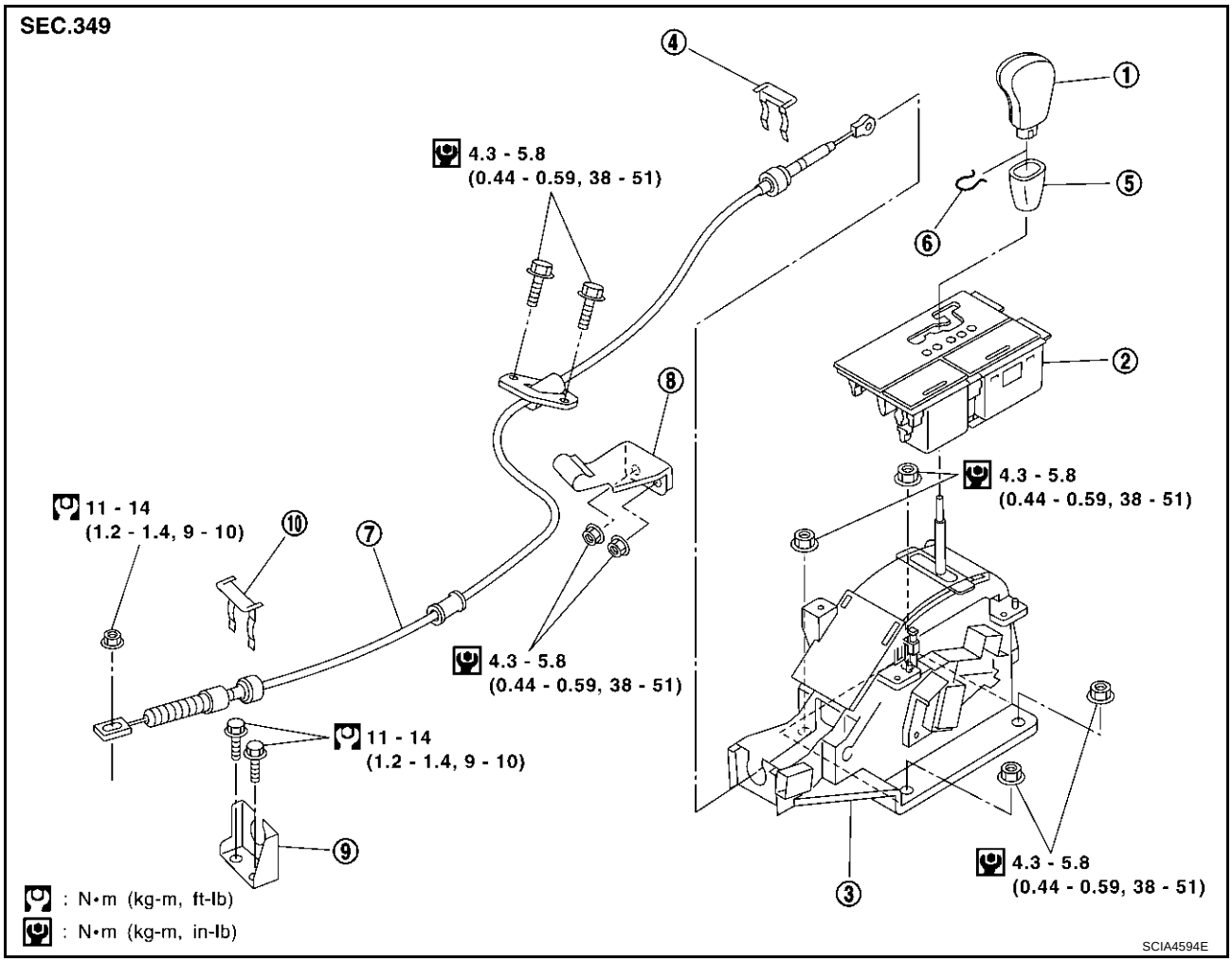
Terminal No.	Wire color	Item	Condition		Data (Approx.)
5	L	CAN H	–	–	–
6	Y	CAN L	–	–	–
8	R	BACK-UP LAMP relay	IGN ON	Selector lever in “R” position.	0V
				Selector lever in other position.	Battery voltage
13	G/W	ROM assembly	—		—
			—		—
14	L/R	ROM assembly	—		—
			—		—
15	BR/R	ROM assembly	—		—
			—		—
42	W/R	Sensor ground	—		0V
46	L/O	Sensor power		—	4.5-5.5V

SHIFT CONTROL SYSTEM

PFP:34901

Control Device Removal and Installation

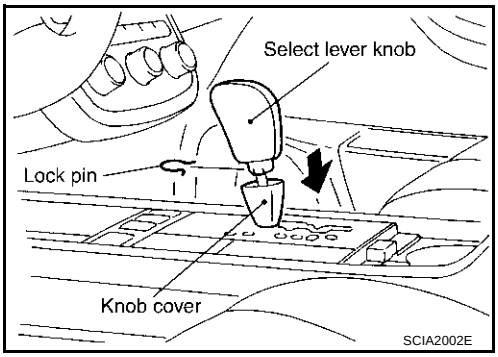
ACS001ZN



1. Select lever knob
2. A/T console finisher
3. Control device assembly
4. Lock plate
5. Knob cover
6. Lock pin
7. Control cable
8. Bracket
9. Bracket
10. Lock plate

REMOVAL

1. Remove knob cover below select lever downward.
2. Pull lock pin out of select lever knob.
3. Remove select 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.

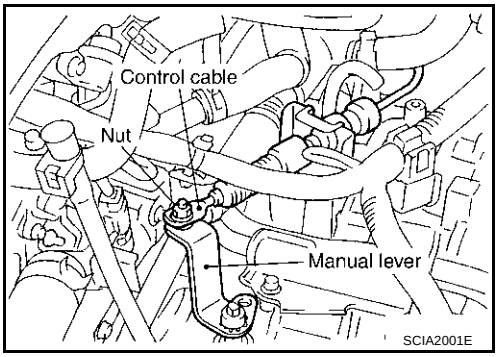
- After installation is completed, adjust and check CVT position.

Adjustment of CVT Position

ACS001ZO

1. Place PNP switch and selector lever in “P” position.
2. Loosen nut of manual lever.
3. While pressing manual lever toward front of vehicle (in P position direction), tighten nut to specified torque.

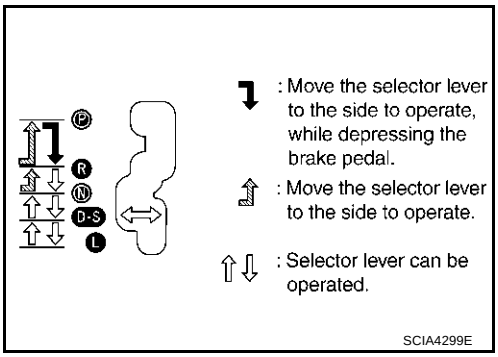
   :11 - 14 N·m (1.2 - 1.4 kg-m, 9 - 10 ft-lb)



Checking of CVT Position

ACS001ZP

1. Place selector lever in “P” position, and turn ignition switch ON (engine stop).
2. Make sure selector lever can be shifted to other than “P” position when brake pedal is depressed. Also make sure selector lever can be shifted from “P” position only when brake pedal is depressed.
3. Move the selector lever and check for excessive effort, sticking, noise or rattle.
4. Confirm the selector lever stops at each position with the feel of engagement when it is moved through all the positions. Check whether or not the actual position the selector lever is in matches the position shown by the shift position indicator and the transaxle body.
5. The method of operating the lever to individual positions correctly should be as shown in the figure.
6. Confirm the back-up lamps illuminate only when lever is placed in the “R” position. Confirm the back-up lamps do not illuminate when selector lever is in the “P” or “N” position with the lever pushed against the “R” 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.



CVT SHIFT LOCK SYSTEM

PFP:00000

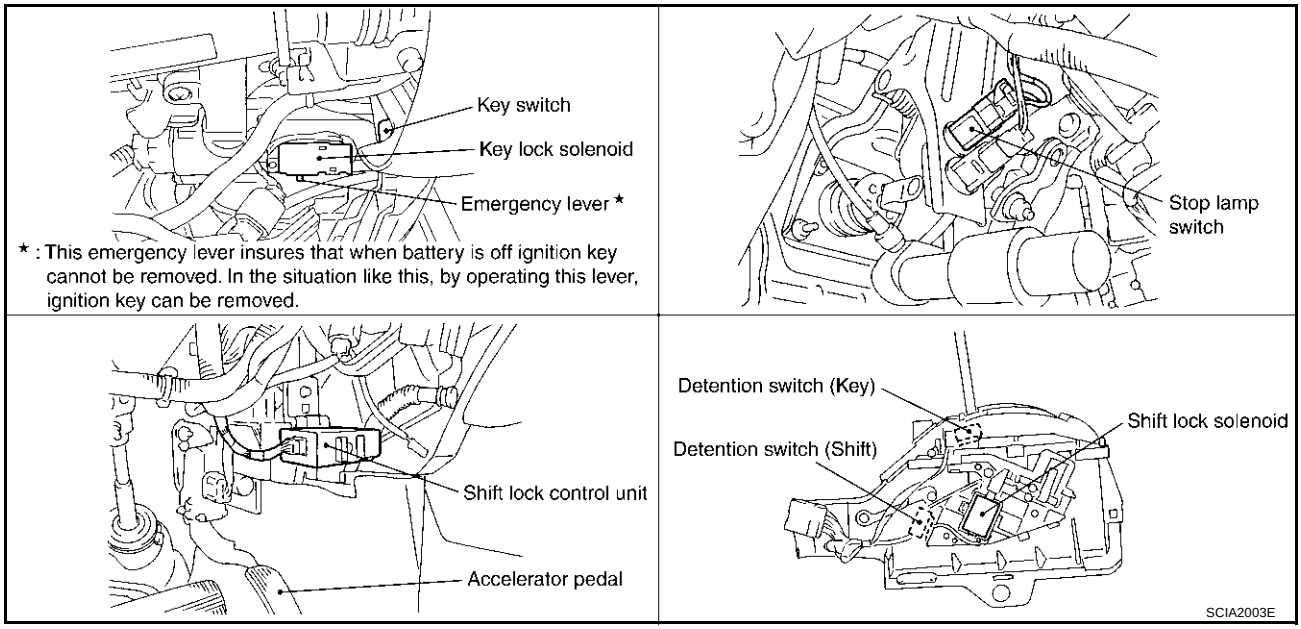
Description

ACS00334

- 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.

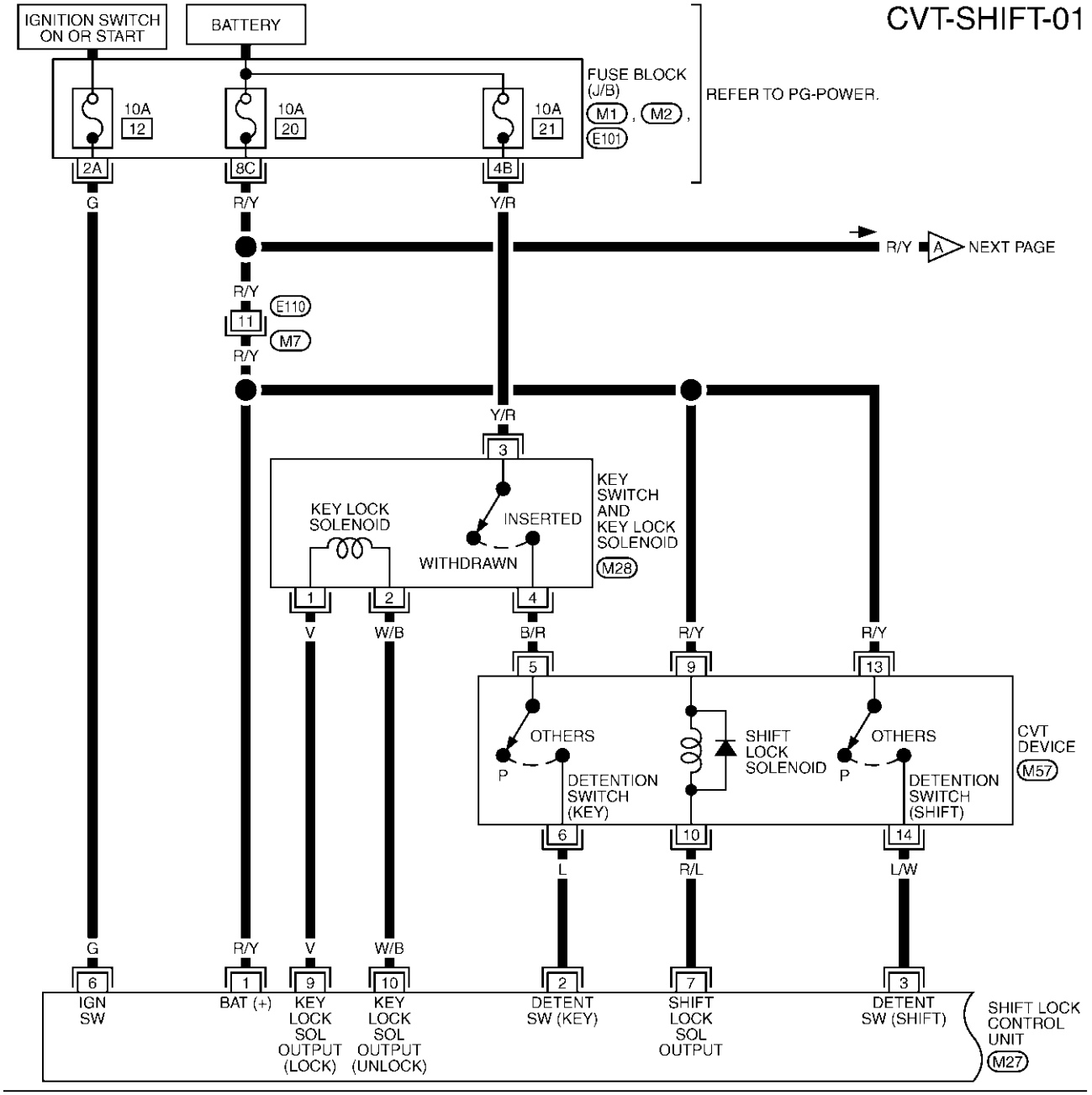
Shift Lock System Electrical Parts Location

ACS00335



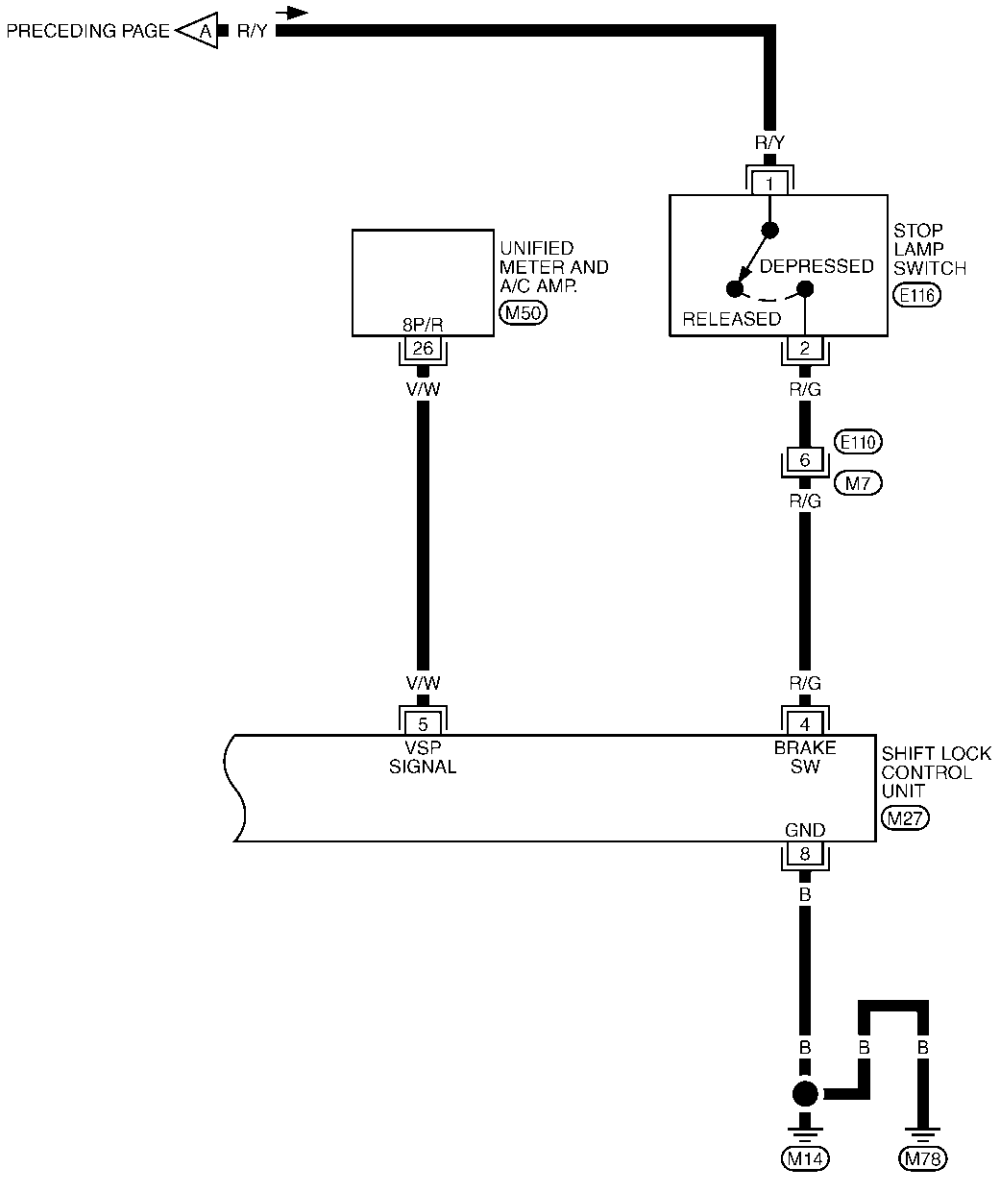
Wiring Diagram — CVT — SHIFT

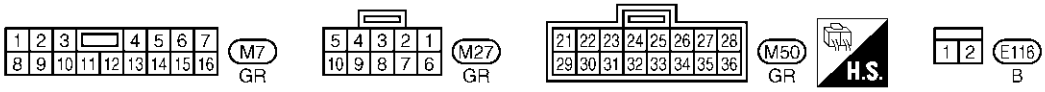
ACS00336



TCWA0165E

CVT-SHIFT-02



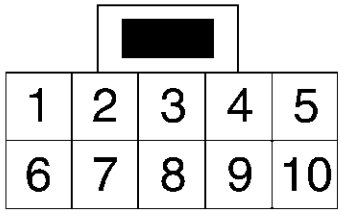


TCWA0166E

Shift Lock Control Unit Reference Values

ACS00337

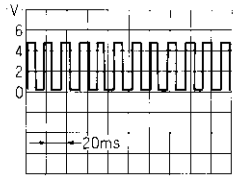
SHIFT LOCK HARNESS CONNECTOR TERMINALS LAYOUT



SCIA2004E

SHIFT LOCK CONTROL UNIT INSPECTION TABLE

Data are reference values.

Terminal (Wire color)		Item	Condition	Judgement standard
1 (R/Y)	8 (B)	Power source	Always	Battery voltage
2 (L)	8 (B)	Detention switch (for key)	When selector lever is not in “P” position with key inserted.	Battery voltage
			When selector lever is in “P” position with key inserted.	Approx. 0V
3 (L/W)	8 (B)	Detention switch (for shift)	When selector lever is not “P” position.	Battery voltage
			When selector lever is “P” position.	Approx. 0V
4 (R/G)	8 (B)	Stop lamp switch	When brake pedal is depressed	Battery voltage
			When brake pedal is released	Approx. 0V
5 (V/W)	8 (B)	Vehicle speed signal (8pulse signal)	Speed meter is operated	 ELF1084D
6 (G)	8 (B)	Ignition signal	Ignition switch: OFF	Approx. 0V
			Ignition switch: ON	Battery voltage
7 (R/L)	8 (B)	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 10km/h or less. ● For 3minutes after selector lever is not in “P” position, vehicle speed is 10km/h or less, and ignition switch is ON → OFF.	Approx. 0V
			Except the above	Battery voltage
8 (B)	—	Ground	—	Approx. 0V
9 (V)	8 (B)	Key lock solenoid	When selector lever is not “P” position.	Battery voltage for approx. 0.1 sec. (Note)
			When selector lever is “P” position.	Approx. 0V
10 (W/B)	8 (B)	Key unlock solenoid	When selector lever is “P” position with ignition switch is OFF.	Battery voltage for approx. 0.1 sec. (Note)
			When selector lever is not “P” position with ignition switch is OFF.	Approx. 0V

NOTE:
Confirm 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

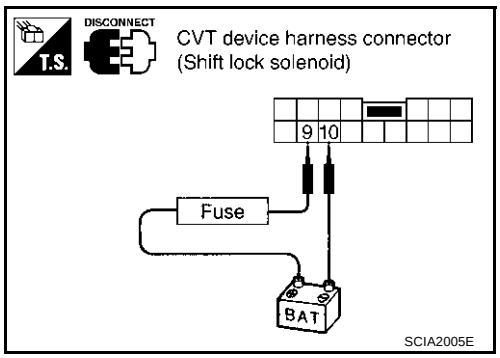
ACS00338

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 No.	Terminal No.
M57	9 (Battery voltage) - 10 (Ground)

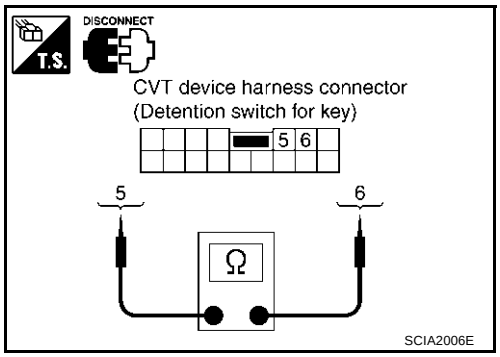


DETENTION SWITCH

For Key:

- Check continuity between terminals of the CVT device harness connector.

Condition	Connector No.	Terminal No.	Continuity
When selector lever is “P” position.	M57	5 - 6	No
When selector lever is not “P” position.			Yes

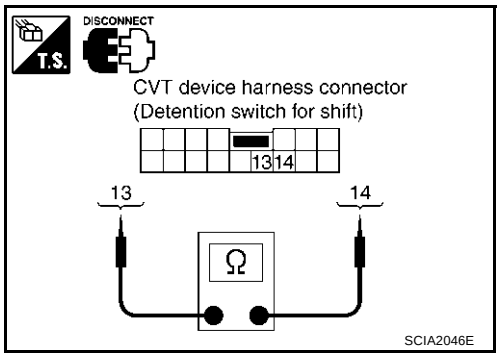


DETENTION SWITCH

For Shift:

- Check continuity between terminals of the CVT device harness connector.

Condition	Connector No.	Terminal No.	Continuity
When selector lever is “P” position.	M57	13 - 14	No
When selector lever is not “P” position.			Yes



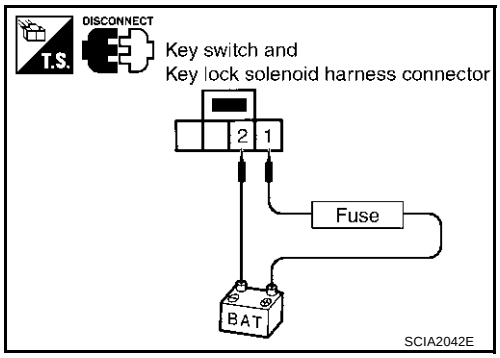
KEY LOCK SOLENOID

Key Lock

- Check operation by applying battery voltage to key switch and key lock solenoid harness connector.

CAUTION:
Be careful not to cause burnout of the harness.

Connector No.	Terminal No.
M28	1 (Battery voltage) - 2 (Ground)

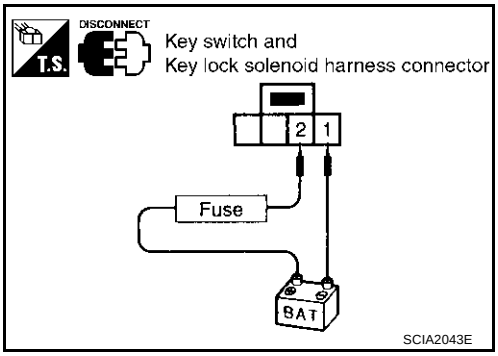


Key Unlock

- Check operation by applying battery voltage to key switch and key lock solenoid harness connector.

CAUTION:
Be careful not to cause burnout of the harness.

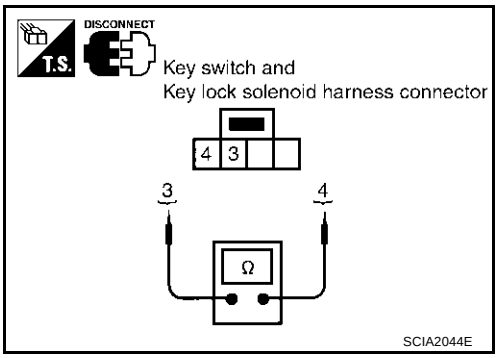
Connector No.	Terminal No.
M28	2 (Battery voltage) - 1 (Ground)



KEY SWITCH

- Check continuity between terminals of the key switch and key lock solenoid harness connector.

Condition	Connector No.	Terminal No.	Continuity
Key inserted	M28	3 - 4	Yes
Key withdrawn			No

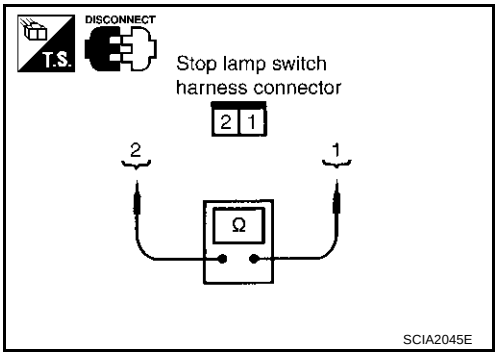


STOP LAMP SWITCH

- Check continuity between terminals of the stop lamp switch harness connector.

Condition	Connector No.	Terminal No.	Continuity
When brake pedal is depressed	E116	1 - 2	Yes
When brake pedal is released			No

Check stop lamp switch after adjusting brake pedal. Refer to BR-6, "Inspection and Adjustment" .



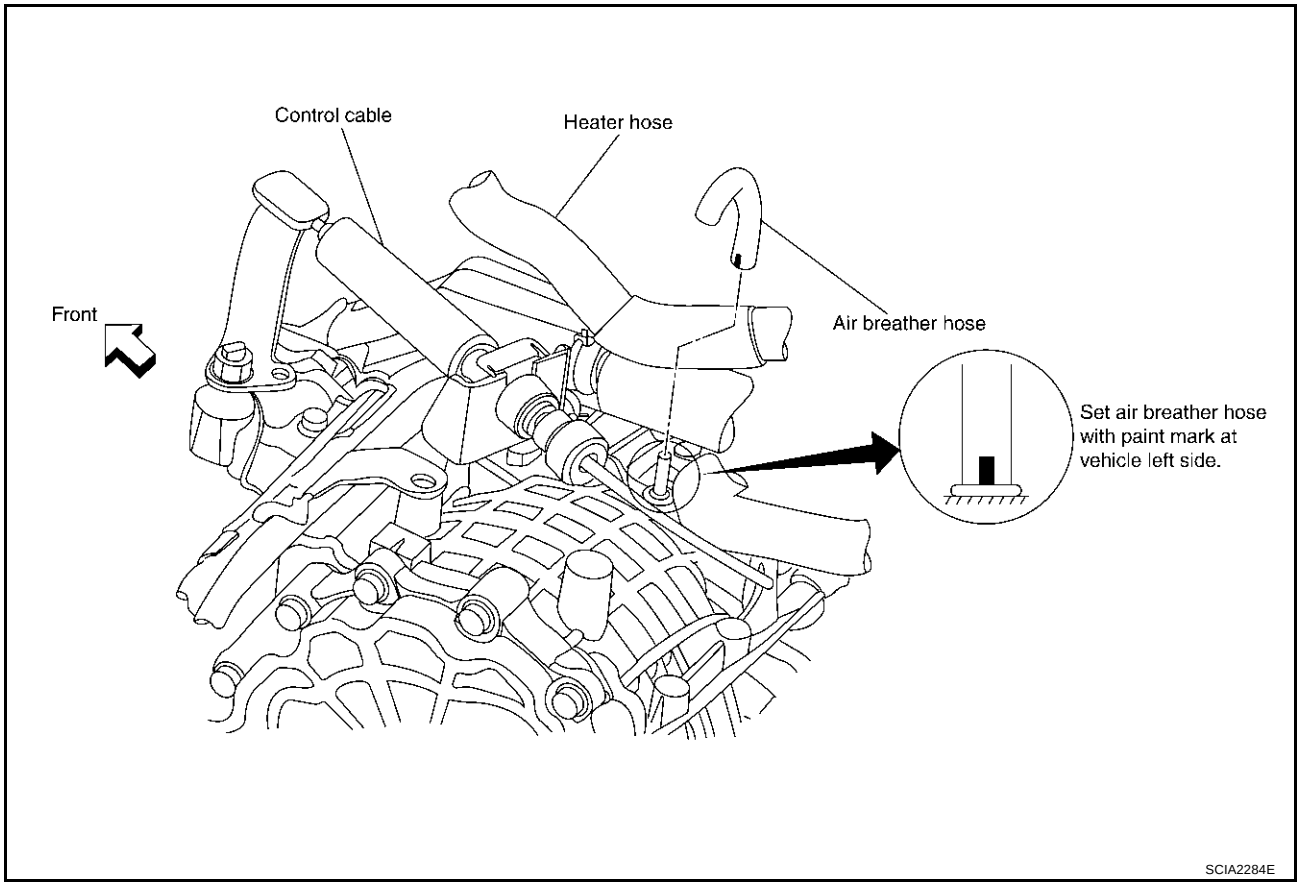
AIR BREATHER HOSE

PFP:31098

Removal and Installation

ACS001ZV

Refer to the figure below for air breather hose and air breather removal and installation procedure.



CAUTION:

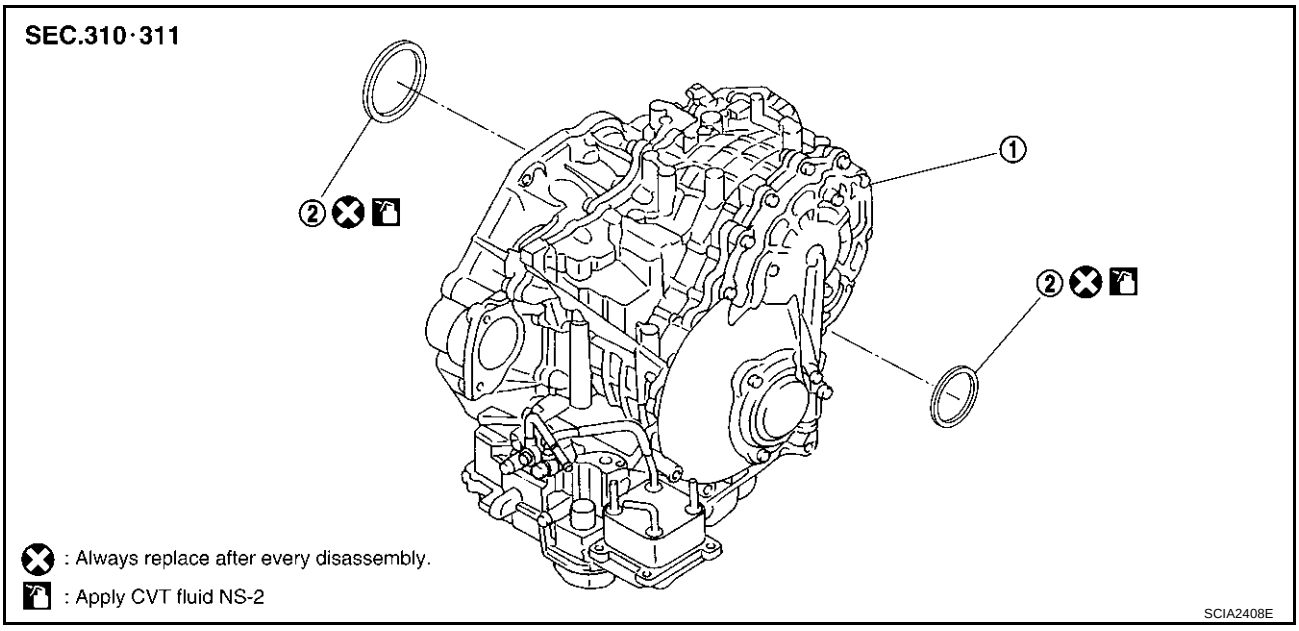
- **Securely insert the hose into the air breather until it touches the bottom.**

DIFFERENTIAL SIDE OIL SEAL

PFP:33111

Removal and Installation

ACS003L0

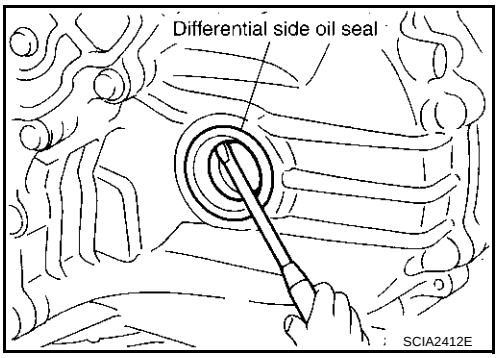


1. Transaxle assembly
2. Differential side oil seal

REMOVAL

1. Remove drive shaft assembly. Refer to FAX-7, "FRONT DRIVE SHAFT" .
2. Remove transfer from transaxle assembly. (with AWD models) Refer to TF-12, "Removal and Installation" .
3. Remove differential side oil seal using a flat-bladed screwdriver.

CAUTION:
Be careful not to scratch transaxle case.



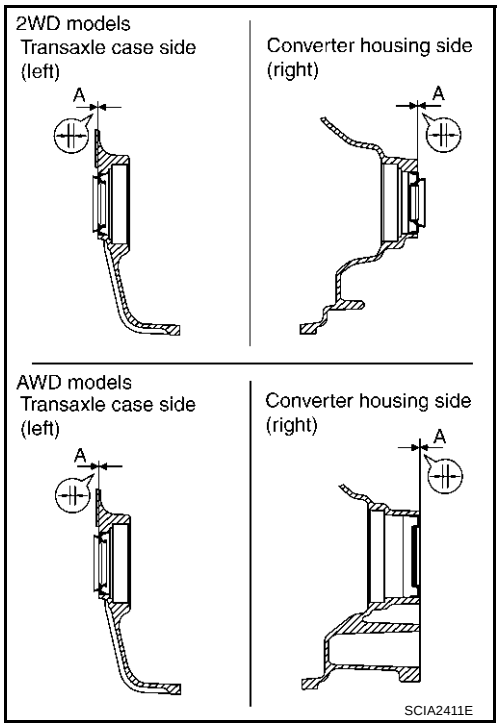
INSTALLATION

1. As shown below, use a drift to drive the differential side oil seal into the case until it is flush. Refer to dimensions A.

Unit: mm (in)

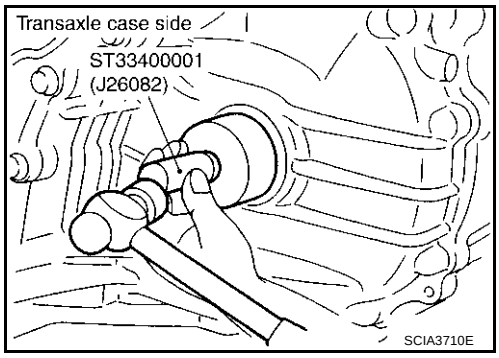
Dimensions A	0± 0.5 (0±0.020)

NOTE:
The differential side oil seal pulling direction is used as the reference.



Drift to be used:

Location	2WD models	AWD models
Transaxle case side (left) Tool number (Kent-Moore No.)	ST33400001 (J26082)	ST33400001 (J26082)
Converter housing side (right) Tool number (Kent-Moore No.)	ST33400001 (J47005)	KV40100621 (J25273)



CAUTION:
- **When installing differential side oil seal, apply a coat of NISSAN CVT Fluid NS-2.**
- **Do not reuse differential side oil seal.**

2. Reinstall any part removed.

CAUTION:
If lubricant leak has occurred, after finishing work, check oil level. Refer to CVT-14, "Checking CVT Fluid" .

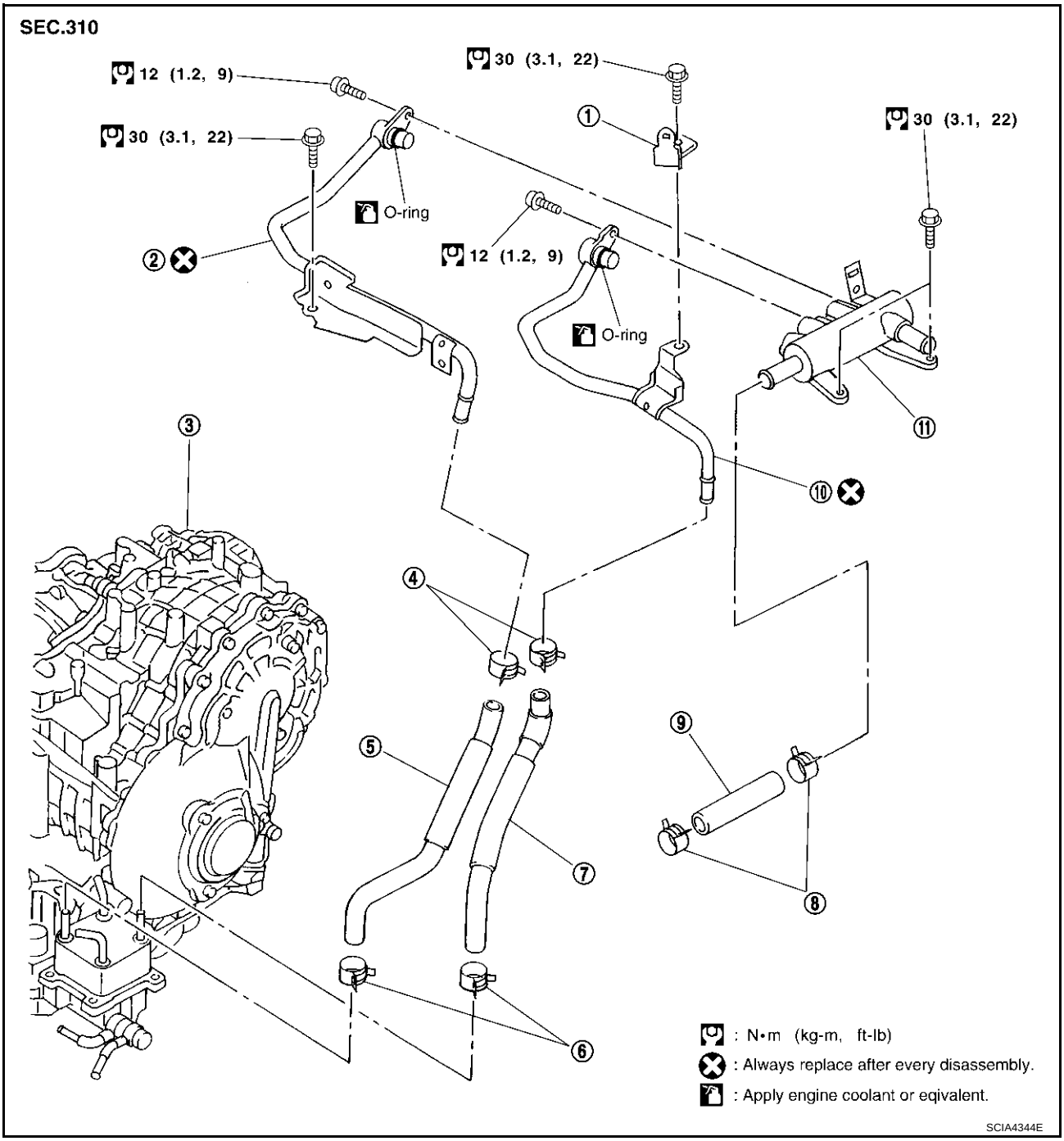
CVT FLUID COOLER VALVE

PFP:21630

Removal and Installation

ACS006P5

COMPONENTS



1. Harness bracket
2. CVT fluid cooler inlet tube assembly
3. Transaxle assembly
4. Hose clamp
5. Inlet water hose
6. Hose clamp
7. Outlet water hose
8. Hose clamp
9. Heater hose
10. CVT fluid cooler outlet tube assembly
11. CVT fluid cooler valve assembly

REMOVAL

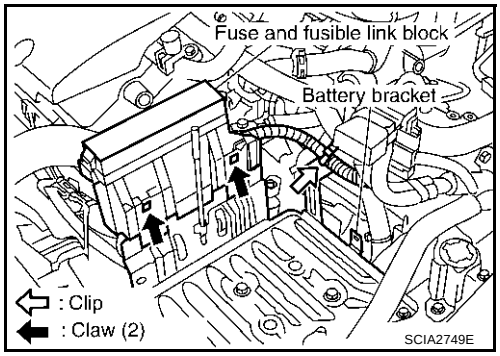
WARNING:

Never remove the radiator cap when the engine is hot. Serious burns could occur from high pressure engine coolant escaping from the radiator.

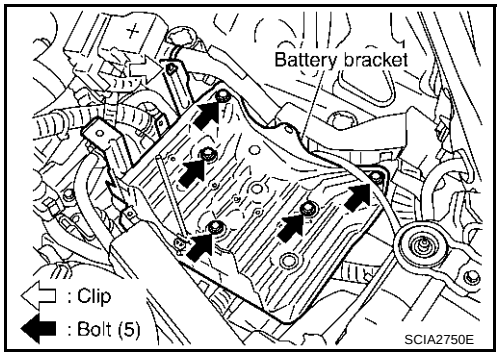
1. Remove engine undercover.
2. Drain engine coolant. Refer to CO-8, "Changing Engine Coolant" .

   CAUTION:

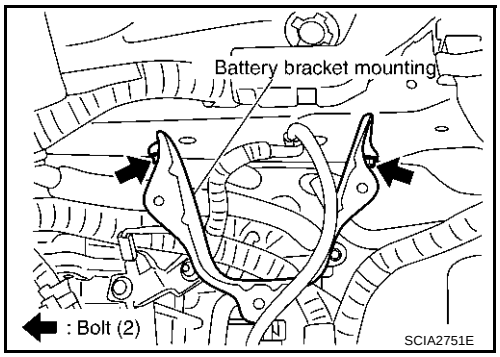
   Perform when the engine is cold.
3. Remove air duct (inlet). Refer to EM-14, "Removal and Installation" .
4. Remove battery. Refer to SC-9, "Removal and Installation" .
5. Remove air cleaner case (upper and lower), resonator, mass air flow sensor and air duct assembly. Refer to EM-14, "Removal and Installation" .
6. Remove fuse and fusible link block from battery bracket.



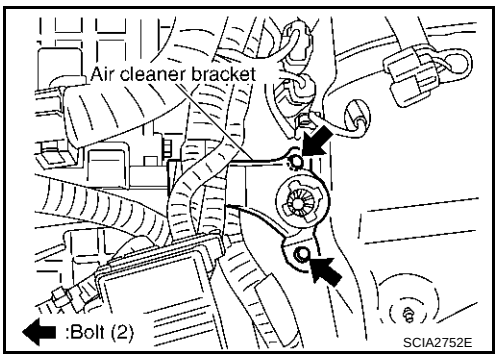
7. Remove battery bracket.



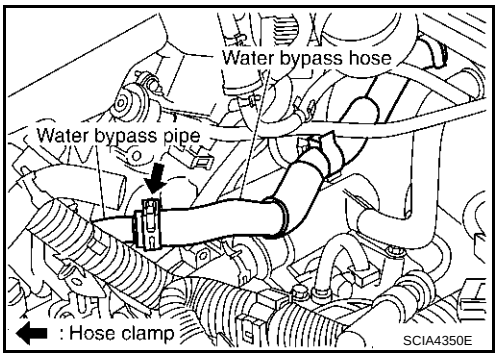
8. Remove battery bracket mounting.



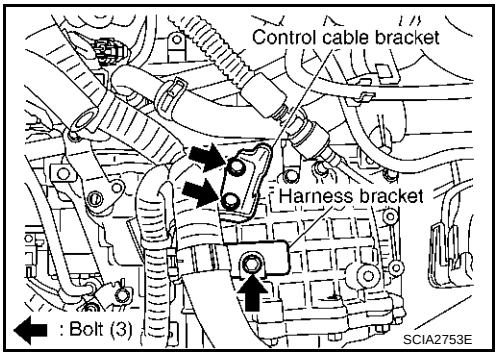
9. Remove air cleaner bracket. Refer to EM-14, "Removal and Installation" .
10. Remove control cable from transaxle assembly. Refer to CVT-182, "Control Device Removal and Installation" .



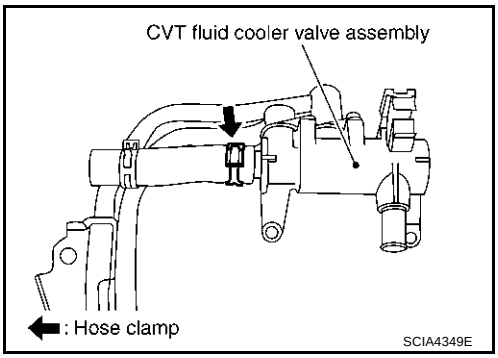
11. Remove water bypass hose from water bypass pipe. Refer to CO-26, "Removal and Installation" .



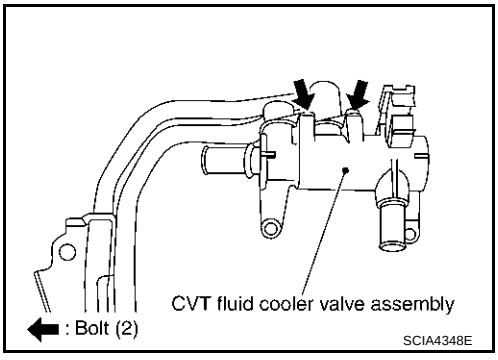
12. Remove harness bracket and control cable bracket from transaxle assembly. Refer to CVT-182, "Control Device Removal and Installation" and CVT-193, "COMPONENTS" .
13. Remove inlet water hose and outlet water hose. Refer to CVT-193, "COMPONENTS" .
14. Remove heater hose from heater pipe. Refer to CO-26, "Removal and Installation" .
15. Remove CVT fluid cooler valve assembly from transaxle assembly. Refer to CVT-193, "COMPONENTS" .



16. Remove heater hose from CVT fluid cooler valve assembly.



17. Remove CVT fluid cooler inlet tube assembly and CVT fluid cooler outlet tube assembly from CVT fluid cooler valve assembly.



INSTALLATION

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

- After completing installation, check for engine coolant leakage, engine coolant level, and the positions of CVT. Refer to CO-8, "Inspection" and CVT-183, "Checking of CVT Position" .

CAUTION:

- **Install hose clamp with tabs aligned with markings of CVT fluid cooler valve assembly and each hose.**
- **Do not reuse CVT fluid cooler inlet tube assembly and CVT fluid cooler outlet tube assembly.**
- **Apply LLC around O-ring when installing CVT fluid cooler inlet tube and CVT fluid cooler outlet tube assembly to CVT fluid cooler valve assembly.**

Component Inspection

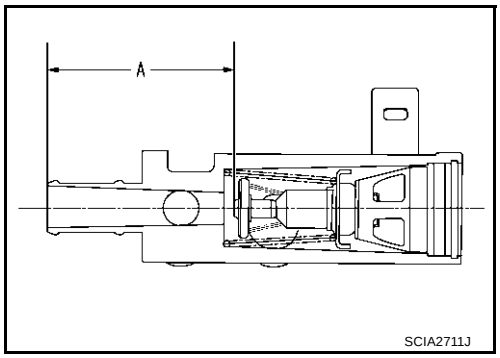
ACS006P6

1. Make sure that CVT fluid cooler valve is fully opened at room temperature.

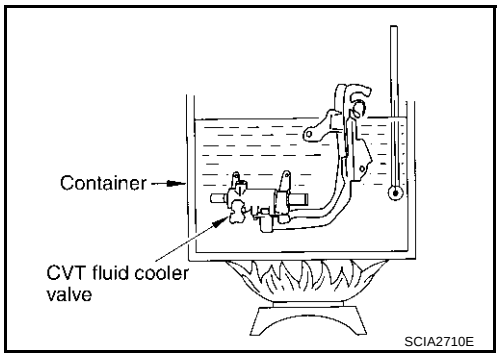
   Standard

   Dimension A from CVT fluid cooler valve port end to tip of valve shaft (At room temperature)

   : Approx 72.0 mm or more



2. Put CVT fluid cooler valve into a water-filled container, and then heat it up to 82°C (180°F) or more for 10 minutes or more.

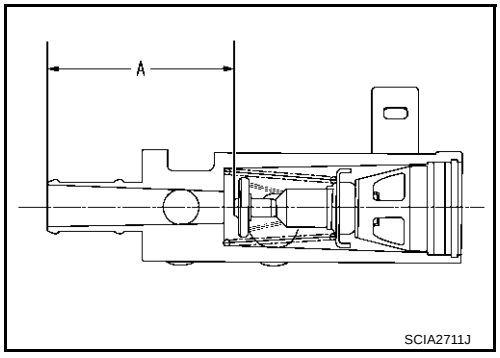


3. Make sure that CVT fluid cooler valve is fully closed.

   Standard

   Dimension A from CVT fluid cooler valve port end to tip of valve shaft (When heating to 82°C (180°F) or more for 10 minutes or more)

   : Approx 66.5 mm or less



TRANSAXLE ASSEMBLY

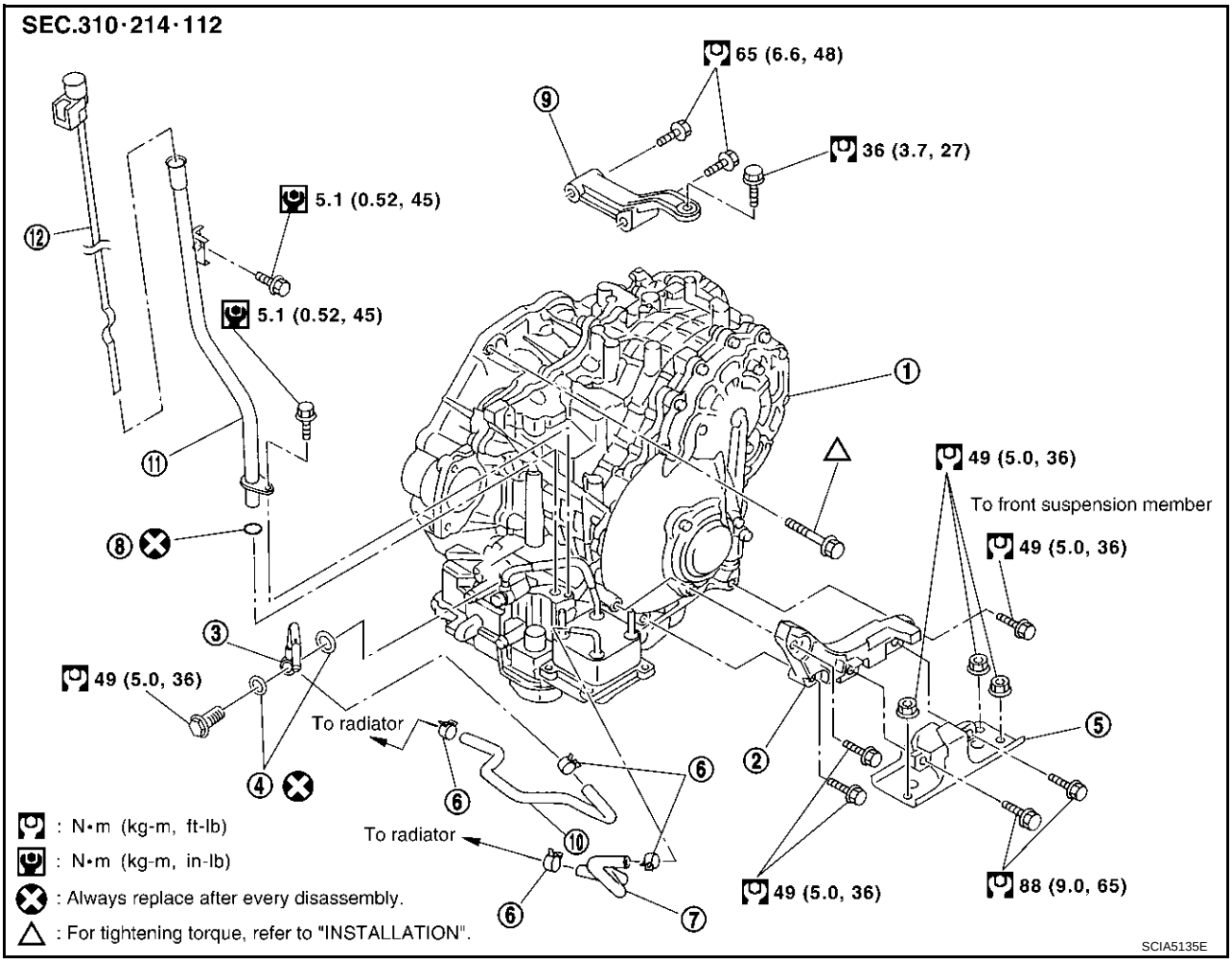
PFP:32020

Removal and Installation

ACS002KZ

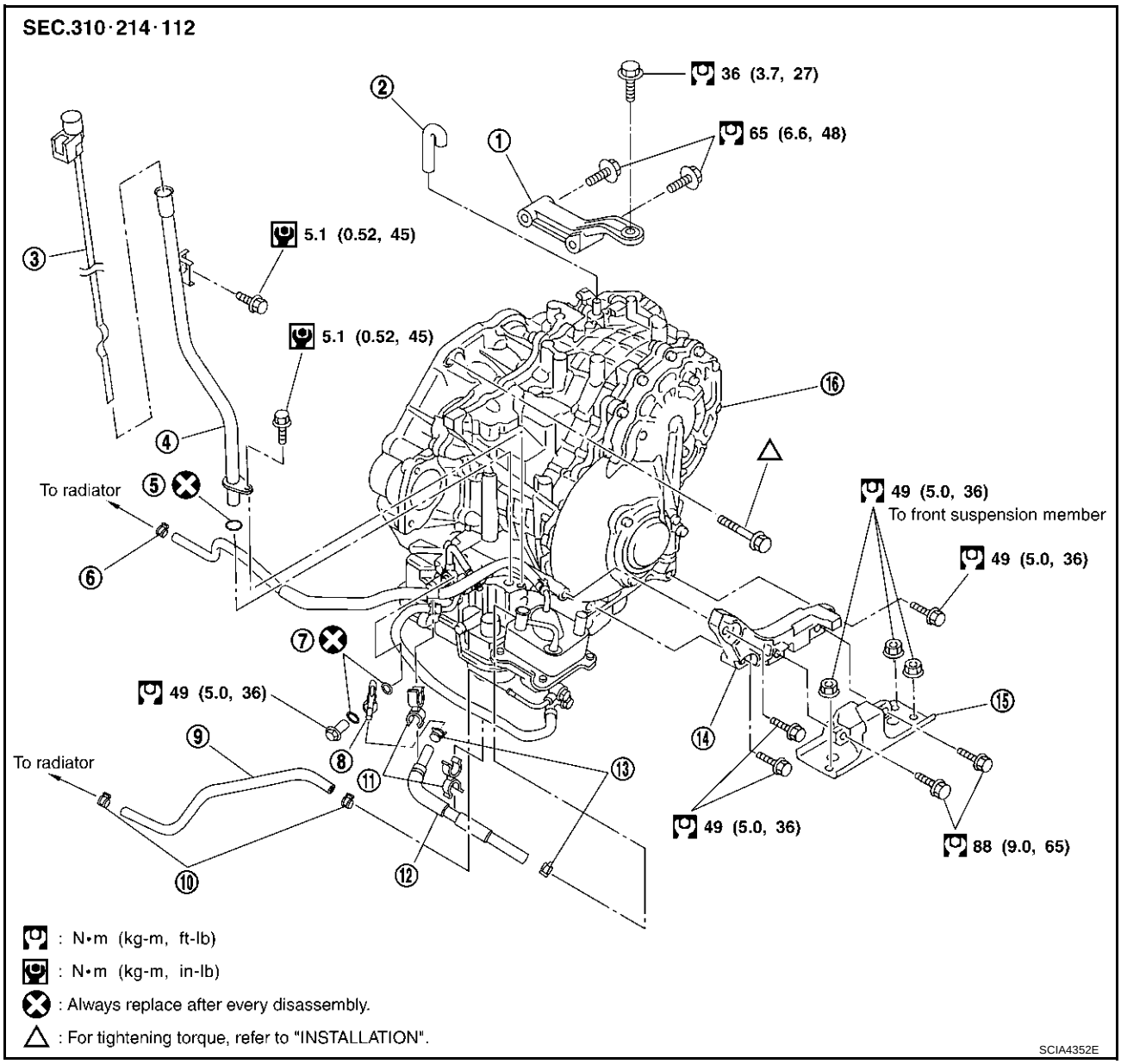
COMPONENTS (2WD MODELS)

1XD00 models



1. Transaxle assembly	2. LH engine mounting bracket	3. Fluid cooler tube
4. Copper washer	5. LH engine mounting insulator	6. Hose clamp
7. CVT fluid cooler hose	8. O-ring	9. Rear gusset
10. CVT fluid cooler hose	11. CVT fluid charging pipe	12. CVT fluid level gauge

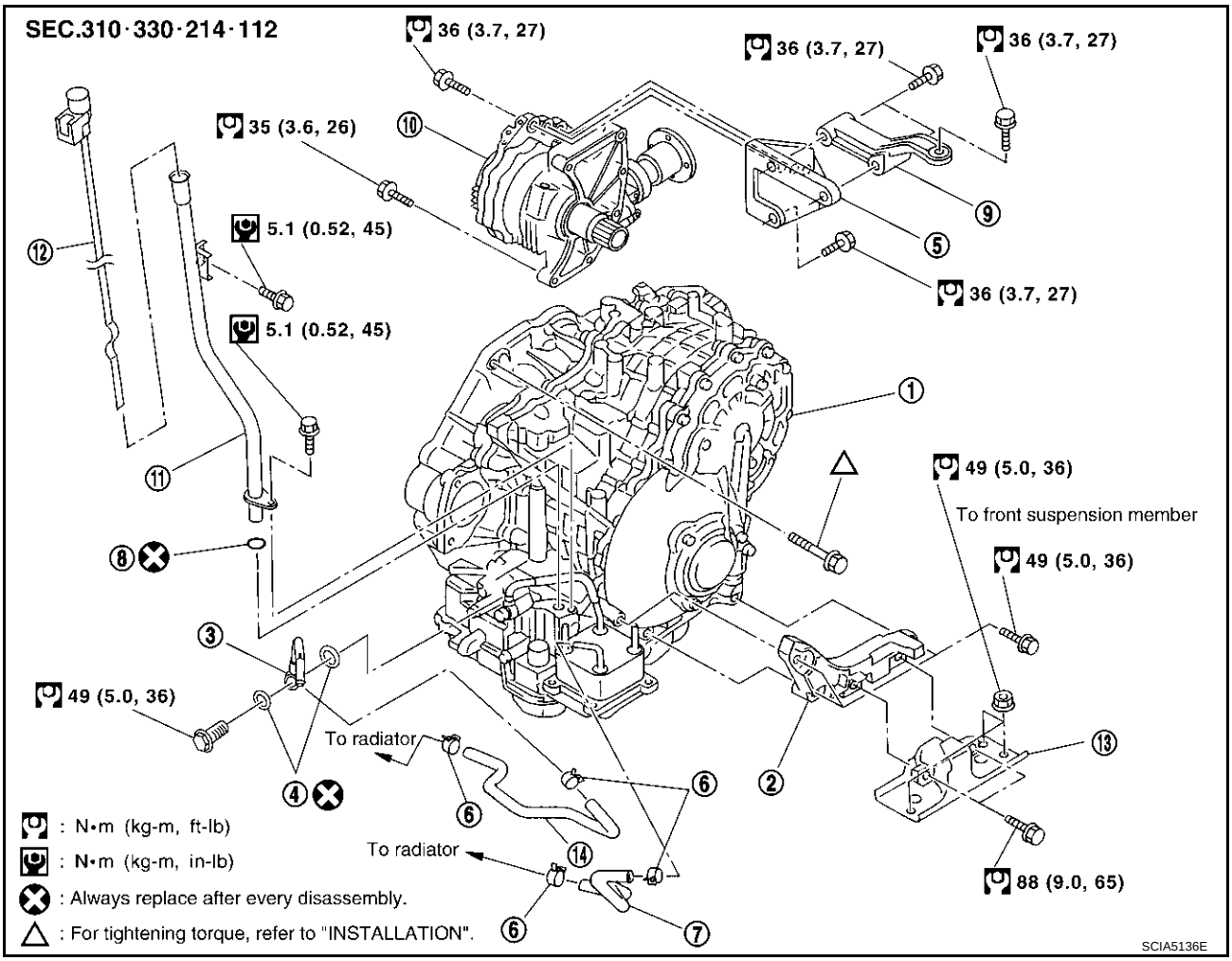
1XD07 models



1. Rear gusset
2. Air breather hose
3. CVT fluid level gauge
4. CVT fluid charging pipe
5. O-ring
6. Hose clamp
7. Copper washer
8. Fluid cooler tube
9. CVT fluid cooler hose
10. Hose clamp
11. Clip
12. CVT fluid cooler hose
13. Hose clamp
14. LH engine mounting bracket
15. LH engine mounting insulator
16. Transaxle assembly

COMPONENTS (AWD MODELS)

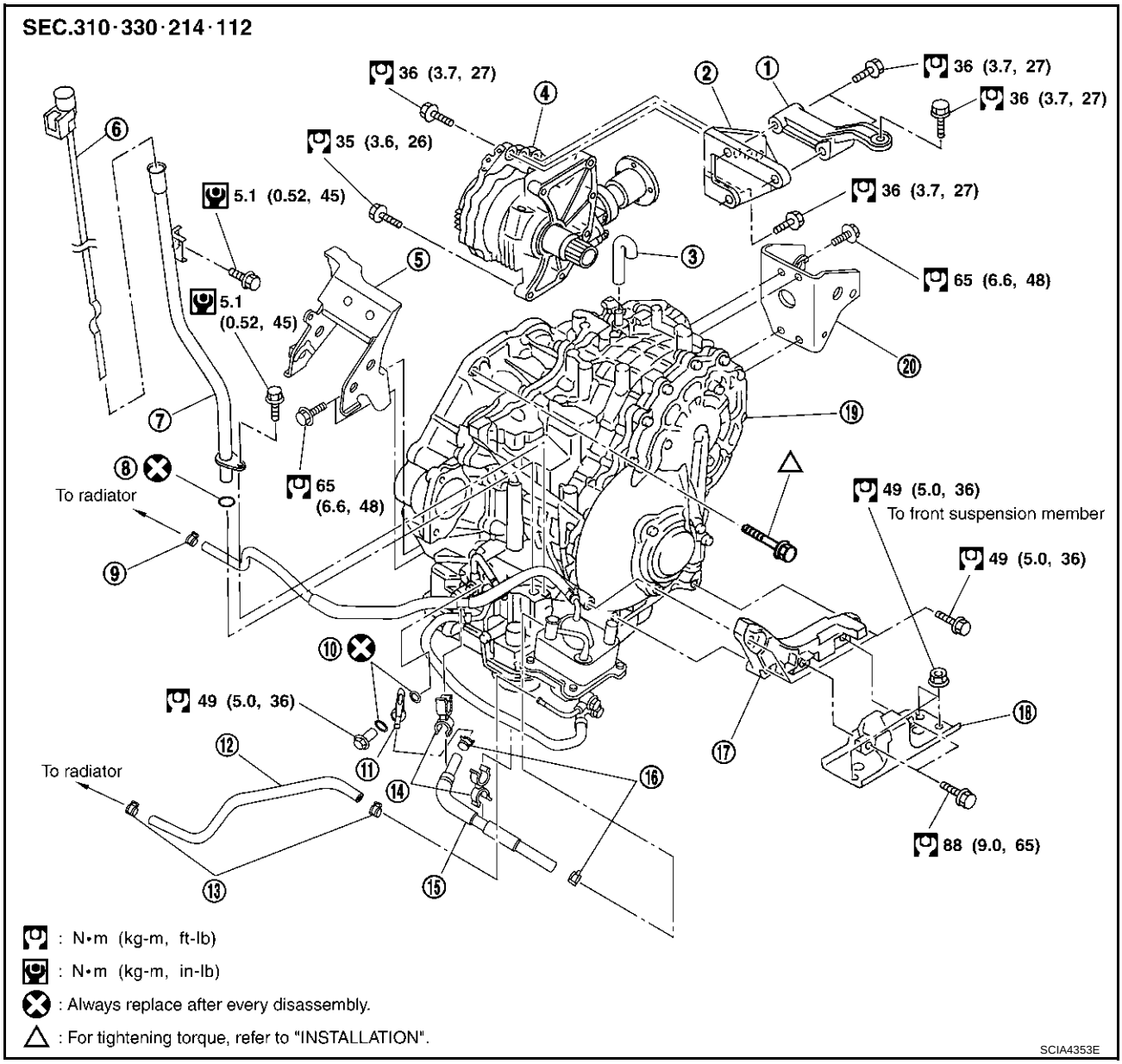
1XD01 models



1. Transaxle assembly	2. LH engine mounting bracket	3. Fluid cooler tube
4. Copper washer	5. Transfer gusset	6. Hose clamp
7. CVT fluid cooler hose	8. O-ring	9. Rear gusset
10. Transfer assembly	11. CVT fluid charging pipe	12. CVT fluid level gauge
13. LH engine mounting insulator	14. CVT fluid cooler hose	

1XD08 models

SEC.310·330·214·112



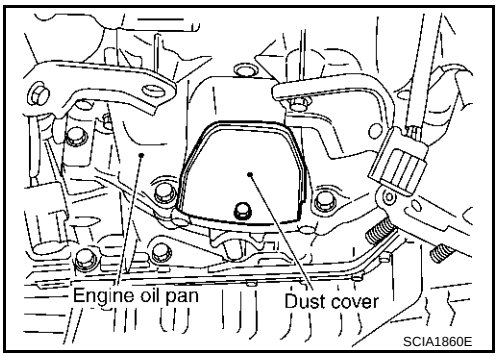
1. Rear gusset
2. Transfer gusset
3. Air breather hose
4. Transfer assembly
5. Front engine mounting bracket
6. CVT fluid level gauge
7. CVT fluid charging pipe
8. O-ring
9. Hose clamp
10. Copper washer
11. Fluid cooler tube
12. CVT fluid cooler hose
13. Hose clamp
14. Clip
15. CVT fluid cooler hose
16. Hose clamp
17. LH engine mounting bracket
18. LH engine mounting insulator
19. Transaxle assembly
20. Rear engine mounting bracket

REMOVAL

CAUTION:

The transaxle assembly it self cannot be removed from the vehicle. Remove the transaxle assembly and engine assembly together from the vehicle.

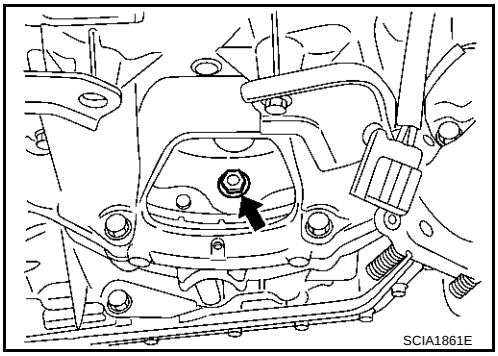
1. Remove exhaust front tube with power tool. Refer to EX-3, "Removal and Installation" .
2. Remove dust cover from converter housing part.



3. 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.



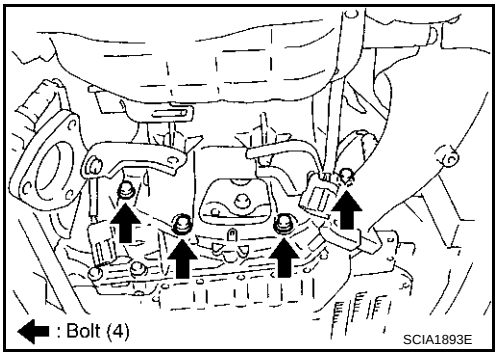
4. Remove the four bolts in the figure.
5. Remove transaxle assembly and engine assembly together from the vehicle. Refer to EM-95, "Removal and Installation" .
6. Remove drive shaft. Refer to FAX-7, "Removal and Installation (Left Side)" , FAX-8, "Removal and Installation (Right Side)" .

   CAUTION:

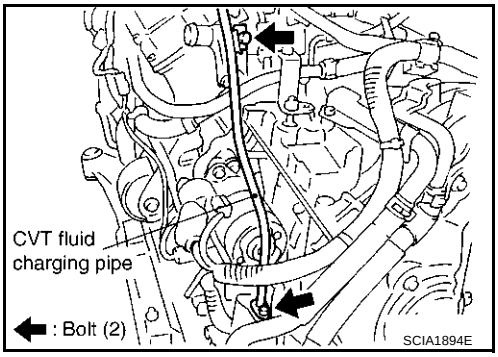
   Be sure to replace the new differential side oil seal every removal of drive shaft. Refer to CVT-191, "Removal and Installation" .
7. Remove transfer gusset. (with AWD models)
8. Remove transfer assembly. Refer to TF-12, "Removal and Installation" . (with AWD models)

   CAUTION:

   Be sure to replace the new differential side oil seal (converter housing side only) every removal of transfer. Refer to CVT-191, "Removal and Installation" .



9. Remove CVT fluid charging pipe.
10. Disconnect harness connector and wire harness.

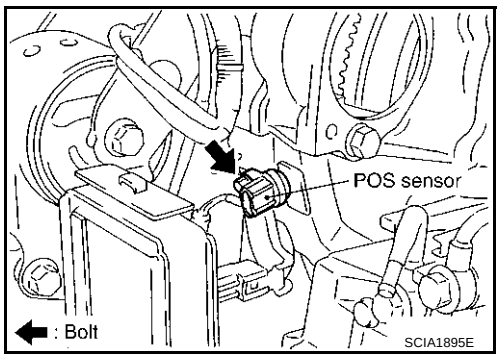


11. Remove POS sensor, from engine assembly. Refer to EM-26, "Removal and Installation" .

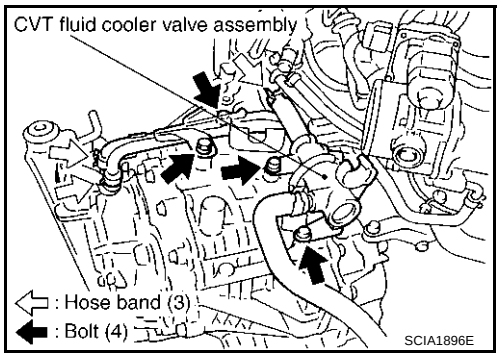
CAUTION:

- **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.**

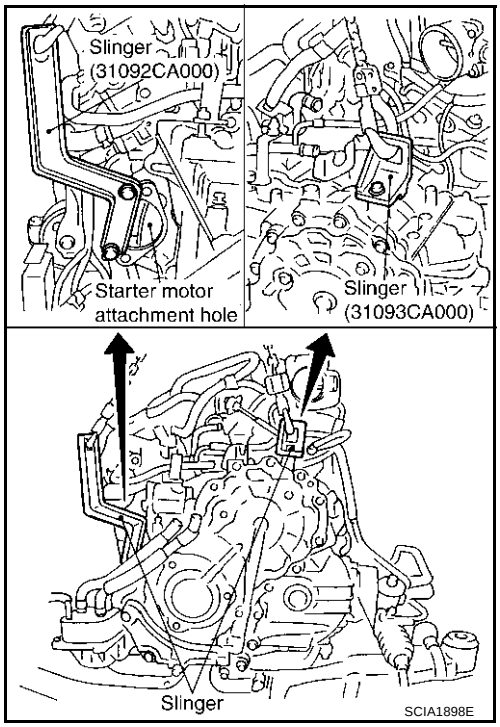
12. Remove starter motor. Refer to SC-16, "Removal and Installation" .



13. Remove CVT fluid cooler valve assembly. (With CVT fluid cooler tube assembly and heater hose).

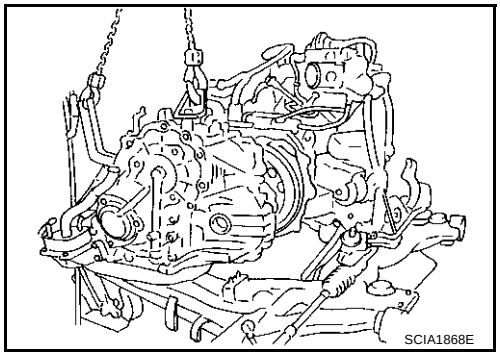


14. Install slinger to transaxle assembly.
15. Remove rear gusset.
16. Remove LH engine mounting bracket and LH engine mounting insulator.
17. Remove front suspension member from transaxle assembly and engine assembly. Refer to EM-95, "Removal and Installation" . (with AWD models)
18. Remove transaxle assembly fixing bolts with power tool.



19. Remove transaxle assembly from engine assembly with a hoist.

- **Secure torque converter to prevent it from dropping.**

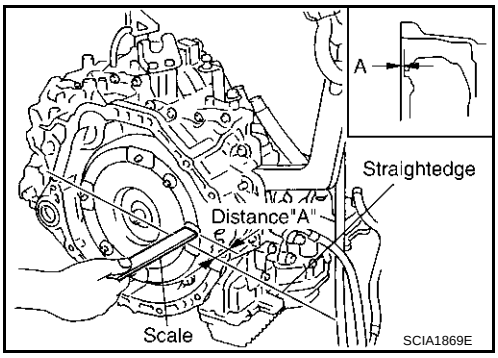


INSPECTION

Installation and Inspection of Torque Converter

- After inserting a torque converter to a transaxle, be sure to check distance A to ensure it is within the reference value limit.

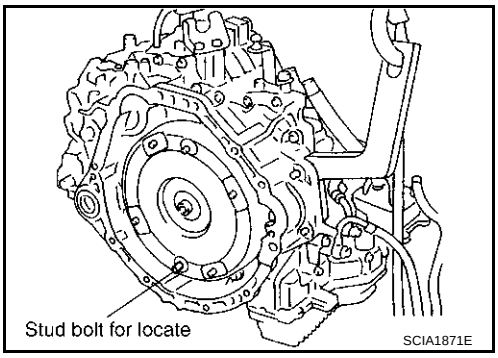
Distance A : 14.0 mm (0.55 in) or more



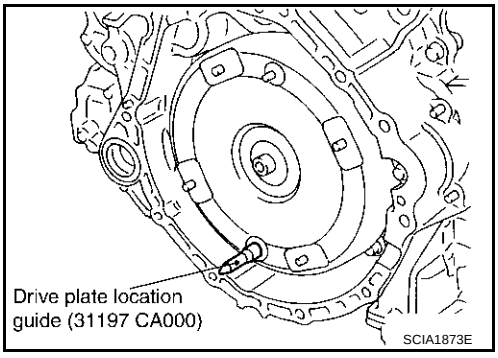
INSTALLATION

Install the removed parts in the reverse order of the removal, while paying attention to the following work.

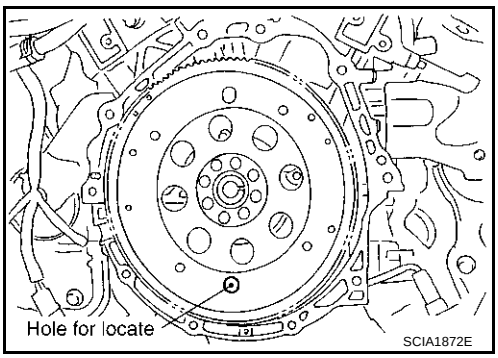
- Screw and set the locate into the stud bolts for the torque converter locate.



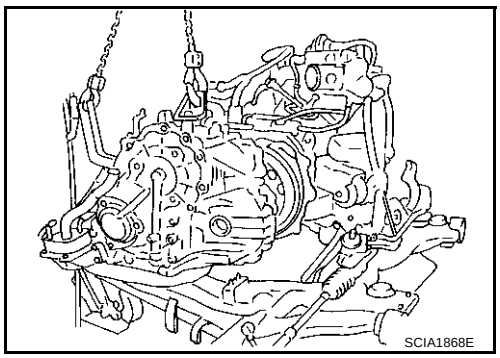
- Rotate the torque converter for the locate to go down.



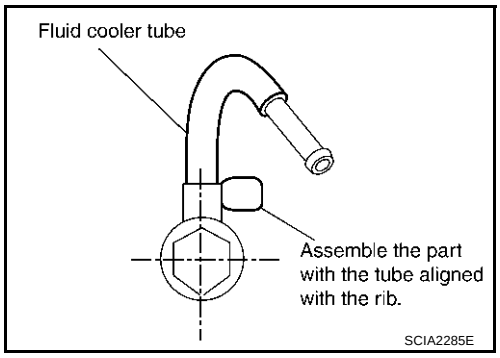
- Rotate the drive plate for the hole of the drive plate locate to go down.



- Installing transaxle assembly from engine assembly with a hoist.

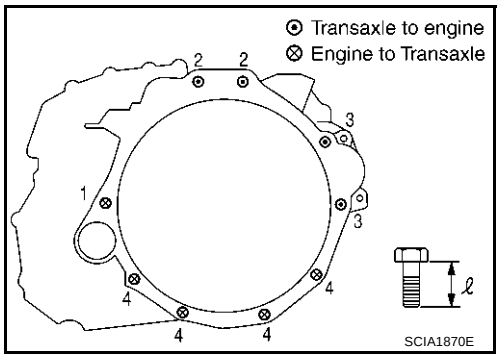


- When installing fluid cooler tube to transaxle assembly, transaxle assembly the part with the tube aligned with the rib.



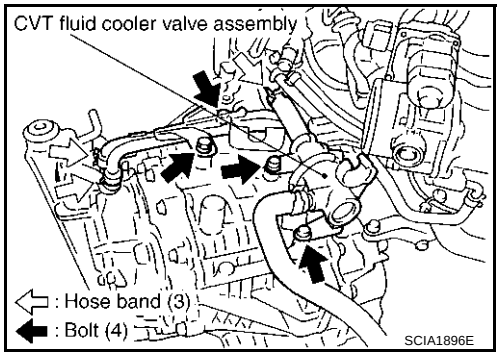
- When installing transaxle to the engine, attach the fixing bolts in accordance with the following standard.

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)



- When installing CVT fluid cooler valve assembly to the engine, attach the fixing bolts in accordance with the following standard.

  : 30N-m (3.1kg-m, 22ft-lb)

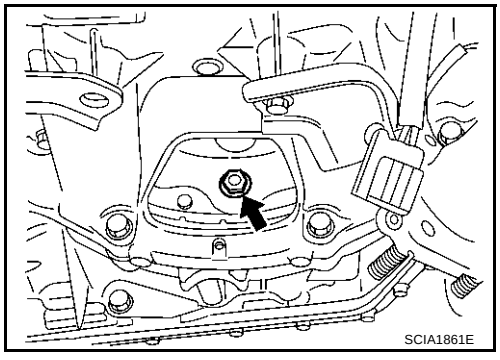


- Align the positions of tightening nuts for drive plate with those of the torque converter, and temporarily tighten the nuts. Then, tighten the nuts with the specified torque.

  : 51N-m (5.2kg-m, 38ft-lb)

CAUTION:

- **When turning crankshaft, turn it clockwise as viewed from the front of the engine.**



- **When tightening the tightening nuts for the torque converter after fixing the crankshaft pulley bolts, be sure to confirm the tightening torque of the crankshaft pulley mounting bolts.**
- **After converter is installed to drive plate, rotate crankshaft several turns and check to be sure that transaxle rotates freely without binding.**
- Install POS sensor. Refer to EM-26, "Removal and Installation" .
- After completing installation, check for fluid leakage, fluid level, and the positions of CVT. Refer to CVT-14, "Checking CVT Fluid" , CVT-183, "Adjustment of CVT Position" , CVT-183, "Checking of CVT Position" .
- When replacing the CVT assembly, erase EEP ROM in TCM. Refer to CVT-8, "Precautions for TCM and CVT Assembly Replacement" .

SERVICE DATA AND SPECIFICATIONS (SDS)

PFP:00030

General Specifications

ACS001ZX

Applied model		VQ35DE engine	
		2WD	AWD
CVT model		RE0F09A	
CVT assembly	Model code number	1XD00, 1XD07	1XD01, 1XD08
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 NISSAN Genuine CVT fluid NS-2. Do not mix with other fluid.**
- **Using CVT fluid other than Nissan Genuine 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-11, "Fluids and Lubricants" .

Stall Speed

ACS00201

Stall speed	2,700 - 3,250 rpm

Line Pressure

ACS002SA

Engine speed rpm	Line pressure kPa (kg/cm^2 , psi)		
	R position	D position	L position
Idle	750 (7.65, 108.8)		
Stall	5300 - 5700 (54.06 - 58.14, 768.5 - 826.5)		

Solenoid Valves

ACS00339

Name	Resistance (Approx.) (Ω)	Terminal No.
Pressure control solenoid valve B (secondary pressure solenoid valve)	3 - 9	3
Pressure control solenoid valve A (line pressure solenoid valve)		2
Torque converter clutch solenoid valve		12
Lock-up select solenoid valve	6 - 19	13

CVT Fluid Temperature Sensor

ACS002SC

Name	Condition	CONSULT-II “DATA MONITOR” (Approx.)	Resistance (Approx.)
CVT fluid temperature sensor 1	20°C (68°F)	2.0 V	2.5 kΩ
	80°C (176°F)	1.0 V	0.3 kΩ

Primary Speed Sensor

ACS002SD

Name	Condition	Data (Approx.)
Primary speed sensor	When running at 20 km/h (12MPH) in “L” position with the closed throttle position switch “OFF”, use the CONSULT-II pulse frequency measuring function. **CAUTION:** **Connect the diagnosis data link connector to the vehicle diagnosis connector.**	600 Hz

Secondary Speed Sensor

ACS002SE

Name	Condition	Data (Approx.)
Secondary speed sensor	When moving at 20 km/h (12MPH), use the CONSULT-II pulse frequency measuring function. **CAUTION:** **Connect the diagnosis data link connector to the vehicle diagnosis connector.**	300 Hz

Removal and Installation

ACS002SG

Unit: mm (in)

Distance between end of converter housing and torque converter	14.0 mm (0.55 in) or more