SECTION CVT

CVT

CONTENTS

SERVICE INFORMATION

INDEX FOR DTC

Alphabetical Index

INFOID:0000000007402315

NOTE:
If DTC “U1000” is displayed with other DTCs, first perform the trouble diagnosis for DTC “U1000”. Refer to CVT-55.

Items (CONSULT screen terms)	DTC*1		Reference
	MIL*2, “ENGINE” with CONSULT or GST	CONSULT only “TRANSMISSION”	
BRAKE SWITCH B	—	P0703	CVT-59
CAN COMM CIRCUIT	U1000	U1000	CVT-55
CONTROL UNIT (CAN)	U1010	U1010	CVT-58
ENGINE SPEED	—	P0725	CVT-81
FLUID PRESS LOW	—	P0868	CVT-116
FLUID PRESS SEN/SW A	P0840	P0840	CVT-110
FLUID PRESS SEN/SW A	—	P0841	CVT-114
FLUID TEMP SENSOR A	P0710	P0710	CVT-66
INCORRECT GR RATIO	—	P0730	CVT-83
INPUT SPEED SENSOR A	P0715	P0715	CVT-71
LINE PRESS CONTROL	—	P1745	CVT-134
OUTPUT SPEED SENSOR	P0720	P0720	CVT-76
PL SOLENOID A	P0745	P0745	CVT-91
PC SOLENOID A	P0746	P0746	CVT-96
PC SOLENOID B	P0778	P0778	CVT-100
PC SOLENOID B	P0776	P0776	CVT-98
SLCT SOLENOID	P1740	P1740	CVT-129
SPEED SENSOR	—	P1723	CVT-126
STEP MOTOR	P1777	P1777	CVT-135
STEP MOTOR	P1778	P1778	CVT-139
TCM	—	P1701	CVT-118
THROTTLE CONTROL SIG	—	P1726	CVT-128
T/M RANGE SWITCH A	P0705	P0705	CVT-61
TORQUE CONVERTER	P0744	P0744	CVT-89
TORQUE CONVERTER	P0740	P0740	CVT-84
TP SENSOR	—	P1705	CVT-122
UP/DOWN SHIFT SWITCH	—	P0826	CVT-105
VEHICLE SPEED*3	—	P1722	CVT-124

*1: These numbers are prescribed by SAE J2012.

*2: Refer to CVT-25, "Introduction".

*3: Models without ABS does not indicate.

DTC No. Index

INFOID:0000000007402316

NOTE:

If DTC "U1000" is displayed with other DTCs, first perform the trouble diagnosis for DTC "U1000". Refer to CVT-55.

DTC*1		Items (CONSULT screen terms)	Reference
MIL*2, "ENGINE" with CONSULT or GST	CONSULT only "TRANSMISSION"		
—	P0703	BRAKE SWITCH B	CVT-59
P0705	P0705	T/M RANGE SWITCH A	CVT-61
P0710	P0710	FLUID TEMP SENSOR A	CVT-66
P0715	P0715	INPUT SPEED SENSOR A	CVT-71
P0720	P0720	OUTPUT SPEED SENSOR	CVT-76
—	P0725	ENGINE SPEED	CVT-81
—	P0730	INCORRECT GR RATIO	CVT-83
P0740	P0740	TORQUE CONVERTER	CVT-84
P0744	P0744	TORQUE CONVERTER	CVT-89
P0745	P0745	L/PRESS SOL/CIRC	CVT-91
P0746	P0746	PC SOLENOID A	CVT-96
P0776	P0776	PC SOLENOID B	CVT-98
P0778	P0778	PC SOLENOID B	CVT-100
—	P0826	UP/DOWN SHIFT SWITCH	CVT-105
P0840	P0840	FLUID PRESS SEN/SW A	CVT-110
—	P0841	FLUID PRESS SEN/SW A	CVT-114
—	P0868	FLUID PRESS LOW	CVT-116
—	P1701	TCM	CVT-118
—	P1705	TP SENSOR	CVT-122
—	P1722	VEHICLE SPEED*3	CVT-124
—	P1723	SPEED SENSOR	CVT-126
—	P1726	THROTTLE CONTROL SIG	CVT-128
P1740	P1740	SLCT SOLENOID	CVT-129
—	P1745	LINE PRESS CONTROL	CVT-134
P1777	P1777	STEP MOTOR	CVT-135
P1778	P1778	STEP MOTOR	CVT-139
U1000	U1000	CAN COMM CIRCUIT	CVT-55
U1010	U1010	CONTROL UNIT (CAN)	CVT-58

*1: These numbers are prescribed by SAE J2012.

*2: Refer to CVT-25, "Introduction".

*3: Models without ABS does not indicate.

PRECAUTIONS

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

INFOID:0000000007402317

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 WHEN USING POWER TOOLS (AIR OR ELECTRIC) AND HAMMERS

WARNING:

- **When working near the Airbag Diagnosis Sensor Unit or other Airbag System sensors with the Ignition ON or engine running, DO NOT use air or electric power tools or strike near the sensor(s) with a hammer. Heavy vibration could activate the sensor(s) and deploy the air bag(s), possibly causing serious injury.**
- **When using air or electric power tools or hammers, always switch the Ignition OFF, disconnect the battery, and wait at least 3 minutes before performing any service.**

Precaution Necessary for Steering Wheel Rotation After Battery Disconnect

INFOID:0000000007402318

NOTE:

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

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

OPERATION PROCEDURE

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

6. Perform a self-diagnosis check of all control units using CONSULT.

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

INFOID:0000000007402319

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

CAUTION:

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

Service After Replacing TCM, Transaxle Assembly, or Control Valve

INFOID:0000000007402320

SERVICE AFTER REPLACING TCM, TRANSAXLE ASSEMBLY, OR CONTROL VALVE

Perform the applicable service according to the following table when replacing TCM, transaxle assembly, or control valve.

CAUTION:

- **Never start the engine until the service is completed.**
- **"DTC P1701" may be indicated soon after replacing TCM, or transaxle assembly or control valve (after erasing the memory in the pattern B). Restart the self-diagnosis after erasing the self-diagnosis result using CONSULT. Check that no error is detected.**

TCM	Transaxle assembly or control valve	Service pattern
Replaced with new unit	Not replaced the unit	"PATTERN A"
Not replaced the unit	Replaced with new or old unit	"PATTERN B"
Replaced with old unit	Not replaced the unit	
	Replaced with new or old unit	
Replaced with new unit	Replaced with new or old unit	"PATTERN C"

NOTE:

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

PATTERN A

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

PATTERN B

1. Turn ignition switch ON after replacing each part.
2. Connect the vehicle with CONSULT.
3. Start engine.
   CAUTION:
   Never start driving.
4. Select "Data monitor" in "TRANSMISSION".

5. Warm up transaxle assembly until “ATFTEMP COUNT” indicates 47 [approximately 20°C (68°F)] or more, and then turn ignition switch OFF.
6. Turn ignition switch ON.
   CAUTION:
   Never start engine.
7. Select “Self Diagnostic Results” in “TRANSMISSION”.
8. Shift the shift lever to “R” position.
9. Depress slightly the accelerator pedal (Pedal angle: 2/8) while depressing the brake pedal.
10. Attempt to select “Erase” with step 9.
11. Release brake pedal and accelerator pedal.
12. Turn ignition switch OFF while keeping the shift lever in “R” position.
13. Wait approximately 10 seconds.
14. Turn ignition switch ON while keeping the shift lever in “R” position.
15. Select “Special function” in “TRANSMISSION”.
16. Check that the value on “CALIB DATA” in CONSULT is the same as the data listed in the table below.
    • Restart the procedure from step 3 if the values are not the same.

CALIB DATA

Item name	Display value
UNIT CLB ID 1	00
UNIT CLB ID 2	00
UNIT CLB ID 3	00
UNIT CLB ID 4	00
UNIT CLB ID 5	00
UNIT CLB ID 6	00

17. Shift the shift lever to “P” position.
18. Check that the shift position indicator in combination meter turns ON. (It indicates approximately 1 or 2 seconds after shifting the shift lever to “P” position.)
    • Check the following items if shift position indicator does not turn ON. Repair or replace accordingly as necessary.
    - The harness between TCM and ROM ASSY in transaxle assembly is open or shorted.
    - Terminals disconnected, loose, or bent from connector housing.
    - Power supply and ground of TCM. Refer to CVT-118, "Description".

PATTERN C

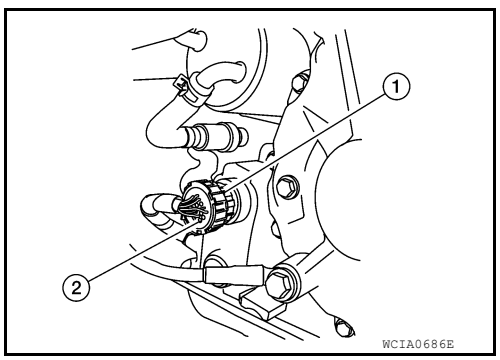
1. Replace transaxle assembly first, and then replace TCM.
2. Perform the service of “PATTERN A”.
   (Perform the service of “PATTERN B” if TCM is replaced first.)

Removal and Installation Procedure for CVT Unit Connector

INFOID:0000000007402321

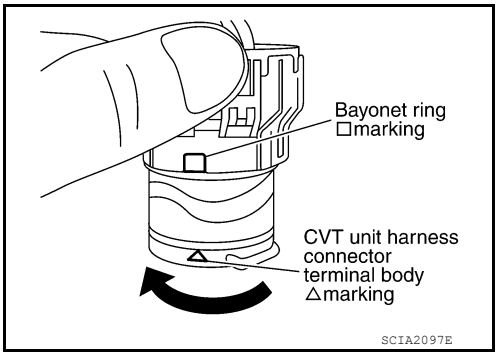
REMOVAL

Rotate bayonet ring (1) counterclockwise, pull out CVT unit harness connector (2) outward and disconnect it.

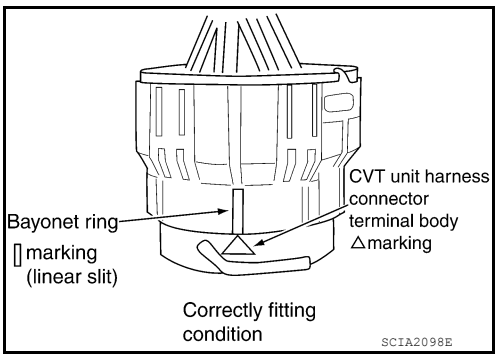


INSTALLATION

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

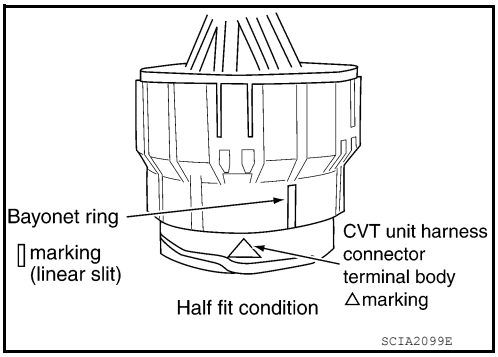


2. Rotate bayonet ring clockwise until CVT unit harness connector terminal body marking is aligned with the bayonet ring marking (linear slit) as shown.



CAUTION:

- **Securely align CVT unit harness connector terminal body marking with bayonet ring marking (linear slit). Do not make a half fit condition as shown.**
- **Do not mistake the bayonet ring marking (linear slit) for other dent portion.**

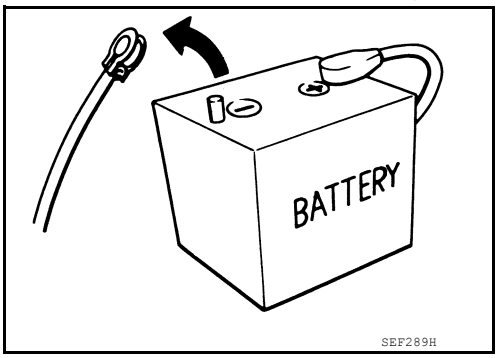


Precaution

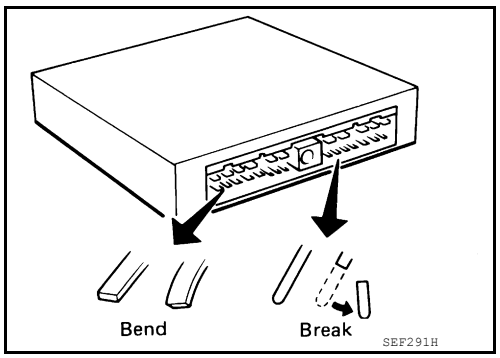
INFOID:0000000007402322

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

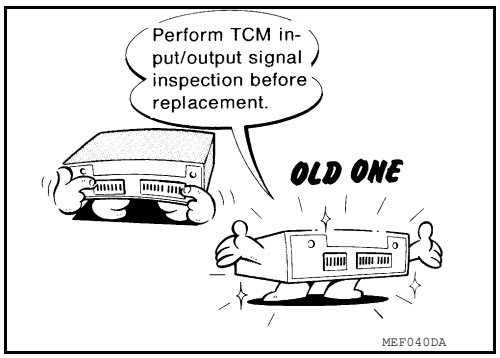
- **Before connecting or disconnecting the TCM harness connector, turn ignition switch OFF and disconnect negative battery cable. Because battery voltage is applied to TCM even if ignition switch is turned OFF.**



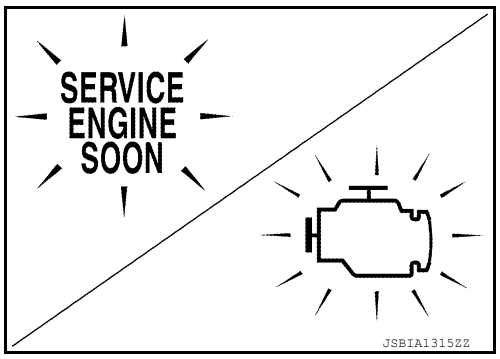
- **When connecting or disconnecting pin connectors into or from TCM, take care not to damage pin terminals (bend or break).**
  When connecting pin connectors make sure that there are not any bends or breaks on TCM pin terminal.



- **Before replacing TCM, perform TCM input/output signal inspection and make sure whether TCM functions properly or not. CVT-45, "TCM Input/Output Signal Reference Value".**



- **After performing each TROUBLE DIAGNOSIS, perform "DTC Confirmation Procedure".**
  If the repair is completed the DTC should not be displayed in the "DTC Confirmation Procedure".
- Always use the specified brand of CVT fluid. Refer to MA-15, "MR20DE".
- Use lint-free paper, not cloth rags, during work.
- After replacing the CVT fluid, dispose of the waste oil using the methods prescribed by law, ordinance, etc.
- Before proceeding with disassembly, thoroughly clean the outside of the transaxle. It is important to prevent the internal parts from becoming contaminated by dirt or other foreign matter.



- Disassembly should be done in a clean work area.
- Place disassembled parts in order for easier and proper assembly.
- All parts should be carefully cleaned with a general purpose, non-flammable solvent before inspection or reassembly.
- Gaskets, seals and O-rings should be replaced.
- It is very important to perform functional tests whenever they are indicated.
- Before assembly, apply a coat of recommended ATF to all parts. Apply petroleum jelly to protect O-rings and seals.
- Extreme care should be taken to avoid damage to O-rings, seals and gaskets when assembling.
- Clean or replace CVT fluid cooler if excessive foreign material is found in oil pan.
- When the CVT drain plug is removed, only some of the fluid is drained. Old CVT fluid will remain in torque converter and CVT fluid cooling system.
  Always follow the procedures under "Changing CVT Fluid" in the CVT section when changing CVT fluid. Refer to CVT-15, "Checking CVT Fluid", CVT-16, "Changing CVT Fluid".

TORQUE CONVERTER SERVICE

The torque converter should be replaced under any of the following conditions:

- External leaks in the hub weld area.
- Converter hub is scored or damaged.
- Converter pilot is broken, damaged or fits poorly into crankshaft.
- Steel particles are found after flushing the cooler and cooler lines.
- Pump is damaged or steel particles are found in the converter.
- Vehicle has TCC shudder and/or no TCC apply. Replace only after all hydraulic and electrical diagnoses have been made. (Converter clutch material may be glazed.)

- Converter is contaminated with engine coolant containing antifreeze.
- Internal malfunction of stator roller clutch.
- Heavy clutch debris due to overheating (blue converter).
- Steel particles or clutch lining material found in fluid filter or on magnet when no internal parts in unit are worn or damaged — indicates that lining material came from converter.

The torque converter should not be replaced if:

- The fluid has an odor, is discolored, and there is no evidence of metal or clutch facing particles.
- The threads in one or more of the converter bolt holes are damaged.
- CVT malfunction did not display evidence of damaged or worn internal parts, steel particles or clutch plate lining material in unit and inside the fluid filter.
- Vehicle has been exposed to high mileage (only). The exception may be where the torque converter clutch dampener plate lining has seen excess wear by vehicles operated in heavy and/or constant traffic, such as taxi, delivery or police use.

Precaution for Work

INFOID:0000000007402323

- When removing or disassembling each component, be careful not to damage or deform it. If a component may be subject to interference, be sure to protect it with a shop cloth.
- When removing (disengaging) components with a screwdriver or similar tool, be sure to wrap the component with a shop cloth or vinyl tape to protect it.
- Protect the removed parts with a shop cloth and prevent them from being dropped.
- Replace a deformed or damaged clip.
- If a part is specified as a non-reusable part, always replace it with a new one.
- Be sure to tighten bolts and nuts securely to the specified torque.
- After installation is complete, be sure to check that each part works properly.
- Follow the steps below to clean components:

- Water soluble dirt:

- Dip a soft cloth into lukewarm water, wring the water out of the cloth and wipe the dirty area.
- Then rub with a soft, dry cloth.

- Oily dirt:

- Dip a soft cloth into lukewarm water with mild detergent (concentration: within 2 to 3%) and wipe the dirty area.
- Then dip a cloth into fresh water, wring the water out of the cloth and wipe the detergent off.
- Then rub with a soft, dry cloth.

- Do not use organic solvent such as thinner, benzene, alcohol or gasoline.
- For genuine leather seats, use a genuine leather seat cleaner.

Service Notice or Precaution

INFOID:0000000007402324

OBD-II SELF-DIAGNOSIS

- CVT self-diagnosis is performed by the TCM in combination with the ECM. The results can be read through the blinking pattern of the malfunction indicator lamp (MIL). Refer to the table on CVT-47, "CONSULT Function (TRANSMISSION)" for the indicator used to display each self-diagnostic result.
- The self-diagnostic results indicated by the MIL are automatically stored in both the ECM and TCM memories.
  Always perform the procedure on CVT-25, "OBD-II Diagnostic Trouble Code (DTC)" to complete the repair and avoid unnecessary blinking of the MIL.

For details of OBD-II, refer to EC-60 [MR20DE (For California)], EC-620 [MR20DE (Except for California)] and EC-1166 (QR25DE).

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

ATFTEMP COUNT Conversion Table

INFOID:0000000007402325

ATFTEMP COUNT	Temperature °C (°F)	ATFTEMP COUNT	Temperature °C (°F)
4	–30 (–22)	177	90 (194)
8	–20 (–4)	183	95 (203)
13	–10 (14)	190	100 (212)
17	–5 (23)	196	105 (221)

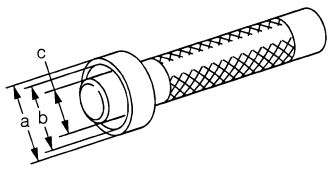
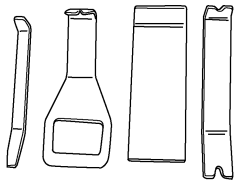
ATFTEMP COUNT	Temperature °C (°F)	ATFTEMP COUNT	Temperature °C (°F)
21	0 (32)	201	110 (230)
27	5 (41)	206	115 (239)
32	10 (50)	210	120 (248)
39	15 (59)	214	125 (257)
47	20 (68)	218	130 (266)
55	25 (77)	221	135 (275)
64	30 (86)	224	140 (284)
73	35 (95)	227	145 (293)
83	40 (104)	229	150 (302)
93	45 (113)	231	155 (311)
104	50 (122)	233	160 (320)
114	55 (131)	235	165 (329)
124	60 (140)	236	170 (338)
134	65 (149)	238	175 (347)
143	70 (158)	239	180 (356)
152	75 (167)	241	190 (374)
161	80 (176)	243	200 (392)
169	85 (185)	—	—

PREPARATION

Special Service Tool

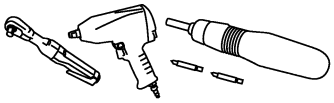
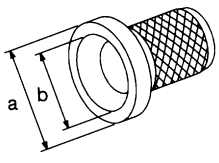
INFOID:0000000007402326

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

Tool number (Kent-Moore No.) Tool name	Description
— (OTC3492) Oil pressure gauge set  SCIA7531E	Measuring line pressure
KV38100300 (—) Drift  ZZA1046D	Installing differential side oil seal **a: 54 mm (2.13 in)** **b: 46 mm (1.81 in)** **c:** 32 mm (1.26 in)
— (J-46534) Trim Tool Set  AWJIA0483ZZ	Removing trim components

Commercial Service Tool

INFOID:0000000007402327

Tool name	Description
Power tool  PIIB1407E	Loosening nuts, screws and bolts
Drift  NT086	Installing converter housing oil seal **a: ϕ 65 mm (2.56 in)** **b: ϕ 60 mm (2.36 in)**

CVT FLUID

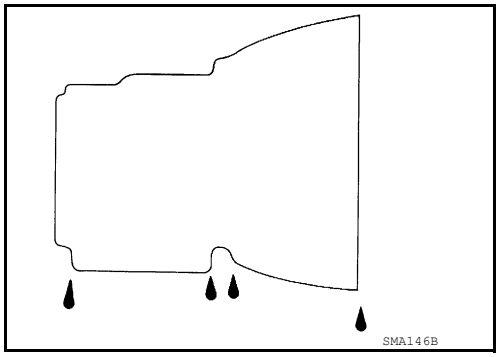
Checking CVT Fluid

INFOID:0000000007402328

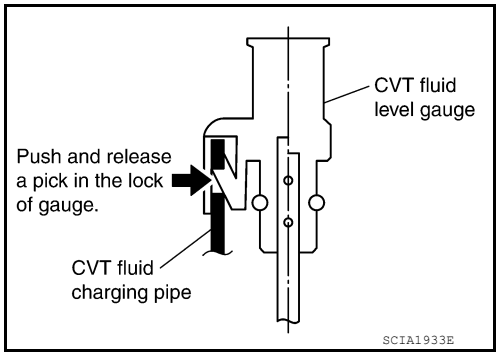
FLUID LEVEL CHECK

Fluid level should be checked with the fluid warmed up to 50° to 80°C (122° to 176°F).

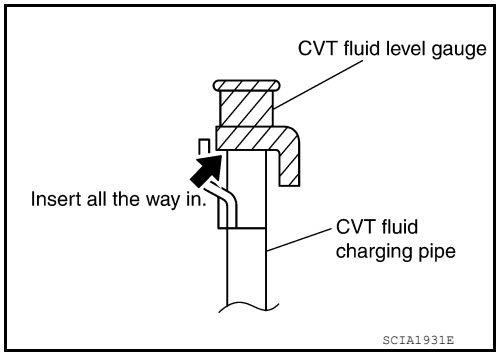
1. Check for fluid leakage.
2. With the engine warmed up, drive the vehicle to warm up the CVT fluid. When ambient temperature is 20°C (68°F), it takes about 10 minutes for the CVT fluid to warm up to 50° to 80°C (122° to 176°F).
3. Park the vehicle on a level surface and set the parking brake.
4. With engine at idle, while depressing brake pedal, move the shift lever throughout the entire shift range and return it to the “P” position.



5. Press the tab on the CVT fluid level gauge to release the lock and pull out the CVT fluid level gauge from the CVT fluid charging pipe.



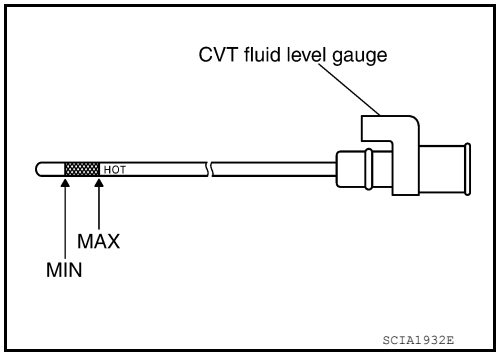
6. Wipe fluid off the CVT fluid level gauge. Then rotate the CVT fluid level gauge 180° and re-insert it into the CVT charging pipe as far as it will go.
   CAUTION:
   Always use lint free paper towels to wipe fluid off the CVT fluid level gauge.



7. Remove the CVT fluid level gauge and check that the fluid level is within the specified range as shown. If the fluid level is at or below the low side of the range, add the necessary specified NISSAN CVT fluid through the CVT charging pipe.

   Fluid grade: **Refer to MA-15, "MR20DE".**

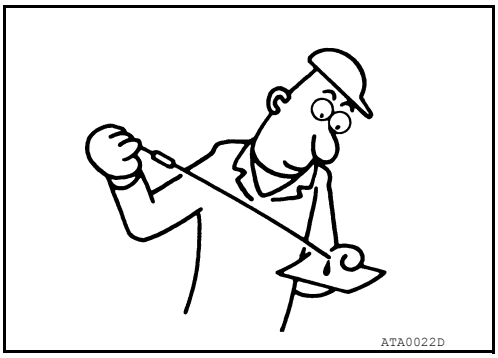
   CAUTION:
   - **Only use specified NISSAN CVT fluid.**
   - **Do not overfill the CVT.**



8. Install the CVT fluid level gauge to the CVT fluid charging pipe until it locks.
   CAUTION:
   When CVT fluid level gauge is installed into the CVT fluid charging pipe, make sure that the CVT fluid level gauge is securely locked in place.

FLUID CONDITION CHECK

Fluid status	Conceivable cause	Required operation
Varnished (viscous varnish state)	CVT fluid become degraded due to high temperatures.	Replace the CVT fluid and check the CVT main unit and the vehicle for malfunctions (wire harness, 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 fluid	Unusual wear of sliding parts within CVT	Replace the CVT fluid and check for improper operation of the CVT.



Changing CVT Fluid

INFOID:0000000007402329

1. Remove drain plug, and drain CVT fluid from oil pan.
2. Install drain plug with new gasket to oil pan and tighten to the specified torque.

Drain plug: **Refer to CVT-178, "Control Valve".**

CAUTION:
Do not reuse drain plug gasket.

3. Fill CVT fluid from CVT fluid charging pipe to the specified level.

Fluid grade and capacity: **Refer to CVT-202, "General Specification".**

CAUTION:
- **Use only Genuine NISSAN CVT Fluid NS-2. Do not mix with other fluid.**
- **Using CVT fluid other than Genuine NISSAN CVT Fluid NS-2 will deteriorate in driveability and CVT durability, and may damage the CVT, which is not covered by the warranty.**
- **When filling CVT fluid, take care not to scatter fluid on heat generating parts such as exhaust.**
- **Sufficiently shake the container of CVT fluid before using.**

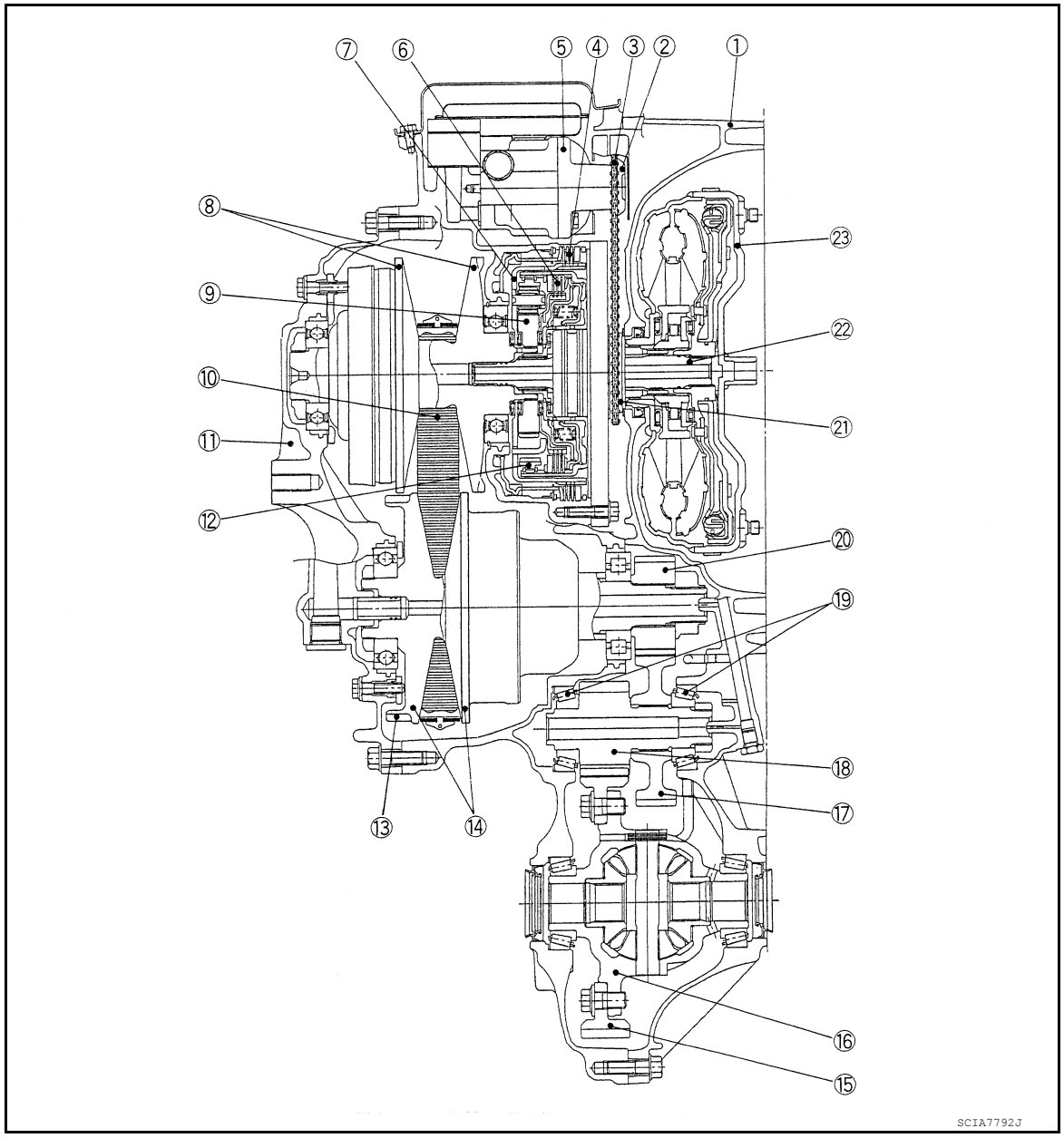
4. With the engine warmed up, drive the vehicle in an urban area. When ambient temperature is 20°C (68°F), it takes about 10 minutes for the CVT fluid to warm up to 50° to 80°C (122° to 176°F).
5. Check CVT fluid level and condition. Refer to CVT-15, "Checking CVT Fluid".
6. Repeat steps 1 through 5 if CVT fluid is contaminated.

CAUTION:
Delete CVT fluid deterioration date with CONSULT after changing CVT fluid.

CVT SYSTEM

Cross-Sectional View - RE0F10A

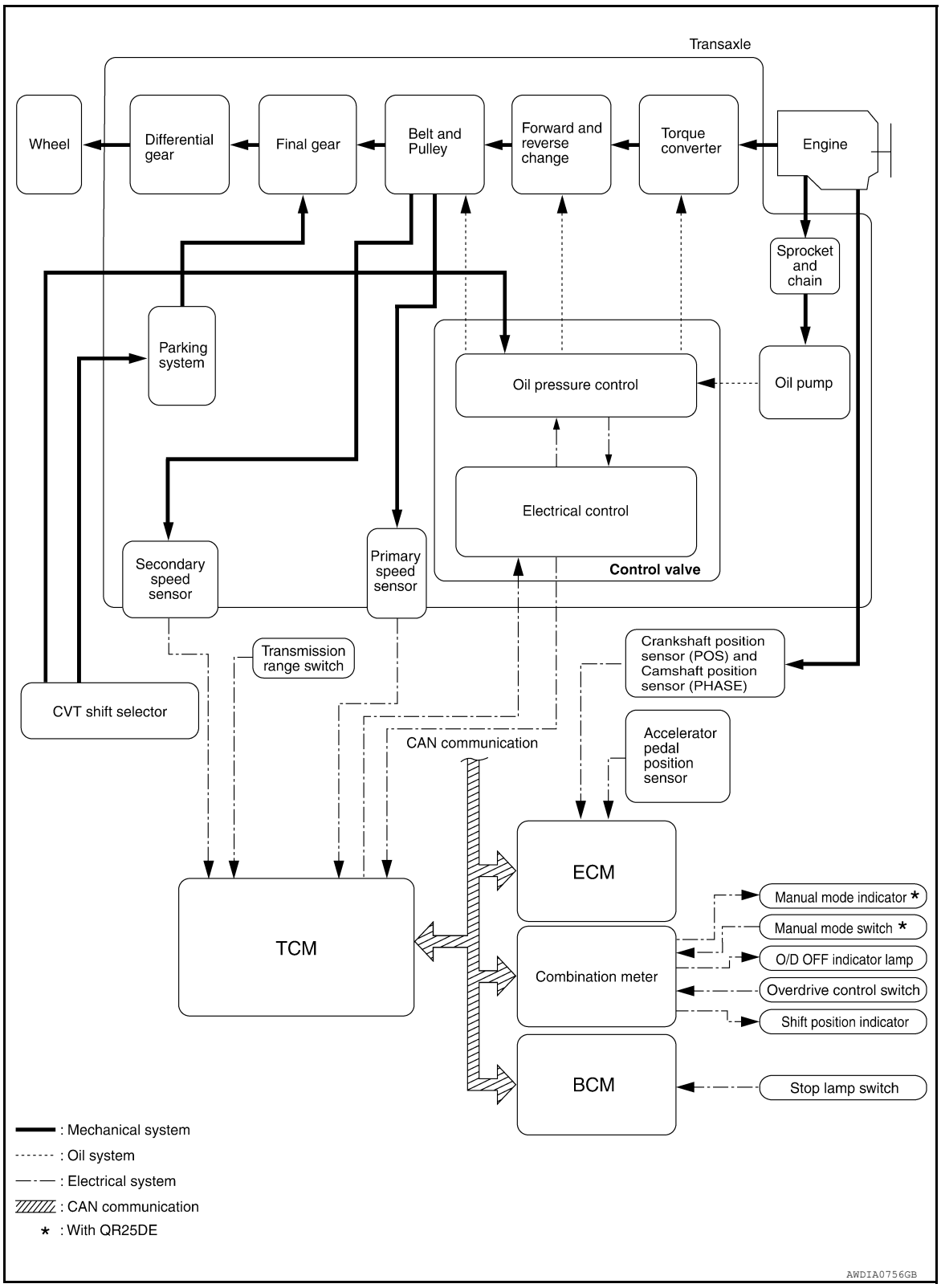
INFOID:0000000007402330



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

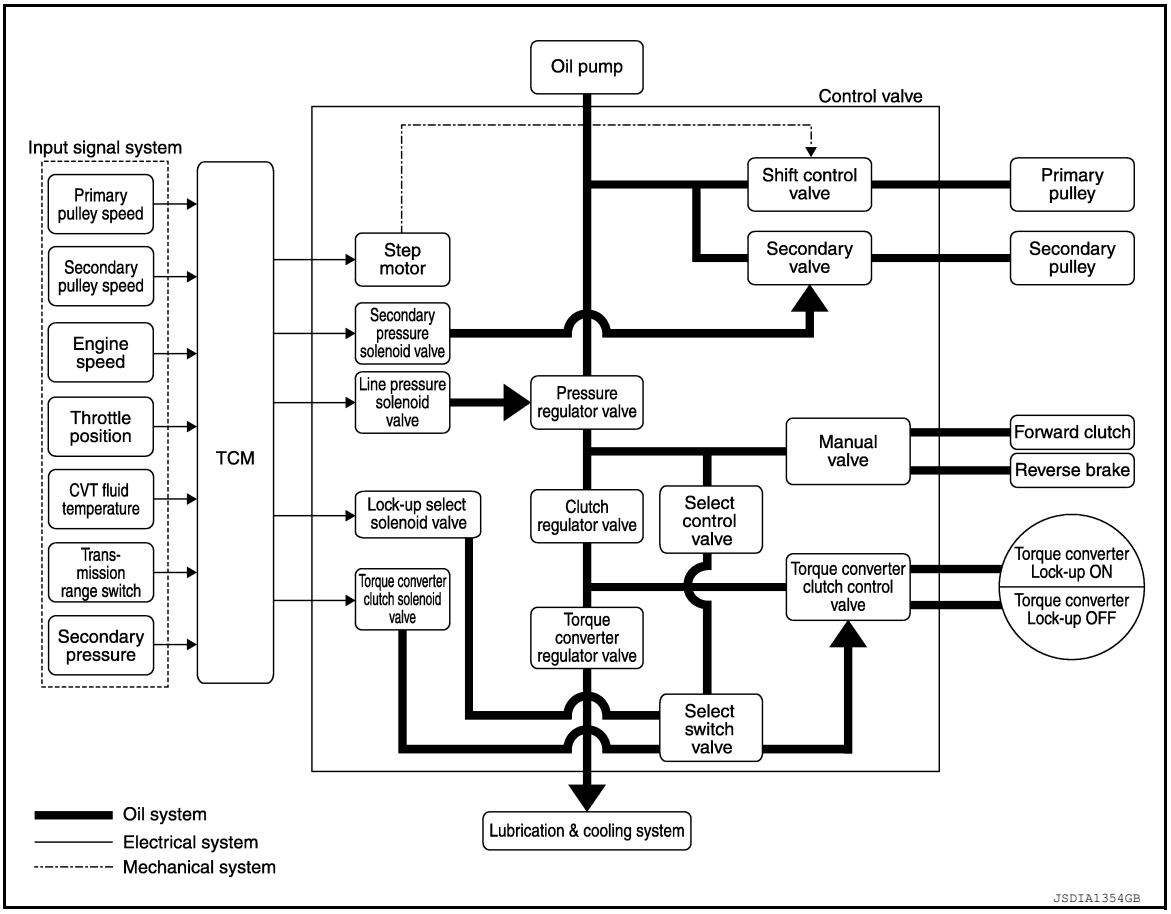
Control System

INFOID:0000000007402331



Hydraulic Control System

INFOID:0000000007402332



TCM Function

INFOID:0000000007402333

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.

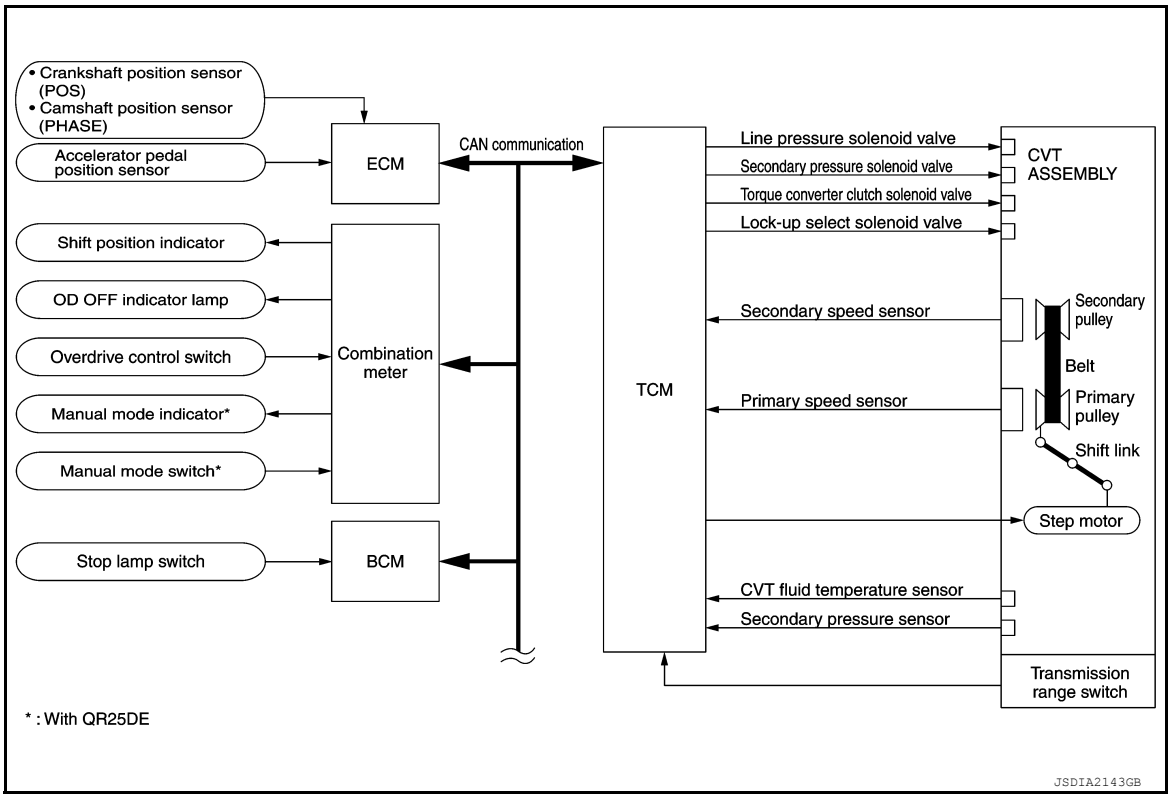
CONTROL SYSTEM OUTLINE

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
Transmission range switch Accelerator pedal position signal Closed throttle position signal Engine speed signal CVT fluid temperature sensor Vehicle speed signal Overdrive control signal Manual mode switch signal* Stop lamp switch signal Primary speed sensor Secondary speed 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 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 Shift position indicator O/D OFF indicator lamp Manual mode indicator* Starter relay

*: With QR25DE

CONTROL SYSTEM DIAGRAM



CAN Communication

INFOID:0000000007402334

SYSTEM DESCRIPTION

Refer to LAN-7, "System Description".

Input/Output Signal of TCM

INFOID:0000000007402335

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

*1: Input by CAN communications.

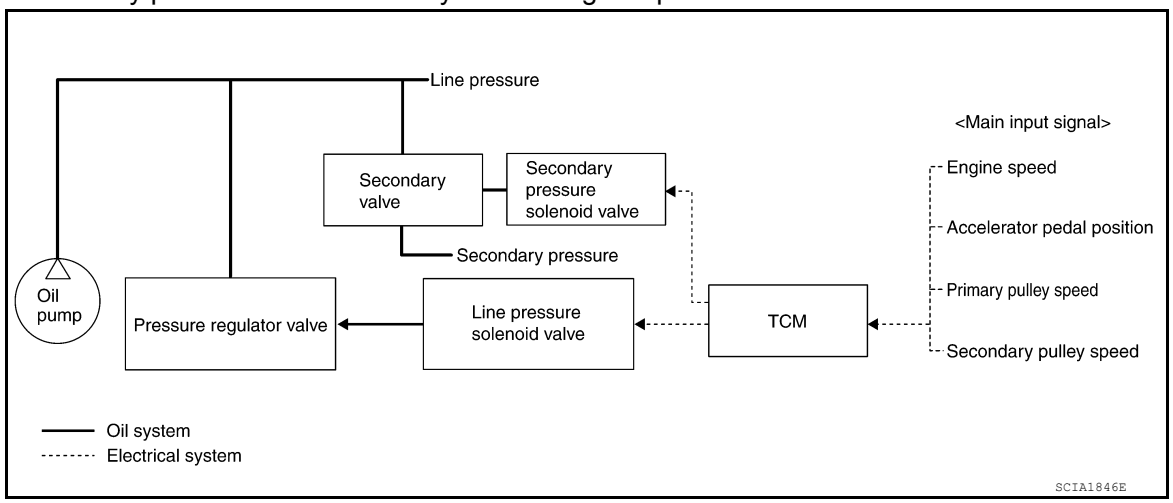
*2: Output by CAN communications.

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

Line Pressure and Secondary Pressure Control

INFOID:0000000007402336

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



NORMAL CONTROL

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

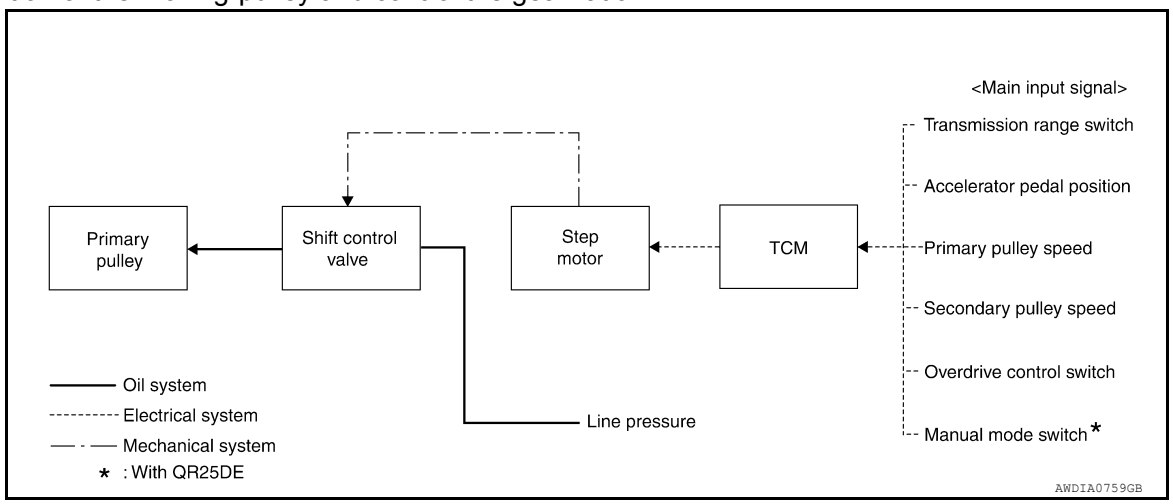
FEEDBACK CONTROL

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

INFOID:0000000007402337

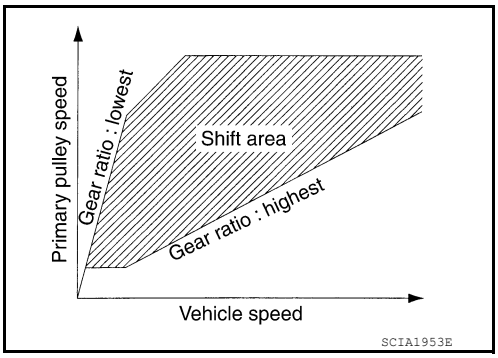
In order to select the gear ratio which can obtain the driving force in accordance with driver's intention and the vehicle condition, TCM monitors the driving conditions, such as the vehicle speed and the throttle position and selects the optimum gear ratio, and determines the gear change steps to the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



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

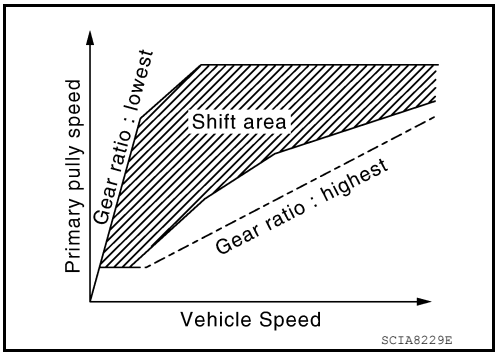
“D” POSITION

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



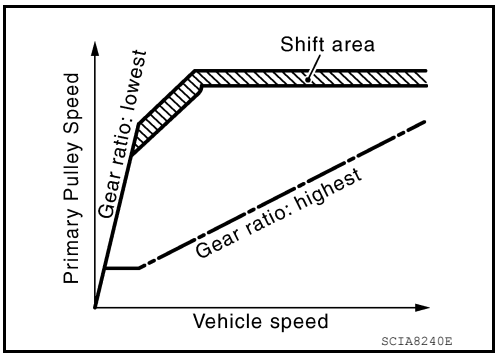
“D” POSITION OVERDRIVE SWITCH: ON

Gear ratio increases in general by limiting gear range on the HIGH side of the gear ratio, and this arrows the generation of the constant strong driving force.



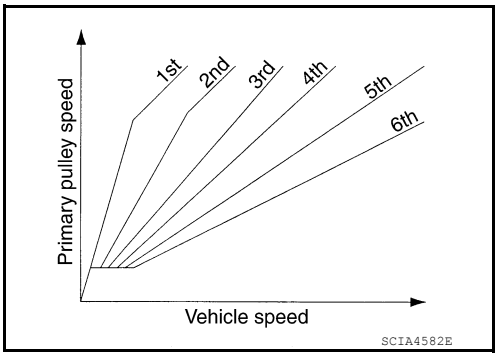
“L” POSITION

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



“M” POSITION (With QR25DE)

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



DOWNHILL ENGINE BRAKE CONTROL (AUTO ENGINE BRAKE CONTROL)

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

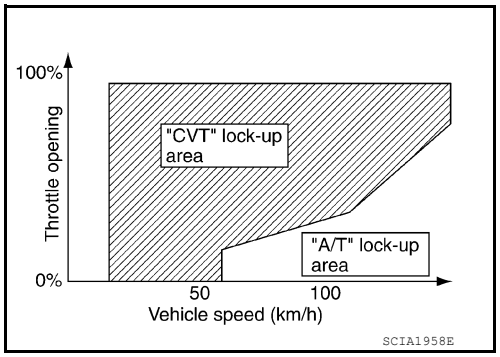
ACCELERATION CONTROL

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

Lock-up and Select Control

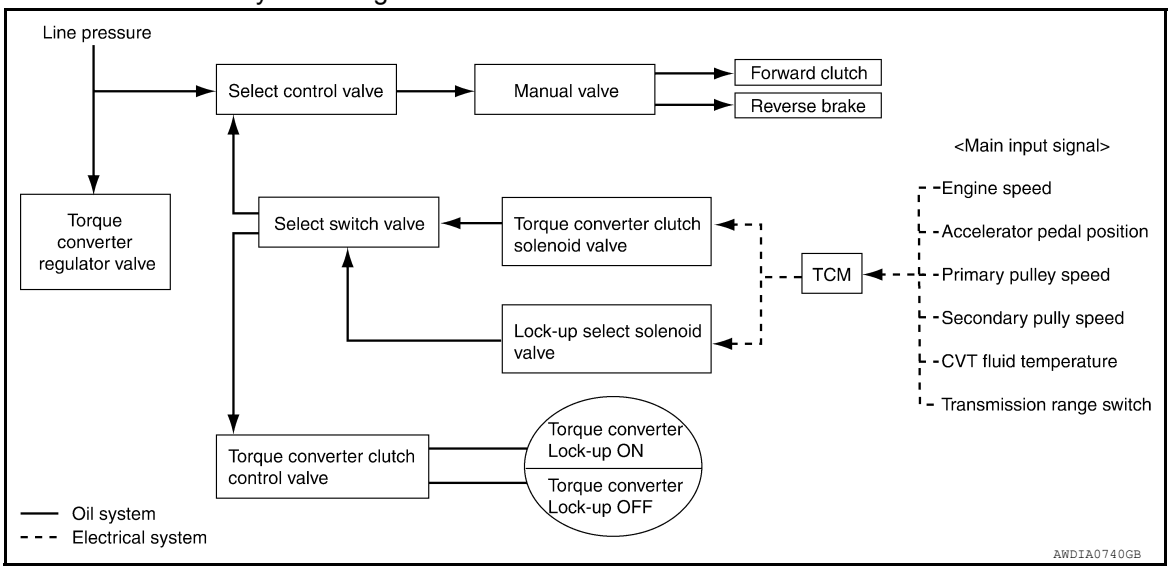
INFOID:0000000007402338

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



TORQUE CONVERTER CLUTCH AND SELECT CONTROL VALVE CONTROL

Lock-up and Select Control System Diagram



Lock-up Released

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

Lock-up Applied

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

Select Control

When shifting between “N” (“P”) ⇒“D” (“R”), optimize the operating pressure on the basis of the throttle position, the engine speed, and the secondary pulley (output) revolution speed to lessen the shift shock.

Control Valve

INFOID:0000000007402339

FUNCTION OF CONTROL VALVE

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

ON BOARD DIAGNOSTIC (OBD) SYSTEM

Introduction

INFOID:0000000007402340

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-47, "CONSULT Function (TRANSMISSION)".

OBD-II Function for CVT System

INFOID:0000000007402341

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

INFOID:0000000007402342

ONE TRIP DETECTION LOGIC

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

TWO TRIP DETECTION LOGIC

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

OBD-II Diagnostic Trouble Code (DTC)

INFOID:0000000007402343

HOW TO READ DTC AND 1ST TRIP DTC

DTC and 1st trip DTC can be read by the following methods.
(With CONSULT or GST) GST) CONSULT or GST (Generic Scan Tool) Examples: P0705, P0720 etc.
These DTC are prescribed by SAE J2012.
(CONSULT 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 can identify them as shown below, therefore, CONSULT (if available) is recommended.

A sample of CONSULT 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. 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 or GST. The 1st trip freeze frame data can only be displayed on the CONSULT screen, not on the GST. For details, refer to EC-132, "CONSULT Function (ENGINE)" [MR20DE (For california)], EC-692, "CONSULT Function (ENGINE)" [MR20DE (Except for california)] and EC-1237, "CONSULT Function (ENGINE)" (QR25DE).

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, 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 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-61, "Emission-related Diagnostic Information" [MR20DE (For california)], EC-621, "Emission-related Diagnostic Information" [MR20DE (Except for california)] and EC-1167, "Emission-related Diagnostic Information" (QR25DE).

- **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)

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

1. Perform DELETING DTC.
2. Make sure that all "DTC RESULT", "TIME" and "FDD" are deleted.

HOW TO ERASE DTC (WITH GST)

1. If the ignition switch stays ON after repair work, be sure to turn ignition switch OFF once. Wait at least 10 seconds and then turn it ON (engine stopped) again.
2. Select Mode 4 with GST (Generic Scan Tool). For details, refer to EC-140, "Generic Scan Tool (GST) Function" [MR20DE (For california)], EC-700, "Generic Scan Tool (GST) Function" [MR20DE (Except for california)] and EC-1245, "Generic Scan Tool (GST) Function" (QR25DE).

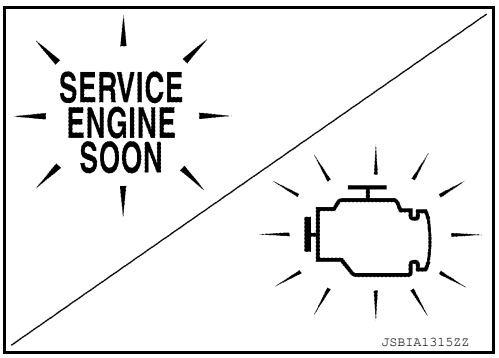
Malfunction Indicator Lamp (MIL)

INFOID:0000000007402344

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-35, or see EC-579 [MR20DE (For california)], EC-1124 [MR20DE (Except for california)] and EC-1692 (QR25DE).
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

DTC Inspection Priority Chart

INFOID:0000000007402345

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-55 .

Priority	Detected items (DTC)
1	U1000
2	Except above

Fail-Safe

INFOID:0000000007402346

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.

Secondary Speed Sensor

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

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 primary speed sensor to the TCM. The overdrive-off mode is inhibited, and the transaxle is put in “D”.

Transmission Range Switch

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

Manual Mode Switch (with QR25DE)

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

CVT Fluid Temperature Sensor

If an unexpected signal is sent from the CVT fluid temperature sensor to the TCM, the gear ratio in use before receiving the unexpected signal is maintained or the gear ratio is controlled to keep engine speed under 4500 rpm.

Secondary Pressure Sensor

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

Line Pressure Solenoid

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

Secondary Pressure Solenoid

If an unexpected signal is sent from the solenoid to the TCM, the 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.

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.

TCM Power Supply (Memory Back-up)

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

How to Perform Trouble Diagnosis for Quick and Accurate Repair

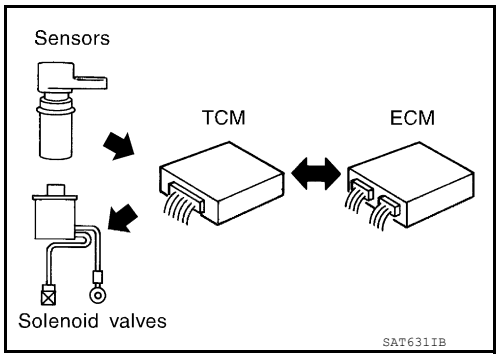
INFOID:0000000007402347

INTRODUCTION

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

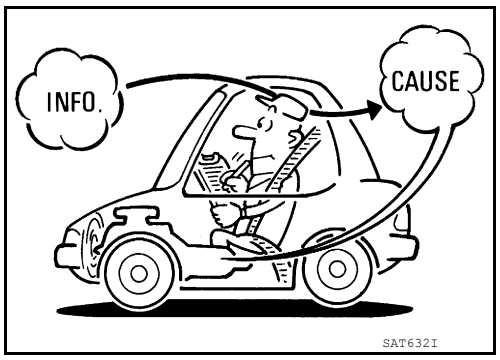
The TCM also communicates with the ECM by means of a signal sent from sensing elements used with the OBD-related parts of the CVT system for malfunction-diagnostic purposes. The TCM is capable of diagnosing malfunctioning parts while the ECM can store malfunctions in its memory.

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.

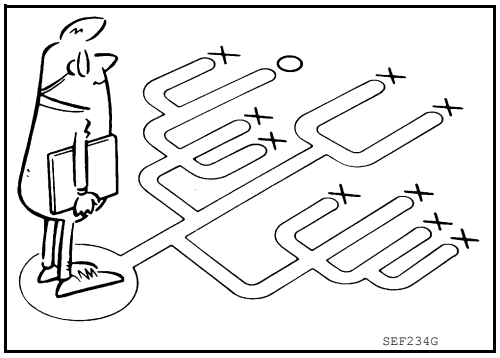
A visual check only may not find the cause of the errors. A road test with CONSULT (or GST) or a circuit tester connected should be performed. Follow the "WORK FLOW" .



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

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

Also check related Service bulletins.



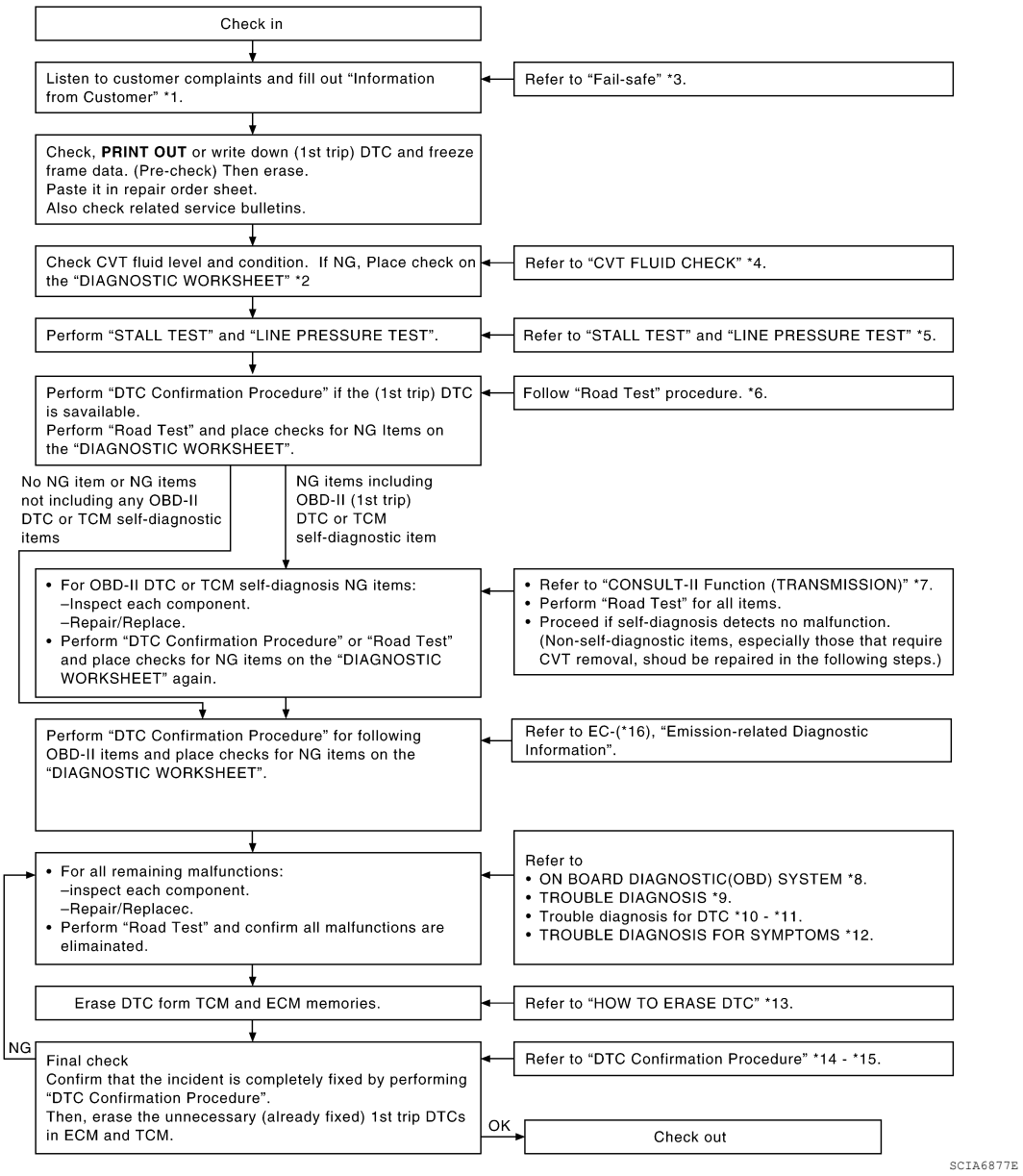
WORK FLOW

A good understanding of the malfunction conditions can make troubleshooting faster and more accurate.

In general, each customer feels differently about a malfunction. It is important to fully understand the symptoms or conditions for a customer complaint.

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

Work Flow Chart



*1. "Information From Customer"
*2. "DIAGNOSTIC WORKSHEET"
*3. CVT-28
*4. CVT-36
*5. CVT-36, CVT-36
*6. CVT-39
*7. CVT-47
*8. CVT-25
*9. CVT-28
*10. CVT-55
*11. CVT-139
*12. CVT-147
*13. CVT-25
*14. CVT-55
*15. CVT-139
*16. EC-61 [MR20DE (For california)], EC-621, [MR20DE (Except for california)] and EC-1167

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

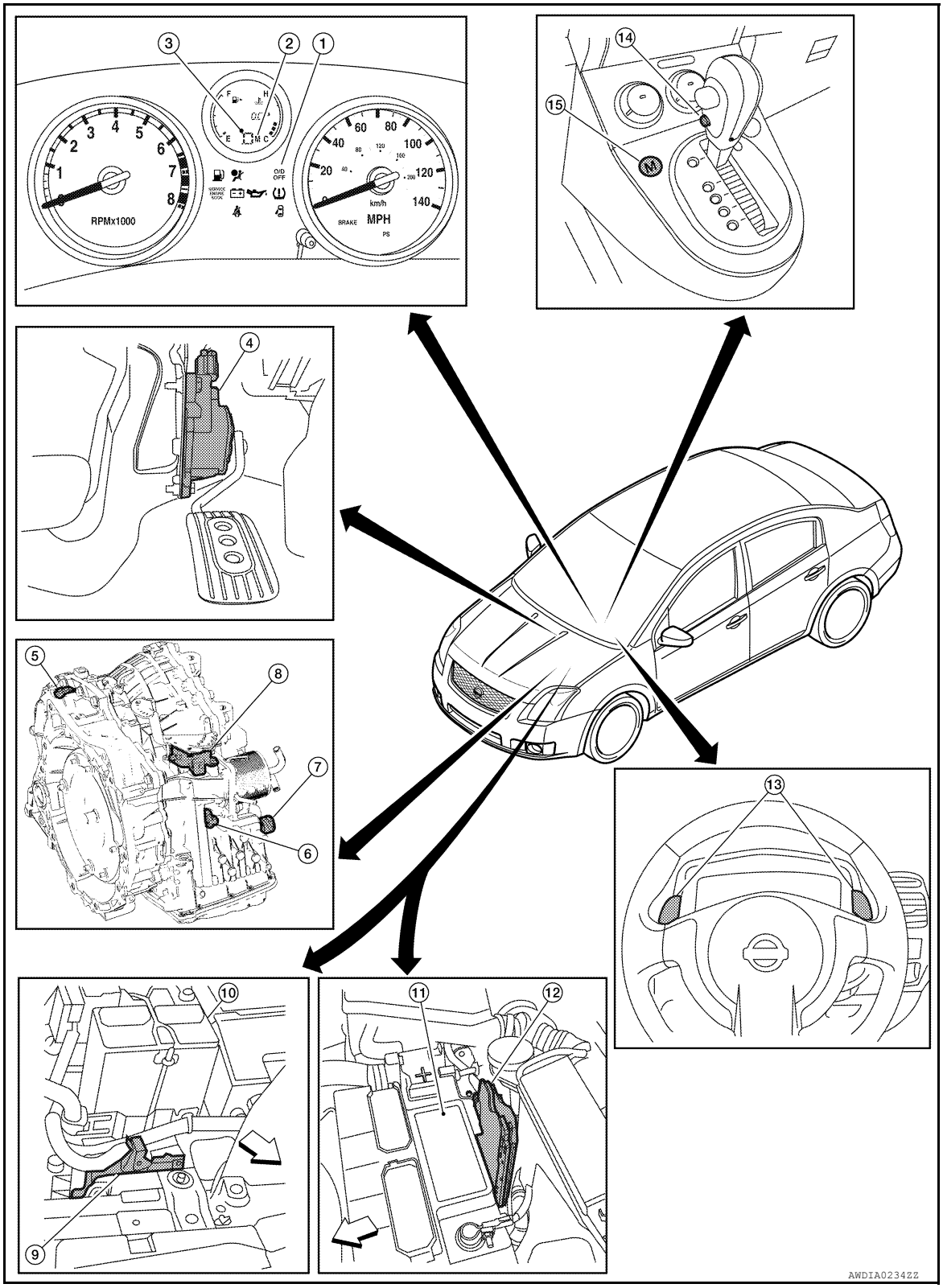
1	☐ Read the item on cautions concerning fail-safe and understand the customer's complaint.			CVT-28
2	☐ CVT fluid inspection			CVT-36
		☐ Leak (Repair leak location.) ☐ State ☐ Amount		
3	☐ Stall test and line pressure test			CVT-36, CVT-36
		☐ Stall test		
			☐ Torque converter one-way clutch ☐ Reverse brake ☐ Forward clutch ☐ Steel belt	☐ Engine ☐ Line pressure low ☐ Primary pulley ☐ Secondary pulley
		☐ Line pressure inspection - Suspected part:		

4	☐ Perform road test.			CVT-39
	4-1.	Check before engine is started		CVT-40
		☐CVT-150, "O/D OFF Indicator Lamp Does Not Come On" ☐ Perform self-diagnosis. Enter checks for detected items. CVT-47		
			☐CVT-55 ☐CVT-58 ☐CVT-59 ☐CVT-61 ☐CVT-66 ☐CVT-71 ☐CVT-76 ☐CVT-81 ☐CVT-83 ☐CVT-84 ☐CVT-89 ☐CVT-91 ☐CVT-96 ☐CVT-98 ☐CVT-100 ☐CVT-105 ☐CVT-110 ☐CVT-114 ☐CVT-116 ☐CVT-118 ☐CVT-122 ☐CVT-124 ☐CVT-126 ☐CVT-128 ☐CVT-129 ☐CVT-135 ☐CVT-139	
	4-2.	Check at idle		CVT-40
		☐CVT-152, "Engine Cannot Be Started in "P" or "N" Position" ☐CVT-152, "In "P" Position, Vehicle Moves Forward or Backward When Pushed" ☐CVT-153, "In "N" Position, Vehicle Moves" ☐CVT-153, "Large Shock "N" Æ "R" Position" ☐CVT-154, "Vehicle Does Not Creep Backward in "R" Position" ☐CVT-155, "Vehicle Does Not Creep Forward in "D" or "L" Position"		

4	4-3.	Cruise test		CVT-41
		☐CVT-156, "Vehicle Speed Does Not Change in "L" Position" ☐CVT-157, "Vehicle Speed Does Not Change in overdrive-off mode" ☐CVT-158, "Vehicle Speed Does Not Change in "D" Position" ☐CVT-159, "Cannot Be Changed to Manual Mode" ☐CVT-159, "CVT Does Not Shift in Manual Mode" ☐CVT-160, "Vehicle Does Not Decelerate by Engine Brake" ☐ perform self-diagnosis. Enter checks for detected items. CVT-47		
			☐CVT-55 ☐CVT-58 ☐CVT-59 ☐CVT-61 ☐CVT-66 ☐CVT-71 ☐CVT-76 ☐CVT-81 ☐CVT-83 ☐CVT-84 ☐CVT-89 ☐CVT-91 ☐CVT-96 ☐CVT-98 ☐CVT-100 ☐CVT-105 ☐CVT-110 ☐CVT-114 ☐CVT-116 ☐CVT-118 ☐CVT-122 ☐CVT-124 ☐CVT-126 ☐CVT-128 ☐CVT-129 ☐CVT-135 ☐CVT-139	
5	☐ Inspect each system for items found to be NG in the self-diagnosis and repair or replace the malfunctioning parts.			
6	☐ Perform all road tests and enter the checks again for the required items.			CVT-39
7	☐ For any remaining NG items, perform the “diagnosis procedure” and repair or replace the malfunctioning parts.			
8	☐ Erase the results of the self-diagnosis from the TCM.			CVT-25, CVT-25

CVT Electrical Parts Location

INFOID:0000000007402348



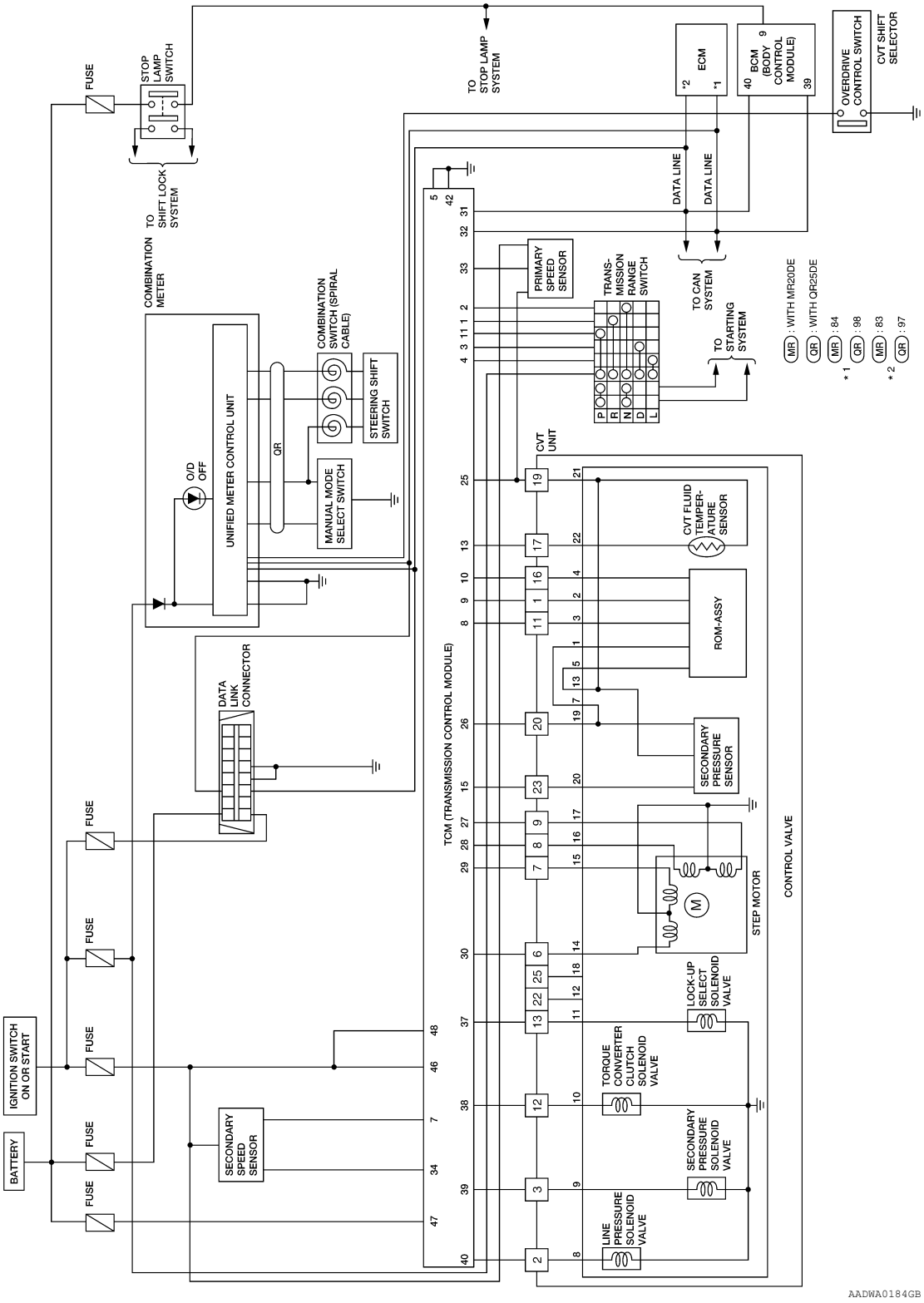
⇐: Front

1. Overdrive indicator lamp
2. Manual mode indicator (with QR25DE)
3. Shift position indicator
4. Accelerator pedal position (APP) sensor
5. Secondary speed sensor
6. Primary speed sensor

7. CVT unit harness connector
8. Transmission range switch
9. TCM (with MR20DE)
10. Battery
11. Battery
12. TCM (with QR25DE)
13. Steering shift switch (with QR25DE)
14. Overdrive OFF switch
15. Manual mode switch (with QR25DE)

Circuit Diagram

INFOID:0000000007402349



Inspections before Trouble Diagnosis

INFOID:0000000007402350

CVT FLUID CHECK

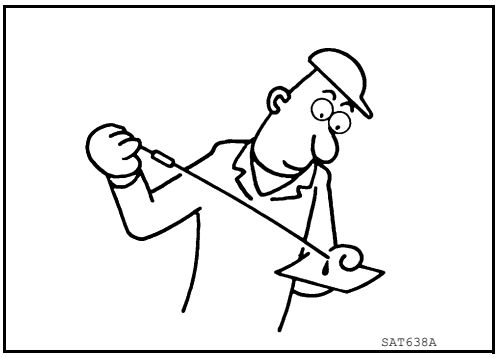
Fluid Leakage and Fluid Level Check

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

Fluid Condition Check

Inspect the fluid condition.

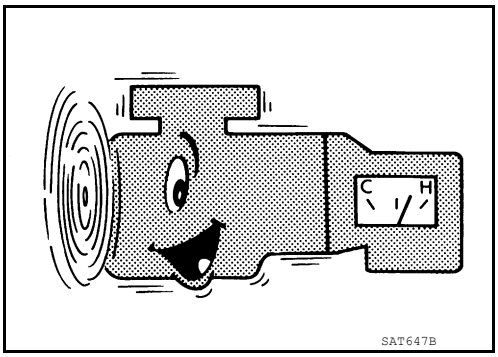
Fluid status	Conceivable cause	Required operation
Varnished (viscous varnish state)	Clutch, brake scorched	Replace the CVT fluid and check the CVT main unit and the vehicle for malfunctions (wire harnesses, cooler pipes, etc.)
Milky white or cloudy	Water in the fluid	Replace the CVT fluid and check for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



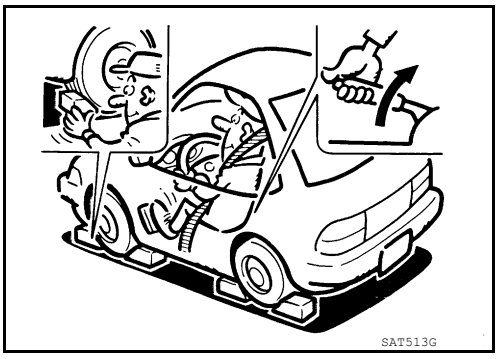
STALL TEST

Stall Test Procedure

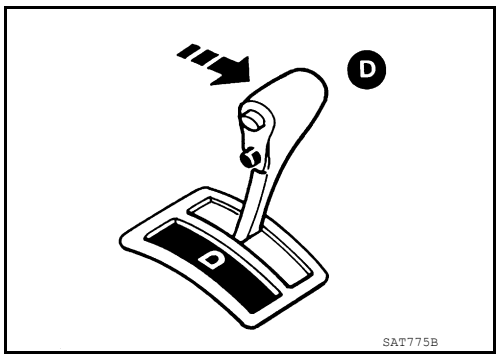
1. Inspect the amount of engine oil. Replenish the engine oil if necessary.
2. Drive for about 10 minutes to warm up the vehicle so that the CVT fluid temperature is 50 to 80°C (122 to 176°F). Inspect the amount of CVT fluid. Replenish if necessary.



3. Securely engage the parking brake so that the tires do not turn.
4. Install a tachometer where it can be seen by driver during test.
   - **It is good practice to mark the point of specified engine rpm on indicator.**

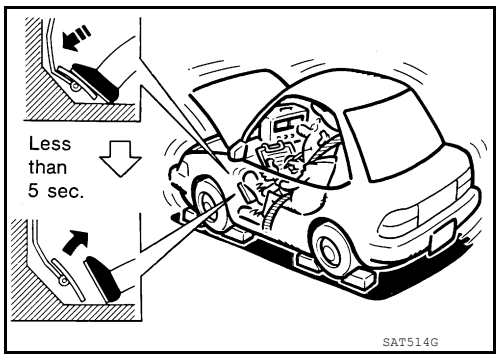


5. Start engine, apply foot brake, and place selector lever in “D” position.

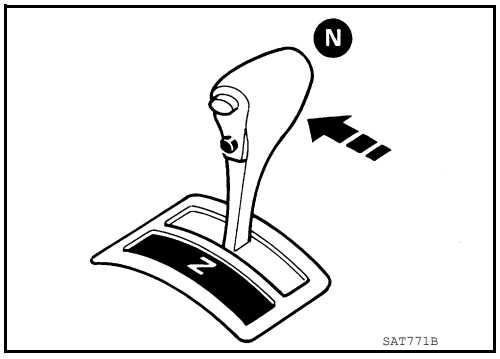


6. While holding down the foot brake, gradually press down the accelerator pedal.
7. Quickly read off the stall speed, and then quickly remove your foot from the accelerator pedal.
   CAUTION:
   Do not hold down the accelerator pedal for more than 5 seconds during this test.

   Stall speed: 2,500 - 3,000 rpm (with MR20DE)
   Stall speed: 2,050 - 3,550 rpm (with QR25DE)



8. Move the selector lever to the “N” position.
9. Cool down the CVT fluid.
   CAUTION:
   Run the engine at idle for at least 1 minute.
10. Repeat steps 6 through 9 with selector lever in “R” position.



Judgment Stall Test

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

O: Stall speed within standard value position.

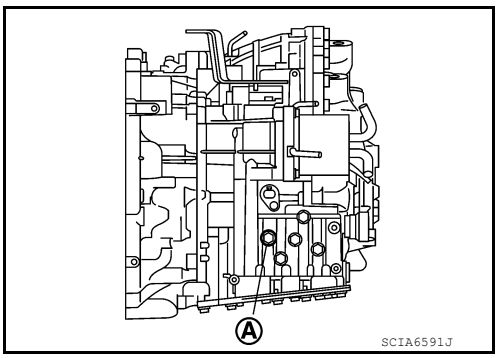
H: Stall speed is higher than standard value.

L: Stall speed is lower than standard value.

LINE PRESSURE TEST

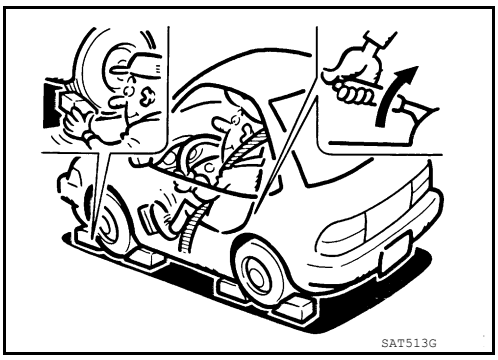
Line Pressure Test Port

(A): Line pressure Test Port.

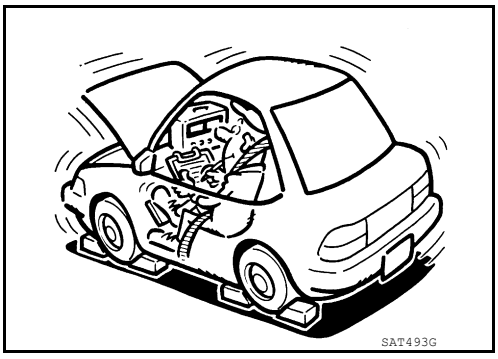


Line Pressure Test Procedure

1. Inspect the amount of engine oil and replenish if necessary.
2. Drive the car for about 10 minutes to warm it up so that the CVT fluid reaches in the range of 50 to 80°C (122 to 176°F), then inspect the amount of CVT fluid and replenish if necessary.
   NOTE:
   The CVT fluid temperature rises in the range of 50 - 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: - (OTC3492)]
   CAUTION:
   When using the oil pressure gauge, be sure to use the O-ring attached to the oil pressure detection plug.
4. Securely engage the parking brake so that the tires do not turn.



5. Start the engine, and then measure the line pressure at both idle and the stall speed.
   CAUTION:
   - **Keep the brake pedal pressed all the way down during measurement.**
   - **When measuring the line pressure at the stall speed, refer to "STALL TEST" .**
6. After the measurements are complete, install the oil pressure detection plug and tighten to the specified torque below.



: 7.5 N·m (0.77 kg-m, 66 in-lb)

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

Line Pressure

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

*: Reference values

Judgment of Line Pressure Test

Judgment		Possible cause
Idle speed	Low for all positions (“P”, “R”, “N”, “D”, “L”)	Possible causes include malfunctions in the pressure supply system and low oil pump output. For example • Oil pump wear • Pressure regulator valve or plug sticking or spring fatigue • Oil strainer ⇒ oil pump ⇒ pressure regulator valve passage oil leak • Engine idle speed too low
	Only low for a specific position	Possible causes include an oil pressure leak in a passage or device related to the position after the pressure is distributed by the manual valve.
	High	Possible causes include a sensor malfunction or malfunction in the line pressure adjustment function. For example • Accelerator pedal position signal malfunction • CVT fluid temperature sensor malfunction • Pressure control solenoid A (line pressure solenoid) malfunction (sticking in OFF state, filter clog, cut line) • Pressure regulator valve or plug sticking
Stall speed	Line pressure does not rise higher than the line pressure for idle.	Possible causes include a sensor malfunction or malfunction in the pressure adjustment function. For example • Accelerator pedal position signal malfunction • TCM malfunction • Pressure control solenoid A (line pressure solenoid) malfunction (shorting, sticking in ON state) • Pressure regulator valve or plug sticking
	The pressure rises, but does not enter the standard position.	Possible causes include malfunctions in the pressure supply system and malfunction in the pressure adjustment function. For example • Accelerator pedal position signal malfunction • Pressure control solenoid A (line pressure solenoid) malfunction (sticking, filter clog) • Pressure regulator valve or plug sticking
	Only low for a specific position	Possible causes include an oil pressure leak in a passage or device related to the position after the pressure is distributed by the manual valve.

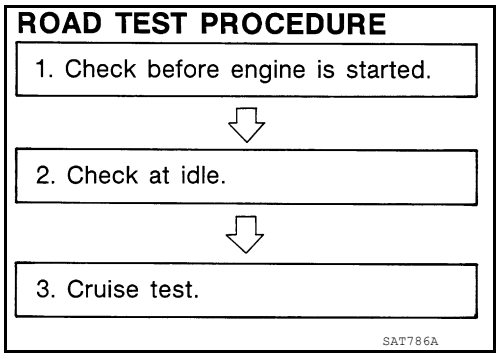
Road Test

INFOID:0000000007402351

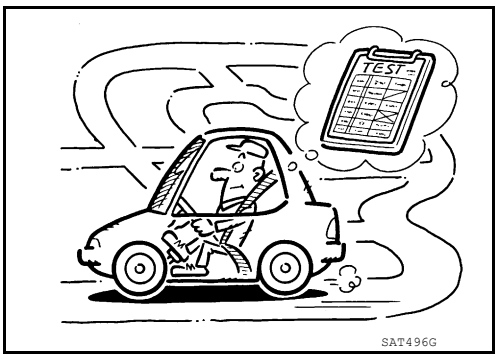
DESCRIPTION

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

1. “Check Before Engine Is Started”CVT-40 .
2. “Check at Idle”CVT-40 .
3. “Cruise Test”CVT-41 .



- Before road test, familiarize yourself with all test procedures and items to check.
- Perform tests on all items until specified symptom is found. Troubleshoot items which check out No Good after road test.



CONSULT OPERATION PROCEDURE

CAUTION:

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

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

1. Touch “DATA MONITOR” on “SELECT DIAG MODE” screen.
2. Touch “MAIN SIGNALS” to set recording condition.
3. See “Numerical Display”, “Barchart Display” or “Line Graph Display”.
4. Touch “START”.
5. When performing cruise test. Refer to CVT-41, "Cruise Test" .
6. After finishing cruise test part, touch “RECORD”.
7. Touch “STORE”.
8. Touch “BACK”.
9. Touch “DISPLAY”.
10. Touch “PRINT”.
11. Check the monitor data printed out.

Check before Engine Is Started

INFOID:0000000007402352

1.CHECK O/D OFF INDICATOR LAMP

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

Does O/D OFF indicator lamp come on for about 2 seconds?

YES >> 1. Turn ignition switch OFF.
2. Perform self-diagnosis and note NG items.
Refer to CVT-47, "CONSULT Function (TRANSMISSION)" .
3. Go to CVT-40, "Check at Idle" .

NO >> Stop “Road Test”. Go to CVT-150, "O/D OFF Indicator Lamp Does Not Come On" .

Check at Idle

INFOID:0000000007402353

1.CHECK STARTING THE ENGINE

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

Is engine started?

YES >> GO TO 2.

NO >> Stop “Road Test”. Mark the box on the CVT-152, "Engine Cannot Be Started in "P" or "N" Position" on the CVT-29, "How to Perform Trouble Diagnosis for Quick and Accurate Repair". Go to CVT-152, "Engine Cannot Be Started in "P" or "N" Position".

2.CHECK STARTING THE ENGINE

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

Is engine started?

YES >> Stop “Road Test”. Mark the box on the CVT-152, "Engine Cannot Be Started in "P" or "N" Position" on the CVT-29, "How to Perform Trouble Diagnosis for Quick and Accurate Repair". Go to CVT-152, "Engine Cannot Be Started in "P" or "N" Position".

NO >> GO TO 3.

3.CHECK “P” POSITION FUNCTION

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

Does vehicle move when it is pushed forward or backward?

YES >> Mark the box CVT-152, "In "P" Position, Vehicle Moves Forward or Backward When Pushed" on the CVT-29, "How to Perform Trouble Diagnosis for Quick and Accurate Repair". Continue “Road Test”.

NO >> GO TO 4.

4.CHECK “N” POSITION FUNCTION

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

Does vehicle move forward or backward?

YES >> Mark the box CVT-153, "In "N" Position, Vehicle Moves" on the CVT-29, "How to Perform Trouble Diagnosis for Quick and Accurate Repair". Continue “Road Test”.

NO >> GO TO 5.

5.CHECK SHIFT SHOCK

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

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

YES >> Mark the box CVT-153, "Large Shock "N" Æ "R" Position" on the CVT-29, "How to Perform Trouble Diagnosis for Quick and Accurate Repair". Continue “Road Test”.

NO >> GO TO 6.

6.CHECK “R” POSITION FUNCTION

Release foot brake for several seconds.

Does vehicle creep backward when foot brake is released?

YES >> GO TO 7.

NO >> Mark the box CVT-154, "Vehicle Does Not Creep Backward in "R" Position" on the CVT-29, "How to Perform Trouble Diagnosis for Quick and Accurate Repair". Continue “Road Test”.

7.CHECK “D”, “L” POSITIONS FUNCTION

Move selector lever to “D” and “L” positions and check if vehicle creeps forward.

Does vehicle creep forward in all positions?

YES >> Go to CVT-41, "Cruise Test".

NO >> Stop “Road Test”. Mark the box CVT-155, "Vehicle Does Not Creep Forward in "D" or "L" Position" on the CVT-29, "How to Perform Trouble Diagnosis for Quick and Accurate Repair". Go to CVT-155, "Vehicle Does Not Creep Forward in "D" or "L" Position".

Cruise Test

INFOID:0000000007402354

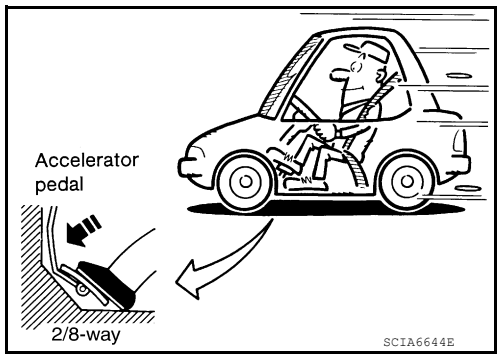
1.CHECK VEHICLE SPEED WHEN SHIFTING GEARS — PART 1

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

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

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

Read vehicle speed and engine speed. Refer to CVT-44, "Vehicle Speed When Shifting Gears" .



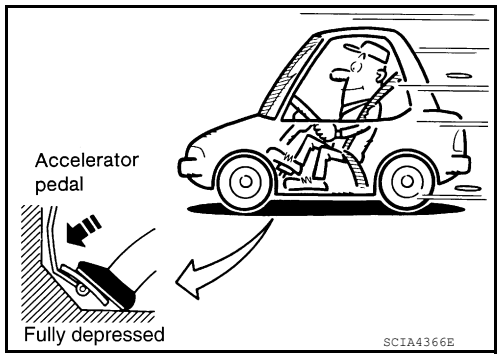
OK or NG

OK >> GO TO 2.
NG >> Mark the box CVT-156, "Vehicle Speed Does Not Change in "L" Position" on the CVT-29, "How to Perform Trouble Diagnosis for Quick and Accurate Repair" . Continue “Road Test”.

2. CHECK VEHICLE SPEED WHEN SHIFTING GEARS — PART 2

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

Read vehicle speed and engine speed. Refer to CVT-44, "Vehicle Speed When Shifting Gears".



OK or NG

OK >> GO TO 3. (With manual mode)
OK >> GO TO 7. (Without manual mode)
NG >> Mark the box CVT-159, "CVT Does Not Shift in Manual Mode" on the CVT-29, "How to Perform Trouble Diagnosis for Quick and Accurate Repair". Continue “Road Test”.

3. CHECK MANUAL MODE FUNCTION

Move to manual mode from "D" position.

Does it switch to manual mode?

YES >> GO TO 4.
NO >> Mark the box CVT-159, "Cannot Be Changed to Manual Mode" on the CVT-29, "How to Perform Trouble Diagnosis for Quick and Accurate Repair" . Continue “Road Test”.

4. CHECK SHIFT-UP FUNCTION

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

Read the gear position. Refer to CVT-47, "CONSULT Function (TRANSMISSION)".

Is upshifting correctly performed?

YES >> GO TO 5.
NO >> Mark the box CVT-159, "CVT Does Not Shift in Manual Mode" on the CVT-29, "How to Perform Trouble Diagnosis for Quick and Accurate Repair" . Continue “Road Test”.

5. CHECK SHIFT-DOWN FUNCTION

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

Read the gear position. Refer to CVT-47, "CONSULT Function (TRANSMISSION)".

Is downshifting correctly performed?

YES >> GO TO 6.
NO >> Mark the box CVT-159, "CVT Does Not Shift in Manual Mode" on the CVT-29, "How to Perform Trouble Diagnosis for Quick and Accurate Repair" . Continue “Road Test”.

6. CHECK ENGINE BRAKE FUNCTION

Check engine brake.

Does engine braking effectively reduce speed in M1 position?

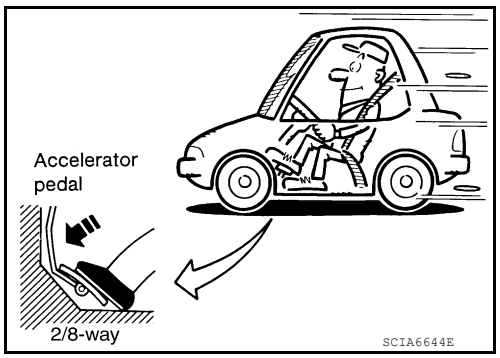
YES >> 1. Stop the vehicle.
2. Perform self-diagnosis. Refer to CVT-47, "CONSULT Function (TRANSMISSION)".

NO >> Mark the box of CVT-160, "Vehicle Does Not Decelerate by Engine Brake" on the CVT-29, "How to Perform Trouble Diagnosis for Quick and Accurate Repair". Then continue trouble diagnosis.

7. CHECK VEHICLE SPEED WHEN SHIFTING GEARS — PART 2

1. Park vehicle on flat surface.
2. Move selector lever to “D” position.
3. Push overdrive control switch. (O/D OFF indicator lamp is on.)
4. Accelerate vehicle to 2/8-way throttle depressing accelerator pedal constantly.

Read vehicle speed and engine speed. Refer to CVT-44, "Vehicle Speed When Shifting Gears" .



OK or NG

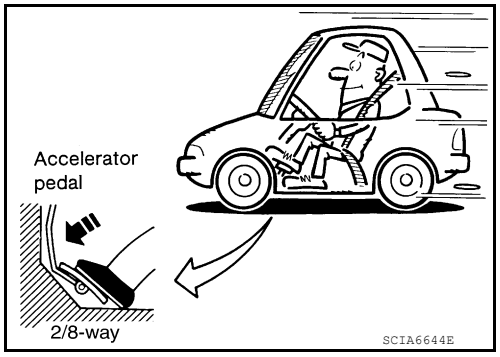
OK >> GO TO 8.

NG >> Mark the box CVT-157, "Vehicle Speed Does Not Change in overdrive-off mode" on the CVT-29, "How to Perform Trouble Diagnosis for Quick and Accurate Repair" . Continue “Road Test”.

8. CHECK VEHICLE SPEED WHEN SHIFTING GEARS — PART 3

1. Park vehicle on flat surface.
2. Move selector lever to “D” position.
3. Push overdrive control switch. (O/D OFF indicator lamp is off.)
4. Accelerate vehicle to 2/8 way throttle depressing accelerator pedal constantly.

Read vehicle speed and engine speed. Refer to CVT-44, "Vehicle Speed When Shifting Gears".



OK or NG

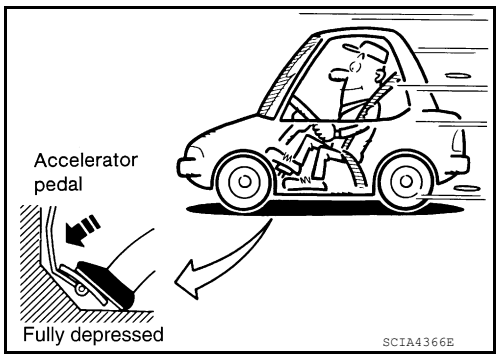
OK >> GO TO 9.

NG >> Mark the box CVT-158, "Vehicle Speed Does Not Change in "D" Position" on the CVT-29, "How to Perform Trouble Diagnosis for Quick and Accurate Repair" . Continue “Road Test”.

9. CHECK VEHICLE SPEED WHEN SHIFTING GEARS — PART 4

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

Read vehicle speed and engine speed. Refer to CVT-44, "Vehicle Speed When Shifting Gears" .



OK or NG

OK >> GO TO 10.

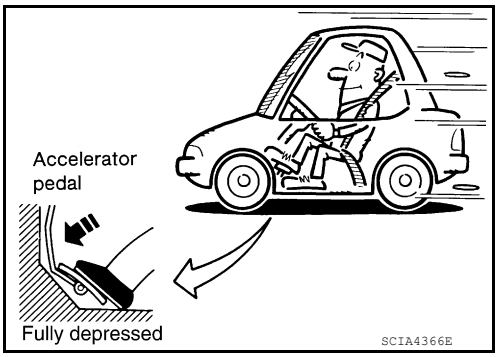
NG >> Mark the box CVT-156, "Vehicle Speed Does Not Change in "L" Position" on the CVT-29, "How to Perform Trouble Diagnosis for Quick and Accurate Repair" . Continue “Road Test”.

10. CHECK VEHICLE SPEED WHEN SHIFTING GEARS — PART 5

1. Park vehicle on flat surface.
2. Move selector lever to “D” position.

3. Push overdrive control switch. (O/D OFF indicator lamp is on.)
4. Accelerate vehicle to full depression depressing accelerator pedal constantly.

Read vehicle speed and engine speed. Refer to CVT-44, "Vehicle Speed When Shifting Gears" .



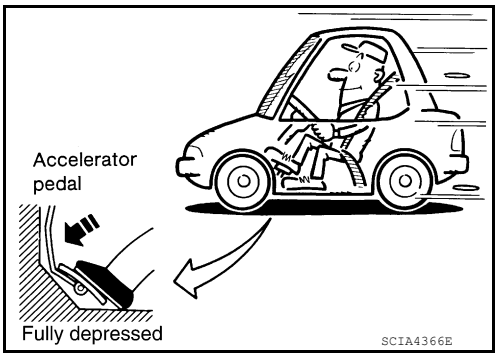
OK or NG

OK >> GO TO 11.
NG >> Mark the box CVT-157, "Vehicle Speed Does Not Change in overdrive-off mode" on the CVT-29, "How to Perform Trouble Diagnosis for Quick and Accurate Repair" . Continue “Road Test”.

11. CHECK VEHICLE SPEED WHEN SHIFTING GEARS — PART 6

1. Park vehicle on flat surface.
2. Move selector lever to “D” position.
3. Push overdrive control switch. (O/D OFF indicator lamp is off.)
4. Accelerate vehicle to full depression depressing accelerator pedal constantly.

Read vehicle speed and engine speed. Refer to CVT-44, "Vehicle Speed When Shifting Gears" .



OK or NG

OK >> GO TO 12.
NG >> Mark the box CVT-158, "Vehicle Speed Does Not Change in "D" Position" on the CVT-29, "How to Perform Trouble Diagnosis for Quick and Accurate Repair" . Continue “Road Test”.

12. CHECK ENGINE BRAKE FUNCTION — PART 1

1. Release accelerator pedal.
2. Check engine brake. (O/D OFF indicator lamp is off.)

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

YES >> GO TO 13.
NO >> Mark the box CVT-160, "Vehicle Does Not Decelerate by Engine Brake" on the CVT-29, "How to Perform Trouble Diagnosis for Quick and Accurate Repair". Continue “Road Test”.

13. CHECK ENGINE BRAKE FUNCTION — PART 2

1. Push overdrive control switch. (O/D OFF indicator lamp is on.)
2. Check engine brake.

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

YES >> GO TO 14.
NO >> Mark the box CVT-160, "Vehicle Does Not Decelerate by Engine Brake" on the CVT-29, "How to Perform Trouble Diagnosis for Quick and Accurate Repair" . Continue “Road Test”.

14. CHECK ENGINE BRAKE FUNCTION — PART 3

1. Move selector lever to “L” position.
2. Check engine brake.

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

YES >> 1. Stop the vehicle.
2. Perform self-diagnosis. Refer to CVT-47, "CONSULT Function (TRANSMISSION)" .
NO >> Mark the box CVT-160, "Vehicle Does Not Decelerate by Engine Brake" on the CVT-29, "How to Perform Trouble Diagnosis for Quick and Accurate Repair" . Then continue trouble diagnosis.

Vehicle Speed When Shifting Gears

INFOID:0000000007402355

Numerical value data are reference values.

Engine type	Throttle position	Shift pattern	Engine speed (rpm)	
			At 40 km/h (25 MPH)	At 60 km/h (37 MPH)
QR25DE	8/8	“D” position	3,300 - 4,300	4,300 - 5,200
		Overdrive-off mode		
		“L” position		
	2/8	“D” position	1,200 - 3,100	1,300 - 3,500
		Overdrive-off mode	2,200 - 3,000	2,800 - 3,600
		“L” position	3,400 - 4,300	4,100 - 5,000
MR20DE	8/8	“D” position	3,400 - 4,200	4,300 - 5,100
		Overdrive-off mode		
		“L” position		
	2/8	“D” position	1,400 - 2,200	1,600 - 2,400
		Overdrive-off mode	2,200 - 3,000	2,800 - 3,600
		“L” position	3,600 - 4,400	4,000 - 4,900

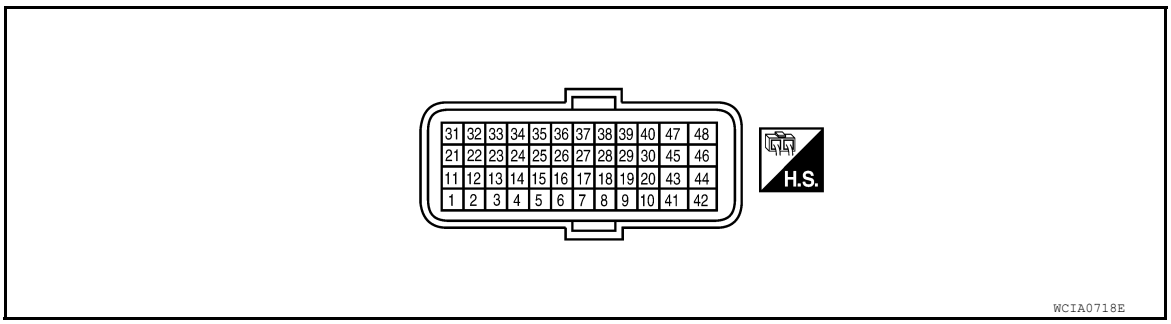
CAUTION:

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

TCM Input/Output Signal Reference Value

INFOID:0000000007402356

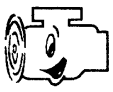
TCM HARNESS CONNECTOR TERMINAL LAYOUT



TERMINALS AND REFERENCE VALUES FOR TCM

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

Terminal	Wire color	Item	Condition		Data (Approx.)
1	W/B	Transmission range switch “R” position		Selector lever in “R” position.	Battery voltage
				When setting selector lever to other positions	0 V
2	P/B	Transmission range switch “N” position		Selector lever in “N” position	Battery voltage
				When setting selector lever to other positions	0 V
3	G/O	Transmission range switch “D” position		Selector lever in “D” position	Battery voltage
				When setting selector lever to other positions	0 V
4	GR	Transmission range switch “L” position		Selector lever in “L” position	Battery voltage
				When setting selector lever to other positions	0 V
5	B	Ground	Always		0 V
6	P/L	K-LINE	—		—
7	W/R	Sensor ground	Always		0 V
8	G/W	ROM assembly	—		—
9	L/R	ROM assembly	—		—

Terminal	Wire color	Item	Condition		Data (Approx.)
10	BR/R	ROM assembly	—		—
11	BR/W	Transmission range switch “P” position		Selector lever in “P” position	Battery voltage
				When setting selector lever to other positions	0 V
13	V	CVT fluid temperature sensor		When CVT fluid temperature is 20°C (68°F)	2.0 V
				When CVT fluid temperature is 80°C (176°F)	1.0 V
15	V/W	Secondary pressure sensor	 and 	“N” position idle	1.0 V
25	W/R	Sensor ground	Always		0 V
26	L/O	Sensor power		—	5.0 V
				—	0 V
27	R/G	Step motor D	Within 2 seconds after ignition switch ON, the time measurement by using the pulse width measurement function (Hi level) of CONSULT.*1 **CAUTION:** **Connect the diagnosis data link cable to the vehicle diagnosis connector.** *1: A circuit tester cannot be used to test this item.		10.0 msec
28	R	Step motor C			30.0 msec
29	O/B	Step motor B			10.0 msec
30	G/R	Step motor A			30.0 msec
31	P	CAN-L	—		—
32	L	CAN-H	—		—
33	LG/R	Primary speed sensor		When driving [“L” position, 20 km/h (12 MPH)].	880 Hz
34	W	Secondary speed sensor		When driving [“D” position, 20 km/h (12 MPH)].	430 Hz
37	L/W	Lock-up select solenoid valve		Selector lever in “P” or “N” positions	Battery voltage
				Wait at least for 5 seconds with the selector lever in “R”, “D” or “L” positions	0 V
38	G	Torque converter clutch solenoid valve		When vehicle cruises in “D” position. — When CVT performs lock-up.	6.0 V
				When vehicle cruises in “D” position. — When CVT does not perform lock-up.	1.5 V
39	W/G	Secondary pressure solenoid valve		Release your foot from the accelerator pedal.	5.0 - 7.0 V
				Press the accelerator pedal all the way down.	3.0 - 4.0 V
40	R/Y	Line pressure solenoid valve	and 	Release your foot from the accelerator pedal.	5.0 - 7.0 V
				Press the accelerator pedal all the way down.	1.0 V
42	B	Ground	Always		0 V
45	Y/R	Power supply (memory back-up)	Always		Battery voltage

Terminal	Wire color	Item	Condition		Data (Approx.)
46	Y	Power supply		—	Battery voltage
				—	0 V
47	Y/R	Power supply (memory back-up)	Always		Battery voltage
48	Y	Power supply		—	Battery voltage
				—	0 V

CONSULT Function (TRANSMISSION)

INFOID:0000000007402357

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

FUNCTION

Diagnostic test mode	Function
Work support	This mode enables a technician to adjust some devices faster and more accurately by following the indications on CONSULT.
Self-diagnostic results	Self-diagnostic results can be read and erased quickly.
Data monitor	Input/Output data in the TCM can be read.
CAN diagnostic support monitor	The results of transmit/receive diagnosis of CAN communication can be read.
CALIB data	Characteristic information for TCM and CVT assembly can be read.
Function test	Performed by CONSULT instead of a technician to determine whether each system is “OK” or “NG”.
ECU part number	TCM part number can be read.

CONSULT REFERENCE VALUE

Item name	Condition	Display value (Approx.)
VSP SENSOR	During driving	Approximately matches the speedometer reading.
ESTM VSP SIG		
PRI SPEED SEN	During driving (lock-up ON)	Approximately matches the engine speed.
ENG SPEED SIG	Engine running	Closely matches the tachometer reading.
SEC HYDR SEN	“N” position idle	1.0 V
ATF TEMP SEN	When CVT fluid temperature is 20°C (68°F)	2.0 V
	When CVT fluid temperature is 80°C (176°F)	1.0 V
VIGN SEN	Ignition switch: ON	Battery voltage
VEHICLE SPEED	During driving	Approximately matches the speedometer reading.
PRI SPEED	During driving (lock-up ON)	Approximately matches the engine speed.
SEC SPEED	During driving	45 X Approximately matches the speedometer reading.
ENG SPEED	Engine running	Closely matches the tachometer reading.

Item name	Condition	Display value (Approx.)
GEAR RATIO	During driving	2.34 - 0.39
ACC PEDAL OPEN	Released accelerator pedal - Fully depressed accelerator pedal	0.0/8 - 8.0/8
SEC PRESS	“N” position idle	1.3 MPa
STM STEP	During driving	0 step – 177 step
ISOLT1	Lock-up “OFF”	0.0 A
	Lock-up “ON”	0.7 A
ISOLT2	Release your foot from the accelerator pedal.	0.8 A
	Press the accelerator pedal all the way down.	0.0 A
ISOLT3	Secondary pressure low - Secondary pressure high	0.8 - 0.0 A
SOLMON1	Lock-up “OFF”	0.0 A
	Lock-up “ON”	0.7 A
SOLMON2	“N” position idle	0.8 A
	When stalled	0.3 - 0.6 A
SOLMON3	“N” position idle	0.6 - 0.7 A
	When stalled	0.4 - 0.6 A
P POSITION SW	Selector lever in “P” position	ON
	When setting selector lever to other positions.	OFF
R POSITION SW	Selector lever in “R” position	ON
	When setting selector lever to other positions.	OFF
N POSITION SW	Selector lever in “N“ position	ON
	When setting selector lever to other positions.	OFF
D POSITION SW	Selector lever in “D” position	ON
	When setting selector lever to other positions.	OFF
L POSITION SW	Selector lever in “L” position	ON
	When setting selector lever to other positions.	OFF
BRAKE SW	Depressed brake pedal	ON
	Released brake pedal	OFF
FULL SW	Fully depressed accelerator pedal	ON
	Released accelerator pedal	OFF
IDLE SW	Released accelerator pedal	ON
	Fully depressed accelerator pedal	OFF
SPORT MODE SW	When OD OFF indicator lamp is off.	ON
	When OD OFF indicator lamp is on.	OFF
INDLRNG	Selector lever in “L” position	ON
	When setting selector lever to other positions.	OFF
INDDRNG	Selector lever in “D” position	ON
	When setting selector lever to other positions.	OFF
INDNRNG	Selector lever in “N“ position	ON
	When setting selector lever to other positions.	OFF
INDRRNG	Selector lever in “R” position	ON
	When setting selector lever to other positions.	OFF
INDPRNG	Selector lever in “P” position	ON
	When setting selector lever to other positions.	OFF

Item name	Condition	Display value (Approx.)
SPORT MODE IND	When sport mode	ON
	Other conditions	OFF
SMCOIL D	During driving	Changes ON ⇔ OFF.
SMCOIL C		
SMCOIL B		
SMCOIL A		
LUSEL SOL OUT	Selector lever in “P”, “N” positions	ON
	Wait at least for 5 seconds with the selector lever in “R”, “D” or “L” position	OFF
LUSEL SOL MON	Selector lever in “P”, “N” positions	ON
	Wait at least for 5 seconds with the selector lever in “R”, “D” or “L” position	OFF
ABS ON	ABS operate	ON
	Other conditions	OFF
RANGE	Selector lever in “N” or “P” position	N·P
	Selector lever in “R” position	R
	Selector lever in “D” position	D
	Selector lever in “L” position	L

WORK SUPPORT MODE

Display Item List

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

Engine Brake Adjustment

“ENGINE BRAKE LEVEL”

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

OFF: Engine brake level control is deactivated.

CAUTION:

Mode of “+1”“0”“-1”“-2”“OFF” can be selected by 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 irregular driveability.

Check CVT Fluid Deterioration Date

“CVTF DETERIORATION DATE”

More than 210000:

It is necessary to change CVT fluid.

Less than 210000:

It is not necessary to change CVT fluid.

CAUTION:

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

SELF-DIAGNOSTIC RESULT MODE

After performing self-diagnosis, place check marks for results on the CVT-29, "How to Perform Trouble Diagnosis for Quick and Accurate Repair". Reference pages are provided following the items.

Display Items List

X: Applicable —: Not applicable

Items (CONSULT screen terms)	Malfunction is detected when...	DTC*1		Reference
		"TRANSMISSION" with CONSULT	MIL*2, "ENGINE" with CONSULT or GST	
CAN COMM CIRCUIT	When TCM is not transmitting or receiving CAN communication signal for 2 seconds or more	U1000	U1000	CVT-55
CONTROL UNIT (CAN)	When detecting error during the initial diagnosis of CAN controller of TCM	U1010	U1010	CVT-58
BRAKE SWITCH B	When the brake switch does not switch to ON or OFF	P0703	—	CVT-59
T/M RANGE SWITCH A	TCM does not receive the correct voltage signal (based on the gear position) from the switch.	P0705	P0705	CVT-61
FLUID TEMP SENSOR A	During running, the CVT fluid temperature sensor signal voltage is excessively high or low	P0710	P0710	CVT-66
INPUT SPEED SENSOR A	• Primary speed sensor signal is not input due to an open circuit • An unexpected signal is input when vehicle is being driven	P0715	P0715	CVT-71
OUTPUT SPEED SENSOR	• Signal from secondary speed sensor not input due to open or short circuit • Unexpected signal input during running	P0720	P0720	CVT-76
ENGINE SPEED	• TCM does not receive the CAN communication signal from the ECM • Engine speed is too low while driving	P0725	—	CVT-81
INCORRECT GR RATIO	Unexpected gear ratio detected	P0730	—	CVT-83
TORQUE CONVERTER	Normal voltage not applied to solenoid due to open or short circuit	P0740	P0740	CVT-84
TORQUE CONVERTER	• CVT cannot perform lock-up even if electrical circuit is good • TCM detects as irregular by comparing difference value with slip rotation • There is big difference engine speed and primary speed when TCM lock-up signal is on	P0744	P0744	CVT-89
L/PRESS SOL/CIRC	• Normal voltage not applied to solenoid due to open or short circuit • TCM detects as irregular by comparing target value with monitor value	P0745	P0745	CVT-91
PC SOLENOID A	Unexpected gear ratio was detected in the LOW side due to excessively low line pressure	P0746	P0746	CVT-96
PC SOLENOID B	Secondary pressure is too high or too low compared with the commanded value while driving	P0776	P0776	CVT-98
PC SOLENOID B	• Normal voltage not applied to solenoid due to cut line, short, or the like • TCM detects as irregular by comparing target value with monitor value	P0778	P0778	CVT-100
UP/DOWN SHIFT SWITCH	When an impossible pattern of switch signals is detected, a malfunction is detected.	P0826	—	CVT-105
FLUID PRESS SEN/SW A	Signal voltage of the secondary pressure sensor is too high or too low while driving	P0840	P0840	CVT-110
FLUID PRESS SEN/SW A	Correlation between the values of the secondary pressure sensor and the primary pressure sensor is out of specification	P0841	—	CVT-114
FLUID PRESS LOW	Secondary fluid pressure is too low compared with the commanded value while driving	P0868	—	CVT-116

Items (CONSULT screen terms)	Malfunction is detected when...	DTC*1		Reference
		"TRANSMISSION" with CONSULT	MIL*2, "ENGINE" with CONSULT or GST	
TCM	• When the power supply to the TCM is cut OFF, for example because the battery is removed, and the self-diagnosis memory function stops • This is not a malfunction message (Whenever shutting OFF a power supply to the TCM, this message appears on the screen)	P1701	—	CVT-118
TP SENSOR	TCM does not receive the proper accelerator pedal position signals (input by CAN communication) from ECM	P1705	—	CVT-122
VEHICLE SPEED*3	• 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-124
SPEED SENSOR	A rotation sensor error is detected because the gear does not change in accordance with the position of the stepping motor **CAUTION:** **One of the "P0720", the "P0715" or the "P0725" is displayed with the DTC at the same time**	P1723	—	CVT-126
THROTTLE CONTROL SIG	The electronically controlled throttle for ECM is malfunctioning	P1726	—	CVT-128
SLCT SOLENOID	• Normal voltage not applied to solenoid due to cut line, short, or the like • TCM detects as irregular by comparing target value with monitor value	P1740	P1740	CVT-129
LINE PRESS CONTROL	TCM detects the unexpected line pressure	P1745	—	CVT-134
STEP MOTOR	Each coil of the step motor is not energized properly due to an open or a short	P1777	P1777	CVT-135
STEP MOTOR	There is a great difference between the number of steps for the stepping motor and for the actual gear ratio	P1778	P1778	CVT-139
NO DTC IS DETECTED: FURTHER TESTING MAY BE REQUIRED	No NG item has been detected	X	X	—

*1: These numbers are prescribed by SAE J2012.

*2: Refer to CVT-26, "Malfunction Indicator Lamp (MIL)" .

*3: Models without ABS does not indicate.

DATA MONITOR MODE

Display Items List

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

Monitored item (Unit)	Monitor item selection			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	
VSP SENSOR (km/h or mph)	X	—	▼	Secondary speed sensor
ESTM VSP SIG (km/h or mph)	X	—	▼	Models without ABS dose not indicate
PRI SPEED SEN (rpm)	X	—	▼	

Monitored item (Unit)	Monitor item selection			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	
ENG SPEED SIG (rpm)	X	—	▼	
SEC HYDR SEN (V)	X	—	▼	
PRI HYDR SEN (V)	X	—	▼	Not mounted but displayed
ATF TEMP SEN (V)	X	—	▼	CVT fluid temperature sensor
VIGN SEN (V)	X	—	▼	
VEHICLE SPEED (km/h or mph)	—	X	▼	Vehicle speed recognized by the TCM
PRI SPEED (rpm)	—	X	▼	Primary pulley speed
SEC SPEED (rpm)	—	—	▼	Secondary pulley speed
ENG SPEED (rpm)	—	X	▼	
SLIP REV (rpm)	—	X	▼	Difference between engine speed and primary pulley speed
GEAR RATIO	—	X	▼	
G SPEED (G)	—	—	▼	
ACC PEDAL OPEN (0.0/8)	X	X	▼	Degree of opening for accelerator recognized by the TCM For fail-safe operation, the specific value used for control is displayed
TRQ RTO	—	—	▼	
SEC PRESS (MPa)	—	X	▼	
PRI PRESS (MPa)	—	X	▼	Not mounted but displayed
ATFTEMP COUNT	—	X	▼	Means CVT fluid temperature. Actual oil temperature (°C) cannot be checked unless a numeric value is converted. Refer to CVT-12, "ATFTEMP COUNT Conversion Table".
DSR REV (rpm)	—	—	▼	
DGEAR RATIO	—	—	▼	
DSTM STEP (step)	—	—	▼	
STM STEP (step)	—	X	▼	
LU PRS (MPa)	—	—	▼	
LINE PRS (MPa)	—	—	▼	
TGT SEC PRESS (MPa)	—	—	▼	
ISOLT1 (A)	—	X	▼	Torque converter clutch solenoid valve output current
ISOLT2 (A)	—	X	▼	Line pressure solenoid valve output current
ISOLT3 (A)	—	X	▼	Secondary pressure solenoid valve output current
SOLMON1 (A)	X	X	▼	Torque converter clutch solenoid valve monitor current
SOLMON2 (A)	X	X	▼	Line pressure solenoid valve monitor current
SOLMON3 (A)	X	X	▼	Secondary pressure solenoid valve monitor current

Monitored item (Unit)	Monitor item selection			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	
P POSITION SW (ON/OFF)	X	—	▼	
R POSITION SW (ON/OFF)	X	—	▼	
N POSITION SW (ON/OFF)	X	—	▼	
D POSITION SW (ON/OFF)	X	—	▼	
L POSITION SW (ON/OFF)	X	—	▼	
BRAKE SW (ON/OFF)	X	X	▼	Stop lamp switch (Signal input with CAN communication)
FULL SW (ON/OFF)	X	X	▼	Signal input with CAN communication
IDLE SW (ON/OFF)	X	X	▼	
SPORT MODE SW (ON/OFF)	X	X	▼	
STRDWNSW (ON/OFF)*	X	—	▼	Responds only to vehicles with Manual mode
STRUPSW (ON/OFF)*	X	—	▼	
DOWNLVR (ON/OFF)	X	—	▼	Not mounted but displayed
UPLVR (ON/OFF)	X	—	▼	
NON MMODE (ON/OFF)	X	—	▼	
MMODE (ON/OFF)	X	—	▼	
INDLRNG (ON/OFF)	—	—	▼	“L” position indicator output
INDDRNG (ON/OFF)	—	—	▼	“D” position indicator output
INDNRNG (ON/OFF)	—	—	▼	“N” position indicator output
INDRRNG (ON/OFF)	—	—	▼	“R” position indicator output
INDPRNG (ON/OFF)	—	—	▼	“P” position indicator output
CVTLAMP (ON/OFF)	—	—	▼	
SPORT MODE IND (ON/OFF)	—	—	▼	
MMODE IND (ON/OFF)	—	—	▼	Not mounted but displayed
SMCOIL D (ON/OFF)	—	—	▼	Step motor coil “D” energizing status
SMCOIL C (ON/OFF)	—	—	▼	Step motor coil “C” energizing status
SMCOIL B (ON/OFF)	—	—	▼	Step motor coil “B” energizing status
SMCOIL A (ON/OFF)	—	—	▼	Step motor coil “A” energizing status
LUSEL SOL OUT (ON/OFF)	—	—	▼	
LUSEL SOL MON (ON/OFF)	—	—	▼	
VDC ON (ON/OFF)	X	—	▼	Not mounted but displayed
TCS ON (ON/OFF)	X	—	▼	
ABS ON (ON/OFF)	X	—	▼	Models without ABS dose not indicate
ACC ON (ON/OFF)	X	—	▼	Not mounted but displayed

Monitored item (Unit)	Monitor item selection			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	
RANGE	—	X	▼	Indicates position is recognized by TCM. Indicates a specific value required for control when fail-safe function is activated
M GEAR POS	—	X	▼	Not mounted but displayed

*: With QR25DE

Diagnosis Procedure without CONSULT

INFOID:0000000007402358

OBD-II SELF-DIAGNOSTIC PROCEDURE (WITH GST)

Refer to EC-140, "Generic Scan Tool (GST) Function".

U1000 CAN COMM CIRCUIT

Description

INFOID:0000000007402359

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

INFOID:0000000007402360

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

Possible Cause

INFOID:0000000007402361

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

DTC Confirmation Procedure

INFOID:0000000007402362

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

1. Turn ignition switch ON.
2. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT.
3. Start engine and wait for at least 6 seconds.
4. If DTC is detected, go to CVT-57, "Diagnosis Procedure" .

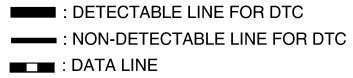
WITH GST

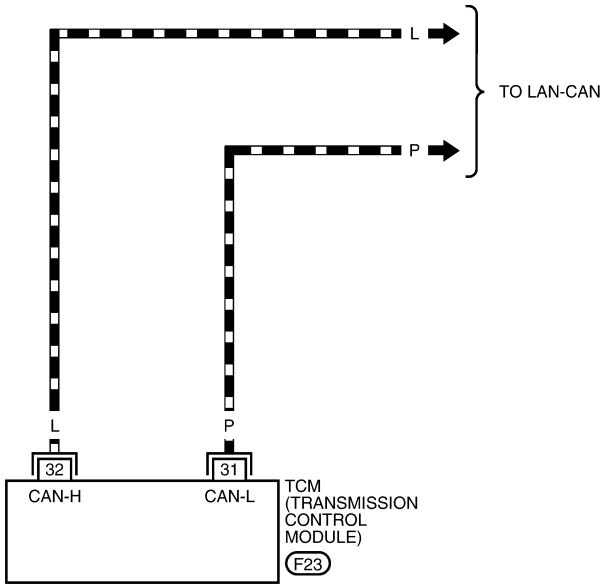
Follow the procedure “WITH CONSULT”.

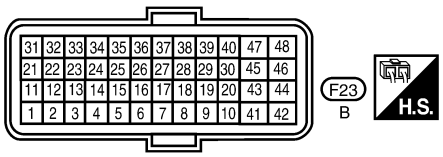
Wiring Diagram - CVT - CAN

INFOID:0000000007402363

CVT-CAN-01







BCWA0736E

TCM TERMINALS AND REFERENCE VALUES

Refer to CVT-45, "TCM Input/Output Signal Reference Value".

Diagnosis Procedure

INFOID:0000000007402364

Go to LAN-16, "Trouble Diagnosis Flow Chart".

U1010 CONTROL UNIT (CAN)

Description

INFOID:0000000007402365

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

INFOID:0000000007402366

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “U1010” with CONSULT is detected when TCM cannot communicate to other control units.

Possible Cause

INFOID:0000000007402367

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

DTC Confirmation Procedure

INFOID:0000000007402368

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

1. Turn ignition switch ON.
2. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT.
3. Start engine and wait for at least 6 seconds.
4. If DTC is detected, go to CVT-58, "Diagnosis Procedure".

WITH GST

Follow the procedure “WITH CONSULT”.

Diagnosis Procedure

INFOID:0000000007402369

1.CHECK DTC

With CONSULT

1. Turn ignition switch ON.
2. Select “SELF-DIAG RESULTS” mode for “TRANSMISSION” with CONSULT.
3. Touch “ERASE”.
4. Turn ignition switch OFF and wait for at least 10 seconds.
5. Perform “DTC confirmation procedure”. Refer to CVT-58, "DTC Confirmation Procedure".

Is any malfunction of the “U1010” indicated?

YES >> Replace the TCM. Refer to CVT-162, "Removal and Installation".
NO >> **INSPECTION END**

P0703 BRAKE SWITCH B

Description

INFOID:0000000007402370

ON, OFF status of the stop lamp switch is sent via the CAN communication from the combination meter to TCM using the signal.

CONSULT Reference Value

INFOID:0000000007402371

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

On Board Diagnosis Logic

INFOID:0000000007402372

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code “P0703” with CONSULT is detected when the stop lamp switch does not switch to ON and OFF.

- The stop lamp switch does not switch to ON and OFF.

Possible Cause

INFOID:0000000007402373

- Harness or connectors
  (Stop lamp switch, and combination meter circuit are open or shorted.)
  (CAN communication line is open or shorted.)
- Stop lamp switch

DTC Confirmation Procedure

INFOID:0000000007402374

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

1. Turn ignition switch ON. (Do not start engine.)
2. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT.
3. Start engine.
4. Start vehicle for at least 3 consecutive seconds.
5. If DTC is detected, go to CVT-59, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000007402375

1.CHECK CAN COMMUNICATION LINE

Perform the self-diagnosis check. Refer to CVT-47, "CONSULT Function (TRANSMISSION)".

Is any malfunction of the “U1000” indicated?

YES >> Check CAN communication line. Refer to CVT-55.
NO >> GO TO 2.

2.CHECK STOP LAMP SWITCH CIRCUIT

With CONSULT

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

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

OK or NG

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

3. CHECK STOP LAMP SWITCH

Check continuity between stop lamp switch harness connector E60 terminals 1 and 2. Refer to CVT-147, "Wiring Diagram - CVT - NONDTC".

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

Check stop lamp switch after adjusting brake pedal — refer to BR-7.

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 combination meter.

NG >> Repair or replace the stop lamp switch.

P0705 TRANSMISSION RANGE SWITCH A

Description

INFOID:0000000007402376

- The transmission range switch is installed to upper part of transaxle case.
- The transmission range switch detects the selector lever position and sends a signal to the TCM.

CONSULT Reference Value

INFOID:0000000007402377

Item name	Condition	Display value
P POSITION SW	Selector lever in “P” position	ON
	When setting selector lever to other positions.	OFF
R POSITION SW	Selector lever in “R” position	ON
	When setting selector lever to other positions.	OFF
N POSITION SW	Selector lever in “N“ position	ON
	When setting selector lever to other positions.	OFF
D POSITION SW	Selector lever in “D” position	ON
	When setting selector lever to other positions.	OFF
L POSITION SW	Selector lever in “L” position	ON
	When setting selector lever to other positions.	OFF
RANGE	Selector lever in “N” or “P” position	N·P
	Selector lever in “R” position	R
	Selector lever in “D” position	D
	Selector lever in “L” position	L

On Board Diagnosis Logic

INFOID:0000000007402378

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P0705” with CONSULT is detected when TCM dose not receive the correct voltage signal from the switch based on the gear position.

Possible Cause

INFOID:0000000007402379

- Harness or connectors
  (The transmission range switch circuit is open or shorted.)
- Transmission range switch

DTC Confirmation Procedure

INFOID:0000000007402380

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.

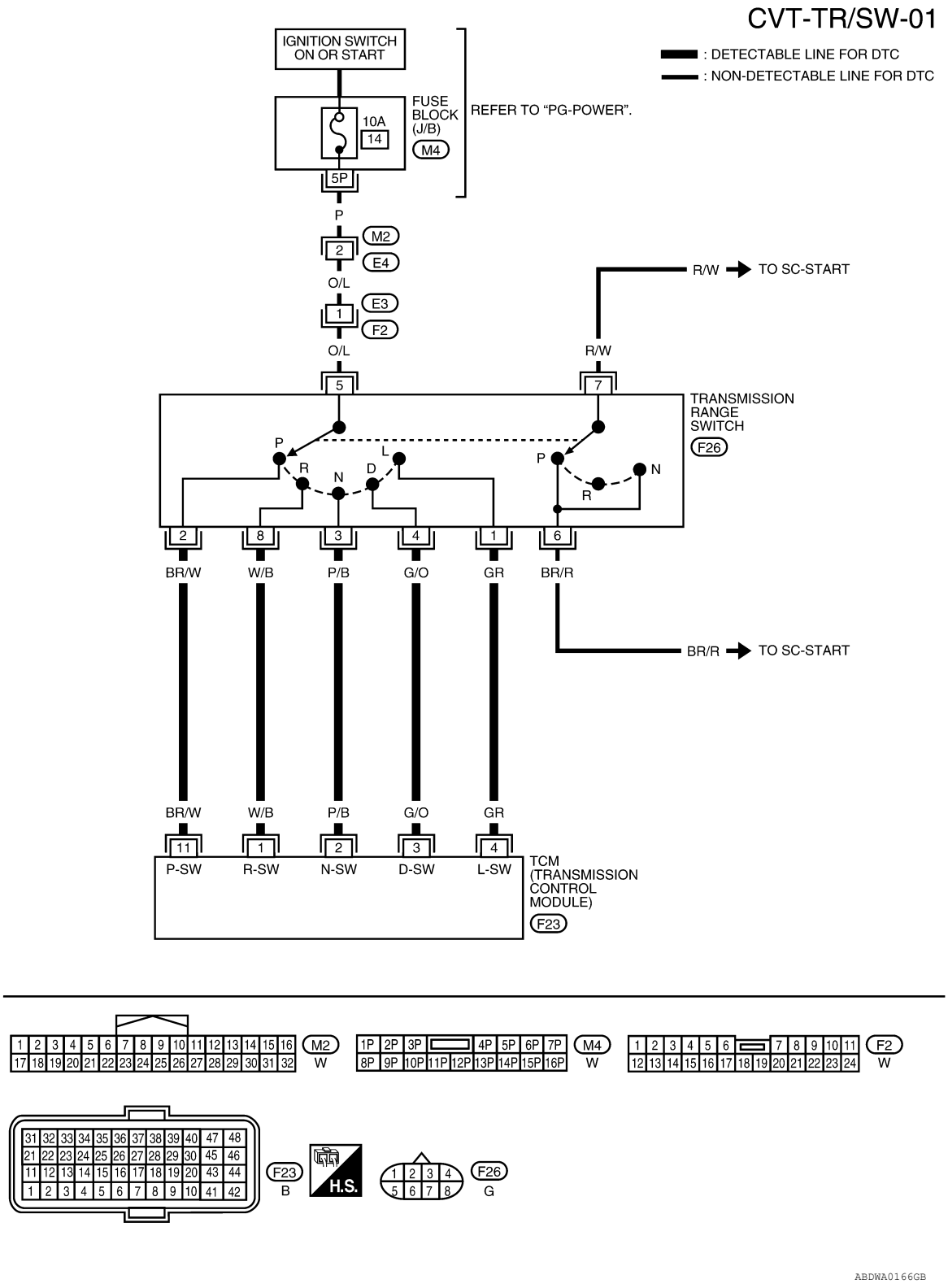
WITH CONSULT

1. Turn ignition switch ON.
2. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT.
3. Start engine.
4. Drive vehicle and maintain the following conditions for at least 2 consecutive seconds.
   VEHICLE SPEED: More than 10 km/h (6 MPH)
   ENG SPEED: More than 450 rpm
   ACC PEDAL OPEN: More than 1.0/8
5. If DTC is detected, go to CVT-63, "Diagnosis Procedure".

WITH GST
Follow the procedure “WITH CONSULT”.

Wiring Diagram - CVT - TR/SW

INFOID:0000000007402381



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TCM TERMINALS AND REFERENCE VALUES

Refer to CVT-45, "TCM Input/Output Signal Reference Value".

Diagnosis Procedure

INFOID:0000000007402382

1. CHECK TRANSMISSION RANGE SW SIGNALS

With CONSULT

1. Turn ignition switch ON.
2. Select “ECU INPUT SIGNALS” in “DATA MONITOR” mode for “TRANSMISSION” with CONSULT.
3. Read out “P”, “R”, “N”, “D” and “L” position switches moving selector lever to each position.

Item name	Condition	Display value
P POSITION SW	When setting selector lever to “P” position.	ON
	When setting selector lever to other positions.	OFF
R POSITION SW	When setting selector lever to “R” position.	ON
	When setting selector lever to other positions.	OFF
N POSITION SW	When setting selector lever to “N” positions.	ON
	When setting selector lever to other positions.	OFF
D POSITION SW	When setting selector lever to “D” position.	ON
	When setting selector lever to other positions.	OFF
L POSITION SW	When setting selector lever to “L” position.	ON
	When setting selector lever to other positions.	OFF

Without CONSULT

1. Turn ignition switch ON.
2. Check voltage between TCM connector terminals and ground while moving selector lever through each position.

Selector lever position	Terminal				
	11	1	2	3	4
P	B	0	0	0	0
R	0	B	0	0	0
N	0	0	B	0	0
D	0	0	0	B	0
L	0	0	0	0	B

B: Battery voltage

0: 0V

OK or NG

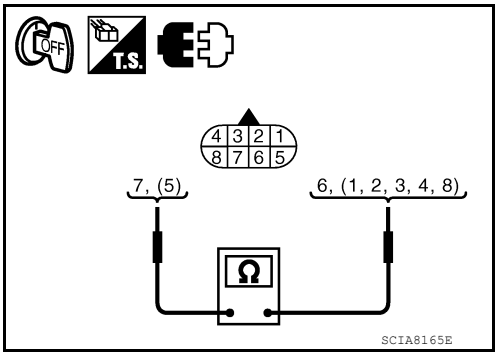
OK >> GO TO 5.
NG >> GO TO 2.

2. CHECK TRANSMISSION RANGE SWITCH

1. Turn ignition switch OFF.
2. Disconnect transmission range switch harness connector.

3. Check continuity between transmission range switch harness connector terminals.

Selector lever position	Connector	Terminal	Continuity
P	F26	2 - 5, 6 - 7	Yes *Continuity should not exist in positions other than the specified positions.
R		5 - 8	
N		3 - 5, 6 - 7	
D		4 - 5	
L		1 - 5	



OK or NG

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

3.CHECK CONTROL CABLE ADJUSTMENT

Check transmission range switch again with control cable disconnected from manual shaft of A/T assembly. Refer to test group 2.

OK or NG

OK >> Adjust control cable. Refer to CVT-174, "Adjustment of CVT Position".
NG >> Check transmission range switch (Refer to test group 1) again after adjusting transmission range switch (Refer to CVT-184, "Transmission Range Switch").
- If OK, **INSPECTION END**
- If NG, repair or replace transmission range switch. Refer to CVT-184, "Transmission Range Switch".

4. DETECT MALFUNCTIONING ITEM

Check the following items.
- Harness for short or open between ignition switch and transmission range switch.
- Harness for short or open between transmission range switch and TCM.
- 10A fuse [No.14, located in the fuse block (J/B)].
- Ignition switch. Refer to PG-4.

OK or NG

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

5.CHECK DTC

Perform CVT-61, "DTC Confirmation Procedure".

OK or NG

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

6.CHECK TCM

1. Check TCM input/output signals. Refer to CVT-45, "TCM Input/Output Signal Reference Value".
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-195, "Removal and Installation (MR20DE)" (MR20DE), CVT-197, "Removal and Installation (QR25DE)" (QR25DE).

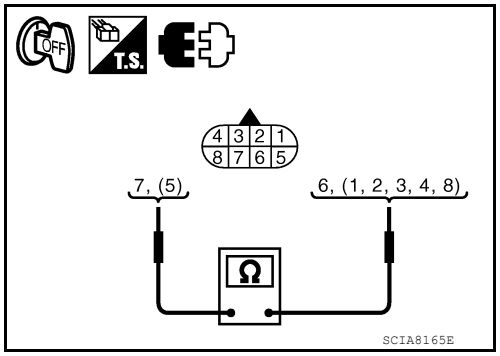
Component Inspection

INFOID:0000000007402383

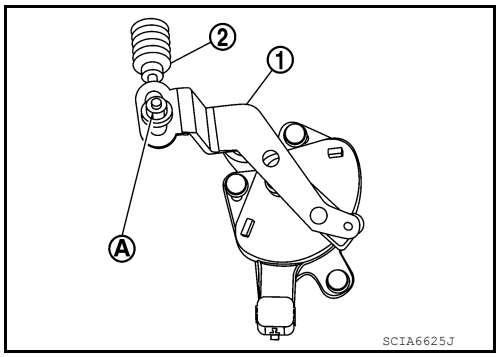
TRANSMISSION RANGE SWITCH

1. Check continuity between transmission range switch harness connector terminals.

Selector lever position	Connector	Terminal	Continuity
P	F26	2 - 5, 6 - 7	Yes *Continuity should not exist in positions other than the specified positions.
R		5 - 8	
N		3 - 5, 6 - 7	
D		4 - 5	
L		1 - 5	



2. If NG, check again with control cable (2) disconnected from manual shaft of CVT assembly. Refer to step 1.
(1): Manual shaft
(A): Lock nut
3. If OK on step 2, adjust control cable (2). Refer to CVT-174, "Adjustment of CVT Position".
4. If NG on step 2, remove transmission range switch from CVT and check continuity of transmission range switch terminals. Refer to step 1.
5. If OK on step 4, adjust transmission range switch. Refer to CVT-174, "Adjustment of Transmission Range Switch".
6. If NG on step 4, replace transmission range switch. Refer to CVT-184, "Transmission Range Switch".



P0710 TRANSMISSION FLUID TEMPERATURE SENSOR A

Description

INFOID:0000000007402384

- The CVT fluid temperature sensor is included in the control valve assembly.
- The CVT fluid temperature sensor detects the CVT fluid temperature and sends a signal to the TCM.

CONSULT Reference Value

INFOID:0000000007402385

Remarks: Specification data are reference values.

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

On Board Diagnosis Logic

INFOID:0000000007402386

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P0710” with CONSULT is detected when TCM receives an excessively low or high voltage from the sensor.

Possible Cause

INFOID:0000000007402387

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

DTC Confirmation Procedure

INFOID:0000000007402388

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

1. Turn ignition switch ON.
2. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT.
3. Start engine and maintain the following conditions for at least 14 minutes (Total).
   VEHICLE SPEED: 10 km/h (6 MPH) or more
   RANGE: “D” position
4. If DTC is detected, go to CVT-68, "Diagnosis Procedure".

WITH GST

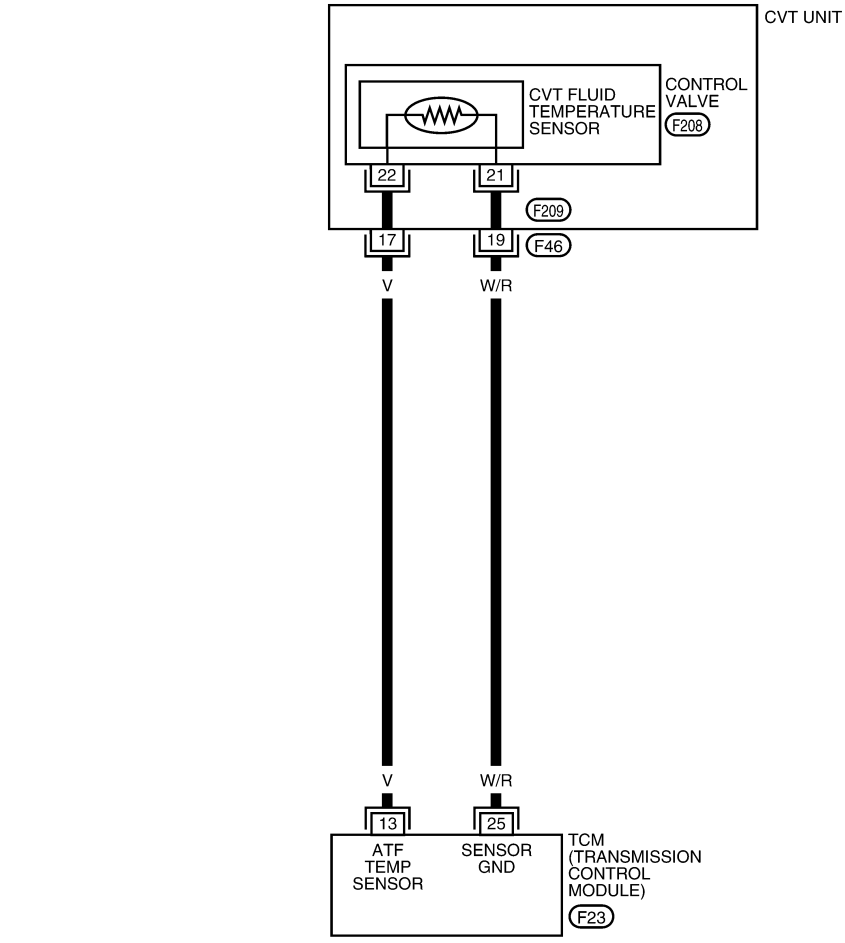
Follow the procedure “WITH CONSULT”.

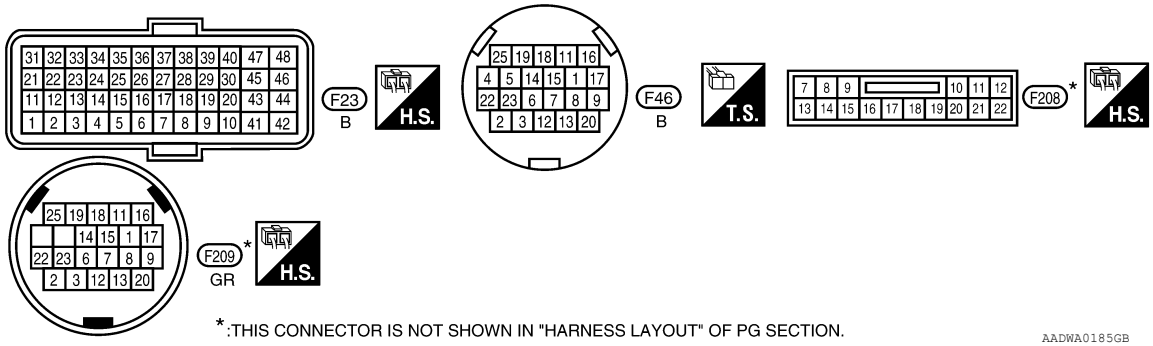
Wiring Diagram - CVT - FTS

INFOID:0000000007402389

CVT-FTS-01

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





*:THIS CONNECTOR IS NOT SHOWN IN "HARNESS LAYOUT" OF PG SECTION.

AADWA0185GB

TCM TERMINALS AND REFERENCE VALUES

Refer toCVT-45, "TCM Input/Output Signal Reference Value".

Diagnosis Procedure

INFOID:0000000007402390

1. CHECK CVT FLUID TEMPERATURE SENSOR SIGNAL

With CONSULT

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

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

Without CONSULT

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

Name	Connector	Terminal	Temperature °C (°F)	Voltage (Approx.)
CVT fluid temperature sensor	F23	13 - 25	20 (68)	2.0 V
			80 (176)	1.0 V

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

OK or NG

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

2. CHECK CVT FLUID TEMPERATURE SENSOR CIRCUIT

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

Name	Connector	Terminal	Temperature °C (°F)	Resistance (Approx.)
CVT fluid temperature sensor	F23	13 - 25	20 (68)	6.5 kΩ
			80 (176)	0.9 kΩ

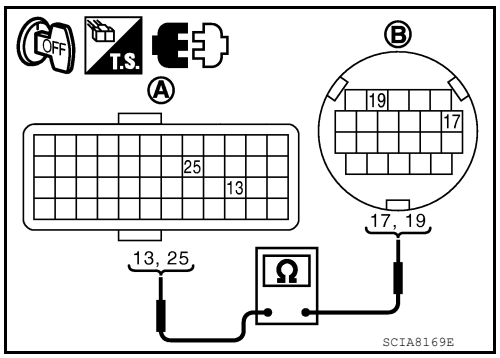
OK or NG

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

3. CHECK HARNESS BETWEEN TCM AND CVT FLUID TEMPERATURE SENSOR

1. Turn ignition switch OFF.
2. Disconnect the TCM connector (A) and CVT unit harness connector (B).

3. Check continuity between TCM connector (A) terminals and CVT unit harness connector (B) terminals.



Item	Connector	Terminal	Continuity
TCM	F23	13	Yes
CVT unit harness connector	F46	17	
TCM	F23	25	Yes
CVT unit harness connector	F46	19	

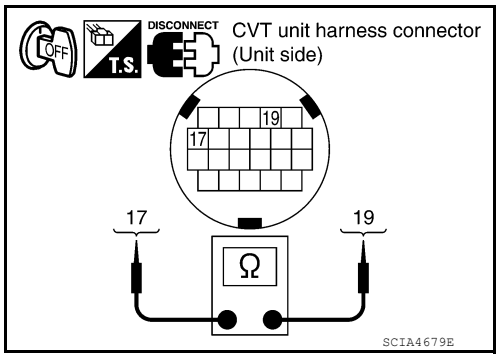
4. If OK, check harness for short to ground and short to power.
5. Reinstall any part removed.

OK or NG

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

4. CHECK CVT FLUID TEMPERATURE SENSOR

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



Name	Connector	Terminal	Temperature °C (°F)	Resistance (Approx.)
CVT fluid temperature sensor	F46	17 - 19	20 (68)	6.5 kΩ
			80 (176)	0.9 kΩ

4. Reinstall any part removed.

OK or NG

OK >> GO TO 6.
NG >> GO TO 5.

5. CHECK DTC

With CONSULT

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

Is only “P0710” detected?

YES >> Replace control valve. Refer to CVT-178, "Control Valve".
NO >> Replace transaxle assembly. Refer to CVT-195, "Removal and Installation (MR20DE)" (MR20DE), CVT-197, "Removal and Installation (QR25DE)" (QR25DE).

6. CHECK TCM

1. Check TCM input/output signals. Refer to CVT-45, "TCM Input/Output Signal Reference Value".
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

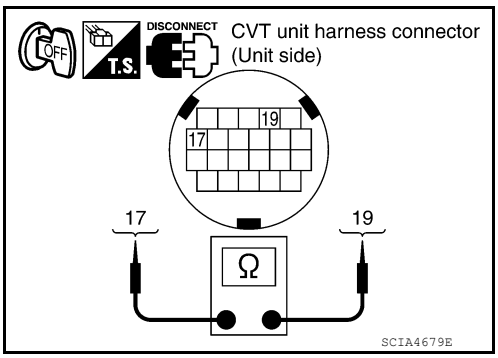
INFOID:0000000007402391

CVT FLUID TEMPERATURE SENSOR

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

3. Check resistance between CVT unit harness connector terminals.

Name	Connector	Terminal	Temperature °C (°F)	Resistance (Approx.)
CVT fluid temperature sensor	F46	17 - 19	20 (68)	6.5 kΩ
			80 (176)	0.9 kΩ



4. If NG, perform “SELF-DIAG RESULTS” mode for “TRANSMISSION”.

P0715 INPUT SPEED SENSOR A

Description

INFOID:0000000007402392

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

CONSULT Reference Value

INFOID:0000000007402393

Remarks: Specification data are reference values.

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

On Board Diagnosis Logic

INFOID:0000000007402394

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P0715” with CONSULT is detected when TCM does not receive the proper signal from the sensor.

Possible Cause

INFOID:0000000007402395

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

DTC Confirmation Procedure

INFOID:0000000007402396

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

1. Turn ignition switch ON and select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT.
2. Start engine and maintain the following conditions for at least 5 consecutive seconds.
   VEHICLE SPEED: 10 km/h (6 MPH) or more
   ACC PEDAL OPEN: More than 1.0/8
   RANGE: “D” position
   ENG SPEED: 450 rpm or more
   Driving location: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.
3. If DTC is detected, go to CVT-73, "Diagnosis Procedure".

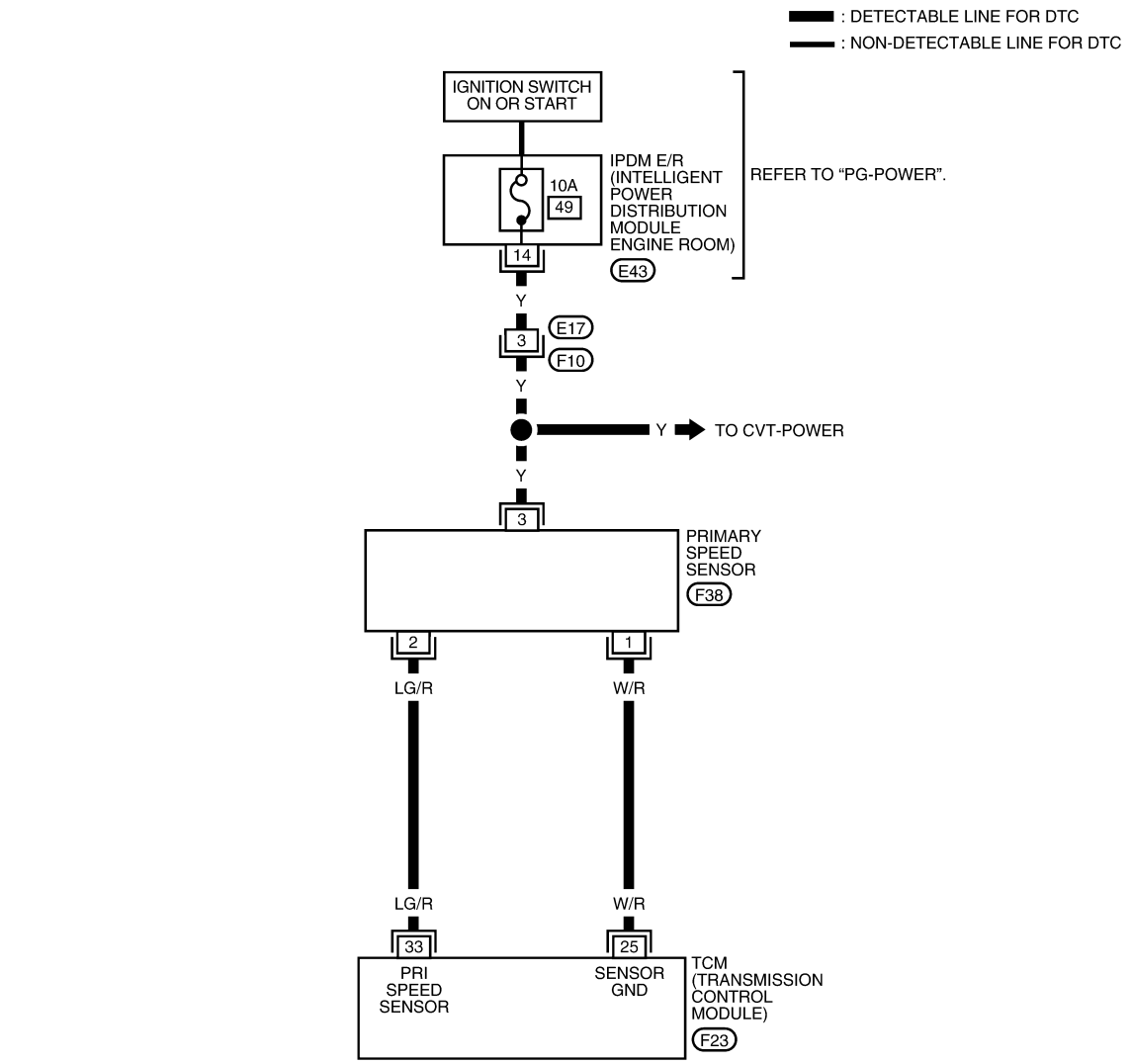
WITH GST

Follow the procedure “WITH CONSULT”.

Wiring Diagram - CVT - PRSCVT

INFOID:0000000007402397

CVT-PRSCVT-01



TCM TERMINALS AND REFERENCE VALUES

Refer to CVT-45, "TCM Input/Output Signal Reference Value".

Diagnosis Procedure

INFOID:0000000007402398

1.CHECK INPUT SIGNAL

With CONSULT
1. Start engine.
2. Select “ECU INPUT SIGNALS” in “DATA MONITOR” mode for “TRANSMISSION” with CONSULT.
3. Start vehicle and read out the value of “VSP SENSOR”.

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

OK or NG

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

2.CHECK PRIMARY SPEED SENSOR

With CONSULT
1. Start engine.
2. Check power supply to primary speed sensor by voltage between TCM connector terminals 25, 46 and 48. Refer to CVT-35, "Circuit Diagram".

Item	Connector	Terminal	Data (Approx.)
TCM	F23	25 - 46	Battery voltage
		25 - 48	

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

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

Item	Connector	Terminal	Name	Data (Approx.)
TCM	F23	33	Primary speed sensor	880 Hz

OK or NG

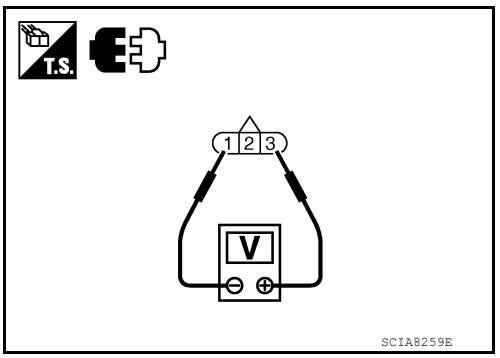
OK >> GO TO 8.
NG >> GO TO 3.

3. CHECK POWER AND SENSOR GROUND

1. Turn ignition switch OFF.
2. Disconnect the primary speed sensor harness connector.
3. Turn ignition switch ON.

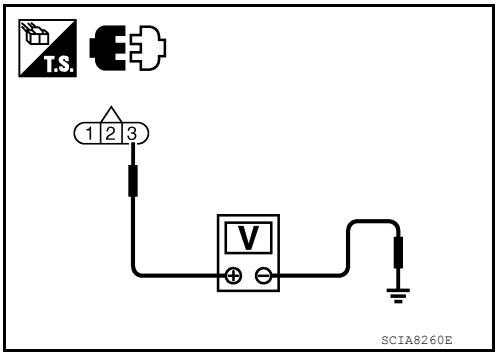
4. Check voltage between primary speed sensor harness connector terminals.

Item	Connector	Terminal	Data (Approx.)
Primary speed sensor	F38	3 - 1	Battery voltage



5. Check voltage between primary speed sensor harness connector terminal and ground.

Item	Connector	Terminal	Data (Approx.)
Primary speed sensor	F38	3 - ground	Battery voltage



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

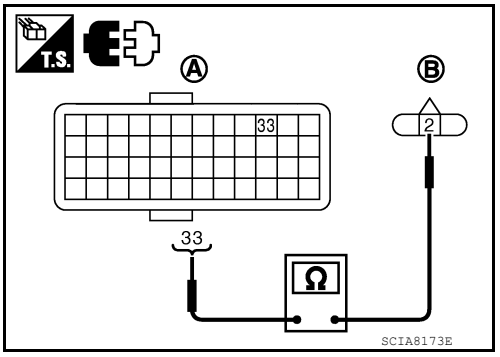
OK or NG

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

4. CHECK HARNESS BETWEEN TCM AND PRIMARY SPEED SENSOR

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

Item	Connector	Terminal	Continuity
TCM	F23	33	Yes
Primary speed sensor	F38	2	



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

OK or NG

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

5. CHECK THE TCM SHORT

Replace same type TCM, perform self-diagnosis check. Erase self-diagnostic results and them drive the vehicle [more than 40 km/h (25 MPH)], perform self-diagnosis check. Refer to CVT-76, "DTC Confirmation Procedure".

Is “P0715 PRI SPEED SEN” detected again?

YES >> Replace the Primary speed sensor. Refer to CVT-185, "Primary Speed Sensor".
NO >> Replace TCM. Refer to CVT-162, "Removal and Installation".

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

1. Turn ignition switch OFF.
2. Disconnect TCM connector, IPDM E/R connector, primary speed sensor and secondary speed sensor harness connector.
3. Check continuity between TCM connector terminals, IPDM E/R harness connector terminal, primary speed sensor harness connector terminal and secondary speed sensor harness connector terminal. Refer to CVT-35, "Circuit Diagram".

Item	Connector	Terminal	Continuity
TCM*	F23	46, 48	Yes
IPDM E/R*	E43	14	
Primary speed sensor*	F38	3	
Secondary speed sensor*	F30	3	

*: Vehicle side

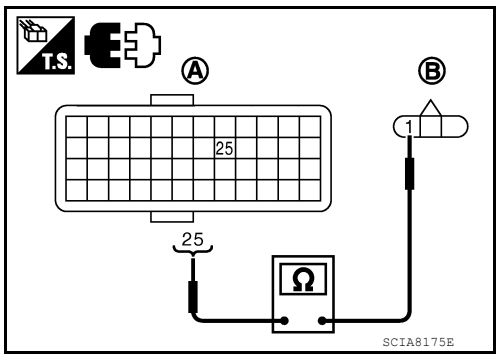
4. If OK, check harness for short to ground and short to power.
5. Reinstall any part removed.

OK or NG

OK >> 10 A fuse (No. 49, located in the IPDM E/R) or ignition switch are malfunctioning.
NG >> Repair open circuit or short to ground or short to power in harness or connectors.

7. CHECK HARNESS BETWEEN TCM AND PRIMARY SPEED SENSOR (SENSOR GROUND)

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



Item	Connector	Terminal	Continuity
TCM	F23	25	Yes
primary speed sensor	F38	1	

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

OK or NG

OK >> GO TO 8.
NG >> Repair open circuit or short to ground or short to power in harness or connectors.

8. CHECK DTC

Perform CVT-76, "DTC Confirmation Procedure".

OK or NG

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

9. CHECK TCM

1. Check TCM input/output signals. Refer to CVT-45, "TCM Input/Output Signal Reference Value".
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.

P0720 OUTPUT SPEED SENSOR

Description

INFOID:0000000007402399

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

CONSULT Reference Value

INFOID:0000000007402400

Remarks: Specification data are reference values.

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

On Board Diagnosis Logic

INFOID:0000000007402401

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P0720” with CONSULT is detected TCM does not receive the proper signal from the sensor.

Possible Cause

INFOID:0000000007402402

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

DTC Confirmation Procedure

INFOID:0000000007402403

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

1. Turn ignition switch ON and select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT.
2. Start engine and maintain the following conditions for at least 12 consecutive seconds.
   ACC PEDAL OPEN: More than 1.0/8
   RANGE: “D” position
   Driving location: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.
3. If DTC is detected, go to CVT-78, "Diagnosis Procedure".

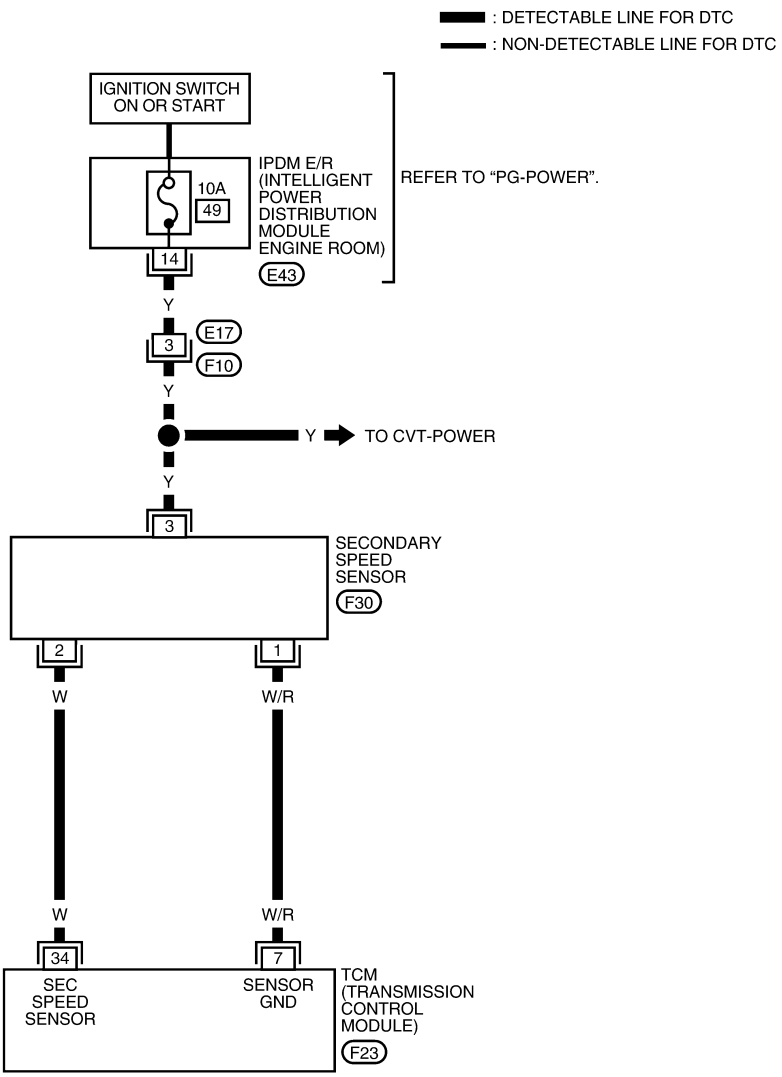
WITH GST

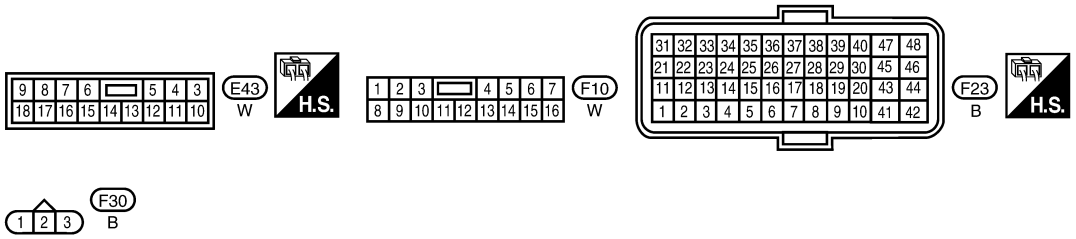
Follow the procedure “WITH CONSULT”.

Wiring Diagram - CVT - SESCVT

INFOID:0000000007402404

CVT-SESCVT-01





BCWA0740E

TCM TERMINALS AND REFERENCE VALUES

Refer to CVT-45, "TCM Input/Output Signal Reference Value".

Diagnosis Procedure

INFOID:0000000007402405

1. CHECK INPUT SIGNAL

With CONSULT

1. Start engine.
2. Select “ECU INPUT SIGNALS” in “DATA MONITOR” mode for “TRANSMISSION” with CONSULT.
3. Start vehicle and read out the value of “VSP SENSOR”.

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

OK or NG

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

2. CHECK SECONDARY SPEED SENSOR

With CONSULT

1. Start engine.
2. Check power supply to secondary speed sensor by voltage between TCM connector terminals 7, 46 and 48. Refer to CVT-35, "Circuit Diagram".

Item	Connector	Terminal	Data (Approx.)
TCM	F23	7- 46	Battery voltage
		7 - 48	

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

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

Item	Connector	Terminal	Name	Data (Approx.)
TCM	F23	34	Secondary speed sensor	430 Hz

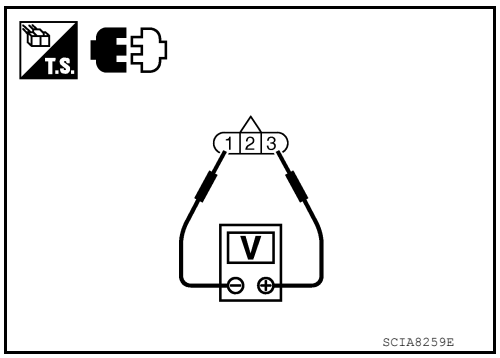
OK or NG

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

3. CHECK POWER AND SENSOR GROUND

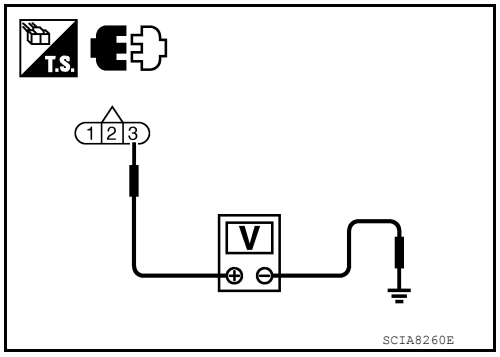
1. Turn ignition switch OFF.
2. Disconnect the secondary speed sensor harness connector.
3. Turn ignition switch ON.

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



Item	Connector	Terminal	Data (Approx.)
Secondary speed sensor	F30	3 - 1	Battery voltage

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



Item	Connector	Terminal	Data (Approx.)
Secondary speed sensor	F30	3 - ground	Battery voltage

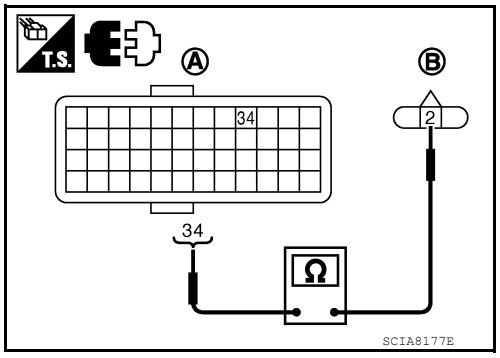
6. If OK, check harness for short to ground and short to power.
7. Reinstall any part removed.

OK or NG

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

4. CHECK HARNESS BETWEEN TCM AND SECONDARY SPEED SENSOR

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



Item	Connector	Terminal	Continuity
TCM	F23	34	Yes
Secondary speed sensor	F30	2	

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

OK or NG

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

5. CHECK THE TCM SHORT

Replace same type TCM, perform self-diagnosis check. Erase self-diagnostic results and them drive the vehicle [more than 40 km/h (25 MPH)], perform self-diagnosis check. Refer to CVT-76, "DTC Confirmation Procedure".

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

YES >> Replace the Secondary speed sensor. Refer to CVT-186, "Secondary Speed Sensor (MR20DE)".
NO >> Replace TCM. Refer to CVT-162, "Removal and Installation".

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

1. Turn ignition switch OFF.
2. Disconnect TCM connector, IPDM E/R connector, primary speed sensor and secondary speed sensor harness connector.
3. Check continuity between TCM connector terminals, IPDM E/R harness connector terminal, primary speed sensor harness connector terminal and secondary speed sensor harness connector terminal. Refer to CVT-35, "Circuit Diagram".

Item	Connector	Terminal	Continuity
TCM*	F23	46, 48	Yes
IPDM E/R*	E43	14	
Primary speed sensor*	F38	3	
Secondary speed sensor*	F30	3	

*: Vehicle side

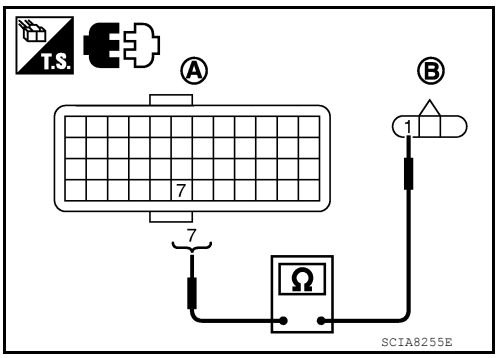
4. If OK, check harness for short to ground and short to power.
5. Reinstall any part removed.

OK or NG

OK >> 10 A fuse (No. 49, located in the IPDM E/R) or ignition switch are malfunctioning.
NG >> Repair open circuit or short to ground or short to power in harness or connectors.

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

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



Item	Connector	Terminal	Continuity
TCM	F23	7	Yes
Secondary speed sensor	F30	1	

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

OK or NG

OK >> GO TO 8.
NG >> Repair open circuit or short to ground or short to power in harness or connectors.

8. CHECK DTC

Perform CVT-76, "DTC Confirmation Procedure".

OK or NG

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

9. CHECK TCM

1. Check TCM input/output signals. Refer to CVT-45, "TCM Input/Output Signal Reference Value".
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.

P0725 ENGINE SPEED

Description

INFOID:0000000007402406

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

CONSULT Reference Value

INFOID:0000000007402407

Remarks: Specification data are reference values.

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

On Board Diagnosis Logic

INFOID:0000000007402408

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

Possible Cause

INFOID:0000000007402409

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

DTC Confirmation Procedure

INFOID:0000000007402410

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

1. Turn ignition switch ON and select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT.
2. Start engine and maintain the following conditions for at least 10 consecutive seconds.
   PRI SPEED SEN: More than 1000 rpm
3. If DTC is detected, go to CVT-81, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000007402411

1. CHECK DTC WITH ECM

With CONSULT

1. Turn ignition switch ON.
2. Select “SELF-DIAG RESULTS” mode for “ENGINE” with CONSULT. Refer to EC-132, "CONSULT Function (ENGINE)" [MR20DE (For california)], EC-692, "CONSULT Function (ENGINE)" [MR20DE (Except for california)] and EC-1237, "CONSULT Function (ENGINE)" (QR25DE).

OK or NG

OK >> GO TO 2.
NG >> Check the DTC detected item. Refer to EC-132, "CONSULT Function (ENGINE)" [MR20DE (For california)], EC-692, "CONSULT Function (ENGINE)" [MR20DE (Except for california)] and EC-1237, "CONSULT Function (ENGINE)" (QR25DE).

2. CHECK DTC WITH TCM

With CONSULT

1. Turn ignition switch ON.
2. Select “SELF-DIAG RESULTS” mode for “TRANSMISSION” with CONSULT. Refer to CVT-47, "CONSULT Function (TRANSMISSION)".

OK or NG

OK >> GO TO 3.
NG >> Check the DTC detected item. Refer to CVT-47, "CONSULT Function (TRANSMISSION)".
• If DTC of CAN communication line is detected, go to CVT-55.

3. CHECK INPUT SIGNALS

With CONSULT

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

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

OK or NG

OK >> GO TO 4.
NG >> Check ignition signal circuit. Refer to EC-565 [MR20DE (For california)], EC-1110 [MR20DE (Except for california)] and EC-1678 (QR25DE).

4. CHECK DTC

Perform CVT-81, "DTC Confirmation Procedure".

OK or NG

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

5. CHECK TCM

1. Check TCM input/output signals. Refer to CVT-45, "TCM Input/Output Signal Reference Value".
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.

P0730 INCORRECT GEAR RATIO

Description

INFOID:0000000007402412

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

CONSULT Reference Value

INFOID:0000000007402413

Remarks: Specification data are reference values.

Item name	Condition	Display value (Approx.)
GEAR RATIO	During driving	2.34 - 0.39

On Board Diagnosis Logic

INFOID:0000000007402414

- This is not an OBD-II self-diagnostic item.
- TCM calculates the actual gear ratio with primary speed sensor and secondary speed sensor.
- Diagnostic trouble code “P0730” with CONSULT is detected, when TCM receives an unexpected gear ratio signal.

Possible Cause

INFOID:0000000007402415

Transaxle assembly

DTC Confirmation Procedure

INFOID:0000000007402416

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

WITH CONSULT

1. Turn ignition switch ON and select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT.
2. Make sure that output voltage of CVT fluid temperature sensor is within the range below.
   ATF TEMP SEN: 1.0 - 2.0 V
   If out of range, drive the vehicle to decrease the voltage (warm up the fluid) or stop engine to increase the voltage (cool down the fluid)
3. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT.
4. Start engine and maintain the following conditions for at least 30 consecutive seconds.
   TEST START FROM 0 km/h (0 MPH)
   CONSTANT ACCELERATION: Keep 30 sec or more
   VEHICLE SPEED: 10 km/h (6 MPH) or more
   ACC PEDAL OPEN: More than 1.0/8
   RANGE: “D” position
   ENG SPEED: 450 rpm or more
5. If DTC is detected, go to CVT-83, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000007402417

1.CHECK DTC

Perform CVT-83, "DTC Confirmation Procedure".

Are any DTC displayed?

YES - 1>> DTC except for “P0730” is displayed: Go to Check the DTC detected item. Refer to CVT-47, "CONSULT Function (TRANSMISSION)".
YES - 2>> DTC for “P0730” is displayed: Replace the transaxle assembly. Refer to CVT-195, "Removal and Installation (MR20DE)" (MR20DE), CVT-197, "Removal and Installation (QR25DE)" (QR25DE).
NO >> **INSPECTION END**

P0740 TORQUE CONVERTER

Description

INFOID:0000000007402418

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

CONSULT Reference Value

INFOID:0000000007402419

Remarks: Specification data are reference values.

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

On Board Diagnosis Logic

INFOID:0000000007402420

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P0740” with CONSULT is detected under the following conditions.

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

Possible Cause

INFOID:0000000007402421

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

DTC Confirmation Procedure

INFOID:0000000007402422

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

1. Turn ignition switch ON.
2. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT and wait at least 10 consecutive seconds.
3. If DTC is detected, go to CVT-86, "Diagnosis Procedure".

WITH GST

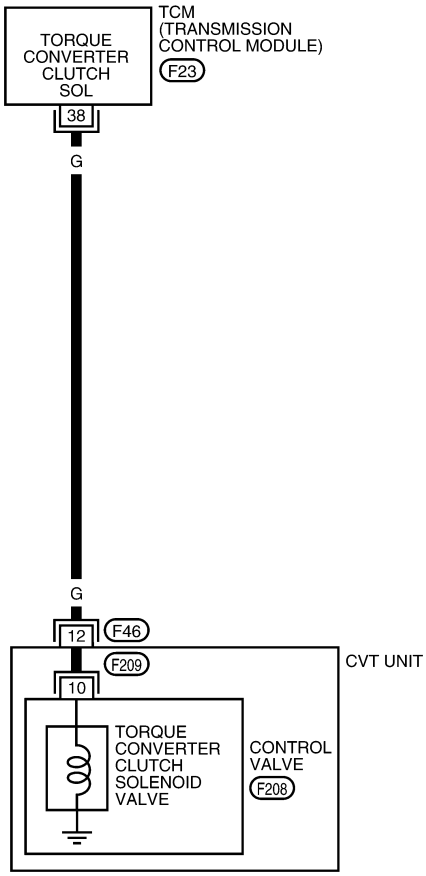
Follow the procedure “WITH CONSULT”.

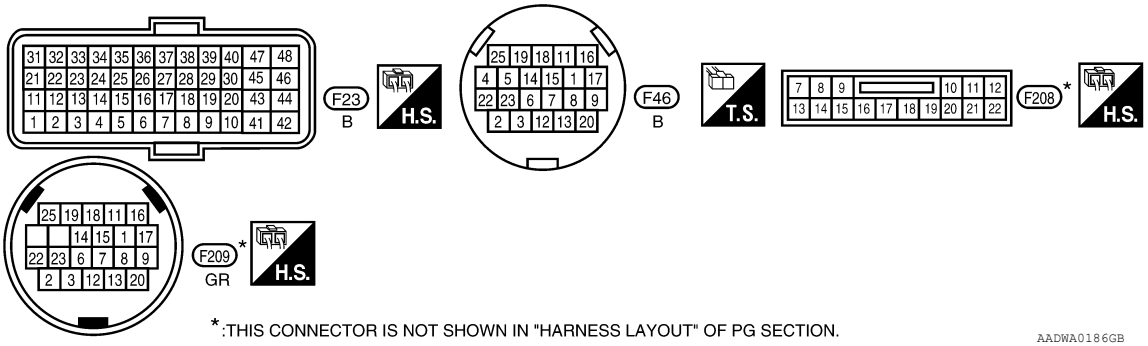
Wiring Diagram - CVT - TCV

INFOID:0000000007402423

CVT-TCV-01

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





*:THIS CONNECTOR IS NOT SHOWN IN "HARNESS LAYOUT" OF PG SECTION.

AADWA0186GB

TCM TERMINALS AND REFERENCE VALUES

Refer to CVT-45, "TCM Input/Output Signal Reference Value".

Diagnosis Procedure

INFOID:0000000007402424

1. CHECK INPUT SIGNAL

With CONSULT

1. Start engine.
2. Select “MAIN SIGNALS” in “DATA MONITOR” mode for “TRANSMISSION” with CONSULT.
3. Start vehicle and read out the value of “ISOLT1”.

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

Without CONSULT

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

Name	Connector	Terminal	Condition		Voltage (Approx.)
Torque converter clutch solenoid valve	F23	38 - ground	When vehicle cruises in “D” position	Lock-up ON	6.0 V
				Lock-up OFF	1.5 V

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

OK or NG

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

2. CHECK TORQUE CONVERTER CLUTCH SOLENOID VALVE CIRCUIT

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

Solenoid valve	Connector	Terminal	Resistance (Approx.)
Torque converter clutch solenoid valve	F23	38 - Ground	3 - 9 Ω

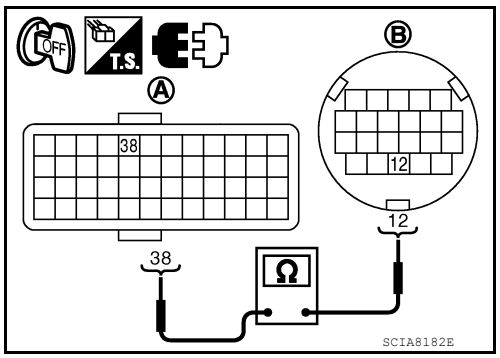
OK or NG

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

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

1. Turn ignition switch OFF.
2. Disconnect TCM connector (A) and CVT unit harness connector (B).

3. Check continuity between TCM connector terminal (A) and CVT unit harness connector terminal (B).



Item	Connector	Terminal	Continuity
TCM	F23	38	Yes
CVT unit harness connector	F46	12	

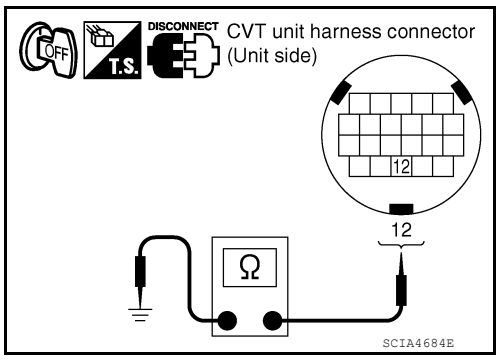
4. If OK, check harness for short to ground and short to power.
5. If OK, check continuity between ground and CVT assembly.
6. Reinstall any part removed.

OK or NG

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

4. CHECK VALVE RESISTANCE

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



Solenoid Valve	Connector	Terminal	Resistance (Approx.)
Torque converter clutch solenoid valve	F46	12 - Ground	3 - 9 Ω

OK or NG

OK >> GO TO 6.
NG >> GO TO 5.

5. CHECK DTC

With CONSULT

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

Is only “P0740” detected?

YES >> Replace control valve. Refer to CVT-178, "Control Valve".
NO >> Replace transaxle assembly. Refer to CVT-195, "Removal and Installation (MR20DE)" (MR20DE), CVT-197, "Removal and Installation (QR25DE)" (QR25DE).

6. CHECK TCM

1. Check TCM input/output signals. Refer to CVT-45, "TCM Input/Output Signal Reference Value".
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.

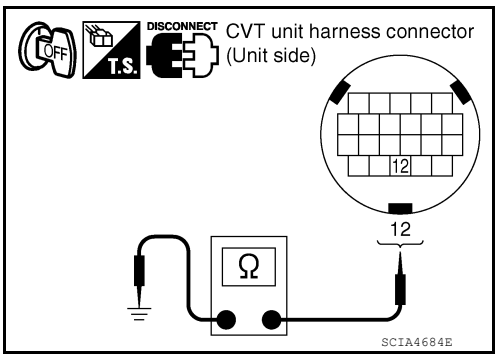
Component Inspection

INFOID:0000000007402425

TORQUE CONVERTER CLUTCH SOLENOID VALVE

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

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



Solenoid Valve	Connector	Terminal	Resistance (Approx.)
Torque converter clutch solenoid valve	F46	12 - Ground	3 - 9 Ω

4. If NG, perform “SELF-DIAG RESULTS” mode for “TRANMISSION”.

P0744 TORQUE CONVERTER

Description

INFOID:0000000007402426

- 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 Reference Value

INFOID:0000000007402427

Remarks: Specification data are reference values.

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

On Board Diagnosis Logic

INFOID:0000000007402428

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P0744” with CONSULT 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

INFOID:0000000007402429

- Torque converter clutch solenoid valve
- Hydraulic control circuit

DTC Confirmation Procedure

INFOID:0000000007402430

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

1. Turn ignition switch ON.
2. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT.
3. Start engine and maintain the following condition for at least 30 seconds.
   ACC PEDAL OPEN: More than 1.0/8
   RANGE: “D” position
   [Vehicle speed: Constant speed of more than 40 km/h (25 MPH)]
4. If DTC is detected go to CVT-89, "Diagnosis Procedure".

WITH GST

Follow the procedure “WITH CONSULT”.

Diagnosis Procedure

INFOID:0000000007402431

1.CHECK INPUT SIGNALS

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

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

OK or NG

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

2.CHECK LINE PRESSURE

Perform line pressure test. Refer to CVT-36, "Inspections before Trouble Diagnosis".

OK or NG

OK >> GO TO 3.
NG >> Repair or replace damaged parts. Refer to CVT-36, "Inspections before Trouble Diagnosis".

3.DETECT MALFUNCTIONING ITEM

Check the following:
- Torque converter clutch solenoid valve. Refer to CVT-87, "Component Inspection".
- Lock-up select solenoid valve. Refer to CVT-132, "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 secondary speed sensor system and primary speed sensor system. Refer to CVT-76, CVT-71.

OK or NG

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

5.CHECK DTC

Perform CVT-89, "DTC Confirmation Procedure".

OK or NG

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

6.CHECK TCM

1. Check TCM input/output signals. Refer to CVT-45, "TCM Input/Output Signal Reference Value".
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-195, "Removal and Installation (MR20DE)" (MR20DE), CVT-197, "Removal and Installation (QR25DE)" (QR25DE).

P0745 PRESSURE CONTROL SOLENOID A

Description

INFOID:0000000007402432

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

CONSULT Reference Value

INFOID:0000000007402433

Remarks: Specification data are reference values.

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

On Board Diagnosis Logic

INFOID:0000000007402434

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P0745” with CONSULT is detected under the following conditions.
- TCM detects an improper voltage drop when it tries to operate the solenoid valve.
- When TCM compares target value with monitor value and detects an irregularity.

Possible Cause

INFOID:0000000007402435

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

DTC Confirmation Procedure

INFOID:0000000007402436

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

1. Turn ignition switch ON and select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT.
2. Start engine and wait at least 5 seconds.
3. If DTC is detected, go to CVT-93, "Diagnosis Procedure".

WITH GST

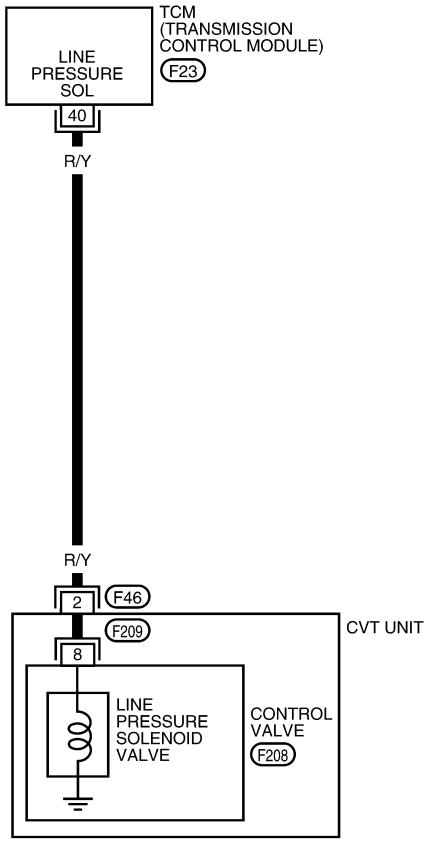
Follow the procedure “WITH CONSULT”.

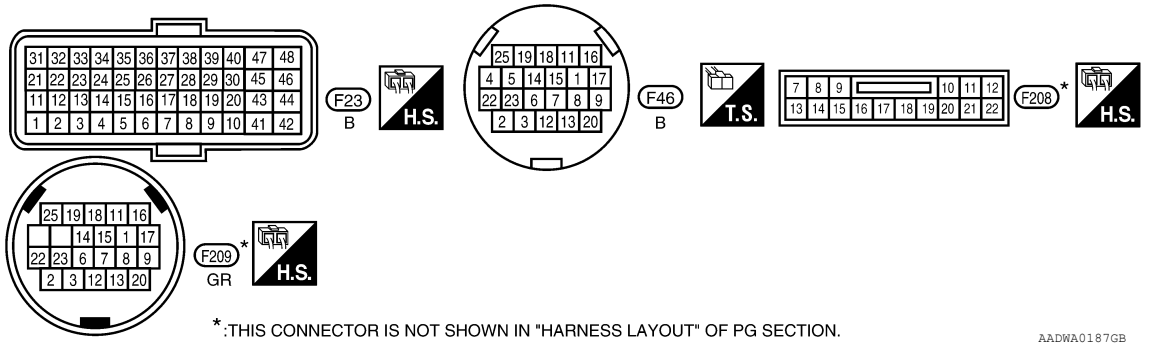
Wiring Diagram - CVT - LPSV

INFOID:0000000007402437

CVT-LPSV-01

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





TCM TERMINALS AND REFERENCE VALUES

Refer to CVT-45, "TCM Input/Output Signal Reference Value".

Diagnosis Procedure

INFOID:0000000007402438

1. CHECK INPUT SIGNAL

With CONSULT
1. Start engine.
2. Select “MAIN SIGNALS” in “DATA MONITOR” mode for “TRANSMISSION” with CONSULT.
3. Read out the value of “ISOLT2”.

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

Without CONSULT
1. Start engine.
2. Check voltage between TCM connector terminal and ground.

Name	Connector	Terminal	Condition	Voltage (Approx.)
Line pressure solenoid valve	F23	40 - ground	Release your foot from the accelerator pedal.	5.0 - 7.0 V
			Press the accelerator pedal all the way down.	1.0 V

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

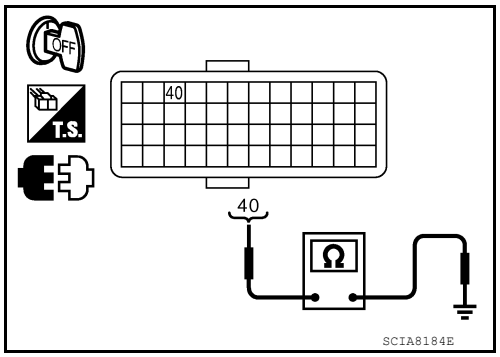
OK or NG

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

2. CHECK LINE PRESSURE SOLENOID VALVE CIRCUIT

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

Solenoid valve	Connector	Terminal	Resistance (Approx.)
Line pressure solenoid valve	F23	40 - ground	3.0 - 9.0 Ω



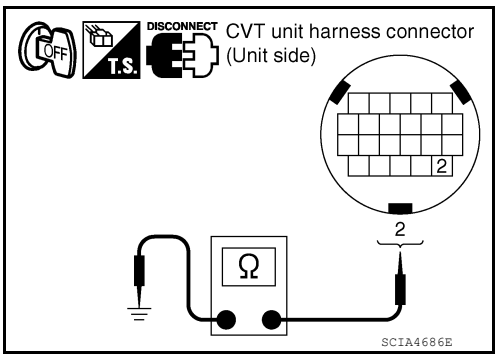
OK or NG

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

3. CHECK VALVE RESISTANCE

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

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



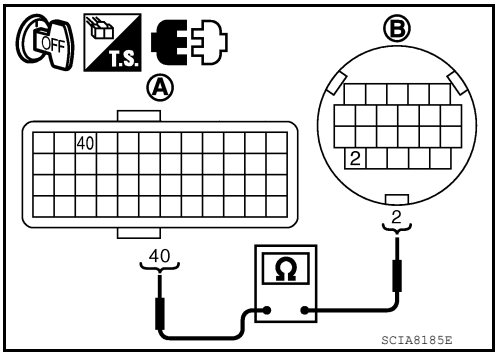
Solenoid valve	Connector	Terminal	Resistance (Approx.)
Line pressure solenoid valve	F46	2 - Ground	3.0 - 9.0 Ω

OK or NG

OK >> GO TO 4.
NG >> Replace the transaxle assembly. Refer to CVT-195, "Removal and Installation (MR20DE)".

4. CHECK HARNESS BETWEEN TCM AND LINE PRESSURE SOLENOID VALVE

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



Item	Connector	Terminal	Continuity
TCM	F23	40	Yes
CVT unit harness connector	F46	2	

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

OK or NG

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

5. CHECK DTC

Perform CVT-91, "DTC Confirmation Procedure".

OK or NG

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

6. CHECK TCM

1. Check TCM input/output signals. Refer to CVT-45, "TCM Input/Output Signal Reference Value".
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-195, "Removal and Installation (MR20DE)" (MR20DE), CVT-197, "Removal and Installation (QR25DE)" (QR25DE).

Component Inspection

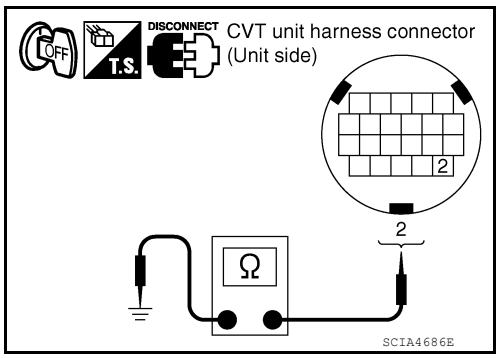
INFOID:0000000007402439

LINE PRESSURE SOLENOID VALVE

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

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

Solenoid valve	Connector	Terminal	Resistance (Approx.)
Line pressure solenoid valve	F46	2 - Ground	3.0 - 9.0 Ω



4. If NG, replace the transaxle assembly. Refer to CVT-195, "Removal and Installation (MR20DE)" (MR20DE), CVT-197, "Removal and Installation (QR25DE)" (QR25DE).

P0746 PRESSURE CONTROL SOLENOID A

Description

INFOID:0000000007402440

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

CONSULT Reference Value

INFOID:0000000007402441

Remarks: Specification data are reference values.

Item name	Condition	Display value (Approx.)
PRI PRESS	“N” position idle	0.3 - 0.7 MPa

On Board Diagnosis Logic

INFOID:0000000007402442

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P0746” with CONSULT is detected under the following conditions.

- Unexpected gear ratio was detected in the LOW side due to excessively low line pressure.

Possible Cause

INFOID:0000000007402443

- Line pressure control system
- Secondary speed sensor
- Primary speed sensor

DTC Confirmation Procedure

INFOID:0000000007402444

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

1. Turn ignition switch ON and select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT.
2. Start engine and maintain the following conditions for at least 10 consecutive seconds. Test start from 0 km/h (0 MPH).
   ATF TEMP SEN: 1.0 - 2.0 V
   ACC PEDAL OPEN: More than 1.0/8
   RANGE: “D” position
   VEHICLE SPEED: 10 km/h (6 MPH) More than
   Driving location: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.
3. If DTC is detected, go to CVT-96, "Diagnosis Procedure".

WITH GST

Follow the procedure “WITH CONSULT”.

Diagnosis Procedure

INFOID:0000000007402445

1.CHECK INPUT SIGNAL

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

Item name	Condition	Display value (Approx.)
PRI PRESS	“N” position idle	0.3 - 0.7 MPa

Without CONSULT

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

Name	Connector	Terminal	Condition	Voltage (Approx.)
Primary pressure sensor	F23	14 - Ground	“N” position idle	0.7 - 3.5 V

OK or NG

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

2.CHECK LINE PRESSURE

Perform line pressure test. Refer to CVT-36, "Inspections before Trouble Diagnosis".

OK or NG

OK >> GO TO 3.
NG >> Repair or replace damaged parts. Refer to CVT-36, "Inspections before Trouble Diagnosis".

3.DETECT MALFUNCTIONING ITEM

Check line pressure solenoid valve. Refer to CVT-94, "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 secondary speed sensor system and primary speed sensor system. Refer to CVT-76, CVT-71.

OK or NG

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

5.DETECT MALFUNCTIONING ITEM

Check the following:

- Power supply and ground circuit for TCM. Refer to CVT-119, "Wiring Diagram - CVT - POWER".
- The TCM pin terminals for damage or loose connection with harness connector.

OK or NG

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

6.CHECK DTC

Perform CVT-96, "DTC Confirmation Procedure".

OK or NG

OK >> **INSPECTION END**
NG >> Replace the transaxle assembly or TCM. Refer to CVT-195, "Removal and Installation (MR20DE)" (MR20DE), CVT-197, "Removal and Installation (QR25DE)" (QR25DE).

P0776 PRESSURE CONTROL SOLENOID B

Description

INFOID:0000000007402446

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

CONSULT Reference Value

INFOID:0000000007402447

Remarks: Specification data are reference values.

Item name	Condition	Display value (Approx.)
SEC PRESS	“N” position idle	0.5 MPa

On Board Diagnosis Logic

INFOID:0000000007402448

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

Possible Cause

INFOID:0000000007402449

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

DTC Confirmation Procedure

INFOID:0000000007402450

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

WITH CONSULT

1. Turn ignition switch ON and select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT.
2. Start engine and maintain the following conditions for at least 30 consecutive seconds.
   ATF TEMP SEN: 1.0 - 2.0 V
   ACC PEDAL OPEN: More than 1.0/8
   RANGE: “D” position
   VEHICLE SPEED: 10 km/h (6 MPH) More than
   Driving location: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.
3. If DTC is detected, go to CVT-98, "Diagnosis Procedure".

WITH GST

Follow the procedure “WITH CONSULT”.

Diagnosis Procedure

INFOID:0000000007402451

1.CHECK INPUT SIGNAL

With CONSULT

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

Item name	Condition	Display value (Approx.)
SEC PRESS	“N” position idle	0.5 MPa

OK or NG

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

2. CHECK LINE PRESSURE

Perform line pressure test. Refer to CVT-36, "Inspections before Trouble Diagnosis".

OK or NG

OK >> GO TO 3.
NG >> Repair or replace damaged parts. Refer to CVT-36, "Inspections before Trouble Diagnosis".

3. DETECT MALFUNCTIONING ITEM

Check the following:
- Secondary pressure solenoid valve. Refer to CVT-103, "Component Inspection".
- Line pressure solenoid valve. Refer to CVT-94, "Component Inspection".

OK or NG

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

4. CHECK SECONDARY PRESSURE SENSOR SYSTEM

Check secondary pressure sensor system. Refer to CVT-110.

OK or NG

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

5. DETECT MALFUNCTIONING ITEM

Check the following:
- Power supply and ground circuit for TCM. Refer to CVT-119, "Wiring Diagram - CVT - POWER".
- The TCM pin terminals for damage or loose connection with harness connector.

OK or NG

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

6. CHECK DTC

Perform CVT-98, "DTC Confirmation Procedure".

OK or NG

OK >> **INSPECTION END**
NG >> Replace the transaxle assembly. Refer to CVT-195, "Removal and Installation (MR20DE)" (MR20DE), CVT-197, "Removal and Installation (QR25DE)" (QR25DE).

P0778 PRESSURE CONTROL SOLENOID B

Description

INFOID:0000000007402452

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

CONSULT Reference Value

INFOID:0000000007402453

Remarks: Specification data are reference values.

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

On Board Diagnosis Logic

INFOID:0000000007402454

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

Possible Cause

INFOID:0000000007402455

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

DTC Confirmation Procedure

INFOID:0000000007402456

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

1. Turn ignition switch ON.
2. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT.
3. Start engine and wait at least 5 seconds.
4. If DTC is detected, go to CVT-102, "Diagnosis Procedure".

WITH GST

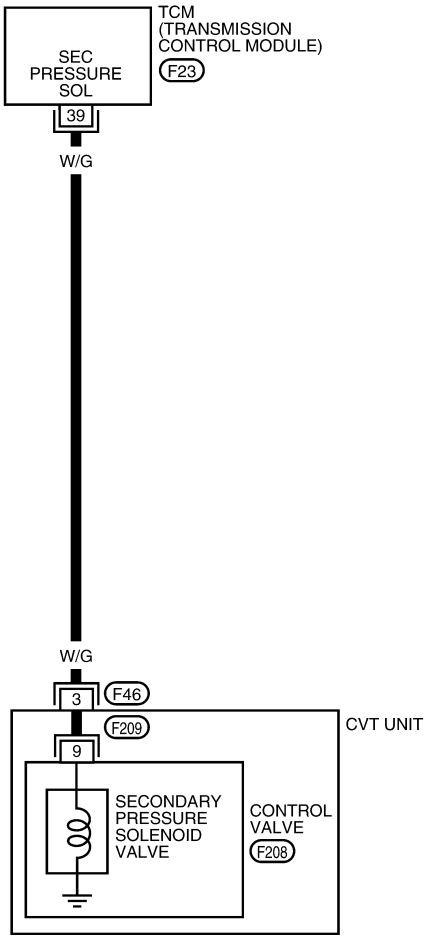
Follow the procedure “WITH CONSULT”.

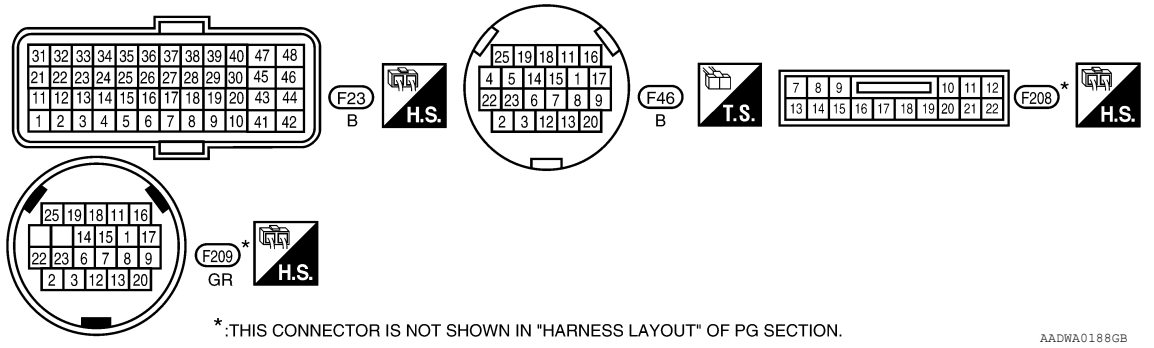
Wiring Diagram - CVT - SECPSV

INFOID:0000000007402457

CVT-SECPSV-01

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





*:THIS CONNECTOR IS NOT SHOWN IN "HARNESS LAYOUT" OF PG SECTION.

AADWA0188GB

TCM TERMINALS AND REFERENCE VALUES

Refer to CVT-45, "TCM Input/Output Signal Reference Value".

Diagnosis Procedure

INFOID:0000000007402458

1. CHECK INPUT SIGNAL

With CONSULT

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

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

Without CONSULT

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

Name	Connector	Terminal	Condition	Voltage (Approx.)
Secondary pressure solenoid valve	F23	39 - ground	Release your foot from the accelerator pedal.	5.0 - 7.0 V
			Press the accelerator pedal all the way down.	3.0 - 4.0 V

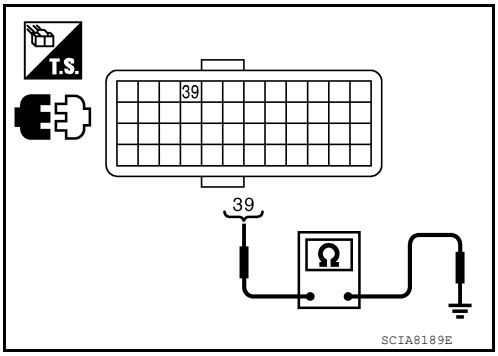
3. Turn ignition switch OFF.
4. Disconnect TCM connector.
5. Check if there is continuity between connector terminal and ground.

OK or NG

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

2. CHECK SECONDARY PRESSURE SOLENOID VALVE CIRCUIT

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



Solenoid valve	Connector	Terminal	Resistance (Approx.)
Secondary pressure solenoid valve	F23	39 - Ground	3.0 - 9.0 Ω

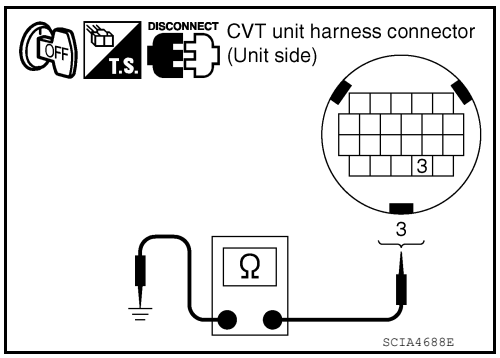
OK or NG

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

3. CHECK VALVE RESISTANCE

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

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



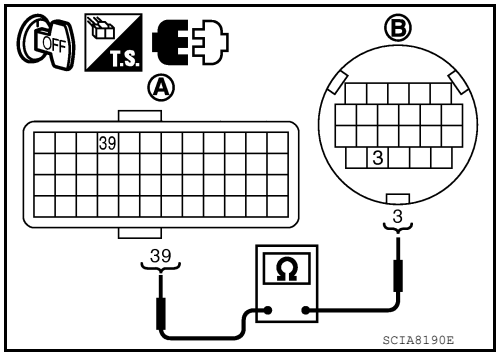
Solenoid valve	Connector	Terminal	Resistance (Approx.)
Secondary pressure solenoid valve	F46	3 - Ground	3.0 - 9.0 Ω

OK or NG

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

4. CHECK HARNESS BETWEEN TCM AND SECONDARY PRESSURE SOLENOID VALVE

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



Item	Connector	Terminal	Continuity
TCM connector	F23	39	Yes
CVT unit harness connector	F46	3	

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

OK or NG

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

5. CHECK DTC

Perform CVT-100, "DTC Confirmation Procedure".

OK or NG

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

6. CHECK TCM

1. Check TCM input/output signals. Refer to CVT-45, "TCM Input/Output Signal Reference Value".
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-195, "Removal and Installation (MR20DE)" (MR20DE), CVT-197, "Removal and Installation (QR25DE)" (QR25DE).

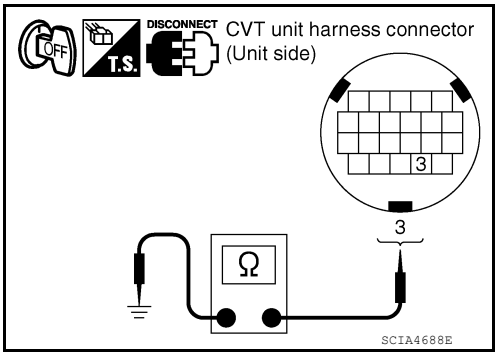
Component Inspection

INFOID:0000000007402459

SECONDARY PRESSURE SOLENOID VALVE

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

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



Solenoid Valve	Connector	Terminal	Resistance (Approx.)
Secondary pressure solenoid valve	F46	3 - Ground	3.0 - 9.0 Ω

4. If NG, replace the transaxle assembly. Refer to CVT-195, "Removal and Installation (MR20DE)" (MR20DE), CVT-197, "Removal and Installation (QR25DE)" (QR25DE).

P0826 UP AND DOWN SHIFT SW

Description

INFOID:0000000007402460

TCM sends the switch signals to combination meter via CAN communication line. Then manual mode switch position is indicated on the CVT position indicator. For inspection, refer to CVT-107, "Diagnosis Procedure"

CONSULT Reference Value

INFOID:0000000007402461

Item name	Condition	Display value
MMODE	When manual mode	ON
	Other than the above	OFF
NON MMODE	When manual mode	OFF
	Other than the above	ON
STRDWN SW	Steering shift switch: - side	ON
	Other than the above	OFF
STRUP	Steering shift switch: + side	ON
	Other than the above	OFF

On Board Diagnosis Logic

INFOID:0000000007402462

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

Possible Cause

INFOID:0000000007402463

- Harness or connectors
  (These switches circuit is open or shorted.)
  (TCM, and combination meter circuit are open or shorted.)
  (CAN communication line is open or shorted.)
- Manual mode select switch.
- Manual mode position select switch.

DTC Confirmation Procedure

INFOID:0000000007402464

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

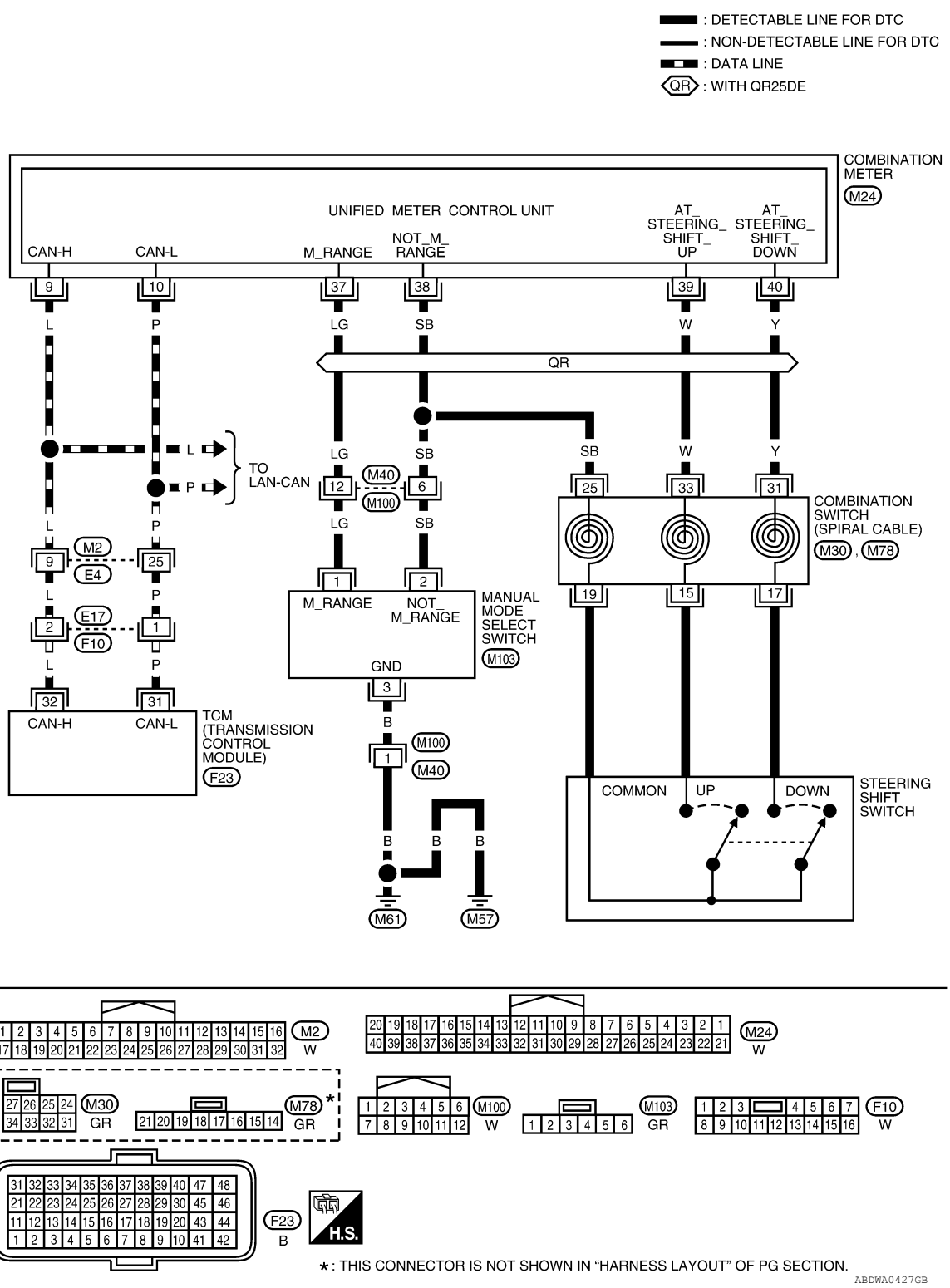
WITH CONSULT

1. Turn ignition switch ON. (Do not start engine.)
2. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT.
3. Start engine.
4. Push manual mode switch“”.
5. Drive vehicle for at least 2 consecutive seconds.
6. If DTC is detected, go toCVT-107, "Diagnosis Procedure".

Wiring Diagram - CVT - MMSW

INFOID:0000000007402465

CVT-MMSW-01



TCM TERMINALS AND REFERENCE VALUES

Refer to CVT-45, "TCM Input/Output Signal Reference Value".

Diagnosis Procedure

INFOID:0000000007402466

1.CHECK CAN COMMUNICATION LINE

Perform the self-diagnosis check. Refer to CVT-47, "CONSULT Function (TRANSMISSION)".

Is any malfunction of the “U1000” indicated?

YES >> Check CAN communication line. Refer to CVT-55.
NO >> GO TO 2.

2.CHECK MANUAL MODE SWITCH SIGNALS

With CONSULT

1. Turn ignition switch ON. (Do not start engine.)
2. Select “ECU INPUT SIGNALS” in “DATA MONITOR” mode for “TRANSMISSION” with CONSULT.
3. Read out ON/OFF switching action of the “STRDWNSW”, “STRUPSW”, “NONMMODE”, “MMODE”.

Item name	Condition	Display value
MMODE	When manual mode	ON
	Other than the above	OFF
NONMMODE	When manual mode	OFF
	Other than the above	ON
STRDWNSW	Steering shift switch: - side	ON
	Other than the above	OFF
STRUPSW	Steering shift switch: + side	ON
	Other than the above	OFF

Without CONSULT

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

OK or NG

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

3.CHECK STEERING SHIFT SWITCH AND MANUAL MODE SWITCH

Check steering shift switch and manual mode switch. Refer to CVT-109, "Component Inspection".

OK or NG

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

4.CHECK BETWEEN STEERING SHIFT SWITCH AND COMBINATION METER

1. Turn ignition switch OFF.
2. Disconnect spiral cable harness connector and combination meter harness connector.
3. Check continuity between spiral cable harness connector terminals and combination meter harness connector terminals.

Item	Connector	Terminal	Continuity
Spiral cable harness connector	M30	25	Yes
Combination meter harness connector	M24	38	
Spiral cable harness connector	M30	31	Yes
Combination meter harness connector	M24	40	
Spiral cable harness connector	M30	33	Yes
Combination meter harness connector	M24	39	

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

OK or NG

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

5. CHECK BETWEEN MANUAL MODE SWITCH AND COMBINATION METER

1. Disconnect manual mode select switch harness connector.
2. Check continuity between manual mode select switch harness connector terminals and combination meter harness connector terminals.

Item	Connector	Terminal	Continuity
Manual mode select switch harness connector	M103	1	Yes
Combination meter harness connector	M24	37	
Manual mode select switch harness connector	M103	2	Yes
Combination meter harness connector	M24	38	

3. Check continuity between manual mode select switch harness connector and ground.

Item	Connector	Terminal	Continuity
Manual mode select switch harness connector	M103	3 - ground	Yes

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

OK or NG

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

6. CHECK SPIRAL CABLE

1. Disconnect spiral cable connector.
2. Check continuity between spiral cable connector terminals.

Item	Connector	Terminal	Continuity
Spiral cable connector	M78	15	Yes
	M30	33	
	M17	17	Yes
	M31	31	
	M19	19	Yes
	M25	25	

OK or NG

OK >> GO TO 7.
NG >> Replace spiral cable. Refer to SRS-33.

7. CHECK COMBINATION METER

Check combination meter. Refer to DI-14, "Self-Diagnosis Mode of Combination Meter".

OK or NG?

YES >> GO TO 8.
NO >> Replace combination meter. Refer to DI-22, "Removal and Installation".

8. CHECK DTC

Perform “DTC Confirmation Procedure”. Refer to CVT-105, "DTC Confirmation Procedure".

OK or NG

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

9. CHECK TCM

1. Check TCM input/output signals. Refer to CVT-45, "TCM Input/Output Signal Reference Value".

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

INFOID:0000000007402467

STEERING SHIFT SWITCH

Check continuity between spiral cable connector terminals.

Terminals	Operation	Continuity
15 - 19	While pushing steering shift switch (+ side)	Yes
	Other condition	No
17 - 19	While pushing steering shift switch (- side)	Yes
	Other condition	No

MANUAL MODE SWITCH

Check continuity between manual mode select switch harness connector terminals.

Terminals	Operation	Continuity
1 - 3	When manual mode	No
	Other condition	Yes
2 - 3	When not in manual mode	Yes
	Other condition	No

P0840 TRANSMISSION FLUID PRESSURE SEN/SW A

Description

INFOID:0000000007402468

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

CONSULT Reference Value

INFOID:0000000007402469

Remarks: Specification data are reference values.

Item name	Condition	Display value (Approx.)
SEC HYDR SEN	“N” position idle	1.0 V
SEC PRESS		1.3 MPa

On Board Diagnosis Logic

INFOID:0000000007402470

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P0840” with CONSULT is detected when TCM detects an improper voltage drop when it receives the sensor signal.

Possible Cause

INFOID:0000000007402471

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

DTC Confirmation Procedure

INFOID:0000000007402472

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

1. Turn ignition switch ON and select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT.
2. Make sure that output voltage of line temperature sensor is within the range below.
   ATF TEMP SEN: 1.0 - 2.0 V
   If out of range, drive the vehicle to decrease the voltage (warm up the fluid) or stop engine to increase the voltage (cool down the fluid)
3. Start engine and wait for at least 5 consecutive seconds.
4. If DTC is detected, go to CVT-112, "Diagnosis Procedure".

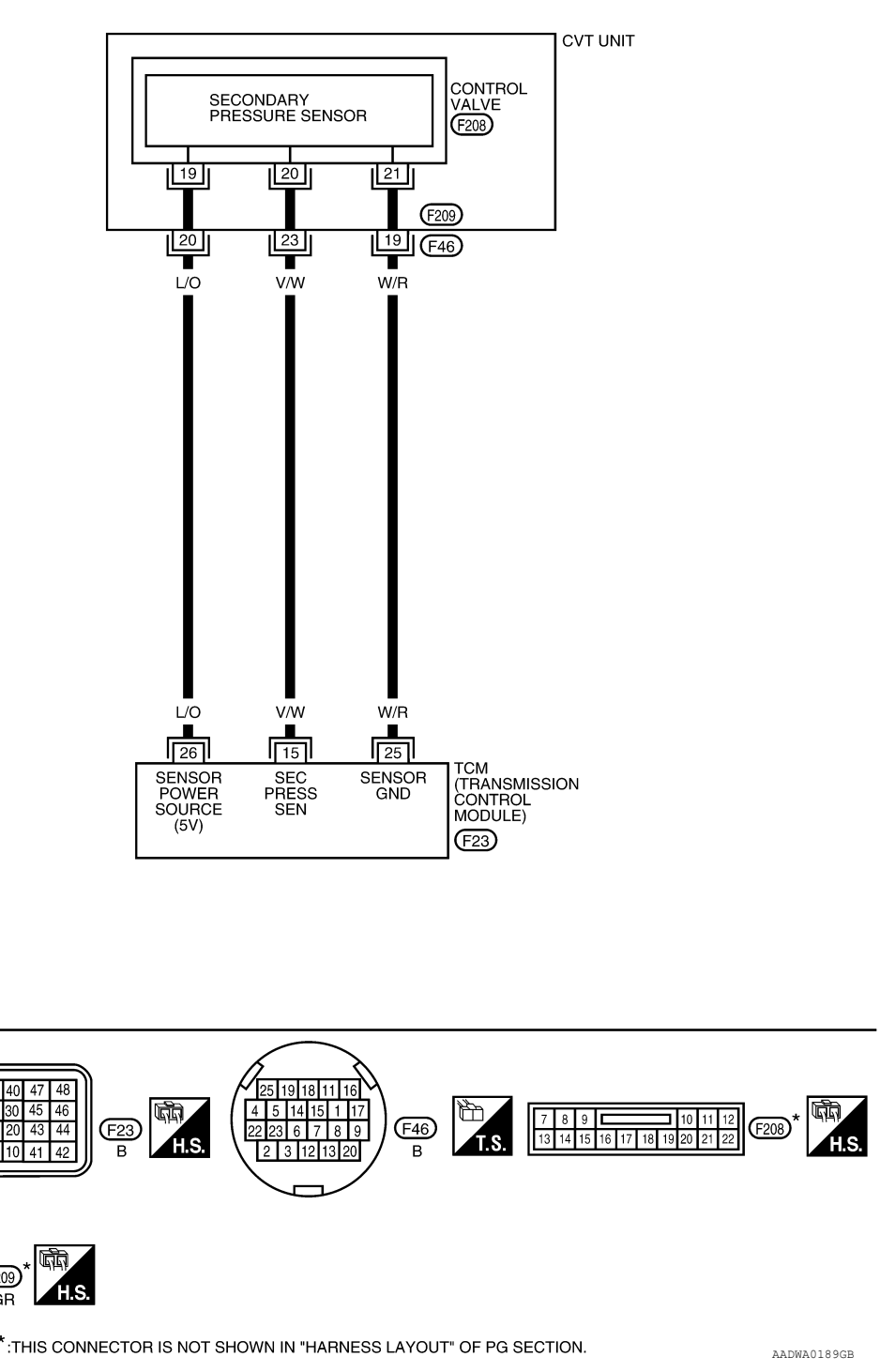
WITH GST

Follow the procedure “WITH CONSULT”.

Wiring Diagram - CVT - SECPS

INFOID:0000000007402473

CVT-SECPS-01



TCM TERMINALS AND REFERENCE VALUES

Refer to CVT-45, "TCM Input/Output Signal Reference Value".

Diagnosis Procedure

INFOID:0000000007402474

1.CHECK INPUT SIGNAL

With CONSULT

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

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

Without CONSULT

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

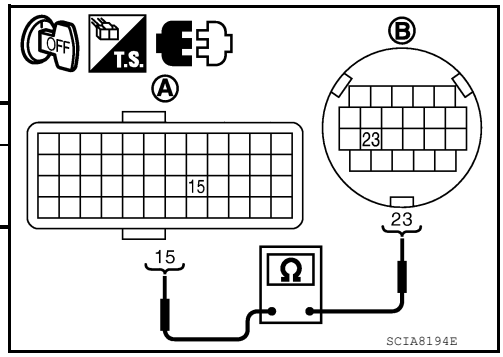
Name	Connector	Terminal	Condition	Voltage (Approx.)
Secondary pressure sensor	F23	15 - Ground	“N” position idle	1.0 V

OK or NG

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

2.CHECK HARNESS BETWEEN TCM AND SECONDARY PRESSURE SENSOR

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



Item	Connector	Terminal	Continuity
TCM connector	F23	15	YES
CVT unit harness connector	F46	23	

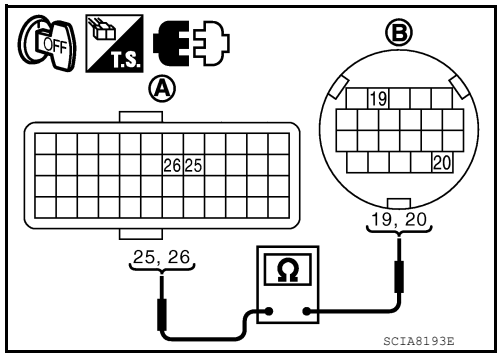
4. If OK, check harness for short to ground and short to power.
5. Reinstall any part removed.

OK or NG

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

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

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



Item	Connector	Terminal	Continuity
TCM	F23	26	Yes
CVT unit harness connector	F46	20	
TCM	F23	25	Yes
CVT unit harness connector	F46	19	

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

OK or NG

OK >> GO TO 4.
NG >> Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK SENSOR POWER AND SENSOR GROUND

1. Turn ignition switch ON.
2. Disconnect CVT unit harness connector.
3. Check voltage between CVT unit harness connector terminal.

Item	Connector	Terminal	Data (Approx.)
CVT unit harness connector (vehicle side)	F46	19 - 20	5.0 V

OK or NG

OK >> GO TO 5.
NG >> GO TO 6.

5. CHECK DTC

With CONSULT

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

Is “P0840” detected?

YES (Only DTC P0840 detected)>>Replace control valve. Refer to CVT-178, "Control Valve".
YES (DTC P0840 and except DTC P0840 are detected)>>Replace the transaxle assembly. Refer to CVT-195, "Removal and Installation (MR20DE)" (MR20DE), CVT-197, "Removal and Installation (QR25DE)" (QR25DE).
NO >> GO TO 6.

6. CHECK TCM

1. Check TCM input/output signals. Refer to CVT-45, "TCM Input/Output Signal Reference Value".
2. If NG, re-check TCM pin terminals for damage or loose connection with harness connector.

OK or NG

OK >> Replace TCM. Refer to CVT-162, "Removal and Installation".
NG >> Repair or replace damaged parts.

P0841 TRANSMISSION FLUID PRESSURE SEN/SW A

Description

INFOID:0000000007402475

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

CONSULT Reference Value

INFOID:0000000007402476

Remarks: Specification data are reference values.

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

On Board Diagnosis Logic

INFOID:0000000007402477

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

Possible Cause

INFOID:0000000007402478

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

DTC Confirmation Procedure

INFOID:0000000007402479

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

WITH CONSULT

1. Turn ignition switch ON and select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT.
2. Start engine and maintain the following conditions for at least 12 consecutive seconds.
   VEHICLE SPEED: 40 km/h (25 MPH) More than
   RANGE: “D” position
3. If DTC is detected, go to CVT-114, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000007402480

1.CHECK CAN COMMUNICATION LINE

Perform the self-diagnosis. Refer to CVT-47, "CONSULT Function (TRANSMISSION)".

Is any malfunction of the “U1000” indicated?

YES >> Check CAN communication line. Refer to CVT-55.
NO >> GO TO 2.

2.CHECK INPUT SIGNALS

With CONSULT

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

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

Without CONSULT

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

Name	Connector	Terminal	Condition	Voltage (Approx.)
Secondary pressure sensor	F23	15 - Ground	“N” position idle	1.0 V

OK or NG

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

3. CHECK LINE PRESSURE

Perform line pressure test. Refer to CVT-36, "Inspections before Trouble Diagnosis".

OK or NG

OK >> GO TO 4.
NG >> Repair or replace damaged parts. Refer to CVT-36, "Inspections before Trouble Diagnosis".

4. CHECK SECONDARY PRESSURE SENSOR SYSTEM

Check secondary pressure sensor system. Refer to CVT-110.

OK or NG

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

5. DETECT MALFUNCTIONING ITEM

Check the following:
- Line pressure solenoid valve. Refer to CVT-94, "Component Inspection".
- Secondary pressure solenoid valve. Refer to CVT-103, "Component Inspection".
- Step motor. Refer to CVT-138, "Component Inspection".

OK or NG6

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

6. CHECK DTC

Perform CVT-114, "DTC Confirmation Procedure".

OK or NG

OK >> **INSPECTION END**
NG >> Replace TCM or transaxle assembly. Refer to CVT-195, "Removal and Installation (MR20DE)".

P0868 TRANSMISSION FLUID PRESSURE

Description

INFOID:0000000007402481

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

CONSULT Reference Value

INFOID:0000000007402482

Remarks: Specification data are reference values.

Item name	Condition	Display value (Approx.)
SEC PRESS	“N” position idle	0.5 MPa

On Board Diagnosis Logic

INFOID:0000000007402483

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

Possible Cause

INFOID:0000000007402484

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

DTC Confirmation Procedure

INFOID:0000000007402485

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

WITH CONSULT

1. Turn ignition switch ON and select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT.
2. Make sure that output voltage of CVT fluid temperature sensor is within the range below.
   ATF TEMP SEN: 1.0 - 2.0 V
   If out of range, drive the vehicle to decrease the voltage (warm up the fluid) or stop engine to increase the voltage (cool down the fluid)
3. Start engine and maintain the following conditions for at least 10 consecutive seconds.
   VEHICLE SPEED (accelerate slowly): 0 → 50 km/h (31 MPH)
   ACC PEDAL OPEN: 0.5/8 - 1.0/8
   RANGE: “D” position
4. If DTC is detected, go to CVT-116, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000007402486

1.CHECK INPUT SIGNAL

With CONSULT

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

Item name	Condition	Display value (Approx.)
SEC PRESS	“N” position idle	0.5 MPa

OK or NG

OK >> GO TO 5.

NG >> GO TO 2.

2. CHECK LINE PRESSURE

Perform line pressure test. Refer to CVT-36, "Inspections before Trouble Diagnosis".

OK or NG

OK >> GO TO 3.
NG >> Repair or replace damaged parts. Refer to CVT-36, "Inspections before Trouble Diagnosis".

3. DETECT MALFUNCTIONING ITEM

Check the following:
- Secondary pressure solenoid valve. Refer to CVT-103, "Component Inspection".
- Line pressure solenoid valve. Refer to CVT-94, "Component Inspection".

OK or NG

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

4. CHECK SECONDARY PRESSURE SENSOR SYSTEM

Check secondary pressure sensor system. Refer to CVT-110.

OK or NG

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

5. DETECT MALFUNCTIONING ITEM

Check the following:
- Power supply and ground circuit for TCM. Refer to CVT-119, "Wiring Diagram - CVT - POWER".
- The TCM pin terminals for damage or loose connection with harness connector.

OK or NG

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

6. CHECK DTC

Perform CVT-116, "DTC Confirmation Procedure".

OK or NG

OK >> **INSPECTION END**
NG >> Replace the transaxle assembly. Refer to CVT-195, "Removal and Installation (MR20DE)" (MR20DE), CVT-197, "Removal and Installation (QR25DE)" (QR25DE).

P1701 TCM

Description

INFOID:0000000007402487

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

NOTE:
Since “P1701” will be indicated when replacing TCM, perform diagnosis after erasing “SELF-DIAG RESULTS”

On Board Diagnosis Logic

INFOID:0000000007402488

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code “P1701” with CONSULT 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

INFOID:0000000007402489

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

DTC Confirmation Procedure

INFOID:0000000007402490

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.

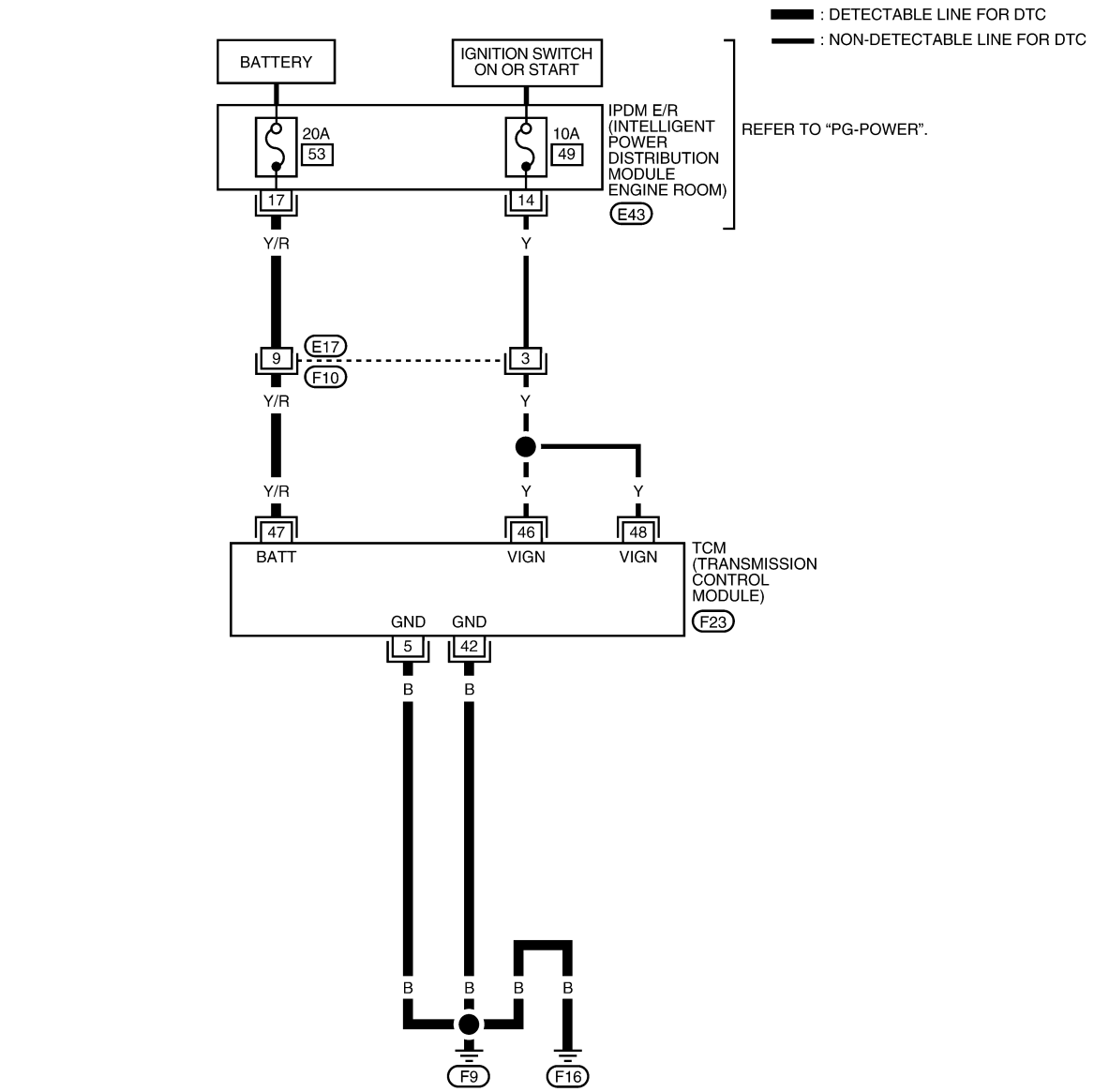
WITH CONSULT

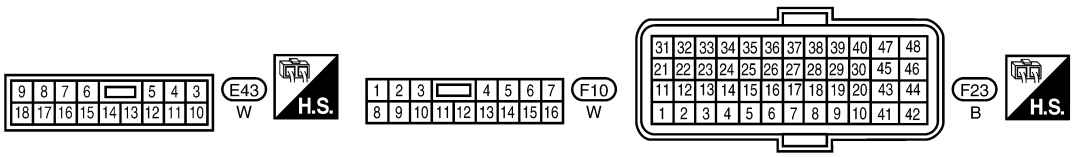
1. Turn ignition switch ON. (Do not start engine.)
2. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT.
3. Wait for at least 2 consecutive seconds.
4. If DTC is detected, go to CVT-120, "Diagnosis Procedure".

Wiring Diagram - CVT - POWER

INFOID:0000000007402491

CVT-POWER-01





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TCM TERMINALS AND REFERENCE VALUES

Refer to CVT-45, "TCM Input/Output Signal Reference Value".

Diagnosis Procedure

INFOID:0000000007402492

1.CHECK DTC

1. Turn ignition switch ON.
2. Select “SELF-DIAG RESULTS” mode for “TRANSMISSION” with CONSULT.
3. Erase self-diagnostic results. Refer to CVT-25, "OBD-II Diagnostic Trouble Code (DTC)".
4. Turn ignition switch OFF, and wait for 5 seconds or more.
5. Start engine.
6. Confirm self-diagnostic results again. Refer to CVT-47, "CONSULT Function (TRANSMISSION)".

Is the “P1701” displayed?

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

2.CHECK TCM POWER SOURCE, STEP 1

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

Name	Connector	Terminal	Condition	Voltage (Approx.)
Power supply (memory back-up)	F23	45 - Ground	Always	Battery voltage
		47 - Ground		

OK or NG

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

3.CHECK TCM POWER SOURCE, STEP 2

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

Name	Connector	Terminal	Condition	Voltage (Approx.)
Power supply	F23	46 - Ground		Battery voltage
				0 V
Power supply		48 - Ground		Battery voltage
				0 V
Power supply (memory back-up)		45 - Ground	Always	Battery voltage
		47 - Ground		

OK or NG

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

4.DETECT MALFUNCTIONING ITEM

Check the following.

- Harness for short or open between battery and TCM connector terminal 45, 47
- Harness for short or open between ignition switch and TCM connector terminal 46, 48

- 10 A fuse (No.49, located in the IPDM E/R)
- 20 A fuse (No.53, located in the IPDM E/R)
- Ignition switch. Refer to PG-4.

OK or NG

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

5.CHECK TCM GROUND CIRCUIT

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

Name	Connector	Terminal	Continuity
Ground	F23	5 - Ground	Yes
		42 - Ground	

OK or NG

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

6.CHECK DTC

Perform CVT-118, "DTC Confirmation Procedure".

OK or NG

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

7.CHECK TCM

1. Check TCM input/output signals. Refer to CVT-45, "TCM Input/Output Signal Reference Value".
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.

P1705 TP SENSOR

Description

INFOID:0000000007402493

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

CONSULT Reference Value

INFOID:0000000007402494

Remarks: Specification data are reference values.

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

On Board Diagnosis Logic

INFOID:0000000007402495

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

Possible Cause

INFOID:0000000007402496

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

DTC Confirmation Procedure

INFOID:0000000007402497

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
1. Turn ignition switch ON.
2. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT.
3. Depress accelerator pedal fully and release it, then wait for 5 seconds.
4. If DTC is detected, go to CVT-122, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000007402498

1.CHECK CAN COMMUNICATION LINE

Perform the self-diagnosis check. Refer to CVT-47, "CONSULT Function (TRANSMISSION)".

Is any malfunction of the “U1000” indicated?

YES >> Check the CAN communication line. Refer to CVT-55.
NO >> GO TO 2.

2.CHECK INPUT SIGNAL

With CONSULT
1. Turn ignition switch ON.
2. Select “ECU INPUT SIGNALS” in “DATA MONITOR” mode for “TRANSMISSION” with CONSULT.
3. Read out the value of “ACC PEDAL OPEN”.

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

OK or NG

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

3. CHECK DTC WITH ECM

With CONSULT

1. Turn ignition switch ON.
2. Select “SELF-DIAG RESULTS” mode for “ENGINE” with CONSULT. Refer to EC-132, "CONSULT Function (ENGINE)" [MR20DE (For california)], EC-692, "CONSULT Function (ENGINE)", [MR20DE (Except for california)] and EC-1237, "CONSULT Function (ENGINE)" (QR25DE).

OK or NG

OK >> GO TO 4.
NG >> Check the DTC Detected Item. Go to EC-132, "CONSULT Function (ENGINE)" [MR20DE (For california)], EC-692, "CONSULT Function (ENGINE)", [MR20DE (Except for california)] and EC-1237, "CONSULT Function (ENGINE)" (QR25DE).

4. CHECK DTC

Perform CVT-122, "DTC Confirmation Procedure".

OK or NG

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

P1722 VEHICLE SPEED

Description

INFOID:0000000007402499

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

CONSULT Reference Value

INFOID:0000000007402500

Remarks: Specification data are reference values.

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

On Board Diagnosis Logic

INFOID:0000000007402501

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code “P1722” with CONSULT 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

INFOID:0000000007402502

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

DTC Confirmation Procedure

INFOID:0000000007402503

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

1. Turn ignition switch ON.
2. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT.
3. Start engine and maintain the following conditions for at least 5 consecutive seconds.
   ACC PEDAL OPEN: 1.0/8 or less
   VEHICLE SPEED SE: 30 km/h (19 MPH) or more
4. If DTC is detected, go to CVT-124, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000007402504

1.CHECK CAN COMMUNICATION LINE

Perform the self-diagnosis check. Refer to CVT-47, "CONSULT Function (TRANSMISSION)".

Is any malfunction of the “U1000” indicated?

YES >> Check CAN communication line. Refer to CVT-55.
NO >> GO TO 2.

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

Perform ABS actuator and electric unit (control unit) self-diagnosis check. Refer to BRC-24, "CONSULT Function (ABS)".

OK or NG

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

3.CHECK INPUT SIGNALS

With CONSULT

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

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

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

OK or NG

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

4. CHECK TCM

Check TCM input/output signals. Refer to CVT-45, "TCM Input/Output Signal Reference Value".

OK or NG

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

5. CHECK DTC

Perform CVT-124, "DTC Confirmation Procedure".

OK or NG

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

P1723 SPEED SENSOR

Description

INFOID:0000000007402505

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

On Board Diagnosis Logic

INFOID:0000000007402506

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

CAUTION:
One of the “P0720”, the “P0715” or the “P0725“ is displayed with the DTC at the same time.

Possible Cause

INFOID:0000000007402507

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

DTC Confirmation Procedure

INFOID:0000000007402508

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

1. Turn ignition switch ON and select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT.
2. Start engine and maintain the following conditions for at least 5 consecutive seconds.
   VEHICLE SPEED SE: 10 km/h (6 MPH) or more
   ACC PEDAL OPEN: More than 1.0/8
   RANGE: “D” position
   ENG SPEED: 450 rpm or more
   Driving location: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.
3. If DTC is detected, go to CVT-126, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000007402509

1.CHECK STEP MOTOR FUNCTION

Perform the self-diagnosis check. Refer to CVT-47, "CONSULT Function (TRANSMISSION)".

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-139.)
NO >> GO TO 2.

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

Check secondary speed sensor system and primary speed sensor system. Refer to CVT-76, CVT-71.

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-81.

OK or NG

OK >> GO TO 4.
NG >> Repair or replace damaged parts. Refer to EC-565 [MR20DE (For california)], EC-1110 [MR20DE (Except for california)] and EC-1682 (QR25DE).

4. DETECT MALFUNCTIONING ITEM

Check the following:
- Power supply and ground circuit for TCM. Refer to CVT-118.
- The TCM pin terminals for damage or loose connection with harness connector.

OK or NG

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

5. CHECK DTC

Perform CVT-126, "DTC Confirmation Procedure".

OK or NG

OK >> **INSPECTION END**
NG >> Replace TCM or transaxle assembly. Refer to CVT-162, "Removal and Installation".

P1726 THROTTLE CONTROL SIGNAL

Description

INFOID:0000000007402510

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

On Board Diagnosis Logic

INFOID:0000000007402511

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code “P1726” with CONSULT is detected when the electronically controlled throttle for ECM is malfunctioning.

Possible Cause

INFOID:0000000007402512

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

DTC Confirmation Procedure

INFOID:0000000007402513

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
1. Turn ignition switch ON.
2. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT.
3. Start engine and let it idle for 5 second.
4. If DTC is detected, go to CVT-128, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000007402514

1.CHECK DTC WITH ECM

With CONSULT
1. Turn ignition switch ON.
2. Select “SELF-DIAG RESULTS” mode for “ENGINE” with CONSULT. Refer to EC-132, "CONSULT Function (ENGINE)" [MR20DE (For california)], EC-692, "CONSULT Function (ENGINE)", [MR20DE (Except for california)] and EC-1237, "CONSULT Function (ENGINE)" (QR25DE).

OK or NG

OK >> GO TO 2.
NG >> Check the DTC Detected Item. Refer to EC-132, "CONSULT Function (ENGINE)" [MR20DE (For california)], EC-692, "CONSULT Function (ENGINE)", [MR20DE (Except for california)] and EC-1237, "CONSULT Function (ENGINE)" (QR25DE).
- If CAN communication line is detected, go to CVT-55.

2.CHECK DTC

Perform CVT-128, "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 TCM. Refer to CVT-162, "Removal and Installation".
NG >> Repair or replace damaged parts.

P1740 SELECT SOLENOID

Description

INFOID:0000000007402515

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

CONSULT Reference Value

INFOID:0000000007402516

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

On Board Diagnosis Logic

INFOID:0000000007402517

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

Possible Cause

INFOID:0000000007402518

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

DTC Confirmation Procedure

INFOID:0000000007402519

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

1. Turn ignition switch ON.
2. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT.
3. Start engine and maintain the following conditions for at least 5 consecutive seconds.
   RANGE: “D” position and “N” position
   (At each time, wait for 5 seconds.)
4. If DTC is detected, go to CVT-131, "Diagnosis Procedure".

WITH GST

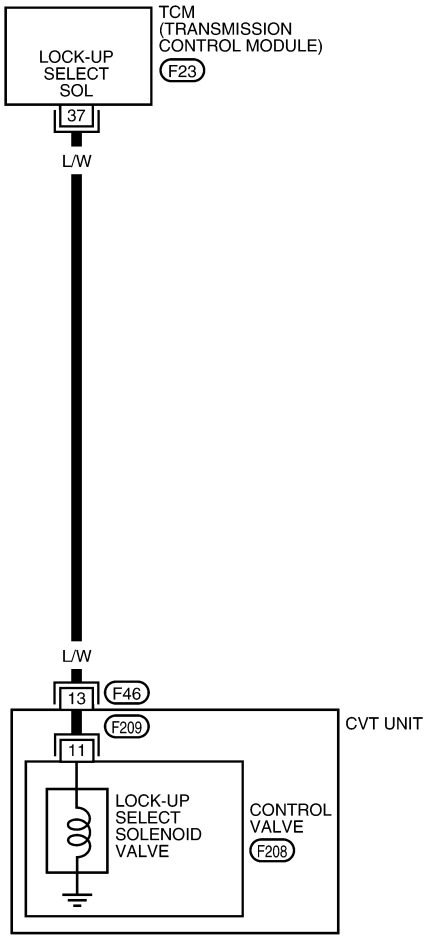
Follow the procedure “WITH CONSULT”.

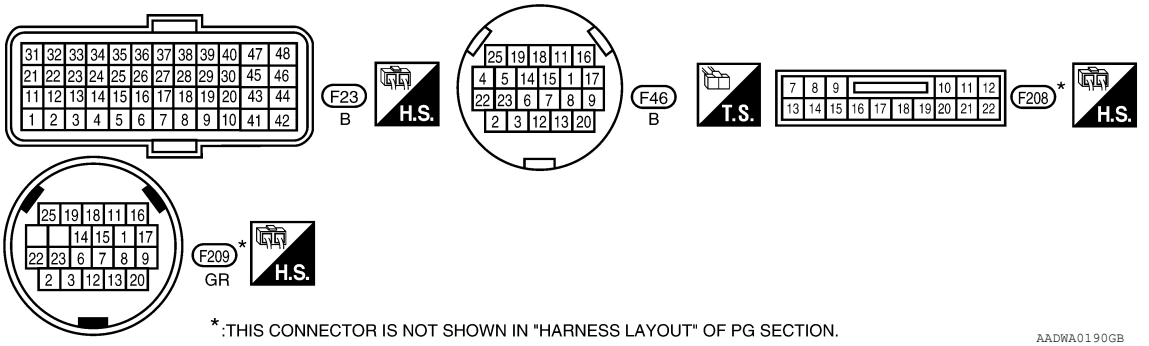
Wiring Diagram - CVT - L/USSV

INFOID:0000000007402520

CVT-L/USSV-01

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





*:THIS CONNECTOR IS NOT SHOWN IN "HARNESS LAYOUT" OF PG SECTION.

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TCM TERMINALS AND REFERENCE VALUES

Refer to CVT-45, "TCM Input/Output Signal Reference Value".

Diagnosis Procedure

INFOID:0000000007402521

1. CHECK INPUT SIGNAL

With CONSULT

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

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

Without CONSULT

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

Name	Connector	Terminal	Condition	Voltage (Approx.)
Lock-up select solenoid valve	F23	37 - Ground	Selector lever in “P” and “N” positions	Battery voltage
			Wait at least for 5 seconds with the selector lever in “R”, “D” and “L” positions	0 V

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

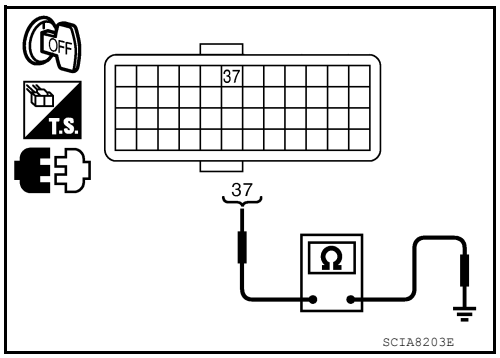
OK or NG

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

2. CHECK LOCK-UP SELECT SOLENOID VALVE CIRCUIT

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

Solenoid valve	Connector	Terminal	Resistance (Approx.)
Lock-up select solenoid valve	F23	37 - Ground	17 - 38 Ω



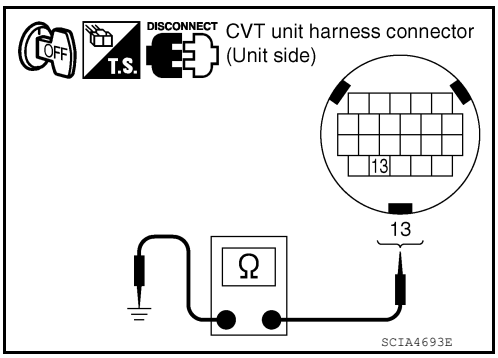
OK or NG

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

3. CHECK VALVE RESISTANCE

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

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



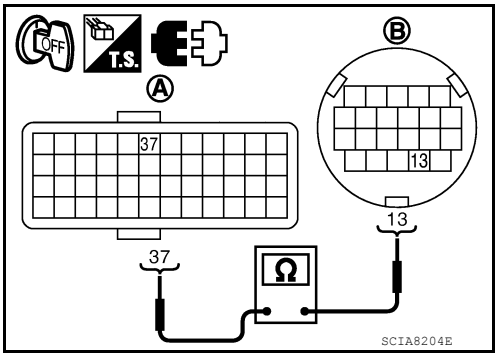
Solenoid valve	Connector	Terminal	Resistance (Approx.)
Lock-up select solenoid valve	F46	13 - Ground	17 - 38 Ω

OK or NG

OK >> GO TO 4.
NG >> Replace the transaxle assembly. Refer to CVT-195, "Removal and Installation (MR20DE)" (MR20DE), CVT-197, "Removal and Installation (QR25DE)" (QR25DE).

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

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



Item	Connector	Terminal	Continuity
TCM	F23	37	Yes
CVT unit harness connector	F46	13	

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

OK or NG

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

5. CHECK DTC

Perform CVT-129, "DTC Confirmation Procedure".

OK or NG

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

6. CHECK TCM

1. Check TCM input/output signals. Refer to CVT-162, "Removal and Installation".
2. If NG, re-check TCM pin terminals for damage or loose connection with harness connector.

OK or NG

OK >> **INSPECTION END**
NG >> 1. Repair or replace damaged parts.
2. Replace TCM. Refer to CVT-162, "Removal and Installation".

Component Inspection

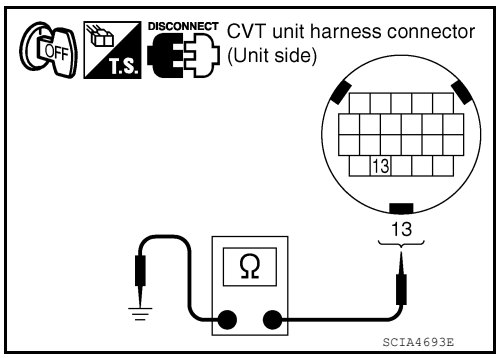
INFOID:0000000007402522

LOCK-UP SELECT SOLENOID VALVE

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

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

Solenoid valve	Connector	Terminal	Resistance (Approx.)
Lock-up select solenoid valve	F46	13 - Ground	17 - 38 Ω



4. If NG, replace the transaxle assembly. Refer to CVT-195, "Removal and Installation (MR20DE)" (MR20DE), CVT-197, "Removal and Installation (QR25DE)" (QR25DE).

P1745 LINE PRESSURE CONTROL

Description

INFOID:0000000007402523

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

On Board Diagnosis Logic

INFOID:0000000007402524

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code “P1745” with CONSULT is detected when TCM detects the unexpected line pressure.

Possible Cause

INFOID:0000000007402525

TCM

DTC Confirmation Procedure

INFOID:0000000007402526

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

1. Turn ignition switch ON and select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT.
2. Make sure that output voltage of CVT fluid temperature sensor is within the range below.
   ATF TEMP SEN: 1.0 - 2.0 V
   If out of range, drive the vehicle to decrease the voltage (warm up the fluid) or stop engine to increase the voltage (cool down the fluid)
3. If DTC is detected, go to CVT-134, "Diagnosis Procedure".

Diagnosis Procedure

INFOID:0000000007402527

1.CHECK DTC

1. Turn ignition switch ON.
2. Select “SELF-DIAG RESULTS” mode for “TRANSMISSION” with CONSULT.
3. Erase self-diagnostic results.
4. Turn ignition switch OFF, and wait for 10 seconds or more.
5. Start engine.
6. Confirm self-diagnostic results again. Refer to CVT-47, "CONSULT Function (TRANSMISSION)".

Is the “P1745” displayed?

YES >> Replace TCM. Refer to CVT-162, "Removal and Installation".
NO >> **INSPECTION END**

P1777 STEP MOTOR

Description

INFOID:0000000007402528

- 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 Reference Value

INFOID:0000000007402529

Remarks: Specification data are reference values.

Item name	Condition	Display value (Approx.)
STM STEP	During driving	0 step - 177 step
SMCOIL A		Changes ON⇔OFF.
SMCOIL B		
SMCOIL C		
SMCOIL D		

On Board Diagnosis Logic

INFOID:0000000007402530

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P1777” with CONSULT is detected under the following conditions.

- When operating step motor ON and OFF, there is no proper change in the voltage of TCM terminal which corresponds to it.

Possible Cause

INFOID:0000000007402531

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

DTC Confirmation Procedure

INFOID:0000000007402532

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

1. Turn ignition switch ON and select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT.
2. Drive vehicle for at least 5 consecutive seconds.
3. If DTC is detected, go to CVT-137, "Diagnosis Procedure".

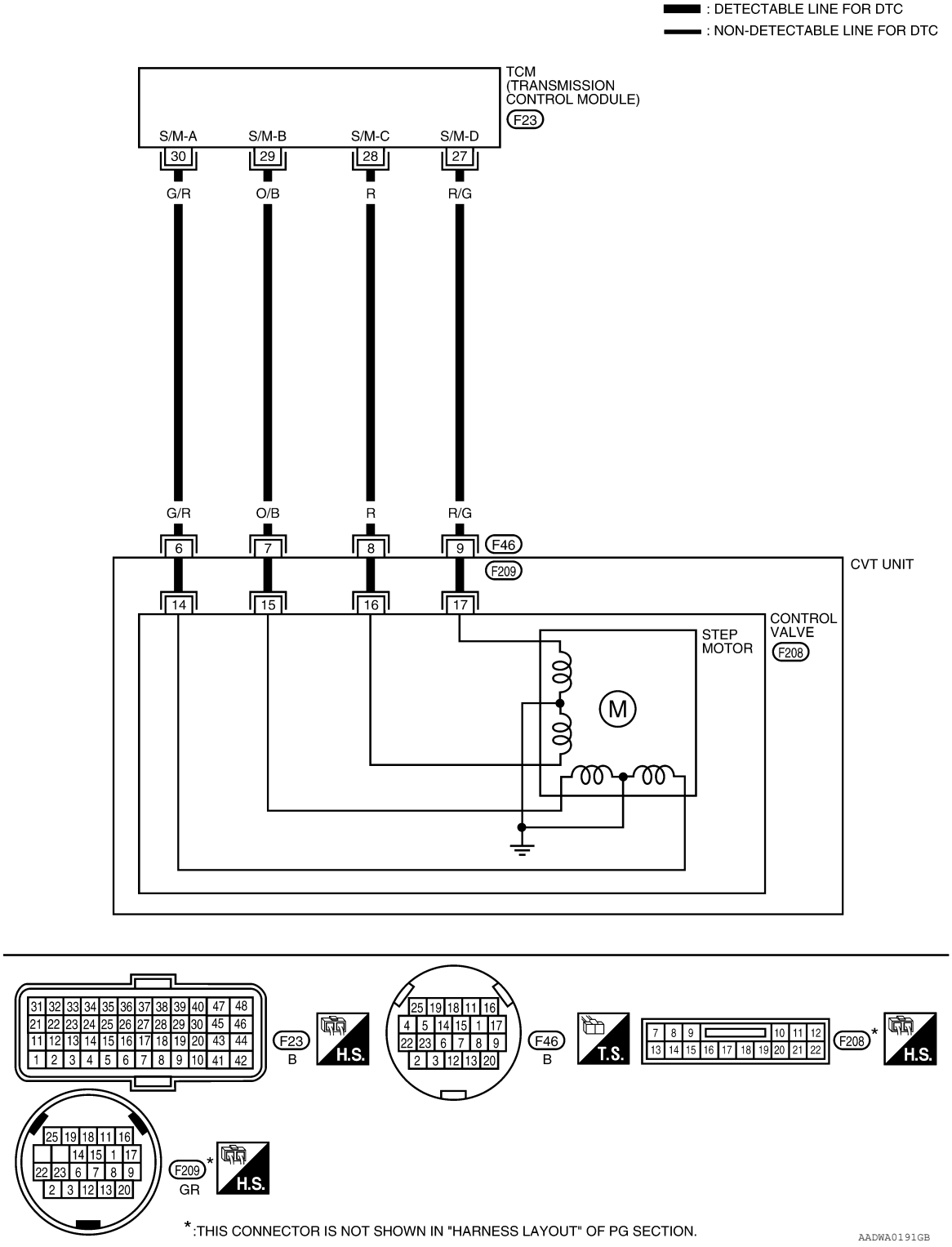
WITH GST

Follow the procedure “WITH CONSULT”.

Wiring Diagram - CVT - STM

INFOID:0000000007402533

CVT-STM-01



TCM TERMINALS AND REFERENCE VALUES

Refer to CVT-45, "TCM Input/Output Signal Reference Value".

Diagnosis Procedure

INFOID:0000000007402534

1.CHECK INPUT SIGNALS

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

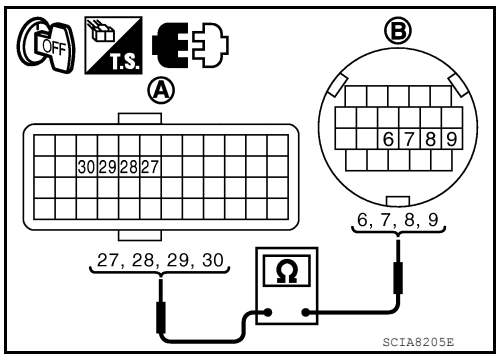
Item name	Condition	Display value (Approx.)
STM STEP	During driving	0 step - 177 step
SMCOIL A		Changes ON⇔OFF.
SMCOIL B		
SMCOIL C		
SMCOIL D		

OK or NG

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

2.CHECK HARNESS BETWEEN TCM AND STEP MOTOR

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



Item	Connector	Terminal	Continuity
TCM	F23	30	Yes
CVT unit harness connector	F46	6	
TCM	F23	29	Yes
CVT unit harness connector	F46	7	
TCM	F23	28	Yes
CVT unit harness connector	F46	8	
TCM	F23	27	Yes
CVT unit harness connector	F46	9	

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

OK or NG

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

3.CHECK STEP MOTOR

Check step motor. Refer to CVT-138, "Component Inspection".

OK or NG

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

4.CHECK DTC

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

Is only “P1777” detected?

YES (Only DTC P1777 detected)>>Replace control valve. Refer to CVT-178, "Control Valve".
YES (DTC P0725 and DTC U1000 in addition to DTC P1777 and detected)>>When DTC is detected as listed below, replace control valve. Refer to CVT-178, "Control Valve".
- DTC for P1777 and P0725 are detected.
- DTC for P1777 and U1000 are detected.
- DTC for P1777, P0725 and U1000 are detected.

NO >> Replace transaxle assembly. Refer to CVT-195, "Removal and Installation (MR20DE)" (MR20DE), CVT-197, "Removal and Installation (QR25DE)" (QR25DE).

5. CHECK TCM

1. Check TCM input/output signals. Refer to CVT-45, "TCM Input/Output Signal Reference Value".
2. If NG, re-check TCM pin terminals for damage or loose connection with harness connector.

OK or NG

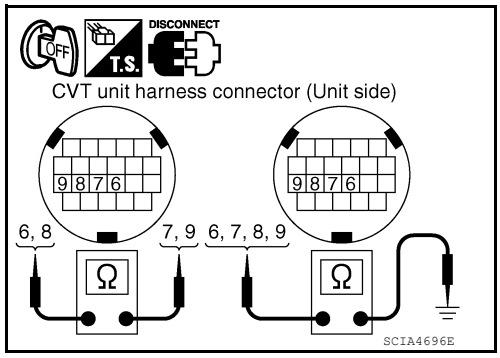
OK >> **INSPECTION END**
NG >> Repair or replace damaged parts.

Component Inspection

INFOID:0000000007402535

STEP MOTOR

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



Name	Connector	Terminal	Resistance (Approx.)
Step motor	F46	6 - 7	30 Ω
		8 - 9	
		6 - Ground	15 Ω
		7 - Ground	
		8 - Ground	
		9 - Ground	

4. If NG, perform “SELF-DIAG RESULTS” mode for “TRANMISSION”.

P1778 STEP MOTOR

Description

INFOID:0000000007402536

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

CONSULT Reference Value

INFOID:0000000007402537

Remarks: Specification data are reference values.

Item name	Condition	Display value (Approx.)
STM STEP	During driving	0 step - 177 step
GEAR RATIO		2.34 - 0.39

On Board Diagnosis Logic

INFOID:0000000007402538

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

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

Possible Cause

INFOID:0000000007402539

Step motor

DTC Confirmation Procedure

INFOID:0000000007402540

CAUTION:

- **Always drive vehicle at a safe speed.**
- **Before starting “DTC Confirmation Procedure”, confirm “Hi” or “Mid” or “Low” fixation by “PRI SPEED” and “VEHICLE SPEED” on “DATA MONITOR MODE”.**
- **If hi-geared fixation occurred, go to CVT-140, "Diagnosis Procedure".**

NOTE:

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

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

WITH CONSULT

1. Turn ignition switch ON and select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT.
2. Make sure that output voltage of CVT fluid temperature sensor is within the range below.
   ATF TEMP SEN: 1.0 - 2.0 V
   If out of range, drive the vehicle to decrease the voltage (warm up the fluid) or stop engine to increase the voltage (cool down the fluid)
3. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT.
4. Start engine and maintain the following conditions for at least 30 consecutive seconds.
   TEST START FROM 0 km/h (0 MPH)
   CONSTANT ACCELERATION: Keep 30 sec or more
   VEHICLE SPEED: 10 km/h (6 MPH) or more
   ACC PEDAL OPEN: More than 1.0/8
   RANGE: “D” position
   ENG SPEED: 450 rpm or more
5. If DTC is detected, go to CVT-140, "Diagnosis Procedure".

WITH GST

Follow the procedure “WITH CONSULT”.

Diagnosis Procedure

INFOID:0000000007402541

1.CHECK STEP MOTOR

With CONSULT

It is monitoring whether “GEAR RATIO: 2.34 - 0.39” changes similarly to “STM STEP: 0 - 177” by DATA MONITOR mode. Refer to CVT-47, "CONSULT Function (TRANSMISSION)".

Without CONSULT

Inspect the engine speed (rise and descend), vehicle speed, throttle position, and check shift change. Refer to CVT-202, "Vehicle Speed When Shifting Gears".

OK or NG

OK >> **INSPECTION END**

NG >> Replace the transaxle assembly. Refer to CVT-195, "Removal and Installation (MR20DE)" (MR20DE), CVT-197, "Removal and Installation (QR25DE)" (QR25DE).

OVERDRIVE CONTROL SWITCH

Description

INFOID:0000000007402542

- Overdrive control switch is installed to the selector lever.
- O/D OFF indicator turns ON, and overdrive driving activates when pressing the overdrive control switch while driving in “D” position. O/D OFF indicator turns OFF, and “D” position driving starts when pressing the overdrive control switch while driving in the overdrive-off mode. Shifting the selector lever in any position other than “D” releases the overdrive-off mode.

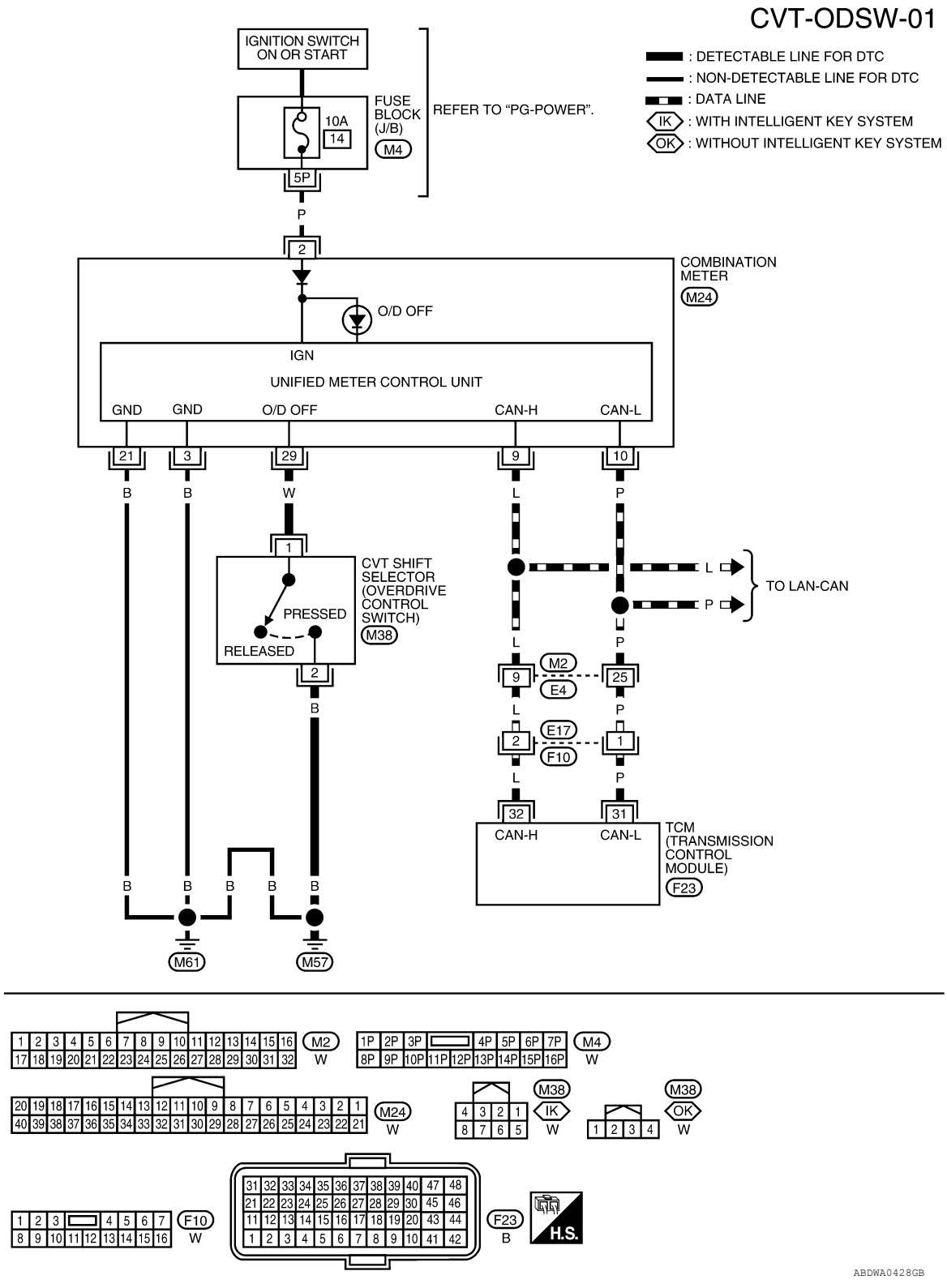
CONSULT Reference Value

INFOID:0000000007402543

Item name	Condition	Display value
SPORT MODE SW	When OD OFF indicator lamp is off.	ON
	When OD OFF indicator lamp is on.	OFF

Wiring Diagram - CVT - ODSW

INFOID:0000000007402544



TCM TERMINALS AND REFERENCE VALUES

Refer to CVT-45, "TCM Input/Output Signal Reference Value".

Diagnosis Procedure

INFOID:0000000007402545

1.CHECK CAN COMMUNICATION LINE

Perform the self-diagnosis check. Refer to CVT-47, "CONSULT Function (TRANSMISSION)".

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

YES >> Check CAN communication line. Refer to CVT-55.
NO >> GO TO 2.

2.CHECK OVERDRIVE CONTROL SWITCH SIGNAL

With CONSULT

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

Item name	Condition	Display value
SPORT MODE SW	While pushing overdrive cancel switch	ON
	Other conditions	OFF

OK or NG

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

3.CHECK OVERDRIVE CONTROL SWITCH

Check overdrive control switch. Refer to CVT-144, "Component Inspection".

OK or NG

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

4.CHECK SELF-DIAGNOSTIC RESULTS (COMBINATION METER)

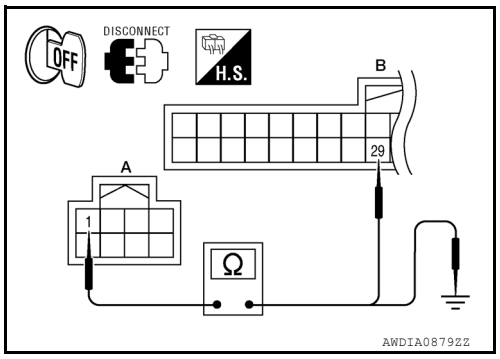
Perform self-diagnosis check. Refer toDI-14, "Self-Diagnosis Mode of Combination Meter" .

Is any malfunction detected by self-diagnostic?

YES >> Check the malfunctioning system.
NO - 1 >> With Intelligent Key: GO TO 5.
NO - 2 >> Without Intelligent Key: GO TO 7.

5.CHECK OVERDRIVE CONTROL SWITCH CIRCUIT WITH INTELLIGENT KEY

1. Turn ignition switch OFF.
2. Disconnect CVT shift selector connector and combination meter connector.
3. Check continuity between CVT shift selector harness connector (A) terminal and combination meter harness connector (B) terminal.



Item	Connector	Terminal	Continuity
CVT shift selector harness connector	M38	1	Yes
Combination meter harness connector	M24	29	

4. Check continuity between CVT shift selector harness connector (A) terminal and ground.

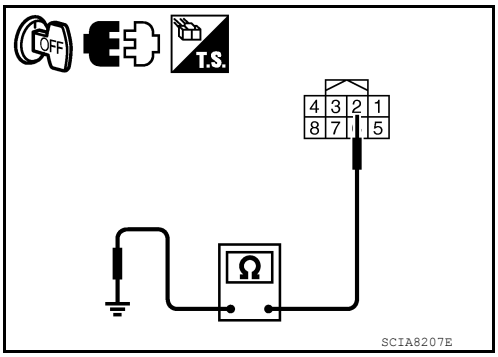
Item	Connector	Terminal	Continuity
CVT shift selector harness connector	M38	1 - ground	No

OK or NG

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

6. CHECK OVERDRIVE CONTROL SWITCH GROUND CIRCUIT WITH INTELLIGENT KEY

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



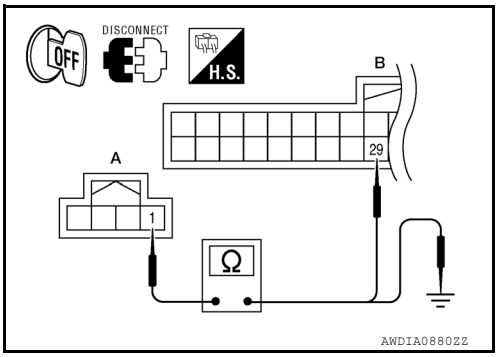
Item	Connector	Terminal	Continuity
CVT shift selector harness connector	M38	2 - ground	Yes

OK or NG

OK >> **INSPECTION END**
NG >> Repair open circuit in harness or connectors.

7. CHECK OVERDRIVE CONTROL SWITCH CIRCUIT WITHOUT INTELLIGENT KEY

1. Turn ignition switch OFF.
2. Disconnect CVT shift selector connector and combination meter connector.
3. Check continuity between CVT shift selector harness connector (A) terminal and combination meter harness connector (B) terminal.



Item	Connector	Terminal	Continuity
CVT shift selector harness connector	M38	1	Yes
Combination meter harness connector	M24	29	

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

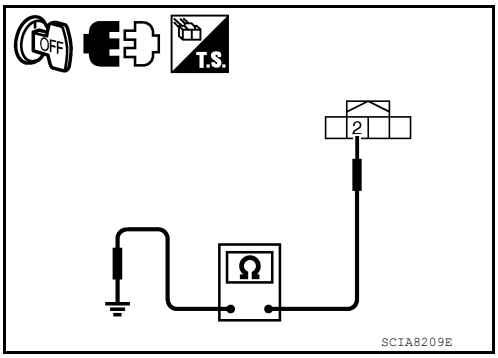
Item	Connector	Terminal	Continuity
CVT shift selector harness connector	M38	1 - ground	Yes

OK or NG

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

8. CHECK OVERDRIVE CONTROL SWITCH GROUND CIRCUIT WITHOUT INTELLIGENT KEY

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



Item	Connector	Terminal	Continuity
CVT shift selector harness connector	M38	2 - ground	Yes

OK or NG

OK >> **INSPECTION END**
NG >> Repair open circuit in harness or connectors.

Component Inspection

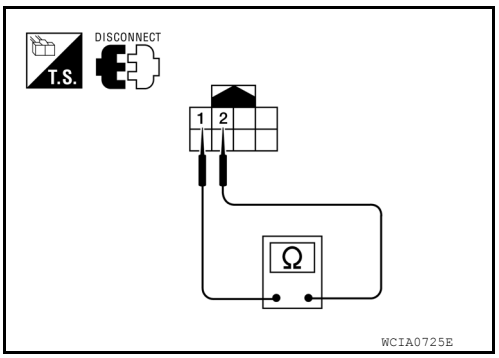
INFOID:0000000007402546

OVERDRIVE CONTROL SWITCH

With Intelligent Key

Check continuity between CVT shift selector terminals.

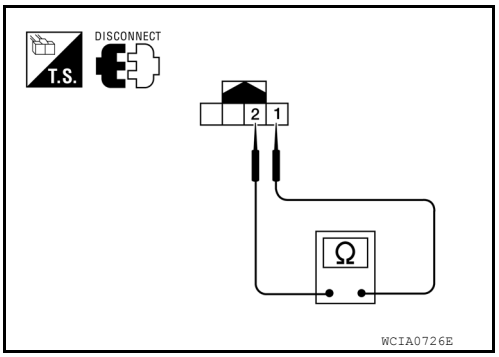
Item	Condition	Terminal	Continuity
Overdrive control switch	While pushing overdrive control switch	1 - 2	Yes
	Other conditions		No



Without Intelligent Key

Check continuity between CVT shift selector terminals.

Item	Condition	Terminal	Continuity
Overdrive control switch	While pushing overdrive control switch	1 - 2	Yes
	Other conditions		No



SHIFT POSITION INDICATOR CIRCUIT

Description

INFOID:0000000007402547

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

CONSULT Reference Value

INFOID:0000000007402548

Item name	Condition	Display value
RANGE	Selector lever in “N” or “P” position.	N·P
	Selector lever in “R” position.	R
	Selector lever in “D” position.	D
	Selector lever in “L” position.	L

Diagnosis Procedure

INFOID:0000000007402549

1.CHECK INPUT SIGNALS

With CONSULT

1. Start engine.
2. Select “MAIN SIGNALS” in “DATA MONITOR” mode for “TRANSMISSION” with CONSULT and read out the value of “RANGE”.
3. Check that the following three positions or indicators are same.

- Actual position of the selector lever
- “RANGE” on CONSULT screen
- Shift position indicator in the combination meter

OK or NG

OK >> **INSPECTION END**
NG >> Check the following.

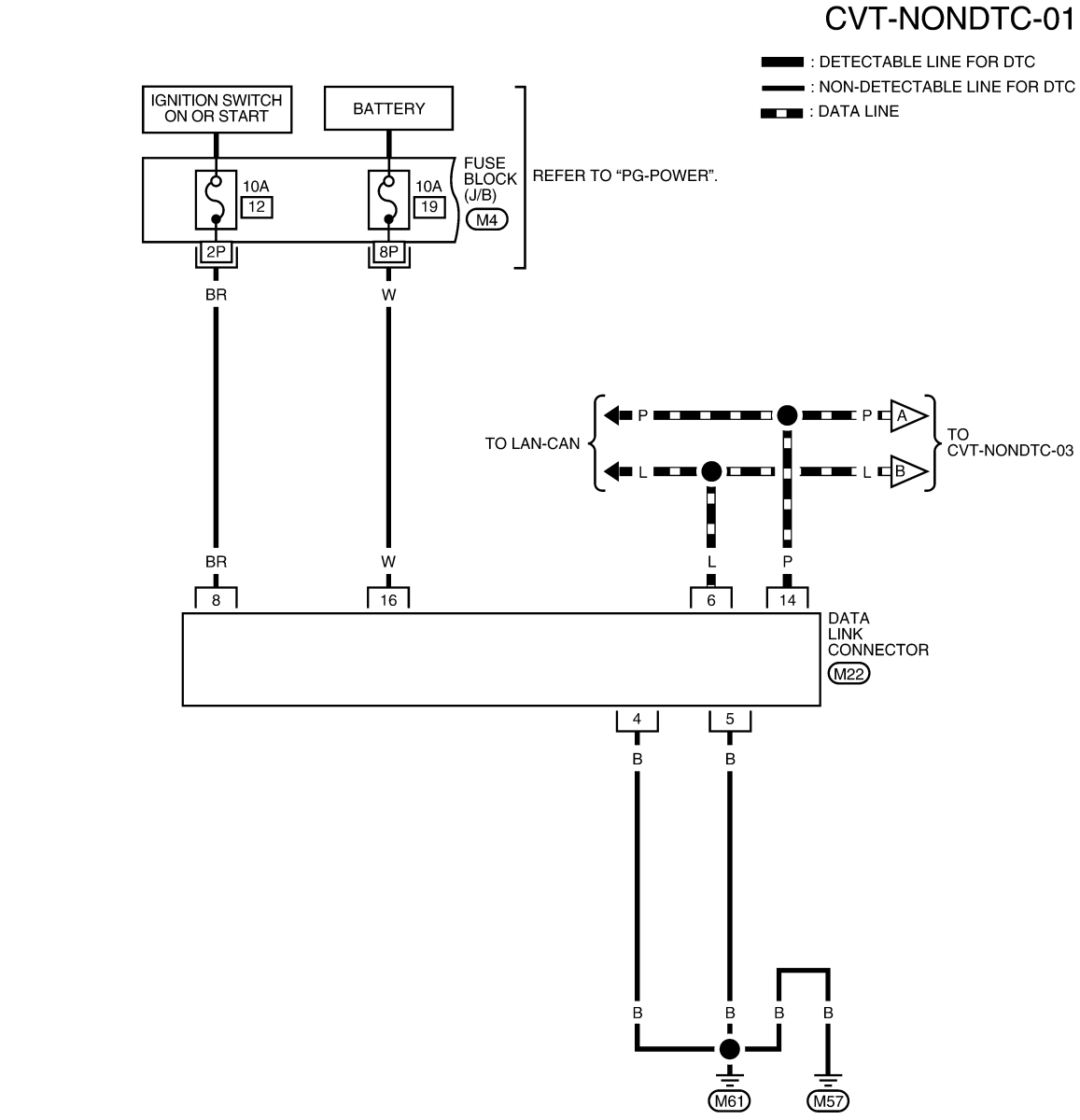
SHIFT POSITION INDICATOR SYMPTOM CHART

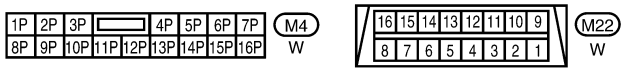
Items	Presumed location of trouble
Actual position does not change.	Park/neutral position switch • Refer to CVT-61. CVT main system (Fail-safe function actuated) • Refer to CVT-47, "CONSULT Function (TRANSMISSION)".
Shift position indicator in the combination meter does not indicate any position.	Perform the self-diagnosis for CVT and the combination meter. • Refer to CVT-47, "CONSULT Function (TRANSMISSION)" and DI-6.
Actual position changes, but the shift position indicator in the combination meter does not change.	
Actual position differs from the shift position indicator in the combination meter.	
Shift position indicator in the combination meter does not indicate specific position only.	Check the combination meter. • Refer to DI-6.

TROUBLE DIAGNOSIS FOR SYMPTOMS

Wiring Diagram - CVT - NONDTC

INFOID:0000000007402550





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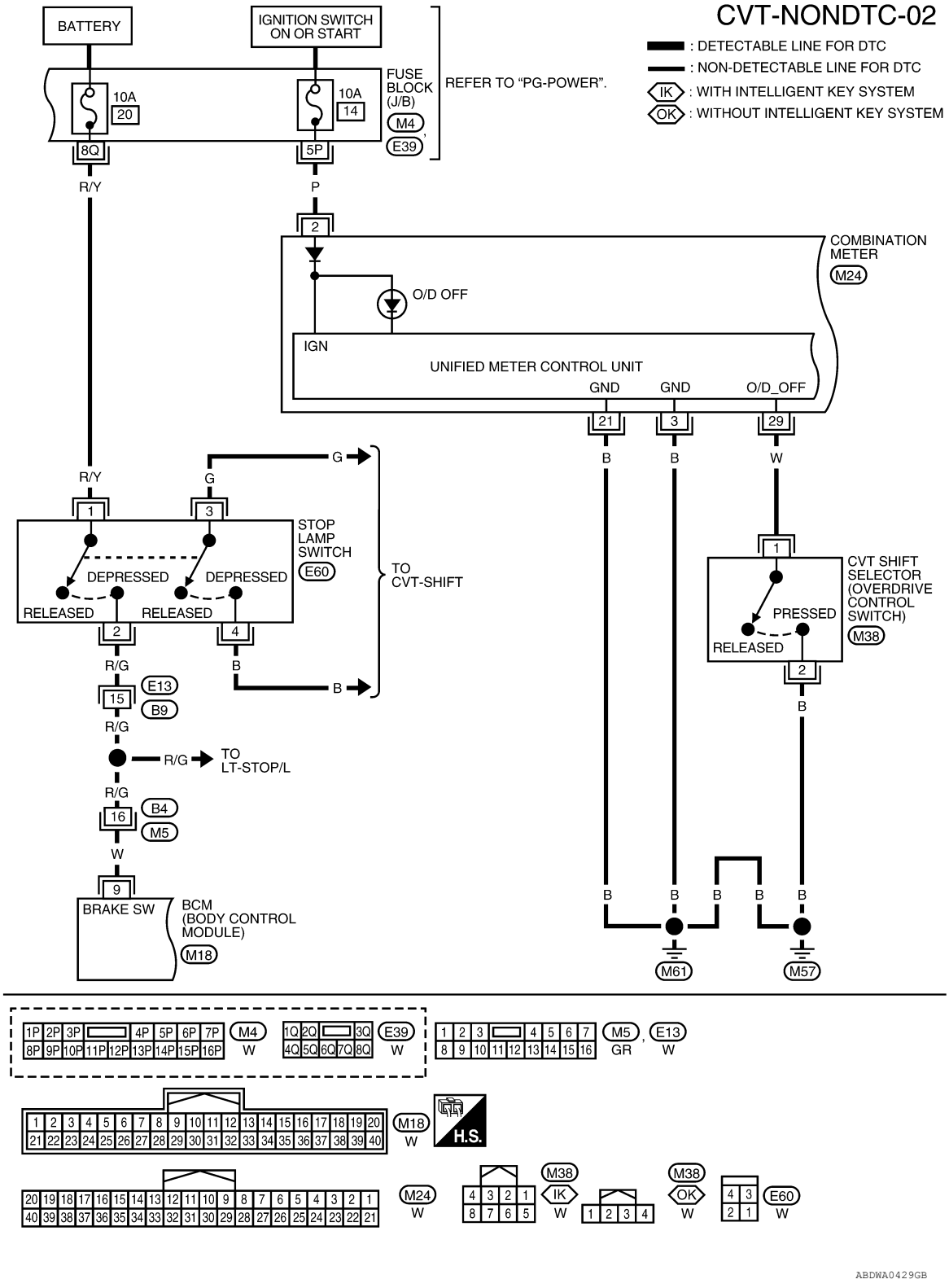

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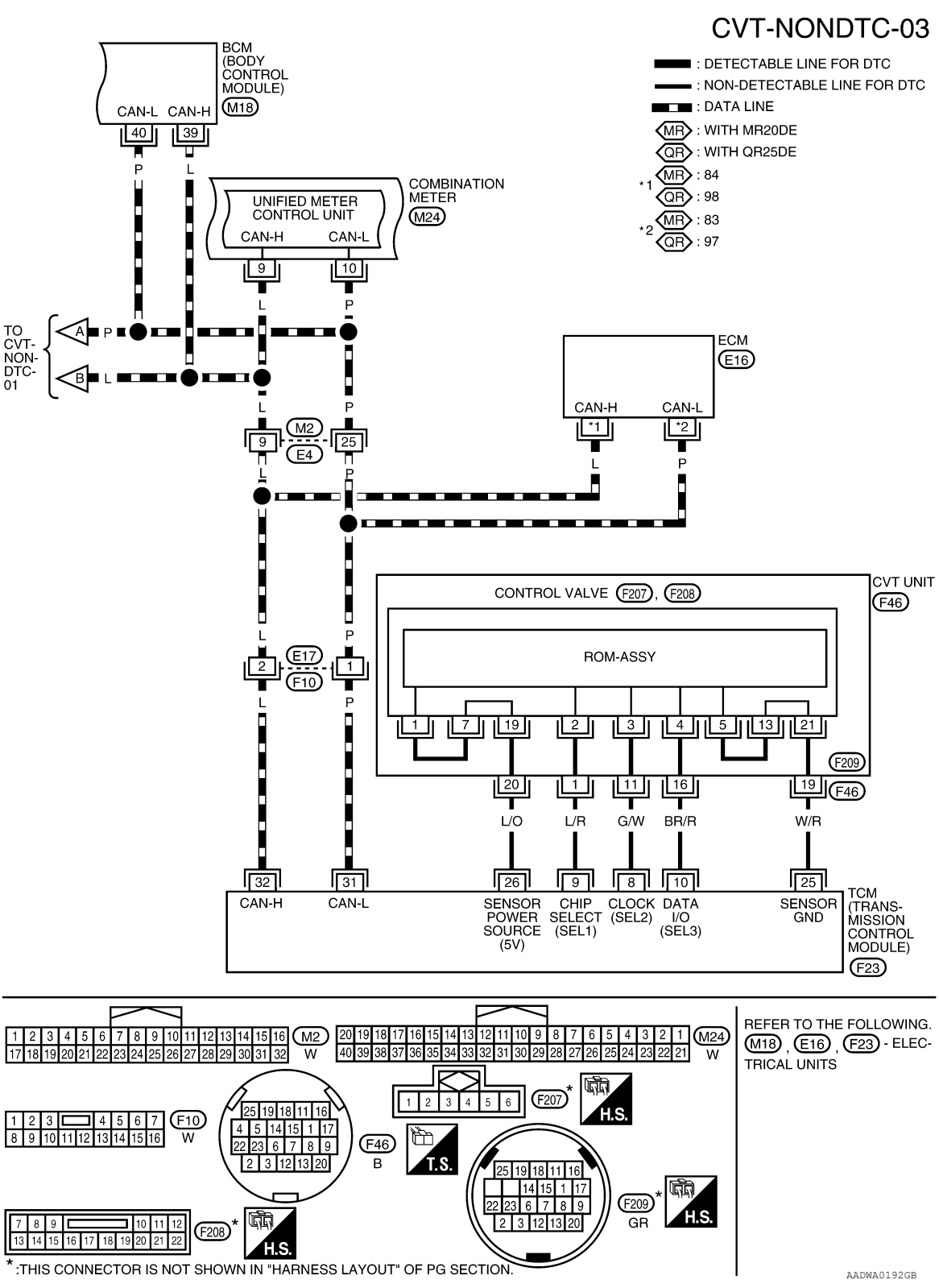
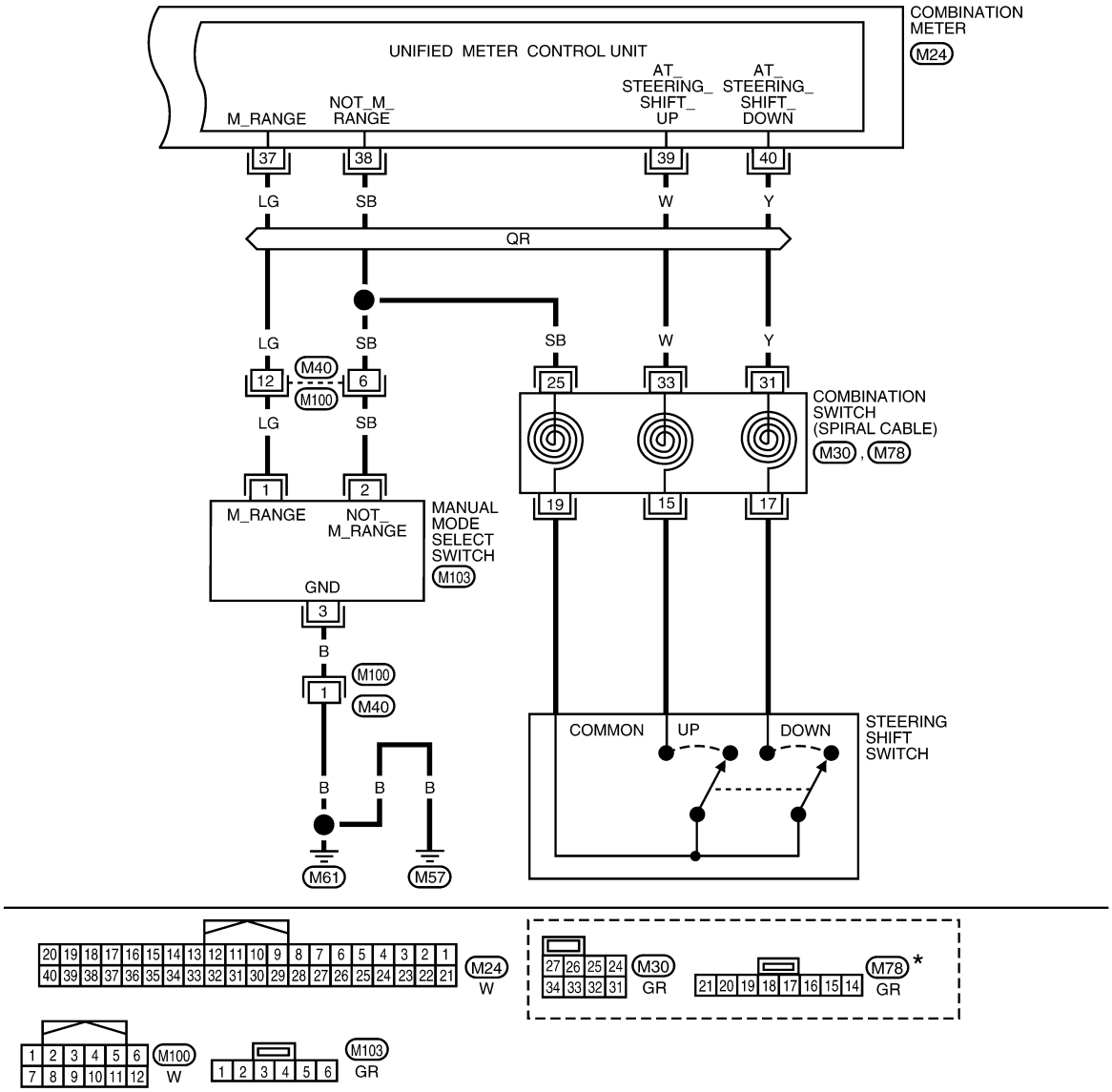

CVT-NONDTC-03
: DETECTABLE LINE FOR DTC
: NON-DETECTABLE LINE FOR DTC
: DATA LINE
MR : WITH MR20DE
QR : WITH QR25DE
*1 MR : 84
QR : 98
*2 MR : 83
QR : 97
BCM (BODY CONTROL MODULE) M18
CAN-L CAN-H
40 39
COMBINATION METER M24
UNIFIED METER CONTROL UNIT
CAN-H CAN-L
9 10
TO CVT-NON-DTC-01
A B
M2 E4
ECM E16
CAN-H CAN-L
*1 *2
CONTROL VALVE F207, F208
CVT UNIT F46
ROM-ASSY
E17 F10
F209 F46
L/O L/R G/W BR/R W/R
32 31 26 9 8 10 25
CAN-H CAN-L SENSOR POWER SOURCE (5V) CHIP SELECT (SEL1) CLOCK (SEL2) DATA I/O (SEL3) SENSOR GND
TCM (TRANS-MISSION CONTROL MODULE) F23
M2 W
M24 W
F10 W
F46 B
F207
F208
F209 GR
H.S.
T.S.
REFER TO THE FOLLOWING. M18, E16, F23 - ELECTRICAL UNITS
*:THIS CONNECTOR IS NOT SHOWN IN "HARNESS LAYOUT" OF PG SECTION.
AADWA0192GB

CVT-NONDTC-04

: DETECTABLE LINE FOR DTC
: NON-DETECTABLE LINE FOR DTC
QR : WITH QR25DE



* : THIS CONNECTOR IS NOT SHOWN IN "HARNESS LAYOUT" OF PG SECTION.

ABDWA0430GB

TCM TERMINALS AND REFERENCE VALUES
Refer to CVT-45, "TCM Input/Output Signal Reference Value".

O/D OFF Indicator Lamp Does Not Come On

INFOID:0000000007402551

SYMPTOM:

O/D OFF indicator lamp does not come on for about 2 seconds when turning ignition switch ON.

DIAGNOSTIC PROCEDURE

1.CHECK CAN COMMUNICATION LINE

Perform the self-diagnosis check. Refer to CVT-47, "CONSULT Function (TRANSMISSION)".

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

YES >> Check CAN communication line. Refer to CVT-55.
NO >> GO TO 2.

2.CHECK TCM POWER SOURCE

1. Turn ignition switch ON.
2. Check voltage between TCM connector terminals and ground. Refer to CVT-119, "Wiring Diagram - CVT - POWER".

Name	Connector	Terminal	Voltage (Approx.)
Power supply	F23	46 - Ground	Battery voltage
		48 - Ground	

OK or NG

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

3.DETECT MALFUNCTIONING ITEM

Check the following.
- Harness for short or open between ignition switch and TCM connector terminal 46, 48
  Refer to CVT-119, "Wiring Diagram - CVT - POWER".
- 10 A fuse (No.49, located in the IPDM E/R). Refer to CVT-119, "Wiring Diagram - CVT - POWER".
- Ignition switch. Refer to PG-4.

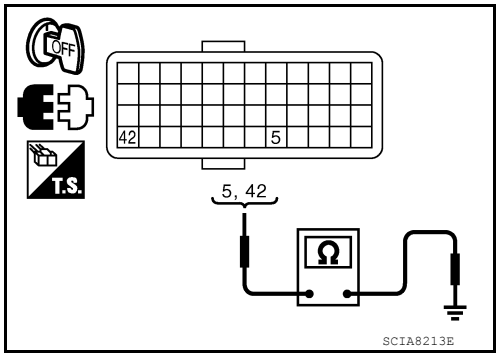
OK or NG

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

4.CHECK TCM GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect TCM connector (A).
3. Check continuity between TCM connector (A) terminals and ground. Refer to CVT-119, "Wiring Diagram - CVT - POWER".

Name	Connector	Terminal	Continuity
Ground	F23	5 - Ground	Yes
		42 - Ground	



OK or NG

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

5.DETECT MALFUNCTIONING ITEM

Check the following.
- Harness and fuse for short or open between ignition switch and O/D OFF indicator lamp
  Refer to PG-4.

OK or NG

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

6.CHECK SYMPTOM

Check again. Refer to CVT-40, "Check before Engine Is Started".

OK or NG

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

7.CHECK COMBINATION METERS

Check combination meters. Refer to DI-6.

OK or NG

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

Engine Cannot Be Started in "P" or "N" Position

INFOID:0000000007402552

SYMPTOM:

- **Engine cannot be started with selector lever in “P” or “N” position.**
- **Engine can be started with selector lever in “D”, “L” or “R” position.**

DIAGNOSTIC PROCEDURE

1.CHECK TRANSMISSION RANGE SWITCH

Check continuity between transmission range switch harness connector terminals. Refer to CVT-35, "Circuit Diagram".

Selector lever position	Connector	Terminal	Continuity
“P”, “N”	F26	6 - 7	Yes
Other positions			No

OK or NG

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

2.CHECK CVT POSITION

Check CVT position. Refer to CVT-174, "Checking of CVT Position".

OK or NG

OK >> Adjust CVT position. Refer to CVT-174, "Adjustment of CVT Position".
NG >> Check transmission range switch (Refer to test group 1.) again after adjusting transmission range switch (Refer to CVT-174, "Adjustment of Transmission Range Switch").
- If OK, **INSPECTION END**
- If NG, repair or replace transmission range switch. Refer to CVT-184, "Transmission Range Switch".

3.CHECK STARTING SYSTEM

Check starting system. Refer to SC-11.

OK or NG

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

In "P" Position, Vehicle Moves Forward or Backward When Pushed

INFOID:0000000007402553

SYMPTOM:

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

DIAGNOSTIC PROCEDURE

1.CHECK CVT POSITION

Check CVT position. Refer to CVT-174, "Checking of CVT Position".

OK or NG

OK >> GO TO 2.
NG >> Adjust CVT position. Refer to CVT-174, "Adjustment of CVT Position".

2.CHECK SYMPTOM

Check again. Refer to CVT-40, "Check at Idle".

OK or NG

OK >> **INSPECTION END**
NG >> Replace the transaxle assembly. Refer to CVT-195, "Removal and Installation (MR20DE)" (MR20DE), CVT-197, "Removal and Installation (QR25DE)" (QR25DE).

In "N" Position, Vehicle Moves

INFOID:0000000007402554

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

DIAGNOSTIC PROCEDURE

1.CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis check. Refer to CVT-47, "CONSULT Function (TRANSMISSION)".

Do the self-diagnostic results indicate transmission range switch circuit?

YES >> Check transmission range switch circuit. Refer to CVT-61.
NO >> GO TO 2.

2.CHECK CVT POSITION

Check CVT position. Refer to CVT-174, "Checking of CVT Position".

OK or NG

OK >> GO TO 3.
NG >> Adjust CVT position. Refer to CVT-174, "Adjustment of CVT Position".

3.CHECK CVT FLUID LEVEL

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

OK or NG

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

4.CHECK SYMPTOM

Check again. Refer to CVT-40, "Check at Idle".

OK or NG

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

5.CHECK TCM

1. Check TCM input/output signals. Refer to CVT-45, "TCM Input/Output Signal Reference Value".
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-195, "Removal and Installation (MR20DE)" (MR20DE), CVT-197, "Removal and Installation (QR25DE)" (QR25DE).
NG >> Repair or replace damaged parts.

Large Shock "N" → "R" Position

INFOID:0000000007402555

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

DIAGNOSTIC PROCEDURE

1.CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis check. Refer to CVT-47, "CONSULT Function (TRANSMISSION)".

Is any malfunction detected by self-diagnosis?

YES >> Check the malfunctioning system. Refer to CVT-47, "CONSULT Function (TRANSMISSION)".

NO >> GO TO 2.

2.CHECK ENGINE IDLE SPEED

Check the engine idle speed. Refer to EC-98, "Idle Speed and Ignition Timing Check" [MR20DE (For california)], EC-658, "Idle Speed and Ignition Timing Check" [MR20DE (Except for california)] and EC-1204, "Idle Speed and Ignition Timing Check" (QR25DE).

OK or NG

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

3.CHECK CVT FLUID LEVEL

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

OK or NG

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

4.CHECK LINE PRESSURE

Check line pressure at idle. Refer to CVT-36, "Inspections before Trouble Diagnosis".

OK or NG

OK >> GO TO 5.
NG >> Check the malfunctioning item. Refer to CVT-36, "Inspections before Trouble Diagnosis".

5.SYMPTOM CHECK

Check again. Refer to CVT-40, "Check at Idle".

OK or NG

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

6.CHECK TCM

1. Check TCM input/output signals. Refer to CVT-45, "TCM Input/Output Signal Reference Value".
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-195, "Removal and Installation (MR20DE)".
NG >> Repair or replace damaged parts.

Vehicle Does Not Creep Backward in "R" Position

INFOID:0000000007402556

SYMPTOM:

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

DIAGNOSTIC PROCEDURE

1.CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis check. Refer to CVT-47, "CONSULT Function (TRANSMISSION)".

Is any malfunction detected by self-diagnosis

YES >> Check the malfunctioning system. Refer to CVT-47, "CONSULT Function (TRANSMISSION)".
NO >> GO TO 2.

2.CHECK CVT POSITION

Check CVT position. Refer to CVT-174, "Checking of CVT Position".

OK or NG

OK >> GO TO 3.
NG >> Adjust CVT position. Refer to CVT-174, "Adjustment of CVT Position".

3.CHECK CVT FLUID LEVEL

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

OK or NG

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

4.CHECK LINE PRESSURE

Check line pressure at idle. Refer to CVT-36, "Inspections before Trouble Diagnosis".

OK or NG

OK >> GO TO 5.
NG >> Check the malfunctioning item. Refer to CVT-36, "Inspections before Trouble Diagnosis".

5.CHECK STALL REVOLUTION

Check stall revolution. Refer to CVT-36, "Inspections before Trouble Diagnosis".

OK or NG

OK >> GO TO 6.
NG >> Check the malfunctioning item. Refer to CVT-36, "Inspections before Trouble Diagnosis".

6.CHECK SYMPTOM

Check again. Refer to CVT-40, "Check at Idle".

OK or NG

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

7.CHECK TCM

1. Check TCM input/output signals. Refer to CVT-45, "TCM Input/Output Signal Reference Value".
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-195, "Removal and Installation (MR20DE)" (MR20DE), CVT-197, "Removal and Installation (QR25DE)" (QR25DE).
NG >> Repair or replace damaged parts.

Vehicle Does Not Creep Forward in "D" or "L" Position

INFOID:0000000007402557

SYMPTOM:
Vehicle does not creep forward when selecting “D” or “L” position.

DIAGNOSTIC PROCEDURE

1.CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis check. Refer to CVT-47, "CONSULT Function (TRANSMISSION)".

Is any malfunction detected by self-diagnosis?

YES >> Check the malfunctioning system. Refer to CVT-47, "CONSULT Function (TRANSMISSION)".
NO >> GO TO 2.

2.CHECK CVT POSITION

Check CVT position. Refer to CVT-174, "Checking of CVT Position".

OK or NG

OK >> GO TO 3.
NG >> Adjust CVT position. Refer to CVT-174, "Adjustment of CVT Position".

3.CHECK CVT FLUID LEVEL

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

OK or NG

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

4.CHECK LINE PRESSURE

Check line pressure at idle. Refer to CVT-36, "Inspections before Trouble Diagnosis".

OK or NG

OK >> GO TO 5.
NG >> Check the malfunctioning item. Refer to CVT-36, "Inspections before Trouble Diagnosis".

5.CHECK STALL REVOLUTION

Check stall revolution. Refer to CVT-36, "Inspections before Trouble Diagnosis".

OK or NG

OK >> GO TO 6.
NG >> Check the malfunctioning item. Refer to CVT-36, "Inspections before Trouble Diagnosis".

6.CHECK SYMPTOM

Check again. Refer to CVT-40, "Check at Idle".

OK or NG

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

7.CHECK TCM

1. Check TCM input/output signals. Refer to CVT-45, "TCM Input/Output Signal Reference Value".
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-195, "Removal and Installation (MR20DE)" (MR20DE), CVT-197, "Removal and Installation (QR25DE)" (QR25DE).
NG >> Repair or replace damaged parts.

Vehicle Speed Does Not Change in "L" Position

INFOID:0000000007402558

SYMPTOM:
Vehicle speed does not change in “L” position while the cruise test.

DIAGNOSTIC PROCEDURE

1.CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis check. Refer to CVT-47, "CONSULT Function (TRANSMISSION)".

Is any malfunction detected by self-diagnosis?

YES >> Check the malfunctioning system. Refer to CVT-47, "CONSULT Function (TRANSMISSION)".
NO >> GO TO 2.

2.CHECK CVT POSITION

Check CVT position. Refer to CVT-174, "Checking of CVT Position".

OK or NG

OK >> GO TO 3.
NG >> Adjust CVT position. Refer to CVT-174, "Adjustment of CVT Position".

3.CHECK CVT FLUID LEVEL

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

OK or NG

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

4.CHECK LINE PRESSURE

Check line pressure at idle. Refer to CVT-36, "Inspections before Trouble Diagnosis".

OK or NG

OK >> GO TO 5.
NG >> Check the malfunctioning item. Refer to CVT-36, "Inspections before Trouble Diagnosis".

5.CHECK STALL REVOLUTION

Check stall revolution. Refer to CVT-36, "Inspections before Trouble Diagnosis".

OK or NG

OK >> GO TO 6.
NG >> Check the malfunctioning item. Refer to CVT-36, "Inspections before Trouble Diagnosis".

6.CHECK SYMPTOM

Check again. Refer to CVT-41, "Cruise Test".

OK or NG

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

7.CHECK TCM

1. Check TCM input/output signals. Refer to CVT-45, "TCM Input/Output Signal Reference Value".
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-195, "Removal and Installation (MR20DE)" (MR20DE), CVT-197, "Removal and Installation (QR25DE)" (QR25DE).
NG >> Repair or replace damaged parts.

Vehicle Speed Does Not Change in overdrive-off mode

INFOID:0000000007402559

SYMPTOM:

Vehicle speed does not change in overdrive-off mode while the cruise test.

DIAGNOSTIC PROCEDURE

1.CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis check. Refer to CVT-47, "CONSULT Function (TRANSMISSION)".

Is any malfunction detected by self-diagnosis?

YES >> Check the malfunctioning system. Refer to CVT-47, "CONSULT Function (TRANSMISSION)".
NO >> GO TO 2.

2.CHECK OVERDRIVE CONTROL SWITCH

Check overdrive control switch. Refer to CVT-141.

OK or NG

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

3.CHECK CVT FLUID LEVEL

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

OK or NG

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

4.CHECK LINE PRESSURE

Check line pressure at idle. Refer to CVT-36, "Inspections before Trouble Diagnosis".

OK or NG

OK >> GO TO 5.
NG >> Check the malfunctioning item. Refer to CVT-36, "Inspections before Trouble Diagnosis".

5.CHECK STALL REVOLUTION

Check stall revolution. Refer to CVT-36, "Inspections before Trouble Diagnosis".

OK or NG

OK >> GO TO 6.
NG >> Check the malfunctioning item. Refer to CVT-36, "Inspections before Trouble Diagnosis".

6.CHECK SYMPTOM

Check again. Refer to CVT-41, "Cruise Test".

OK or NG

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

7.CHECK TCM

1. Check TCM input/output signals. Refer to CVT-45, "TCM Input/Output Signal Reference Value".
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-195, "Removal and Installation (MR20DE)" (MR20DE), CVT-197, "Removal and Installation (QR25DE)" (QR25DE).
NG >> Repair or replace damaged parts.

Vehicle Speed Does Not Change in "D" Position

INFOID:0000000007402560

SYMPTOM:
Vehicle speed does not change in “D” position while the cruise test.

DIAGNOSTIC PROCEDURE

1.CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis check. Refer to CVT-47, "CONSULT Function (TRANSMISSION)".

Is any malfunction detected by self-diagnosis?

YES >> Check the malfunctioning system. Refer to CVT-47, "CONSULT Function (TRANSMISSION)".
NO >> GO TO 2.

2.CHECK CVT POSITION

Check CVT position. Refer to CVT-174, "Checking of CVT Position".

OK or NG

OK >> GO TO 3.
NG >> Adjust CVT position. Refer to CVT-174, "Adjustment of CVT Position".

3.CHECK CVT FLUID LEVEL

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

OK or NG

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

4.CHECK LINE PRESSURE

Check line pressure at idle. Refer to CVT-36, "Inspections before Trouble Diagnosis".

OK or NG

OK >> GO TO 5.
NG >> Check the malfunctioning item. Refer to CVT-36, "Inspections before Trouble Diagnosis".

5.CHECK STALL REVOLUTION

Check stall revolution. Refer to CVT-36, "Inspections before Trouble Diagnosis".

OK or NG

OK >> GO TO 6.
NG >> Check the malfunctioning item. Refer to CVT-36, "Inspections before Trouble Diagnosis".

6.CHECK SYMPTOM

Check again. Refer to CVT-41, "Cruise Test".

OK or NG

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

7.CHECK TCM

1. Check TCM input/output signals. Refer to CVT-45, "TCM Input/Output Signal Reference Value".
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-195, "Removal and Installation (MR20DE)" (MR20DE), CVT-197, "Removal and Installation (QR25DE)" (QR25DE).
NG >> Repair or replace damaged parts.

Cannot Be Changed to Manual Mode

INFOID:0000000007402561

SYMPTOM:

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

DIAGNOSTIC PROCEDURE

1.CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis check. Refer to CVT-47, "CONSULT Function (TRANSMISSION)" .

Is any malfunction detected by self-diagnosis?

YES >> Check the malfunctioning system. Refer to CVT-47, "CONSULT Function (TRANSMISSION)" .
NO >> GO TO 2.

2.CHECK MANUAL MODE SWITCH

Check the manual mode switch circuit. Refer to CVT-105 .

OK or NG

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

3.SYMPTOM CHECK

Check again. Refer to CVT-41, "Cruise Test" .

OK or NG

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

4.CHECK TCM

1. Check TCM input/output signals. Refer to CVT-45, "TCM Input/Output Signal Reference Value" .
2. If NG, re-check TCM pin terminals for damage or loose connection with harness connector.

OK or NG

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

CVT Does Not Shift in Manual Mode

INFOID:0000000007402562

SYMPTOM:

Speed does not change even if the selector lever is put in the manual shift gate position and the selector lever is operated to + side or to - side.

DIAGNOSTIC PROCEDURE

1.CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis check. Refer to CVT-47, "CONSULT Function (TRANSMISSION)" .

Is any malfunction detected by self-diagnosis?

YES >> Check the malfunctioning system. Refer to CVT-47, "CONSULT Function (TRANSMISSION)" .
NO >> GO TO 2.

2.CHECK MANUAL MODE SWITCH

Check the manual mode switch circuit. Refer to CVT-105 .

OK or NG

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

3.CHECK CVT POSITION

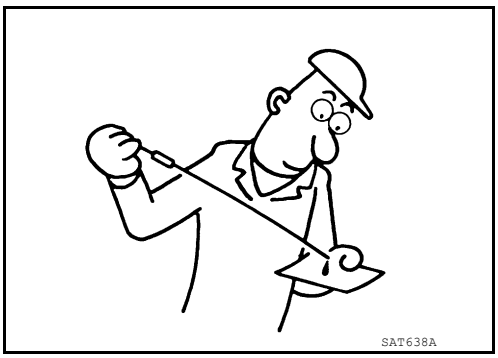
Check CVT position. Refer to CVT-174, "Checking of CVT Position"

OK or NG

OK >> GO TO 4.
NG >> Adjust CVT position. Refer to CVT-174, "Adjustment of CVT Position".

4. CHECK CVT FLUID LEVEL

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

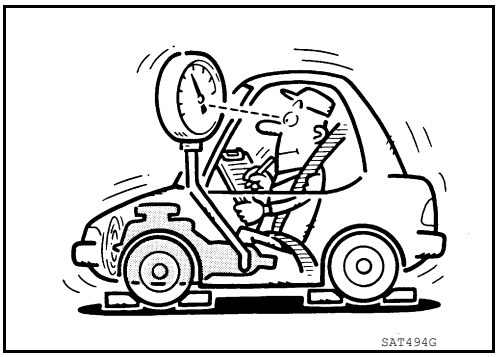


OK or NG

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

5. CHECK LINE PRESSURE

Check line pressure at idle. Refer to CVT-36, "Inspections before Trouble Diagnosis" .



OK or NG

OK >> GO TO 6.
NG >> Check the malfunctioning item. Refer to CVT-36, "Inspections before Trouble Diagnosis" .

6. CHECK SYMPTOM

Check again. Refer to CVT-41, "Cruise Test".

OK or NG

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

7. CHECK TCM

1. Check TCM input/output signals. Refer to CVT-45, "TCM Input/Output Signal Reference Value".
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-195, "Removal and Installation (MR20DE)" (MR20DE), CVT-197, "Removal and Installation (QR25DE)" (QR25DE).
NG >> Repair or replace damaged parts.

Vehicle Does Not Decelerate by Engine Brake

INFOID:0000000007402563

SYMPTOM:

Engine brake does not operate when releasing the accelerator pedal while the cruise test.

DIAGNOSTIC PROCEDURE

1. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis check. Refer to CVT-47, "CONSULT Function (TRANSMISSION)".

Is any malfunction detected by self-diagnosis?

YES >> Check the malfunctioning system. Refer to CVT-47, "CONSULT Function (TRANSMISSION)".
NO >> GO TO 2.

2. CHECK CVT POSITION

Check CVT position. Refer to CVT-174, "Checking of CVT Position".

OK or NG

OK >> GO TO 3.
NG >> Adjust CVT position. Refer to CVT-174, "Adjustment of CVT Position".

3. CHECK CVT FLUID LEVEL

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

OK or NG

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

4. CHECK LINE PRESSURE

Check line pressure at idle. Refer to CVT-36, "Inspections before Trouble Diagnosis".

OK or NG

OK >> GO TO 5.
NG >> Check the malfunctioning item. Refer to CVT-36, "Inspections before Trouble Diagnosis".

5. CHECK SYMPTOM

Check again. Refer to CVT-41, "Cruise Test".

OK or NG

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

6. CHECK TCM

1. Check TCM input/output signals. Refer to CVT-45, "TCM Input/Output Signal Reference Value".
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-195, "Removal and Installation (MR20DE)" (MR20DE), CVT-197, "Removal and Installation (QR25DE)" (QR25DE).
NG >> Repair or replace damaged parts.

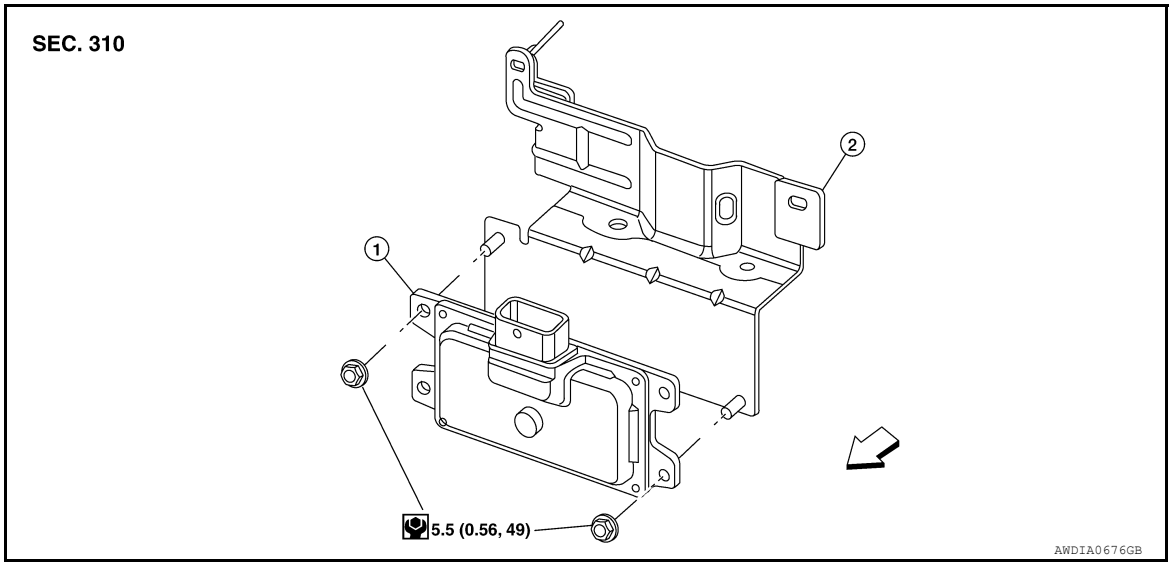
TCM

Removal and Installation

INFOID:0000000007402564

MR20DE

Components



1. TCM
2. Bracket
⇦ Front

Removal

CAUTION:

When replacing TCM and transaxle assembly as a set, replace transaxle assembly first and then replace TCM. Refer to CVT-8, "Service After Replacing TCM, Transaxle Assembly, or Control Valve".

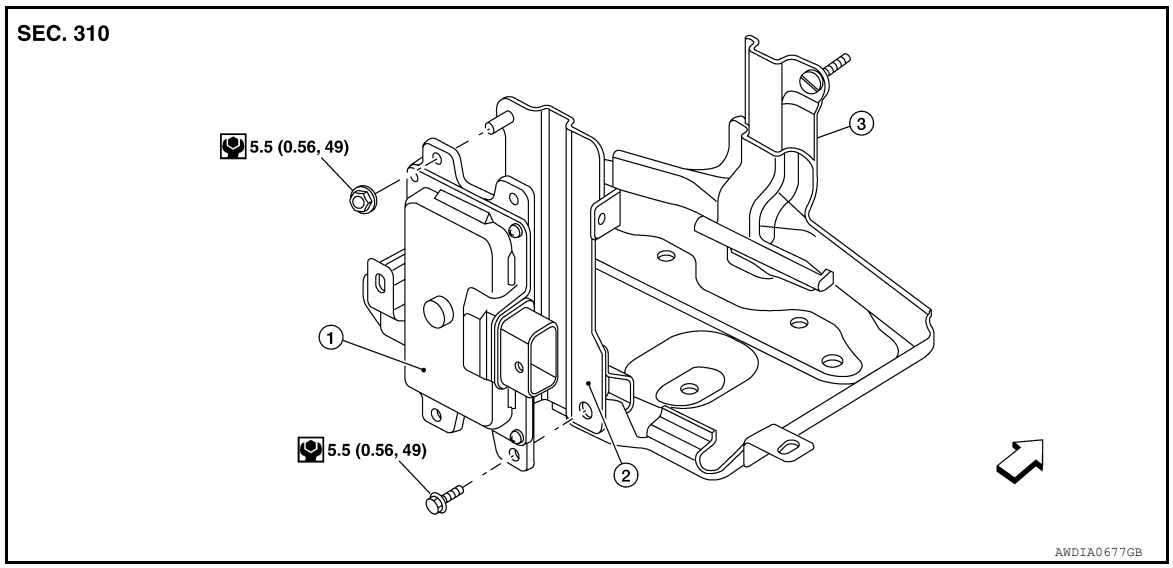
1. Disconnect the battery negative terminal.
2. Remove the air duct (inlet). Refer to EM-16, "Component".
3. Disconnect the TCM harness connector.
4. Remove the TCM.

Installation

Installation is in the reverse order of removal.

QR25DE

Components



1. TCM
2. Bracket
3. Battery tray

⇦ Front

Removal

CAUTION:

When replacing TCM and transaxle assembly as a set, replace transaxle assembly first and then replace TCM. Refer to CVT-8, "Service After Replacing TCM, Transaxle Assembly, or Control Valve".

1. Disconnect the battery negative terminal.
2. Remove the air cleaner case. Refer to EM-16.
3. Disconnect the TCM harness connector.
4. Remove the TCM.

Installation

Installation is in the reverse order of removal.

CVT SHIFT LOCK SYSTEM

Description

INFOID:0000000007402565

WITH INTELLIGENT KEY

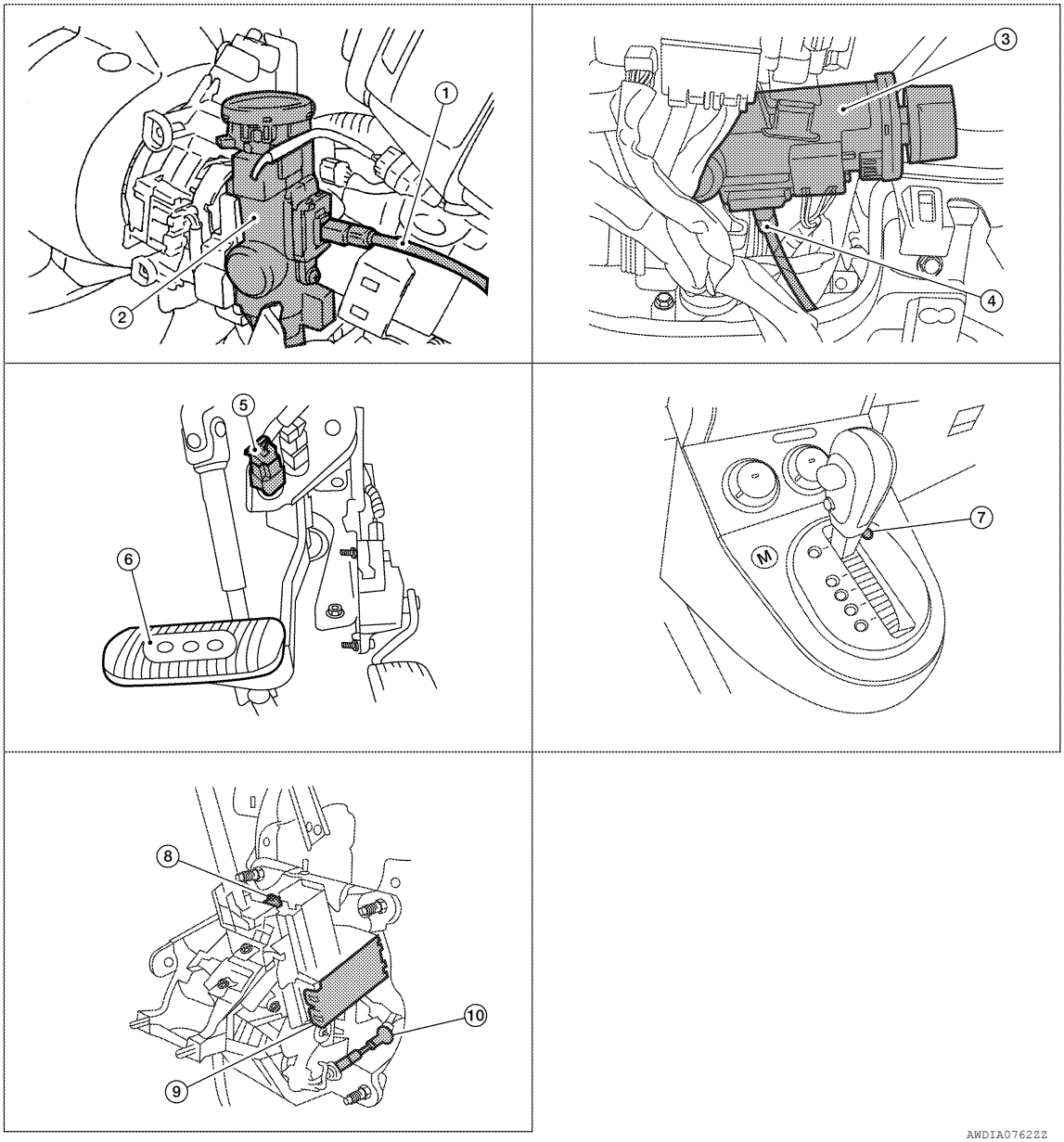
- The mechanical key interlock mechanism also operates as a shift lock:
  With the ignition knob switch turned to ON, selector lever cannot be shifted from “P” position to any other position unless brake pedal is depressed.
  With the ignition knob switch turned to OFF, selector lever cannot be shifted from “P” position to any other position.
- 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 ignition knob switch, respectively.

WITHOUT INTELLIGENT KEY

- The mechanical key interlock mechanism also operates as a shift lock:
  With the ignition switch turned to ON, selector lever cannot be shifted from “P” position to any other position unless brake pedal is depressed.
  With the key removed, selector lever cannot be shifted from “P” position to any other position.
  The key cannot be removed unless selector lever is placed in “P” position.
- 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 key cylinder, respectively.

Shift Lock System Electrical Parts Location

INFOID:0000000007402566

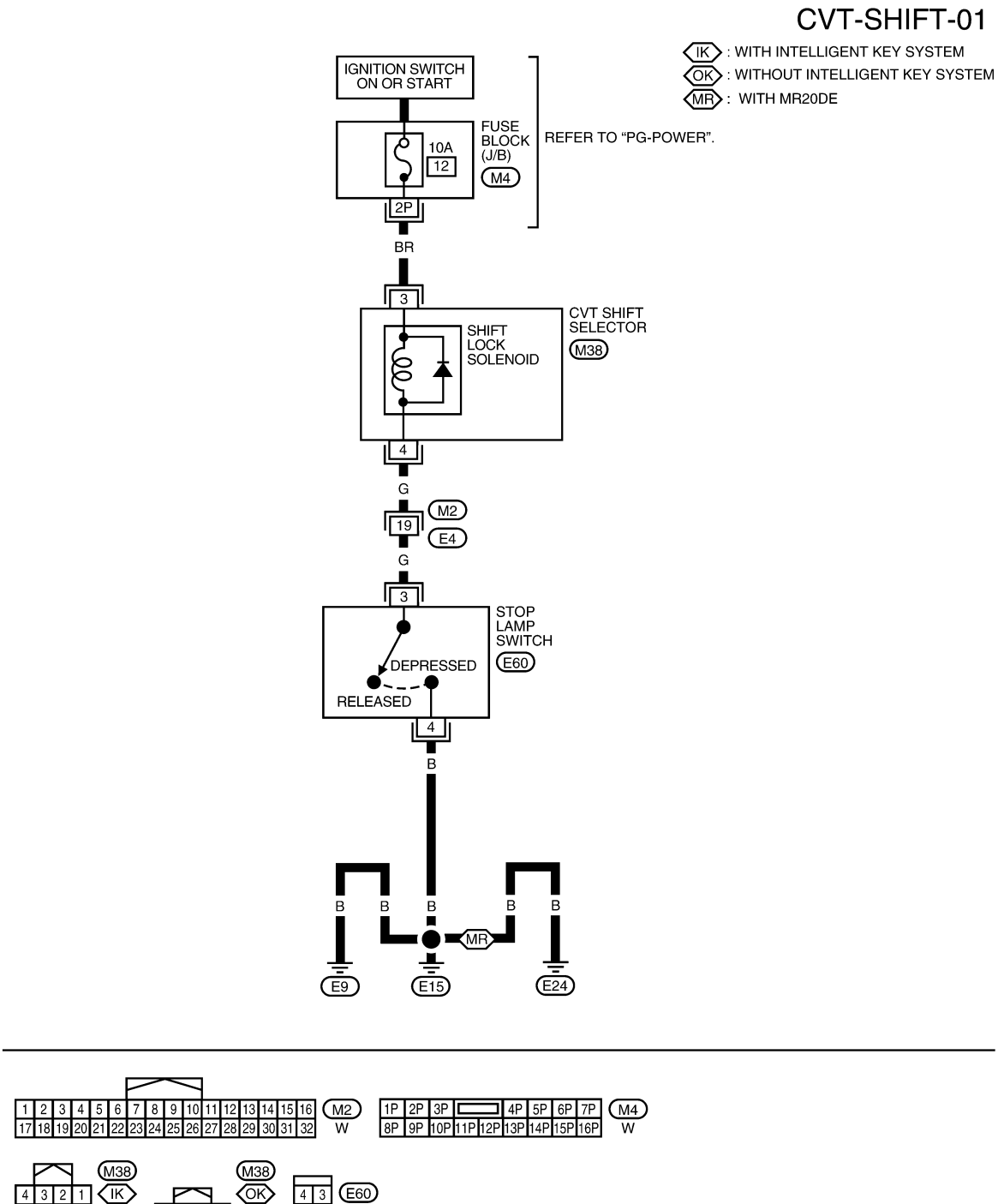


AWDIA0762ZZ

1. Key interlock cable (Without Intelligent Key)
2. Key cylinder (Without Intelligent Key)
3. Ignition knob switch (With Intelligent Key)
4. Key interlock cable (With Intelligent Key)
5. Stop lamp switch
6. Brake pedal
7. Shift lock release button
8. Park position switch
9. Shift lock solenoid
10. Key interlock cable

Wiring Diagram - CVT - SHIFT

INFOID:0000000007402567



Diagnosis Procedure

INFOID:0000000007402568

WITHOUT INTELLIGENT KEY

SYMPTOM 1:

- **Selector lever cannot be moved from “P” position with ignition switch in ON position and brake pedal depressed.**
- **Selector lever can be moved from “P” position with ignition key in ON position and brake pedal released.**
- **Selector lever can be moved from “P” position when ignition switch is removed from key cylinder.**

SYMPTOM 2:

- **Ignition key cannot be removed when selector lever is set to “P” position.**
- **Ignition key can be removed when selector lever is set to any position except “P” position.**

1.CHECK KEY INTERLOCK CABLE

Check key interlock cable for damage.

OK or NG

OK >> GO TO 2.
NG >> Repair key interlock cable. Refer to CVT-175, "Removal and Installation".

2.CHECK CVT POSITION

Check CVT position. Refer to CVT-174, "Checking of CVT Position".

OK or NG

OK >> GO TO 3.
NG >> Adjust control cable. Refer to CVT-174, "Adjustment of CVT Position".

3.CHECK SHIFT LOCK SOLENOID AND PARK POSITION SWITCH

1. Turn ignition switch ON. (Do not start engine.)
2. Selector lever is set in “P” position.
3. Check operation sound.

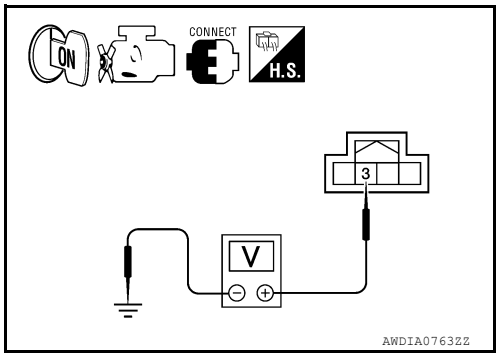
Condition	Brake pedal	Operation sound
When ignition switch is turned to ON position and selector lever is set in “P” position.	Depressed→Released	Yes
	Released→Depressed	

OK or NG

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

4.CHECK POWER SOURCE

Check voltage between CVT shift selector connector M38 terminal 3 and ground.



OK or NG

OK >> GO TO 6.
NG >> GO TO 5.

5.DETECT MALFUNCTIONING ITEM

Check the following. If any items are damaged, repair or replace damaged parts.

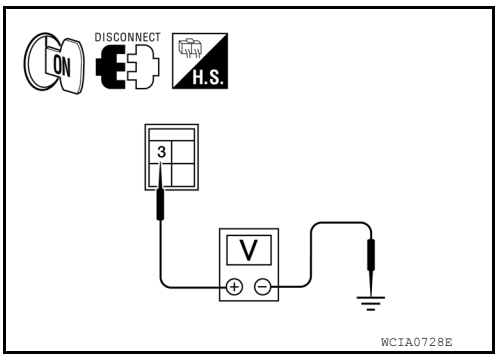
- Harness for short or open between ignition switch and CVT shift selector connector
- 10A fuse [No.12, located in the fuse block (J/B)]
- Ignition switch, Refer to PG-4 .

OK or NG

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

6.CHECK STOP LAMP SWITCH POWER SOURCE

1. Turn ignition switch OFF.
2. Disconnect stop lamp switch connector E60.
3. Turn ignition switch ON.
4. Check voltage between stop lamp switch connector E60 terminal 3 and ground.



3 - ground : Battery voltage

OK or NG

OK >> GO TO 8.
NG >> GO TO 7.

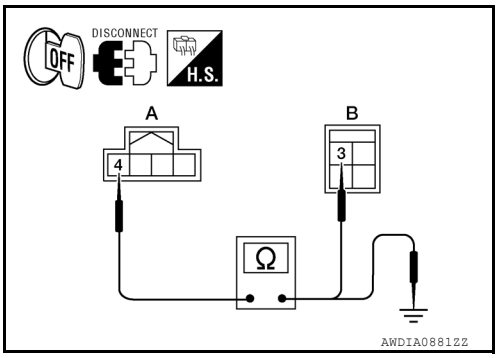
7. CHECK STOP LAMP SWITCH SUPPLY CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect CVT shift selector connector M38.
3. Check continuity between CVT shift selector connector M38 (A) terminal 4 and stop lamp switch connector E60 (B) terminal 3.

Continuity should exist.

4. Check continuity between CVT shift selector connector M38 (A) terminal 4 and ground.

Continuity should not exist.



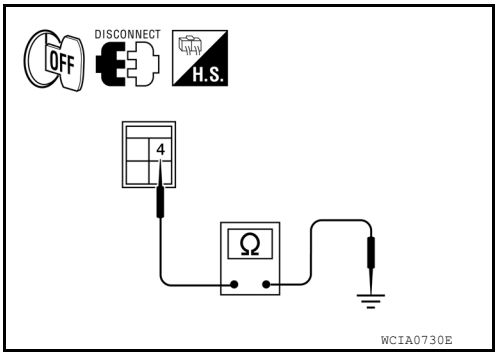
OK or NG

OK >> Replace shift lock solenoid assembly.
NG >> Repair or replace harness as necessary.

8. CHECK GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Check continuity between stop lamp switch connector E60 terminal 4 and ground.

Continuity should exist.



OK or NG

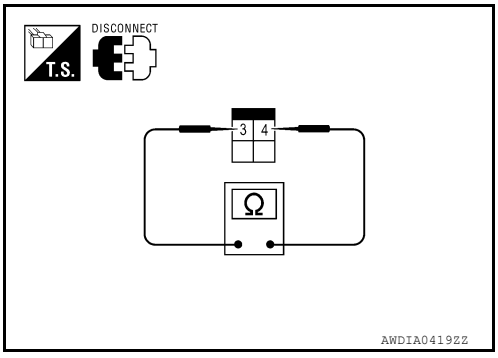
OK >> GO TO 9.
NG >> Repair or replace harness as necessary.

9. CHECK STOP LAMP SWITCH

Check continuity between stop lamp switch terminals 3 and 4.

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

Check stop lamp switch after adjusting brake pedal. Refer to BR-7 .



OK or NG

OK >> **INSPECTION END**.
NG >> Replace stop lamp switch.

WITH INTELLIGENT KEY

SYMPTOM 1:

- **Selector lever cannot be moved from “P” position with ignition knob switch in ON position and brake pedal depressed.**

- **Selector lever can be moved from “P” position with ignition knob switch in ON position and brake pedal released.**
- **Selector lever can be moved from “P” position when ignition knob switch is in OFF position.**

SYMPTOM 2:

- **Ignition knob switch cannot be turned when selector lever is set to “P” position.**
- **Ignition knob switch can be turned when selector lever is set to any position except “P” position.**

1.CHECK KEY INTERLOCK CABLE

Check key interlock cable for damage.

OK or NG

OK >> GO TO 2.
NG >> Repair key interlock cable. Refer to CVT-175, "Removal and Installation".

2.CHECK CVT POSITION

Check CVT position. Refer to CVT-174, "Checking of CVT Position".

OK or NG

OK >> GO TO 3.
NG >> Adjust control cable. Refer to CVT-174, "Adjustment of CVT Position".

3.CHECK SHIFT LOCK SOLENOID AND PARK POSITION SWITCH

1. Turn ignition switch ON. (Do not start engine.)
2. Selector lever is set in “P” position.
3. Check operation sound.

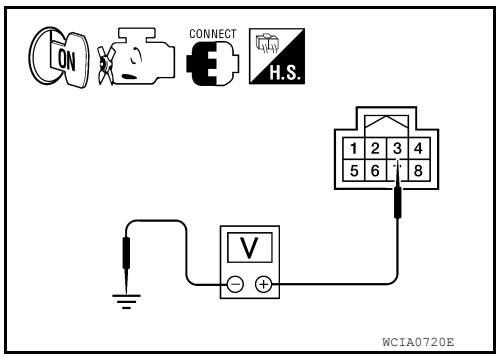
Condition	Brake pedal	Operation sound
When ignition switch is turned to ON position and selector lever is set in “P” position.	Depressed	Yes
	Released	No

OK or NG

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

4.CHECK POWER SOURCE

Check voltage between CVT shift selector harness connector M38 terminal 3 and ground.



OK or NG

OK >> GO TO 6.
NG >> GO TO 5.

5.DETECT MALFUNCTIONING ITEM

Check the following. If any items are damaged, repair or replace damaged parts.

- Harness for short or open between ignition switch and CVT shift selector harness connector
- 10A fuse [No.12, located in the fuse block (J/B)]
- Ignition switch, Refer to PG-4 .

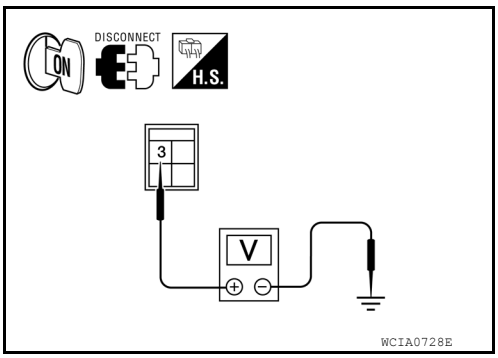
OK or NG

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

6.CHECK STOP LAMP SWITCH POWER SOURCE

1. Turn ignition switch OFF.
2. Disconnect stop lamp switch harness connector E60.
3. Turn ignition switch ON.
4. Check voltage between stop lamp switch harness connector E60 terminal 3 and ground.

3 - ground : Battery voltage



OK or NG

OK >> GO TO 8.
NG >> GO TO 7.

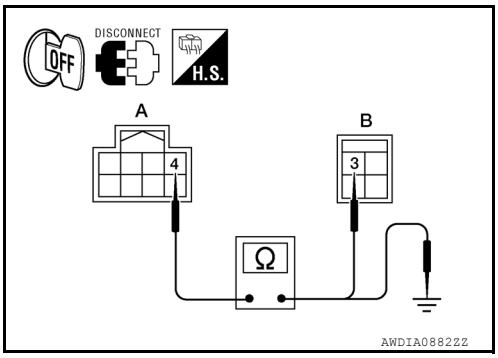
7. CHECK STOP LAMP SWITCH SUPPLY CIRCUIT

1. Turn ignition switch OFF.
2. Disconnect CVT shift selector harness connector M38.
3. Check continuity between stop lamp switch harness connector E60 (B) terminal 3 and CVT shift selector harness connector M38 (A) terminal 4.

Continuity should exist.

4. Check continuity between stop lamp switch harness connector E60 (B) terminal 3 and ground.

Continuity should not exist.



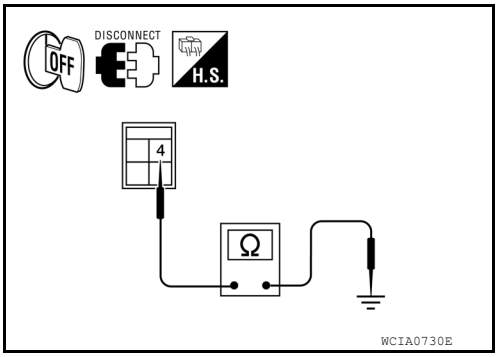
OK or NG

OK >> Replace shift lock solenoid assembly.
NG >> Repair or replace harness as necessary.

8. CHECK GROUND CIRCUIT

1. Turn ignition switch OFF.
2. Check continuity between stop lamp switch harness connector E60 terminal 4 and ground.

Continuity should exist.



OK or NG

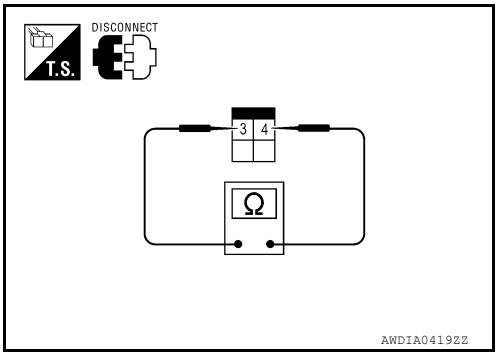
OK >> GO TO 9.
NG >> Repair or replace harness as necessary.

9. CHECK STOP LAMP SWITCH

Check continuity between stop lamp switch terminals 3 and 4.

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

Check stop lamp switch after adjusting brake pedal. Refer to BR-7 .



OK or NG

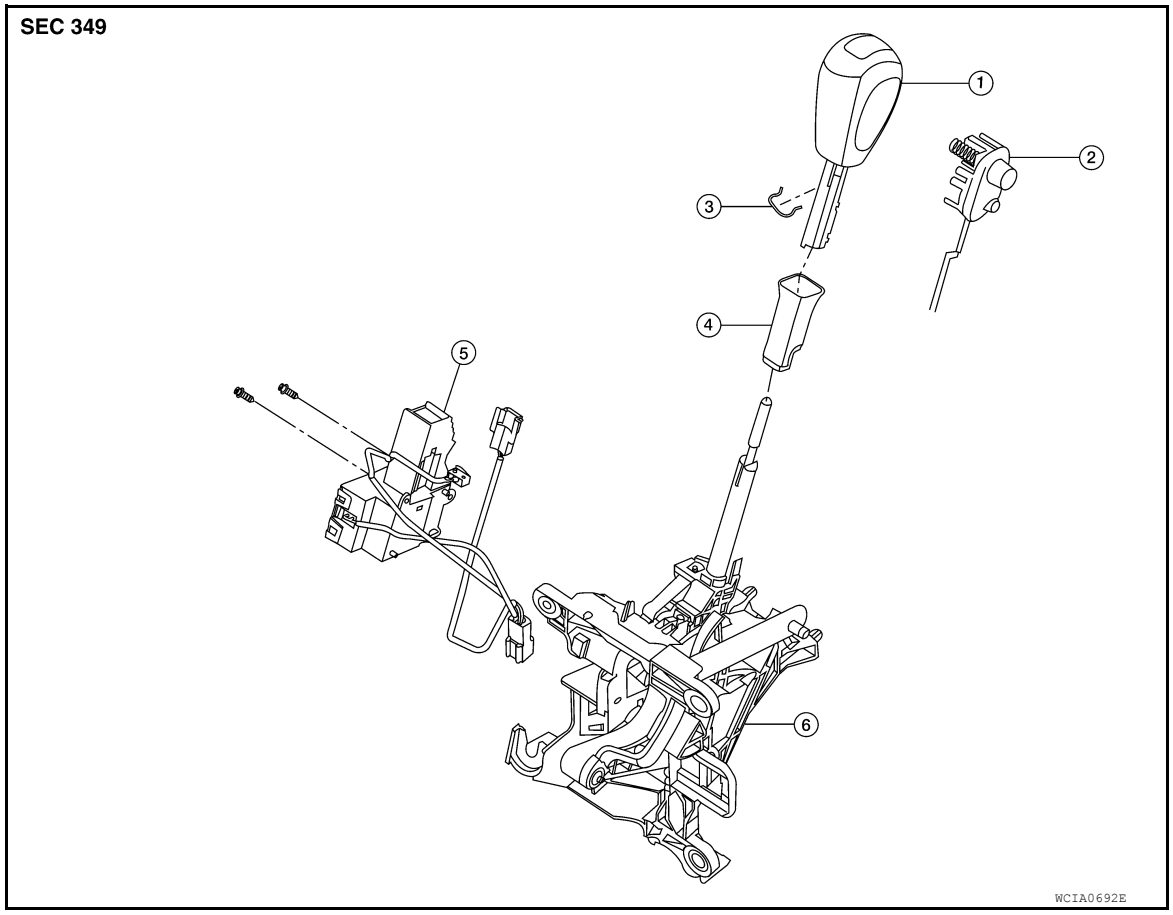
OK >> **INSPECTION END**.
NG >> Replace stop lamp switch.

SHIFT CONTROL SYSTEM

Removal and Installation

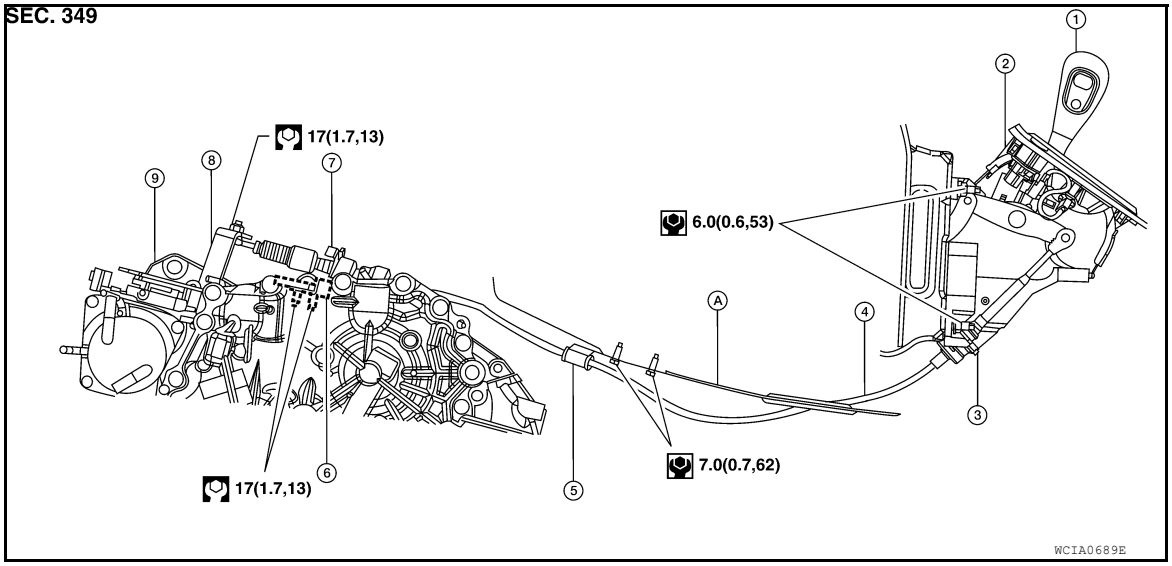
INFOID:0000000007402569

CVT SHIFT SELECTOR ASSEMBLY COMPONENTS



1. Shift selector handle
2. Shift selector button and overdrive connector switch assembly
3. Shift selector handle clip
4. Shift selector handle cover
5. Shift lock solenoid and park position switch assembly
6. CVT shift selector assembly

CONTROL CABLE COMPONENTS



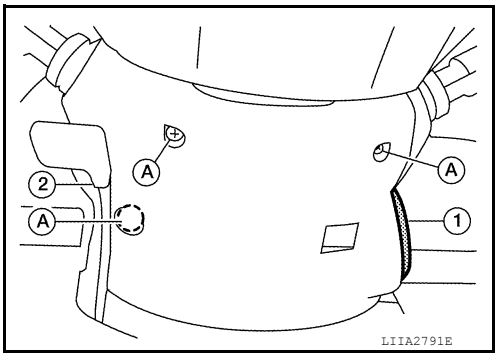
1. Shift selector handle
2. CVT shift selector assembly
3. Cable socket
4. Control cable
5. Cable bracket
6. Bracket
7. Lock plate
8. Manual lever
9. Transaxle assembly
A. Floor

REMOVAL

CAUTION:

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

1. Place the shift selector in the “P” position.
2. Remove the center console assembly. Refer to IP-18, "Removal and Installation".
3. Remove the instrument lower panel LH. Refer to IP-15, "Removal and Installation".
4. Remove steering lock escutcheon (1).
5. Remove steering column cover screws (A), then remove steering column upper cover and lower cover (2).

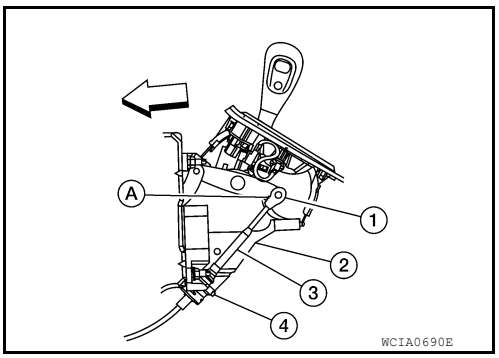


6. Remove instrument lower covers (LH/RH). Refer to IP-11, "Component Parts".
7. Remove the glove box assembly. Refer to IP-17, "Removal and Installation".
8. Remove the instrument lower cover (center) screws, disconnect power socket connector and then remove the instrument lower cover (center). Refer to IP-11, "Component Parts".
9. Remove the instrument upper cover screws and then remove the instrument upper cover. Refer to IP-11, "Component Parts".
10. Disconnect the CVT shift selector assembly harness connector.
11. Remove the key interlock cable from the CVT shift selector assembly. Refer to CVT-175, "Removal and Installation".
12. Remove the control cable from the CVT shift selector assembly.
13. Remove the nuts and the CVT shift selector assembly.

INSTALLATION

Installation is in the reverse order of removal.

- When installing the control cable (3) to the CVT shift selector assembly (2), make sure that the control cable socket is fully pressed into the CVT shift selector assembly (2), and the control cable end (1) is fully pressed in with the ribbed surface (A) facing towards the front of the vehicle.
  ⇦: Vehicle front
- After installation is completed, adjust and check the CVT position. Refer to CVT-174, "Adjustment of CVT Position" and CVT-174, "Checking of CVT Position".



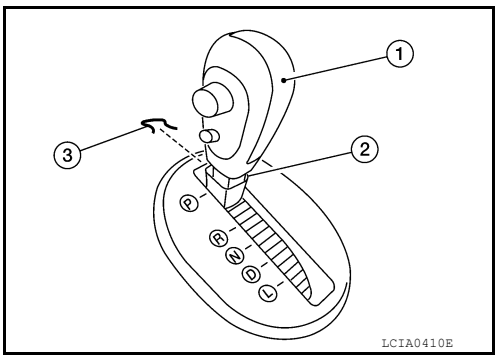
Shift Selector Handle Removal and Installation

INFOID:0000000007402570

REMOVAL

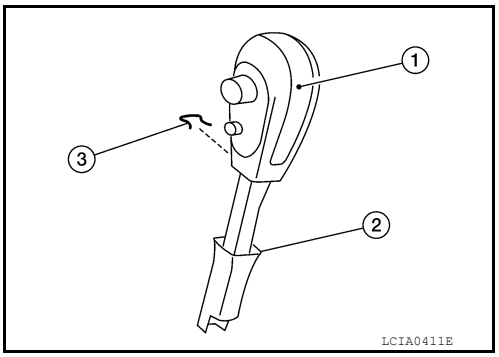
CAUTION:
Make sure that parking brake is applied before removal and installation.

1. Set shift selector handle (1) in “N” position.
2. Slide shift selector handle cover (2) downward.
3. Pull out lock pin (3) from shift selector handle (1).
4. Remove shift selector handle (1) and shift selector handle cover (2) as a set from shift selector.
   CAUTION:
   Do not push shift selector button.



INSTALLATION

1. Insert lock pin (3) to shift selector handle (1).
2. Install handle cover (2) to shift selector handle (1).
3. Set shift selector in “N” position.
4. Install shift selector handle over shift selector until a click is felt.
   CAUTION:
   - **Do not tilt shift selector handle when installing. Install it straight, and do not tap or apply any shock to install it.**
   - **Do not push shift selector button.**



Steering Shift Switch

INFOID:0000000007402571

REMOVAL

1. Park the vehicle on a level surface.
2. Remove the driver air bag module. Refer to SRS-31, "Removal and Installation".
3. Remove the steering wheel. Refer to PS-7, "Removal and Installation".
4. Remove horn switch.
5. Partially remove steering shift switch assembly.
6. Remove steering wheel rear cover.
7. Disconnect the vehicle harness connector and from steering shift switch.
8. Remove steering shift switch assembly.

INSTALLATION

Installation is in the reverse order of removal.

Adjustment of CVT Position

INFOID:0000000007402572

CAUTION:
Make sure that parking brake is applied before adjustment.

1. Loosen the control cable nut and place the manual lever in “P” position.
2. Place shift selector in “P” position.
3. Temporarily tighten the control cable nut.
   NOTE:
   Do not move the manual lever. Make sure the manual lever stays in the “P” position.
4. Tighten the control cable nut.

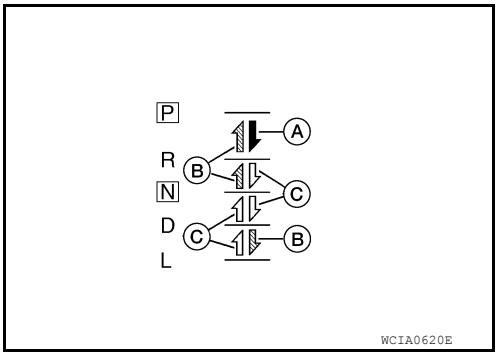
   Control cable nut: Refer to CVT-171, "Removal and Installation".

   CAUTION:
   Secure the manual lever when tightening nut.
5. Check the operation of the CVT. Refer to CVT-174, "Checking of CVT Position".

Checking of CVT Position

INFOID:0000000007402573

1. Place shift selector in “P” position, and turn ignition switch ON. (Do not start engine.)
2. Make sure shift selector can be moved from “P” position when brake pedal is depressed. Also make sure shift selector can be moved from “P” position only when brake pedal is depressed.
3. Move the shift selector and check for excessive effort, sticking, noise or rattle.
4. Confirm the shift selector stops at each position with the feel of engagement when it is moved through all the positions. Check that the actual position of the shift selector matches the position shown by the shift position indicator and the manual lever on the transaxle.
5. The method of operating the shift selector to individual positions correctly should be as shown.
   - (A): Press shift selector button to operate shift selector, while depressing the brake pedal.
   - (B): Press shift selector button to operate shift selector.
   - (C): Shift selector can be operated without pressing shift selector button.



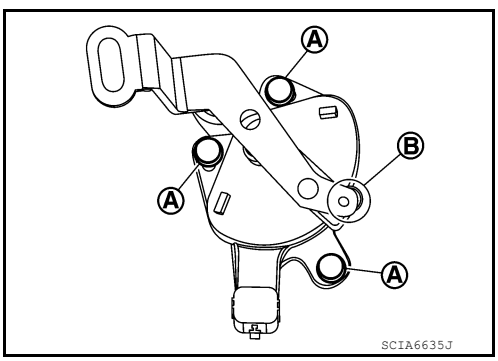
6. Confirm the back-up lamps illuminate only when shift selector is placed in the “R” position. Confirm the back-up lamps do not illuminate when the shift selector is pushed toward the “R” position side when shift selector is in the “P” or “N” position.
7. Confirm the engine can only be started with the shift selector in the “P” and “N” positions.
8. Make sure transaxle is locked completely when shift selector is in the “P” position.

Adjustment of Transmission Range Switch

INFOID:0000000007402574

1. Move shift selector to “N” position.
2. Remove control cable from manual lever.
3. Loosen transmission range switch bolts (A). Insert a pin (ø4 mm) into the adjusting holes (B) on both transmission range switch and manual lever for adjusting the position.
4. Tighten transmission range switch bolts (A).

   Transmission range switch bolts (A): 5.9 N·m (0.60 kg-m, 52 in-lb)
5. Connect control cable on manual lever. Refer to CVT-174, "Adjustment of CVT Position".

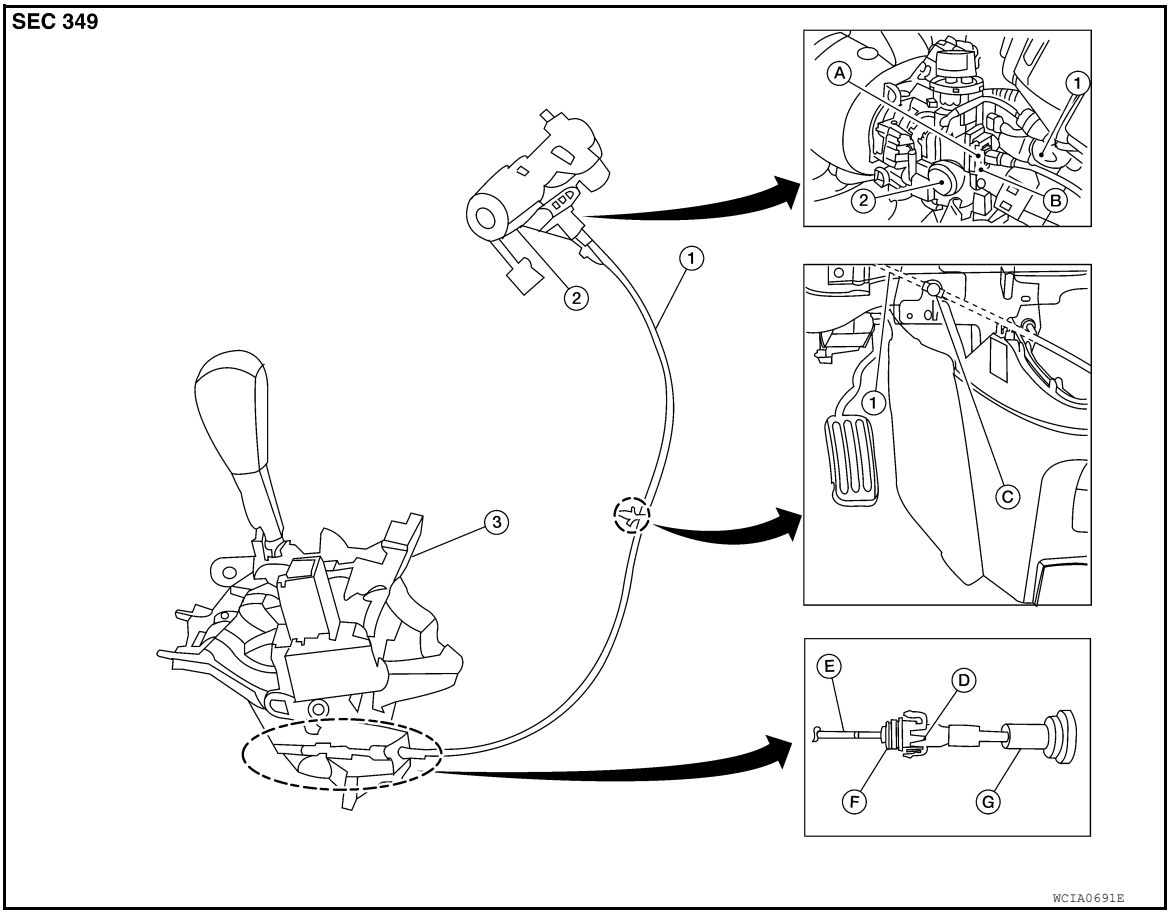


KEY INTERLOCK CABLE

Removal and Installation

INFOID:0000000007402575

COMPONENTS



1. Key interlock cable	2. Key cylinder	3. CVT shift selector assembly
A. Lock plate	B. Holder	C. Clip
D. Slider	E. Key interlock rod	F. Adjust holder
G. Casing cap		

REMOVAL

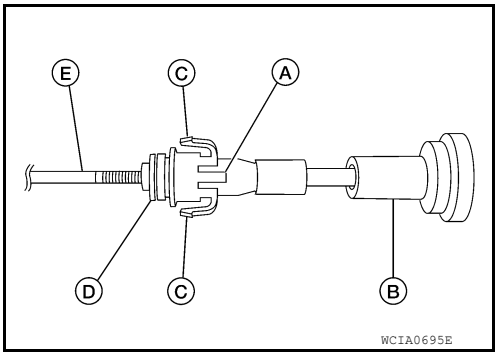
Refer to the figure for key interlock cable removal procedure.

CAUTION:

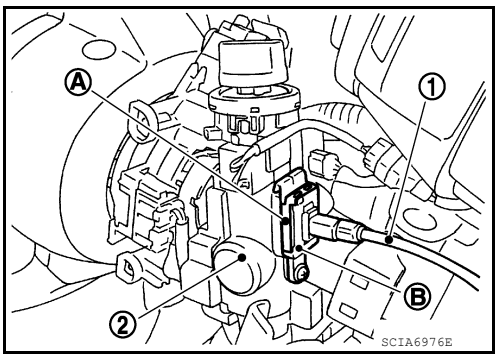
Make sure that parking brake is applied before removal/installation.

1. Place the shift selector in the “N” position.
2. Remove the shift selector handle. Refer to CVT-173, "Shift Selector Handle Removal and Installation".
3. Remove the IP center assembly. Refer to IP-11.

4. Slide the slider (A) toward the casing cap (B) while pressing tabs (C) on the slider (A) to separate the slider (A) from the adjust holder (D).
5. Remove the casing cap (B) from the cable bracket on the CVT shift selector assembly.
6. Remove the key interlock cable from the key interlock rod (E).



7. Remove steering column cover (upper and lower) and instrument lower finisher. Refer to IP-11.
8. Pull out the lock plate (A) from the holder (B).
9. Remove the key interlock cable (1) from the key cylinder (2).



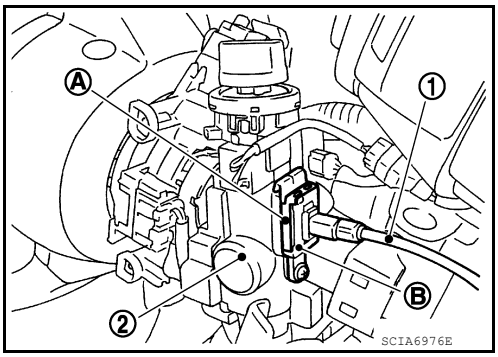
10. Remove the clip and then remove the key interlock cable from the vehicle.

INSTALLATION

CAUTION:

- **Install key interlock cable in such a way that it will not be damaged by sharp bends, twists or interference with adjacent parts.**
- **After installing key interlock cable to CVT shift selector assembly, make sure that casing cap and bracket are firmly secured in their positions.**

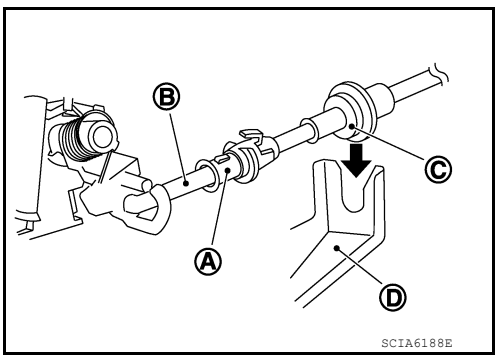
1. Place the shift selector in the “P” position.
2. Turn ignition switch to “ACC” or “ON” position.
3. Set the key interlock cable (1) to the key cylinder (2).
4. Install the lock plate (A) to the holder (B).
5. Turn ignition switch to “LOCK” position.



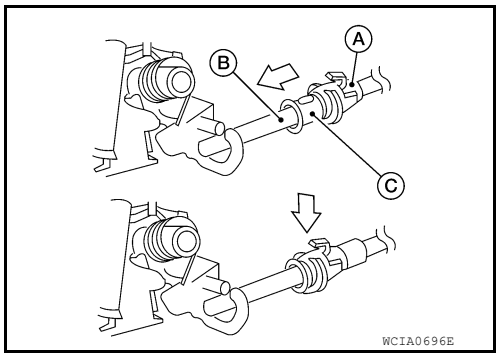
6. Temporarily install the adjust holder (A) to the key interlock rod (B).
7. Install the casing cap (C) to the cable bracket (D) on the CVT shift selector assembly.

   CAUTION:

   - **Do not bend or twist key interlock cable excessively when installing.**
   - **After installing key interlock cable to cable bracket (D) on CVT shift selector assembly, make sure casing cap (C) is firmly secured in cable bracket (D) on CVT shift selector assembly.**
   - **If casing cap (C) is loose [less than 39.2 N (4.0 kg, 8.8 lb) removing force], replace key interlock cable.**



8. Place the shift selector in the "P" position.
9. Pull the adjust holder (C) all the way to the left on the key interlock rod (B). Move the slider (A) toward the key interlock rod (B) and lock it.
   CAUTION:
   - **Do not press tabs when holding slider (A).**
   - **Do not apply any force to key interlock rod (B) when sliding slider (A).**

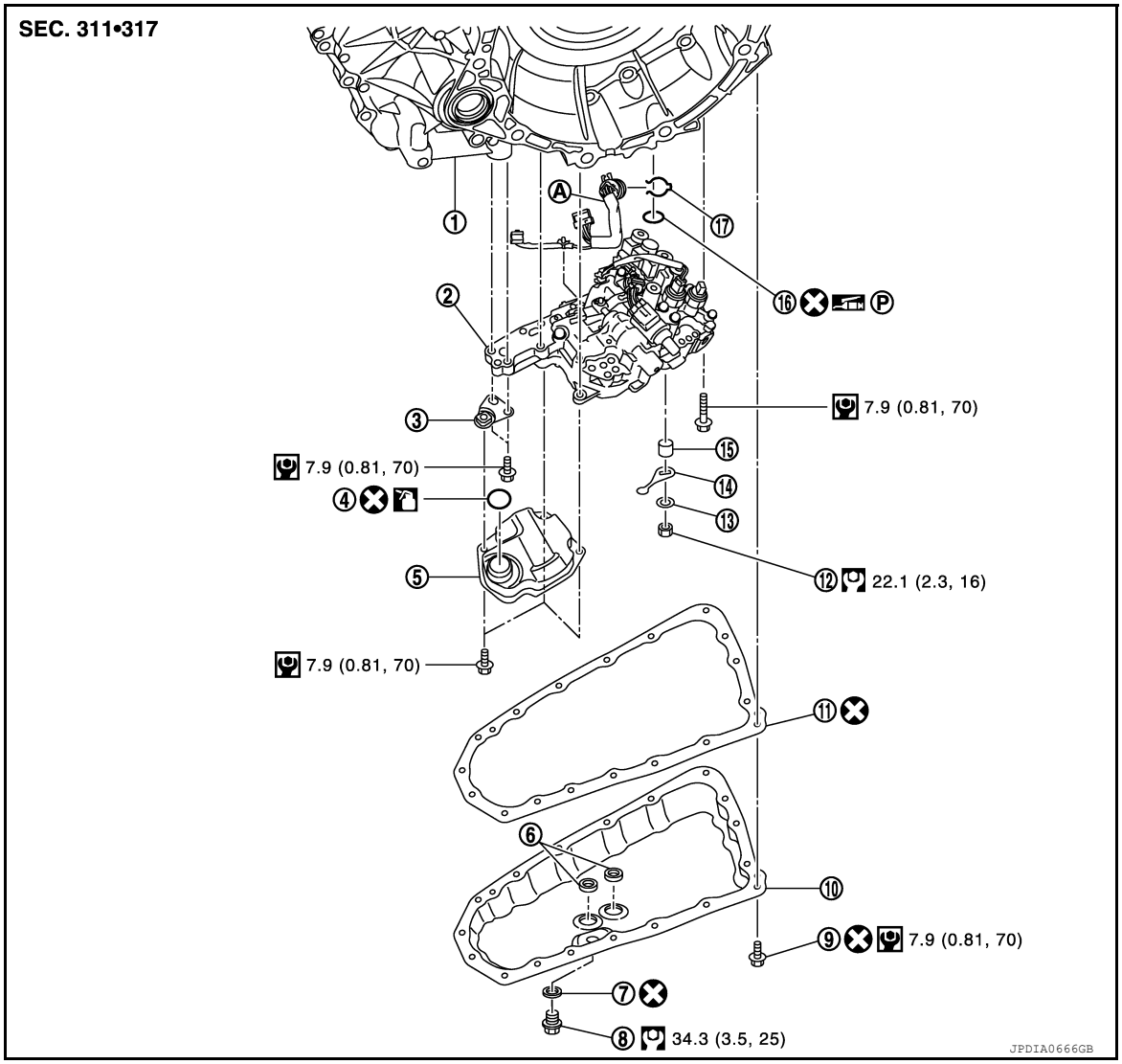


10. Secure the key interlock cable with the clip.
11. Installation of the remaining components is in the reverse order of removal.
12. Check shift lock system. Refer to CVT-164, "Description".

ON-VEHICLE SERVICE

Control Valve

INFOID:0000000007402577

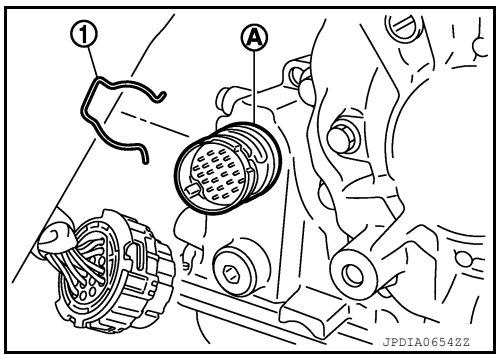


1.	Transaxle assembly	2.	Control valve	3.	Bracket
4.	O-ring	5.	Oil strainer assembly	6.	Magnet
7.	Drain plug gasket	8.	Drain plug	9.	Oil pan bolt
10.	Oil pan	11.	Oil pan gasket	12.	Lock nut
13.	Washer	14.	Manual plate	15.	Collar
16.	Lip seal	17.	Snap ring		
A.	CVT unit connector				
	: NISSAN CVT Fluid NS-2				

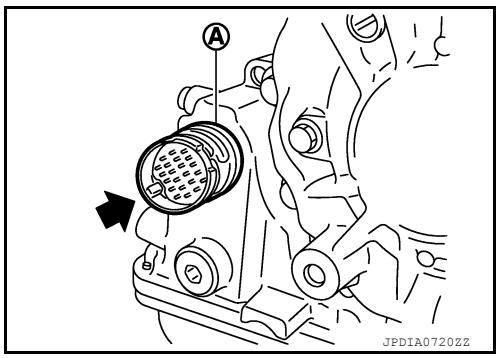
REMOVAL

1. Remove drain plug from oil pan and then drain the CVT fluid.
2. Remove drain plug gasket.
3. Disconnect battery cable from negative terminal. Refer to SC-7, "Removal and Installation (MR20DE Battery)" (MR20DE) or SC-8, "Removal and Installation (QR25DE Battery)" (QR25DE).
4. Disconnect the CVT unit connector. Refer to CVT-9, "Removal and Installation Procedure for CVT Unit Connector".

5. Remove the snap ring (1) from the CVT unit connector (A).

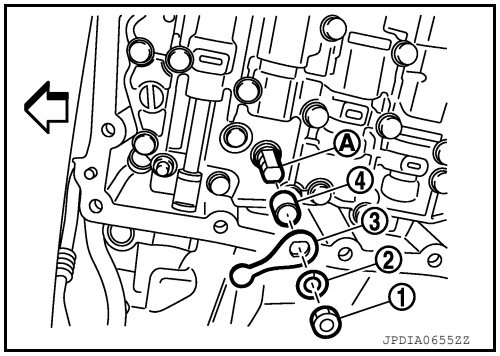


6. Press the CVT unit connector (A) into the transaxle case.
CAUTION:
Never damage the CVT unit connector.
NOTE:
Clean around the connector to prevent foreign materials from entering into the transaxle case.



7. Remove the oil pan bolts, and then remove the oil pan and oil pan gasket.
8. Remove the magnets from the oil pan.
9. Remove the lock nut (1) and washer (2), and then remove the manual plate (3).

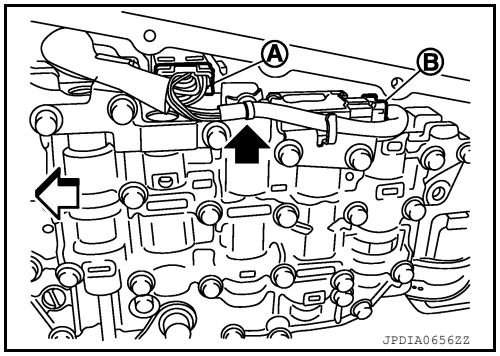
⇦ : Vehicle front



10. Remove the collar (4) from the manual shaft (A).
CAUTION:
Never drop the collar.

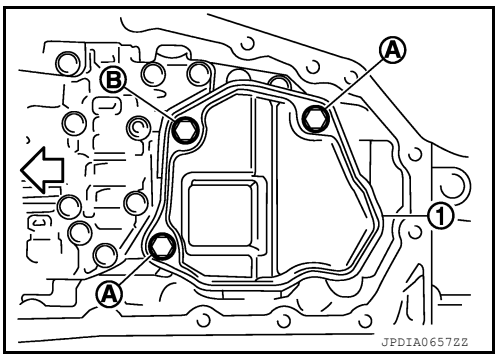
11. Disconnect the connectors (A) and (B).

⬅ : Clip
⇦ : Vehicle front



12. Remove the oil strainer assembly bolts (A) and (B), and then remove the oil strainer assembly (1).

⇦ : Vehicle front

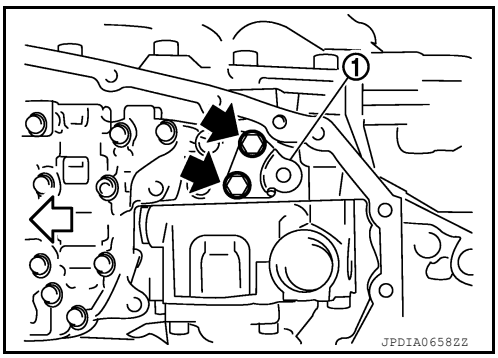


13. Remove O-ring from oil strainer assembly.

14. Remove the bracket (1).

⬅ : Bolt

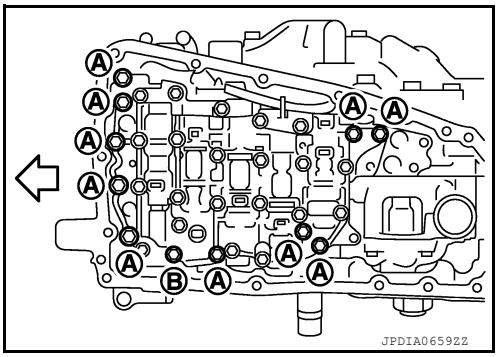
⇦ : Vehicle front



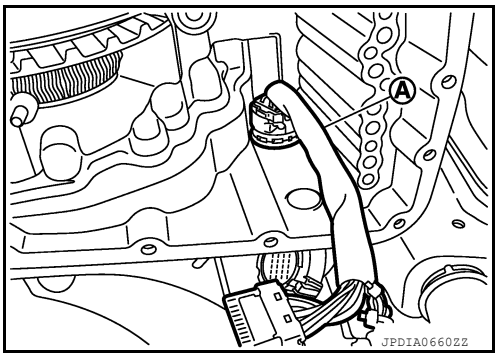
15. Remove the control valve bolts (A) and (B), and then remove the control valve from the transaxle case.

⇦ : Vehicle front

CAUTION:
Never drop the control valve, ratio control valve and manual shaft.

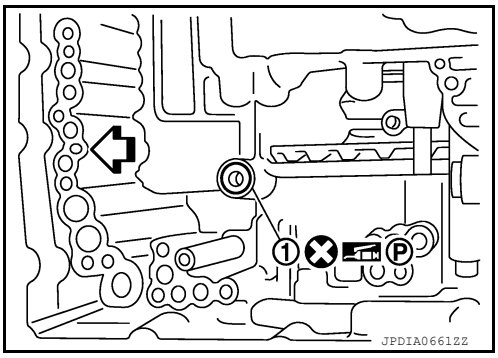


16. Remove CVT unit connector (A) from the transaxle case inside.



17. Remove the lip seal (1) from the transaxle case.

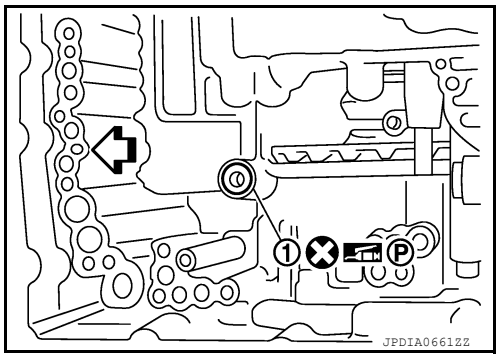
⇦ : Vehicle front



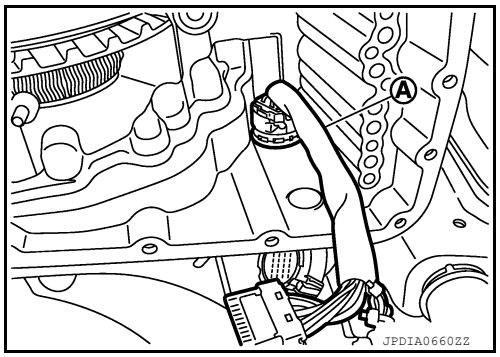
INSTALLATION

1. Install the lip seal (1) to the transaxle case.
   CAUTION:
   Do not reuse lip seal.

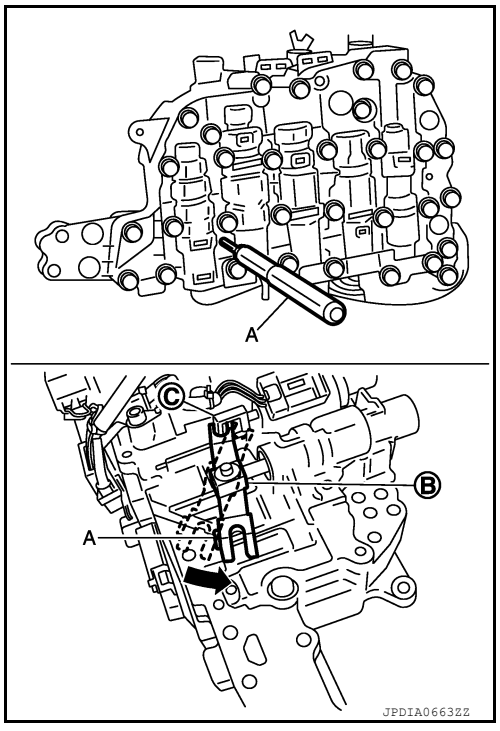
   ⇦ : Vehicle front



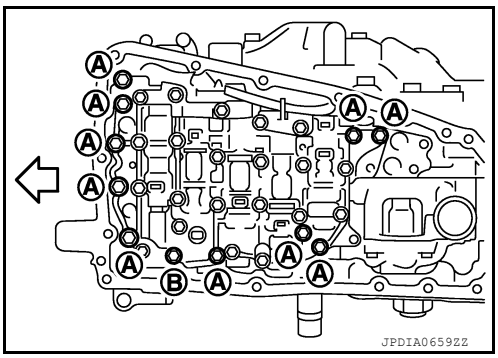
2. Install the CVT unit connector (A) to the transaxle case.
   CAUTION:
   Connect the CVT unit connector with the stopper facing up, and then press in until it clicks.



3. Press in the ratio control valve (B) in the (⬅) direction, and then secure the linkage in the position shown with the suitable tool (A) from the back of control valve through the hole to hold in place.
4. Check that one end of linkage engages with the step motor end (C) and that the linkage is in the direction shown.
5. Install the control valve to the transaxle case.
   CAUTION:
   - **Never drop the suitable tool. If it is dropped, repeat the installation procedure from step 3.**
   - **Never pinch the harness into between the control valve and the transaxle case.**



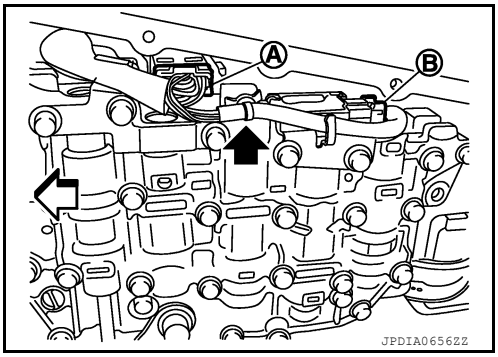
6. Secure the control valve using the control valve bolts (A) and (B).



⇦ : Vehicle front

Bolt	Bolt length (mm)	Number of bolts
A	54	10
B	44	1

7. Pull the suitable tool out.
8. Connect the connectors (A) and (B).

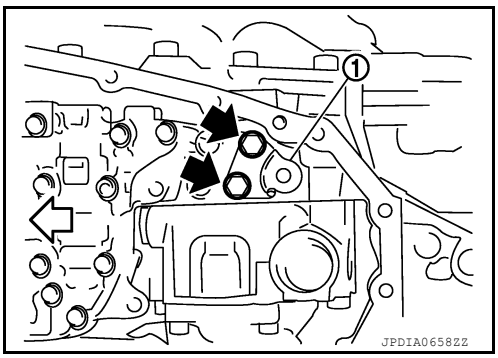


⬅ : Clip

⇦ : Vehicle front

CAUTION:
- **Never pinch the harness into between the control valve and the transaxle case.**
- **Securely insert the connector until it clicks and locks.**

9. Install the bracket (1).



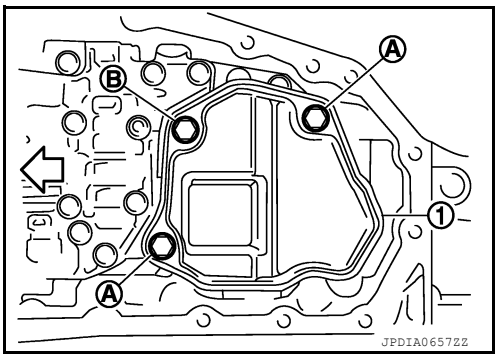
⬅ : Bolt

⇦ : Vehicle front

10. Install O-ring to oil strainer assembly.

CAUTION:
- **Do not reuse O-ring.**
- **Apply CVT fluid NS-2 to O-ring.**

11. Install the oil strainer assembly (1) using the oil strainer assembly bolts (A) and (B).



⇦ : Vehicle front

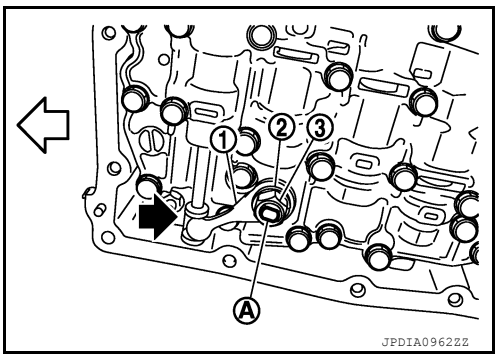
Bolt	Bolt length (mm)	Number of bolts
A	12	2
B	44	1

NOTE:
Remove the bracket and adjust the position again if the bolt hole positions are not aligned.

12. Install the collar to the manual shaft.

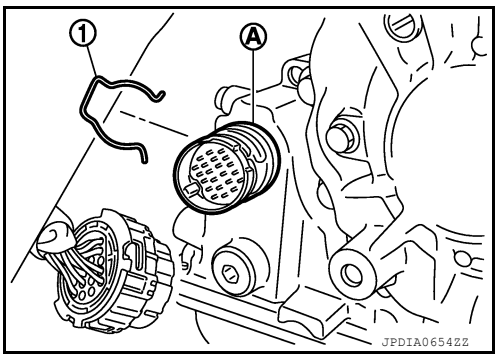
CAUTION:
Never drop the collar.

13. Install the manual plate (1) while aligning with the groove (A) of the manual shaft.
CAUTION:
Assemble the manual plate while aligning its end with the cutout (⬅) of the manual valve.



⇦ : Vehicle front

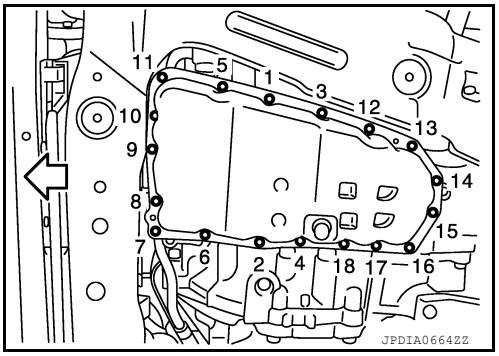
14. Install the washer (2) and the lock-nut (3), and then tighten to the specified torque.
15. Install the snap ring (1) to the CVT unit connector (A).
16. Connect the CVT unit connector. Refer to CVT-9, "Removal and Installation Procedure for CVT Unit Connector".
17. Install the magnets while aligning them with the convex side of oil pan.
CAUTION:
Completely eliminate the iron powder from the magnet mounting area of oil pan and the magnet.
18. Install the oil pan to the transaxle case with the following procedure.



a. Install the oil pan gasket to the oil pan.
CAUTION:
- **Completely wipe out any moisture, oil, and old gasket from the oil pan gasket mating surface and bolt hole of oil pan and transaxle case.**
- **Never reuse oil pan gasket.**

b. Install the oil pan assembly to the transaxle case, and then temporarily tighten the oil pan bolt.
CAUTION:
Do not reuse oil pan bolts.

c. Tighten the oil pan bolts in the order shown to the specified torque.
d. Tighten the oil pan bolts again clockwise from (1) shown to the specified torque.



19. Install drain plug gasket to drain plug.
CAUTION:
Do not reuse drain plug gasket.
20. Install drain plug to oil pan.
21. Fill CVT fluid from CVT fluid charging pipe to the specified level. Refer to CVT-16, "Changing CVT Fluid".

CVT fluid type	**: Refer to CVT-202, "General Specification".**
Fluid capacity	**: Refer to CVT-202, "General Specification".**

CAUTION:
- **Use only Genuine NISSAN CVT Fluid NS-2. Never mix with other fluid.**
- **Using CVT fluid other than Genuine NISSAN CVT Fluid NS-2 will deteriorate in driveability and CVT durability, and may damage the CVT, which is not covered by the warranty.**
- **When filling CVT fluid, take care not to scatter heat generating parts such as exhaust.**
- **Sufficiently shake the container of CVT fluid before using.**
- **Delete CVT fluid deterioration date with CONSULT after changing CVT fluid. Refer to CVT-47, "CONSULT Function (TRANSMISSION)".**

22. Connect battery cable to negative terminal. Refer to SC-7, "Removal and Installation (MR20DE Battery)" or SC-8, "Removal and Installation (QR25DE Battery)".
23. With the engine warmed up, drive the vehicle in an urban area.
NOTE:

When ambient temperature is 20°C (68°F), it takes about 10 minutes for the CVT fluid to warm up to 50° to 80°C (122° to 176°F).

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

INSPECTION AFTER REMOVAL

Check oil pan for foreign material.
- If a large amount of worn material is found, clutch plate may be worn.
- If iron powder is found, bearings, gears, or clutch plates may be worn.
- If aluminum powder is found, bushing may be worn, or chips or burrs of aluminum casting parts may enter.

Check points where wear is found in all cases.

INSPECTION AFTER REMOVAL

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

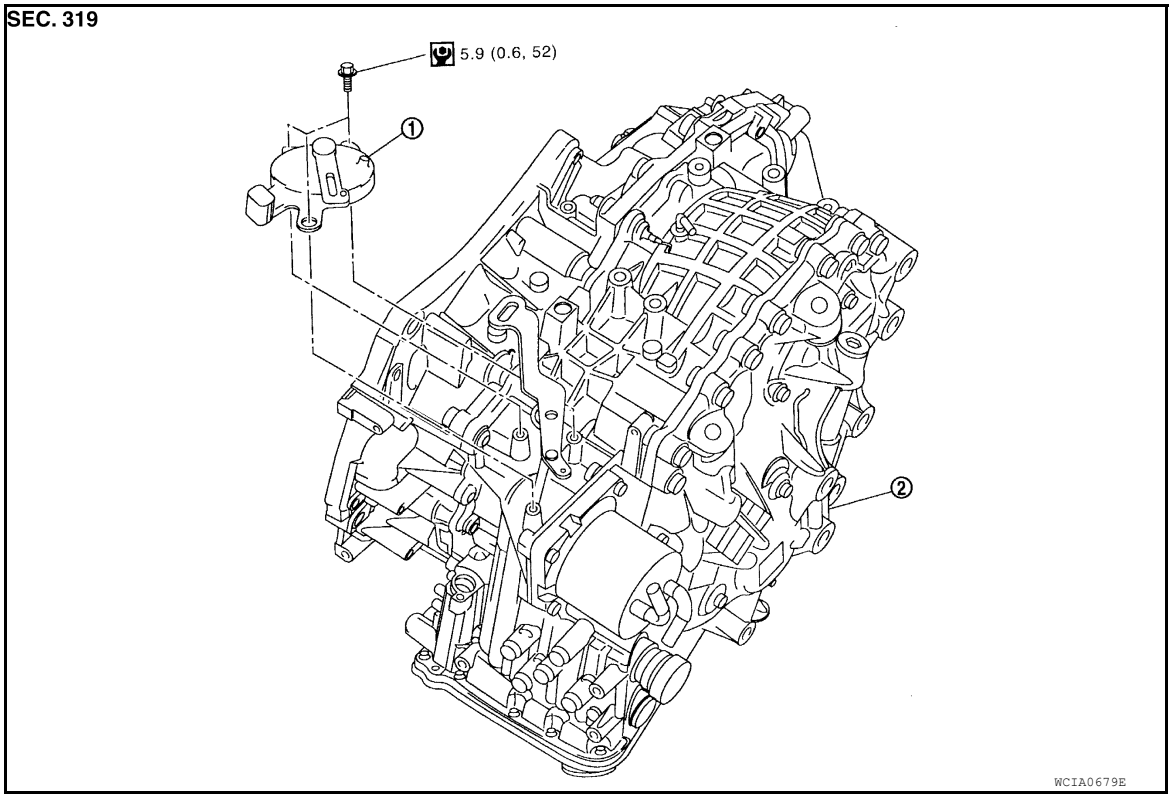
INSPECTION AFTER INSTALLATION

Erase the TCM data.
- Erase the CVT fluid degradation data. Refer to CVT-47, "CONSULT Function (TRANSMISSION)".
- Erase the memory of EEPROM in the TCM. Refer to CVT-8, "Service After Replacing TCM, Transaxle Assembly, or Control Valve".

Transmission Range Switch

INFOID:0000000007402578

COMPONENTS



1. Transmission range switch
2. CVT assembly

REMOVAL AND INSTALLATION (MR20DE)

Removal

1. Remove air duct and air duct (Inlet). Refer to EM-16, "Removal and Installation".
2. Remove battery and air duct/battery tray. Refer to EM-16, "Component".
3. Disconnect control cable. Refer to CVT-171, "Removal and Installation".
4. Disconnect transmission range switch connector.
5. Remove transmission range switch.

Installation

Installation is in the reverse order of removal.

NOTE:

- Align transmission range switch position when installing.
- After installation of transmission range switch, check the continuity of transmission range switch. Refer to CVT-174, "Adjustment of Transmission Range Switch".
- After installation is complete, adjust and check CVT position. Refer to CVT-174, "Adjustment of CVT Position", CVT-174, "Checking of CVT Position".

REMOVAL AND INSTALLATION (QR25DE)

Removal

1. Remove front air duct. Refer to EM-133, "Removal and Installation".
2. Disconnect control cable. Refer to CVT-171, "Removal and Installation".
3. Disconnect transmission range switch connector.
4. Remove transmission range switch.

Installation

Installation is in the reverse order of removal.

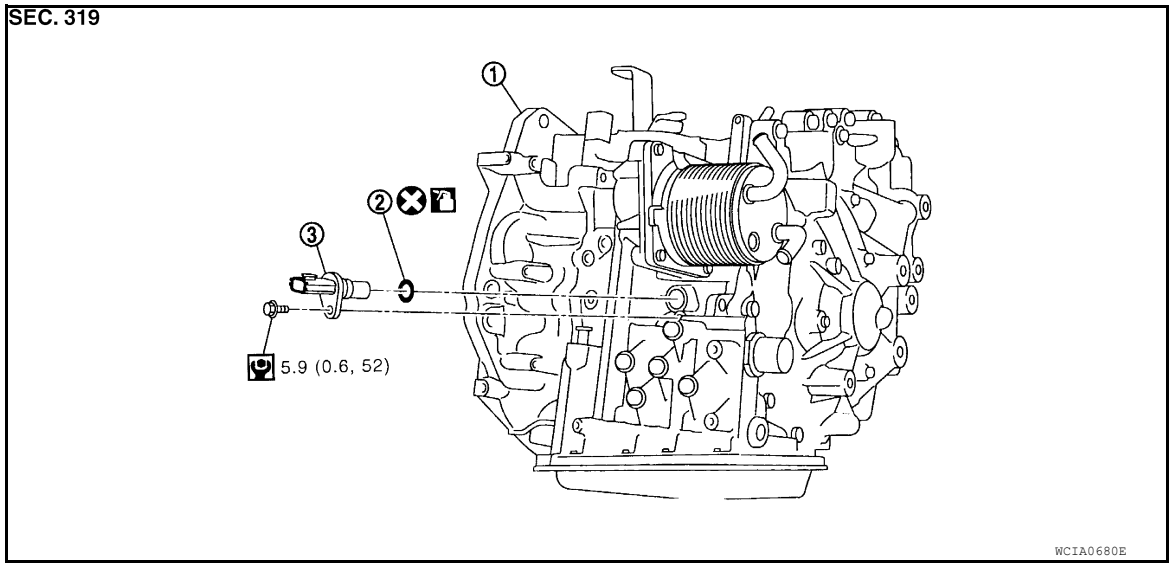
NOTE:

- Align transmission range switch position when installing.
- After installation of transmission range switch, check the continuity of transmission range switch. Refer to CVT-174, "Adjustment of Transmission Range Switch".
- After installation is complete, adjust and check CVT position. Refer to CVT-174, "Adjustment of CVT Position", CVT-174, "Checking of CVT Position".

Primary Speed Sensor

INFOID:0000000007402579

COMPONENTS



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

REMOVAL AND INSTALLATION (MR20DE)

Removal

1. Remove the engine undercover. Refer to EI-15, "Removal and Installation".
2. Disconnect the primary speed sensor connector.
3. Remove the primary speed sensor.

Installation

Installation is in the reverse order of removal.

CAUTION:

- **Do not reuse O-ring.**
- **Apply CVT fluid to O-ring.**
- **After installation is complete, check for CVT fluid leakage and CVT fluid level. Refer to CVT-15, "Checking CVT Fluid".**

REMOVAL AND INSTALLATION (QR25DE)

Removal

1. Remove front air duct. Refer to EM-133, "Removal and Installation".
2. Disconnect the primary speed sensor connector.
3. Remove the primary speed sensor.

Installation
Installation is in the reverse order of removal.

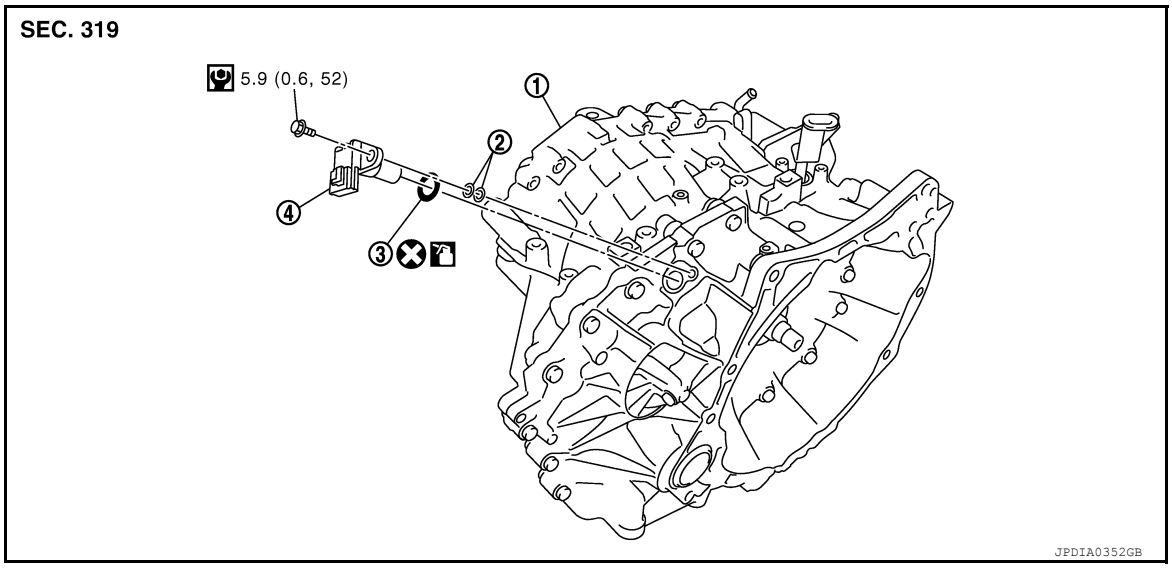
CAUTION:

- **Do not reuse O-ring.**
- **Apply CVT fluid to O-ring.**
- **After installation is complete, check for CVT fluid leakage and CVT fluid level. Refer to CVT-15, "Checking CVT Fluid".**

Secondary Speed Sensor (MR20DE)

INFOID:0000000007402580

COMPONENTS



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

REMOVAL AND INSTALLATION

Removal

1. Remove the air cleaner and air duct (inlet). Refer to EM-16, "Removal and Installation".
2. Remove the air duct/battery tray. Refer to EM-16, "Component".
3. Disconnect secondary speed sensor connector.
4. Remove secondary speed sensor.

Installation
Installation is in the reverse order of removal.

CAUTION:

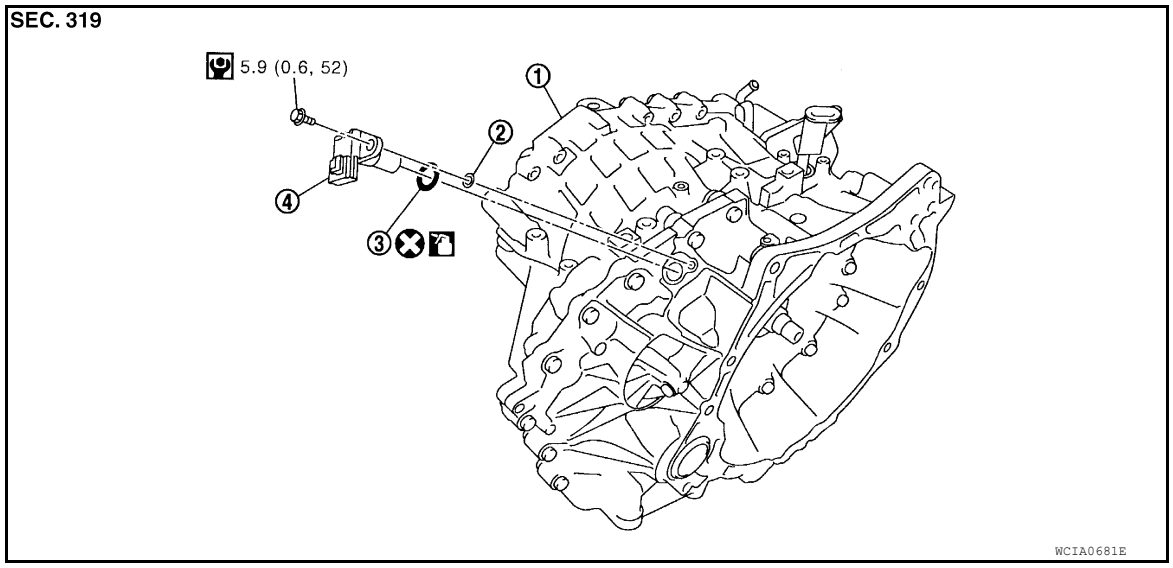
- **Do not reuse O-ring.**
- **Apply CVT fluid to O-ring.**
- **Insert the shims.**

- **After installation is complete, check for CVT fluid leakage and CVT fluid level. Refer to CVT-15, "Checking CVT Fluid".**

Secondary Speed Sensor (QR25DE)

INFOID:0000000007402581

COMPONENTS



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

REMOVAL AND INSTALLATION

Removal

1. Remove the air cleaner and air duct assembly. Refer to EM-133, "Removal and Installation".
2. Disconnect the secondary speed sensor connector.
3. Remove the secondary speed sensor.

Installation

Installation is in the reverse order of removal.

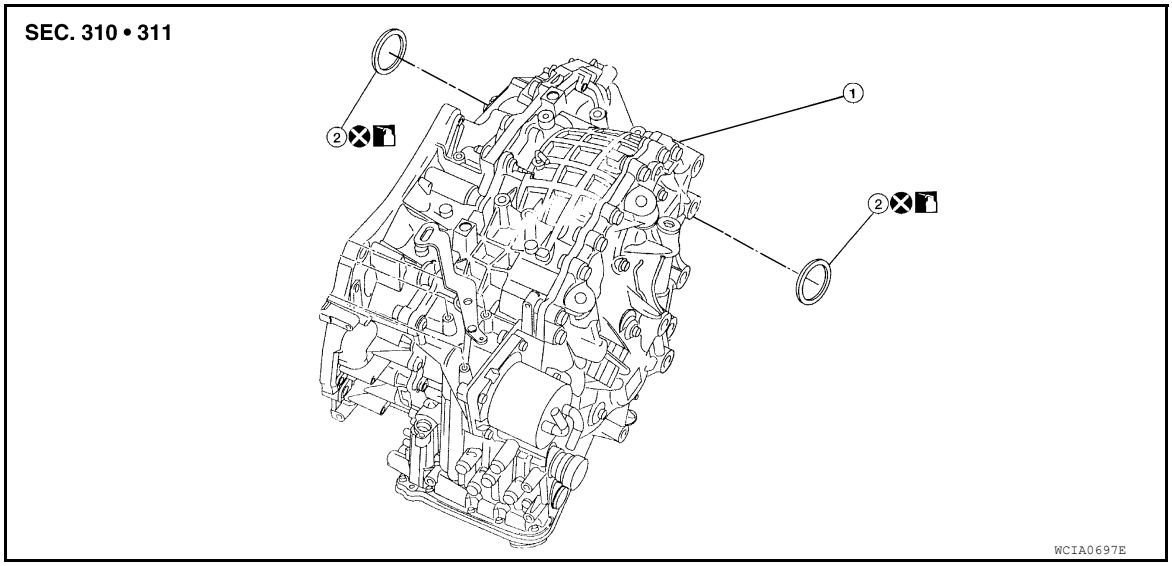
CAUTION:

- **Do not reuse O-ring.**
- **Apply CVT fluid to O-ring.**
- **Insert the shim.**
- **After installation is complete, check for CVT fluid leakage and CVT fluid level. Refer to CVT-15, "Checking CVT Fluid".**

Differential Side Oil Seal

INFOID:0000000007402582

COMPONENTS

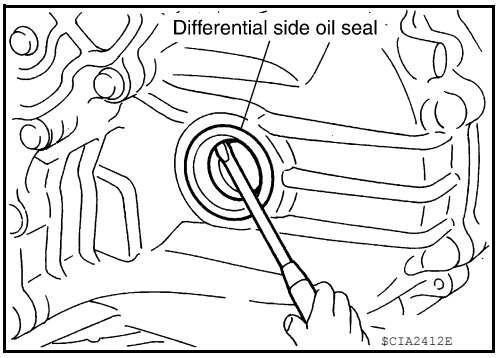


1. CVT assembly
2. Differential oil seal

:Apply CVT Fluid. Refer to MA-15, "MR20DE".

REMOVAL

1. Remove front drive shaft from CVT assembly. Refer to FAX-9.
2. Remove differential side oil seal using suitable tool.
   CAUTION:
   Do not scratch CVT case or converter housing.



INSTALLATION

1. Drive the new differential side oil seal in until it is flush using Tool.

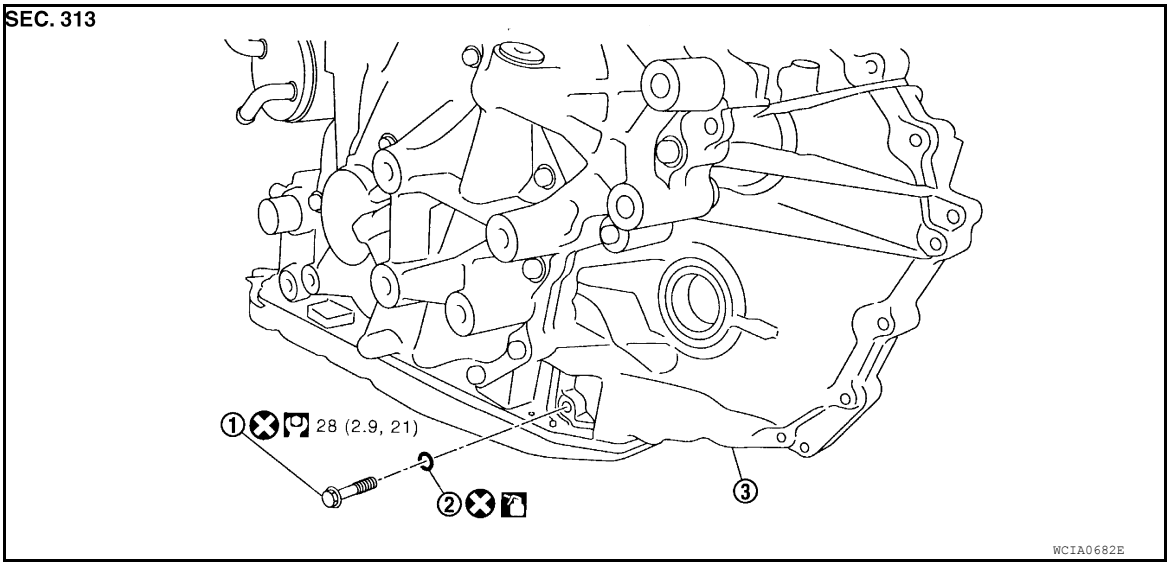
   Tool number : KV38100300 (—)

   CAUTION:
   - **Do not reuse differential side oil seals.**
   - **Apply CVT fluid to the new differential side oil seals.**
2. Install drive shaft assembly. Refer to FAX-9.
3. Check for CVT fluid leakage and CVT fluid level. Refer to CVT-15, "Checking CVT Fluid".

Oil Pump Fitting Bolt

INFOID:0000000007402583

COMPONENTS



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

: Apply CVT Fluid. Refer to MA-15, "MR20DE".

NOTE:
Replace the oil pump fitting bolt and the O-ring if oil leaks or exudes from the oil pump fitting bolt.

REMOVAL AND INSTALLATION

Removal

1. Remove the oil pump fitting bolt and O-ring.
   CAUTION:
   Do not reuse oil pump fitting bolt and O-ring.

Installation

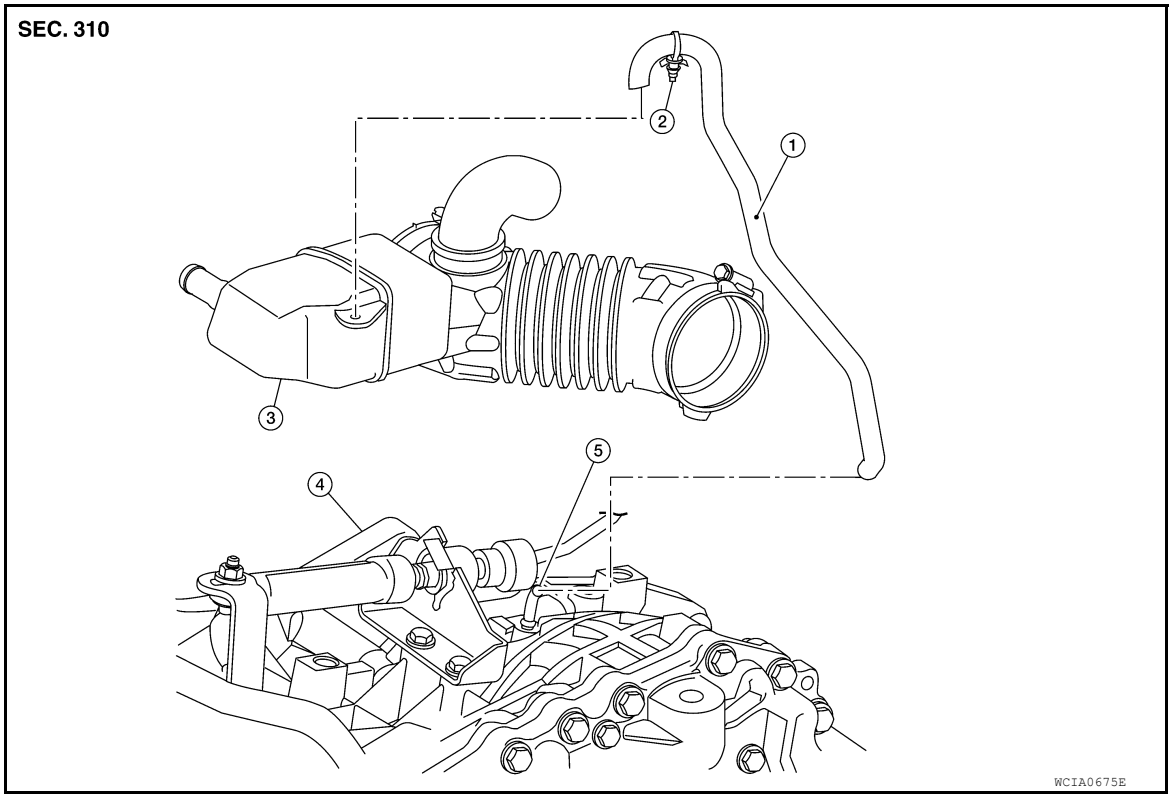
Installation is in the reverse order of removal.

CAUTION:
- **Do not reuse oil pump fitting bolt and O-ring.**
- **Apply CVT fluid to O-ring.**
- **After installation is complete, check for CVT fluid leakage and CVT fluid level. Refer to CVT-15, "Checking CVT Fluid".**

AIR BREATHER HOSE

Removal and Installation (MR20DE)

INFOID:0000000007402584



1. Air breather hose
2. Clip
3. Resonator
4. CVT assembly
5. Air breather tube

REMOVAL

1. Disconnect the clip from the resonator.
2. Remove the air breather hose from the air breather tube.

INSTALLATION

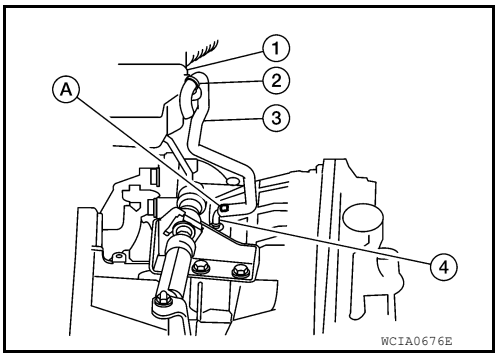
Installation is in the reverse order of removal.

CAUTION:

Make sure air breather hose is not collapsed or blocked due to folding or bending when installed.

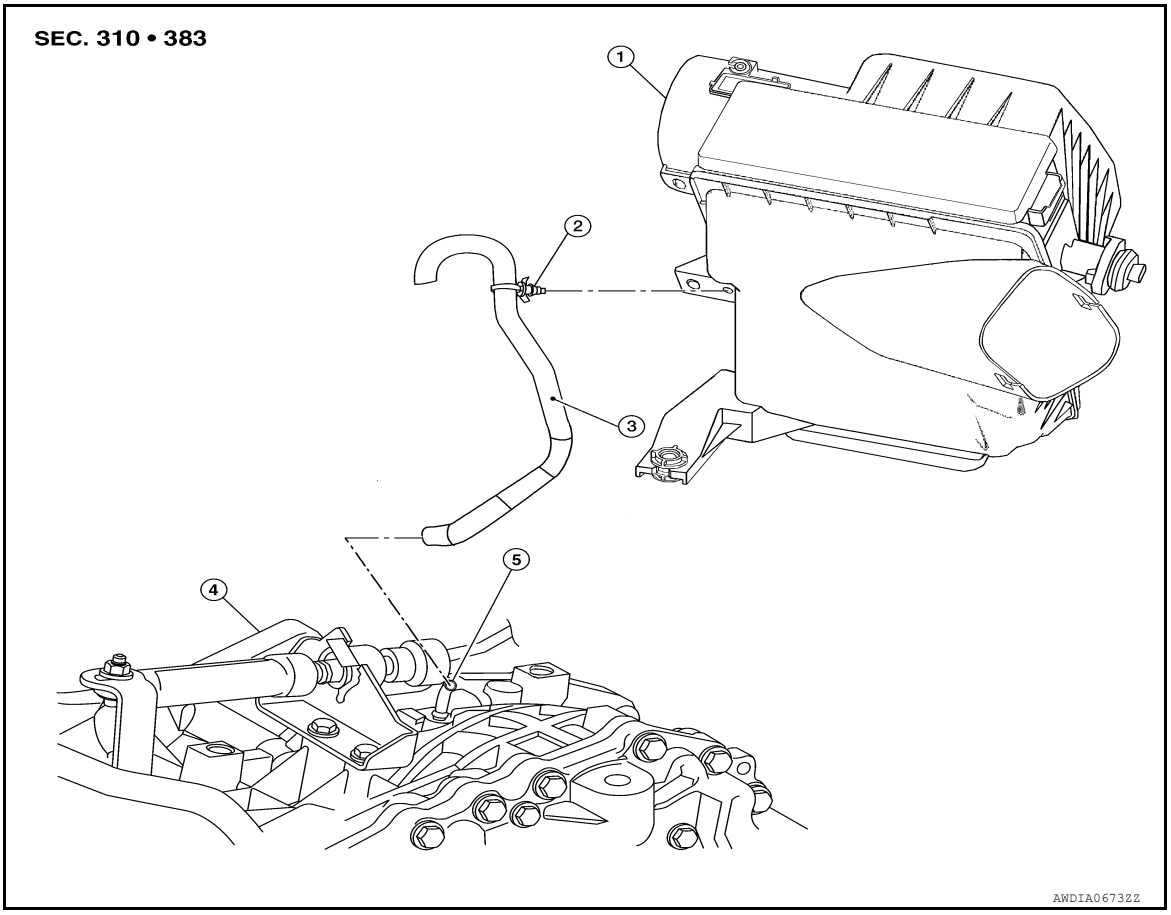
NOTE:

- Install the air breather hose (3) to the air breather tube (4) so that the paint mark (A) faces upward. Also make sure the air breather hose end is pushed up to the air breather tube bend position.
- When installing air breather hose (3) to the resonator (1) make sure to fully insert the clip (2).



Removal and Installation (QR25DE)

INFOID:0000000007402585



1. Air cleaner case
2. Clip
3. Air breather hose
4. CVT assembly
5. Air breather tube

REMOVAL

1. Remove resonator and electric throttle control actuator tube. Refer to EM-133, "Removal and Installation".
2. Disconnect the clip from the air cleaner case.
3. Remove the air breather hose from the air breather tube.

INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

Make sure air breather hose is not collapsed or blocked due to folding or bending when installed.

NOTE:

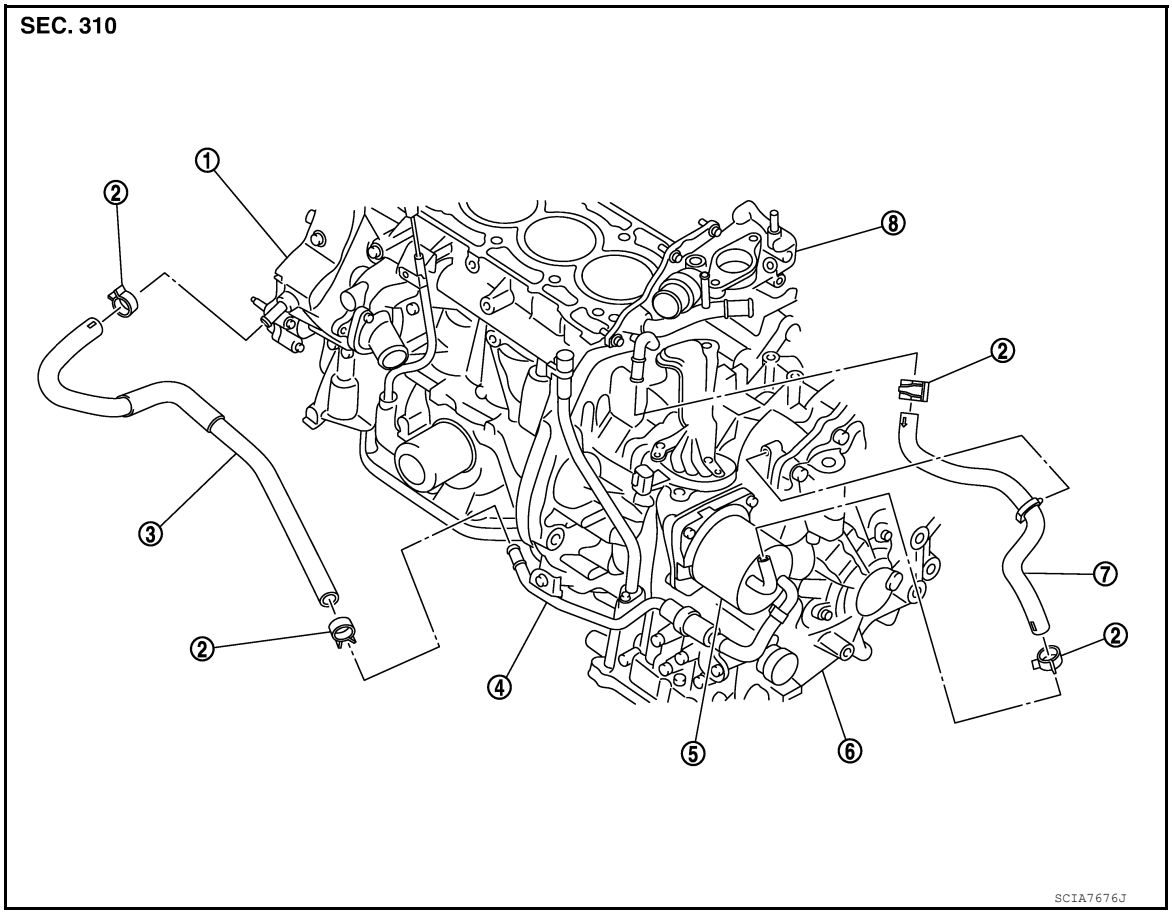
- Install the air breather hose to the air breather tube so that the paint mark faces upward. Also make sure the air breather hose end is pushed up to the air breather tube bend position.
- When installing air breather hose to the air cleaner case make sure to fully insert the clip.

CVT FLUID COOLER SYSTEM

CVT Fluid Cooler Removal and Installation (MR20DE)

INFOID:0000000007402586

COMPONENTS



1. Water pump
2. Hose clamp
3. CVT water hose
4. Water thermostat tube
5. CVT fluid cooler
6. CVT assembly
7. CVT water hose
8. Engine coolant outlet

NOTE:
When removing components such as hoses, tubes/lines, etc., cap or plug openings to prevent fluid from spilling.

REMOVAL

1. Drain the coolant from the radiator. Refer to CO-12, "Changing Engine Coolant".
2. Remove the air cleaner and air duct assembly. Refer to EM-16, "Removal and Installation".
3. Remove the front RH wheel and tire. Refer to WT-7, "Adjustment".
4. Remove the splash shield RH. Refer to EI-23, "Component".
5. Disconnect and remove the CVT water hoses.
6. Remove the CVT fluid cooler and O-ring.
   CAUTION:
   Do not reuse O-ring.

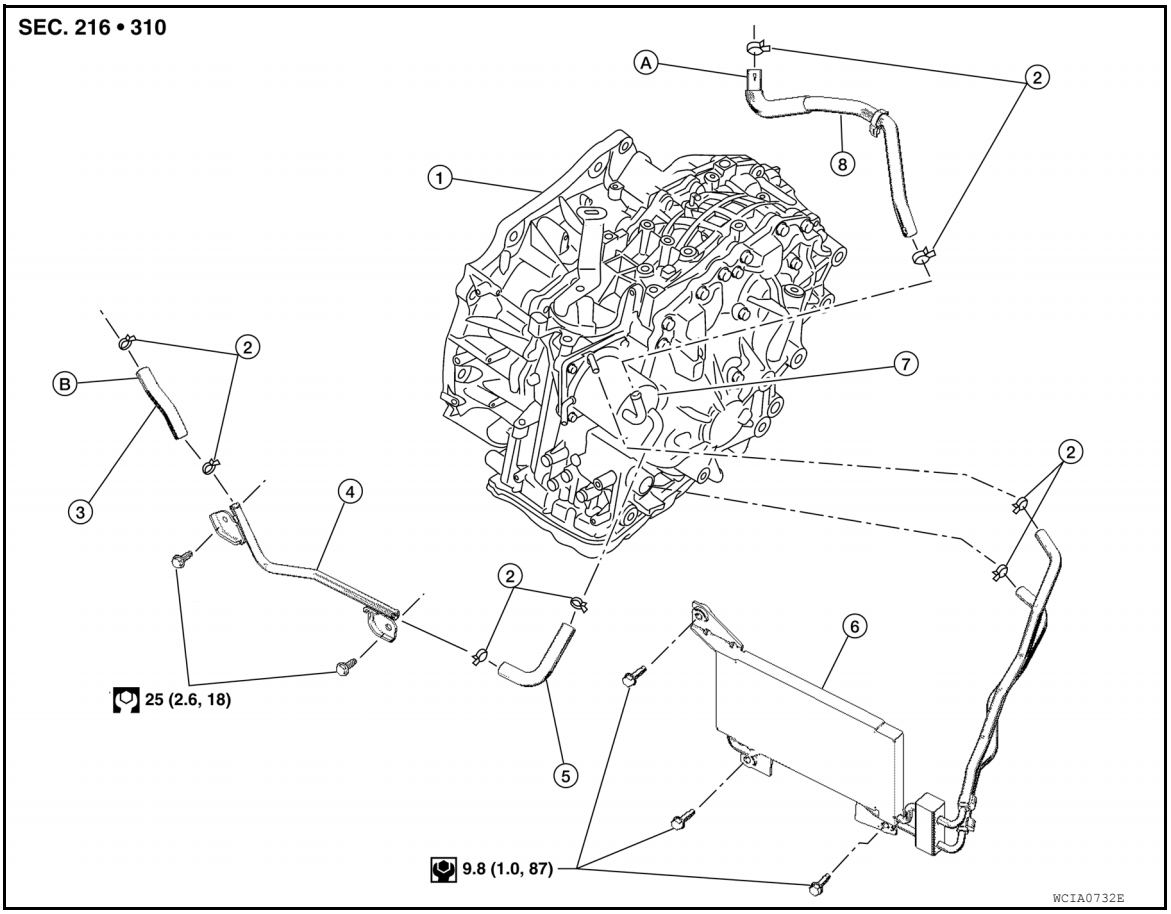
INSTALLATION

Installation is in the reverse order of removal.
CAUTION:
Do not reuse O-ring.

CVT Fluid Cooler Removal and Installation (QR25DE)

INFOID:0000000007402587

COMPONENTS



1. CVT assembly
2. Hose clamp
3. CVT water hose
4. Water tube
5. Water hose
6. CVT fluid cooler assembly
7. CVT fluid cooler
8. CVT water hose
A. To engine coolant outlet
B. To heater pipe

NOTE:
When removing components such as hoses, tubes/lines, etc., cap or plug openings to prevent fluid from spilling.

REMOVAL

1. Drain the coolant from the radiator. Refer to CO-43, "Changing Engine Coolant".
2. Remove the air cleaner assembly. Refer to EM-133, "Removal and Installation".
3. Remove the front RH wheel and tire. Refer to WT-7, "Adjustment".
4. Remove the splash shield RH. Refer to EI-23, "Component".
5. Disconnect and remove the CVT water hoses.
6. Remove the CVT fluid cooler and O-ring.
   CAUTION:
   Do not reuse O-ring.
7. Remove the CVT fluid cooler assembly.

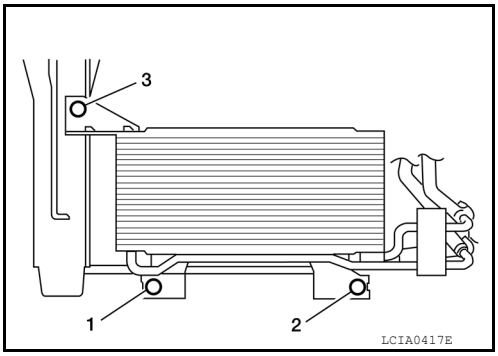
INSTALLATION

Installation is in the reverse order of removal.

- Install and torque the CVT cooler assembly bolts to the specified torque in the order shown.

CAUTION:

Do not reuse O-ring.

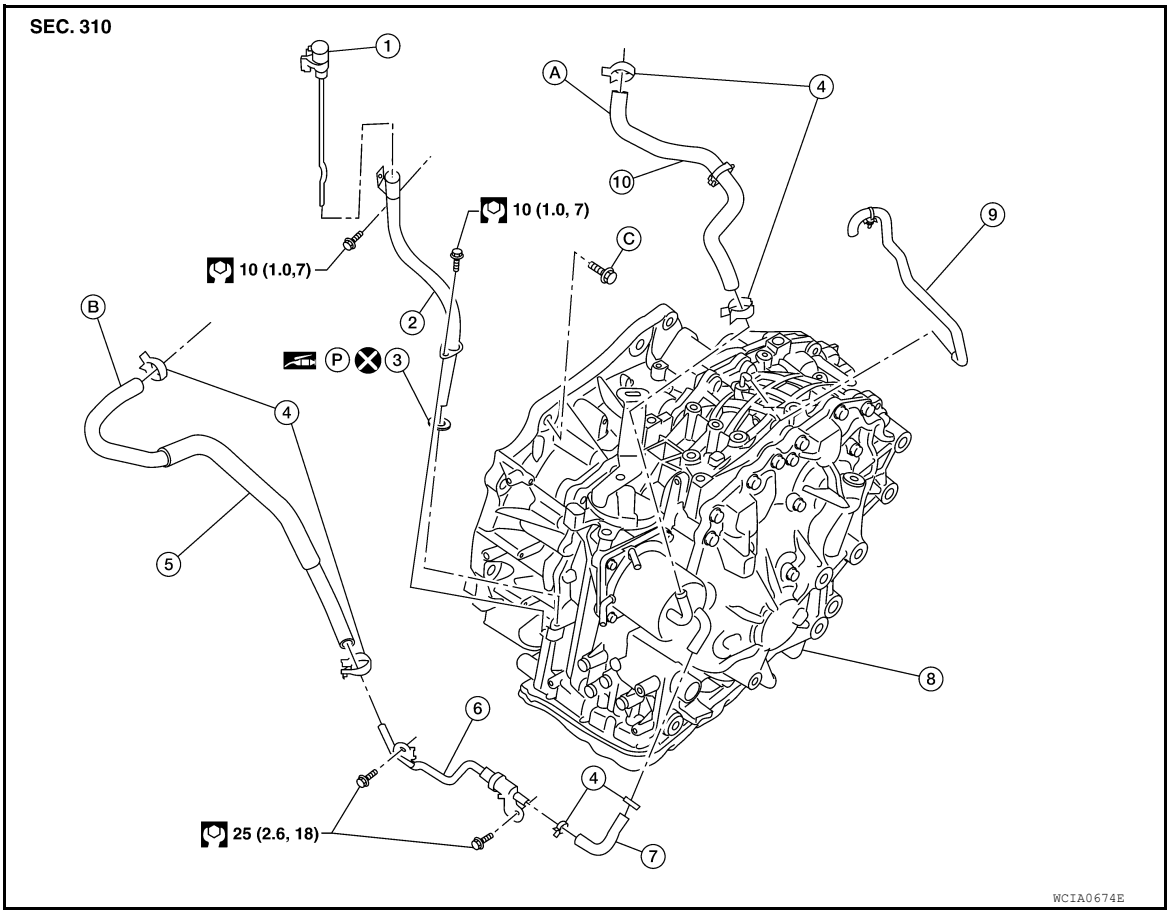


TRANSAXLE ASSEMBLY

Removal and Installation (MR20DE)

INFOID:0000000007402588

COMPONENTS



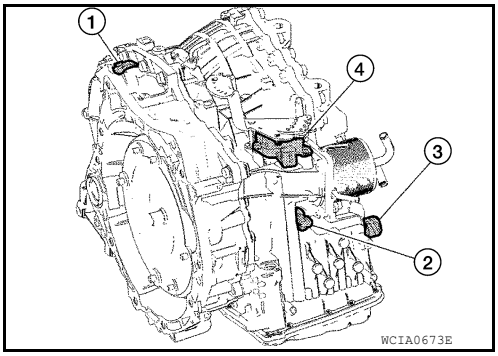
1. CVT fluid level gauge
2. CVT fluid charging pipe
3. O-ring
4. Hose clamp
5. CVT water hose
6. Water thermostat tube
7. Water hose
8. Transaxle assembly
9. Air breather hose
10. CVT water hose
A. To engine coolant outlet
B. To water pump
C. Refer to "INSTALLATION".

WARNING:
Never remove the radiator cap when the engine is hot. Serious burns could occur from high pressure coolant escaping from the radiator.
CAUTION:
When replacing TCM and transaxle assembly as a set, replace transaxle assembly first and then replace TCM. Refer to CVT-8, "Service After Replacing TCM, Transaxle Assembly, or Control Valve".
NOTE:
When removing components such as hoses, tubes/lines, etc., cap or plug openings to prevent fluid from spilling.

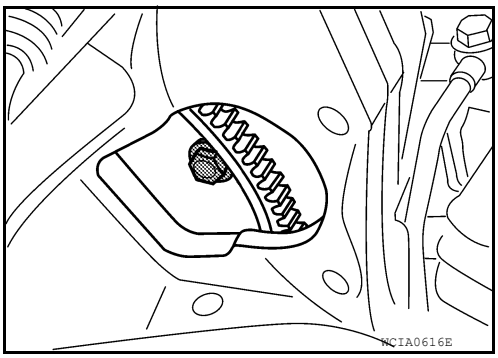
REMOVAL

1. Remove the engine and transaxle as an assembly. Refer to EM-76, "Removal and Installation".

2. Disconnect the electrical connectors from the following:
   - Secondary speed sensor (1)
   - Primary speed sensor (2)
   - CVT unit connector (3)
   - Transmission range switch (4)
3. Remove the harness from the CVT.



4. Remove the four drive plate to torque converter nuts.
   NOTE:
   Rotate the crankshaft clockwise viewed from front of engine for access to drive plate to torque converter nuts.



5. Put matching marks on the drive plate and torque converter alignment stud.
   CAUTION:
   For matching marks, use paint. Never damage the drive plate or torque converter.
6. Remove the CVT to engine and engine to CVT bolts.
7. Separate the CVT from the engine.
8. If necessary, remove the following from the CVT:
   - Primary speed sensor
   - Secondary speed sensor
   - Transmission range switch
   - CVT fluid charging pipe
   - Engine mounting bracket (LH)
   - Water tube and hoses
   - Air breather hose
   - Any necessary brackets

INSTALLATION

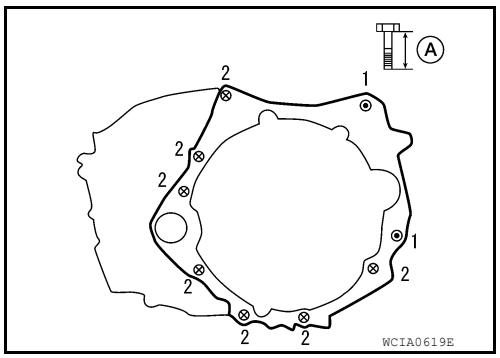
Installation is in the reverse order of removal.

CAUTION:

- **When replacing an engine or transmission you must make sure any dowels are installed correctly during re-assembly.**
- **Improper alignment caused by missing dowels may cause vibration, oil leaks or breakage of drive train components.**
- **Do not reuse O-rings.**
- **When turning crankshaft, turn it clockwise as viewed from the front of the engine.**
- **When tightening the nuts for the torque converter while securing the crankshaft pulley bolt, be sure to confirm the tightening torque of the crankshaft pulley bolt. Refer to EM-40.**
- **After converter is installed to drive plate, rotate crankshaft several turns to check that CVT rotates freely without binding.**
- **When installing the CVT to the engine, align the matching mark on the drive plate with the matching mark on the torque converter alignment stud.**

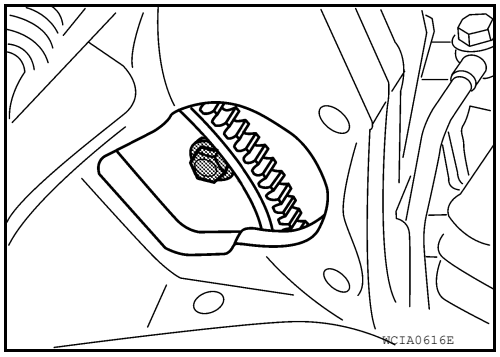
- **When installing CVT to the engine, attach the bolts in accordance with the following standard.**

Bolt No.	1 (CVT to engine)	2 (Engine to CVT)
Number of bolts	2	7
Bolt length “A” mm (in)	55 (2.17)	50 (1.97)
Tightening torque N·m (kg-m, ft-lb)	62 (6.3, 46)	



- **When installing the drive plate to torque converter nuts, tighten them temporarily. Then tighten the nuts to the specified torque.**

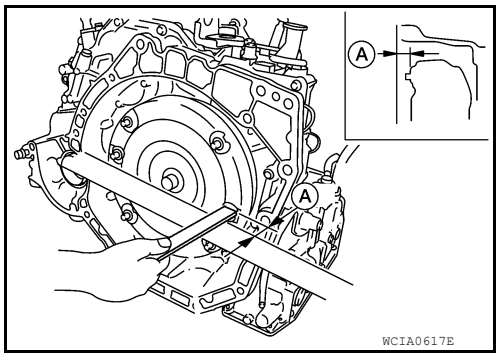
Converter nuts : 51 N·m (5.2 kg-m, 38 ft-lb)



INSPECTION BEFORE INSTALLATION

When installing the torque converter to the CVT measure distance A.

Distance “A”: 14.4 mm (0.567 in)



INSPECTION AFTER INSTALLATION

Check the following.

- Check for CVT fluid leakage and check CVT fluid level. Refer to CVT-15, "Checking CVT Fluid".
- Check CVT position. Refer to CVT-174, "Adjustment of CVT Position".
- Start and warm up the engine. Visually check that there is no leakage of engine coolant and CVT fluid.

ADJUSTMENT AFTER INSTALLATION

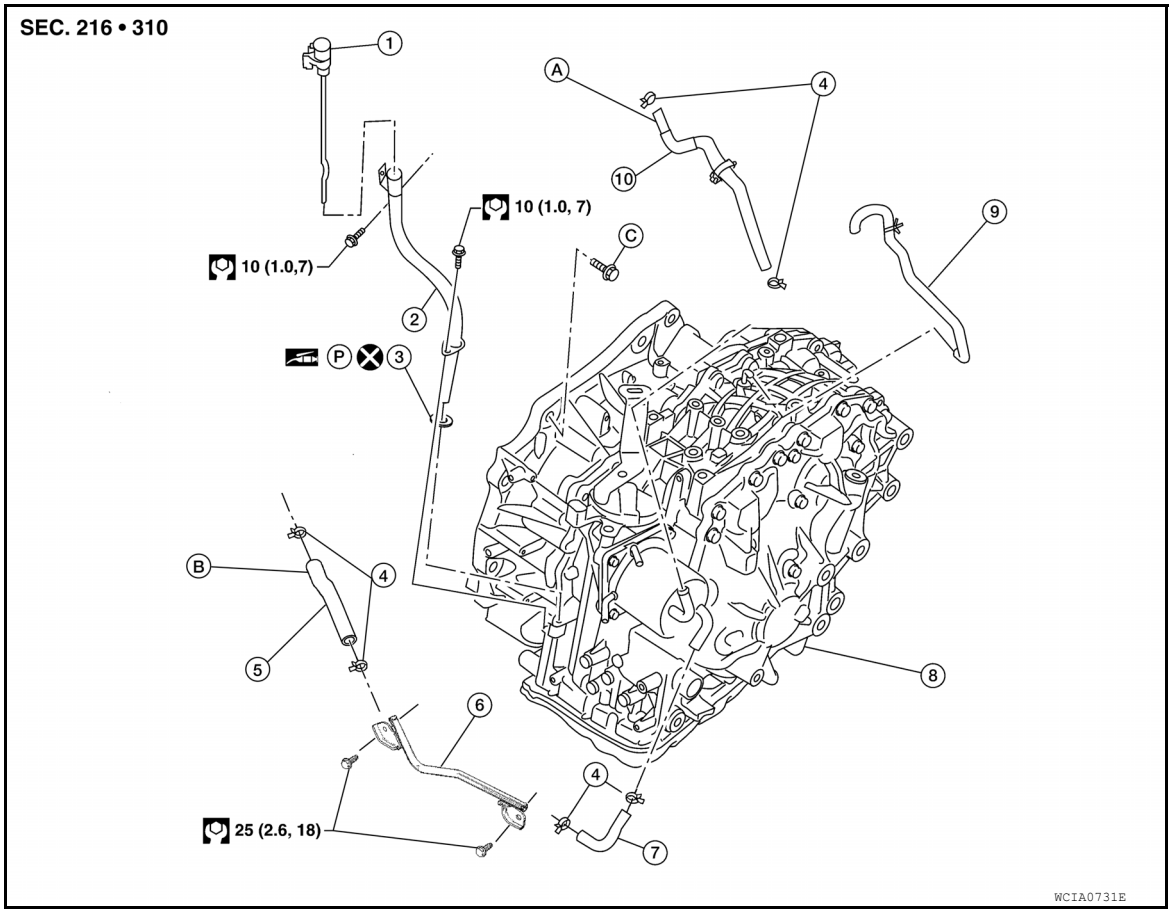
Erase TCM data.

- Erase CVT fluid degradation level data. Refer to CVT-47, "CONSULT Function (TRANSMISSION)".
- When replacing the transaxle assembly, erase EEP ROM in TCM. Refer to CVT-8, "Service After Replacing TCM, Transaxle Assembly, or Control Valve".

Removal and Installation (QR25DE)

INFOID:0000000007402589

COMPONENTS

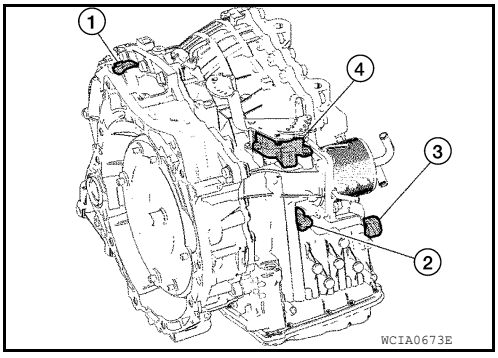


1. CVT fluid level gauge
2. CVT fluid charging pipe
3. O-ring
4. Hose clamp
5. CVT water hose
6. Water tube
7. Water hose
8. Transaxle assembly
9. Air breather hose
10. CVT water hose
A. To engine coolant outlet
B. To heater pipe
C. Refer to "INSTALLATION".

WARNING:
Never remove the radiator cap when the engine is hot. Serious burns could occur from high pressure coolant escaping from the radiator.
CAUTION:
When replacing TCM and transaxle assembly as a set, replace transaxle assembly first and then replace TCM. Refer to CVT-8, "Service After Replacing TCM, Transaxle Assembly, or Control Valve".
NOTE:
When removing components such as hoses, tubes/lines, etc., cap or plug openings to prevent fluid from spilling.

REMOVAL

1. Remove the engine and transaxle as an assembly. Refer to EM-186, "Removal and Installation".
2. Disconnect the electrical connectors from the following:
   - Secondary speed sensor (1)
   - Primary speed sensor (2)
   - CVT unit connector (3)
   - Transmission range switch (4)
3. Remove the harness from the CVT.



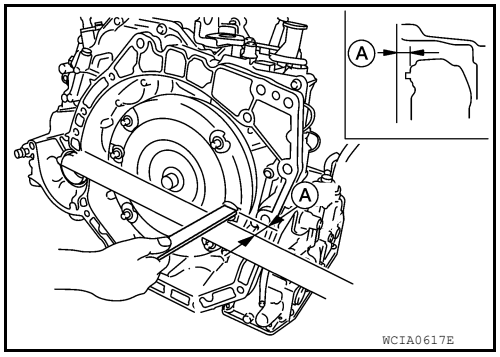
4. Remove the four drive plate to torque converter nuts.
NOTE:
Rotate the crankshaft clockwise viewed from front of engine for access to drive plate to torque converter nuts.
5. Put matching marks on the drive plate and torque converter alignment stud.
CAUTION:
For matching marks, use paint. Never damage the drive plate or torque converter.
6. Remove the CVT to engine and engine to CVT bolts.
7. Separate the CVT from the engine.
8. If necessary, remove the following from the CVT:
- Primary speed sensor
- Secondary speed sensor
- Transmission range switch
- CVT fluid charging pipe
- Engine mounting bracket (LH)
- Water tube and hoses
- Air breather hose
- Any necessary brackets

INSTALLATION

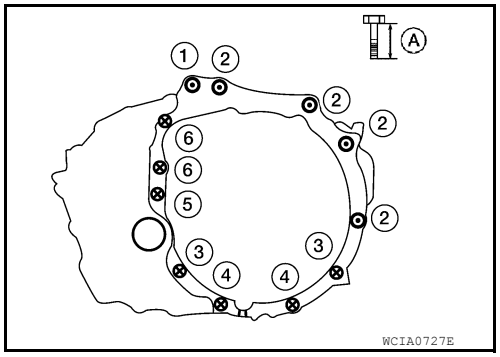
Installation is in the reverse order of removal.

CAUTION:
- **When replacing an engine or transmission you must make sure any dowels are installed correctly during re-assembly.**
- **Improper alignment caused by missing dowels may cause vibration, oil leaks or breakage of drive train components.**
- **Do not reuse O-rings.**
- **When turning crankshaft, turn it clockwise as viewed from the front of the engine.**
- **When tightening the nuts for the torque converter while securing the crankshaft pulley bolt, be sure to confirm the tightening torque of the crankshaft pulley bolt. Refer to EM-165.**
- **After converter is installed to drive plate, rotate crankshaft several turns to check that CVT rotates freely without binding.**
- **When installing the torque converter to the CVT measure distance A.**

Distance "A": 14.4 mm (0.567 in)



- **When installing the CVT to the engine, align the matching mark on the drive plate with the matching mark on the torque converter alignment stud.**
- **When installing CVT to the engine, attach the bolts in accordance with the following standard.**



Bolt No.	1 (CVT to engine)	2 (CVT to engine)	3 (Engine to CVT)	4 (Engine to CVT)	5 (Engine to CVT)	6 (Engine to CVT)
Number of bolts	1	4	2	2	1	2
Bolt length "A" mm (in)	45 (1.77)	45 (1.77)	45 (1.77)	35 (1.38)	45 (1.77)	45 (1.77)
Tightening torque N·m (kg-m, ft-lb)	35 (3.6, 26)	75 (7.6, 55)	42.7 (4.4, 31)	42.7 (4.4, 31)	62 (6.3, 46)	62 (6.3, 46)

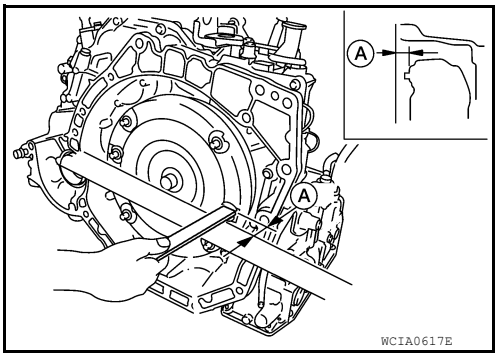
- **When installing the drive plate to torque converter nuts, tighten them temporarily. Then tighten the nuts to the specified torque.**

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

INSPECTION BEFORE INSTALLATION

When installing the torque converter to the CVT measure distance A.

Distance “A”: 14.4 mm (0.567 in)



INSPECTION AFTER INSTALLATION

Check the following.

- Check for CVT fluid leakage and check CVT fluid level. Refer to CVT-15, "Checking CVT Fluid".
- Check CVT position. Refer to CVT-174, "Adjustment of CVT Position".
- Start and warm up the engine. Visually check that there is no leakage of engine coolant and CVT fluid.

ADJUSTMENT AFTER INSTALLATION

Erase TCM data.

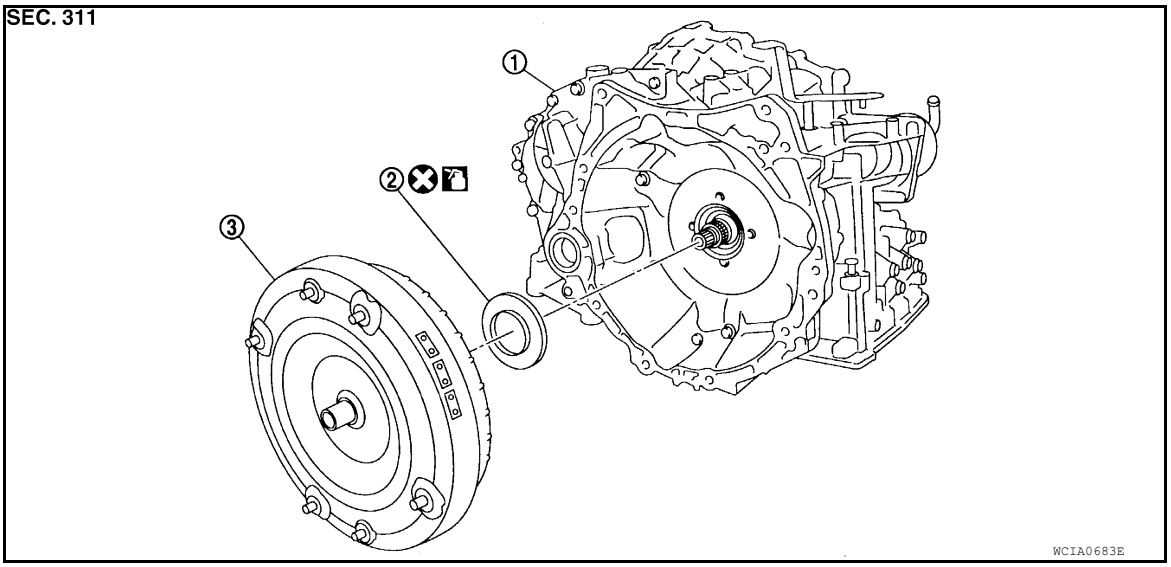
- Erase CVT fluid degradation level data. Refer to CVT-47, "CONSULT Function (TRANSMISSION)".
- When replacing the transaxle assembly, erase EEP ROM in TCM. Refer to CVT-8, "Service After Replacing TCM, Transaxle Assembly, or Control Valve".

REPAIR FOR COMPONENT PARTS

Torque Converter and Converter Housing Oil Seal

INFOID:0000000007402590

COMPONENTS



1. Transaxle assembly
2. Converter housing oil seal
3. Torque converter

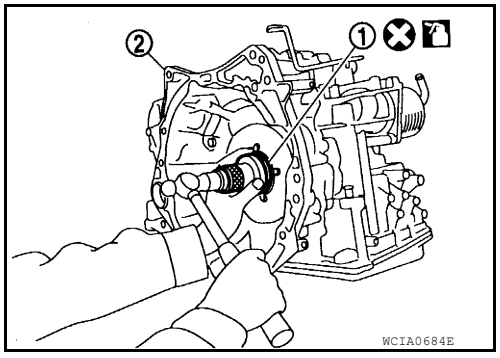
: Apply CVT Fluid NS-2.

DISASSEMBLY

1. Remove torque converter.
2. Remove the converter housing oil seal using suitable tool.
   CAUTION:
   Do not scratch converter housing.

ASSEMBLY

1. Drive the converter housing oil seal (1) in evenly using suitable tool as shown.
   • CVT (2)
   CAUTION:
   • Do not reuse converter housing oil seal.
   • Apply CVT fluid to converter housing oil seal.
2. Install torque converter.



SERVICE DATA AND SPECIFICATIONS (SDS)

General Specification

INFOID:0000000007402591

Applied model		MR20DE engine	QR25DE engine
CVT model		RE0F10A	
CVT assembly	Model code number	3UX0C	1XT7A
Transmission gear ratio	D range	2.349 - 0.394	
	Reverse	1.750	
	Final drive	5.122	5.407
Recommended fluid		NISSAN CVT Fluid NS-2*1	
Fluid capacity	Liter (US qt., Imp qt)	7.3 (7-3/4, 6-3/8)*2	7.5 (7-7/8, 6-5/8)*2

CAUTION:

- **Use only Genuine NISSAN CVT Fluid NS-2. Do not mix with other fluid.**
- **Using CVT fluid other than Genuine NISSAN CVT Fluid NS-2 will deteriorate in driveability and CVT durability, and may damage the CVT, which is not covered by the NISSAN new vehicle limited warranty.**

*1: Refer to MA-15, "MR20DE" (MR20DE), MA-15, "QR25DE" (QR25DE).

*2:The fluid capacity is the reference value. Check the fluid level with CVT fluid level gauge.

Vehicle Speed When Shifting Gears

INFOID:0000000007402592

Numerical value data are reference values.

Engine type	Throttle position	Shift pattern	Engine speed (rpm)	
			At 40 km/h (25 MPH)	At 60 km/h (37 MPH)
MR20DE	Full	“D” position	3,400 - 4,300	4,300 - 5,200
		Overdrive-off mode		
		“L” position		
	1/4	“D” position	1,200 - 3,100	1,300 - 3,500
		Overdrive-off mode	2,200 - 3,000	2,800 - 3,600
		“L” position	3,400 - 4,300	4,100 - 5,000
QR25DE	Full	“D” position	3,300 - 4,200	4,300 - 5,200
		Overdrive-off mode		
		“L” position		
	1/4	“D” position	1,300 - 3,100	1,400 - 3,400
		Overdrive-off mode	2,200 - 3,000	2,800 - 3,600
		“L” position	3,200 - 4,100	4,000 - 4,900

CAUTION:

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

Stall Speed

INFOID:0000000007402593

Engine	Stall speed
MR20DE	2,500 - 3,000 rpm
QR25DE	2,050 - 3,550 rpm

Line Pressure

INFOID:0000000007402594

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

*: Reference values

Solenoid Valves

INFOID:0000000007402595

Name	Resistance (Approx.)	Terminal
Secondary pressure solenoid valve	3.0 - 9.0 Ω	3
Line pressure solenoid valve		2
Torque converter clutch solenoid valve		12
Lock-up select solenoid valve	17.0 - 38.0 Ω	13

CVT Fluid Temperature Sensor

INFOID:0000000007402596

Name	Condition	CONSULT "DATA MONITOR" (Approx.)	Resistance (Approx.)
ATF TEMP SEN	20°C (68°F)	2.0 V	6.5 kΩ
	80°C (176°F)	1.0 V	0.9 kΩ

Primary Speed Sensor

INFOID:0000000007402597

Name	Condition	Data (Approx.)
Primary speed sensor	When driving ["L" position, 20 km/h (12 MPH)].	880 Hz

Secondary Speed Sensor

INFOID:0000000007402598

Name	Condition	Data (Approx.)
Secondary speed sensor	When driving ["D" position, 20 km/h (12 MPH)].	430 Hz

Removal and Installation

INFOID:0000000007402599

Distance between end of converter housing and torque converter	14.4 mm (0.567 in)