

SECTION **CVT**
CVT

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CVT

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Alphabetical Index

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NOTE:

If DTC “U1000” is displayed with other DTCs, first perform the trouble diagnosis for DTC “U1000”. Refer to [CVT-54](#).

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Items (CONSULT-III screen terms)	DTC*1		Reference
	MIL *2, “ENGINE” with CONSULT-III or GST	CONSULT-III only “TRANSMISSION”	
BRAKE SWITCH B	—	P0703	CVT-58
CAN COMM CIRCUIT	U1000	U1000	CVT-54
CONTROL UNIT (CAN)	U1010	U1010	CVT-57
ENGINE SPEED	—	P0725	CVT-80
FLUID PRESS LOW	—	P0868	CVT-115
FLUID PRESS SEN/SW A	P0840	P0840	CVT-109
FLUID PRESS SEN/SW A	—	P0841	CVT-113
FLUID TEMP SENSOR A	P0710	P0710	CVT-65
INCORRECT GR RATIO	—	P0730	CVT-82
INPUT SPEED SENSOR A	P0715	P0715	CVT-70
LINE PRESS CONTROL	—	P1745	CVT-133
OUTPUT SPEED SENSOR	P0720	P0720	CVT-75
PL SOLENOID A	P0745	P0745	CVT-90
PC SOLENOID A	P0746	P0746	CVT-95
PC SOLENOID B	P0778	P0778	CVT-99
PC SOLENOID B	P0776	P0776	CVT-97
SLCT SOLENOID	P1740	P1740	CVT-128
SPEED SENSOR	—	P1723	CVT-125
STEP MOTOR	P1777	P1777	CVT-134
STEP MOTOR	P1778	P1778	CVT-138
TCM	—	P1701	CVT-117
THROTTLE CONTROL SIG	—	P1726	CVT-127
T/M RANGE SWITCH A	P0705	P0705	CVT-60
TORQUE CONVERTER	P0744	P0744	CVT-88
TORQUE CONVERTER	P0740	P0740	CVT-83
TP SENSOR	—	P1705	CVT-121
UP/DOWN SHIFT SWITCH	—	P0826	CVT-104
VEHICLE SPEED*3	—	P1722	CVT-123

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*1: These numbers are prescribed by SAE J2012.

*2: Refer to [CVT-24](#), "Introduction".

*3: Models without ABS does not indicate.

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If DTC “U1000” is displayed with other DTCs, first perform the trouble diagnosis for DTC “U1000”. Refer to [CVT-54](#).

DTC*1		Items (CONSULT-III screen terms)	Reference
MIL*2, “ENGINE” with CONSULT-III or GST	CONSULT-III only “TRANSMISSION”		
—	P0703	BRAKE SWITCH B	CVT-58
P0705	P0705	T/M RANGE SWITCH A	CVT-60
P0710	P0710	FLUID TEMP SENSOR A	CVT-65
P0715	P0715	INPUT SPEED SENSOR A	CVT-70
P0720	P0720	OUTPUT SPEED SENSOR	CVT-75
—	P0725	ENGINE SPEED	CVT-80
—	P0730	INCORRECT GR RATIO	CVT-82
P0740	P0740	TORQUE CONVERTER	CVT-83
P0744	P0744	TORQUE CONVERTER	CVT-88
P0745	P0745	L/PRESS SOL/CIRC	CVT-90
P0746	P0746	PC SOLENOID A	CVT-95
P0776	P0776	PC SOLENOID B	CVT-97
P0778	P0778	PC SOLENOID B	CVT-99
—	P0826	UP/DOWN SHIFT SWITCH	CVT-104
P0840	P0840	FLUID PRESS SEN/SW A	CVT-109
—	P0841	FLUID PRESS SEN/SW A	CVT-113
—	P0868	FLUID PRESS LOW	CVT-115
—	P1701	TCM	CVT-117
—	P1705	TP SENSOR	CVT-121
—	P1722	VEHICLE SPEED*3	CVT-123
—	P1723	SPEED SENSOR	CVT-125
—	P1726	THROTTLE CONTROL SIG	CVT-127
P1740	P1740	SLCT SOLENOID	CVT-128
—	P1745	LINE PRESS CONTROL	CVT-133
P1777	P1777	STEP MOTOR	CVT-134
P1778	P1778	STEP MOTOR	CVT-138
U1000	U1000	CAN COMM CIRCUIT	CVT-54
U1010	U1010	CONTROL UNIT (CAN)	CVT-57

*1: These numbers are prescribed by SAE J2012.

*2: Refer to [CVT-24, "Introduction"](#).

*3: Models without ABS does not indicate.

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

INFOID:000000005937460

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:000000005284079

NOTE:

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

For models equipped with the Intelligent Key system and NVIS/IVIS, an electrically controlled steering lock mechanism is adopted on the key cylinder.

For this reason, if the battery is disconnected or if the battery is discharged, the steering wheel will lock and steering wheel rotation will become impossible.

If steering wheel rotation is required when battery power is interrupted, follow the procedure below before starting the repair operation.

OPERATION PROCEDURE

1. Connect both battery cables.

NOTE:

Supply power using jumper cables if battery is discharged.

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

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

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

INFOID:000000005284080

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:000000005524808

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-III. 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-III.
3. Start engine.
 - **CAUTION:**
Never start driving.
4. Select "Data monitor" in "TRANSMISSION".

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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-III 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-117, "Description"](#).

PATTERN C

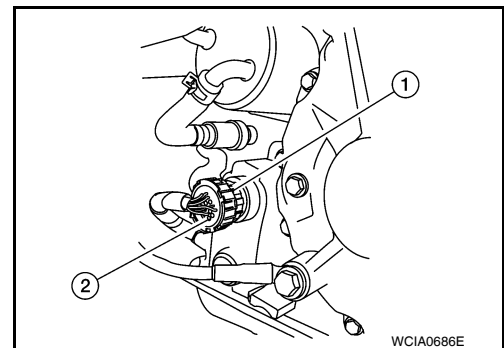
1. Replace transaxle assembly first, and then replace TCM.
2. Perform the service of "PATTERN A".
(Perform the service of "PATTERN B" if TCM is replaced first.)

Removal and Installation Procedure for CVT Unit Connector

INFOID:000000005284082

REMOVAL

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

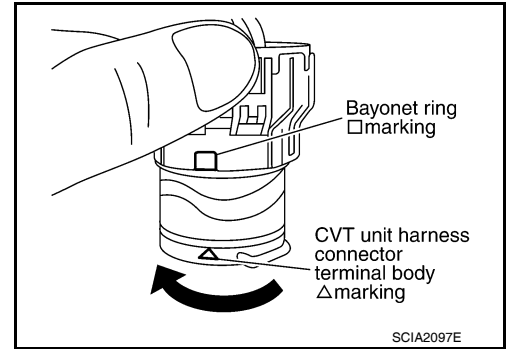


INSTALLATION

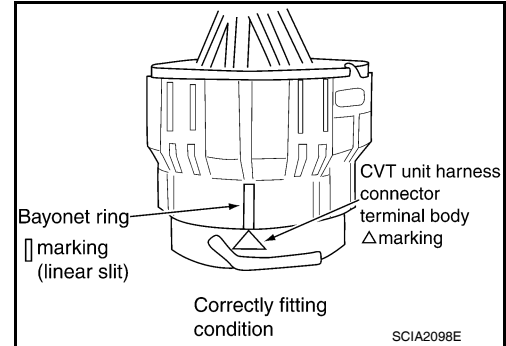
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1. Align CVT unit harness connector terminal body marking with bayonet ring marking, insert CVT unit harness connector, and then rotate bayonet ring clockwise.

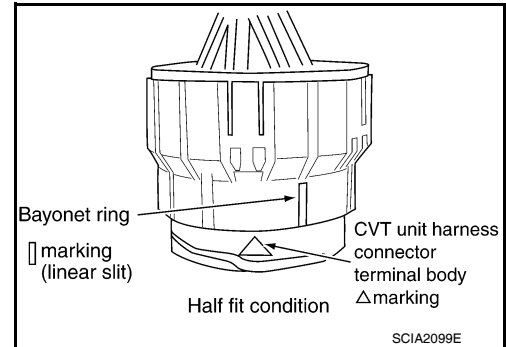


2. Rotate bayonet ring clockwise until CVT unit harness connector terminal body marking is aligned with the bayonet ring marking (linear slit) as shown.



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.



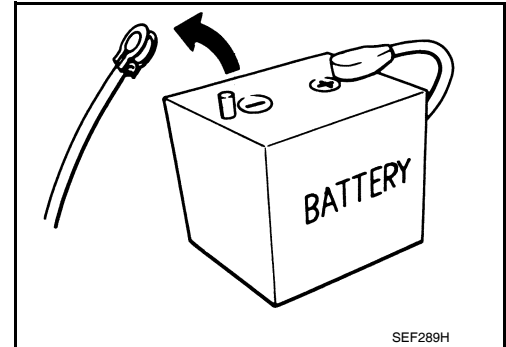
Precaution

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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.

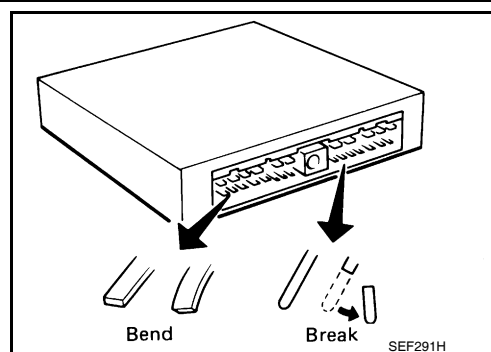


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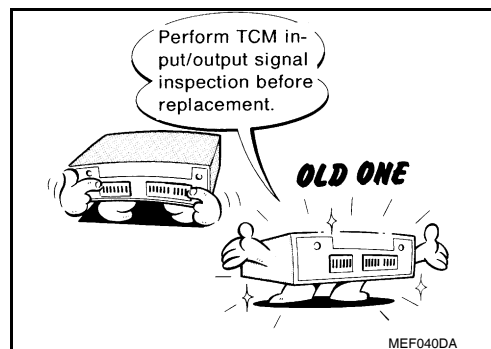
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- When connecting or disconnecting pin connectors into or from TCM, take care not to damage pin terminals (bend or break).

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



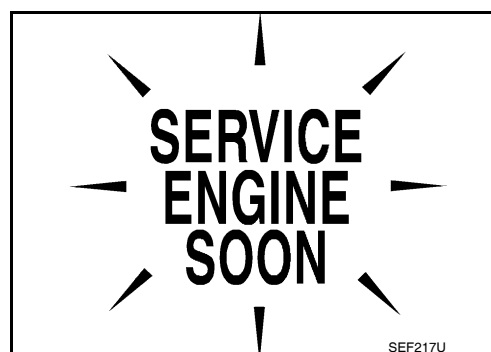
- Before replacing TCM, perform TCM input/output signal inspection and make sure whether TCM functions properly or not. [CVT-44, "TCM Input/Output Signal Reference Value"](#).



- 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-14, "Checking CVT Fluid"](#), [CVT-15, "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.)

PRECAUTIONS

< SERVICE INFORMATION >

- 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.

Service Notice or Precaution

INFOID:000000005284084

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-46. "CONSULT-III Function \(TRANSMISSION\)"](#) for the indicator used to display each self-diagnostic result.
- The self-diagnostic results indicated by the MIL are automatically stored in both the ECM and TCM memories.

Always perform the procedure on [CVT-24. "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-61](#).

- **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-59](#).**

ATFTEMP COUNT Conversion Table

INFOID:000000005284085

ATFTEMP COUNT	Temperature °C (°F)	ATFTEMP COUNT	Temperature °C (°F)
4	-30 (-22)	177	90 (194)
8	-20 (-4)	183	95 (203)
13	-10 (14)	190	100 (212)
17	-5 (23)	196	105 (221)
21	0 (32)	201	110 (230)
27	5 (41)	206	115 (239)
32	10 (50)	210	120 (248)
39	15 (59)	214	125 (257)
47	20 (68)	218	130 (266)
55	25 (77)	221	135 (275)
64	30 (86)	224	140 (284)
73	35 (95)	227	145 (293)
83	40 (104)	229	150 (302)
93	45 (113)	231	155 (311)
104	50 (122)	233	160 (320)
114	55 (131)	235	165 (329)
124	60 (140)	236	170 (338)
134	65 (149)	238	175 (347)
143	70 (158)	239	180 (356)
152	75 (167)	241	190 (374)
161	80 (176)	243	200 (392)
169	85 (185)	—	—

PREPARATION

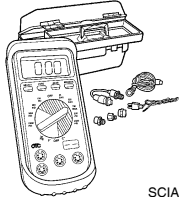
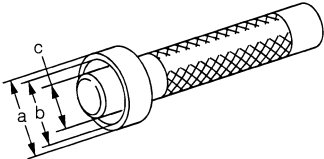
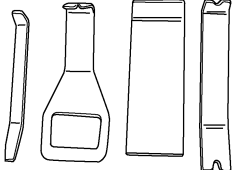
< SERVICE INFORMATION >

PREPARATION

Special Service Tool

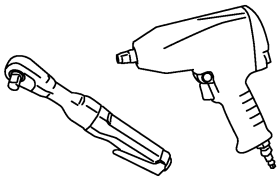
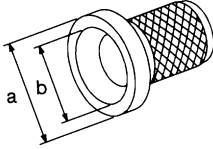
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The actual shapes of Kent-Moore tools may differ from those of special service tools illustrated here.

Tool number (Kent-Moore No.) Tool name	Description
<p>— (OTC3492) Oil pressure gauge set</p>  <p style="text-align: right;">SCIA7531E</p>	Measuring line pressure
<p>KV38100300 (—) Drift</p>  <p style="text-align: right;">ZZA1046D</p>	Installing differential side oil seal a: 54 mm (2.13 in) b: 46 mm (1.81 in) c: 32 mm (1.26 in)
<p>— (J-46534) Trim tool set</p>  <p style="text-align: right;">AWJIA0483ZZ</p>	For removing trim

Commercial Service Tool

INFOID:000000005284087

Tool number Tool name	Description
<p>Power tool</p>  <p style="text-align: right;">PBIC0190E</p>	Loosening nuts and bolts
<p>Drift</p>  <p style="text-align: right;">NT086</p>	Installing converter housing oil seal a: ϕ 65 mm (2.56 in) b: ϕ 60 mm (2.36 in)

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CVT FLUID

< SERVICE INFORMATION >

CVT FLUID

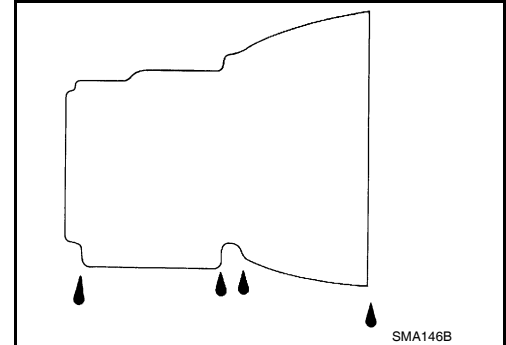
Checking CVT Fluid

INFOID:000000005284088

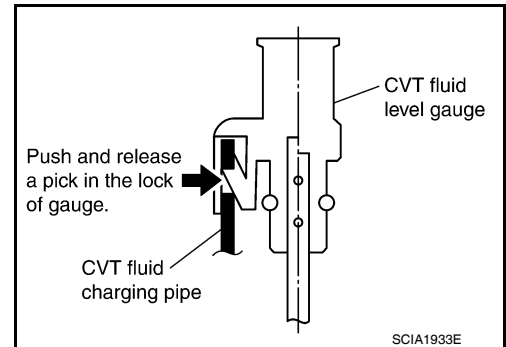
FLUID LEVEL CHECK

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.



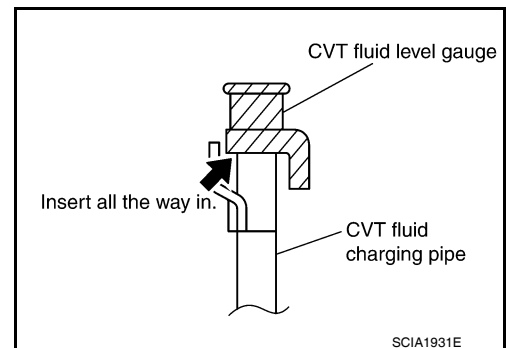
5. Press the tab on the CVT fluid level gauge to release the lock and pull out the CVT fluid level gauge from the CVT fluid charging pipe.



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.

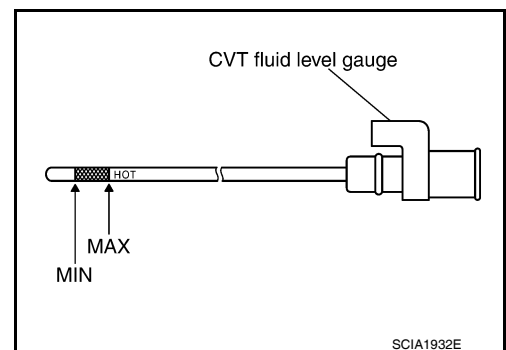


7. Remove the CVT fluid level gauge and check that the fluid level is within the specified range as shown. If the fluid level is at or below the low side of the range, add the necessary specified NISSAN CVT fluid through the CVT charging pipe.

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:

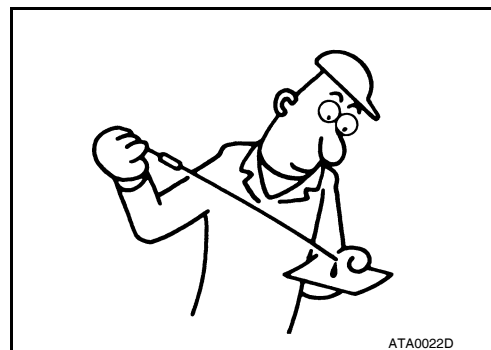
When CVT fluid level gauge is installed into the CVT fluid charging pipe, make sure that the CVT fluid level gauge is securely locked in place.

CVT FLUID

< SERVICE INFORMATION >

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:000000005588766

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-199, "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-14, "Checking CVT Fluid"](#).
6. Repeat steps 1 through 5 if CVT fluid is contaminated.

CAUTION:

Delete CVT fluid deterioration date with CONSULT-III after changing CVT fluid.

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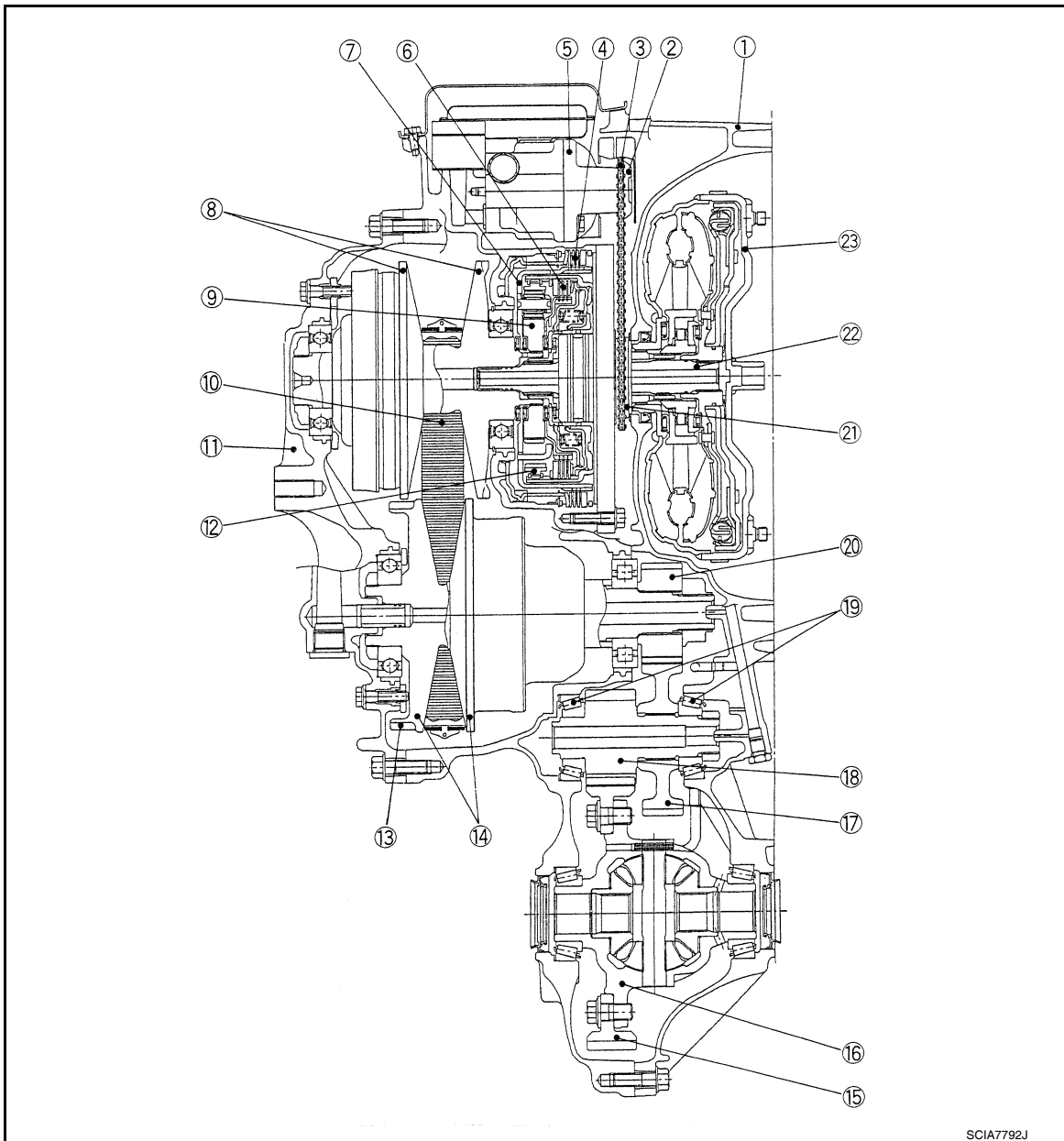
CVT SYSTEM

< SERVICE INFORMATION >

CVT SYSTEM

Cross-Sectional View - RE0F10A

INFOID:000000005284090



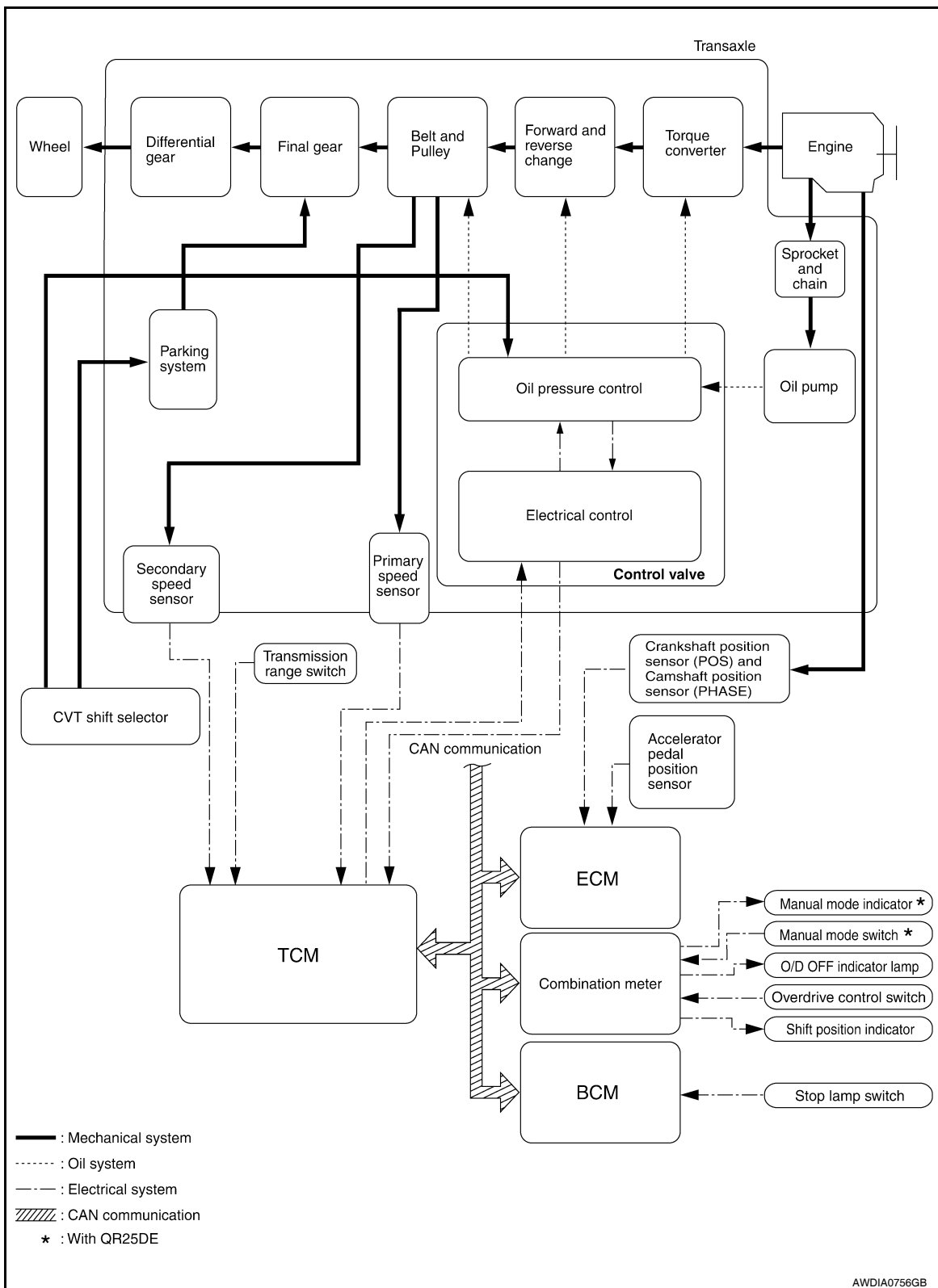
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|--------------------------|----------------------|--------------------|
| 1. Converter housing | 2. Driven sprocket | 3. Chain |
| 4. Reverse brake | 5. Oil pump | 6. Forward clutch |
| 7. Planetary carrier | 8. Primary pulley | 9. Sun gear |
| 10. 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 | |

CVT SYSTEM

< SERVICE INFORMATION >

Control System

INFOID:000000005284091



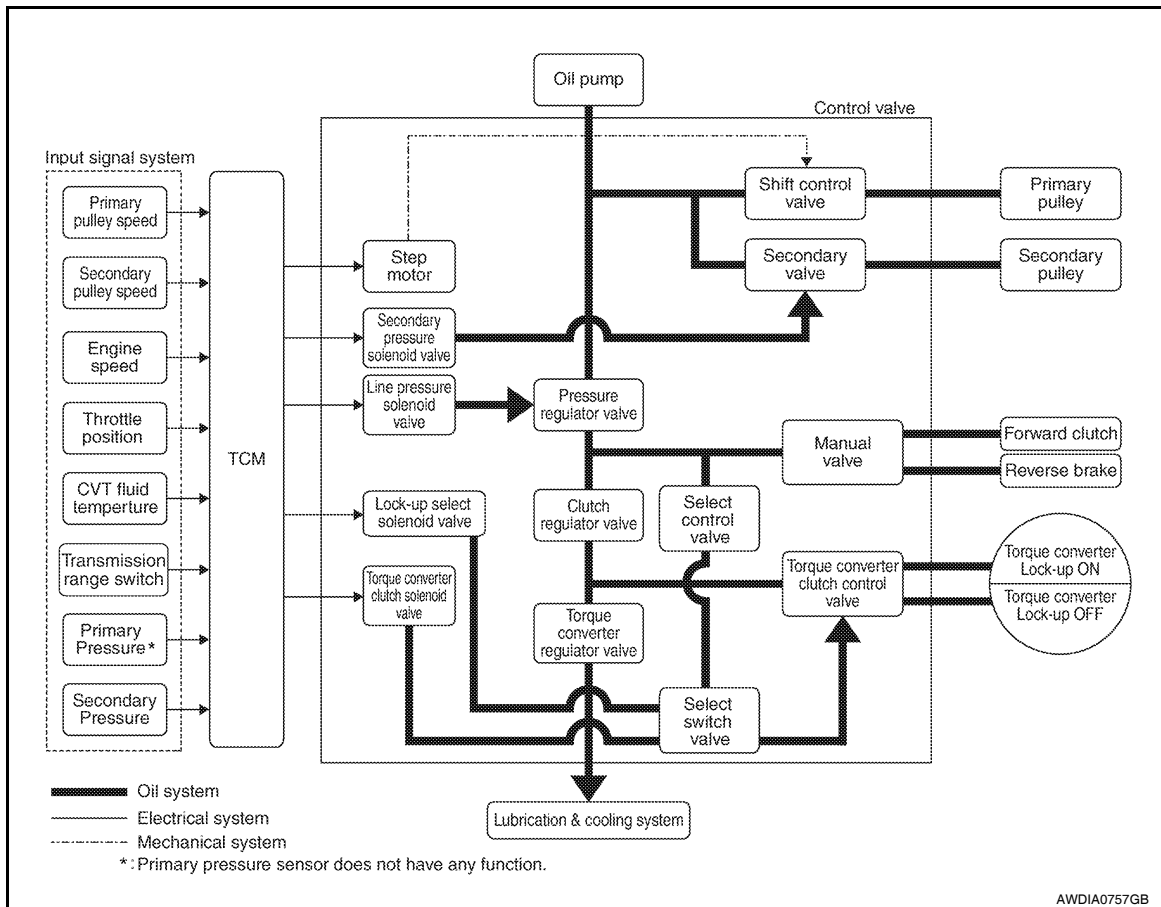
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CVT SYSTEM

< SERVICE INFORMATION > Hydraulic Control System

INFOID:000000005284092



TCM Function

INFOID:000000005284093

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 Primary pressure sensor** Secondary pressure sensor	⇒	Shift control Line pressure control Primary pressure control Secondary pressure control Lock-up control Engine brake control Vehicle speed control Fail-safe control Self-diagnosis CONSULT-III communication line Duet-EA control CAN system On board diagnosis	⇒	Step motor Torque converter clutch solenoid valve Lock-up select solenoid valve Line pressure solenoid valve Secondary pressure solenoid valve Shift position indicator O/D OFF indicator lamp Manual mode indicator* Starter relay

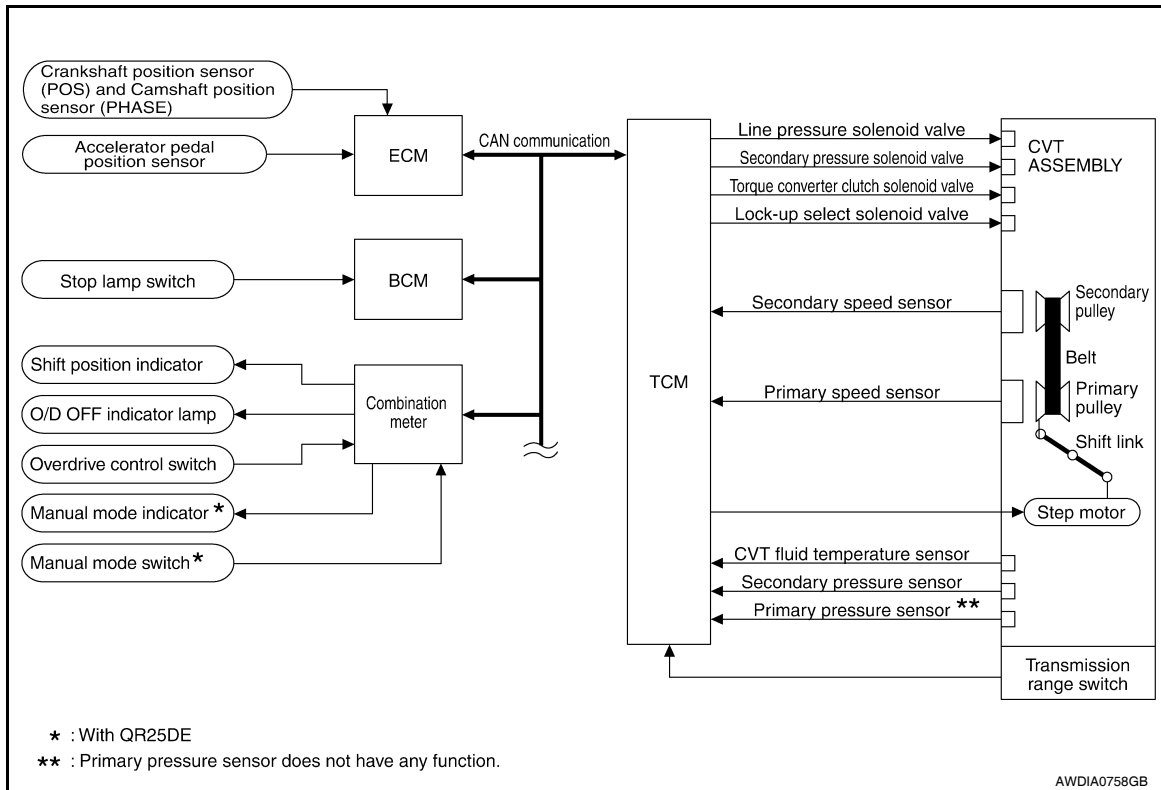
*: With QR25DE

** : Primary pressure sensor does not have any function.

CVT SYSTEM

< SERVICE INFORMATION >

CONTROL SYSTEM DIAGRAM



CAN Communication

INFOID:000000005284094

SYSTEM DESCRIPTION

Refer to [LAN-7, "System Description"](#).

Input/Output Signal of TCM

INFOID:000000005284095

Control item	Fluid pressure control	Select control	Shift control	Lock-up control	CAN communication control	Fail-safe function (*3)
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
Primary pressure sensor(*4)	X					
Secondary pressure sensor	X					X

CVT SYSTEM

< SERVICE INFORMATION >

Control item		Fluid pressure control	Select control	Shift control	Lock-up control	CAN communication control	Fail-safe function (*3)
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.

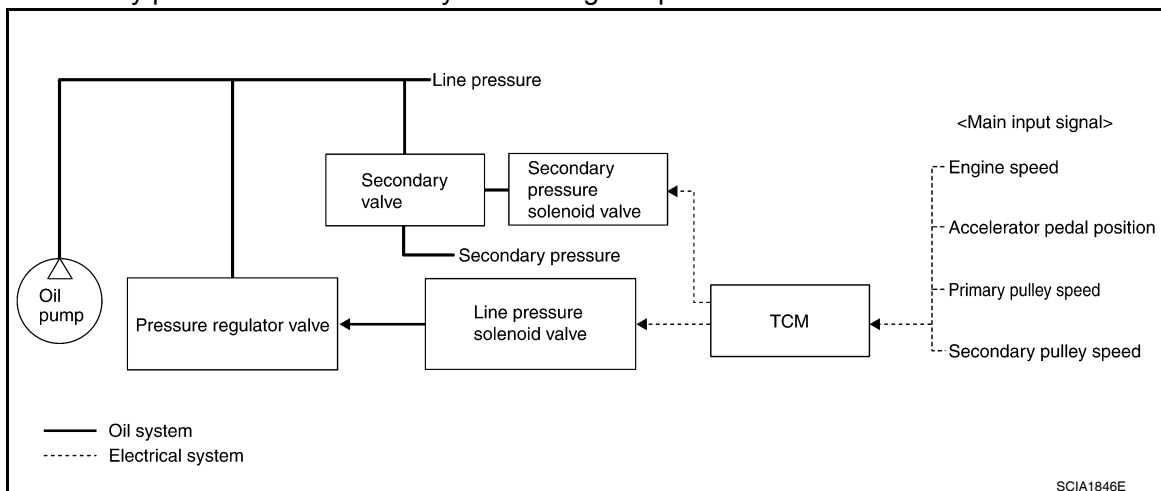
*3: If these input and output signals are different, the TCM triggers the fail-safe function.

*4: Primary pressure sensor does not have any function.

Line Pressure and Secondary Pressure Control

INFOID:000000005284096

- 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

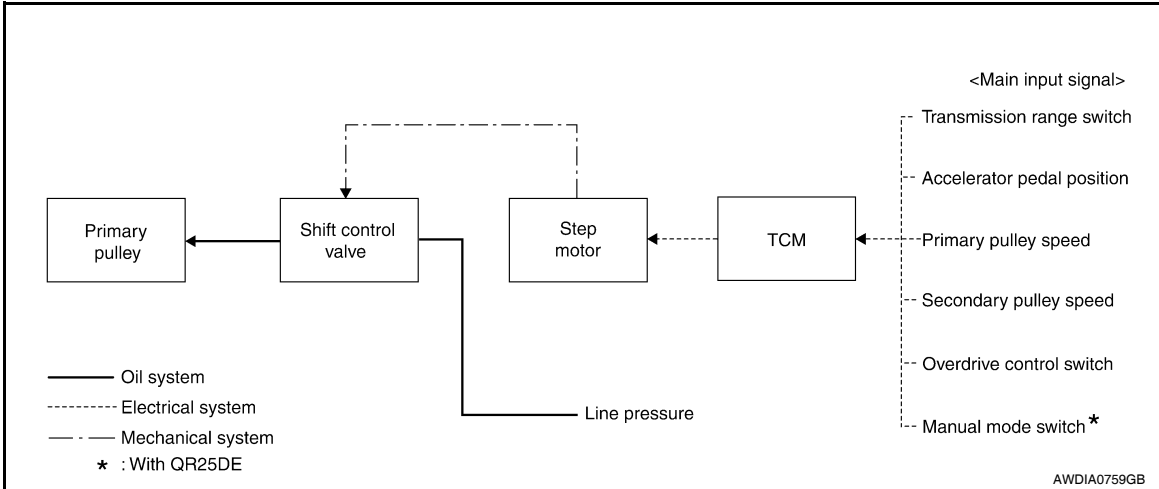
INFOID:000000005284097

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 com-

CVT SYSTEM

< SERVICE INFORMATION >

mand 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.

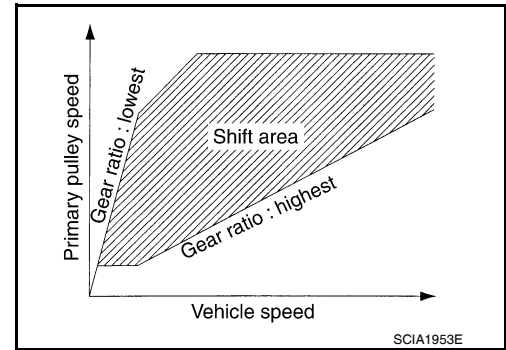


NOTE:

The gear ratio is set for every position separately.

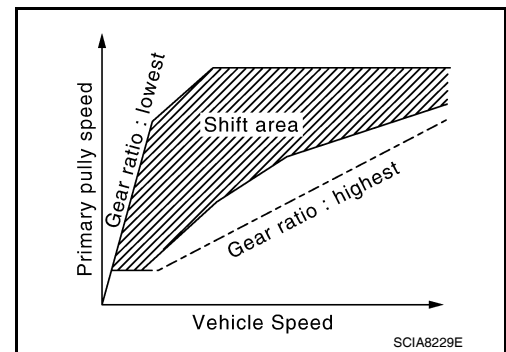
“D” POSITION

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



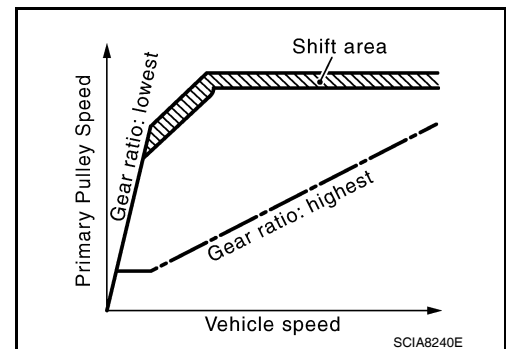
“D” POSITION OVERDRIVE SWITCH: ON

Gear ratio increases in general by limiting gear range on the HIGH side of the gear ratio, and this allows 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.

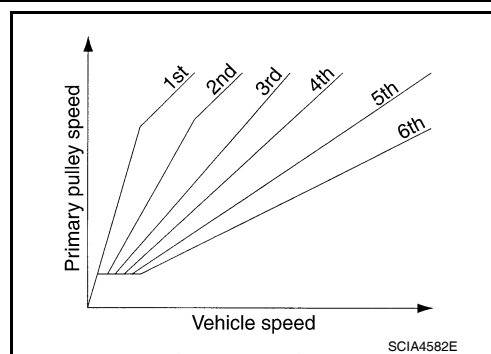


“M” POSITION (With QR25DE)

CVT SYSTEM

< SERVICE INFORMATION >

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.

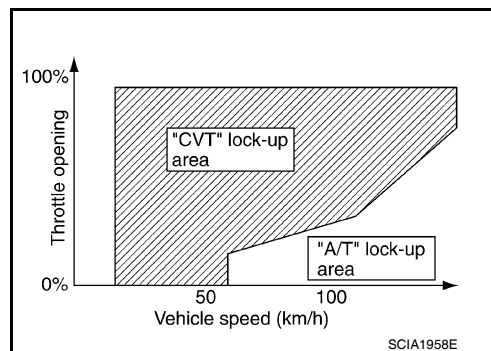
ACCELERATION CONTROL

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:000000005284098

- 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.

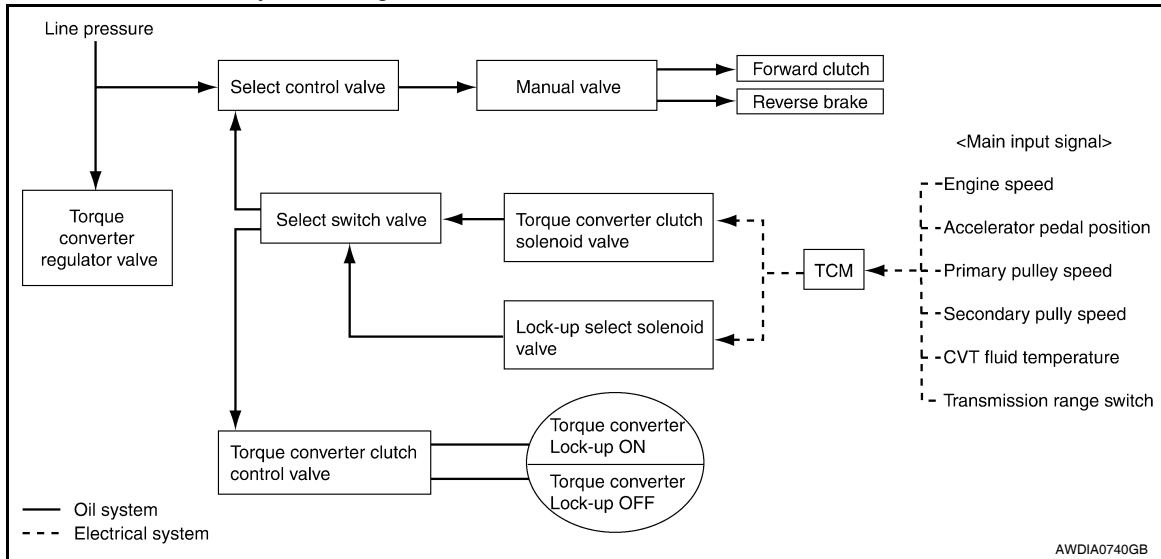


TORQUE CONVERTER CLUTCH AND SELECT CONTROL VALVE CONTROL

CVT SYSTEM

< SERVICE INFORMATION >

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:000000005284099

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	<ul style="list-style-type: none"> 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

< SERVICE INFORMATION >

ON BOARD DIAGNOSTIC (OBD) SYSTEM

Introduction

INFOID:000000005284100

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-46, "CONSULT-III Function \(TRANSMISSION\)"](#).

OBD-II Function for CVT System

INFOID:000000005284101

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:000000005284102

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:000000005284103

HOW TO READ DTC AND 1ST TRIP DTC

DTC and 1st trip DTC can be read by the following methods.

( **With CONSULT-III or  GST**) CONSULT-III or GST (Generic Scan Tool) Examples: P0705, P0720 etc.

These DTC are prescribed by SAE J2012.

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

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

A sample of CONSULT-III 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-III. Time data indicates how many times the vehicle was driven after the last detection of a DTC.

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

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

Freeze Frame Data and 1st Trip Freeze Frame Data

The ECM has a memory function, which stores the driving 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.

ON BOARD DIAGNOSTIC (OBD) SYSTEM

< SERVICE INFORMATION >

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-III or GST. The 1st trip freeze frame data can only be displayed on the CONSULT-III screen, not on the GST. For details, refer to [EC-131. "CONSULT-III Function \(ENGINE\)"](#).

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

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

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

HOW TO ERASE DTC

The diagnostic trouble code can be erased by CONSULT-III, 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-III or GST is easier and quicker than switching the mode selector on the ECM.**

The following emission-related diagnostic information is cleared from the ECM memory when erasing DTC related to OBD-II. For details, refer to [EC-62. "Emission-related Diagnostic Information"](#).

- **Diagnostic trouble codes (DTC)**
- **1st trip diagnostic trouble codes (1st trip DTC)**
- **Freeze frame data**
- **1st trip freeze frame data**
- **System readiness test (SRT) codes**
- **Test values**

HOW TO ERASE DTC (WITH CONSULT-III)

- **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-138. "Generic Scan Tool \(GST\) Function"](#).

Malfunction Indicator Lamp (MIL)

INFOID:000000005284104

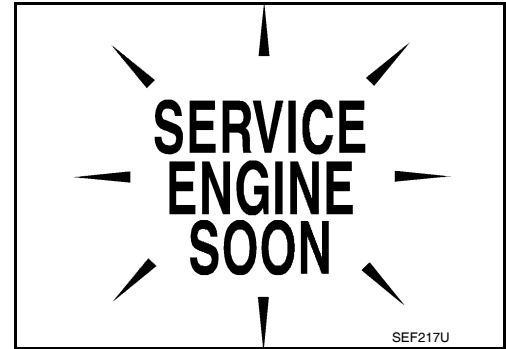
DESCRIPTION

ON BOARD DIAGNOSTIC (OBD) SYSTEM

< SERVICE INFORMATION >

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-575](#).
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

< SERVICE INFORMATION >

TROUBLE DIAGNOSIS

DTC Inspection Priority Chart

INFOID:000000005284105

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-54](#).

Priority	Detected items (DTC)
1	U1000
2	Except above

Fail-Safe

INFOID:000000005284106

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.

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TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

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 status 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

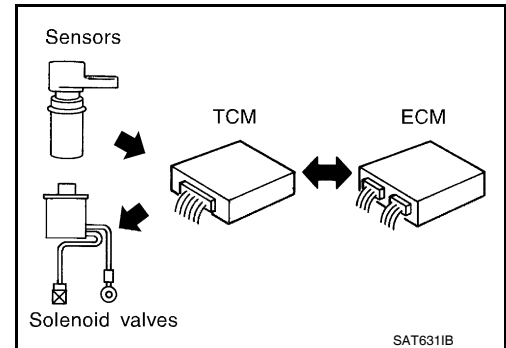
INFOID:000000005284107

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.

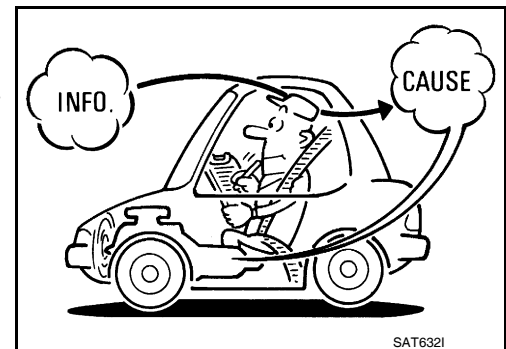
The TCM also communicates with the ECM by means of a signal sent from sensing elements used with the OBD-related parts of the CVT system for malfunction-diagnostic purposes. The TCM is capable of diagnosing malfunctioning parts while the ECM can store malfunctions in its memory.

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.

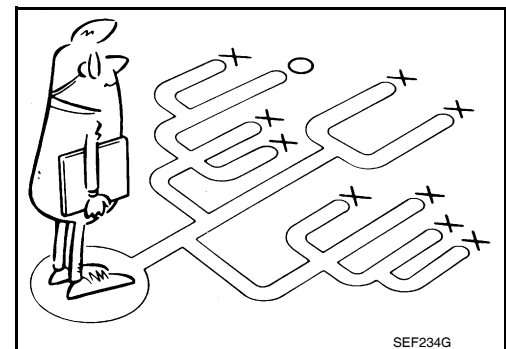
A visual check only may not find the cause of the errors. A road test with CONSULT-III (or GST) or a circuit tester connected should be performed. Follow the "WORK FLOW" .



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

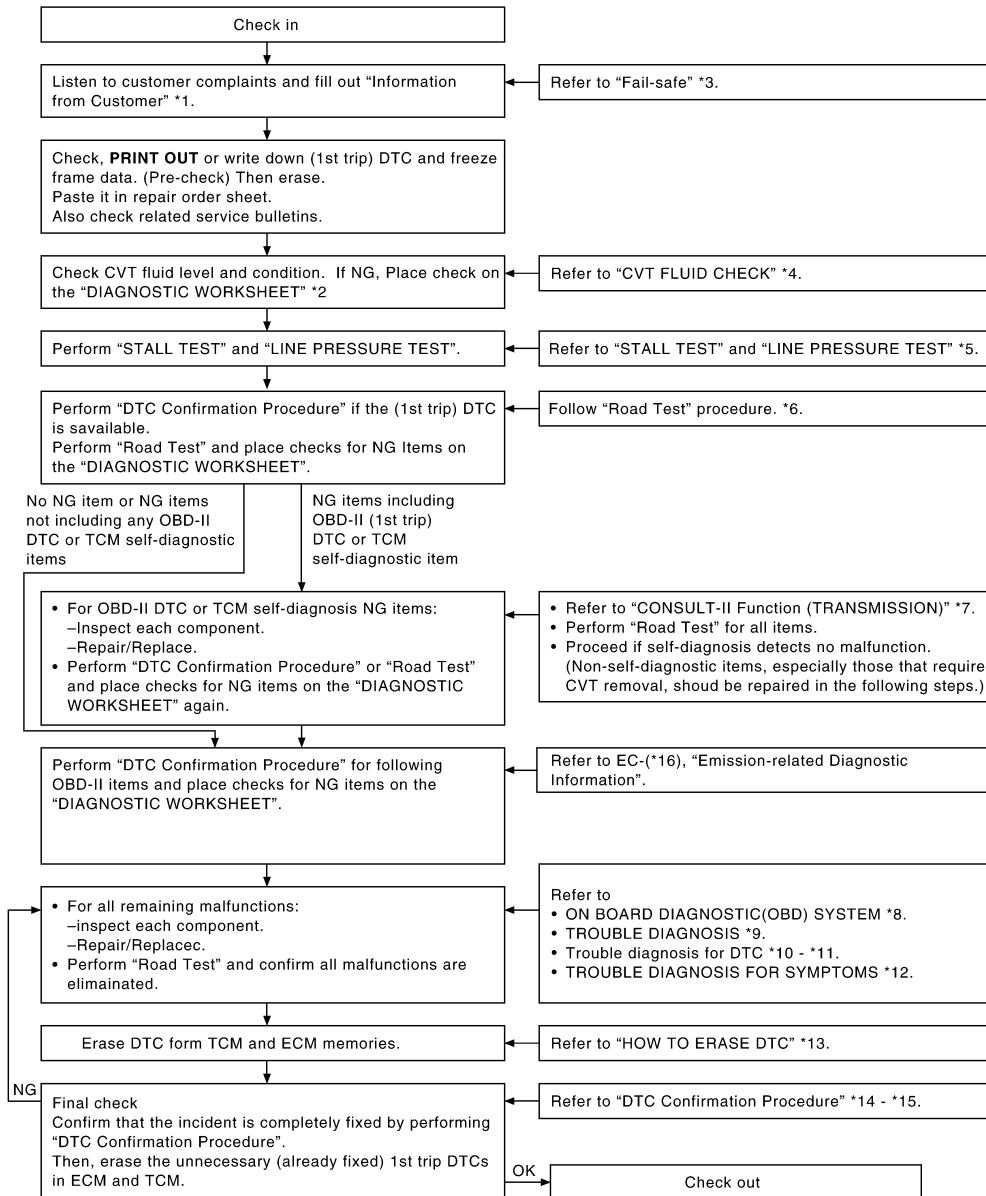
A good understanding of the malfunction conditions can make troubleshooting faster and more accurate. In general, each customer feels differently about a malfunction. It is important to fully understand the symptoms or conditions for a customer complaint.

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

Work Flow Chart

TROUBLE DIAGNOSIS

< SERVICE INFORMATION >



SCIA6877E

- | | | |
|---------------------------------|---|------------------------------|
| *1. "Information From Customer" | *2. "DIAGNOSTIC WORKSHEET" | *3. CVT-27 |
| *4. CVT-35 | *5. CVT-35 , CVT-35 | *6. CVT-38 |
| *7. CVT-46 | *8. CVT-24 | *9. CVT-27 |
| *10. CVT-54 | *11. CVT-138 | *12. CVT-146 |
| *13. CVT-24 | *14. CVT-54 | *15. CVT-138 |
| *16. EC-62 | | |

DIAGNOSTIC WORKSHEET

Information From Customer

KEY POINTS

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

TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

		<input type="checkbox"/> Perform road test.	CVT-38	A
4	4-1.	Check before engine is started	CVT-39	
		<input type="checkbox"/> CVT-149. "O/D OFF Indicator Lamp Does Not Come On" <input type="checkbox"/> Perform self-diagnosis. Enter checks for detected items. CVT-46		B
		<input type="checkbox"/> CVT-54 <input type="checkbox"/> CVT-57 <input type="checkbox"/> CVT-58 <input type="checkbox"/> CVT-60 <input type="checkbox"/> CVT-65 <input type="checkbox"/> CVT-70 <input type="checkbox"/> CVT-75 <input type="checkbox"/> CVT-80 <input type="checkbox"/> CVT-82 <input type="checkbox"/> CVT-83 <input type="checkbox"/> CVT-88 <input type="checkbox"/> CVT-90 <input type="checkbox"/> CVT-95 <input type="checkbox"/> CVT-97 <input type="checkbox"/> CVT-99 <input type="checkbox"/> CVT-104 <input type="checkbox"/> CVT-109 <input type="checkbox"/> CVT-113 <input type="checkbox"/> CVT-115 <input type="checkbox"/> CVT-117 <input type="checkbox"/> CVT-121 <input type="checkbox"/> CVT-123 <input type="checkbox"/> CVT-125 <input type="checkbox"/> CVT-127 <input type="checkbox"/> CVT-128 <input type="checkbox"/> CVT-134 <input type="checkbox"/> CVT-138		C D E F G H I
	4-2.	Check at idle	CVT-39	
		<input type="checkbox"/> CVT-151. "Engine Cannot Be Started in "P" or "N" Position" <input type="checkbox"/> CVT-151. "In "P" Position. Vehicle Moves Forward or Backward When Pushed" <input type="checkbox"/> CVT-152. "In "N" Position. Vehicle Moves" <input type="checkbox"/> CVT-152. "Large Shock "N" → "R" Position" <input type="checkbox"/> CVT-153. "Vehicle Does Not Creep Backward in "R" Position" <input type="checkbox"/> CVT-154. "Vehicle Does Not Creep Forward in "D" or "L" Position"		J K

CVT

TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

4	4-3.	Cruise test	CVT-40
		<input type="checkbox"/> CVT-155. "Vehicle Speed Does Not Change in "L" Position" <input type="checkbox"/> CVT-156. "Vehicle Speed Does Not Change in overdrive-off mode" <input type="checkbox"/> CVT-157. "Vehicle Speed Does Not Change in "D" Position" <input type="checkbox"/> CVT-158. "Cannot Be Changed to Manual Mode" <input type="checkbox"/> CVT-158. "CVT Does Not Shift in Manual Mode" <input type="checkbox"/> CVT-159. "Vehicle Does Not Decelerate by Engine Brake" <input type="checkbox"/> perform self-diagnosis. Enter checks for detected items. CVT-46	
		<input type="checkbox"/> CVT-54 <input type="checkbox"/> CVT-57 <input type="checkbox"/> CVT-58 <input type="checkbox"/> CVT-60 <input type="checkbox"/> CVT-65 <input type="checkbox"/> CVT-70 <input type="checkbox"/> CVT-75 <input type="checkbox"/> CVT-80 <input type="checkbox"/> CVT-82 <input type="checkbox"/> CVT-83 <input type="checkbox"/> CVT-88 <input type="checkbox"/> CVT-90 <input type="checkbox"/> CVT-95 <input type="checkbox"/> CVT-97 <input type="checkbox"/> CVT-99 <input type="checkbox"/> CVT-104 <input type="checkbox"/> CVT-109 <input type="checkbox"/> CVT-113 <input type="checkbox"/> CVT-115 <input type="checkbox"/> CVT-117 <input type="checkbox"/> CVT-121 <input type="checkbox"/> CVT-123 <input type="checkbox"/> CVT-125 <input type="checkbox"/> CVT-127 <input type="checkbox"/> CVT-128 <input type="checkbox"/> CVT-134 <input type="checkbox"/> CVT-138	
5		<input type="checkbox"/> Inspect each system for items found to be NG in the self-diagnosis and repair or replace the malfunctioning parts.	
6		<input type="checkbox"/> Perform all road tests and enter the checks again for the required items.	CVT-38
7		<input type="checkbox"/> For any remaining NG items, perform the "diagnosis procedure" and repair or replace the malfunctioning parts.	
8		<input type="checkbox"/> Erase the results of the self-diagnosis from the TCM.	CVT-24 , CVT-24

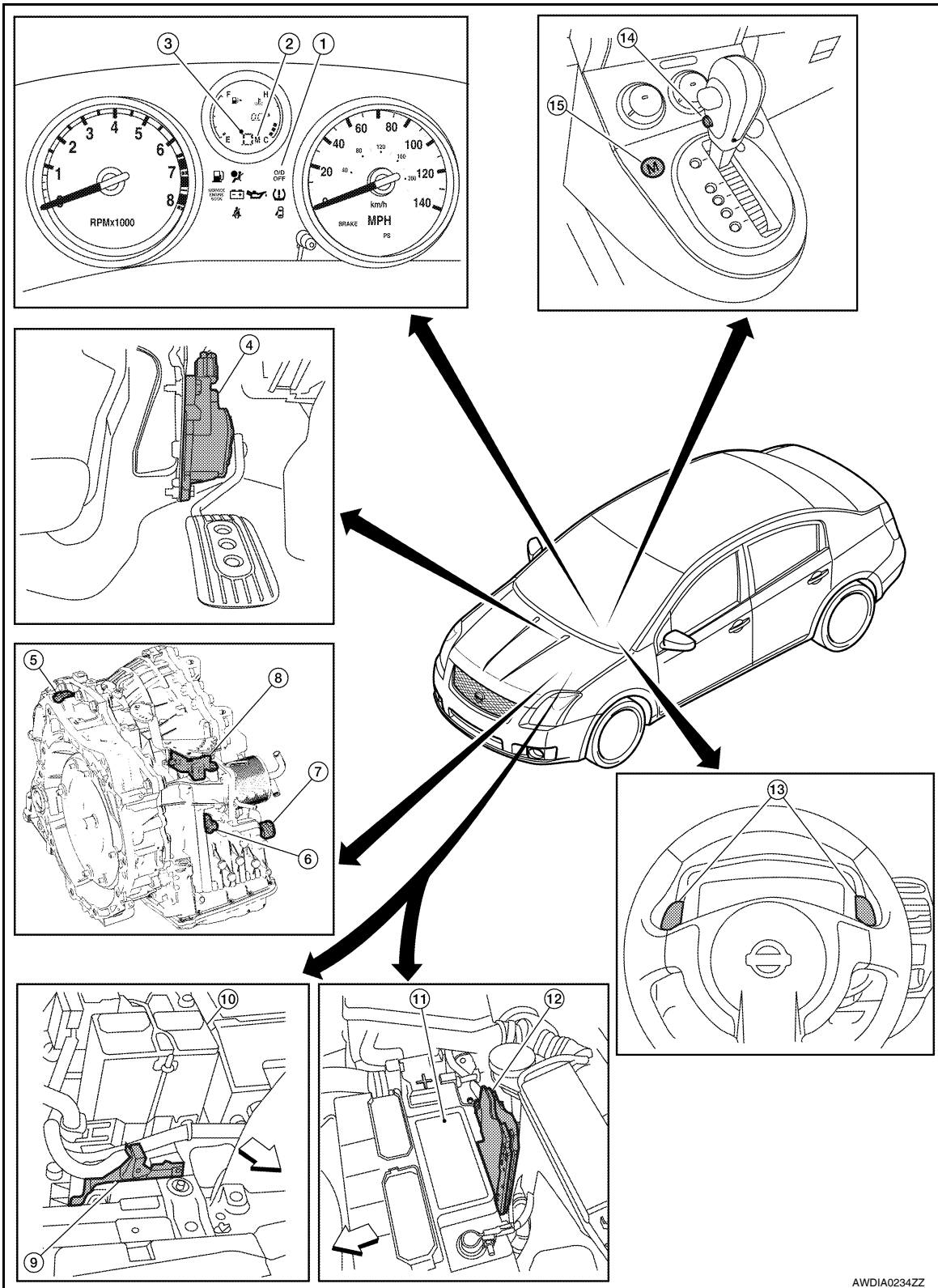
TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

CVT Electrical Parts Location

INFOID:000000005284108

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←: 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 |

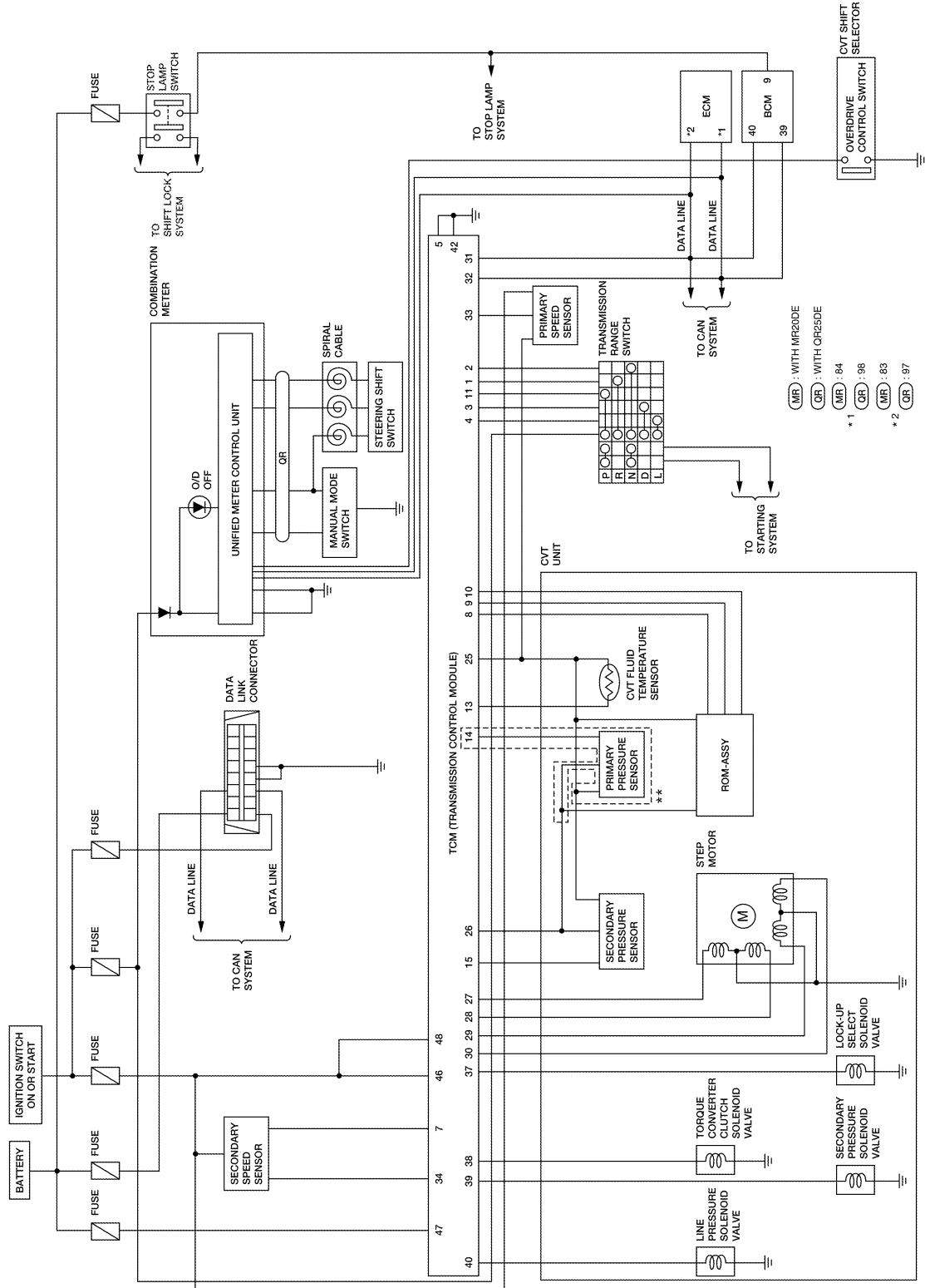
TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

- | | | |
|---|------------------------------|--------------------------------------|
| 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:000000005284109



ABDWA0156GB

TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

Inspections before Trouble Diagnosis

INFOID:000000005284110

CVT FLUID CHECK

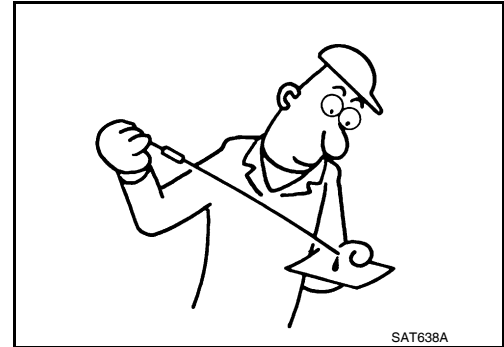
Fluid Leakage and Fluid Level Check

- Inspect for fluid leakage and check the fluid level. Refer to [CVT-14. "Checking CVT Fluid"](#).

Fluid Condition Check

Inspect the fluid condition.

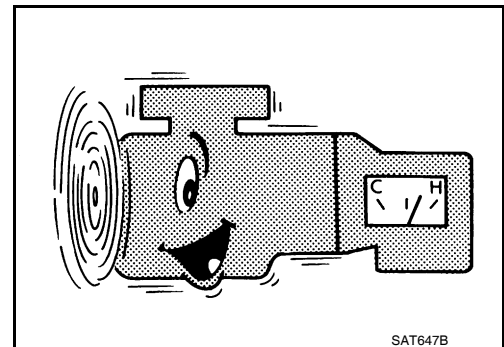
Fluid status	Conceivable cause	Required operation
Varnished (viscous varnish state)	Clutch, brake scorched	Replace the CVT fluid and check the CVT main unit and the vehicle for malfunctions (wire harnesses, cooler pipes, etc.)
Milky white or cloudy	Water in the fluid	Replace the CVT fluid and check for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



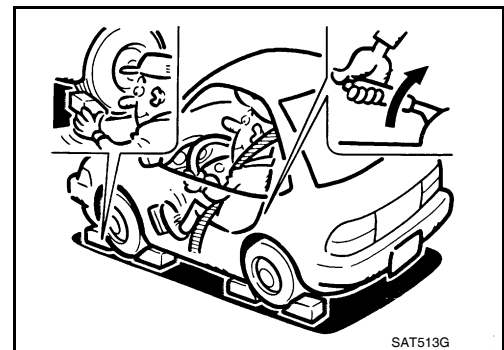
STALL TEST

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.

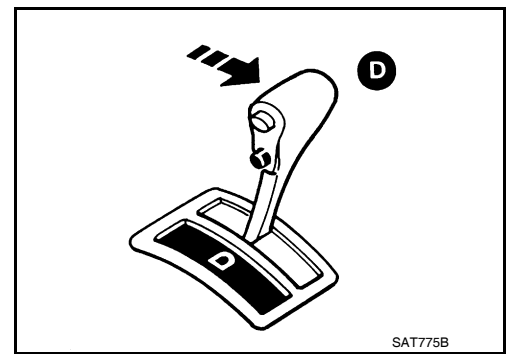


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TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

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



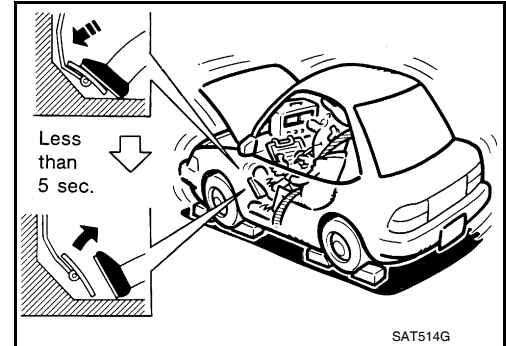
- While holding down the foot brake, gradually press down the accelerator pedal.
- Quickly read off the stall speed, and then quickly remove your foot from the accelerator pedal.

CAUTION:

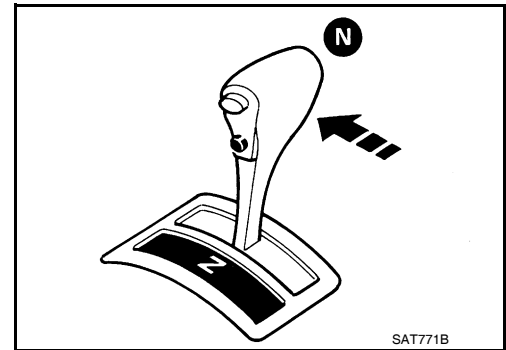
Do not hold down the accelerator pedal for more than 5 seconds during this test.

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

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



- Move the selector lever to the "N" position.
 - Cool down the CVT fluid.
- CAUTION:**
Run the engine at idle for at least 1 minute.
- 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.

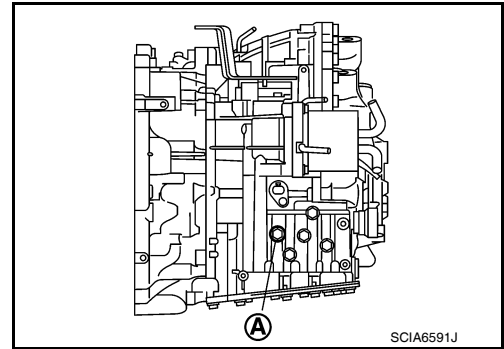
LINE PRESSURE TEST

Line Pressure Test Port

TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

(A): Line pressure Test Port.



A
B
CVT

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:

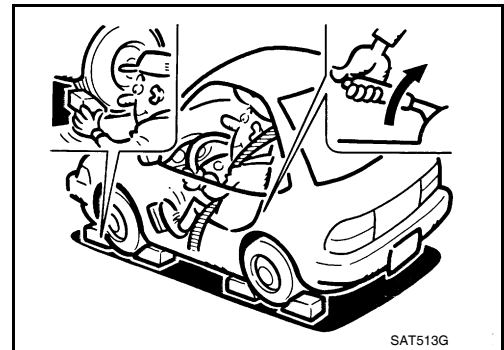
The CVT fluid temperature rises in the range of 50 - 80°C (122 - 176°F) during 10 minutes of driving.

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.



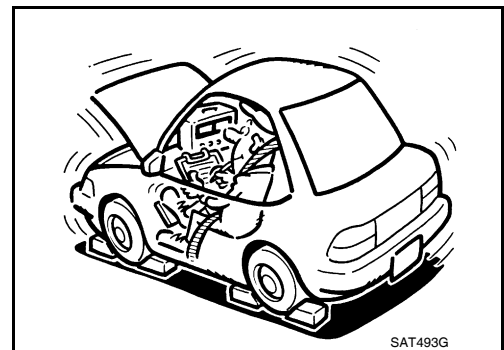
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5. Start the engine, and then measure the line pressure at both idle and the stall speed.

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.



L
M
N
O

: 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

P

TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

Judgment of Line Pressure Test

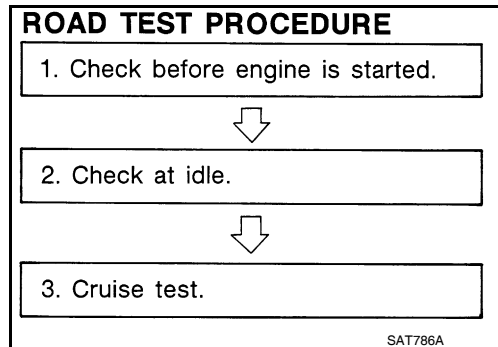
Judgment		Possible cause
Idle speed	Low for all positions ("P", "R", "N", "D", "L")	Possible causes include malfunctions in the pressure supply system and low oil pump output. For example <ul style="list-style-type: none"> • Oil pump wear • Pressure regulator valve or plug sticking or spring fatigue • 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 <ul style="list-style-type: none"> • 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 <ul style="list-style-type: none"> • 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 <ul style="list-style-type: none"> • 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:000000005284111

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-39](#) .
 2. "Check at Idle" [CVT-39](#) .
 3. "Cruise Test" [CVT-40](#) .



TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

- 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-III OPERATION PROCEDURE

CAUTION:

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

- Using CONSULT-III, perform a cruise test and record the result.
 - Print the result and ensure that shifts and lock-ups take place as per Shift Schedule.
1. Touch "DATA MONITOR" on "SELECT DIAG MODE" screen.
 2. Touch "MAIN SIGNALS" to set recording condition.
 3. See "Numerical Display", "Bar chart Display" or "Line Graph Display".
 4. Touch "START".
 5. When performing cruise test. Refer to [CVT-40, "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:000000005284112

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-46, "CONSULT-III Function \(TRANSMISSION\)"](#) .
3. Go to [CVT-39, "Check at Idle"](#) .
- NO >> Stop "Road Test". Go to [CVT-149, "O/D OFF Indicator Lamp Does Not Come On"](#) .

Check at Idle

INFOID:000000005284113

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-151, "Engine Cannot Be Started in "P" or "N" Position"](#) on the [CVT-28, "How to Perform Trouble Diagnosis for Quick and Accurate Repair"](#). Go to [CVT-151, "Engine Cannot Be Started in "P" or "N" Position"](#).

TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

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-151, "Engine Cannot Be Started in "P" or "N" Position"](#) on the [CVT-28, "How to Perform Trouble Diagnosis for Quick and Accurate Repair"](#). Go to [CVT-151, "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-151, "In "P" Position, Vehicle Moves Forward or Backward When Pushed"](#) on the [CVT-28, "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-152, "In "N" Position, Vehicle Moves"](#) on the [CVT-28, "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-152, "Large Shock "N" → "R" Position"](#) on the [CVT-28, "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-153, "Vehicle Does Not Creep Backward in "R" Position"](#) on the [CVT-28, "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-40, "Cruise Test"](#).

NO >> Stop "Road Test". Mark the box [CVT-154, "Vehicle Does Not Creep Forward in "D" or "L" Position"](#) on the [CVT-28, "How to Perform Trouble Diagnosis for Quick and Accurate Repair"](#). Go to [CVT-154, "Vehicle Does Not Creep Forward in "D" or "L" Position"](#).

Cruise Test

INFOID:000000005284114

1. CHECK VEHICLE SPEED WHEN SHIFTING GEARS — PART 1

TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

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)

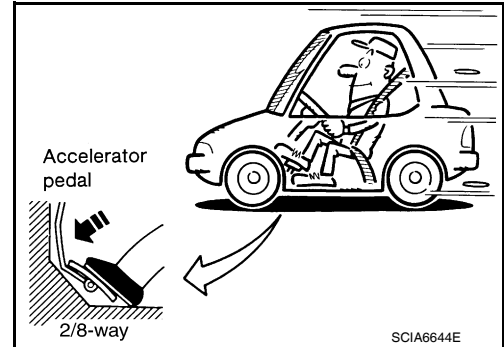
2. Park vehicle on flat surface.
3. Move selector lever to "P" position.
4. Start engine.
5. Move selector lever to "L" position.
6. Accelerate vehicle to 2/8-way throttle depressing accelerator pedal constantly.

Ⓟ Read vehicle speed and engine speed. Refer to CVT-43, "Vehicle Speed When Shifting Gears".

OK or NG

OK >> GO TO 2.

NG >> Mark the box [CVT-155, "Vehicle Speed Does Not Change in "L" Position"](#) on the [CVT-28, "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.

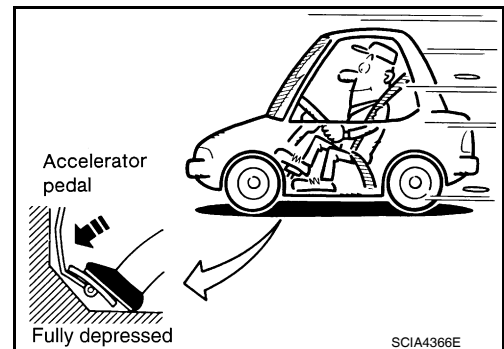
Ⓟ Read vehicle speed and engine speed. Refer to CVT-43, "Vehicle Speed When Shifting Gears".

OK or NG

OK >> GO TO 3. (With manual mode)

OK >> GO TO 7. (Without manual mode)

NG >> Mark the box [CVT-158, "CVT Does Not Shift in Manual Mode"](#) on the [CVT-28, "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-158, "Cannot Be Changed to Manual Mode"](#) on the [CVT-28, "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-46, "CONSULT-III Function (TRANSMISSION)".

Is upshifting correctly performed?

YES >> GO TO 5.

NO >> Mark the box [CVT-158, "CVT Does Not Shift in Manual Mode"](#) on the [CVT-28, "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-46, "CONSULT-III Function (TRANSMISSION)".

Is downshifting correctly performed?

YES >> GO TO 6.

NO >> Mark the box [CVT-158, "CVT Does Not Shift in Manual Mode"](#) on the [CVT-28, "How to Perform Trouble Diagnosis for Quick and Accurate Repair"](#). Continue "Road Test".

TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

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-46, "CONSULT-III Function \(TRANSMISSION\)"](#).

NO >> Mark the box of [CVT-159, "Vehicle Does Not Decelerate by Engine Brake"](#) on the [CVT-28, "How to Perform Trouble Diagnosis for Quick and Accurate Repair"](#). Then continue trouble diagnosis.

7. CHECK VEHICLE SPEED WHEN SHIFTING GEARS — PART 2

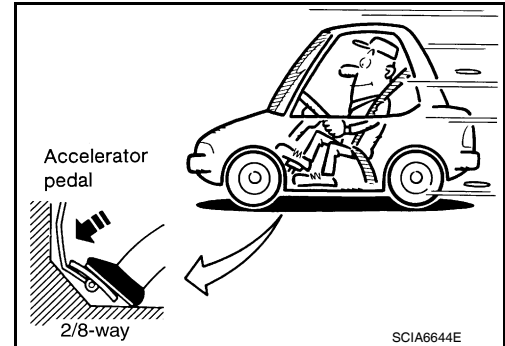
1. Park vehicle on flat surface.
2. Move selector lever to "D" position.
3. Push overdrive control switch. (O/D OFF indicator lamp is on.)
4. Accelerate vehicle to 2/8-way throttle depressing accelerator pedal constantly.

 **Read vehicle speed and engine speed. Refer to [CVT-43, "Vehicle Speed When Shifting Gears"](#).**

OK or NG

OK >> GO TO 8.

NG >> Mark the box [CVT-156, "Vehicle Speed Does Not Change in overdrive-off mode"](#) on the [CVT-28, "How to Perform Trouble Diagnosis for Quick and Accurate Repair"](#). Continue "Road Test".



8. CHECK VEHICLE SPEED WHEN SHIFTING GEARS — PART 3

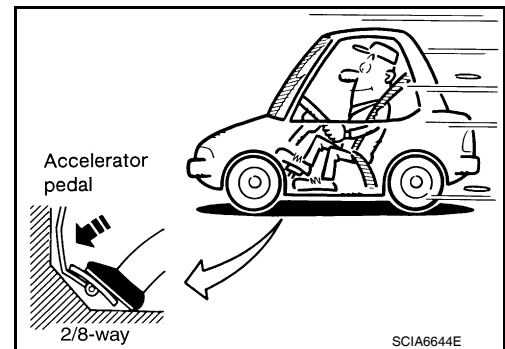
1. Park vehicle on flat surface.
2. Move selector lever to "D" position.
3. Push overdrive control switch. (O/D OFF indicator lamp is off.)
4. Accelerate vehicle to 2/8 way throttle depressing accelerator pedal constantly.

 **Read vehicle speed and engine speed. Refer to [CVT-43, "Vehicle Speed When Shifting Gears"](#).**

OK or NG

OK >> GO TO 9.

NG >> Mark the box [CVT-157, "Vehicle Speed Does Not Change in "D" Position"](#) on the [CVT-28, "How to Perform Trouble Diagnosis for Quick and Accurate Repair"](#). Continue "Road Test".



9. CHECK VEHICLE SPEED WHEN SHIFTING GEARS — PART 4

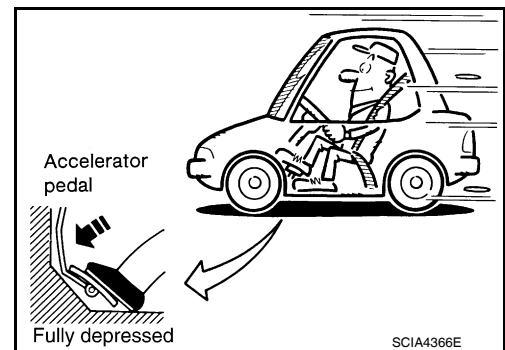
1. Park vehicle on flat surface.
2. Move selector lever to "L" position.
3. Accelerate vehicle to full depression depressing accelerator pedal constantly.

 **Read vehicle speed and engine speed. Refer to [CVT-43, "Vehicle Speed When Shifting Gears"](#).**

OK or NG

OK >> GO TO 10.

NG >> Mark the box [CVT-155, "Vehicle Speed Does Not Change in "L" Position"](#) on the [CVT-28, "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.

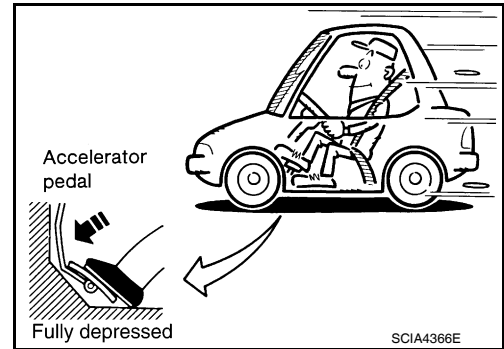
TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

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-43, "Vehicle Speed When Shifting Gears"](#).

OK or NG

- OK >> GO TO 11.
NG >> Mark the box [CVT-156, "Vehicle Speed Does Not Change in overdrive-off mode"](#) on the [CVT-28, "How to Perform Trouble Diagnosis for Quick and Accurate Repair"](#). Continue "Road Test".

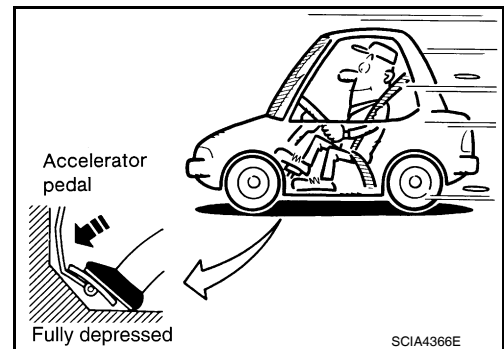


11. CHECK VEHICLE SPEED WHEN SHIFTING GEARS — PART 6

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-43, "Vehicle Speed When Shifting Gears"](#).

OK or NG

- OK >> GO TO 12.
NG >> Mark the box [CVT-157, "Vehicle Speed Does Not Change in "D" Position"](#) on the [CVT-28, "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-159, "Vehicle Does Not Decelerate by Engine Brake"](#) on the [CVT-28, "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-159, "Vehicle Does Not Decelerate by Engine Brake"](#) on the [CVT-28, "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-46, "CONSULT-III Function \(TRANSMISSION\)"](#).
NO >> Mark the box [CVT-159, "Vehicle Does Not Decelerate by Engine Brake"](#) on the [CVT-28, "How to Perform Trouble Diagnosis for Quick and Accurate Repair"](#). Then continue trouble diagnosis.

Vehicle Speed When Shifting Gears

INFOID:000000005284115

Numerical value data are reference values.

TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

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

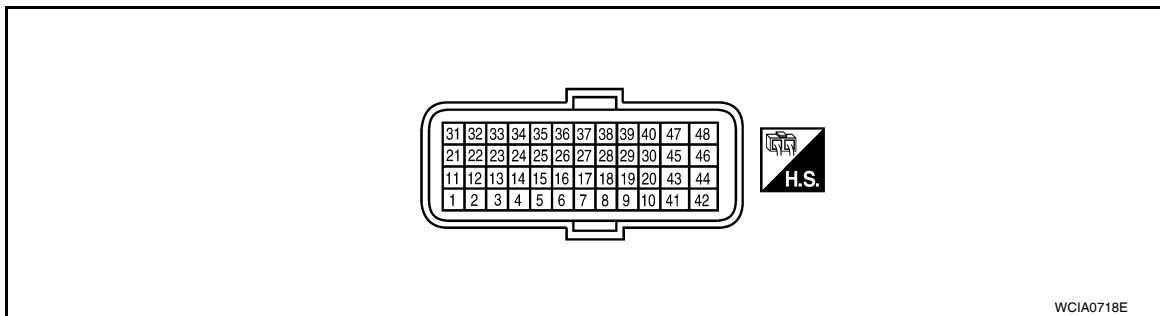
CAUTION:

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:000000005284116

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	—	—





TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

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
14	LG	Primary pressure sensor	—		—
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	 and 	—	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-III.*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.
					When CVT does not perform lock-up.
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

TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

Terminal	Wire color	Item	Condition		Data (Approx.)
45	Y/R	Power supply (memory back-up)	Always		Battery voltage
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-III Function (TRANSMISSION)

INFOID:000000005284117

CONSULT-III 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-III.
Self-diagnostic results	Self-diagnostic results can be read and erased quickly.
Data monitor	Input/Output data in the TCM can be read.
CAN diagnostic support monitor	The results of transmit/receive diagnosis of CAN communication can be read.
CALIB data	Characteristic information for TCM and CVT assembly can be read.
Function test	Performed by CONSULT-III instead of a technician to determine whether each system is "OK" or "NG".
ECU part number	TCM part number can be read.

CONSULT-III 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.

TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

Item name	Condition	Display value (Approx.)	
SEC SPEED	During driving	45 X Approximately matches the speedometer reading.	A
ENG SPEED	Engine running	Closely matches the tachometer reading.	B
GEAR RATIO	During driving	2.34 - 0.39	
ACC PEDAL OPEN	Released accelerator pedal - Fully depressed accelerator pedal	0.0/8 - 8.0/8	CVT
SEC PRESS	"N" position idle	1.3 MPa	
STM STEP	During driving	0 step – 177 step	
ISOLT1	Lock-up "OFF"	0.0 A	D
	Lock-up "ON"	0.7 A	
ISOLT2	Release your foot from the accelerator pedal.	0.8 A	E
	Press the accelerator pedal all the way down.	0.0 A	
ISOLT3	Secondary pressure low - Secondary pressure high	0.8 - 0.0 A	F
SOLMON1	Lock-up "OFF"	0.0 A	
	Lock-up "ON"	0.7 A	
SOLMON2	"N" position idle	0.8 A	G
	When stalled	0.3 - 0.6 A	
SOLMON3	"N" position idle	0.6 - 0.7 A	H
	When stalled	0.4 - 0.6 A	
P POSITION SW	Selector lever in "P" position	ON	
	When setting selector lever to other positions.	OFF	I
R POSITION SW	Selector lever in "R" position	ON	
	When setting selector lever to other positions.	OFF	J
N POSITION SW	Selector lever in "N" position	ON	
	When setting selector lever to other positions.	OFF	K
D POSITION SW	Selector lever in "D" position	ON	
	When setting selector lever to other positions.	OFF	L
L POSITION SW	Selector lever in "L" position	ON	
	When setting selector lever to other positions.	OFF	M
BRAKE SW	Depressed brake pedal	ON	
	Released brake pedal	OFF	N
FULL SW	Fully depressed accelerator pedal	ON	
	Released accelerator pedal	OFF	O
IDLE SW	Released accelerator pedal	ON	
	Fully depressed accelerator pedal	OFF	P
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	

TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

Item name	Condition	Display value (Approx.)
INDRRNG	Selector lever in "R" position	ON
	When setting selector lever to other positions.	OFF
INDPRNG	Selector lever in "P" position	ON
	When setting selector lever to other positions.	OFF
SPORT MODE IND	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-III 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:

TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

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-28, "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-III screen terms)	Malfunction is detected when...	DTC*1		Reference
		"TRANSMISSION" with CONSULT-III	MIL*2, "ENGINE" with CONSULT-III or GST	
CAN COMM CIRCUIT	When TCM is not transmitting or receiving CAN communication signal for 2 seconds or more	U1000	U1000	CVT-54
CONTROL UNIT (CAN)	When detecting error during the initial diagnosis of CAN controller of TCM	U1010	U1010	CVT-57
BRAKE SWITCH B	When the brake switch does not switch to ON or OFF	P0703	—	CVT-58
T/M RANGE SWITCH A	TCM does not receive the correct voltage signal (based on the gear position) from the switch.	P0705	P0705	CVT-60
FLUID TEMP SENSOR A	During running, the CVT fluid temperature sensor signal voltage is excessively high or low	P0710	P0710	CVT-65
INPUT SPEED SENSOR A	<ul style="list-style-type: none"> 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-70
OUTPUT SPEED SENSOR	<ul style="list-style-type: none"> Signal from secondary speed sensor not input due to open or short circuit Unexpected signal input during running 	P0720	P0720	CVT-75
ENGINE SPEED	<ul style="list-style-type: none"> TCM does not receive the CAN communication signal from the ECM Engine speed is too low while driving 	P0725	—	CVT-80
INCORRECT GR RATIO	Unexpected gear ratio detected	P0730	—	CVT-82
TORQUE CONVERTER	Normal voltage not applied to solenoid due to open or short circuit	P0740	P0740	CVT-83
TORQUE CONVERTER	<ul style="list-style-type: none"> 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-88
L/PRESS SOL/ CIRC	<ul style="list-style-type: none"> 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-90
PC SOLENOID A	Unexpected gear ratio was detected in the LOW side due to excessively low line pressure	P0746	P0746	CVT-95
PC SOLENOID B	Secondary pressure is too high or too low compared with the commanded value while driving	P0776	P0776	CVT-97
PC SOLENOID B	<ul style="list-style-type: none"> 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-99
UP/DOWN SHIFT SWITCH	When an impossible pattern of switch signals is detected, a malfunction is detected.	P0826	—	CVT-104
FLUID PRESS SEN/SW A	Signal voltage of the secondary pressure sensor is too high or too low while driving	P0840	P0840	CVT-109

TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

Items (CONSULT-III screen terms)	Malfunction is detected when...	DTC*1		Reference
		"TRANSMIS- SION" with CONSULT-III	MIL *2, "EN- GINE" with CONSULT-III or GST	
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-113
FLUID PRESS LOW	Secondary fluid pressure is too low compared with the commanded value while driving	P0868	—	CVT-115
TCM	<ul style="list-style-type: none"> 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-117
TP SENSOR	TCM does not receive the proper accelerator pedal position signals (input by CAN communication) from ECM	P1705	—	CVT-121
VEHICLE SPEED*3	<ul style="list-style-type: none"> 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-123
SPEED SENSOR	<p>A rotation sensor error is detected because the gear does not change in accordance with the position of the stepping motor</p> <p>CAUTION: One of the "P0720", the "P0715" or the "P0725" is displayed with the DTC at the same time</p>	P1723	—	CVT-125
THROTTLE CON- TROL SIG	The electronically controlled throttle for ECM is malfunctioning	P1726	—	CVT-127
SLCT SOLENOID	<ul style="list-style-type: none"> 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-128
LINE PRESS CONTROL	TCM detects the unexpected line pressure	P1745	—	CVT-133
STEP MOTOR	Each coil of the step motor is not energized properly due to an open or a short	P1777	P1777	CVT-134
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-138
NO DTC IS DE- TECTED: FUR- THER TESTING MAY BE RE- QUIRED	No NG item has been detected	X	X	—

*1: These numbers are prescribed by SAE J2012.

*2: Refer to [CVT-25. "Malfunction Indicator Lamp \(MIL\)"](#) .

*3: Models without ABS does not indicate.

DATA MONITOR MODE

Display Items List

TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

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	—	▼	
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

TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

Monitored item (Unit)	Monitor item selection			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	
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
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	▼	
IDLE SW (ON/OFF)	X	X	▼	Signal input with CAN communication
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	—	▼	

TROUBLE DIAGNOSIS

< SERVICE INFORMATION >

Monitored item (Unit)	Monitor item selection			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	
ABS ON (ON/OFF)	X	—	▼	Models without ABS dose not indicate
ACC ON (ON/OFF)	X	—	▼	Not mounted but displayed
RANGE	—	X	▼	Indicates position is recognized by TCM. Indicates a specific value required for control when fail-safe function is activated
M GEAR POS	—	X	▼	Not mounted but displayed
Voltage (V)	—	—	▼	Displays the value measured by the voltage probe
Frequency (Hz)	—	—	▼	The value measured by the pulse probe is displayed
DUTY-HI (high) (%)	—	—	▼	
DUTY-LOW (low) (%)	—	—	▼	
PLS WIDTH-HI (ms)	—	—	▼	
PLS WIDTH-LOW (ms)	—	—	▼	

*: With QR25DE

Diagnosis Procedure without CONSULT-III

INFOID:000000005284118

OBD-II SELF-DIAGNOSTIC PROCEDURE (WITH GST)

Refer to [EC-138. "Generic Scan Tool \(GST\) Function"](#) .

U1000 CAN COMM CIRCUIT

< SERVICE INFORMATION >

U1000 CAN COMM CIRCUIT

Description

INFOID:000000005284119

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:000000005284120

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

Possible Cause

INFOID:000000005284121

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

DTC Confirmation Procedure

INFOID:000000005284122

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.

④ WITH CONSULT-III

1. Turn ignition switch ON.
2. Select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
3. Start engine and wait for at least 6 seconds.
4. If DTC is detected, go to [CVT-56. "Diagnosis Procedure"](#).

④ WITH GST

Follow the procedure "WITH CONSULT-III".




U1000 CAN COMM CIRCUIT

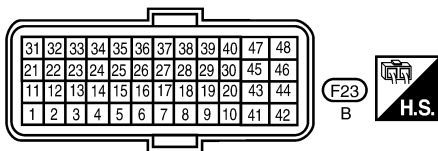
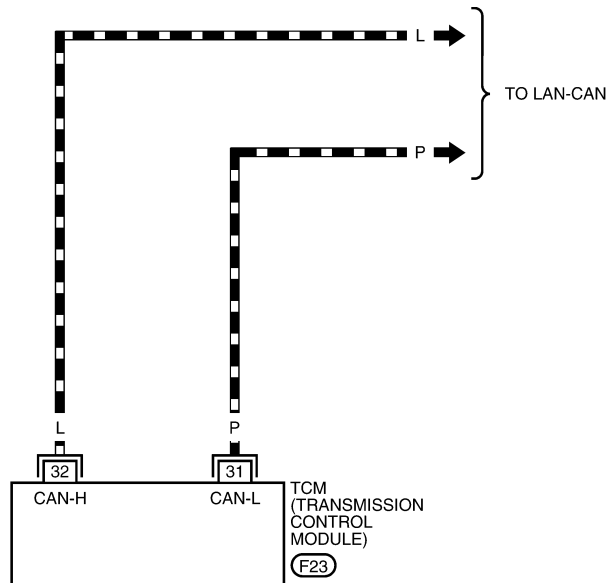
< SERVICE INFORMATION >

Wiring Diagram - CVT - CAN

INFOID:000000005284123

CVT-CAN-01

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



BCWA0736E

TCM TERMINALS AND REFERENCE VALUES
 Refer to [CVT-44, "TCM Input/Output Signal Reference Value"](#).

U1000 CAN COMM CIRCUIT

< SERVICE INFORMATION >

Diagnosis Procedure

INFOID:000000005284124

Go to [LAN-17, "Trouble Diagnosis Flow Chart"](#).

U1010 CONTROL UNIT (CAN)

< SERVICE INFORMATION >

U1010 CONTROL UNIT (CAN)

Description

INFOID:000000005284125

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:000000005284126

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

Possible Cause

INFOID:000000005284127

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

DTC Confirmation Procedure

INFOID:000000005284128

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-III

1. Turn ignition switch ON.
2. Select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
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-III".

Diagnosis Procedure

INFOID:000000005284129

1. CHECK DTC

Ⓟ With CONSULT-III

1. Turn ignition switch ON.
2. Select "SELF-DIAG RESULTS" mode for "TRANSMISSION" with CONSULT-III.
3. Touch "ERASE".
4. Turn ignition switch OFF and wait for at least 10 seconds.
5. Perform "DTC confirmation procedure". Refer to [CVT-57. "DTC Confirmation Procedure"](#).

Is any malfunction of the "U1010" indicated?

- YES >> Replace the TCM. Refer to [CVT-161. "Removal and Installation"](#).
NO >> **INSPECTION END**

P0703 BRAKE SWITCH B

< SERVICE INFORMATION >

P0703 BRAKE SWITCH B

Description

INFOID:000000005284130

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

CONSULT-III Reference Value

INFOID:000000005284131

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

On Board Diagnosis Logic

INFOID:000000005284132

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code "P0703" with CONSULT-III 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:000000005284133

- 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:000000005284134

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.

④ WITH CONSULT-III

1. Turn ignition switch ON. (Do not start engine.)
2. Select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
3. Start engine.
4. Start vehicle for at least 3 consecutive seconds.
5. If DTC is detected, go to [CVT-58, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000005284135

1. CHECK CAN COMMUNICATION LINE

Perform the self-diagnosis check. Refer to [CVT-46, "CONSULT-III Function \(TRANSMISSION\)"](#).

Is any malfunction of the "U1000" indicated?

- YES >> Check CAN communication line. Refer to [CVT-54](#).
NO >> GO TO 2.

2. CHECK STOP LAMP SWITCH CIRCUIT

④ With CONSULT-III

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

P0703 BRAKE SWITCH B

< SERVICE INFORMATION >

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-146, "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-8](#).

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.

A
B
CVT
D
E
F
G
H
I
J
K
L
M
N
O
P

P0705 TRANSMISSION RANGE SWITCH A

< SERVICE INFORMATION >

P0705 TRANSMISSION RANGE SWITCH A

Description

INFOID:000000005284136

- 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-III Reference Value

INFOID:000000005284137

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:000000005284138

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

Possible Cause

INFOID:000000005284139

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

DTC Confirmation Procedure

INFOID:000000005284140

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-III

1. Turn ignition switch ON.
2. Select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
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-62. "Diagnosis Procedure"](#).

P0705 TRANSMISSION RANGE SWITCH A

< SERVICE INFORMATION >

WITH GST

Follow the procedure "WITH CONSULT-III".

Wiring Diagram - CVT - TR/SW

INFOID:000000005284141

A

B

CVT

D

E

F

G

H

I

J

K

L

M

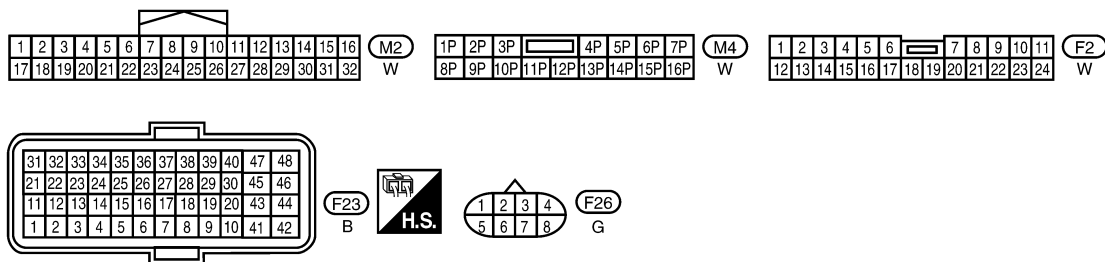
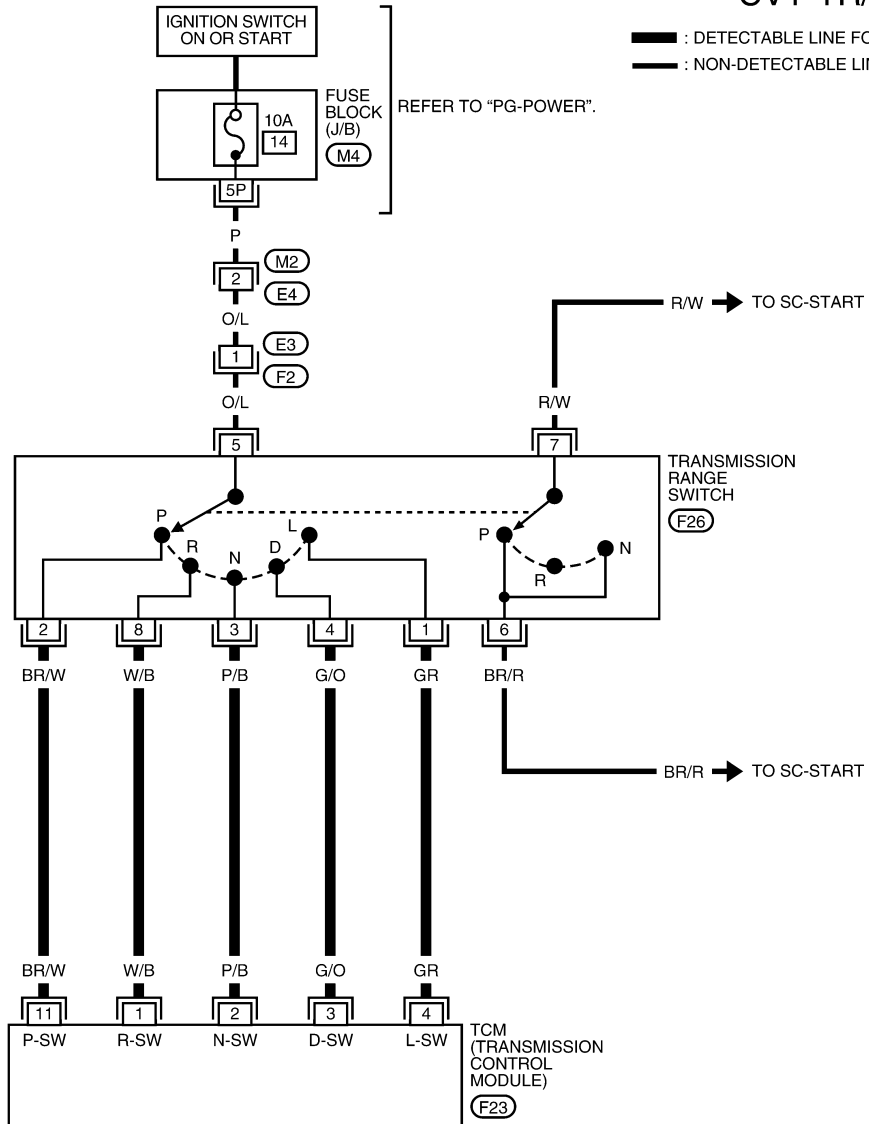
N

O

P

CVT-TR/SW-01

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



ABDWA0166GB

TCM TERMINALS AND REFERENCE VALUES

P0705 TRANSMISSION RANGE SWITCH A

< SERVICE INFORMATION >

Refer to [CVT-44. "TCM Input/Output Signal Reference Value"](#).

Diagnosis Procedure

INFOID:000000005284142

1. CHECK TRANSMISSION RANGE SW SIGNALS

With CONSULT-III

1. Turn ignition switch ON.
2. Select "ECU INPUT SIGNALS" in "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
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-III

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

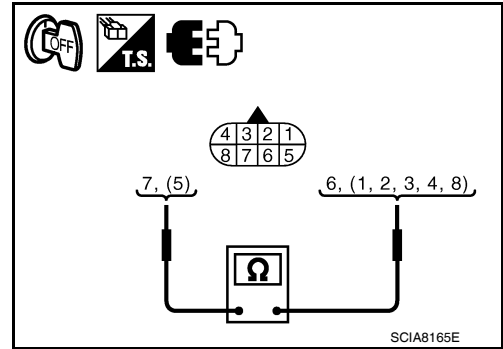
1. Turn ignition switch OFF.
2. Disconnect transmission range switch harness connector.

P0705 TRANSMISSION RANGE SWITCH A

< SERVICE INFORMATION >

- 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-172. "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-3](#).

OK or NG

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

5. CHECK DTC

Perform [CVT-60. "DTC Confirmation Procedure"](#).

OK or NG

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

6. CHECK TCM

- Check TCM input/output signals. Refer to [CVT-44. "TCM Input/Output Signal Reference Value"](#).
- 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-192. "Removal and Installation \(MR20DE\)"](#) (MR20DE), [CVT-194. "Removal and Installation \(QR25DE\)"](#) (QR25DE).

Component Inspection

INFOID:000000005284143

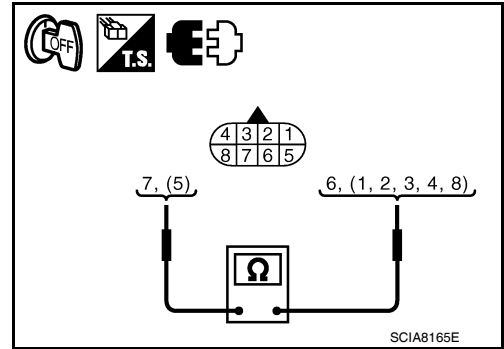
TRANSMISSION RANGE SWITCH

P0705 TRANSMISSION RANGE SWITCH A

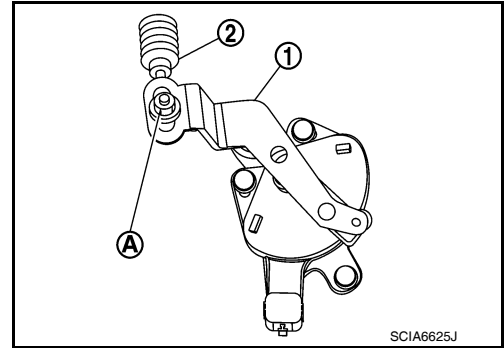
< SERVICE INFORMATION >

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

Selector lever position	Connector	Terminal	Continuity
P	F26	2 - 5, 6 - 7	Yes
R		5 - 8	*Continuity should not exist in positions other than the specified positions.
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-172, "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-173, "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

< SERVICE INFORMATION >

P0710 TRANSMISSION FLUID TEMPERATURE SENSOR A

Description

INFOID:000000005284144

- 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-III Reference Value

INFOID:000000005284145

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:000000005284146

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

Possible Cause

INFOID:000000005284147

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

DTC Confirmation Procedure

INFOID:000000005284148

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-III

1. Turn ignition switch ON.
2. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-III.
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-67, "Diagnosis Procedure"](#).

Ⓟ WITH GST

Follow the procedure “WITH CONSULT-III”.

P0710 TRANSMISSION FLUID TEMPERATURE SENSOR A

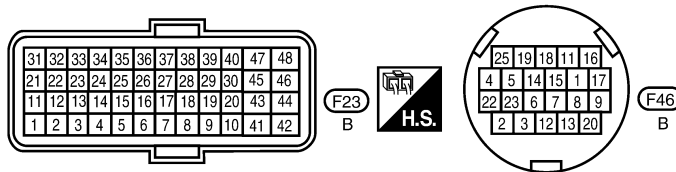
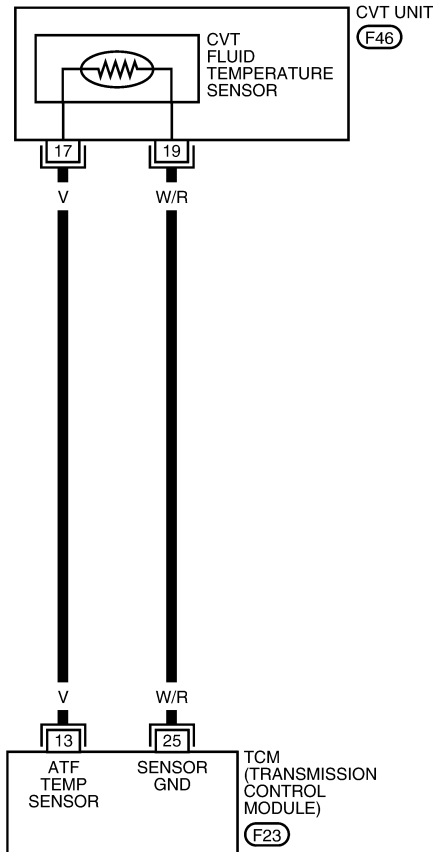
< SERVICE INFORMATION >

Wiring Diagram - CVT - FTS

INFOID:000000005284149

CVT-FTS-01

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



BCWA0738E

TCM TERMINALS AND REFERENCE VALUES
 Refer to [CVT-44, "TCM Input/Output Signal Reference Value"](#).

P0710 TRANSMISSION FLUID TEMPERATURE SENSOR A

< SERVICE INFORMATION >

Diagnosis Procedure

INFOID:000000005284150

1. CHECK CVT FLUID TEMPERATURE SENSOR SIGNAL

With CONSULT-III

1. Start engine.
2. Select "ECU INPUT SIGNALS" in "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
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-III

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).

P0710 TRANSMISSION FLUID TEMPERATURE SENSOR A

< SERVICE INFORMATION >

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-III

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-192, "Removal and Installation \(MR20DE\)"](#) (MR20DE), [CVT-194, "Removal and Installation \(QR25DE\)"](#) (QR25DE).

6. CHECK TCM

1. Check TCM input/output signals. Refer to [CVT-44, "TCM Input/Output Signal Reference Value"](#).
2. If NG, re-check TCM pin terminals for damage or loose connection with harness connector.

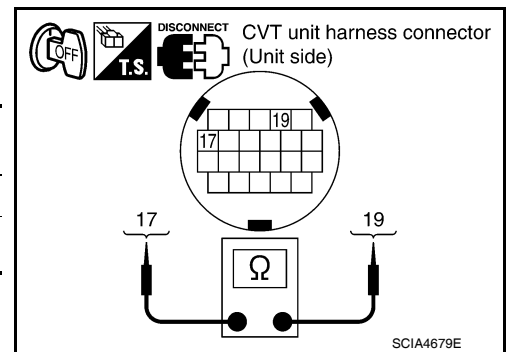
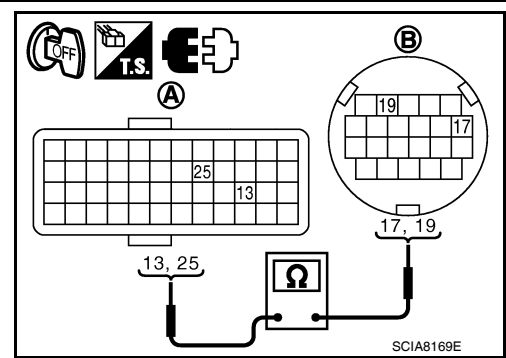
OK or NG

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

Component Inspection

CVT FLUID TEMPERATURE SENSOR

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



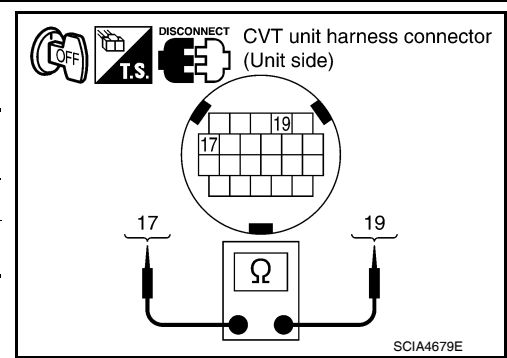
P0710 TRANSMISSION FLUID TEMPERATURE SENSOR A

< SERVICE INFORMATION >

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".



A

B

CVT

D

E

F

G

H

I

J

K

L

M

N

O

P

P0715 INPUT SPEED SENSOR A

< SERVICE INFORMATION >

P0715 INPUT SPEED SENSOR A

Description

INFOID:000000005284152

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

CONSULT-III Reference Value

INFOID:000000005284153

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:000000005284154

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

Possible Cause

INFOID:000000005284155

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

DTC Confirmation Procedure

INFOID:000000005284156

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-III

1. Turn ignition switch ON and select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
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-72, "Diagnosis Procedure"](#).

Ⓟ WITH GST

Follow the procedure "WITH CONSULT-III".

P0715 INPUT SPEED SENSOR A

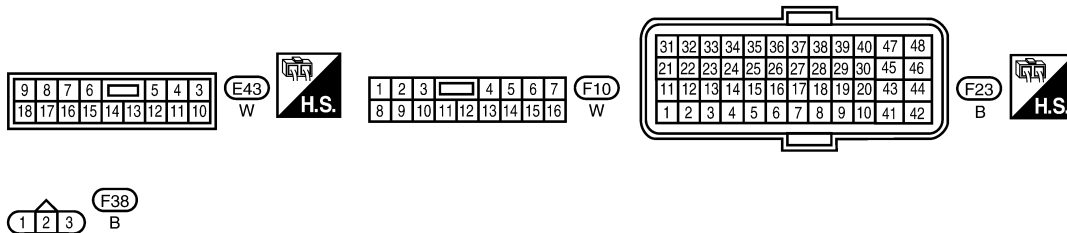
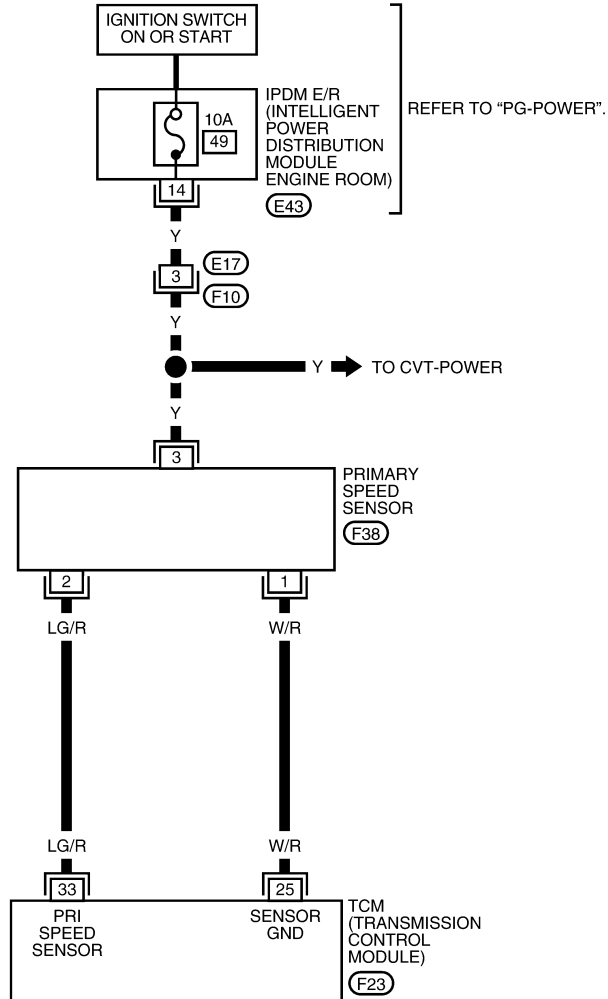
< SERVICE INFORMATION >

Wiring Diagram - CVT - PRSCVT

INFOID:000000005284157

CVT-PRSCVT-01

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



BCWA0739E

TCM TERMINALS AND REFERENCE VALUES
 Refer to [CVT-44. "TCM Input/Output Signal Reference Value"](#).

P0715 INPUT SPEED SENSOR A

< SERVICE INFORMATION >

Diagnosis Procedure

INFOID:000000005284158

1. CHECK INPUT SIGNAL

Ⓜ With CONSULT-III

1. Start engine.
2. Select "ECU INPUT SIGNALS" in "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
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-III

1. Start engine.
2. Check power supply to primary speed sensor by voltage between TCM connector terminals 25, 46 and 48. Refer to [CVT-34. "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-III 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

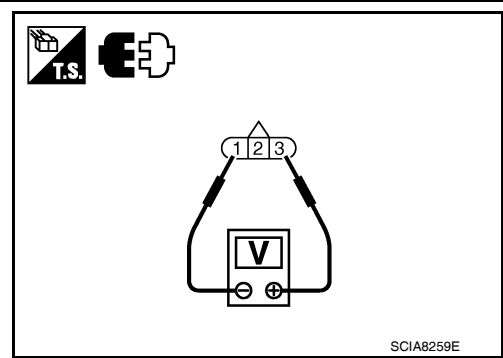
1. Turn ignition switch OFF.
2. Disconnect the primary speed sensor harness connector.
3. Turn ignition switch ON.

P0715 INPUT SPEED SENSOR A

< SERVICE INFORMATION >

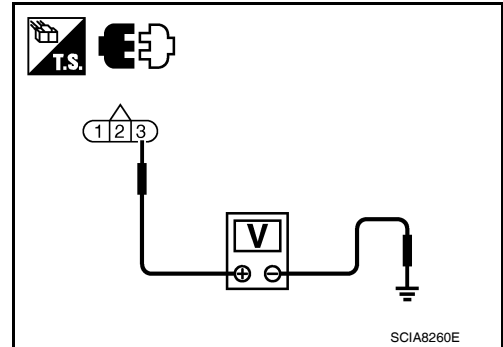
- Check voltage between primary speed sensor harness connector terminals.

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



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

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



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

OK or NG

OK >> GO TO 4.

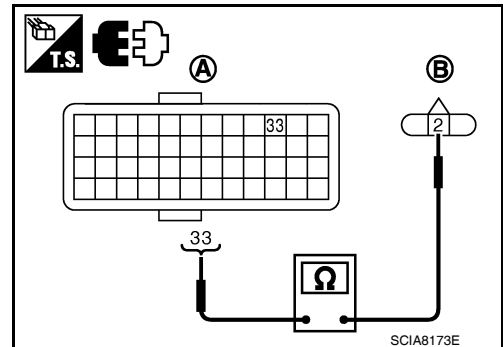
NG - 1 >> Battery voltage is not supplied between terminals 1 and 3, terminals 1 and ground: GO TO 6.

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

- Turn ignition switch OFF.
- Disconnect TCM connector (A) and primary speed sensor harness connector (B).
- 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	



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

OK or NG

OK >> GO TO 5.

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

5. CHECK THE TCM SHORT

Replace same type TCM, perform self-diagnosis check. Erase self-diagnostic results and then drive the vehicle [more than 40 km/h (25 MPH)], perform self-diagnosis check. Refer to [CVT-75. "DTC Confirmation Procedure"](#).

Is "P0715 PRI SPEED SEN" detected again?

YES >> Replace the Primary speed sensor. Refer to [CVT-184. "Primary Speed Sensor"](#).

NO >> Replace TCM. Refer to [CVT-161. "Removal and Installation"](#).

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

- Turn ignition switch OFF.
- Disconnect TCM connector, IPDM E/R connector, primary speed sensor and secondary speed sensor harness connector.
- 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-34. "Circuit Diagram"](#).

P0715 INPUT SPEED SENSOR A

< SERVICE INFORMATION >

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

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

- Turn ignition switch OFF.
- Disconnect TCM connector (A) and primary speed sensor harness connector (B).
- 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	

- If OK, check harness for short to ground and short to power.
- 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-75, "DTC Confirmation Procedure"](#).

OK or NG

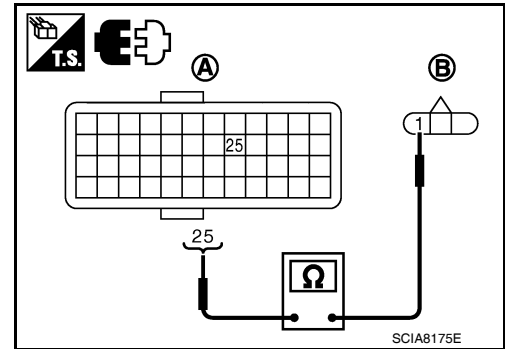
- OK >> **INSPECTION END**
NG >> GO TO 9.

9. CHECK TCM

- Check TCM input/output signals. Refer to [CVT-44, "TCM Input/Output Signal Reference Value"](#).
- 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

< SERVICE INFORMATION >

P0720 OUTPUT SPEED SENSOR

Description

INFOID:000000005284159

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-III Reference Value

INFOID:000000005284160

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:000000005284161

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

Possible Cause

INFOID:000000005284162

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

DTC Confirmation Procedure

INFOID:000000005284163

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-III

1. Turn ignition switch ON and select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
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-77, "Diagnosis Procedure"](#).

Ⓞ WITH GST

Follow the procedure "WITH CONSULT-III".

P0720 OUTPUT SPEED SENSOR

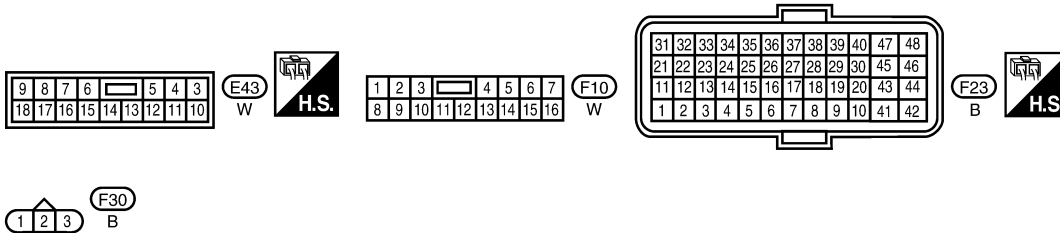
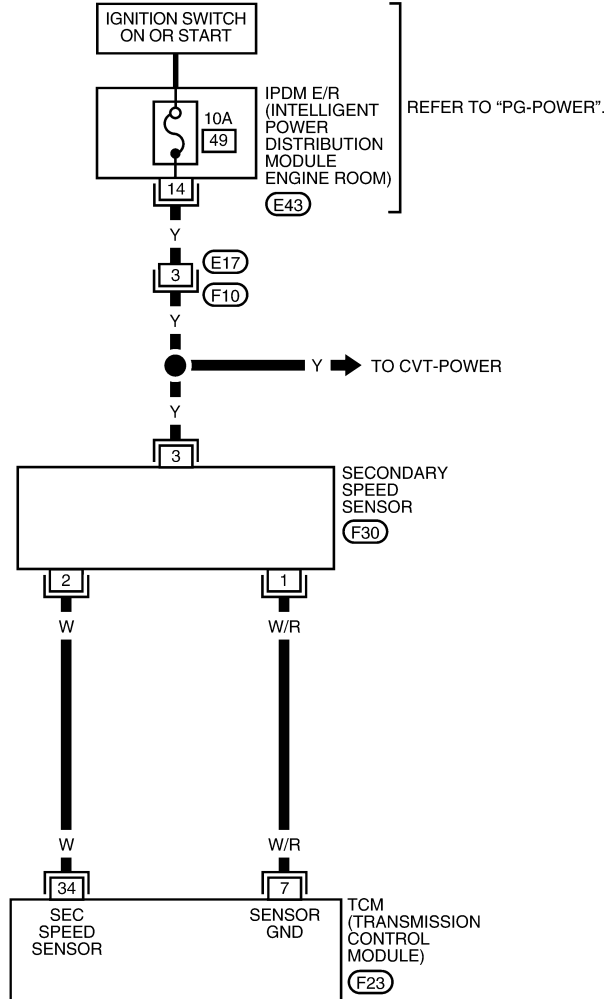
< SERVICE INFORMATION >

Wiring Diagram - CVT - SESCOVT

INFOID:000000005284164

CVT-SESCVT-01

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



BCWA0740E

TCM TERMINALS AND REFERENCE VALUES

Refer to [CVT-44, "TCM Input/Output Signal Reference Value"](#).

P0720 OUTPUT SPEED SENSOR

< SERVICE INFORMATION >

Diagnosis Procedure

INFOID:000000005284165

1. CHECK INPUT SIGNAL

With CONSULT-III

1. Start engine.
2. Select "ECU INPUT SIGNALS" in "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
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-III

1. Start engine.
2. Check power supply to secondary speed sensor by voltage between TCM connector terminals 7, 46 and 48. Refer to [CVT-34. "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-III 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

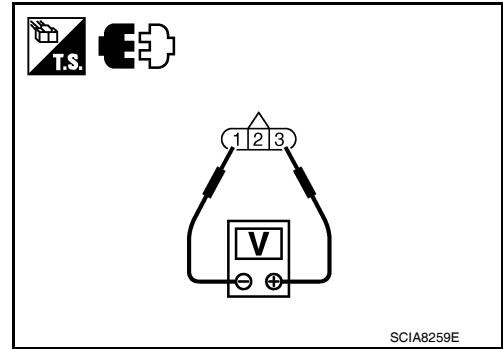
1. Turn ignition switch OFF.
2. Disconnect the secondary speed sensor harness connector.
3. Turn ignition switch ON.

P0720 OUTPUT SPEED SENSOR

< SERVICE INFORMATION >

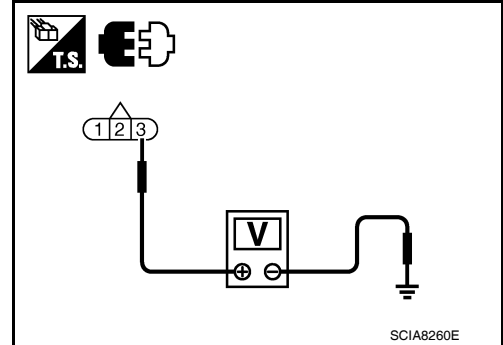
4. Check voltage between secondary speed sensor harness connector terminals.

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

- Turn ignition switch OFF.
- Disconnect TCM connector (A) and secondary speed sensor harness connector (B).
- 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	

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

OK or NG

OK >> GO TO 5.

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

5. CHECK THE TCM SHORT

Replace same type TCM, perform self-diagnosis check. Erase self-diagnostic results and then drive the vehicle [more than 40 km/h (25 MPH)], perform self-diagnosis check. Refer to [CVT-75, "DTC Confirmation Procedure"](#).

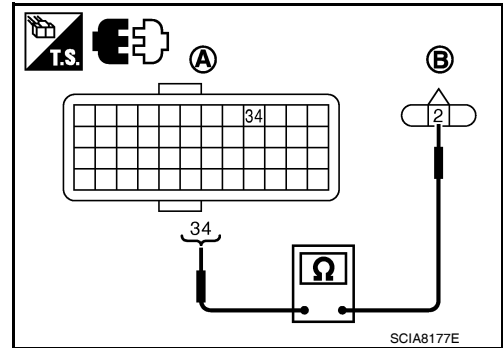
Is "P0720 VEH SPD SEN/CIR CVT" detected again?

YES >> Replace the Secondary speed sensor. Refer to [CVT-185, "Secondary Speed Sensor \(MR20DE\)"](#).

NO >> Replace TCM. Refer to [CVT-161, "Removal and Installation"](#).

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

- Turn ignition switch OFF.
- Disconnect TCM connector, IPDM E/R connector, primary speed sensor and secondary speed sensor harness connector.
- 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-34, "Circuit Diagram"](#).



P0720 OUTPUT SPEED SENSOR

< SERVICE INFORMATION >

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

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

- Turn ignition switch OFF.
- Disconnect TCM connector (A) and secondary speed sensor harness connector (B).
- 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	

- If OK, check harness for short to ground and short to power.
- 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-75, "DTC Confirmation Procedure"](#).

OK or NG

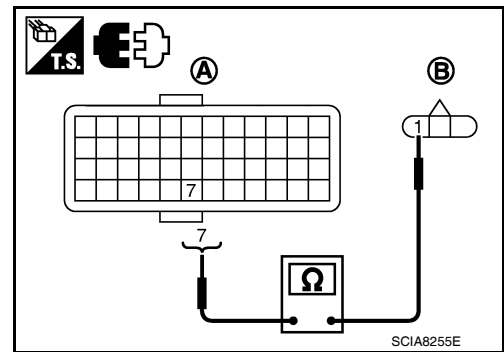
- OK >> **INSPECTION END**
 NG >> GO TO 9.

9. CHECK TCM

- Check TCM input/output signals. Refer to [CVT-44, "TCM Input/Output Signal Reference Value"](#).
- 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

< SERVICE INFORMATION >

P0725 ENGINE SPEED

Description

INFOID:000000005284166

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

CONSULT-III Reference Value

INFOID:000000005284167

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:000000005284168

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

Possible Cause

INFOID:000000005284169

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

DTC Confirmation Procedure

INFOID:000000005284170

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.

④ WITH CONSULT-III

1. Turn ignition switch ON and select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
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-80, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000005284171

1. CHECK DTC WITH ECM

④ With CONSULT-III

1. Turn ignition switch ON.
2. Select "SELF-DIAG RESULTS" mode for "ENGINE" with CONSULT-III. Refer to [EC-131, "CONSULT-III Function \(ENGINE\)"](#).

OK or NG

- OK >> GO TO 2.
NG >> Check the DTC detected item. Refer to [EC-131, "CONSULT-III Function \(ENGINE\)"](#).

2. CHECK DTC WITH TCM

④ With CONSULT-III

1. Turn ignition switch ON.
2. Select "SELF-DIAG RESULTS" mode for "TRANSMISSION" with CONSULT-III. Refer to [CVT-46, "CONSULT-III Function \(TRANSMISSION\)"](#).

OK or NG

- OK >> GO TO 3.
NG >> Check the DTC detected item. Refer to [CVT-46, "CONSULT-III Function \(TRANSMISSION\)"](#).

P0725 ENGINE SPEED

< SERVICE INFORMATION >

- If DTC of CAN communication line is detected, go to [CVT-54](#).

3. CHECK INPUT SIGNALS

With CONSULT-III

1. Start engine.
2. Select "ECU INPUT SIGNALS" in "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
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-561](#).

4. CHECK DTC

Perform [CVT-80. "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-44. "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.

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P0730 INCORRECT GEAR RATIO

< SERVICE INFORMATION >

P0730 INCORRECT GEAR RATIO

Description

INFOID:000000005284172

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-III Reference Value

INFOID:000000005284173

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:000000005284174

- 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-III is detected, when TCM receives an unexpected gear ratio signal.

Possible Cause

INFOID:000000005284175

Transaxle assembly

DTC Confirmation Procedure

INFOID:000000005284176

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-III

1. Turn ignition switch ON and select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
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-III.
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-82, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000005284177

1. CHECK DTC

Perform [CVT-82, "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-46, "CONSULT-III Function \(TRANSMISSION\)"](#).
- YES - 2>> DTC for "P0730" is displayed: Replace the transaxle assembly. Refer to [CVT-192, "Removal and Installation \(MR20DE\)"](#) (MR20DE), [CVT-194, "Removal and Installation \(QR25DE\)"](#) (QR25DE).
- NO >> **INSPECTION END**

P0740 TORQUE CONVERTER

< SERVICE INFORMATION >

P0740 TORQUE CONVERTER

Description

INFOID:000000005284178

- 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-III Reference Value

INFOID:000000005284179

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:000000005284180

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

Possible Cause

INFOID:000000005284181

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

DTC Confirmation Procedure

INFOID:000000005284182

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-III

1. Turn ignition switch ON.
2. Select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III and wait at least 10 consecutive seconds.
3. If DTC is detected, go to [CVT-85, "Diagnosis Procedure"](#).

Ⓜ WITH GST

Follow the procedure "WITH CONSULT-III".

P0740 TORQUE CONVERTER

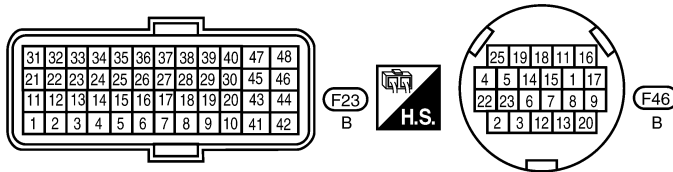
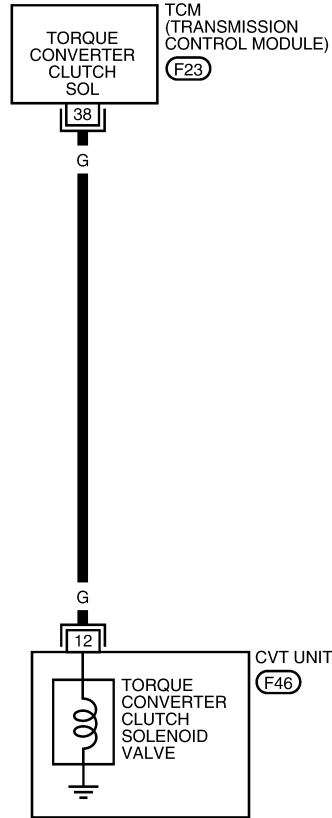
< SERVICE INFORMATION >

Wiring Diagram - CVT - TCV

INFOID:000000005284183

CVT-TCV-01

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



BCWA0741E

TCM TERMINALS AND REFERENCE VALUES
 Refer to [CVT-44, "TCM Input/Output Signal Reference Value"](#).

P0740 TORQUE CONVERTER

< SERVICE INFORMATION >

Diagnosis Procedure

INFOID:000000005284184

1. CHECK INPUT SIGNAL

With CONSULT-III

1. Start engine.
2. Select "MAIN SIGNALS" in "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
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-III

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).

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P0740 TORQUE CONVERTER

< SERVICE INFORMATION >

- 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	

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

OK or NG

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

4.CHECK VALVE RESISTANCE

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

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

OK or NG

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

5.CHECK DTC

Ⓟ With CONSULT-III

- Turn ignition switch ON.
- 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-192, "Removal and Installation \(MR20DE\)"](#) (MR20DE), [CVT-194, "Removal and Installation \(QR25DE\)"](#) (QR25DE).

6.CHECK TCM

- Check TCM input/output signals. Refer to [CVT-44, "TCM Input/Output Signal Reference Value"](#).
- If NG, re-check TCM pin terminals for damage or loose connection with harness connector.

OK or NG

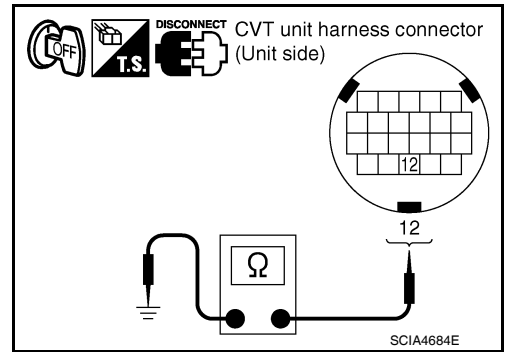
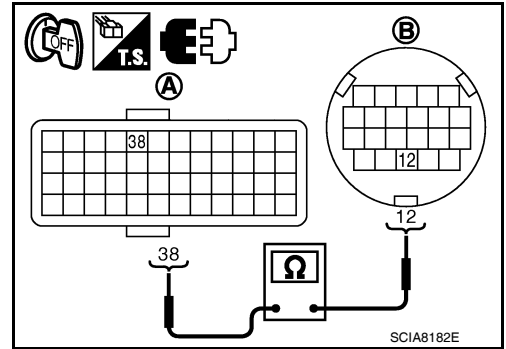
- OK >> **INSPECTION END**
 NG >> Repair or replace damaged parts.

Component Inspection

INFOID:000000005284185

TORQUE CONVERTER CLUTCH SOLENOID VALVE

- Turn ignition switch OFF.
- Disconnect CVT unit harness connector.



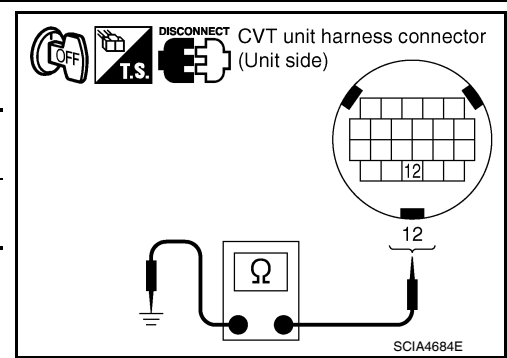
P0740 TORQUE CONVERTER

< SERVICE INFORMATION >

- 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

- If NG, perform "SELF-DIAG RESULTS" mode for "TRANSMISSION".



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P0744 TORQUE CONVERTER

< SERVICE INFORMATION >

P0744 TORQUE CONVERTER

Description

INFOID:000000005284186

- 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-III Reference Value

INFOID:000000005284187

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:000000005284188

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “P0744” with CONSULT-III 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:000000005284189

- Torque converter clutch solenoid valve
- Hydraulic control circuit

DTC Confirmation Procedure

INFOID:000000005284190

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-III

1. Turn ignition switch ON.
2. Select “DATA MONITOR” mode for “TRANSMISSION” with CONSULT-III.
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-88, "Diagnosis Procedure"](#).

WITH GST

Follow the procedure “WITH CONSULT-III”.

Diagnosis Procedure

INFOID:000000005284191

1. CHECK INPUT SIGNALS

With CONSULT-III

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

P0744 TORQUE CONVERTER

< SERVICE INFORMATION >

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-35, "Inspections before Trouble Diagnosis"](#).

OK or NG

- OK >> GO TO 3.
- NG >> Repair or replace damaged parts. Refer to [CVT-35, "Inspections before Trouble Diagnosis"](#).

3. DETECT MALFUNCTIONING ITEM

Check the following:

- Torque converter clutch solenoid valve. Refer to [CVT-86, "Component Inspection"](#).
- Lock-up select solenoid valve. Refer to [CVT-131, "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-75](#), [CVT-70](#).

OK or NG

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

5. CHECK DTC

Perform [CVT-88, "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-44, "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-192, "Removal and Installation \(MR20DE\)"](#) (MR20DE), [CVT-194, "Removal and Installation \(QR25DE\)"](#) (QR25DE).

P0745 PRESSURE CONTROL SOLENOID A

< SERVICE INFORMATION >

P0745 PRESSURE CONTROL SOLENOID A

Description

INFOID:000000005284192

- 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-III Reference Value

INFOID:000000005284193

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:000000005284194

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "P0745" with CONSULT-III 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:000000005284195

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

DTC Confirmation Procedure

INFOID:000000005284196

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-III

1. Turn ignition switch ON and select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
2. Start engine and wait at least 5 seconds.
3. If DTC is detected, go to [CVT-92, "Diagnosis Procedure"](#).

Ⓢ WITH GST

Follow the procedure "WITH CONSULT-III".

P0745 PRESSURE CONTROL SOLENOID A

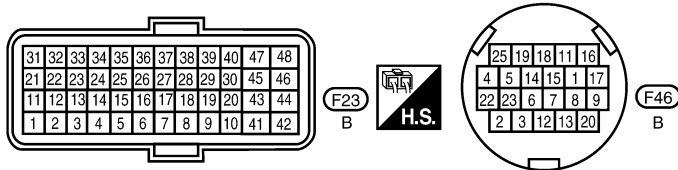
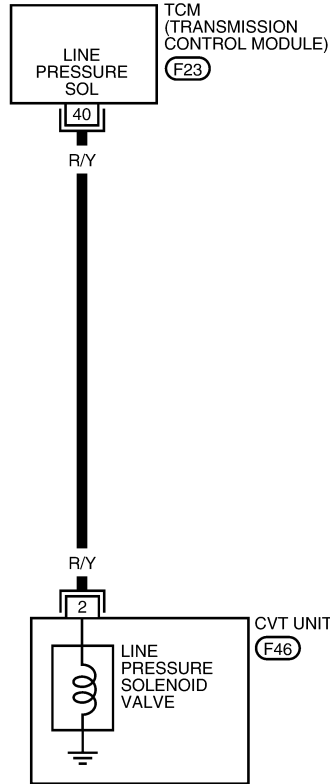
< SERVICE INFORMATION >

Wiring Diagram - CVT - LPSV

INFOID:000000005284197

CVT-LPSV-01

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



BCWA0742E

TCM TERMINALS AND REFERENCE VALUES
 Refer to [CVT-44. "TCM Input/Output Signal Reference Value"](#).

P0745 PRESSURE CONTROL SOLENOID A

< SERVICE INFORMATION >

Diagnosis Procedure

INFOID:000000005284198

1. CHECK INPUT SIGNAL

Ⓜ With CONSULT-III

1. Start engine.
2. Select "MAIN SIGNALS" in "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
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-III

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.

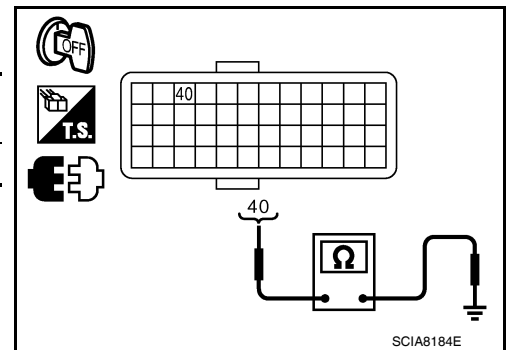
2. CHECK LINE PRESSURE SOLENOID VALVE CIRCUIT

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.

P0745 PRESSURE CONTROL SOLENOID A

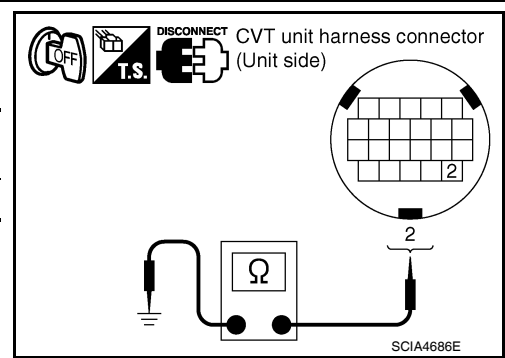
< SERVICE INFORMATION >

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-192, "Removal and Installation \(MR20DE\)"](#).

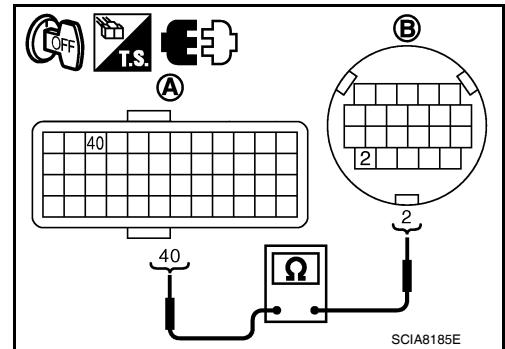


4. CHECK HARNESS BETWEEN TCM AND LINE PRESSURE SOLENOID VALVE

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-90, "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-44, "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-192, "Removal and Installation \(MR20DE\)"](#) (MR20DE), [CVT-194, "Removal and Installation \(QR25DE\)"](#) (QR25DE).

Component Inspection

INFOID:000000005284199

LINE PRESSURE SOLENOID VALVE

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

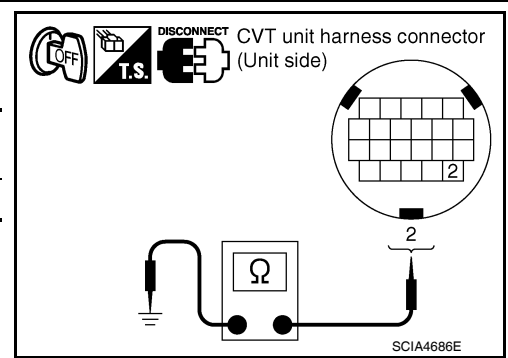
P0745 PRESSURE CONTROL SOLENOID A

< SERVICE INFORMATION >

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-192, "Removal and Installation \(MR20DE\)"](#) (MR20DE), [CVT-194, "Removal and Installation \(QR25DE\)"](#) (QR25DE).



P0746 PRESSURE CONTROL SOLENOID A

< SERVICE INFORMATION >

P0746 PRESSURE CONTROL SOLENOID A

Description

INFOID:000000005284200

- 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-III Reference Value

INFOID:000000005284201

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:000000005284202

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

Possible Cause

INFOID:000000005284203

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

DTC Confirmation Procedure

INFOID:000000005284204

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-III

1. Turn ignition switch ON and select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
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-95, "Diagnosis Procedure"](#).

Ⓜ WITH GST

Follow the procedure "WITH CONSULT-III".

Diagnosis Procedure

INFOID:000000005284205

1. CHECK INPUT SIGNAL

Ⓜ With CONSULT-III

1. Start engine.
2. Select "MAIN SIGNALS" in "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
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

P0746 PRESSURE CONTROL SOLENOID A

< SERVICE INFORMATION >

⊗ Without CONSULT-III

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-35, "Inspections before Trouble Diagnosis"](#).

OK or NG

- OK >> GO TO 3.
NG >> Repair or replace damaged parts. Refer to [CVT-35, "Inspections before Trouble Diagnosis"](#).

3.DETECT MALFUNCTIONING ITEM

Check line pressure solenoid valve. Refer to [CVT-93, "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-75](#), [CVT-70](#).

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-118, "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-95, "DTC Confirmation Procedure"](#).

OK or NG

- OK >> **INSPECTION END**
NG >> Replace the transaxle assembly or TCM. Refer to [CVT-192, "Removal and Installation \(MR20DE\)"](#) (MR20DE), [CVT-194, "Removal and Installation \(QR25DE\)"](#) (QR25DE).

P0776 PRESSURE CONTROL SOLENOID B

< SERVICE INFORMATION >

P0776 PRESSURE CONTROL SOLENOID B

Description

INFOID:000000005284206

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

CONSULT-III Reference Value

INFOID:000000005284207

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:000000005284208

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

Possible Cause

INFOID:000000005284209

- 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:000000005284210

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-III

1. Turn ignition switch ON and select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
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-97, "Diagnosis Procedure"](#).

Ⓜ WITH GST

Follow the procedure "WITH CONSULT-III".

Diagnosis Procedure

INFOID:000000005284211

1. CHECK INPUT SIGNAL

Ⓜ With CONSULT-III

1. Start engine.
2. Select "MAIN SIGNALS" in "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
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

P0776 PRESSURE CONTROL SOLENOID B

< SERVICE INFORMATION >

OK or NG

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

2.CHECK LINE PRESSURE

Perform line pressure test. Refer to [CVT-35. "Inspections before Trouble Diagnosis"](#).

OK or NG

- OK >> GO TO 3.
- NG >> Repair or replace damaged parts. Refer to [CVT-35. "Inspections before Trouble Diagnosis"](#).

3.DETECT MALFUNCTIONING ITEM

Check the following:

- Secondary pressure solenoid valve. Refer to [CVT-102. "Component Inspection"](#).
- Line pressure solenoid valve. Refer to [CVT-93. "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-109](#).

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-118. "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-97. "DTC Confirmation Procedure"](#).

OK or NG

- OK >> **INSPECTION END**
- NG >> Replace the transaxle assembly. Refer to [CVT-192. "Removal and Installation \(MR20DE\)"](#) (MR20DE), [CVT-194. "Removal and Installation \(QR25DE\)"](#) (QR25DE).

P0778 PRESSURE CONTROL SOLENOID B

< SERVICE INFORMATION >

P0778 PRESSURE CONTROL SOLENOID B

Description

INFOID:000000005284212

- 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-III Reference Value

INFOID:000000005284213

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:000000005284214

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "P0778" with CONSULT-III 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:000000005284215

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

DTC Confirmation Procedure

INFOID:000000005284216

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-III

1. Turn ignition switch ON.
2. Select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
3. Start engine and wait at least 5 seconds.
4. If DTC is detected, go to [CVT-101, "Diagnosis Procedure"](#).

WITH GST

Follow the procedure "WITH CONSULT-III".

P0778 PRESSURE CONTROL SOLENOID B

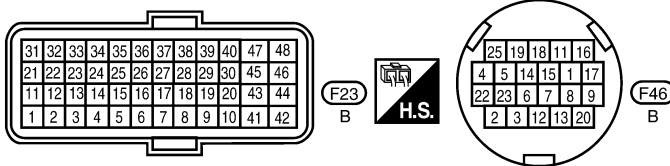
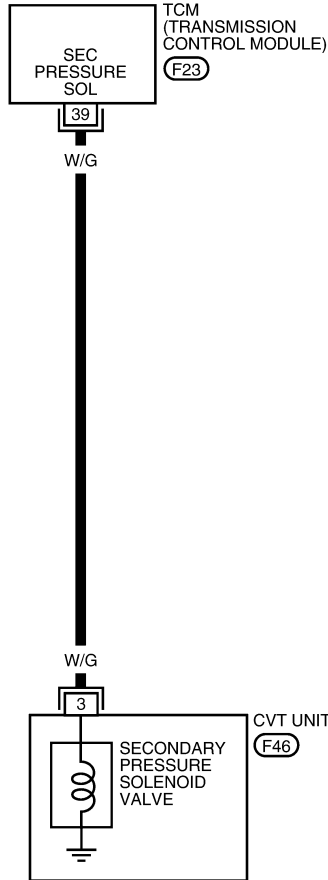
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Wiring Diagram - CVT - SECPSV

INFOID:000000005284217

CVT-SECPSV-01

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



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TCM TERMINALS AND REFERENCE VALUES

Refer to [CVT-44, "TCM Input/Output Signal Reference Value"](#).

P0778 PRESSURE CONTROL SOLENOID B

< SERVICE INFORMATION >

Diagnosis Procedure

INFOID:000000005284218

1. CHECK INPUT SIGNAL

With CONSULT-III

1. Start engine.
2. Select "MAIN SIGNALS" in "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
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-III

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.

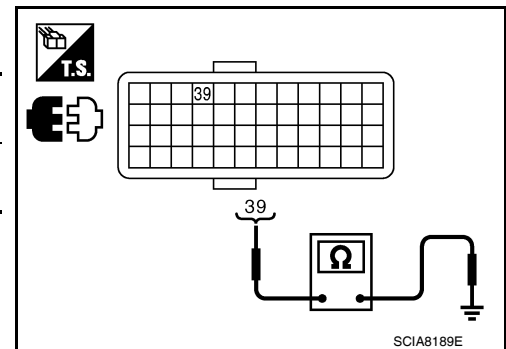
2. CHECK SECONDARY PRESSURE SOLENOID VALVE CIRCUIT

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.

P0778 PRESSURE CONTROL SOLENOID B

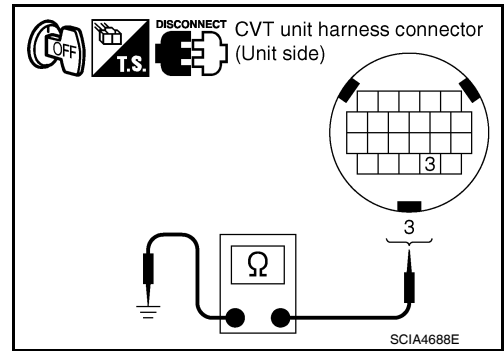
< SERVICE INFORMATION >

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-99. "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-44. "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-192. "Removal and Installation \(MR20DE\)"](#) (MR20DE), [CVT-194. "Removal and Installation \(QR25DE\)"](#) (QR25DE).

Component Inspection

INFOID:000000005284219

SECONDARY PRESSURE SOLENOID VALVE

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

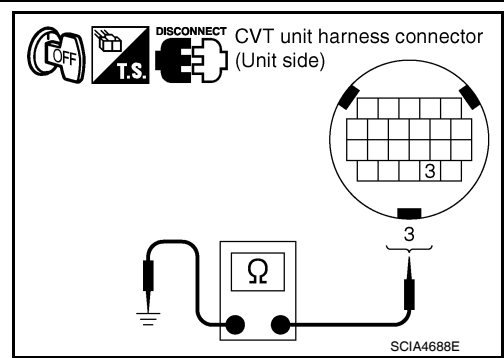
P0778 PRESSURE CONTROL SOLENOID B

< SERVICE INFORMATION >

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-192, "Removal and Installation \(MR20DE\)"](#) (MR20DE), [CVT-194, "Removal and Installation \(QR25DE\)"](#) (QR25DE).



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P0826 UP AND DOWN SHIFT SW

< SERVICE INFORMATION >

P0826 UP AND DOWN SHIFT SW

Description

INFOID:000000005284220

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-106. "Diagnosis Procedure"](#)

CONSULT-III Reference Value in Data Monitor Mode

INFOID:000000005284221

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:000000005284222

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code "P0826" with CONSULT-III 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:000000005284223

- 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:000000005284224

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-III

1. Turn ignition switch ON. (Do not start engine.)
2. Select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
3. Start engine.
4. Push manual mode switch "".
5. Drive vehicle for at least 2 consecutive seconds.
6. If DTC is detected, go to [CVT-106. "Diagnosis Procedure"](#).

P0826 UP AND DOWN SHIFT SW

< SERVICE INFORMATION >

Wiring Diagram - CVT - MMSW

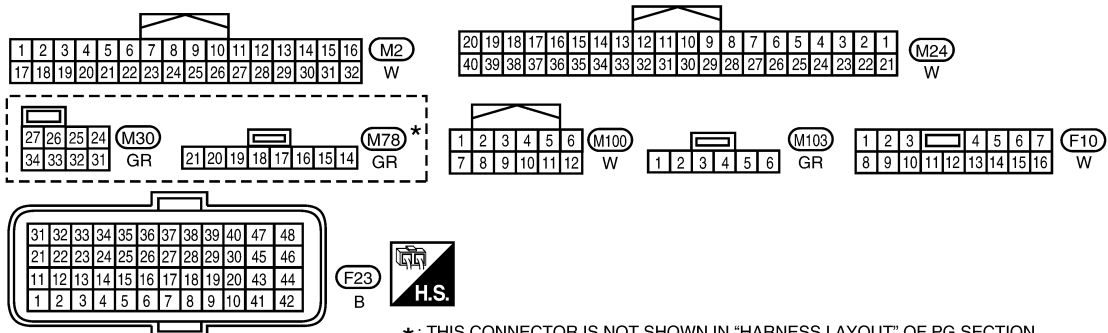
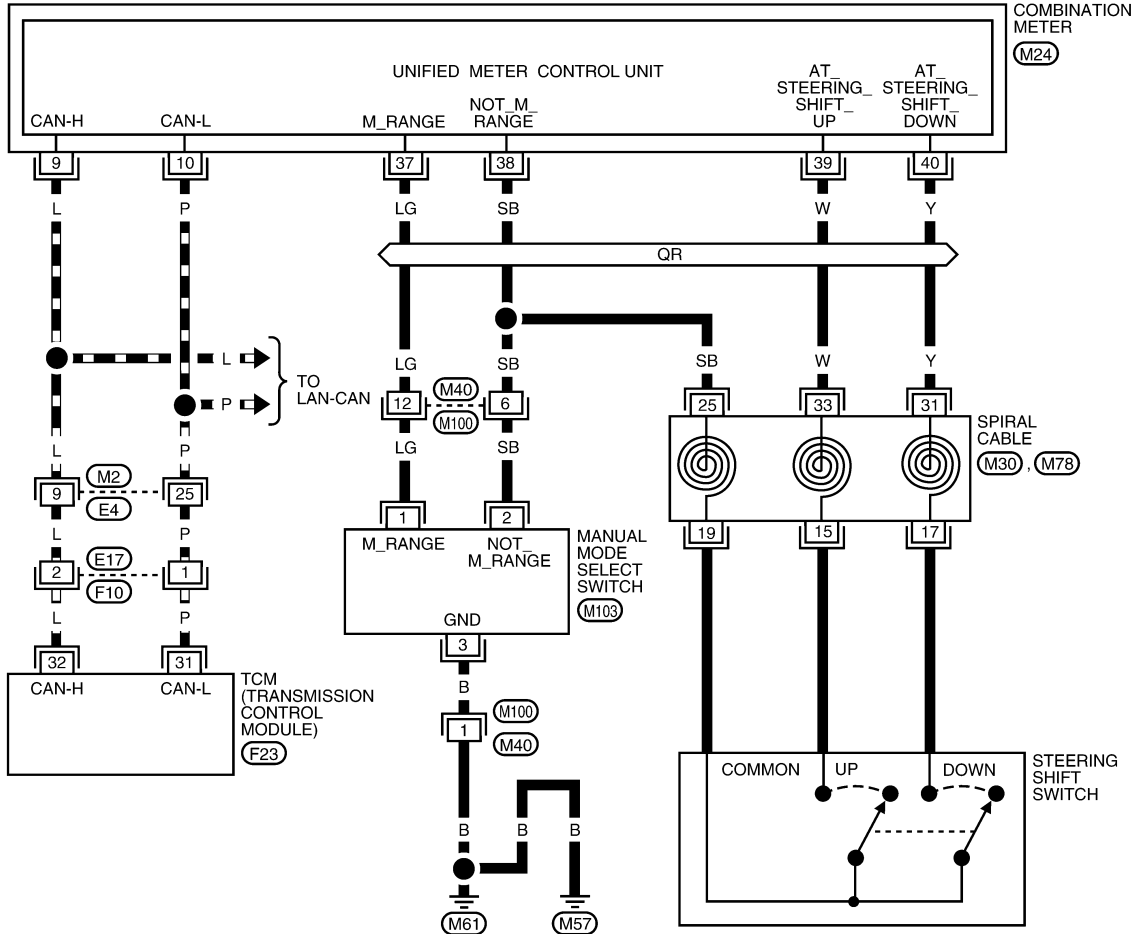
INFOID:000000005284225

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CVT

CVT-MMSW-01

- : DETECTABLE LINE FOR DTC
- : NON-DETECTABLE LINE FOR DTC
- : DATA LINE
- : WITH QR25DE



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

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TCM TERMINALS AND REFERENCE VALUES

Refer to [CVT-44. "TCM Input/Output Signal Reference Value"](#).

P0826 UP AND DOWN SHIFT SW

< SERVICE INFORMATION >

Diagnosis Procedure

INFOID:000000005284226

1. CHECK CAN COMMUNICATION LINE

Perform the self-diagnosis check. Refer to [CVT-46, "CONSULT-III Function \(TRANSMISSION\)"](#).

Is any malfunction of the "U1000" indicated?

YES >> Check CAN communication line. Refer to [CVT-54](#).

NO >> GO TO 2.

2. CHECK MANUAL MODE SWITCH SIGNALS

With CONSULT-III

1. Turn ignition switch ON. (Do not start engine.)
2. Select "ECU INPUT SIGNALS" in "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
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-III

Drive vehicle in the manual mode, and confirm that the actual gear position and the meter's indication of the position mutually coincide when the selector lever 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-108, "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.

P0826 UP AND DOWN SHIFT SW

< SERVICE INFORMATION >

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-23, "Removal and Installation"](#).

8.CHECK DTC

Perform "DTC Confirmation Procedure". Refer to [CVT-104, "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-44, "TCM Input/Output Signal Reference Value"](#).

P0826 UP AND DOWN SHIFT SW

< SERVICE INFORMATION >

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:000000005284227

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

< SERVICE INFORMATION >

P0840 TRANSMISSION FLUID PRESSURE SEN/SW A

Description

INFOID:000000005284228

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

CONSULT-III Reference Value

INFOID:000000005284229

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:000000005284230

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

Possible Cause

INFOID:000000005284231

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

DTC Confirmation Procedure

INFOID:000000005284232

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-III

1. Turn ignition switch ON and select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
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-111, "Diagnosis Procedure"](#).

Ⓜ WITH GST

Follow the procedure "WITH CONSULT-III".

P0840 TRANSMISSION FLUID PRESSURE SEN/SW A

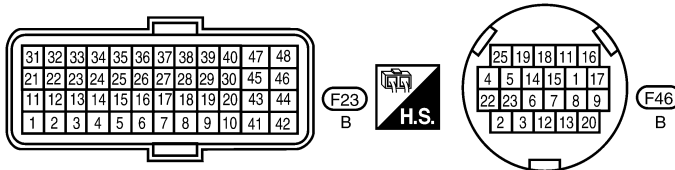
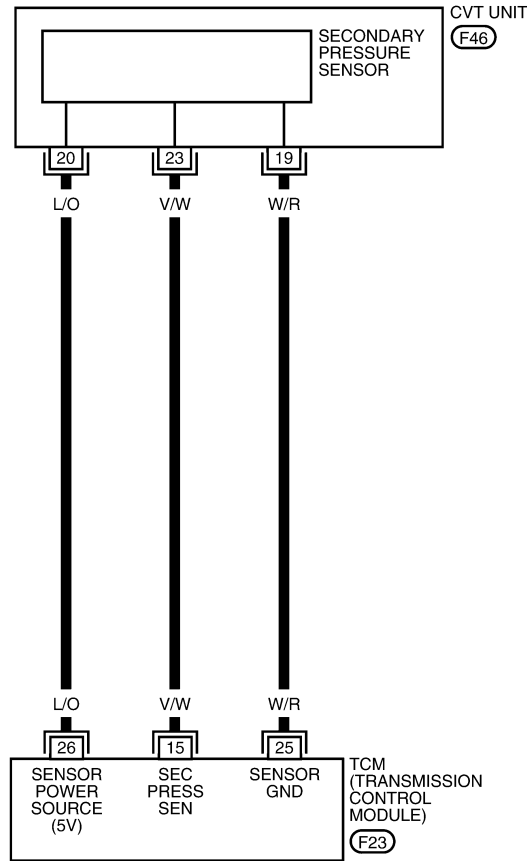
< SERVICE INFORMATION >

Wiring Diagram - CVT - SECPS

INFOID:000000005284233

CVT-SECPS-01

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



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TCM TERMINALS AND REFERENCE VALUES

Refer to [CVT-44, "TCM Input/Output Signal Reference Value"](#).

P0840 TRANSMISSION FLUID PRESSURE SEN/SW A

< SERVICE INFORMATION >

Diagnosis Procedure

INFOID:000000005284234

1. CHECK INPUT SIGNAL

With CONSULT-III

1. Start engine.
2. Select "ECU INPUT SIGNALS" in "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
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-III

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

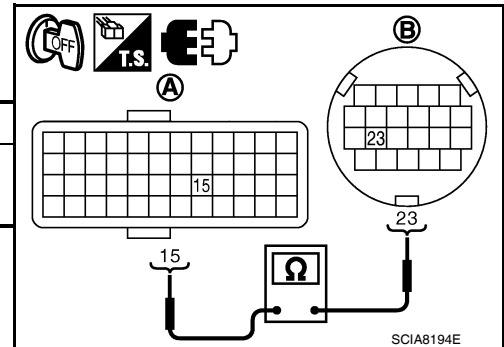
1. Turn ignition switch OFF.
2. Disconnect TCM connector (A) and CVT unit harness connector (B).
3. Check continuity between TCM connector (A) terminal and CVT unit harness connector (B) terminal.

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.

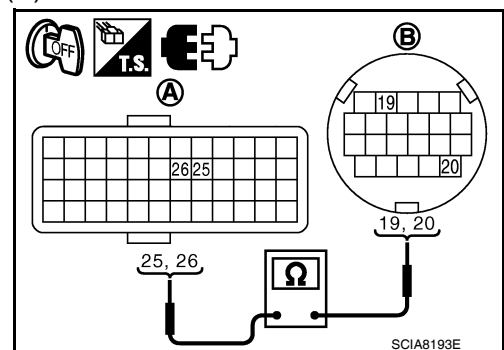


3. CHECK HARNESS BETWEEN TCM AND CVT UNIT HARNESS CONNECTOR (SENSOR POWER AND SENSOR GROUND)

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.



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P0840 TRANSMISSION FLUID PRESSURE SEN/SW A

< SERVICE INFORMATION >

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-III

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-192, "Removal and Installation \(MR20DE\)"](#) (MR20DE), [CVT-194, "Removal and Installation \(QR25DE\)"](#) (QR25DE).

NO >> GO TO 6.

6. CHECK TCM

1. Check TCM input/output signals. Refer to [CVT-44, "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-161, "Removal and Installation"](#).

NG >> Repair or replace damaged parts.

P0841 TRANSMISSION FLUID PRESSURE SEN/SW A

< SERVICE INFORMATION >

P0841 TRANSMISSION FLUID PRESSURE SEN/SW A

Description

INFOID:000000005284235

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-III Reference Value

INFOID:000000005284236

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:000000005284237

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

Possible Cause

INFOID:000000005284238

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

DTC Confirmation Procedure

INFOID:000000005284239

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.

④ WITH CONSULT-III

1. Turn ignition switch ON and select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
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-113, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000005284240

1.CHECK CAN COMMUNICATION LINE

Perform the self-diagnosis. Refer to [CVT-46, "CONSULT-III Function \(TRANSMISSION\)"](#).

Is any malfunction of the "U1000" indicated?

- YES >> Check CAN communication line. Refer to [CVT-54](#).
NO >> GO TO 2.

2.CHECK INPUT SIGNALS

④ With CONSULT-III

1. Start engine.
2. Select "ECU INPUT SIGNALS" in "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
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-III

P0841 TRANSMISSION FLUID PRESSURE SEN/SW A

< SERVICE INFORMATION >

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-35, "Inspections before Trouble Diagnosis"](#).

OK or NG

- OK >> GO TO 4.
NG >> Repair or replace damaged parts. Refer to [CVT-35, "Inspections before Trouble Diagnosis"](#).

4.CHECK SECONDARY PRESSURE SENSOR SYSTEM

Check secondary pressure sensor system. Refer to [CVT-109](#).

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-93, "Component Inspection"](#).
- Secondary pressure solenoid valve. Refer to [CVT-102, "Component Inspection"](#).
- Step motor. Refer to [CVT-137, "Component Inspection"](#).

OK or NG6

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

6.CHECK DTC

Perform [CVT-113, "DTC Confirmation Procedure"](#).

OK or NG

- OK >> **INSPECTION END**
NG >> Replace TCM or transaxle assembly. Refer to [CVT-192, "Removal and Installation \(MR20DE\)"](#).

P0868 TRANSMISSION FLUID PRESSURE

< SERVICE INFORMATION >

P0868 TRANSMISSION FLUID PRESSURE

Description

INFOID:000000005284241

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

CONSULT-III Reference Value

INFOID:000000005284242

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:000000005284243

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

Possible Cause

INFOID:000000005284244

- 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:000000005284245

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.

④ WITH CONSULT-III

1. Turn ignition switch ON and select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
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-115, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000005284246

1. CHECK INPUT SIGNAL

④ With CONSULT-III

1. Start engine.
2. Select "MAIN SIGNALS" in "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
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.

P0868 TRANSMISSION FLUID PRESSURE

< SERVICE INFORMATION >

NG >> GO TO 2.

2.CHECK LINE PRESSURE

Perform line pressure test. Refer to [CVT-35, "Inspections before Trouble Diagnosis"](#).

OK or NG

OK >> GO TO 3.

NG >> Repair or replace damaged parts. Refer to [CVT-35, "Inspections before Trouble Diagnosis"](#).

3.DETECT MALFUNCTIONING ITEM

Check the following:

- Secondary pressure solenoid valve. Refer to [CVT-102, "Component Inspection"](#).
- Line pressure solenoid valve. Refer to [CVT-93, "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-109](#).

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-118, "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-115, "DTC Confirmation Procedure"](#).

OK or NG

OK >> **INSPECTION END**

NG >> Replace the transaxle assembly. Refer to [CVT-192, "Removal and Installation \(MR20DE\)"](#) (MR20DE), [CVT-194, "Removal and Installation \(QR25DE\)"](#) (QR25DE).

P1701 TCM

< SERVICE INFORMATION >

P1701 TCM

Description

INFOID:000000005284247

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:000000005284248

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code "P1701" with CONSULT-III 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:000000005284249

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

DTC Confirmation Procedure

INFOID:000000005284250

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-III

1. Turn ignition switch ON. (Do not start engine.)
2. Select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
3. Wait for at least 2 consecutive seconds.
4. If DTC is detected, go to [CVT-119. "Diagnosis Procedure"](#).

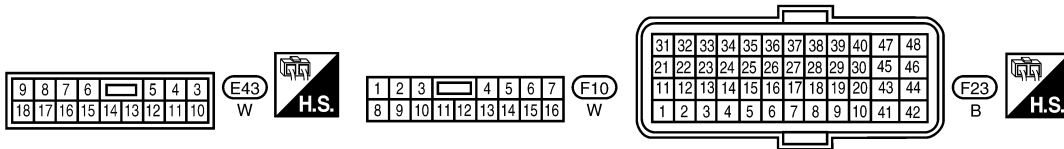
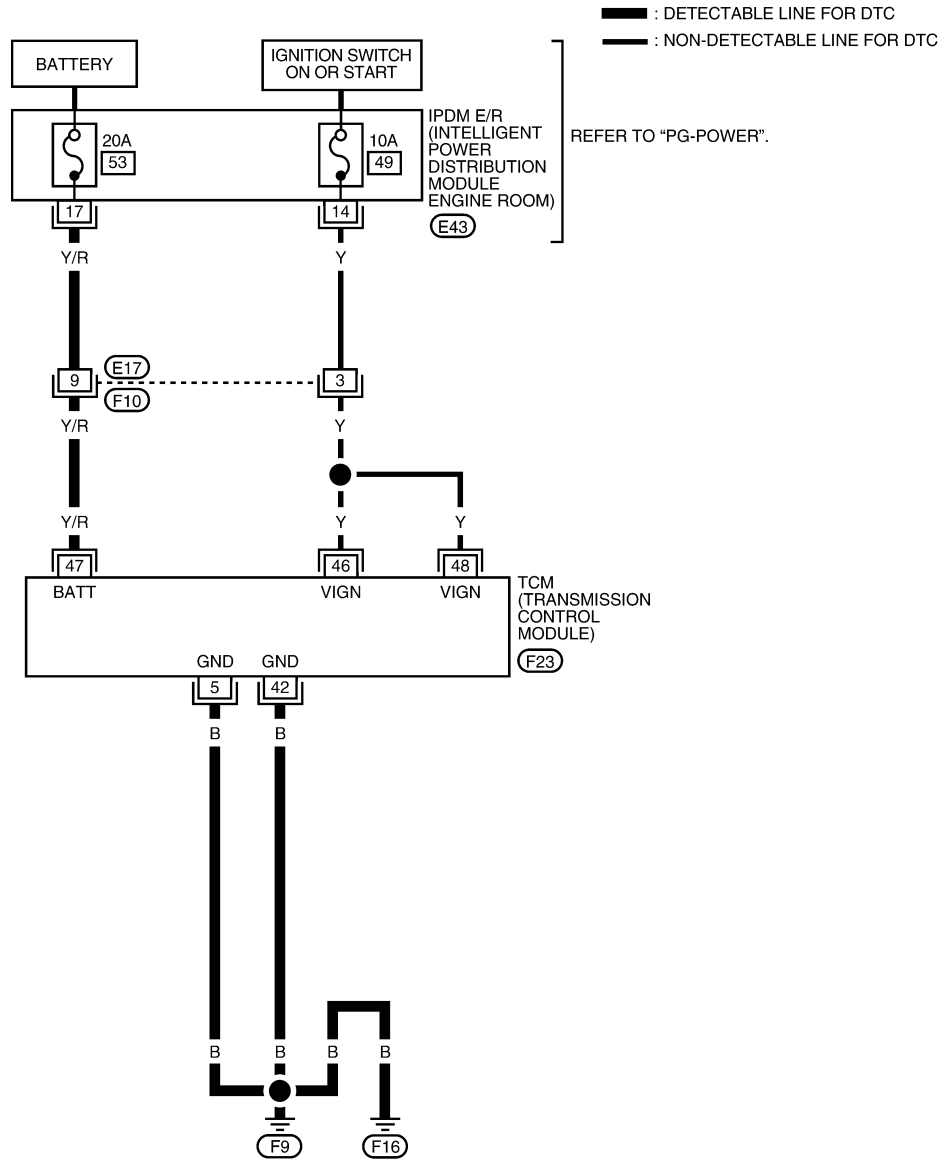
P1701 TCM

< SERVICE INFORMATION >

Wiring Diagram - CVT - POWER

INFOID:000000005284251

CVT-POWER-01



AADWA0080GB

TCM TERMINALS AND REFERENCE VALUES

Refer to [CVT-44, "TCM Input/Output Signal Reference Value"](#).

P1701 TCM

< SERVICE INFORMATION >

Diagnosis Procedure

INFOID:000000005284252

1. CHECK DTC

1. Turn ignition switch ON.
2. Select "SELF-DIAG RESULTS" mode for "TRANSMISSION" with CONSULT-III.
3. Erase self-diagnostic results. Refer to [CVT-24. "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-46. "CONSULT-III 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

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

P1701 TCM

< SERVICE INFORMATION >

- 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-3](#).

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-117, "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-44, "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

< SERVICE INFORMATION >

P1705 TP SENSOR

Description

INFOID:000000005284253

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-III Reference Value

INFOID:000000005284254

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:000000005284255

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

Possible Cause

INFOID:000000005284256

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

DTC Confirmation Procedure

INFOID:000000005284257

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-III

1. Turn ignition switch ON.
2. Select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
3. Depress accelerator pedal fully and release it, then wait for 5 seconds.
4. If DTC is detected, go to [CVT-121, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000005284258

1.CHECK CAN COMMUNICATION LINE

Perform the self-diagnosis check. Refer to [CVT-46, "CONSULT-III Function \(TRANSMISSION\)"](#).

Is any malfunction of the "U1000" indicated?

- YES >> Check the CAN communication line. Refer to [CVT-54](#).
NO >> GO TO 2.

2.CHECK INPUT SIGNAL

Ⓜ With CONSULT-III

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

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

OK or NG

P1705 TP SENSOR

< SERVICE INFORMATION >

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

3. CHECK DTC WITH ECM

With CONSULT-III

1. Turn ignition switch ON.
2. Select "SELF-DIAG RESULTS" mode for "ENGINE" with CONSULT-III. Refer to [EC-131, "CONSULT-III Function \(ENGINE\)"](#).

OK or NG

- OK >> GO TO 4.
- NG >> Check the DTC Detected Item. Go to [EC-131, "CONSULT-III Function \(ENGINE\)"](#).

4. CHECK DTC

Perform [CVT-121, "DTC Confirmation Procedure"](#).

OK or NG

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

P1722 VEHICLE SPEED

< SERVICE INFORMATION >

P1722 VEHICLE SPEED

Description

INFOID:000000005284259

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

CONSULT-III Reference Value

INFOID:000000005284260

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:000000005284261

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code "P1722" with CONSULT-III 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:000000005284262

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

DTC Confirmation Procedure

INFOID:000000005284263

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-III

1. Turn ignition switch ON.
2. Select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
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-123, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000005284264

1.CHECK CAN COMMUNICATION LINE

Perform the self-diagnosis check. Refer to [CVT-46, "CONSULT-III Function \(TRANSMISSION\)"](#).

Is any malfunction of the "U1000" indicated?

- YES >> Check CAN communication line. Refer to [CVT-54](#).
NO >> GO TO 2.

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

Perform ABS actuator and electric unit (control unit) self-diagnosis check. Refer to [BRC-20, "CONSULT-III Function \(ABS\)"](#).

OK or NG

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

3.CHECK INPUT SIGNALS

P1722 VEHICLE SPEED

< SERVICE INFORMATION >

Ⓜ With CONSULT-III

1. Start engine.
2. Select "SELECTION FROM MENU" in "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
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-44, "TCM Input/Output Signal Reference Value"](#).

OK or NG

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

5.CHECK DTC

Perform [CVT-123, "DTC Confirmation Procedure"](#).

OK or NG

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

P1723 SPEED SENSOR

< SERVICE INFORMATION >

P1723 SPEED SENSOR

Description

INFOID:000000005284265

- 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:000000005284266

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code "P1723" with CONSULT-III 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:000000005284267

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

DTC Confirmation Procedure

INFOID:000000005284268

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-III

1. Turn ignition switch ON and select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
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-125, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000005284269

1. CHECK STEP MOTOR FUNCTION

Perform the self-diagnosis check. Refer to [CVT-46, "CONSULT-III 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-138](#).)
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-75](#), [CVT-70](#).

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-80](#).

A

B

CVT

D

E

F

G

H

I

J

K

L

M

N

O

P

P1723 SPEED SENSOR

< SERVICE INFORMATION >

OK or NG

- OK >> GO TO 4.
- NG >> Repair or replace damaged parts. Refer to [EC-561](#).

4. DETECT MALFUNCTIONING ITEM

Check the following:

- Power supply and ground circuit for TCM. Refer to [CVT-117](#).
- 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-125, "DTC Confirmation Procedure"](#).

OK or NG

- OK >> **INSPECTION END**
- NG >> Replace TCM or transaxle assembly. Refer to [CVT-161, "Removal and Installation"](#).

P1726 THROTTLE CONTROL SIGNAL

< SERVICE INFORMATION >

P1726 THROTTLE CONTROL SIGNAL

Description

INFOID:000000005284270

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:000000005284271

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

Possible Cause

INFOID:000000005284272

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

DTC Confirmation Procedure

INFOID:000000005284273

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-III

1. Turn ignition switch ON.
2. Select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
3. Start engine and let it idle for 5 second.
4. If DTC is detected, go to [CVT-127, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000005284274

1.CHECK DTC WITH ECM

Ⓟ With CONSULT-III

1. Turn ignition switch ON.
2. Select "SELF-DIAG RESULTS" mode for "ENGINE" with CONSULT-III. Refer to [EC-131, "CONSULT-III Function \(ENGINE\)"](#).

OK or NG

- OK >> GO TO 2.
NG >> Check the DTC Detected Item. Refer to [EC-131, "CONSULT-III Function \(ENGINE\)"](#).
• If CAN communication line is detected, go to [CVT-54](#).

2.CHECK DTC

Perform [CVT-127, "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-161, "Removal and Installation"](#).
NG >> Repair or replace damaged parts.

P1740 SELECT SOLENOID

< SERVICE INFORMATION >

P1740 SELECT SOLENOID

Description

INFOID:000000005284275

- 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-III Reference Value

INFOID:000000005284276

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:000000005284277

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

Possible Cause

INFOID:000000005284278

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

DTC Confirmation Procedure

INFOID:000000005284279

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-III

1. Turn ignition switch ON.
2. Select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
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-130, "Diagnosis Procedure"](#).

WITH GST

Follow the procedure "WITH CONSULT-III".

P1740 SELECT SOLENOID

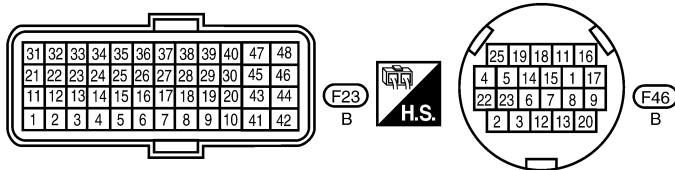
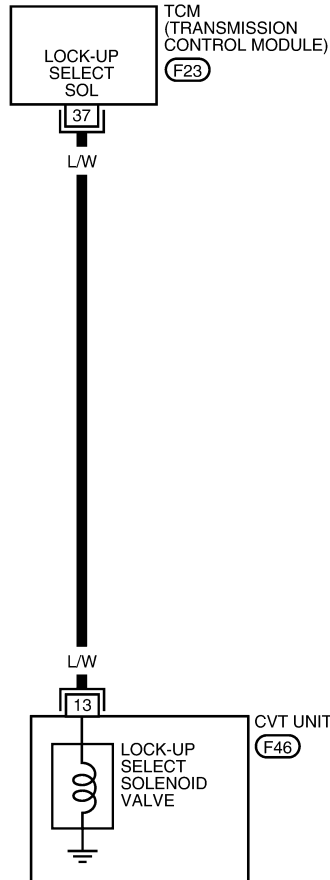
< SERVICE INFORMATION >

Wiring Diagram - CVT - L/USSV

INFOID:000000005284280

CVT-L/USSV-01

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



BCWA0747E

TCM TERMINALS AND REFERENCE VALUES

Refer to [CVT-44. "TCM Input/Output Signal Reference Value"](#).

P1740 SELECT SOLENOID

< SERVICE INFORMATION >

Diagnosis Procedure

INFOID:000000005284281

1. CHECK INPUT SIGNAL

④ With CONSULT-III

1. Turn ignition switch ON.
2. Select "SELECTION FROM MENU" in "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
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-III

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.

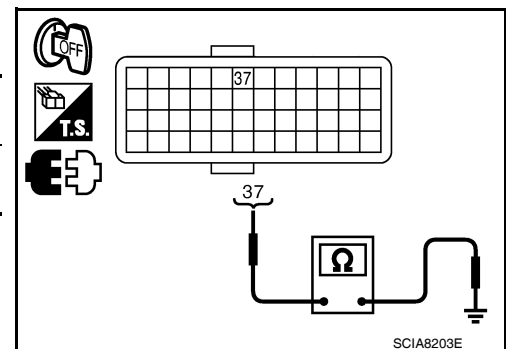
Solenoid valve	Connector	Terminal	Resistance (Approx.)
Lock-up select solenoid valve	F23	37 - Ground	17 - 38 Ω

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.



P1740 SELECT SOLENOID

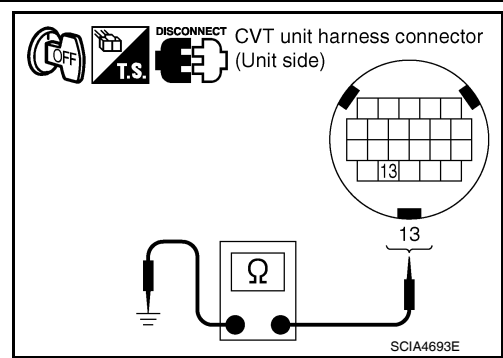
< SERVICE INFORMATION >

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-192, "Removal and Installation \(MR20DE\)"](#) (MR20DE), [CVT-194, "Removal and Installation \(QR25DE\)"](#) (QR25DE).



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

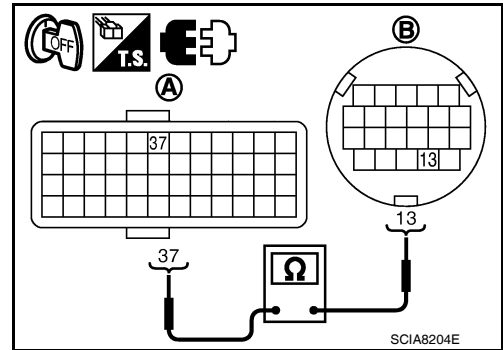
1. Turn ignition switch OFF.
2. Disconnect TCM connector (A) and CVT harness connector (B).
3. Check continuity between TCM connector (A) terminal and CVT unit harness connector (B) terminal.

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-128, "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-161, "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-161, "Removal and Installation"](#).

Component Inspection

INFOID:000000005284282

LOCK-UP SELECT SOLENOID VALVE

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

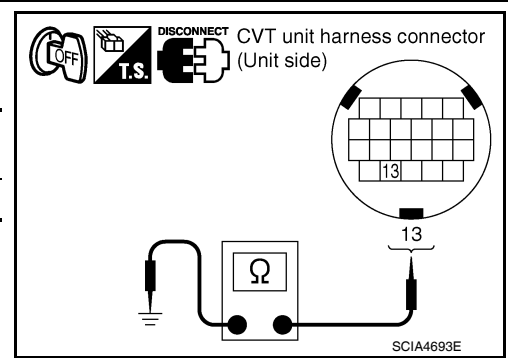
P1740 SELECT SOLENOID

< SERVICE INFORMATION >

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-192, "Removal and Installation \(MR20DE\)"](#) (MR20DE), [CVT-194, "Removal and Installation \(QR25DE\)"](#) (QR25DE).



P1745 LINE PRESSURE CONTROL

< SERVICE INFORMATION >

P1745 LINE PRESSURE CONTROL

Description

INFOID:000000005284283

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:000000005284284

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

Possible Cause

INFOID:000000005284285

TCM

DTC Confirmation Procedure

INFOID:000000005284286

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-III

1. Turn ignition switch ON and select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
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-133, "Diagnosis Procedure"](#).

Diagnosis Procedure

INFOID:000000005284287

1. CHECK DTC

1. Turn ignition switch ON.
2. Select "SELF-DIAG RESULTS" mode for "TRANSMISSION" with CONSULT-III.
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-46, "CONSULT-III Function \(TRANSMISSION\)"](#).

Is the "P1745" displayed?

- YES >> Replace TCM. Refer to [CVT-161, "Removal and Installation"](#).
NO >> **INSPECTION END**

P1777 STEP MOTOR

< SERVICE INFORMATION >

P1777 STEP MOTOR

Description

INFOID:000000005284288

- 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-III Reference Value

INFOID:000000005284289

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:000000005284290

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "P1777" with CONSULT-III 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:000000005284291

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

DTC Confirmation Procedure

INFOID:000000005284292

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-III

1. Turn ignition switch ON and select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
2. Drive vehicle for at least 5 consecutive seconds.
3. If DTC is detected, go to [CVT-136. "Diagnosis Procedure"](#).

WITH GST

Follow the procedure "WITH CONSULT-III".

P1777 STEP MOTOR

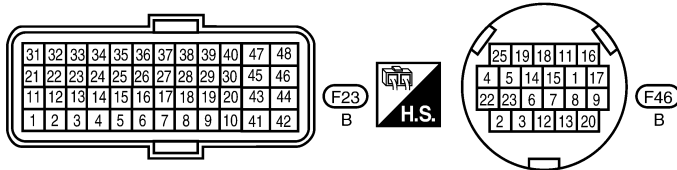
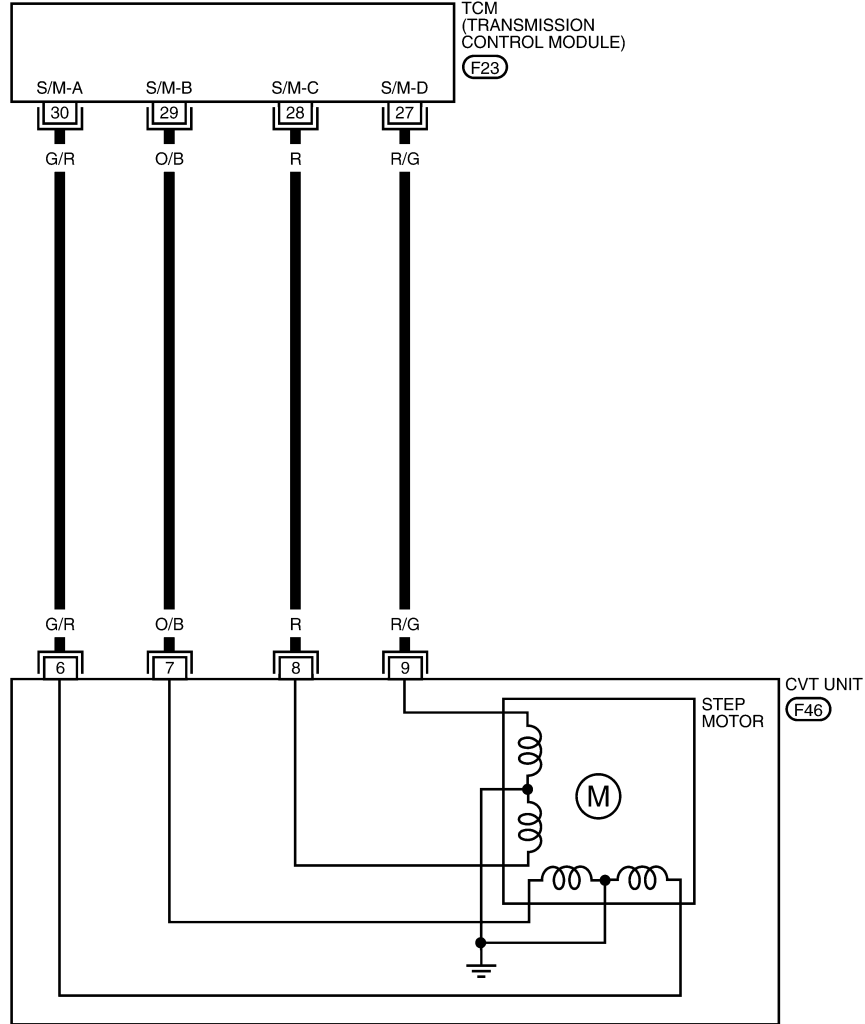
< SERVICE INFORMATION >

Wiring Diagram - CVT - STM

INFOID:000000005284293

CVT-STM-01

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



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TCM TERMINALS AND REFERENCE VALUES
 Refer to [CVT-44. "TCM Input/Output Signal Reference Value"](#).

P1777 STEP MOTOR

< SERVICE INFORMATION >

Diagnosis Procedure

INFOID:000000005284294

1. CHECK INPUT SIGNALS

With CONSULT-III

1. Start engine.
2. Select "SELECTION FROM MENU" in "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
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		

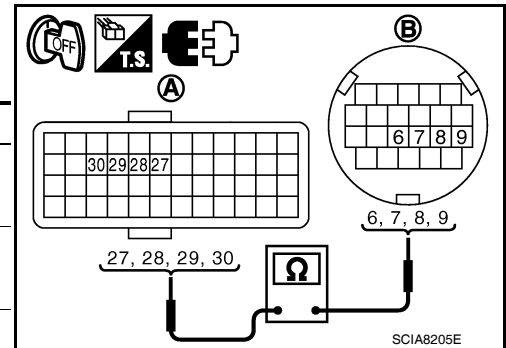
OK or NG

- 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-137, "Component Inspection"](#).

OK or NG

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

4. CHECK DTC

With CONSULT-III

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

Is only "P1777" detected?

P1777 STEP MOTOR

< SERVICE INFORMATION >

- 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-192, "Removal and Installation \(MR20DE\)"](#) (MR20DE), [CVT-194, "Removal and Installation \(QR25DE\)"](#) (QR25DE).

5. CHECK TCM

1. Check TCM input/output signals. Refer to [CVT-44, "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.

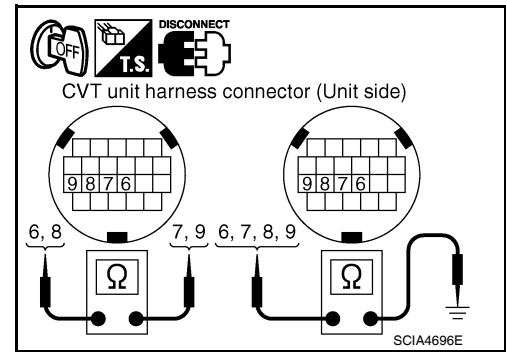
Component Inspection

INFOID:000000005284295

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 "TRANSMISSION".

P1778 STEP MOTOR

< SERVICE INFORMATION >

P1778 STEP MOTOR

Description

INFOID:000000005284296

- 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-III Reference Value

INFOID:000000005284297

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:000000005284298

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "P1778" with CONSULT-III is detected under the following conditions.
 - When not changing the pulley ratio according to the instruction of TCM.

Possible Cause

INFOID:000000005284299

Step motor

DTC Confirmation Procedure

INFOID:000000005284300

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-gear fixation occurred, go to [CVT-139, "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.

④ WITH CONSULT-III

1. Turn ignition switch ON and select "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
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-III.
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-139, "Diagnosis Procedure"](#).

④ WITH GST

Follow the procedure "WITH CONSULT-III".

P1778 STEP MOTOR

< SERVICE INFORMATION >

Diagnosis Procedure

INFOID:000000005284301

1. CHECK STEP MOTOR

With CONSULT-III

It is monitoring whether "GEAR RATIO: 2.34 - 0.39" changes similarly to "STM STEP: 0 - 177" by DATA MONITOR mode. Refer to [CVT-46, "CONSULT-III Function \(TRANSMISSION\)"](#).

Without CONSULT-III

Inspect the engine speed (rise and descend), vehicle speed, throttle position, and check shift change. Refer to [CVT-199, "Vehicle Speed When Shifting Gears"](#).

OK or NG

OK >> **INSPECTION END**

NG >> Replace the transaxle assembly. Refer to [CVT-192, "Removal and Installation \(MR20DE\)"](#) (MR20DE), [CVT-194, "Removal and Installation \(QR25DE\)"](#) (QR25DE).

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OVERDRIVE CONTROL SWITCH

< SERVICE INFORMATION >

OVERDRIVE CONTROL SWITCH

Description

INFOID:000000005284302

- 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-III Reference Value

INFOID:000000005284303

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

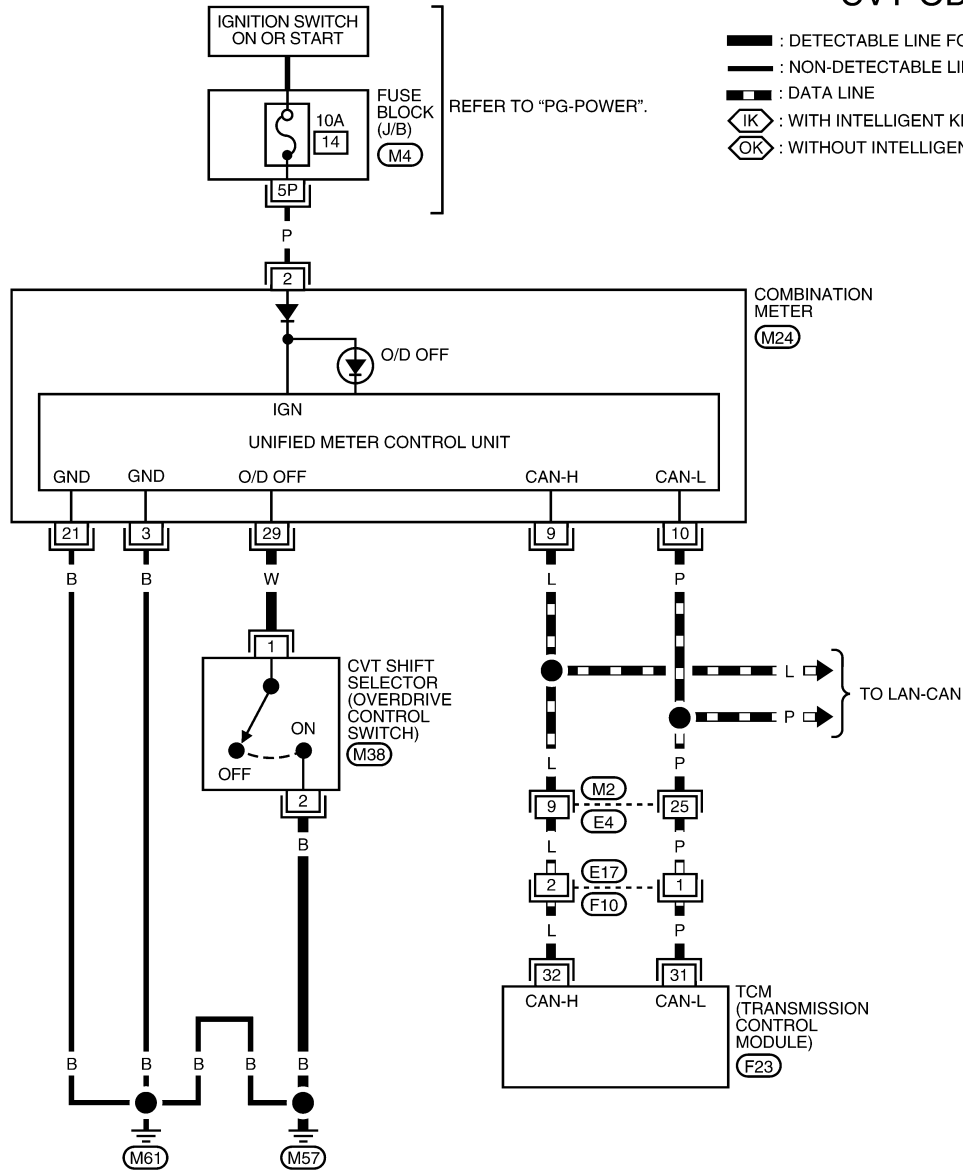
OVERDRIVE CONTROL SWITCH

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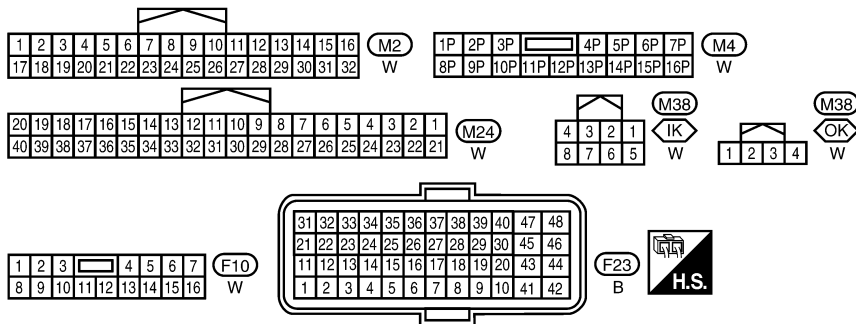
Wiring Diagram - CVT - ODSW

INFOID:000000005284304

CVT-ODSW-01



- : DETECTABLE LINE FOR DTC
- : NON-DETECTABLE LINE FOR DTC
- : DATA LINE
- : WITH INTELLIGENT KEY
- : WITHOUT INTELLIGENT KEY



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TCM TERMINALS AND REFERENCE VALUES

Refer to [CVT-44, "TCM Input/Output Signal Reference Value"](#).

OVERDRIVE CONTROL SWITCH

< SERVICE INFORMATION >

Diagnosis Procedure

INFOID:000000005284305

1. CHECK CAN COMMUNICATION LINE

Perform the self-diagnosis check. Refer to [CVT-46, "CONSULT-III Function \(TRANSMISSION\)"](#).

Is any malfunction of the "U1000" indicated in the results?

- YES >> Check CAN communication line. Refer to [CVT-54](#).
- NO >> GO TO 2.

2. CHECK OVERDRIVE CONTROL SWITCH SIGNAL

ⓑ With CONSULT-III

1. Turn ignition switch ON.
2. Select "ECU INPUT SIGNALS" in "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III.
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-143, "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 to [DI-14, "Self-Diagnosis Mode of Combination Meter"](#).

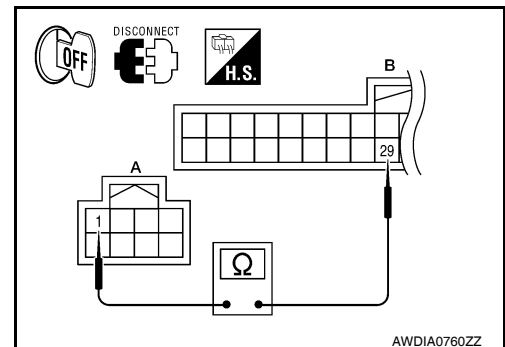
Is any malfunction detected by self-diagnostic?

- YES >> Check the malfunctioning system.
- NO - 1 >> With Intelligent Key: GO TO 5.
- NO - 2 >> Without Intelligent Key: GO TO 6.

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	



OVERDRIVE CONTROL SWITCH

< SERVICE INFORMATION >

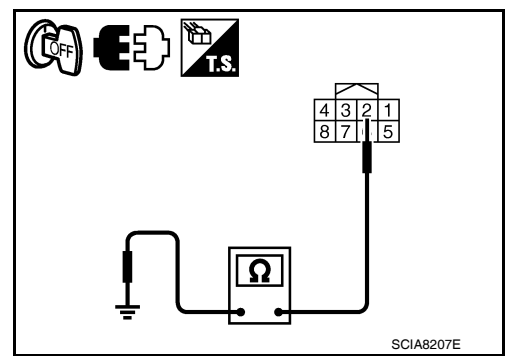
4. Check continuity between CVT shift selector harness connector terminal and ground.

Item	Connector	Terminal	Continuity
CVT shift selector harness connector	M38	2 - ground	Yes

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

OK or NG

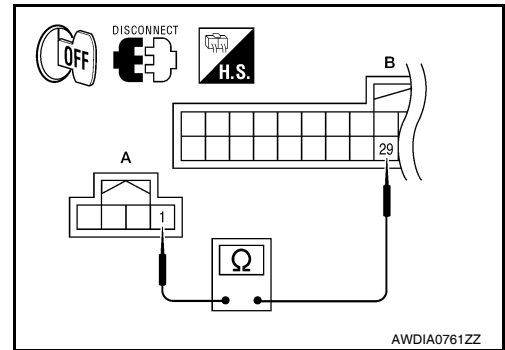
- OK >> **INSPECTION END**
 NG >> Repair open circuit or short to ground or short to power in harness or connectors.



6. 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	



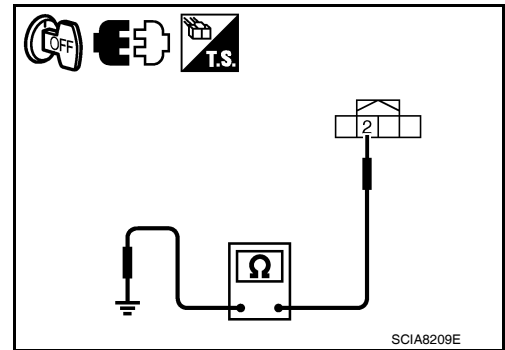
4. Check continuity between CVT shift selector harness connector terminal and ground.

Item	Connector	Terminal	Continuity
CVT shift selector harness connector	M38	2 - ground	Yes

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

OK or NG

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



Component Inspection

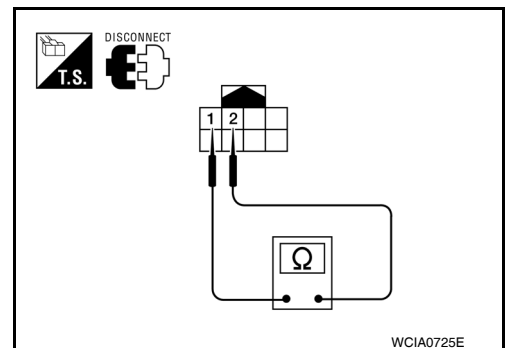
INFOID:000000005284306

OVERDRIVE CONTROL SWITCH

With Intelligent Key

Check continuity between CVT shift selector harness connector terminals.

Item	Condition	Terminal	Continuity
Overdrive control switch	While pushing overdrive control switch	1 - 2	Yes
	Other conditions		No



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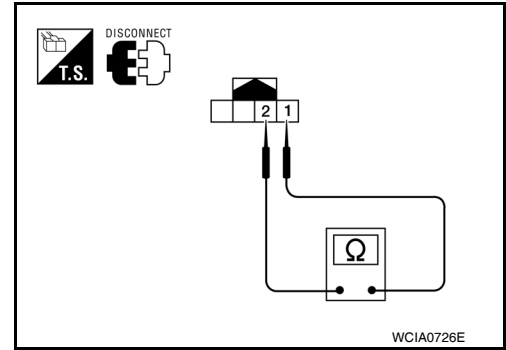
OVERDRIVE CONTROL SWITCH

< SERVICE INFORMATION >

Without Intelligent Key

Check continuity between CVT shift selector harness connector terminals.

Item	Condition	Terminal	Continuity
Overdrive control switch	While pushing overdrive control switch	1 - 2	Yes
	Other conditions		No



SHIFT POSITION INDICATOR CIRCUIT

< SERVICE INFORMATION >

SHIFT POSITION INDICATOR CIRCUIT

Description

INFOID:000000005284307

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

CONSULT-III Reference Value

INFOID:000000005284308

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:000000005284309

1. CHECK INPUT SIGNALS

With CONSULT-III

- Start engine.
- Select "MAIN SIGNALS" in "DATA MONITOR" mode for "TRANSMISSION" with CONSULT-III and read out the value of "RANGE".
- Check that the following three positions or indicators are same.
 - Actual position of the selector lever
 - "RANGE" on CONSULT-III 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 <ul style="list-style-type: none"> • Refer to CVT-60. CVT main system (Fail-safe function actuated) <ul style="list-style-type: none"> • Refer to CVT-46, "CONSULT-III Function (TRANSMISSION)".
Shift position indicator in the combination meter does not indicate any position.	Perform the self-diagnosis for CVT and the combination meter. <ul style="list-style-type: none"> • Refer to CVT-46, "CONSULT-III 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. <ul style="list-style-type: none"> • Refer to DI-6.

TROUBLE DIAGNOSIS FOR SYMPTOMS




< SERVICE INFORMATION >

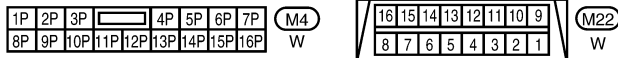
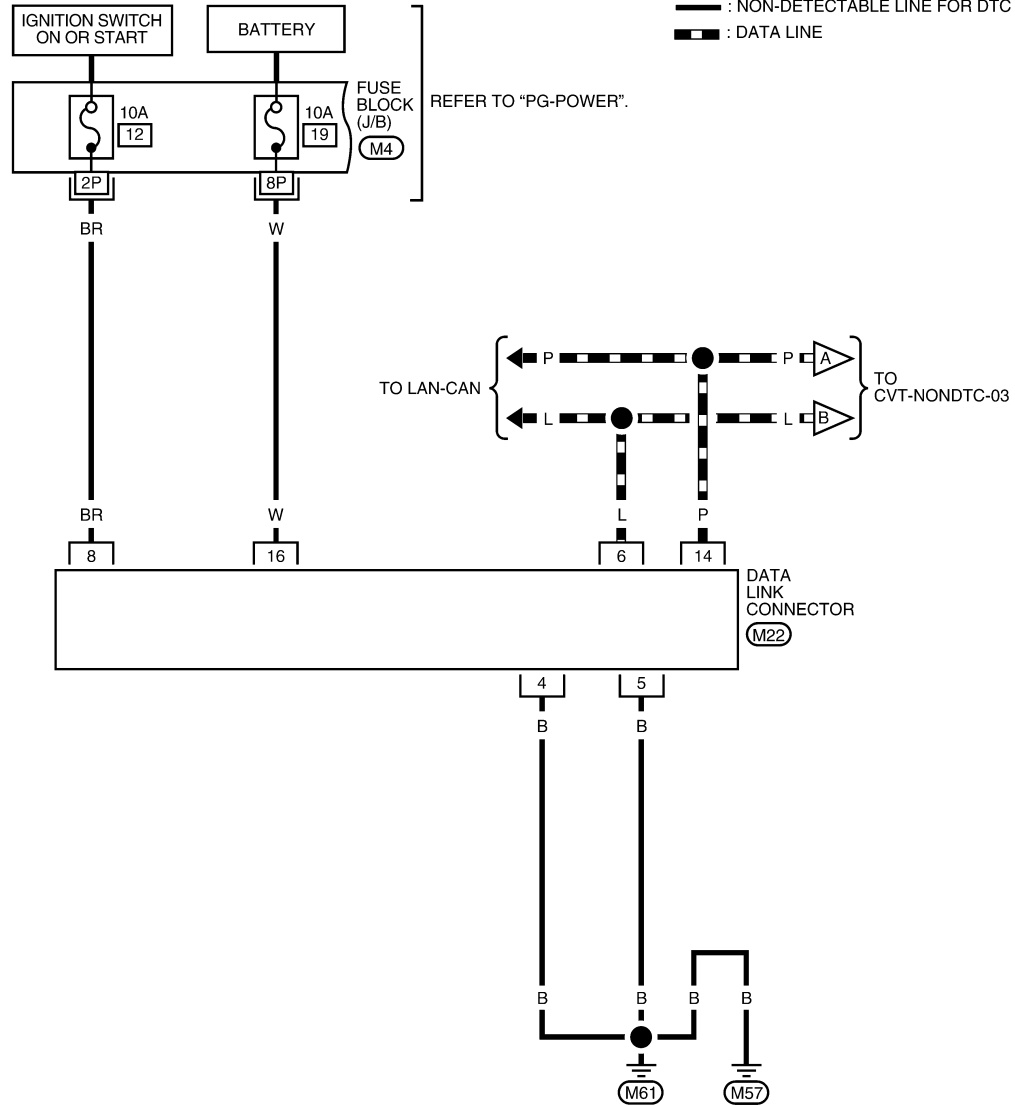
TROUBLE DIAGNOSIS FOR SYMPTOMS

Wiring Diagram - CVT - NONDTC

INFOID:000000005284310

CVT-NONDTC-01

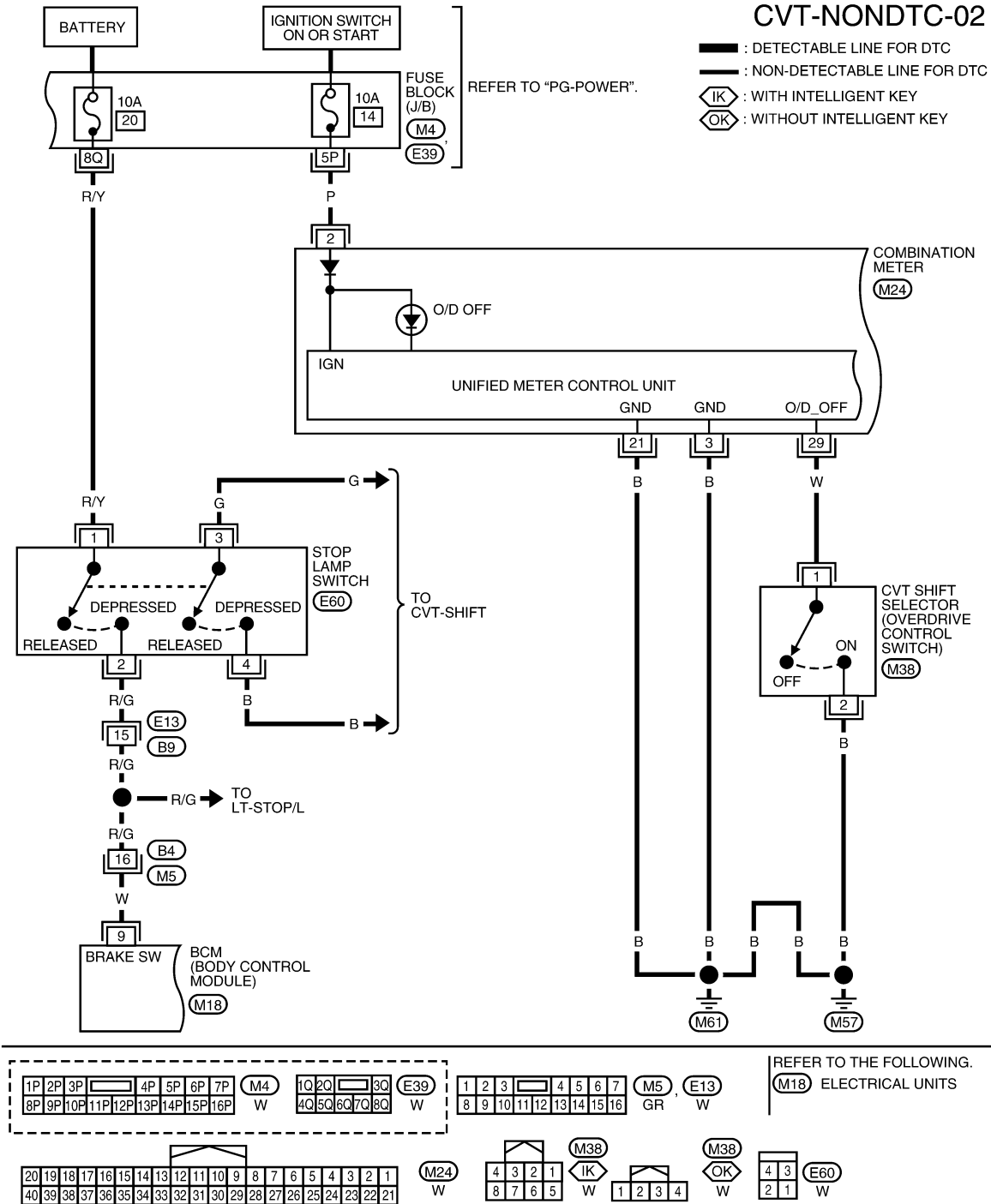
-  : DETECTABLE LINE FOR DTC
-  : NON-DETECTABLE LINE FOR DTC
-  : DATA LINE



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TROUBLE DIAGNOSIS FOR SYMPTOMS

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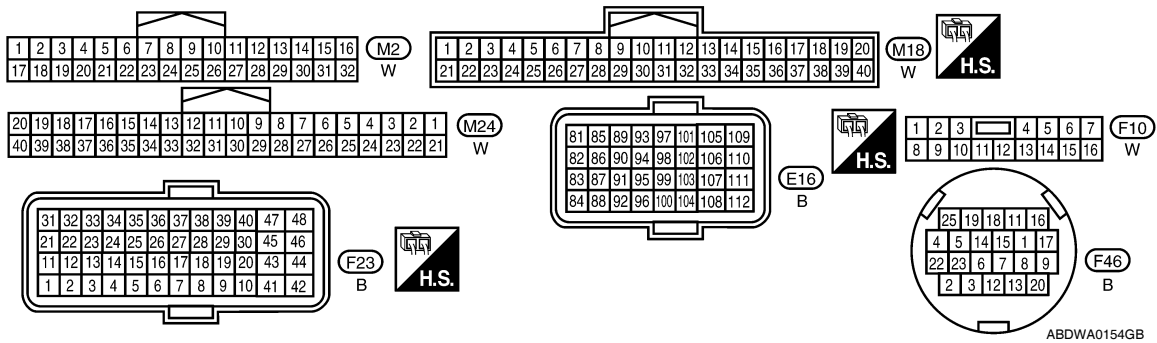
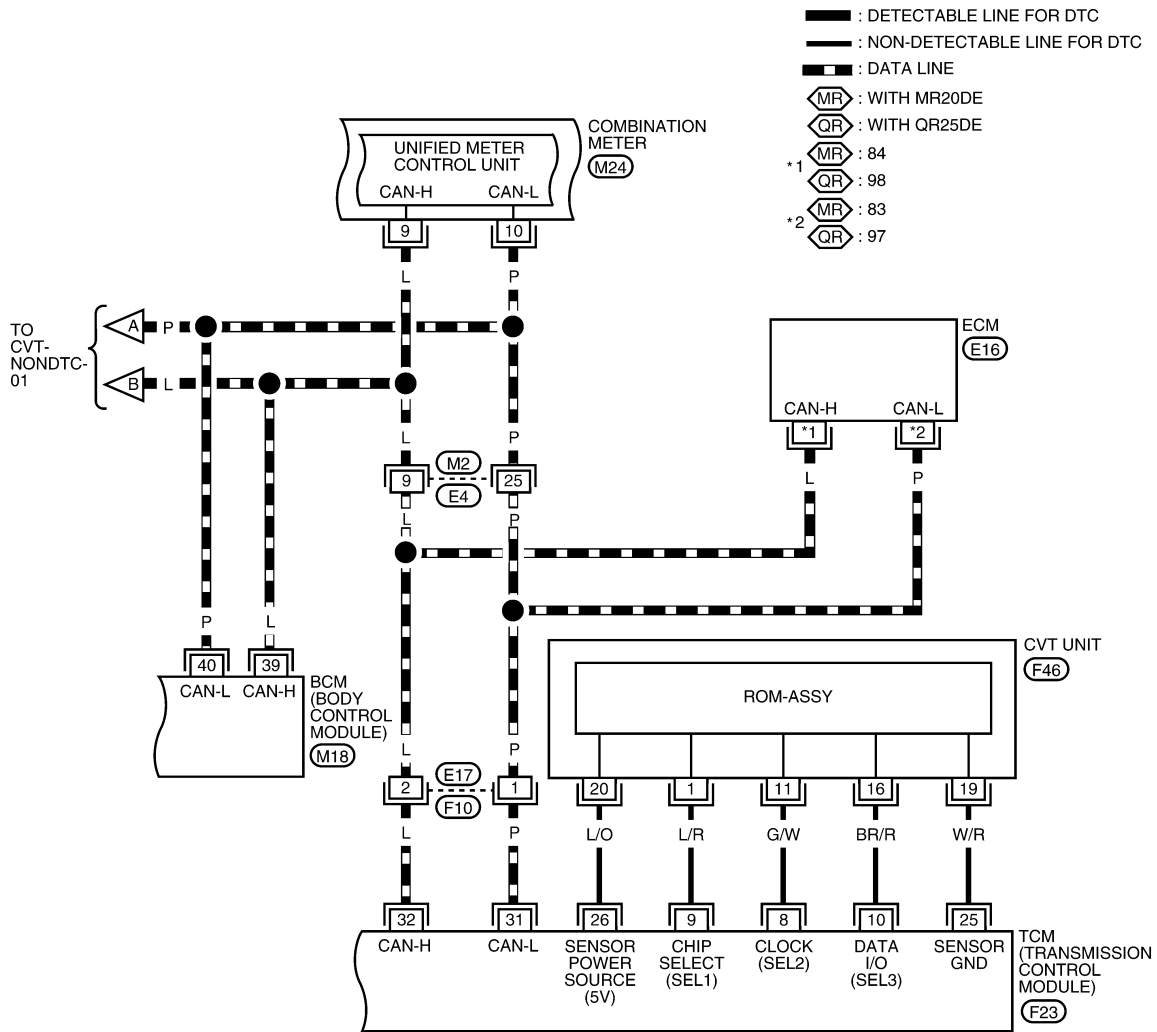


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TROUBLE DIAGNOSIS FOR SYMPTOMS

< SERVICE INFORMATION >

CVT-NONDTC-03

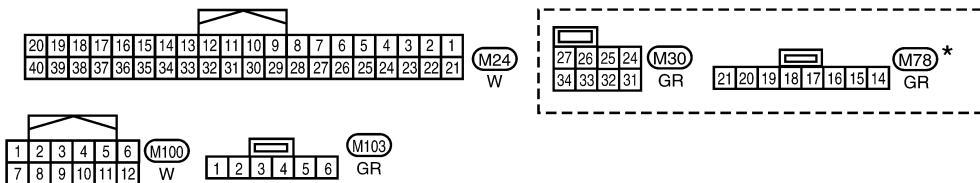
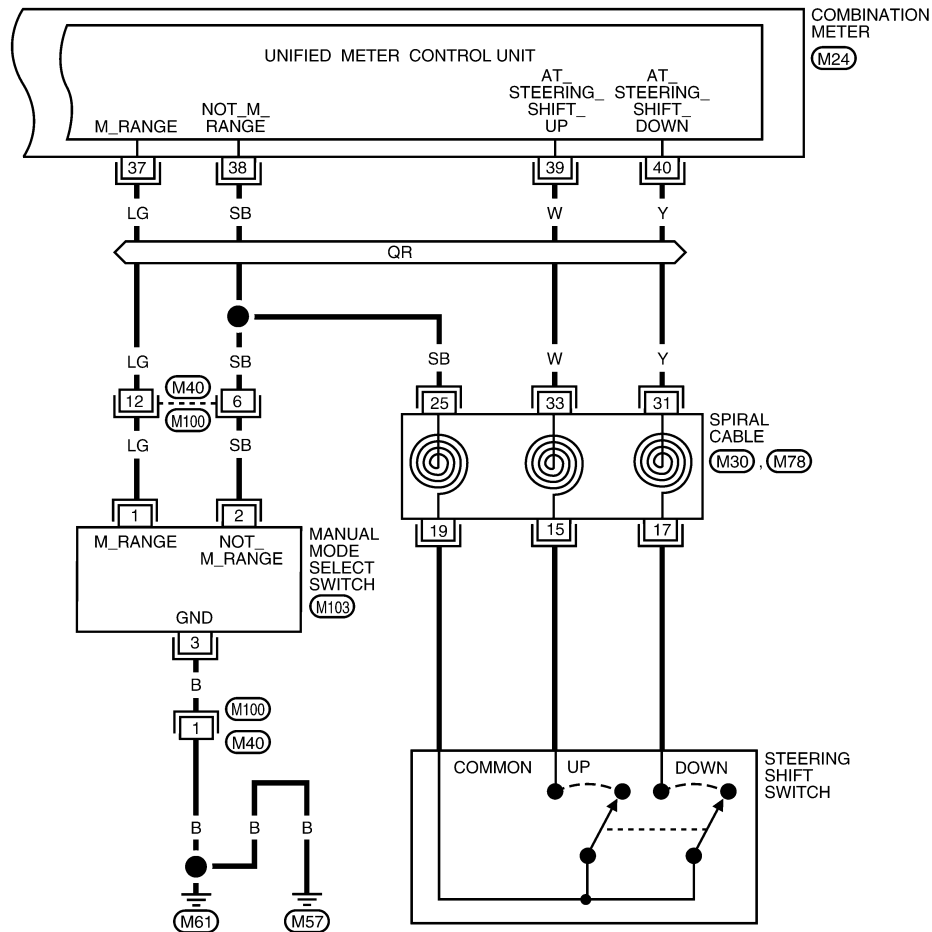


TROUBLE DIAGNOSIS FOR SYMPTOMS

< SERVICE INFORMATION >

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.

ABDWA0155GB

TCM TERMINALS AND REFERENCE VALUES

Refer to [CVT-44, "TCM Input/Output Signal Reference Value"](#).

O/D OFF Indicator Lamp Does Not Come On

INFOID:000000005284311

SYMPTOM:

Revision: January 2010

CVT-149

2010 Sentra

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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-46, "CONSULT-III Function \(TRANSMISSION\)"](#).

Is any malfunction of the "U1000" indicated in the results?

YES >> Check CAN communication line. Refer to [CVT-54](#).

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-118, "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-118, "Wiring Diagram - CVT - POWER"](#).
- 10 A fuse (No.49, located in the IPDM E/R). Refer to [CVT-118, "Wiring Diagram - CVT - POWER"](#).
- Ignition switch. Refer to [PG-3](#).

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-118, "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.

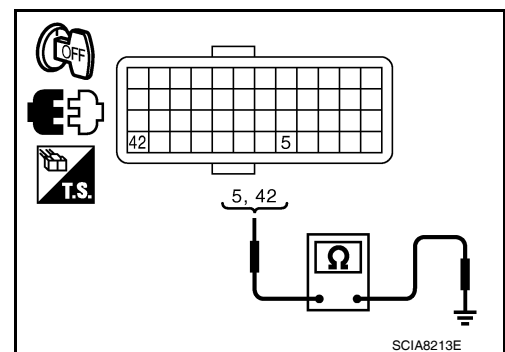
- Harness and fuse for short or open between ignition switch and O/D OFF indicator lamp
Refer to [PG-3](#).

OK or NG

OK >> GO TO 6.

NG >> Repair or replace damaged parts.

6. CHECK SYMPTOM



TROUBLE DIAGNOSIS FOR SYMPTOMS

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Check again. Refer to [CVT-39, "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:000000005284312

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-34, "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-173, "Checking of CVT Position"](#).

OK or NG

- OK >> Adjust CVT position. Refer to [CVT-172, "Adjustment of CVT Position"](#).
- NG >> Check transmission range switch (Refer to test group 1.) again after adjusting transmission range switch (Refer to [CVT-173, "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:000000005284313

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-173, "Checking of CVT Position"](#).

OK or NG

- OK >> GO TO 2.
- NG >> Adjust CVT position. Refer to [CVT-172, "Adjustment of CVT Position"](#).

TROUBLE DIAGNOSIS FOR SYMPTOMS

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2.CHECK SYMPTOM

Check again. Refer to [CVT-39, "Check at Idle"](#).

OK or NG

OK >> **INSPECTION END**

NG >> Replace the transaxle assembly. Refer to [CVT-192, "Removal and Installation \(MR20DE\)"](#) (MR20DE), [CVT-194, "Removal and Installation \(QR25DE\)"](#) (QR25DE).

In "N" Position, Vehicle Moves

INFOID:000000005284314

SYMPTOM:

Vehicle moves forward or backward when selecting "N" position.

DIAGNOSTIC PROCEDURE

1.CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis check. Refer to [CVT-46, "CONSULT-III Function \(TRANSMISSION\)"](#).

Do the self-diagnostic results indicate transmission range switch circuit?

YES >> Check transmission range switch circuit. Refer to [CVT-60](#).

NO >> GO TO 2.

2.CHECK CVT POSITION

Check CVT position. Refer to [CVT-173, "Checking of CVT Position"](#).

OK or NG

OK >> GO TO 3.

NG >> Adjust CVT position. Refer to [CVT-172, "Adjustment of CVT Position"](#).

3.CHECK CVT FLUID LEVEL

Check CVT fluid level. Refer to [CVT-14, "Checking CVT Fluid"](#).

OK or NG

OK >> GO TO 4.

NG >> Refill CVT fluid.

4.CHECK SYMPTOM

Check again. Refer to [CVT-39, "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-44, "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-192, "Removal and Installation \(MR20DE\)"](#) (MR20DE), [CVT-194, "Removal and Installation \(QR25DE\)"](#) (QR25DE).

NG >> Repair or replace damaged parts.

Large Shock "N" → "R" Position

INFOID:000000005284315

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-46, "CONSULT-III Function \(TRANSMISSION\)"](#).

Is any malfunction detected by self-diagnosis?

YES >> Check the malfunctioning system. Refer to [CVT-46, "CONSULT-III Function \(TRANSMISSION\)"](#).

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NO >> GO TO 2.

2. CHECK ENGINE IDLE SPEED

Check the engine idle speed. Refer to [EC-97, "Idle Speed and Ignition Timing Check"](#).

OK or NG

OK >> GO TO 3.

NG >> Repair.

3. CHECK CVT FLUID LEVEL

Check CVT fluid level. Refer to [CVT-14, "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-35, "Inspections before Trouble Diagnosis"](#).

OK or NG

OK >> GO TO 5.

NG >> Check the malfunctioning item. Refer to [CVT-35, "Inspections before Trouble Diagnosis"](#).

5. SYMPTOM CHECK

Check again. Refer to [CVT-39, "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-44, "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-192, "Removal and Installation \(MR20DE\)"](#).

NG >> Repair or replace damaged parts.

Vehicle Does Not Creep Backward in "R" Position

INFOID:000000005284316

SYMPTOM:

Vehicle does not creep backward when selecting "R" position.

DIAGNOSTIC PROCEDURE

1. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis check. Refer to [CVT-46, "CONSULT-III Function \(TRANSMISSION\)"](#).

Is any malfunction detected by self-diagnosis

YES >> Check the malfunctioning system. Refer to [CVT-46, "CONSULT-III Function \(TRANSMISSION\)"](#).

NO >> GO TO 2.

2. CHECK CVT POSITION

Check CVT position. Refer to [CVT-173, "Checking of CVT Position"](#).

OK or NG

OK >> GO TO 3.

NG >> Adjust CVT position. Refer to [CVT-172, "Adjustment of CVT Position"](#).

3. CHECK CVT FLUID LEVEL

Check CVT fluid level. Refer to [CVT-14, "Checking CVT Fluid"](#).

OK or NG

OK >> GO TO 4.

NG >> Refill CVT fluid.

TROUBLE DIAGNOSIS FOR SYMPTOMS

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4. CHECK LINE PRESSURE

Check line pressure at idle. Refer to [CVT-35, "Inspections before Trouble Diagnosis"](#).

OK or NG

OK >> GO TO 5.

NG >> Check the malfunctioning item. Refer to [CVT-35, "Inspections before Trouble Diagnosis"](#).

5. CHECK STALL REVOLUTION

Check stall revolution. Refer to [CVT-35, "Inspections before Trouble Diagnosis"](#).

OK or NG

OK >> GO TO 6.

NG >> Check the malfunctioning item. Refer to [CVT-35, "Inspections before Trouble Diagnosis"](#).

6. CHECK SYMPTOM

Check again. Refer to [CVT-39, "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-44, "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-192, "Removal and Installation \(MR20DE\)"](#) (MR20DE), [CVT-194, "Removal and Installation \(QR25DE\)"](#) (QR25DE).

NG >> Repair or replace damaged parts.

Vehicle Does Not Creep Forward in "D" or "L" Position

INFOID:000000005284317

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-46, "CONSULT-III Function \(TRANSMISSION\)"](#).

Is any malfunction detected by self-diagnosis?

YES >> Check the malfunctioning system. Refer to [CVT-46, "CONSULT-III Function \(TRANSMISSION\)"](#).

NO >> GO TO 2.

2. CHECK CVT POSITION

Check CVT position. Refer to [CVT-173, "Checking of CVT Position"](#).

OK or NG

OK >> GO TO 3.

NG >> Adjust CVT position. Refer to [CVT-172, "Adjustment of CVT Position"](#).

3. CHECK CVT FLUID LEVEL

Check CVT fluid level. Refer to [CVT-14, "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-35, "Inspections before Trouble Diagnosis"](#).

OK or NG

OK >> GO TO 5.

NG >> Check the malfunctioning item. Refer to [CVT-35, "Inspections before Trouble Diagnosis"](#).

TROUBLE DIAGNOSIS FOR SYMPTOMS

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5.CHECK STALL REVOLUTION

Check stall revolution. Refer to [CVT-35, "Inspections before Trouble Diagnosis"](#).

OK or NG

OK >> GO TO 6.

NG >> Check the malfunctioning item. Refer to [CVT-35, "Inspections before Trouble Diagnosis"](#).

6.CHECK SYMPTOM

Check again. Refer to [CVT-39, "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-44, "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-192, "Removal and Installation \(MR20DE\)" \(MR20DE\)](#), [CVT-194, "Removal and Installation \(QR25DE\)" \(QR25DE\)](#).

NG >> Repair or replace damaged parts.

Vehicle Speed Does Not Change in "L" Position

INFOID:000000005284318

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-46, "CONSULT-III Function \(TRANSMISSION\)"](#).

Is any malfunction detected by self-diagnosis?

YES >> Check the malfunctioning system. Refer to [CVT-46, "CONSULT-III Function \(TRANSMISSION\)"](#).

NO >> GO TO 2.

2.CHECK CVT POSITION

Check CVT position. Refer to [CVT-173, "Checking of CVT Position"](#).

OK or NG

OK >> GO TO 3.

NG >> Adjust CVT position. Refer to [CVT-172, "Adjustment of CVT Position"](#).

3.CHECK CVT FLUID LEVEL

Check CVT fluid level. Refer to [CVT-14, "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-35, "Inspections before Trouble Diagnosis"](#).

OK or NG

OK >> GO TO 5.

NG >> Check the malfunctioning item. Refer to [CVT-35, "Inspections before Trouble Diagnosis"](#).

5.CHECK STALL REVOLUTION

Check stall revolution. Refer to [CVT-35, "Inspections before Trouble Diagnosis"](#).

OK or NG

OK >> GO TO 6.

NG >> Check the malfunctioning item. Refer to [CVT-35, "Inspections before Trouble Diagnosis"](#).

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6. CHECK SYMPTOM

Check again. Refer to [CVT-40, "Cruise Test"](#).

OK or NG

OK >> **INSPECTION END**

NG >> GO TO 7.

7. CHECK TCM

1. Check TCM input/output signals. Refer to [CVT-44, "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-192, "Removal and Installation \(MR20DE\)"](#) (MR20DE), [CVT-194, "Removal and Installation \(QR25DE\)"](#) (QR25DE).

NG >> Repair or replace damaged parts.

Vehicle Speed Does Not Change in overdrive-off mode

INFOID:000000005284319

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-46, "CONSULT-III Function \(TRANSMISSION\)"](#).

Is any malfunction detected by self-diagnosis?

YES >> Check the malfunctioning system. Refer to [CVT-46, "CONSULT-III Function \(TRANSMISSION\)"](#).

NO >> GO TO 2.

2. CHECK OVERDRIVE CONTROL SWITCH

Check overdrive control switch. Refer to [CVT-140](#).

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-14, "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-35, "Inspections before Trouble Diagnosis"](#).

OK or NG

OK >> GO TO 5.

NG >> Check the malfunctioning item. Refer to [CVT-35, "Inspections before Trouble Diagnosis"](#).

5. CHECK STALL REVOLUTION

Check stall revolution. Refer to [CVT-35, "Inspections before Trouble Diagnosis"](#).

OK or NG

OK >> GO TO 6.

NG >> Check the malfunctioning item. Refer to [CVT-35, "Inspections before Trouble Diagnosis"](#).

6. CHECK SYMPTOM

Check again. Refer to [CVT-40, "Cruise Test"](#).

OK or NG

OK >> **INSPECTION END**

NG >> GO TO 7.

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7.CHECK TCM

1. Check TCM input/output signals. Refer to [CVT-44, "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-192, "Removal and Installation \(MR20DE\)"](#) (MR20DE), [CVT-194, "Removal and Installation \(QR25DE\)"](#) (QR25DE).
- NG >> Repair or replace damaged parts.

Vehicle Speed Does Not Change in "D" Position

INFOID:000000005284320

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-46, "CONSULT-III Function \(TRANSMISSION\)"](#).

Is any malfunction detected by self-diagnosis?

- YES >> Check the malfunctioning system. Refer to [CVT-46, "CONSULT-III Function \(TRANSMISSION\)"](#).
- NO >> GO TO 2.

2.CHECK CVT POSITION

Check CVT position. Refer to [CVT-173, "Checking of CVT Position"](#).

OK or NG

- OK >> GO TO 3.
- NG >> Adjust CVT position. Refer to [CVT-172, "Adjustment of CVT Position"](#).

3.CHECK CVT FLUID LEVEL

Check CVT fluid level. Refer to [CVT-14, "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-35, "Inspections before Trouble Diagnosis"](#).

OK or NG

- OK >> GO TO 5.
- NG >> Check the malfunctioning item. Refer to [CVT-35, "Inspections before Trouble Diagnosis"](#).

5.CHECK STALL REVOLUTION

Check stall revolution. Refer to [CVT-35, "Inspections before Trouble Diagnosis"](#).

OK or NG

- OK >> GO TO 6.
- NG >> Check the malfunctioning item. Refer to [CVT-35, "Inspections before Trouble Diagnosis"](#).

6.CHECK SYMPTOM

Check again. Refer to [CVT-40, "Cruise Test"](#).

OK or NG

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

7.CHECK TCM

1. Check TCM input/output signals. Refer to [CVT-44, "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

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- OK >> Replace the transaxle assembly. Refer to [CVT-192, "Removal and Installation \(MR20DE\)"](#) (MR20DE), [CVT-194, "Removal and Installation \(QR25DE\)"](#) (QR25DE).
NG >> Repair or replace damaged parts.

Cannot Be Changed to Manual Mode

INFOID:000000005284321

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-46, "CONSULT-III Function \(TRANSMISSION\)"](#) .

Is any malfunction detected by self-diagnosis?

- YES >> Check the malfunctioning system. Refer to [CVT-46, "CONSULT-III Function \(TRANSMISSION\)"](#) .
NO >> GO TO 2.

2. CHECK MANUAL MODE SWITCH

Check the manual mode switch circuit. Refer to [CVT-104](#) .

OK or NG

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

3. SYMPTOM CHECK

Check again. Refer to [CVT-40, "Cruise Test"](#) .

OK or NG

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

4. CHECK TCM

1. Check TCM input/output signals. Refer to [CVT-44, "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:000000005284322

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-46, "CONSULT-III Function \(TRANSMISSION\)"](#) .

Is any malfunction detected by self-diagnosis?

- YES >> Check the malfunctioning system. Refer to [CVT-46, "CONSULT-III Function \(TRANSMISSION\)"](#) .
NO >> GO TO 2.

2. CHECK MANUAL MODE SWITCH

Check the manual mode switch circuit. Refer to [CVT-104](#) .

OK or NG

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

3. CHECK CVT POSITION

Check CVT position. Refer to [CVT-173, "Checking of CVT Position"](#)

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OK or NG

OK >> GO TO 4.

NG >> Adjust CVT position. Refer to [CVT-172. "Adjustment of CVT Position"](#).

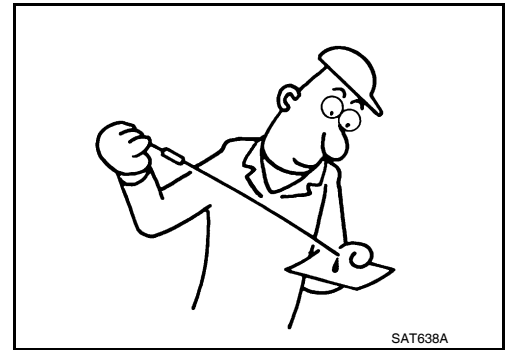
4. CHECK CVT FLUID LEVEL

Check CVT fluid level. Refer to [CVT-14. "Checking CVT Fluid"](#).

OK or NG

OK >> GO TO 5.

NG >> Refill CVT fluid.



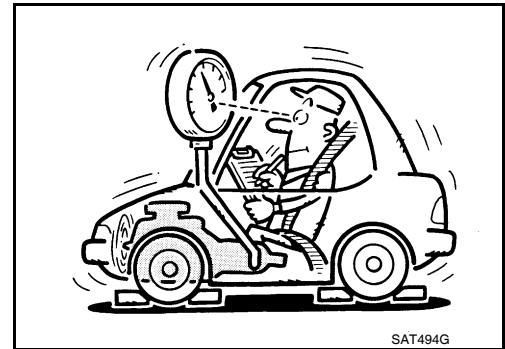
5. CHECK LINE PRESSURE

Check line pressure at idle. Refer to [CVT-35. "Inspections before Trouble Diagnosis"](#).

OK or NG

OK >> GO TO 6.

NG >> Check the malfunctioning item. Refer to [CVT-35. "Inspections before Trouble Diagnosis"](#).



6. CHECK SYMPTOM

Check again. Refer to [CVT-40. "Cruise Test"](#).

OK or NG

OK >> **INSPECTION END**

NG >> GO TO 7.

7. CHECK TCM

1. Check TCM input/output signals. Refer to [CVT-44. "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-192. "Removal and Installation \(MR20DE\)"](#) (MR20DE), [CVT-194. "Removal and Installation \(QR25DE\)"](#) (QR25DE).

NG >> Repair or replace damaged parts.

Vehicle Does Not Decelerate by Engine Brake

INFOID:000000005284323

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-46. "CONSULT-III Function \(TRANSMISSION\)"](#).

Is any malfunction detected by self-diagnosis?

YES >> Check the malfunctioning system. Refer to [CVT-46. "CONSULT-III Function \(TRANSMISSION\)"](#).

NO >> GO TO 2.

2. CHECK CVT POSITION

Check CVT position. Refer to [CVT-173. "Checking of CVT Position"](#).

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OK or NG

OK >> GO TO 3.

NG >> Adjust CVT position. Refer to [CVT-172, "Adjustment of CVT Position"](#).

3. CHECK CVT FLUID LEVEL

Check CVT fluid level. Refer to [CVT-14, "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-35, "Inspections before Trouble Diagnosis"](#).

OK or NG

OK >> GO TO 5.

NG >> Check the malfunctioning item. Refer to [CVT-35, "Inspections before Trouble Diagnosis"](#).

5. CHECK SYMPTOM

Check again. Refer to [CVT-40, "Cruise Test"](#).

OK or NG

OK >> **INSPECTION END**

NG >> GO TO 6.

6. CHECK TCM

1. Check TCM input/output signals. Refer to [CVT-44, "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-192, "Removal and Installation \(MR20DE\)"](#) (MR20DE), [CVT-194, "Removal and Installation \(QR25DE\)"](#) (QR25DE).

NG >> Repair or replace damaged parts.

TCM

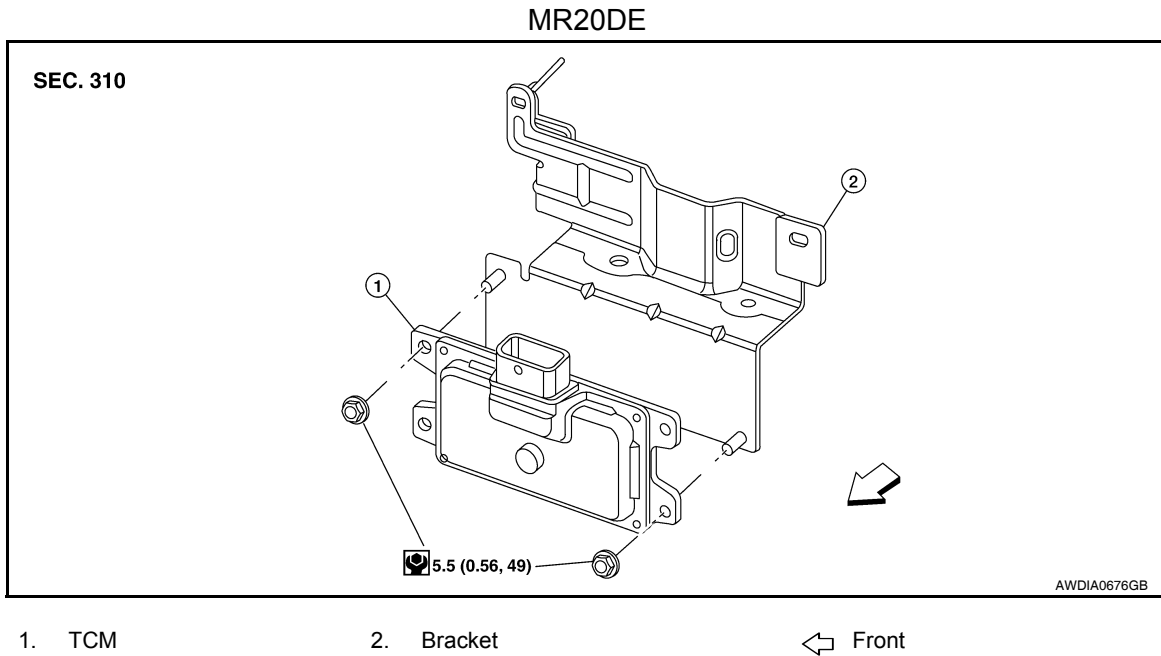
< SERVICE INFORMATION >

TCM

Removal and Installation

INFOID:000000005284324

COMPONENTS



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 fresh air intake tube (upper). Refer to [EM-16](#).
3. Disconnect the TCM harness connector.
4. Remove the TCM (1).

INSTALLATION

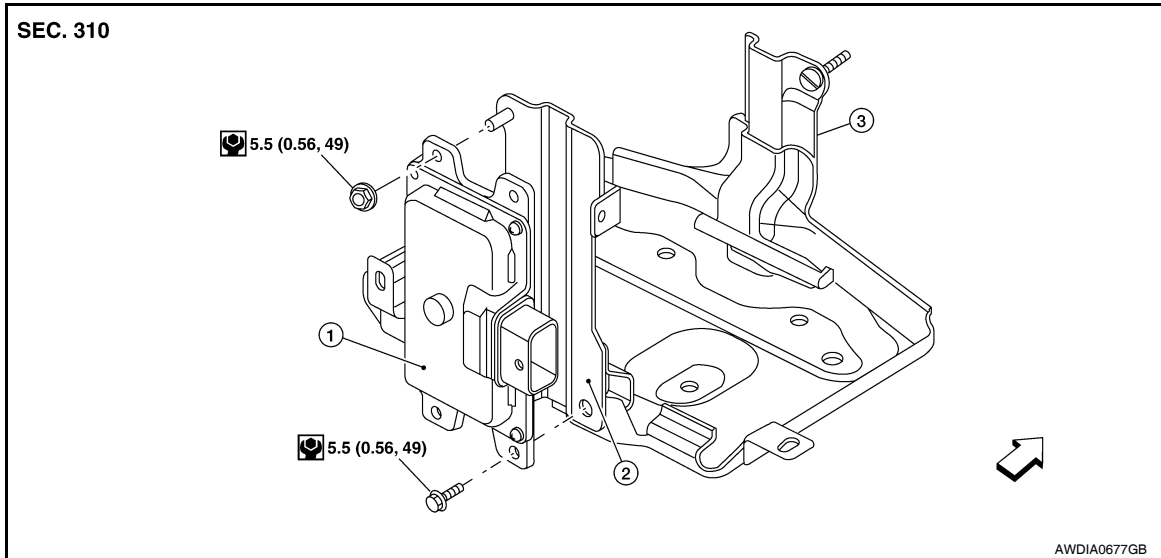
Installation is in the reverse order of removal.

COMPONENTS

TCM

< SERVICE INFORMATION >

QR25DE



1. TCM
⇐ Front

2. Bracket

3. Battery tray

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

< SERVICE INFORMATION >

CVT SHIFT LOCK SYSTEM

Description

INFOID:000000005284325

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.

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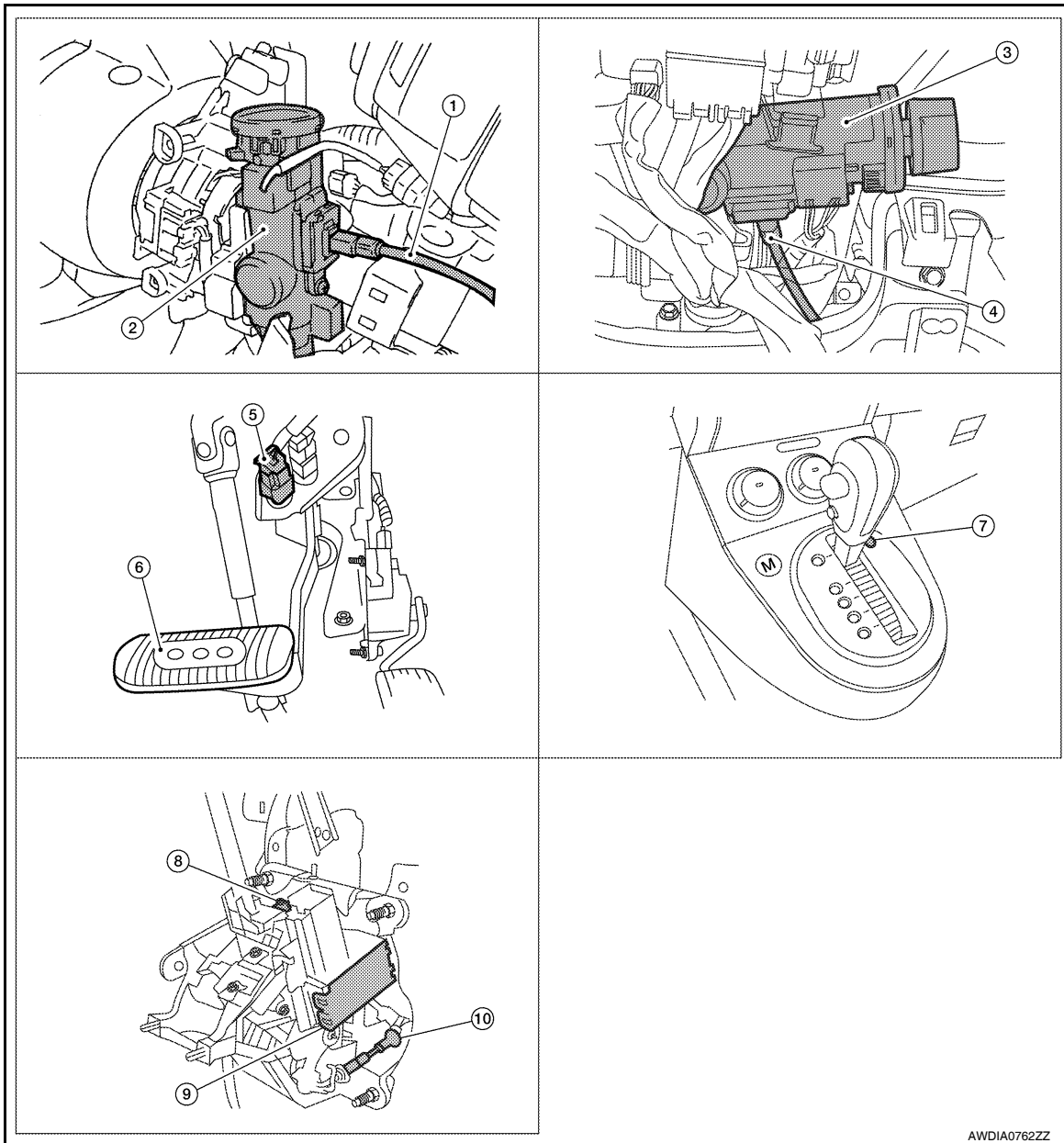
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CVT SHIFT LOCK SYSTEM

< SERVICE INFORMATION >

Shift Lock System Electrical Parts Location

INFOID:000000005284326



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 | | |

CVT SHIFT LOCK SYSTEM

< SERVICE INFORMATION >

Wiring Diagram - CVT - SHIFT

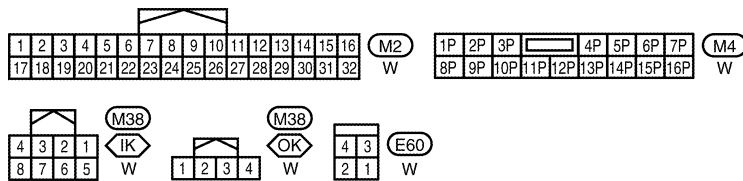
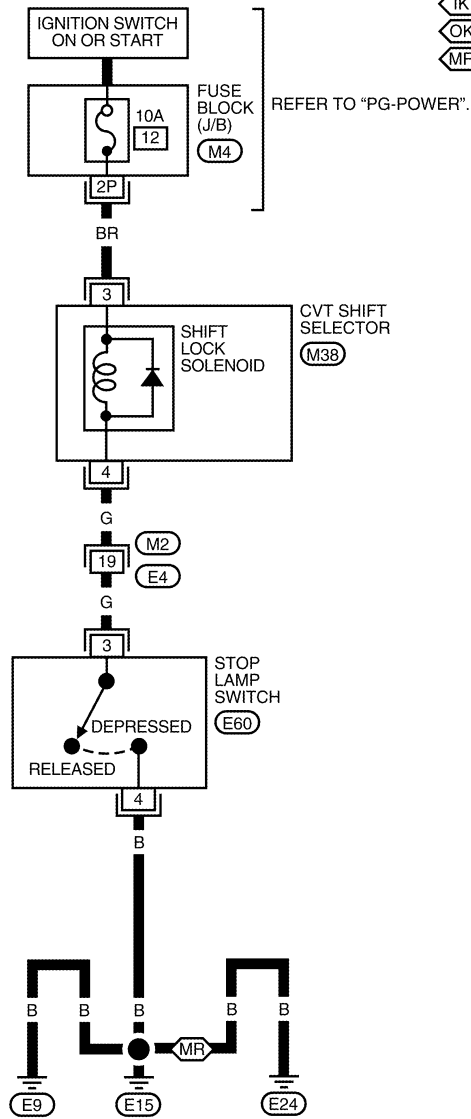
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CVT

CVT-SHIFT-01

- : WITH INTELLIGENT KEY
- : WITHOUT INTELLIGENT KEY
- : WITH MR20DE



ABDWA0167GB

Diagnosis Procedure

INFOID:000000005284328

WITHOUT INTELLIGENT KEY
SYMPTOM 1:

CVT SHIFT LOCK SYSTEM

< SERVICE INFORMATION >

- 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-174. "Removal and Installation"](#).

2. CHECK CVT POSITION

Check CVT position. Refer to [CVT-173. "Checking of CVT Position"](#).

OK or NG

- OK >> GO TO 3.
- NG >> Adjust control cable. Refer to [CVT-172. "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

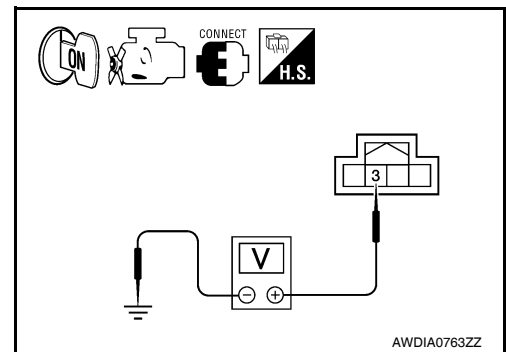
- OK >> **INSPECTION END**
- NG >> GO TO 4.

4. CHECK POWER SOURCE

Check voltage between CVT shift selector 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-3](#) .

OK or NG

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

6. CHECK STOP LAMP SWITCH POWER SOURCE

CVT SHIFT LOCK SYSTEM

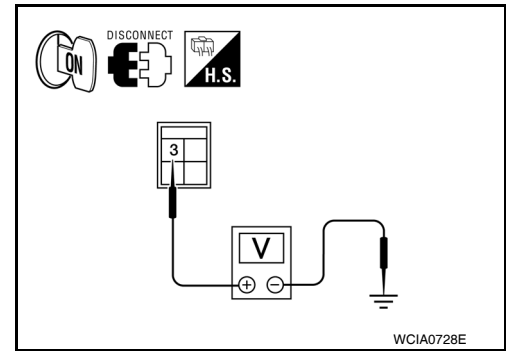
< SERVICE INFORMATION >

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.



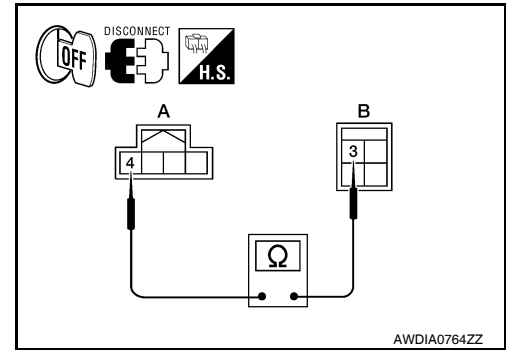
7. CHECK STOP LAMP SWITCH SUPPLY CIRCUIT

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.

OK or NG

- OK >> Replace shift lock solenoid assembly.
NG >> Repair or replace harness as necessary.



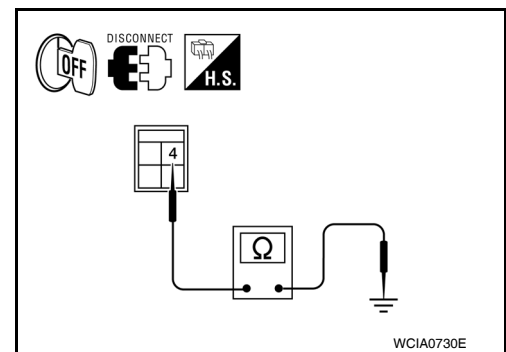
8. CHECK GROUND CIRCUIT

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

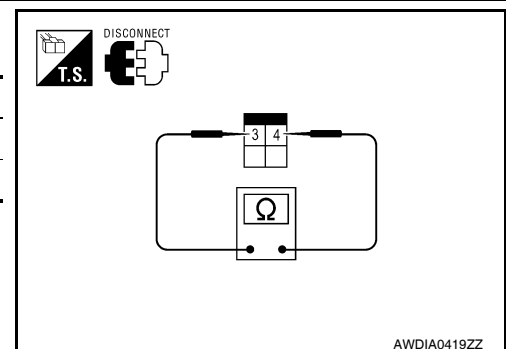
Check continuity between stop lamp switch terminals 3 and 4.

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-8**.

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:

CVT SHIFT LOCK SYSTEM

< SERVICE INFORMATION >

- 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-174. "Removal and Installation"](#).

2. CHECK CVT POSITION

Check CVT position. Refer to [CVT-173. "Checking of CVT Position"](#).

OK or NG

OK >> GO TO 3.

NG >> Adjust control cable. Refer to [CVT-172. "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.

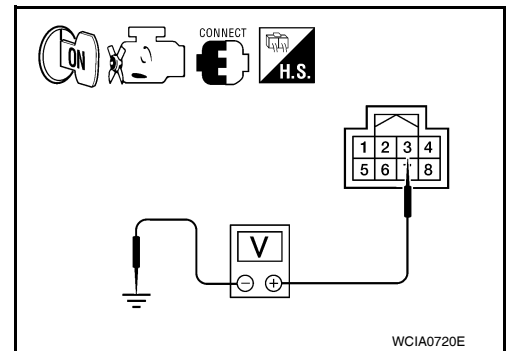
4. CHECK POWER SOURCE

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-3](#).

OK or NG

OK >> **INSPECTION END**

NG >> Repair or replace damaged parts.

6. CHECK STOP LAMP SWITCH POWER SOURCE

CVT SHIFT LOCK SYSTEM

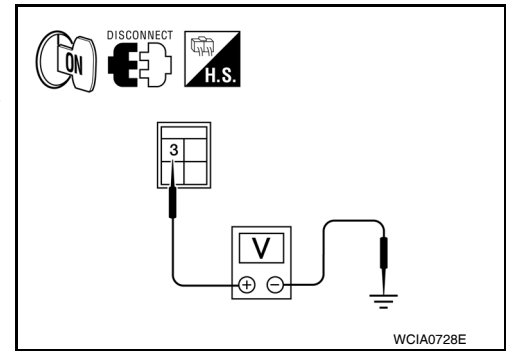
< SERVICE INFORMATION >

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.



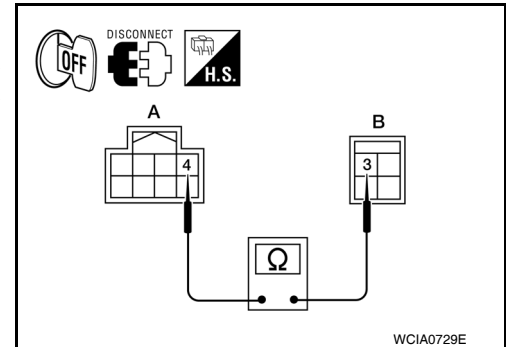
7. CHECK STOP LAMP SWITCH SUPPLY CIRCUIT

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.

OK or NG

- OK >> Replace shift lock solenoid assembly.
NG >> Repair or replace harness as necessary.



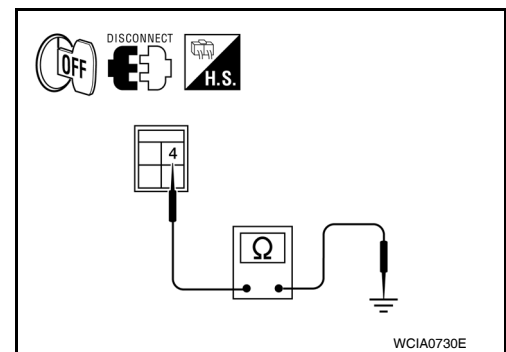
8. CHECK GROUND CIRCUIT

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

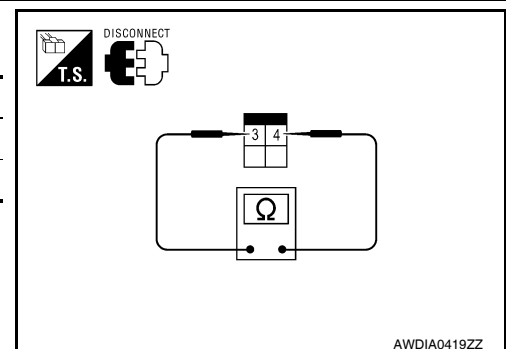
Check continuity between stop lamp switch terminals 3 and 4.

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-8.

OK or NG

- OK >> **INSPECTION END.**
NG >> Replace stop lamp switch.



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SHIFT CONTROL SYSTEM

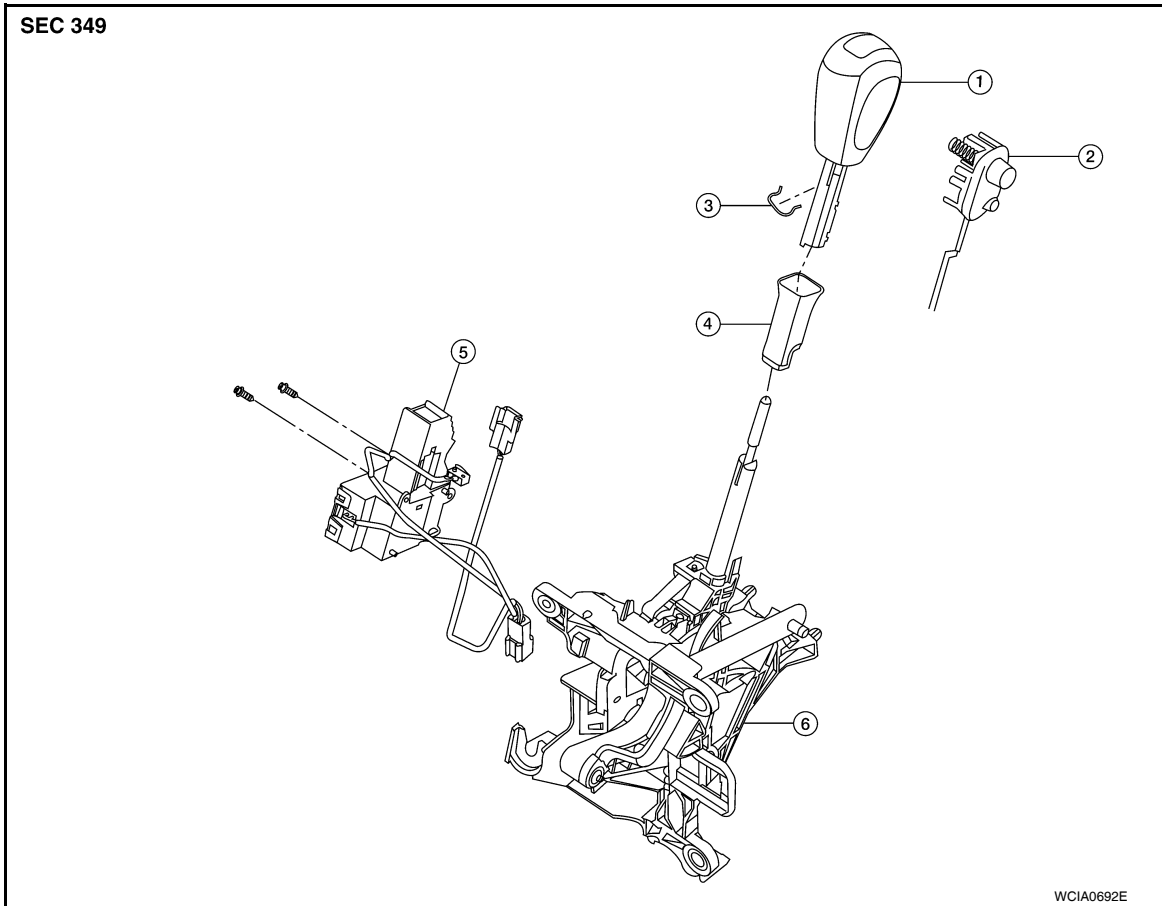
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SHIFT CONTROL SYSTEM

Removal and Installation

INFOID:000000005284329

CVT SHIFT SELECTOR ASSEMBLY COMPONENTS

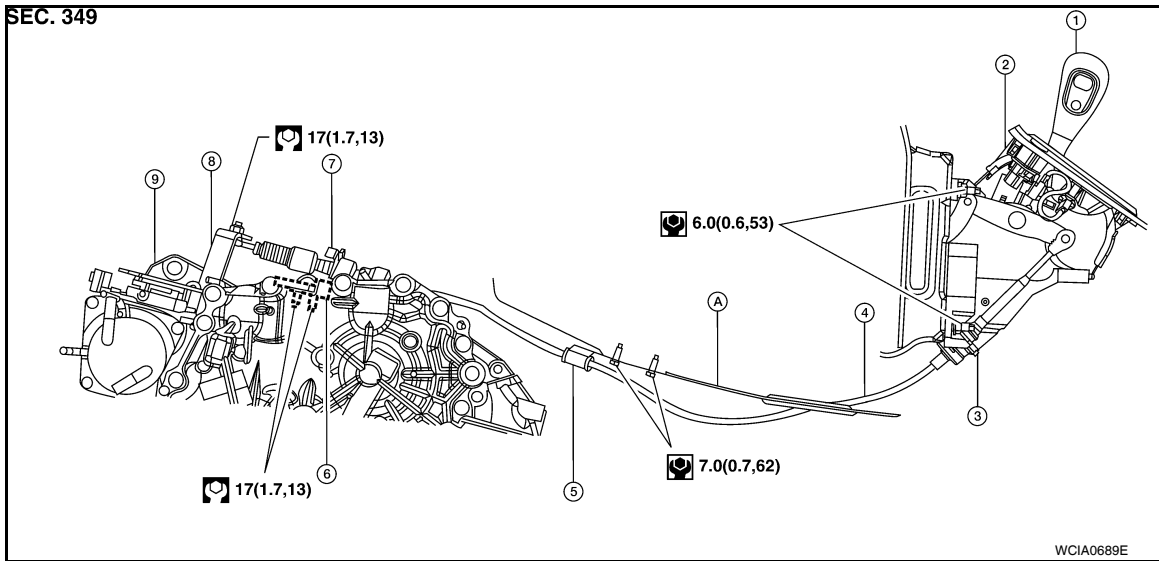


- | | | |
|-----------------------|---|--------------------------------|
| 1. Shift lever handle | 2. Shift lever button and overdrive connector switch assembly | 3. Lock pin |
| 4. Handle cover | 5. Shift lock solenoid and park position switch assembly | 6. CVT shift selector assembly |

CONTROL CABLE COMPONENTS

SHIFT CONTROL SYSTEM

< SERVICE INFORMATION >



- | | | |
|-----------------------|-----------------------------|-----------------------|
| 1. Shift lever handle | 2. CVT shift lever 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 lever in the "P" position.
2. Remove the IP center assembly. Refer to [IP-11](#).
3. Disconnect the CVT shift selector assembly harness connector.
4. Remove the key interlock cable from the CVT shift selector assembly. Refer to [CVT-174, "Removal and Installation"](#).
5. Remove the control cable from the CVT shift selector assembly.
6. Remove the nuts and the CVT shift selector assembly.

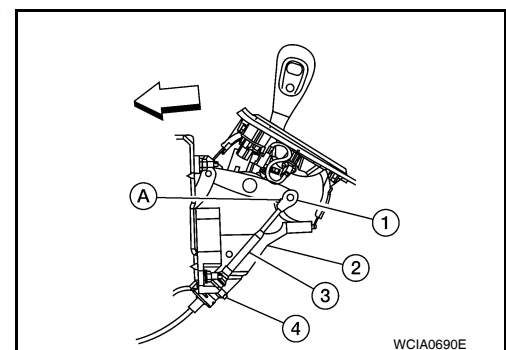
INSTALLATION

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-172, "Adjustment of CVT Position"](#) and [CVT-173, "Checking of CVT Position"](#).



Shift Lever Handle Removal and Installation

INFOID:000000005284330

REMOVAL

CAUTION:

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

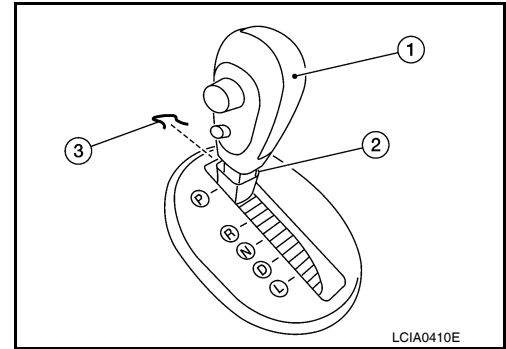
SHIFT CONTROL SYSTEM

< SERVICE INFORMATION >

1. Set shift lever handle (1) in "N" position.
2. Slide shift lever handle cover (2) downward.
3. Pull out lock pin (3) from shift lever handle (1).
4. Remove shift lever handle (1) and shift lever handle cover (2) as a set from shift lever.

CAUTION:

Do not push shift lever button.

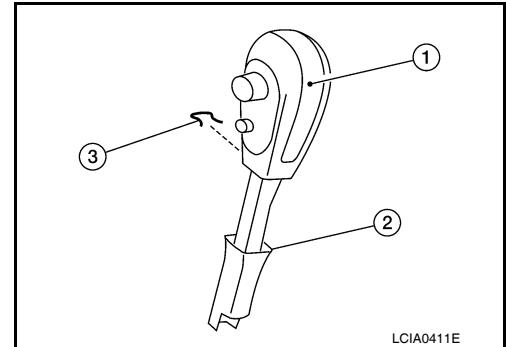


INSTALLATION

1. Insert lock pin (3) to shift lever handle (1).
2. Install handle cover (2) to shift lever handle (1).
3. Set shift lever in "N" position.
4. Install shift lever handle over shift lever until a click is felt.

CAUTION:

- Do not tilt shift lever handle when installing. Install it straight, and do not tap or apply any shock to install it.
- Do not push shift lever button.



Steering Shift Switch

INFOID:000000006054099

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:000000005284331

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 lever 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-170, "Removal and Installation"](#).

CAUTION:

Secure the manual lever when tightening nut.

5. Check the operation of the CVT. Refer to [CVT-173, "Checking of CVT Position"](#).

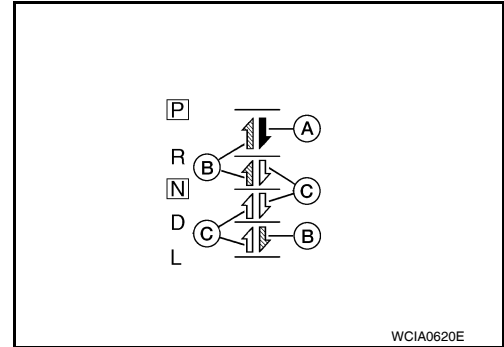
SHIFT CONTROL SYSTEM

< SERVICE INFORMATION >

Checking of CVT Position

INFOID:000000005284332

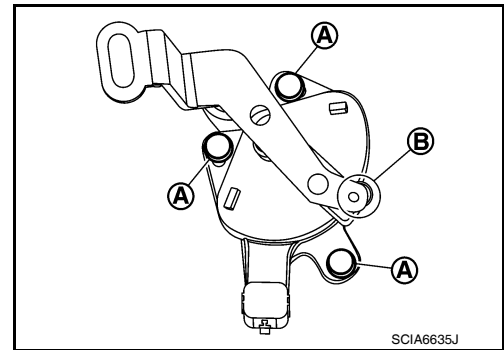
1. Place shift lever in "P" position, and turn ignition switch ON. (Do not start engine.)
2. Make sure shift lever can be shifted to other than "P" position when brake pedal is depressed. Also make sure shift lever can be shifted from "P" position only when brake pedal is depressed.
3. Move the shift lever and check for excessive effort, sticking, noise or rattle.
4. Confirm the shift lever 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 lever matches the position shown by the shift position indicator and the manual lever on the transaxle.
5. The method of operating the shift lever to individual positions correctly should be as shown.
 - (A): Press shift lever button to operate shift lever, while depressing the brake pedal.
 - (B): Press shift lever button to operate shift lever.
 - (C): Shift lever can be operated without pressing shift lever button.
6. Confirm the back-up lamps illuminate only when shift lever is placed in the "R" position. Confirm the back-up lamps do not illuminate when the shift lever is pushed toward the "R" position side with the gear position remained in the "P" or "N" position.
7. Confirm the engine can only be started with the shift lever in the "P" and "N" positions.
8. Make sure transaxle is locked completely in "P" position.



Adjustment of transmission range switch

INFOID:000000005284333

1. Move shift lever to "N" position.
 2. Remove control cable from manual lever.
 3. Loosen transmission range switch bolts (A). Insert a pin ($\varnothing 4$ 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 : 5.9 N·m (0.60 kg-m, 52 in-lb)**
5. Connect control cable on manual lever (B). Refer to [CVT-172](#), "[Adjustment of CVT Position](#)".



KEY INTERLOCK CABLE

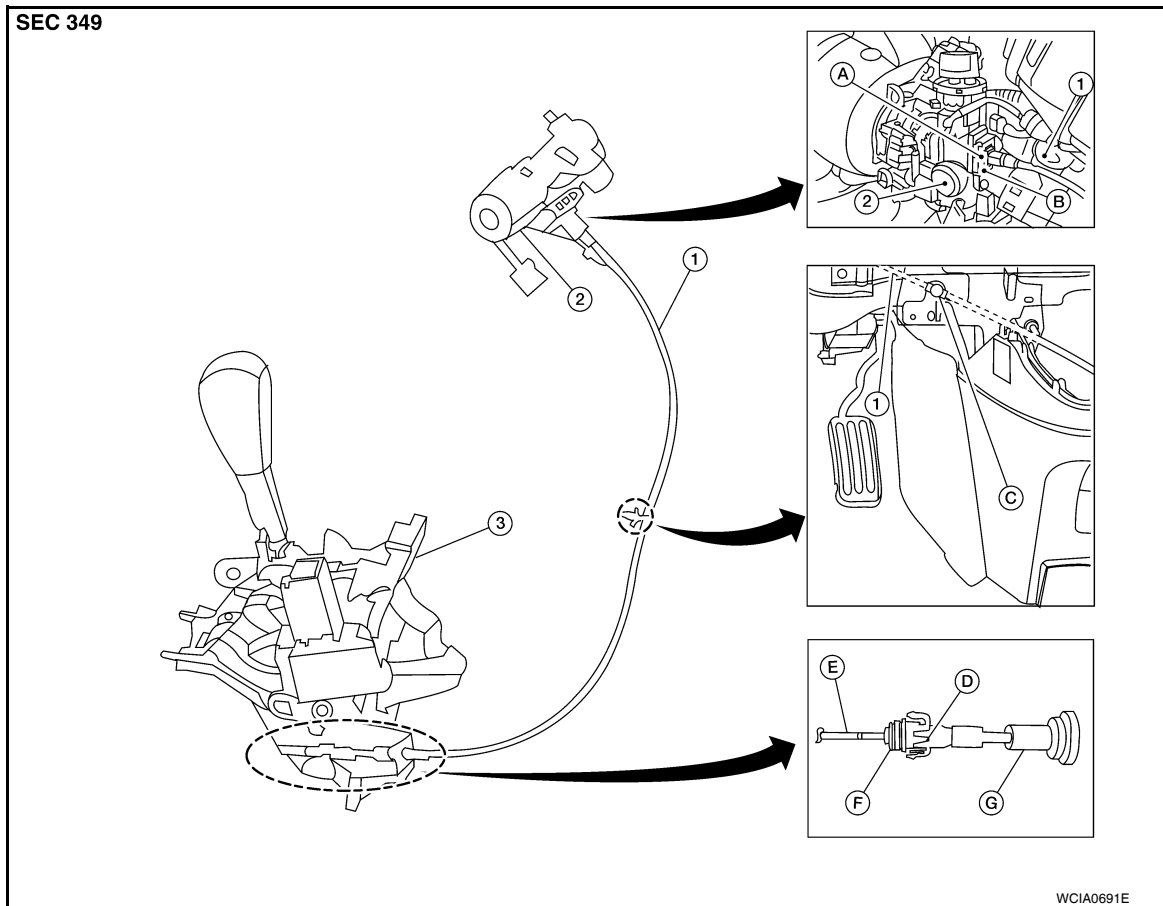
< SERVICE INFORMATION >

KEY INTERLOCK CABLE

Removal and Installation

INFOID:000000005284334

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:

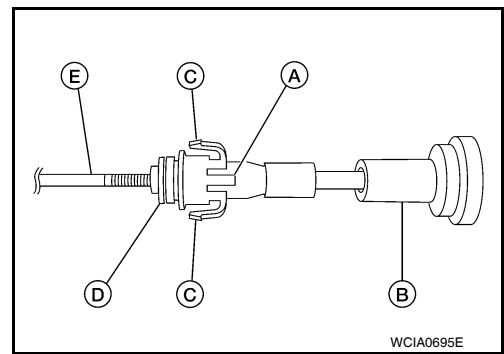
Make sure that parking brake is applied before removal/installation.

1. Place the shift lever in the "N" position.
2. Remove the shift lever handle. Refer to [CVT-171, "Shift Lever Handle Removal and Installation"](#).
3. Remove the IP center assembly. Refer to [IP-11](#).

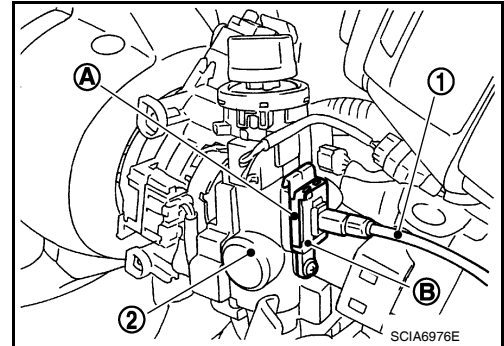
KEY INTERLOCK CABLE

< SERVICE INFORMATION >

- Slide the slider (A) toward the casing cap (B) while pressing tabs (C) on the slider to separate the slider (A) from the adjust holder (D).
- Remove the casing cap (B) from the cable bracket on the CVT shift selector assembly.
- Remove the key interlock cable from the key interlock rod (E).



- Remove steering column cover (upper and lower) and instrument lower finisher. Refer to [IP-11](#).
- Pull out the lock plate (A) from the holder (B).
- Remove the key interlock cable (1) from the key cylinder (2).



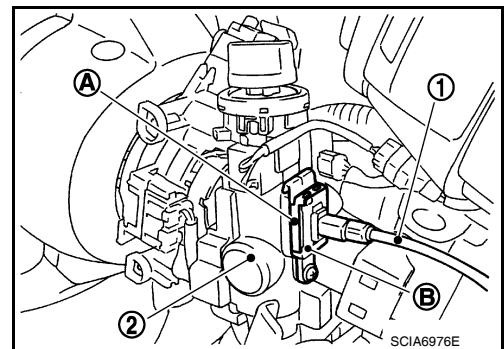
- Remove the clip and then remove the key interlock cable from the vehicle.

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.

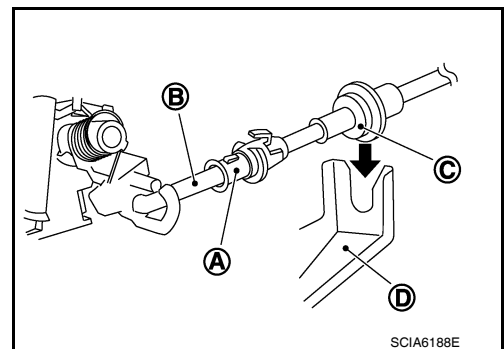
- Place the shift lever in the "P" position.
- Turn ignition switch to "ACC" or "ON" position.
- Set the key interlock cable (1) to the key cylinder (2).
- Install the lock plate (A) to the holder (B).
- Turn ignition switch to "LOCK" position.



- Temporarily install the adjust holder (A) to the key interlock rod (B).
- 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 caps (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.



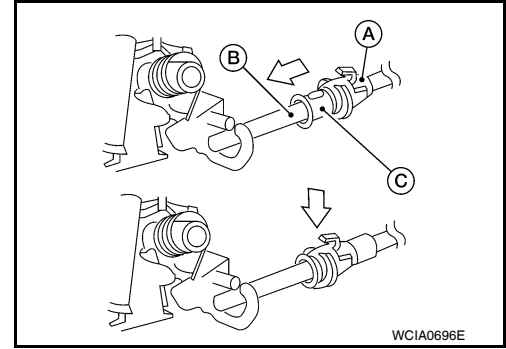
KEY INTERLOCK CABLE

< SERVICE INFORMATION >

8. Install shift handle in "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-163, "Description"](#).

ON-VEHICLE SERVICE

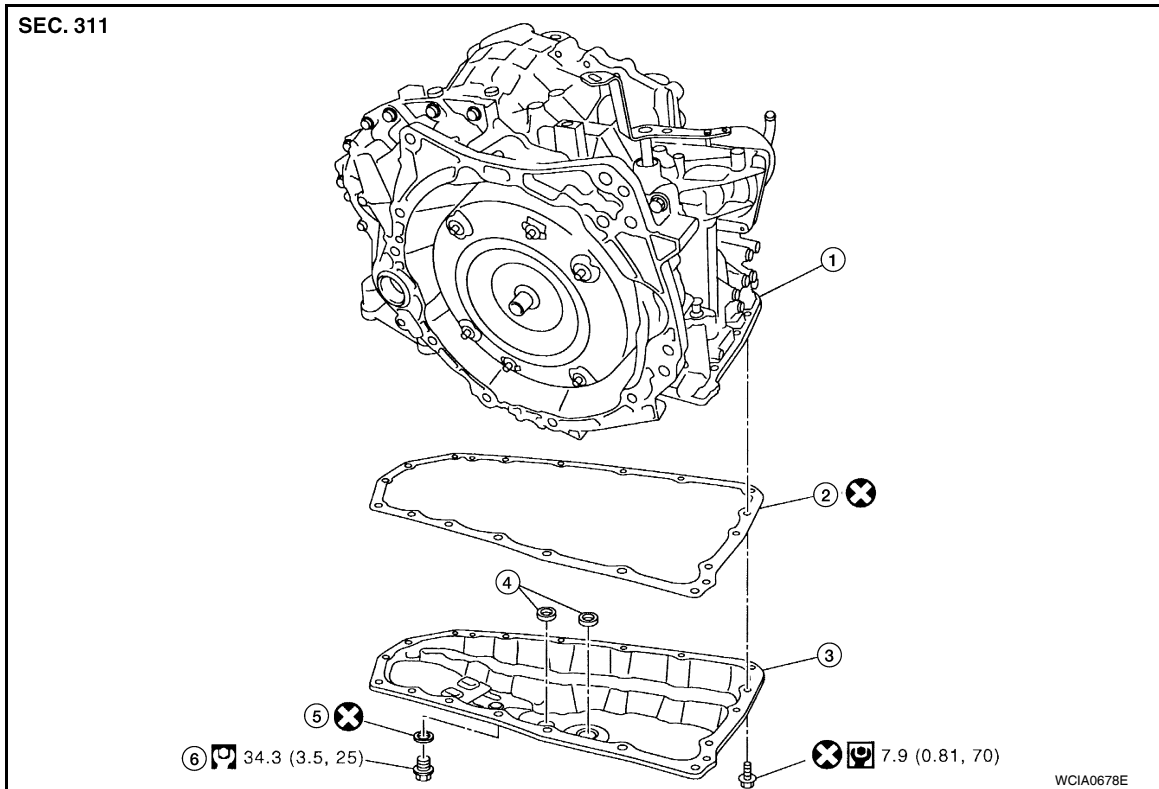
< SERVICE INFORMATION >

ON-VEHICLE SERVICE

Oil Pan

INFOID:000000005284335

COMPONENTS



- | | | |
|-----------------|----------------------|---------------|
| 1. CVT assembly | 2. Oil pan gasket | 3. Oil pan |
| 4. Magnet | 5. Drain plug gasket | 6. Drain plug |

Removal

1. Remove drain plug from oil pan and then drain the CVT fluid.
2. Remove drain plug gasket.
3. Remove oil pan bolts.
4. Remove oil pan and oil pan gasket.

CAUTION:

Check for foreign materials in the oil pan to help determine the cause of any malfunction. If the CVT fluid is very dark, smells burned, or contains foreign particles, frictional material (clutches) may need replacement. A tacky film that will not wipe clean indicates varnish build up. Varnish can cause valves to stick and can inhibit pump pressure.

Installation

1. 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.

2. Install the oil pan assembly to the transaxle case, and then temporarily tighten the oil pan bolt.

CAUTION:

Never reuse oil pan bolts.

ON-VEHICLE SERVICE

< SERVICE INFORMATION >

3. Tighten the oil pan bolts in the order shown to the specified torque.
4. Tighten the oil pan bolts again clockwise from (1) shown to the specified torque.
5. Install drain plug gasket to drain plug.

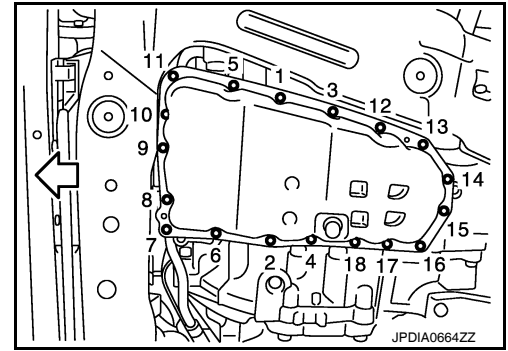
CAUTION:

Never reuse drain plug gasket.

6. Install drain plug to oil pan.

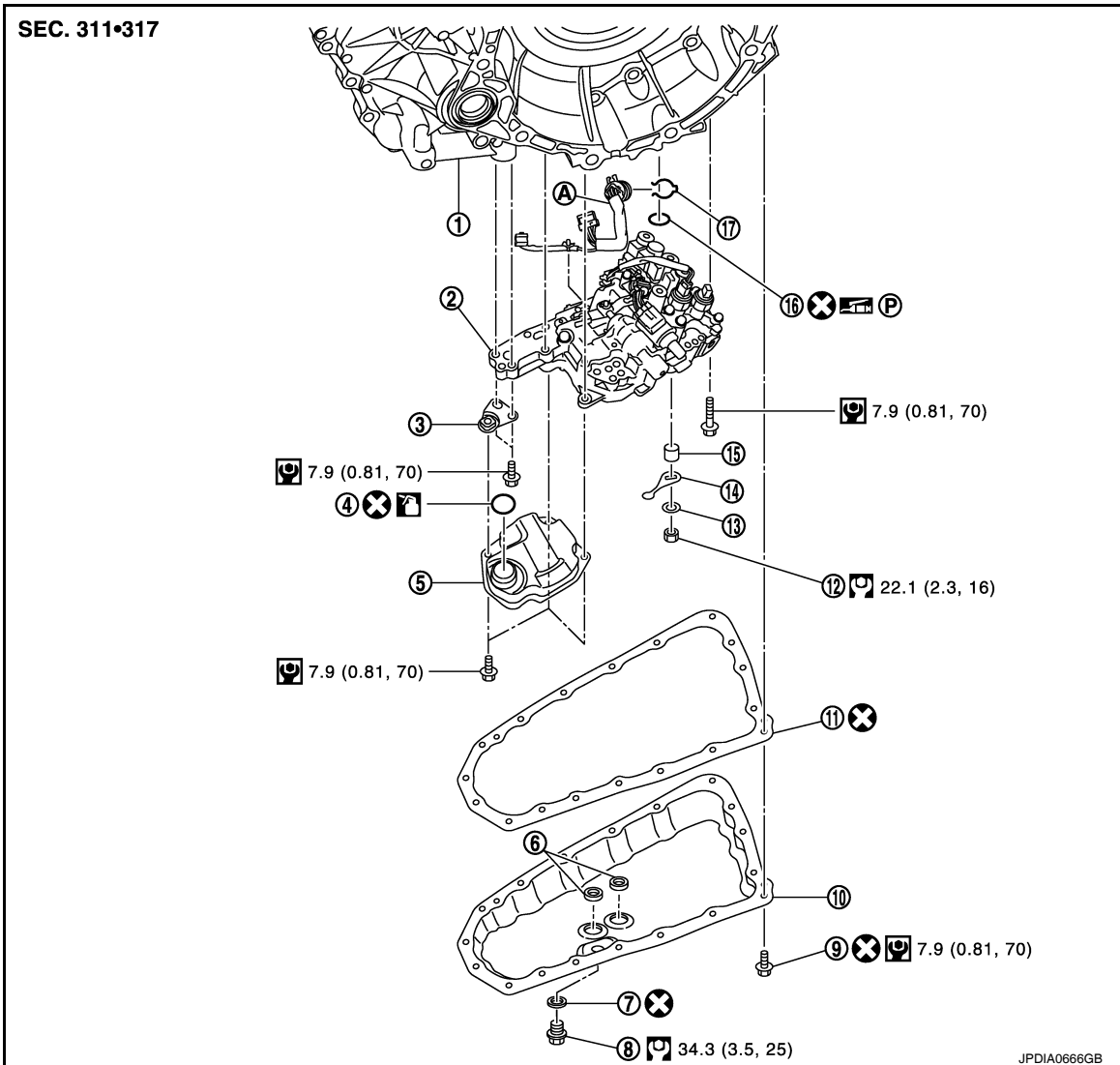
CAUTION:

- After installation is complete, fill CVT with recommended CVT fluid and check for CVT fluid leakage and CVT fluid level. Refer to [CVT-14, "Checking CVT Fluid"](#).



Control Valve

INFOID:000000005284336



JPDIA0666GB

- | | | |
|-----------------------|--------------------------|-----------------|
| 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 | |

ON-VEHICLE SERVICE

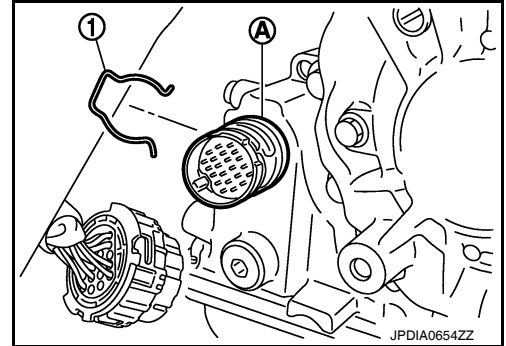
< SERVICE INFORMATION >

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 \(MR20DE Battery\)"](#), or [SC-8. "Removal and Installation \(QR25DE Battery\)"](#).
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).



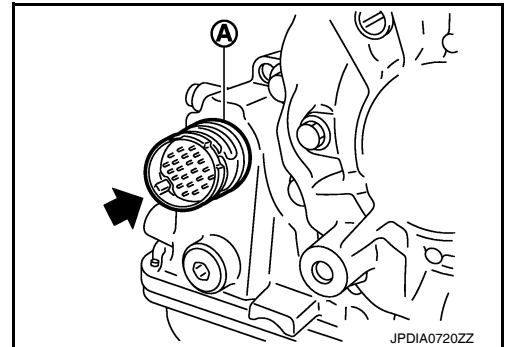
6. Press the CVT unit connector (A) into the transaxle case.

CAUTION:

Never damage the CVT unit connector.

NOTE:

Clean around the connector to prevent foreign materials from entering into the transaxle case.



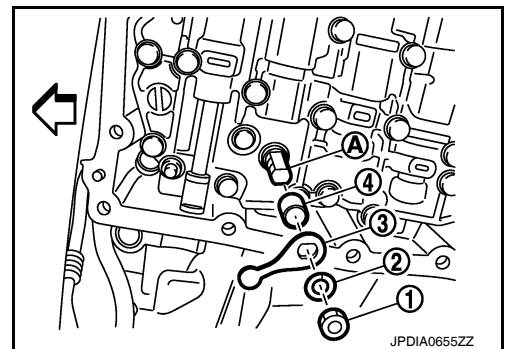
7. Remove the oil pan bolts, and then remove the oil pan and oil pan gasket.
8. Remove the magnets from the oil pan.
9. Remove the lock nut (1) and washer (2), and then remove the manual plate (3).

 : Vehicle front

10. Remove the collar (4) from the manual shaft (A).

CAUTION:

Never drop the collar.

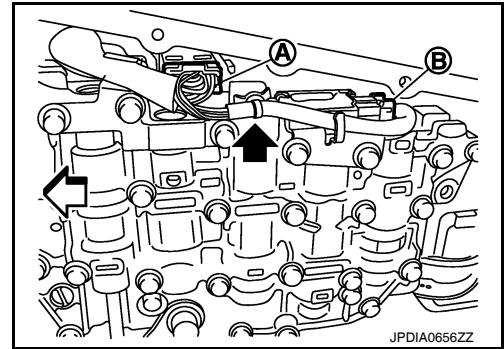


ON-VEHICLE SERVICE

< SERVICE INFORMATION >

11. Disconnect the connectors (A) and (B).

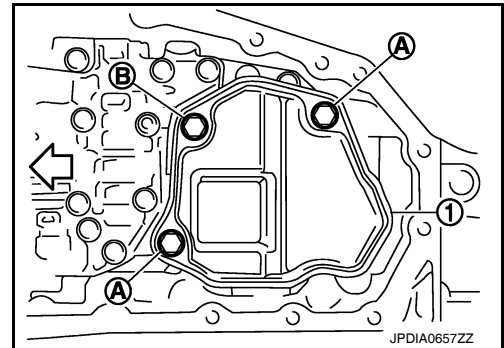
- ← : Clip
- ⇐ : Vehicle front



12. Remove the oil strainer assembly bolts (A) and (B), and then remove the oil strainer assembly (1).

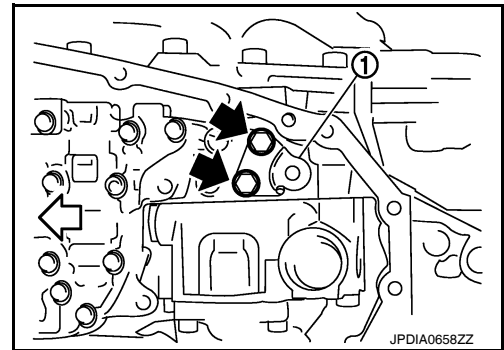
- ⇐ : Vehicle front

13. Remove O-ring from oil strainer assembly.



14. Remove the bracket (1).

- ← : Bolt
- ⇐ : Vehicle front

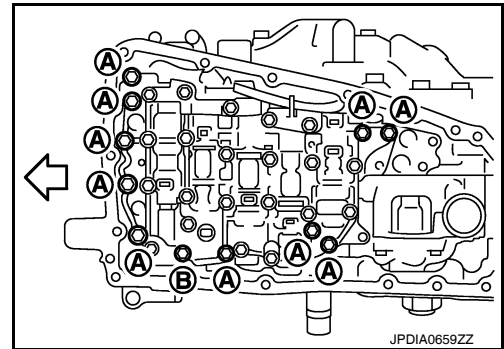


15. Remove the control valve bolts (A) and (B), and then remove the control valve from the transaxle case.

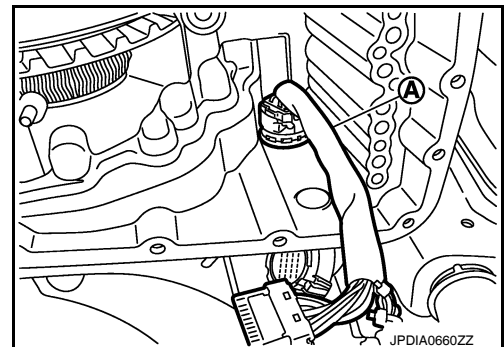
- ⇐ : Vehicle front

CAUTION:

Never drop the control valve, ratio control valve and manual shaft.



16. Remove CVT unit connector (A) from the transaxle case inside.

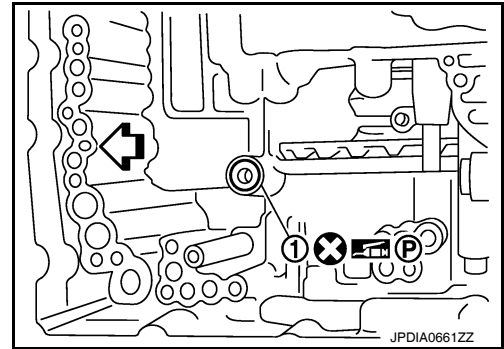


ON-VEHICLE SERVICE

< SERVICE INFORMATION >

17. Remove the lip seal (1) from the transaxle case.

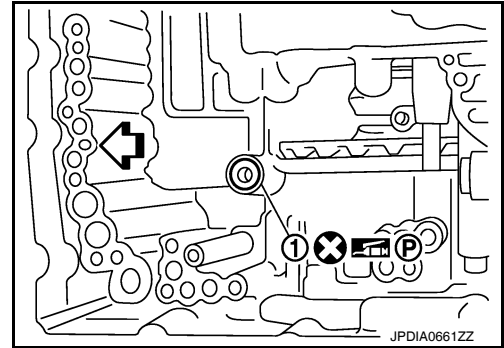
← : Vehicle front



INSTALLATION

1. Install the lip seal (1) to the transaxle case.

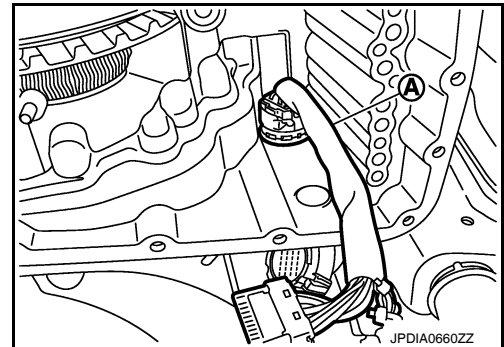
← : Vehicle front



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.



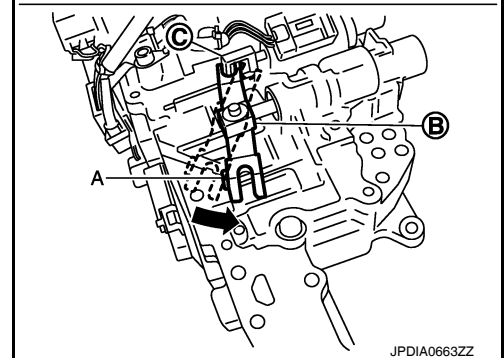
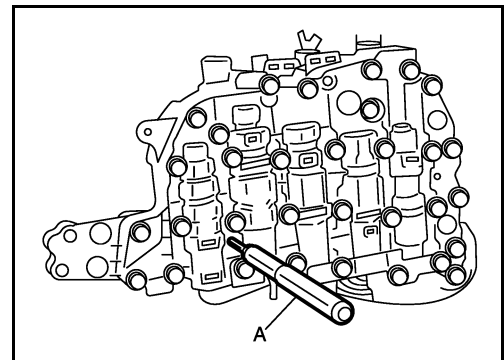
3. Press in the ratio control valve (B) in the (←) direction, and then fix the linkage in the position shown with the linkage pin (A) from the back of control valve through the hole for fixing.

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 linkage pin. If it is dropped, repeat the installation procedure from step 3.
- Never pinch the harness into between the control valve and the transaxle case.



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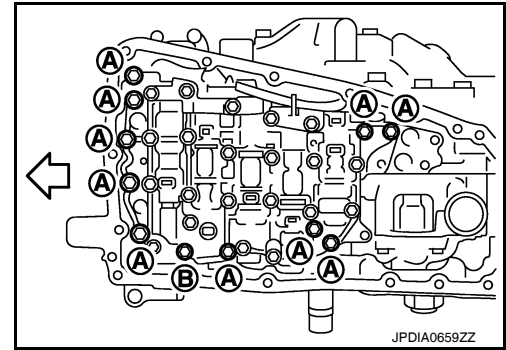
ON-VEHICLE SERVICE

< SERVICE INFORMATION >

6. Fix 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



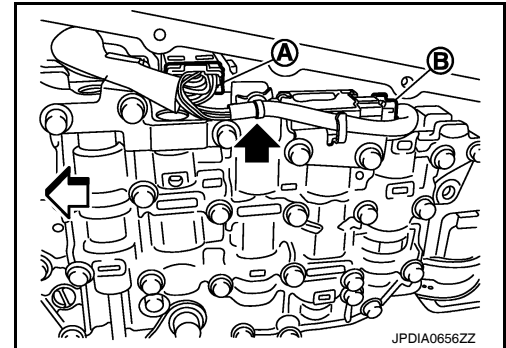
7. Pull the linkage pin out.
8. Connect the connectors (A) and (B).

← : Clip

⇐ : Vehicle front

CAUTION:

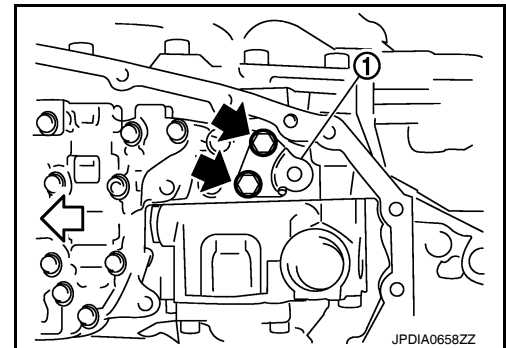
- Never pinch the harness into between the control valve and the transaxle case.
- Securely insert the connector until it clicks and locks.



9. Install the bracket (1).

← : Bolt

⇐ : Vehicle front



10. Install O-ring to oil strainer assembly.

CAUTION:

- Never 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

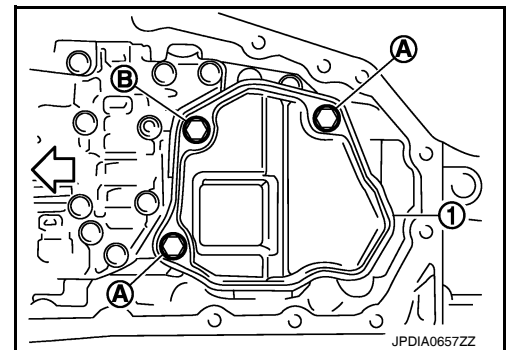
NOTE:

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.



ON-VEHICLE SERVICE

< SERVICE INFORMATION >

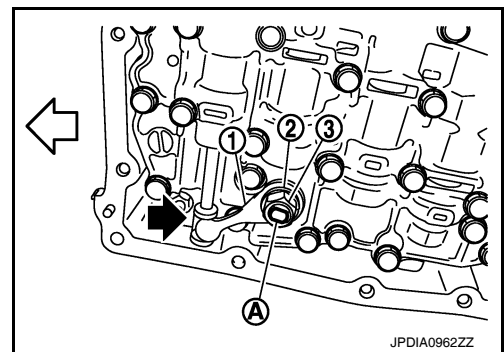
13. Install the manual plate (1) while aligning with the groove (A) of the manual valve.

CAUTION:

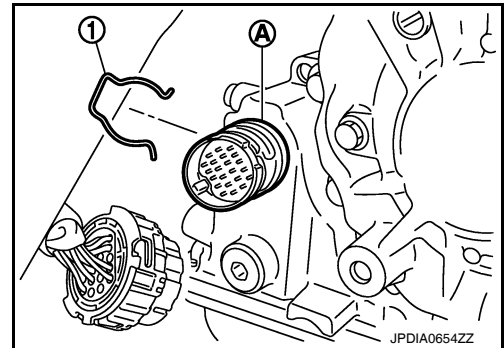
Assemble the manual plate while aligning its end with the cutout (←) of the manual valve.

← : 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 magnet while aligning it 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.

1. Install the oil pan gasket to the oil pan.

CAUTION:

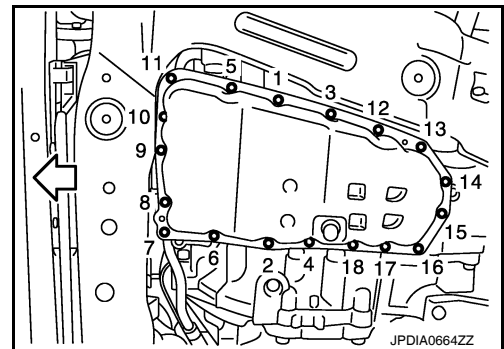
- Completely wipe out any moisture, oil, and old gasket from the oil pan gasket mating surface and bolt hole of oil pan and transaxle case.
- Never reuse oil pan gasket.

2. Install the oil pan assembly to the transaxle case, and then temporarily tighten the oil pan bolt.

CAUTION:

Never reuse oil pan bolts.

3. Tighten the oil pan bolts in the order shown to the specified torque.
4. Tighten the oil pan bolts again clockwise from (1) shown to the specified torque.



19. Install drain plug gasket to drain plug.

CAUTION:

Never reuse drain plug gasket.

20. Install drain plug to oil pan.

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

CVT fluid : Refer to [CVT-14, "Checking CVT Fluid"](#).

Fluid capacity : Refer to [MA-42, "Checking CVT Fluid"](#).

CAUTION:

- Use only Genuine NISSAN CVT Fluid NS-2. Never mix with other fluid.
- Using CVT fluid other than Genuine NISSAN CVT Fluid NS-2 will deteriorate in driveability and CVT durability, and may damage the CVT, which is not covered by the warranty.
- When filling CVT fluid, take care not to scatter heat generating parts such as exhaust.
- Sufficiently shake the container of CVT fluid before using.
- Delete CVT fluid deterioration date with CONSULT-III after changing CVT fluid. Refer to [CVT-46, "CONSULT-III Function \(TRANSMISSION\)"](#).

22. 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).

23. Check CVT fluid level and condition. Refer to [MA-42, "Checking CVT Fluid"](#).

ON-VEHICLE SERVICE

< SERVICE INFORMATION >

24. Connect battery cable to negative terminal. Refer to [SC-7, "Removal and Installation \(MR20DE Battery\)"](#) or [SC-8, "Removal and Installation \(QR25DE Battery\)"](#).

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 [MA-42, "Checking CVT Fluid"](#).

INSPECTION AFTER INSTALLATION

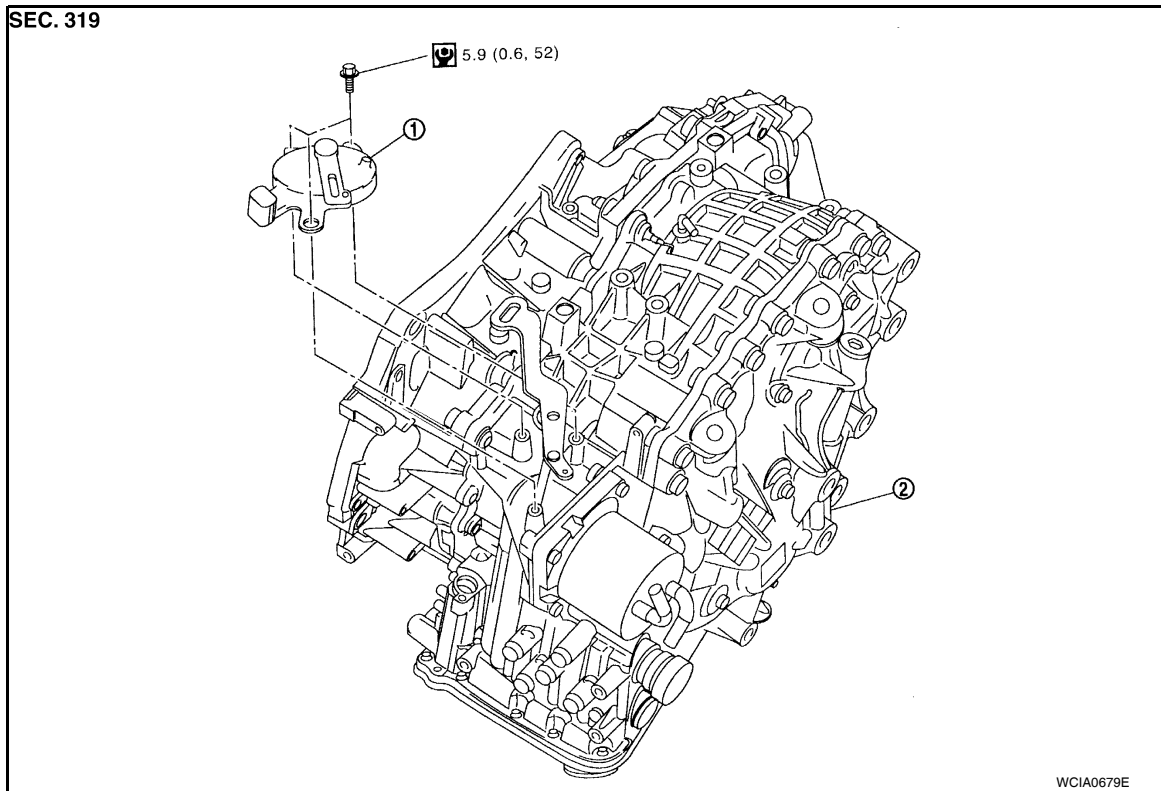
Erase the TCM data.

- Erase the CVT fluid degradation data. Refer to [CVT-46, "CONSULT-III 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:000000005284337

COMPONENTS



1. Transmission range switch 2. CVT assembly

NOTE:

- Align transmission range switch position when installing.
- After installation of transmission range switch, check the continuity of transmission range switch. Refer to [CVT-173, "Adjustment of transmission range switch"](#).
- After installation is complete, adjust and check CVT position. Refer to [CVT-172, "Adjustment of CVT Position"](#), [CVT-173, "Checking of CVT Position"](#).

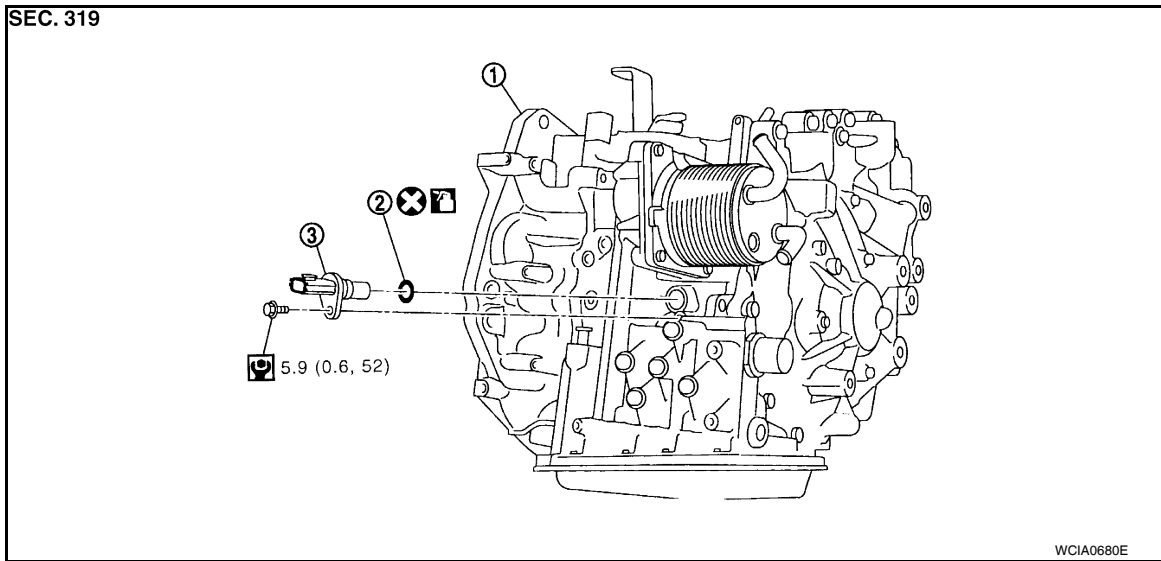
Primary Speed Sensor

INFOID:000000005284338

COMPONENTS

ON-VEHICLE SERVICE

< SERVICE INFORMATION >



1. CVT assembly

2. O-ring

3. Primary speed sensor

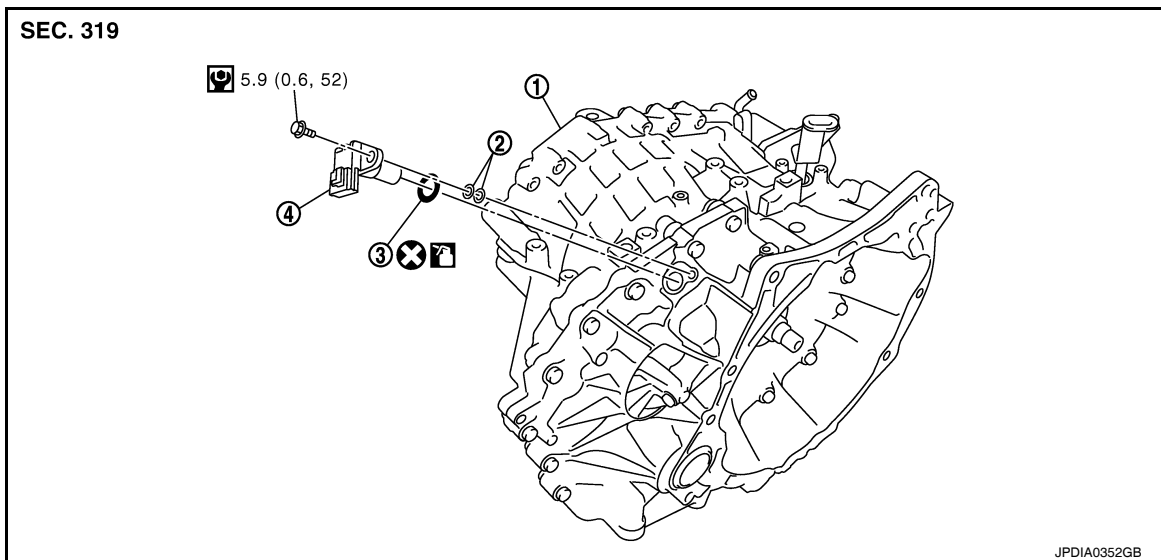
CAUTION:

- 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-14, "Checking CVT Fluid"](#).

Secondary Speed Sensor (MR20DE)

INFOID:000000005284339

COMPONENTS



1. CVT assembly

2. Shim

3. O-ring

4. Secondary speed sensor

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-14, "Checking CVT Fluid"](#).

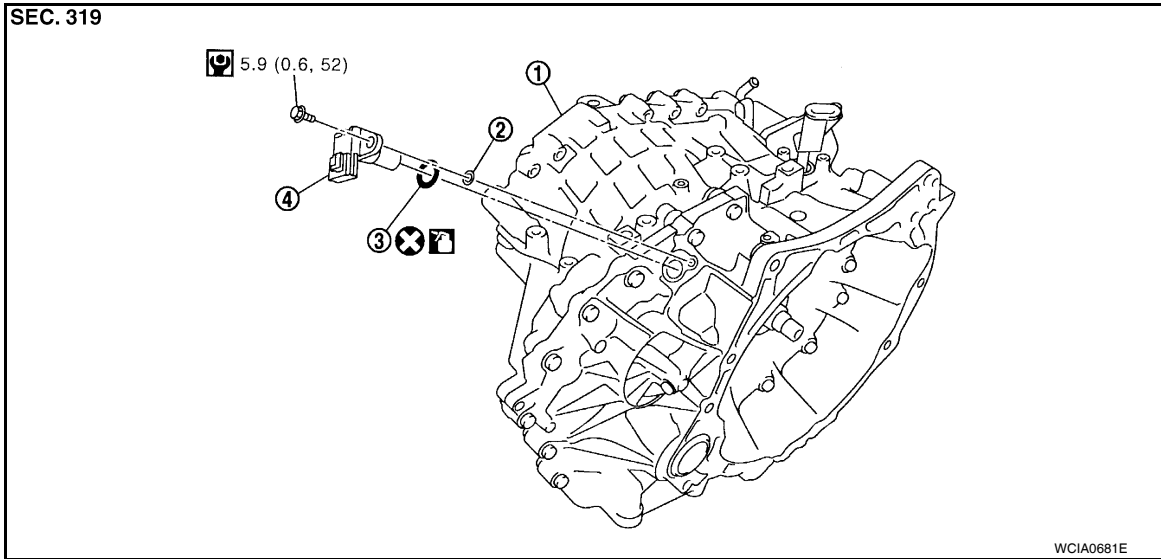
ON-VEHICLE SERVICE

< SERVICE INFORMATION >

Secondary Speed Sensor (QR25DE)

INFOID:000000005567743

COMPONENTS



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

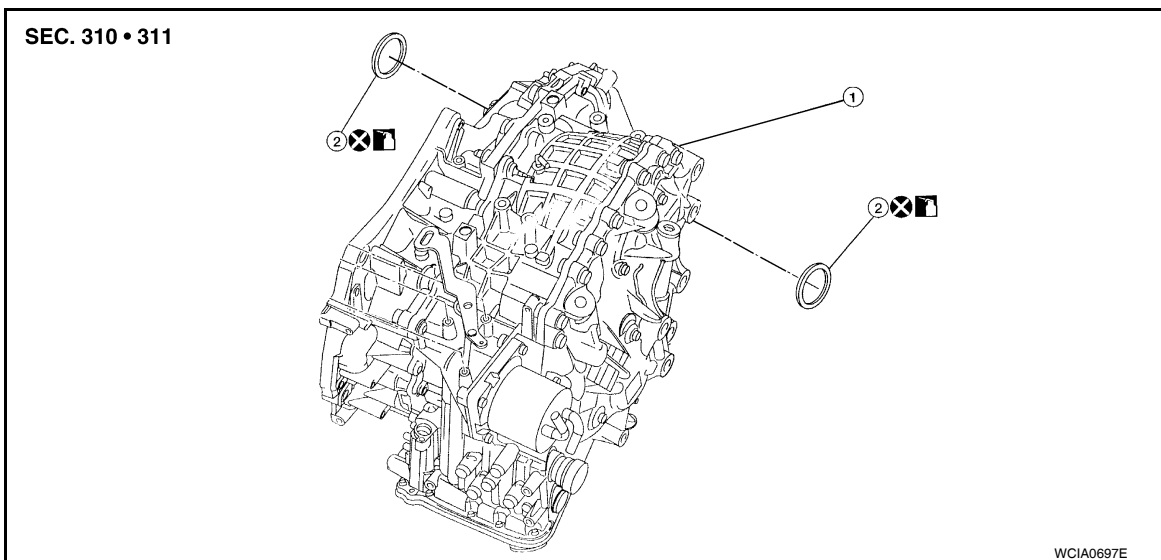
CAUTION:

- 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-14, "Checking CVT Fluid"](#).

Differential Side Oil Seal

INFOID:000000005284340

COMPONENTS



1. CVT assembly
2. Differential oil seal

:Apply CVT Fluid. Refer to [MA-15, "MR20DE"](#).

REMOVAL

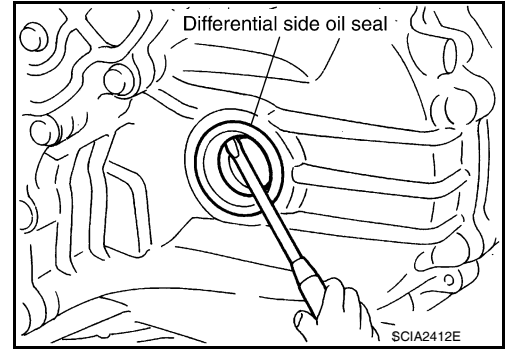
ON-VEHICLE SERVICE

< SERVICE INFORMATION >

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-14, "Checking CVT Fluid"](#).

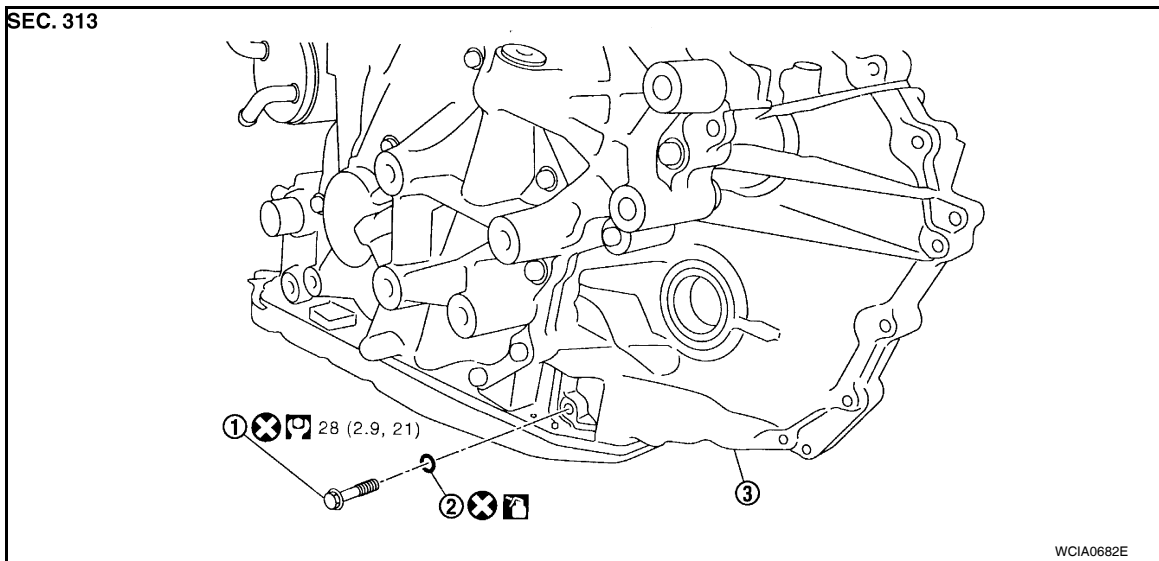
Oil Pump Fitting Bolt

INFOID:000000005284341

NOTE:

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

COMPONENTS



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

 : Apply CVT Fluid. Refer to [MA-15, "MR20DE"](#).

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-14, "Checking CVT Fluid"](#).

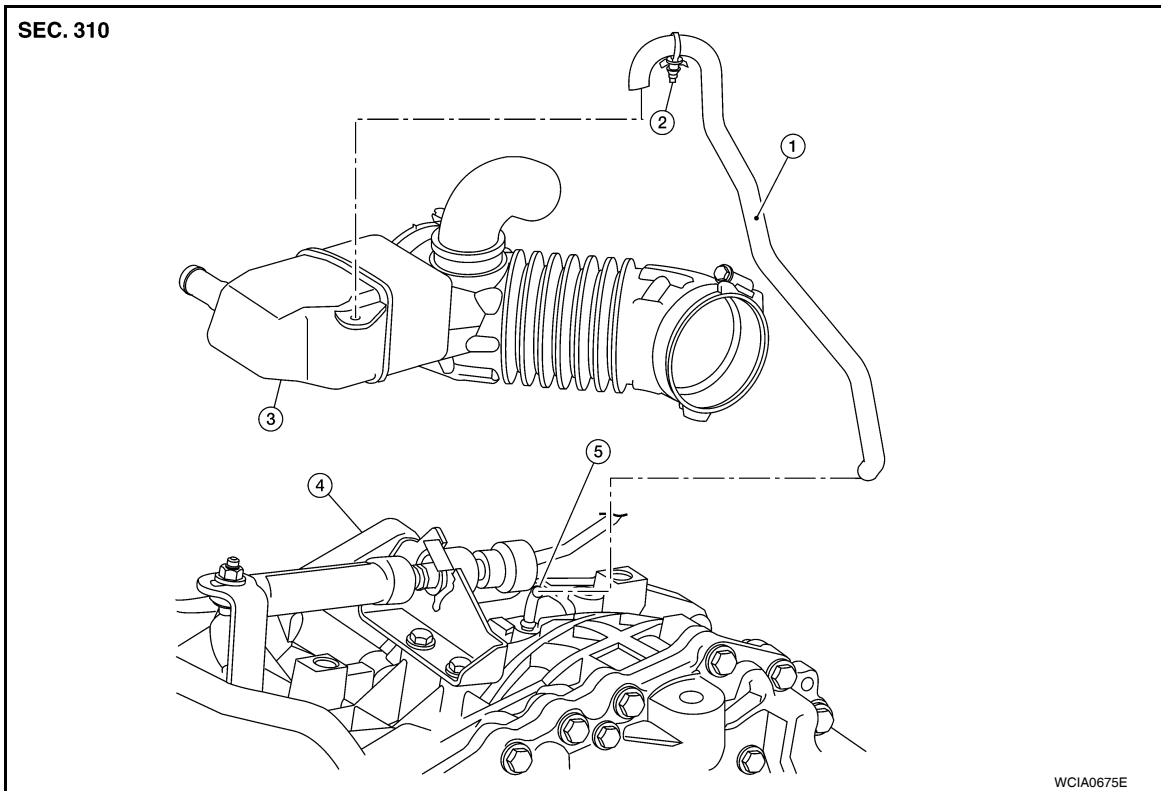
AIR BREATHER HOSE

< SERVICE INFORMATION >

AIR BREATHER HOSE

Removal and Installation (MR20DE)

INFOID:000000005284342



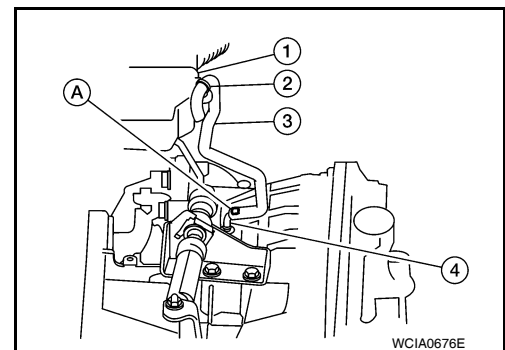
- | | | |
|----------------------|----------------------|--------------|
| 1. Air breather hose | 2. Clip | 3. Resonator |
| 4. CVT assembly | 5. Air breather tube | |

CAUTION:

Make sure air breather hose 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 tube bend position.
- When installing air breather hose (3) to the resonator (1) make sure to fully insert the clip (2).

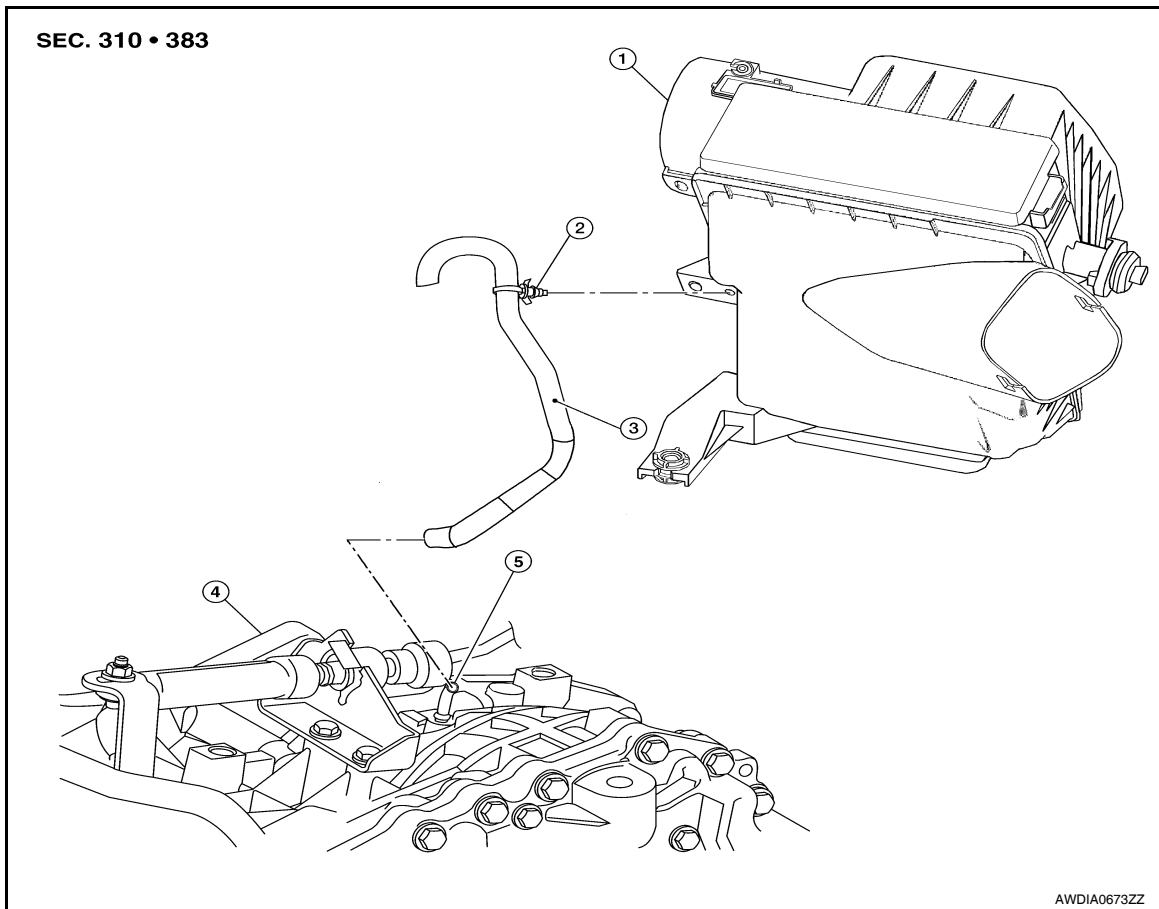


AIR BREATHER HOSE

< SERVICE INFORMATION >

Removal and Installation (QR25DE)

INFOID:000000005284343



- | | | |
|---------------------|----------------------|----------------------|
| 1. Air cleaner case | 2. Clip | 3. Air breather hose |
| 4. CVT assembly | 5. Air breather tube | |

CAUTION:

Make sure air breather hose 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 tube bend position.
- When installing air breather hose to the air cleaner case make sure to fully insert the clip.

CVT FLUID COOLER SYSTEM

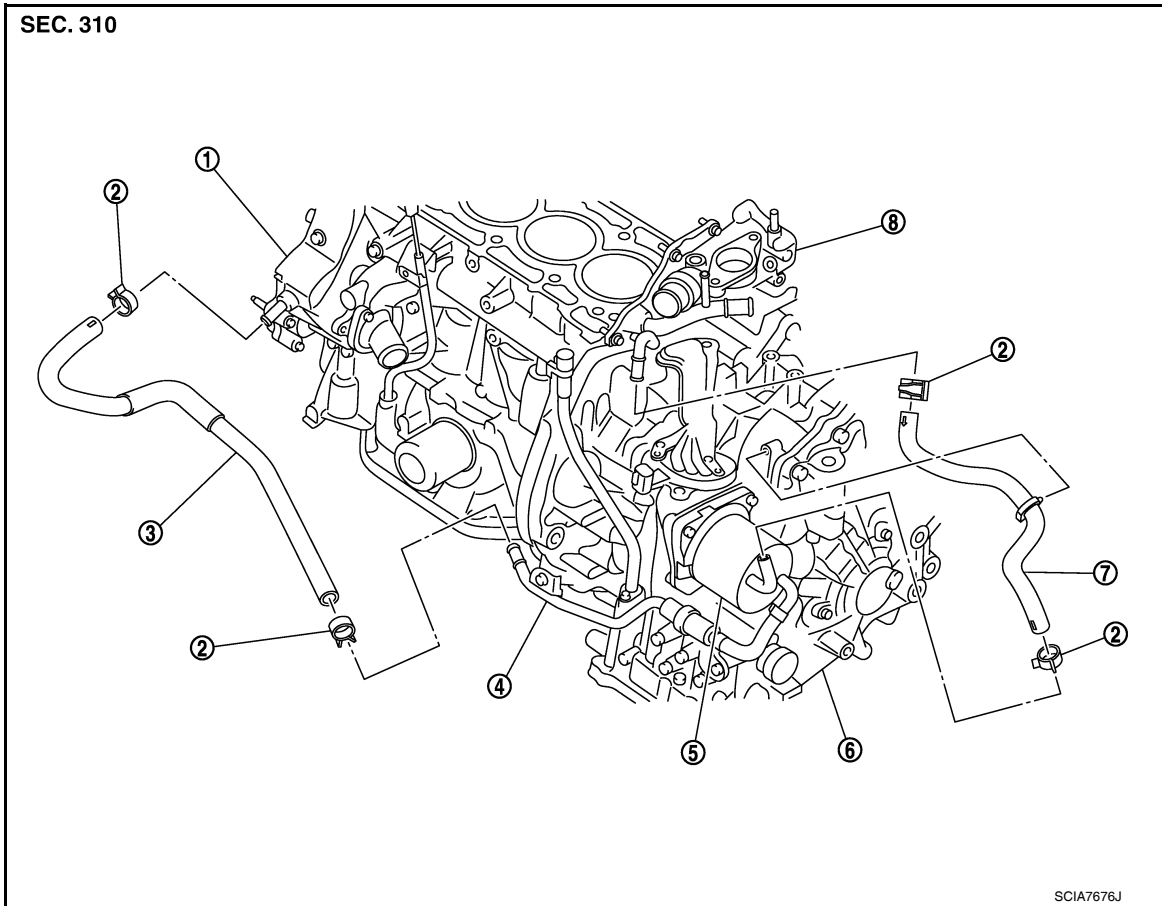
< SERVICE INFORMATION >

CVT FLUID COOLER SYSTEM

CVT Fluid Cooler Removal and Installation (MR20DE)

INFOID:000000005284344

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 | |

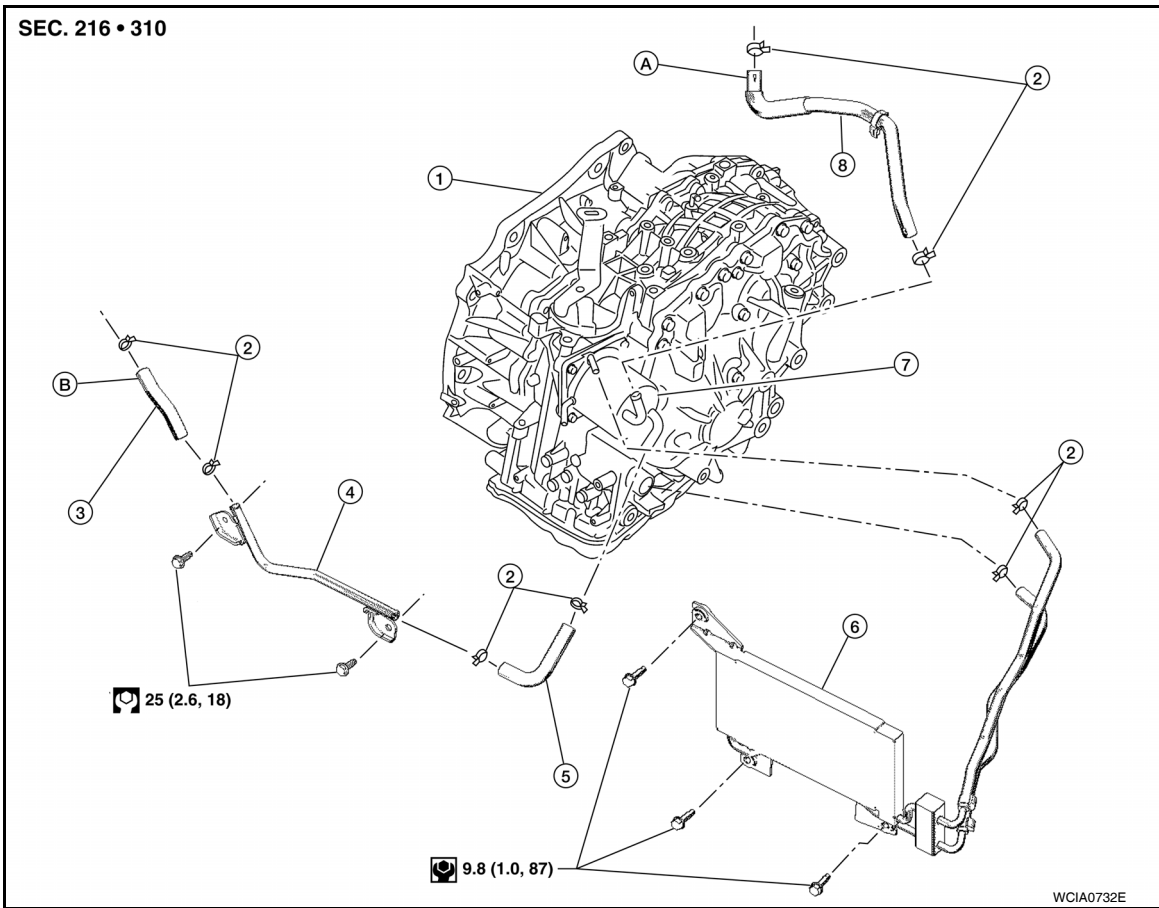
CVT Fluid Cooler Removal and Installation (QR25DE)

INFOID:000000005284345

COMPONENTS

CVT FLUID COOLER SYSTEM

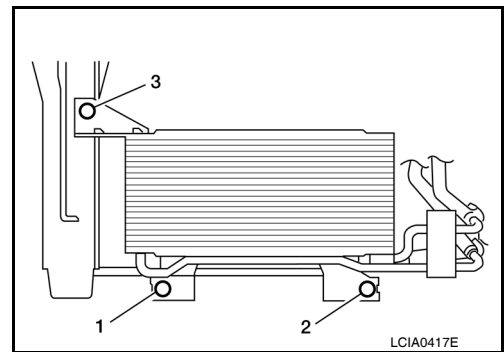
< SERVICE INFORMATION >



- | | | |
|---------------------|-------------------|------------------------------|
| 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:

Install and torque the CVT cooler assembly bolts to the specified torque in the order shown.



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TRANSAXLE ASSEMBLY

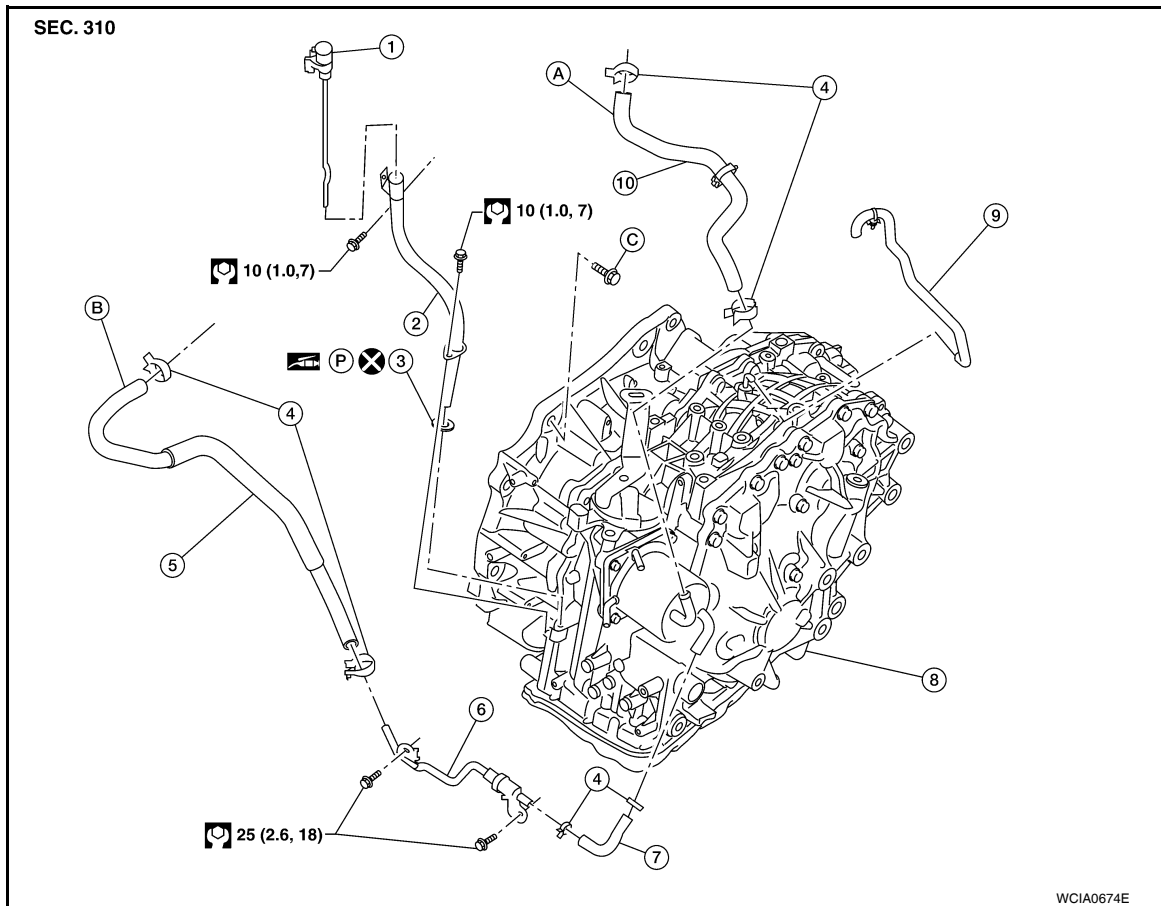
< SERVICE INFORMATION >

TRANSAXLE ASSEMBLY

Removal and Installation (MR20DE)

INFOID:000000005284346

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". | | |

REMOVAL

WARNING:

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

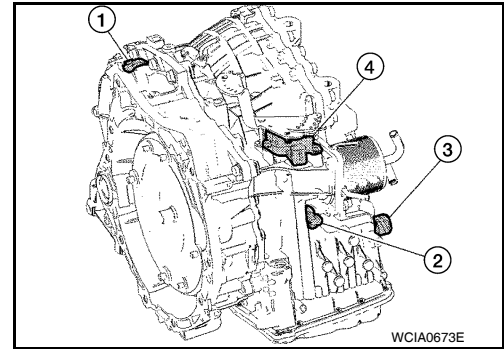
CAUTION:

- Perform this step engine is cold.
 - 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. Remove the engine and transaxle as an assembly. Refer to [EM-76, "Removal and Installation"](#).

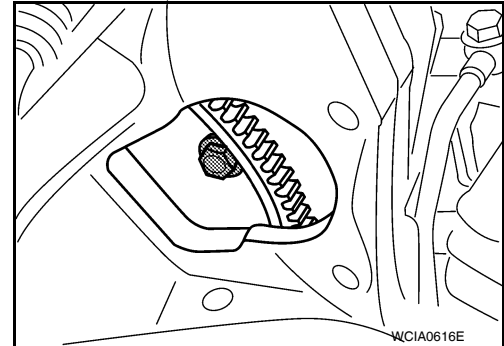
TRANSAXLE ASSEMBLY

< SERVICE INFORMATION >

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.**

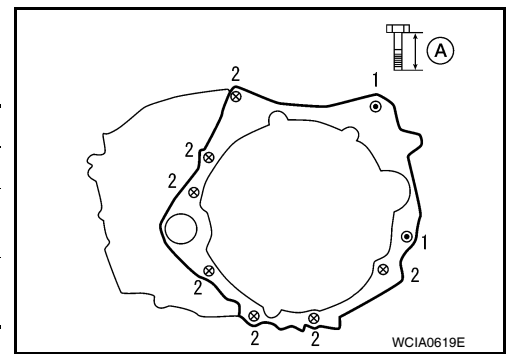
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TRANSAXLE ASSEMBLY

< SERVICE INFORMATION >

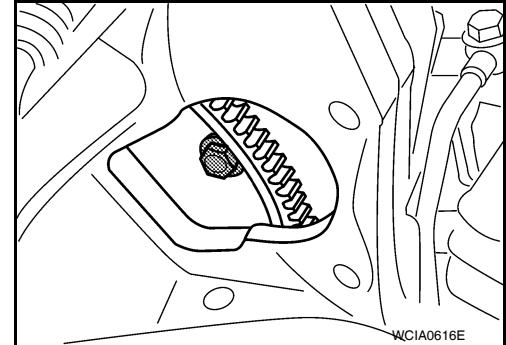
- When installing CVT to the engine, attach the bolts in accordance with the following standard.

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.

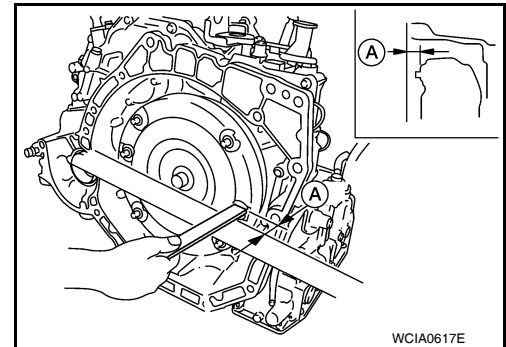
Converter nuts : 51 N·m (5.2 kg·m, 38 ft·lb)



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-14, "Checking CVT Fluid"](#).
- Check CVT position. Refer to [CVT-172, "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-46, "CONSULT-III 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"](#).

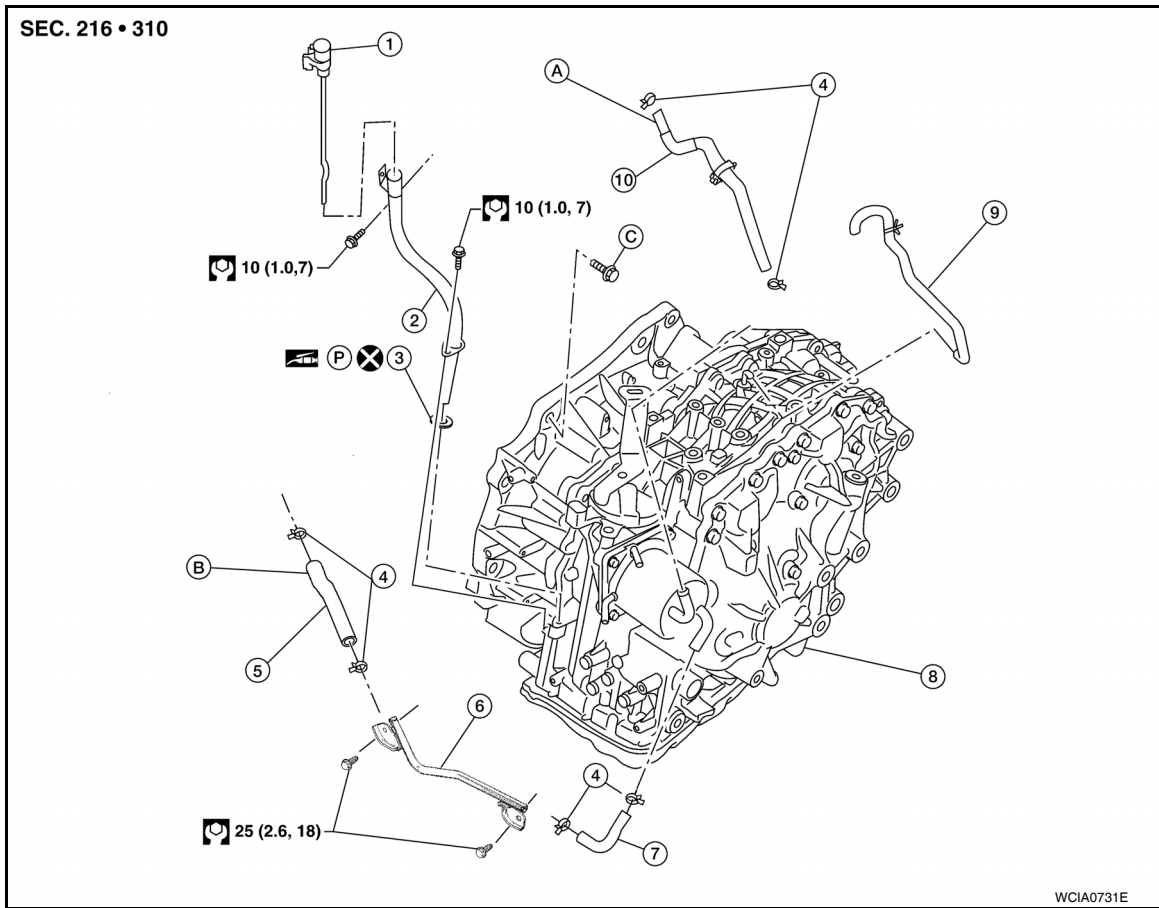
Removal and Installation (QR25DE)

INFOID:000000005284347

COMPONENTS

TRANSAXLE ASSEMBLY

< SERVICE INFORMATION >



- | | | |
|-----------------------------|-----------------------------|----------------------|
| 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". | | |

REMOVAL

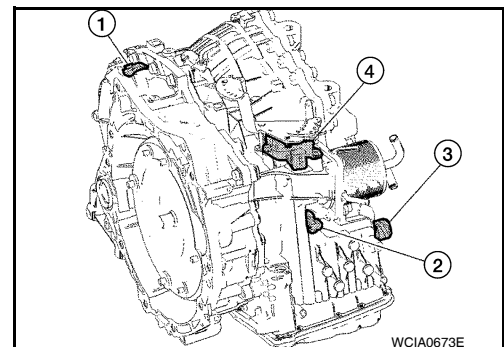
WARNING:

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

CAUTION:

- Perform this step engine is cold.
- 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. Remove the engine and transaxle as an assembly. Refer to [EM-184, "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.

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TRANSAXLE ASSEMBLY

< SERVICE INFORMATION >

NOTE:

Rotate the crankshaft clockwise viewed from front of engine for access to drive plate to torque converter nuts.

- 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.

- Remove the CVT to engine and engine to CVT bolts.
- Separate the CVT from the engine.
- 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

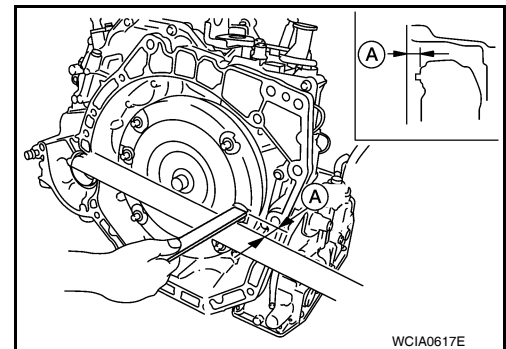
INSTALLATION

Installation is in the reverse order of removal.

CAUTION:

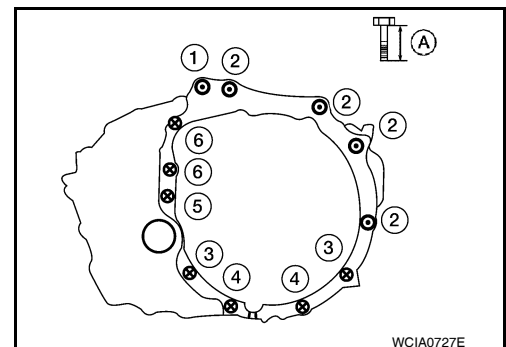
- When replacing an engine or transmission you must make sure any dowels are installed correctly during re-assembly.
- Improper alignment caused by missing dowels may cause vibration, oil leaks or breakage of drive train components.
- Do not reuse O-rings.
- When turning crankshaft, turn it clockwise 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-164](#).
- 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)



TRANSAXLE ASSEMBLY

< SERVICE INFORMATION >

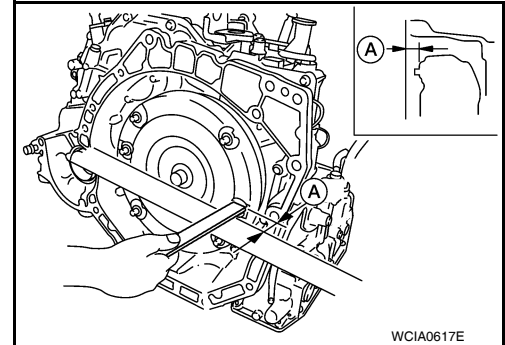
- When installing the drive plate to torque converter nuts, tighten them temporarily. Then tighten the nuts to the specified torque.

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-14, "Checking CVT Fluid"](#).
- Check CVT position. Refer to [CVT-172, "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-46, "CONSULT-III Function \(TRANSMISSION\)"](#).
- When replacing the transaxle assembly, erase EEPROM in TCM. Refer to [CVT-8, "Service After Replacing TCM, Transaxle Assembly, or Control Valve"](#).

REPAIR FOR COMPONENT PARTS

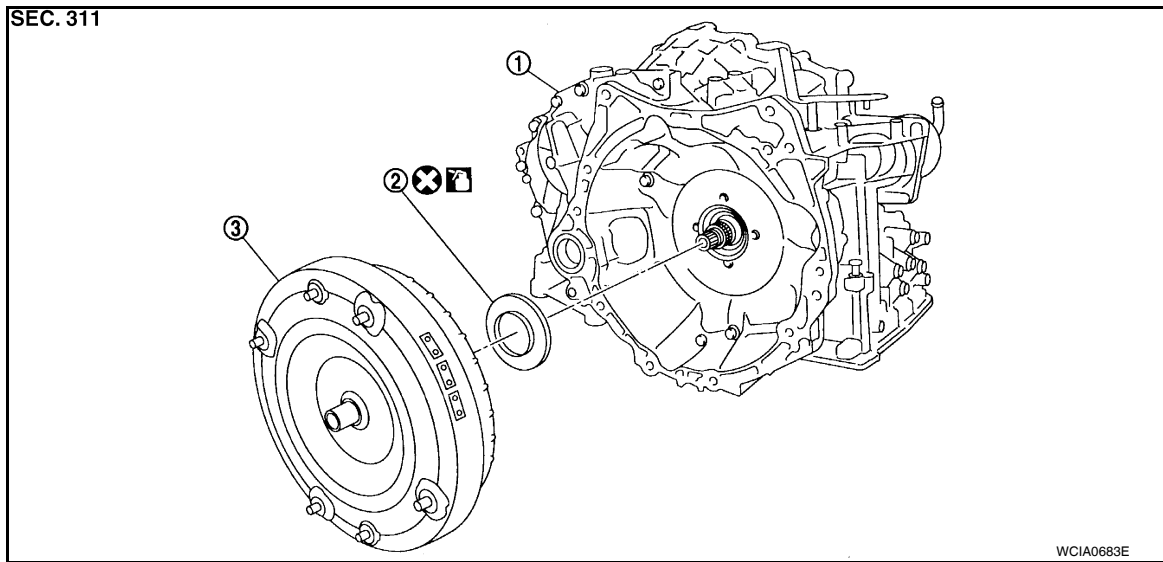
< SERVICE INFORMATION >

REPAIR FOR COMPONENT PARTS

Torque Converter and Converter Housing Oil Seal

INFOID:000000005284348

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:

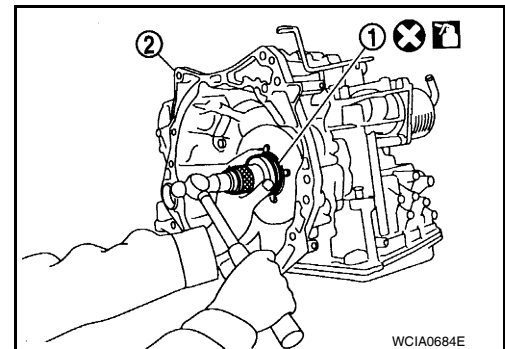
Do not scratch converter housing.

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.



SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE INFORMATION >

SERVICE DATA AND SPECIFICATIONS (SDS)

General Specification

INFOID:000000005284349

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

A
B
CVT

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:000000005284350

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

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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:000000005284351

Engine	Stall speed
MR20DE	2,500 - 3,000 rpm
QR25DE	2,050 - 3,550 rpm

O
P

SERVICE DATA AND SPECIFICATIONS (SDS)

< SERVICE INFORMATION >

Line Pressure

INFOID:000000005284352

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:000000005284353

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:000000005284354

Name	Condition	CONSULT-III "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:000000005284355

Name	Condition	Data (Approx.)
Primary speed sensor	When driving ["L" position, 20 km/h (12 MPH)].	880 Hz

Secondary Speed Sensor

INFOID:000000005284356

Name	Condition	Data (Approx.)
Secondary speed sensor	When driving ["D" position, 20 km/h (12 MPH)].	430 Hz

Removal and Installation

INFOID:000000005284357

Distance between end of converter housing and torque converter	14.4 mm (0.567 in)
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