

SECTION **AT**

AUTOMATIC TRANSMISSION

A
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AT

CONTENTS

<p>INDEX FOR DTC 5</p> <p> Alphabetical Index 5</p> <p> DTC No. Index 6</p> <p>PRECAUTIONS 7</p> <p> Precautions for Supplemental Restraint System (SRS) "AIR BAG" and "SEAT BELT PRE-TENSIONER" 7</p> <p> Precautions for On Board Diagnostic (OBD) System of A/T and Engine 7</p> <p> Precautions 7</p> <p> Service Notice or Precautions 8</p> <p> Wiring Diagrams and Trouble Diagnosis 9</p> <p>PREPARATION 10</p> <p> Special Service Tools 10</p> <p> Commercial Service Tools 11</p> <p>A/T FLUID 12</p> <p> Changing A/T Fluid 12</p> <p> Checking A/T Fluid 12</p> <p>A/T CONTROL SYSTEM 14</p> <p> Cross-Sectional View (2WD Models) 14</p> <p> Cross-Sectional View (AWD Models) 15</p> <p> Shift Mechanism 16</p> <p> TCM Function 27</p> <p> CAN Communication 28</p> <p> Input/Output Signal of TCM 42</p> <p> Line Pressure Control 43</p> <p> Shift Control 44</p> <p> Lock-Up Control 45</p> <p> Engine Brake Control 46</p> <p> Control Valve 47</p> <p>ON BOARD DIAGNOSTIC (OBD) SYSTEM 49</p> <p> Introduction 49</p> <p> OBD-II Function for A/T System 49</p> <p> One or Two Trip Detection Logic of OBD-II 49</p> <p> OBD-II Diagnostic Trouble Code (DTC) 49</p> <p> Malfunction Indicator Lamp (MIL) 52</p> <p>TROUBLE DIAGNOSIS 53</p> <p> DTC Inspection Priority Chart 53</p> <p> Fail-Safe 53</p> <p> How To Perform Trouble Diagnosis For Quick and</p>	<p>Accurate Repair 55</p> <p>A/T Electrical Parts Location 60</p> <p>Circuit Diagram 61</p> <p>Wiring Diagram — AT — 62</p> <p>Inspections Before Trouble Diagnosis 71</p> <p>Check Before Engine is Started 75</p> <p>Check at Idle 75</p> <p>Cruise Test - Part 1 76</p> <p>Cruise Test - Part 2 78</p> <p>Cruise Test - Part 3 79</p> <p>Vehicle Speed When Shifting Gears 80</p> <p>Vehicle Speed When Performing and Releasing Complete Lock-up 80</p> <p>Vehicle Speed When Performing and Releasing Slip Lock-up 81</p> <p>Symptom Chart 82</p> <p>TCM Input/Output Signal Reference Values 107</p> <p>CONSULT-II 108</p> <p>Diagnostic Procedure Without CONSULT-II 120</p> <p>DTC U1000 CAN COMMUNICATION LINE 122</p> <p> Description 122</p> <p> On Board Diagnosis Logic 122</p> <p> Possible Cause 122</p> <p> DTC Confirmation Procedure 122</p> <p> Diagnostic Procedure 123</p> <p>DTC P0615 START SIGNAL CIRCUIT 124</p> <p> Description 124</p> <p> CONSULT-II Reference Value 124</p> <p> On Board Diagnosis Logic 124</p> <p> Possible Cause 124</p> <p> DTC Confirmation Procedure 124</p> <p> Diagnostic Procedure 125</p> <p>DTC P0705 PARK/NEUTRAL POSITION SWITCH 127</p> <p> Description 127</p> <p> CONSULT-II Reference Value 127</p> <p> On Board Diagnosis Logic 127</p> <p> Possible Cause 127</p> <p> DTC Confirmation Procedure 127</p> <p> Diagnostic Procedure 128</p> <p>DTC P0720 VEHICLE SPEED SENSOR A/T (REV-</p>
---	--

D
E
F
G
H
I
J
K
L
M

OLUTION SENSOR)	129	Description	144
Description	129	On Board Diagnosis Logic	144
CONSULT-II Reference Value	129	Possible Cause	144
On Board Diagnosis Logic	129	DTC Confirmation Procedure	144
Possible Cause	129	Diagnostic Procedure	144
DTC Confirmation Procedure	129	DTC P1705 THROTTLE POSITION SENSOR	145
Diagnostic Procedure	130	Description	145
DTC P0725 ENGINE SPEED SIGNAL	131	On Board Diagnosis Logic	145
Description	131	Possible Cause	145
CONSULT-II Reference Value	131	DTC Confirmation Procedure	145
On Board Diagnosis Logic	131	Diagnostic Procedure	145
Possible Cause	131	DTC P1710 A/T FLUID TEMPERATURE SENSOR	
DTC Confirmation Procedure	131	CIRCUIT	147
Diagnostic Procedure	131	Description	147
DTC P0740 TORQUE CONVERTER CLUTCH		CONSULT-II Reference Value	147
SOLENOID VALVE	133	On Board Diagnosis Logic	147
Description	133	Possible Cause	147
CONSULT-II Reference Value	133	DTC Confirmation Procedure	147
On Board Diagnosis Logic	133	Diagnostic Procedure	148
Possible Cause	133	DTC P1716 TURBINE REVOLUTION SENSOR ...	149
DTC Confirmation Procedure	133	Description	149
Diagnostic Procedure	134	CONSULT-II Reference Value	149
DTC P0744 A/T TCC S/V FUNCTION (LOCK-UP). 135		On Board Diagnosis Logic	149
Description	135	Possible Cause	149
CONSULT-II Reference Value	135	DTC Confirmation Procedure	149
On Board Diagnosis Logic	135	Diagnostic Procedure	150
Possible Cause	135	DTC P1721 VEHICLE SPEED SENSOR MTR	151
DTC Confirmation Procedure	135	Description	151
Diagnostic Procedure	136	CONSULT-II Reference Value	151
DTC P0745 LINE PRESSURE SOLENOID VALVE 137		On Board Diagnosis Logic	151
Description	137	Possible Cause	151
CONSULT-II Reference Value	137	DTC Confirmation Procedure	151
On Board Diagnosis Logic	137	Diagnostic Procedure	151
Possible Cause	137	DTC P1730 A/T INTERLOCK	153
DTC Confirmation Procedure	137	Description	153
Diagnostic Procedure	138	On Board Diagnosis Logic	153
DTC P1701 TRANSMISSION CONTROL MODULE		Possible Cause	153
(POWER SUPPLY)	139	DTC Confirmation Procedure	153
Description	139	Judgement of A/T Interlock	154
On Board Diagnosis Logic	139	Diagnostic Procedure	154
Possible Cause	139	DTC P1731 A/T 1ST ENGINE BRAKING	156
DTC Confirmation Procedure	139	Description	156
Diagnostic Procedure	140	CONSULT-II Reference Value	156
DTC P1702 TRANSMISSION CONTROL MODULE		On Board Diagnosis Logic	156
(RAM)	142	Possible Cause	156
Description	142	DTC Confirmation Procedure	156
On Board Diagnosis Logic	142	Diagnostic Procedure	157
Possible Cause	142	DTC P1752 INPUT CLUTCH SOLENOID VALVE .158	
DTC Confirmation Procedure	142	Description	158
Diagnostic Procedure	142	CONSULT-II Reference Value	158
DTC P1703 TRANSMISSION CONTROL MODULE		On Board Diagnosis Logic	158
(ROM)	143	Possible Cause	158
Description	143	DTC Confirmation Procedure	158
On Board Diagnosis Logic	143	Diagnostic Procedure	159
Possible Cause	143	DTC P1754 INPUT CLUTCH SOLENOID VALVE	
DTC Confirmation Procedure	143	FUNCTION	160
Diagnostic Procedure	143	Description	160
DTC P1704 TRANSMISSION CONTROL MODULE		CONSULT-II Reference Value	160
(EEPROM)	144	On Board Diagnosis Logic	160

Possible Cause	160	Description	176
DTC Confirmation Procedure	160	CONSULT-II Reference Value	176
Diagnostic Procedure	161	On Board Diagnosis Logic	176
DTC P1757 FRONT BRAKE SOLENOID VALVE	162	Possible Cause	176
Description	162	DTC Confirmation Procedure	176
CONSULT-II Reference Value	162	Diagnostic Procedure	177
On Board Diagnosis Logic	162	DTC P1815 MANUAL MODE SWITCH	178
Possible Cause	162	Description	178
DTC Confirmation Procedure	162	CONSULT-II Reference Value in Data Monitor Mode	178
Diagnostic Procedure	163	On Board Diagnosis Logic	178
DTC P1759 FRONT BRAKE SOLENOID VALVE FUNCTION	164	Possible Cause	178
Description	164	DTC Confirmation Procedure	178
CONSULT-II Reference Value	164	Diagnostic Procedure	178
On Board Diagnosis Logic	164	Component Inspection	180
Possible Cause	164	Position Indicator Lamp	180
DTC Confirmation Procedure	164	DTC P1841 ATF PRESSURE SWITCH 1	181
Diagnostic Procedure	165	Description	181
DTC P1762 DIRECT CLUTCH SOLENOID VALVE	166	CONSULT-II Reference Value	181
Description	166	On Board Diagnosis Logic	181
CONSULT-II Reference Value	166	Possible Cause	181
On Board Diagnosis Logic	166	DTC Confirmation Procedure	181
Possible Cause	166	Diagnostic Procedure	182
DTC Confirmation Procedure	166	DTC P1843 ATF PRESSURE SWITCH 3	183
Diagnostic Procedure	167	Description	183
DTC P1764 DIRECT CLUTCH SOLENOID VALVE FUNCTION	168	CONSULT-II Reference Value	183
Description	168	On Board Diagnosis Logic	183
CONSULT-II Reference Value	168	Possible Cause	183
On Board Diagnosis Logic	168	DTC Confirmation Procedure	183
Possible Cause	168	Diagnostic Procedure	184
DTC Confirmation Procedure	168	DTC P1845 ATF PRESSURE SWITCH 5	185
Diagnostic Procedure	169	Description	185
DTC P1767 HIGH AND LOW REVERSE CLUTCH SOLENOID VALVE	170	CONSULT-II Reference Value	185
Description	170	On Board Diagnosis Logic	185
CONSULT-II Reference Value	170	Possible Cause	185
On Board Diagnosis Logic	170	DTC Confirmation Procedure	185
Possible Cause	170	Diagnostic Procedure	186
DTC Confirmation Procedure	170	DTC P1846 ATF PRESSURE SWITCH 6	187
Diagnostic Procedure	171	Description	187
DTC P1769 HIGH AND LOW REVERSE CLUTCH SOLENOID VALVE FUNCTION	172	CONSULT-II Reference Value	187
Description	172	On Board Diagnosis Logic	187
CONSULT-II Reference Value	172	Possible Cause	187
On Board Diagnosis Logic	172	DTC Confirmation Procedure	187
Possible Cause	172	Diagnostic Procedure	188
DTC Confirmation Procedure	172	CLOSED THROTTLE POSITION AND WIDE OPEN THROTTLE POSITION CIRCUIT	189
Diagnostic Procedure	173	Diagnostic Procedure	189
DTC P1772 LOW COAST BRAKE SOLENOID VALVE	174	BRAKE SIGNAL CIRCUIT	190
Description	174	Diagnostic Procedure	190
CONSULT-II Reference Value	174	TROUBLE DIAGNOSIS FOR SYMPTOMS	191
On Board Diagnosis Logic	174	A/T CHECK Indicator Lamp Does Not Come On	191
Possible Cause	174	Engine Cannot Be Started In "P" or "N" Position	192
DTC Confirmation Procedure	174	In "P" Position, Vehicle Moves When Pushed	193
Diagnostic Procedure	175	In "N" Position, Vehicle Moves	194
DTC P1774 LOW COAST BRAKE SOLENOID VALVE FUNCTION	176	Large Shock ("N" to "D" Position)	195
Description	176	Vehicle Does Not Creep Backward In "R" Position	198
CONSULT-II Reference Value	176	Vehicle Does Not Creep Forward In "D" Position	201
On Board Diagnosis Logic	176	Vehicle Cannot Be Started From D1	204
Possible Cause	176	A/T Does Not Shift: D1 → D2	206

A
B
AT
D
E
F
G
H
I
J
K
L
M

A/T Does Not Shift: D2 → D3	209	Removal and Installation (2WD Models)	269
A/T Does Not Shift: D3 → D4	211	Removal and Installation (AWD Models)	272
A/T Does Not Shift: D4 → D5	214	OVERHAUL	277
A/T Does Not Perform Lock-Up	216	Components	277
A/T Does Not Hold Lock-Up Condition	219	Oil Channel	287
Lock-Up Is Not Released	220	Locations of Adjusting Shims, Needle Bearings, Thrust Washers and Snap Rings	289
Engine Speed Does Not Return To Idle	221	DISASSEMBLY	291
Cannot Be Changed to Manual Mode	222	Disassembly	291
A/T Does Not Shift: 5th Gear → 4th Gear	223	REPAIR FOR COMPONENT PARTS	308
A/T Does Not Shift: 4th Gear → 3rd Gear	225	Oil Pump	308
A/T Does Not Shift: 3rd Gear → 2nd Gear	227	Front Sun Gear, 3rd One-Way Clutch	311
A/T Does Not Shift: 2nd Gear → 1st Gear	229	Front Carrier, Input Clutch, Rear Internal Gear	313
Vehicle Does Not Decelerate By Engine Brake ...	231	Mid Sun Gear, Rear Sun Gear, High and Low Reverse Clutch Hub	319
SHIFT CONTROL SYSTEM	233	High and Low Reverse Clutch	324
Control Device Removal and Installation	233	Direct Clutch	327
Adjustment of A/T Position	234	ASSEMBLY	329
Checking of A/T Position	234	Assembly (1)	329
A/T SHIFT LOCK SYSTEM	235	Adjustment	341
Description	235	Assembly (2)	343
Shift Lock System Electrical Parts Location	235	SERVICE DATA AND SPECIFICATIONS (SDS) ...	351
Wiring Diagram — AT — SHIFT	236	General Specifications	351
Diagnostic Procedure	237	Vehicle Speed When Shifting Gears	351
KEY INTERLOCK CABLE	239	Vehicle Speed When Performing and Releasing Complete Lock-up	352
Components	239	Vehicle Speed When Performing and Releasing Slip Lock-up	352
Removal	240	Stall Speed	353
Installation	241	Line Pressure	353
ON-VEHICLE SERVICE	242	A/T Fluid Temperature Sensor	353
Control Valve with TCM and A/T Fluid Temperature Sensor 2	242	Turbine Revolution Sensor	353
Parking Components (2WD Models Only)	254	Vehicle Speed Sensor A/T (Revolution Sensor) ..	353
Rear Oil Seal	261	Reverse Brake	353
Revolution Sensor Components (2WD Models Only)	262	Total End Play	353
AIR BREATHER HOSE	267		
Removal and Installation	267		
TRANSMISSION ASSEMBLY	269		

INDEX FOR DTC

INDEX FOR DTC

PF0:00024

Alphabetical Index

ACS002L1

NOTE:

If DTC U1000 is displayed with other DTC, first perform the trouble diagnosis for DTC U1000. Refer to [AT-122](#).

Items (CONSULT-II screen terms)	DTC		Reference page
	OBD-II	Except OBD-II	
	CONSULT-II GST (*1)	CONSULT-II only "A/T"	
A/T 1ST E/BRAKING	—	P1731	AT-156
ATF PRES SW 1/CIRC	—	P1841	AT-181
ATF PRES SW 3/CIRC	—	P1843	AT-183
ATF PRES SW 5/CIRC	—	P1845	AT-185
ATF PRES SW 6/CIRC	—	P1846	AT-187
A/T INTERLOCK	P1730	P1730	AT-153
A/T TCC S/V FNCTN	P0744	P0744	AT-135
ATF TEMP SEN/CIRC	P0710	P1710	AT-147
CAN COMM CIRCUIT	U1000	U1000	AT-122
D/C SOLENOID/CIRC	P1762	P1762	AT-166
D/C SOLENOID FNCTN	P1764 (*3)	P1764	AT-168
ENGINE SPEED SIG	P0725 (*2)	P0725	AT-131
FR/B SOLENOID/CIRC	P1757	P1757	AT-162
FR/B SOLENOID FNCT	P1759	P1759	AT-164
HLR/C SOL/CIRC	P1767	P1767	AT-170
HLR/C SOL FNCTN	P1769 (*3)	P1769	AT-172
I/C SOLENOID/CIRC	P1752	P1752	AT-158
I/C SOLENOID FNCTN	P1754 (*3)	P1754	AT-160
L/PRESS SOL/CIRC	P0745	P0745	AT-137
LC/B SOLENOID/CIRC	P1772	P1772	AT-174
LC/B SOLENOID FNCT	P1774	P1774	AT-176
MANU MODE SW/CIR	—	P1815	AT-178
PNP SW/CIRC	P0705	P0705	AT-127
STARTER RELAY/CIRC	—	P0615	AT-124
TCC SOLENOID/CIRC	P0740	P0740	AT-133
TCM-EEPROM	—	P1704	AT-144
TCM-POWER SUPPLY	—	P1701	AT-139
TCM-RAM	—	P1702	AT-142
TCM-ROM	—	P1703	AT-143
TP SEN/CIRC A/T	P1705 (*2)	P1705	AT-145
TURBINE REV S/CIRC	P1716	P1716	AT-149
VEH SPD SE/CIR-MTR	—	P1721	AT-151
VEH SPD SEN/CIR AT	P0720	P0720	AT-129

*1: These numbers are prescribed by SAE J2012.

*2: For VQ35DE engine.

*3: These malfunctions cannot be displayed MIL if another malfunction is assigned to MIL.

INDEX FOR DTC

ACS002L2

DTC No. Index

NOTE:

If DTC U1000 is displayed with other DTC, first perform the trouble diagnosis for DTC U1000. Refer to [AT-122](#).

DTC		Items (CONSULT-II screen terms)	Reference page
OBD-II	Except OBD-II		
CONSULT-II GST (*1)	CONSULT-I only "A/T"		
—	P0615	STARTER RELAY/CIRC	AT-124
P0705	P0705	PNP SW/CIRC	AT-127
P0710	P1710	ATF TEMP SEN/CIRC	AT-147
P0720	P0720	VEH SPD SEN/CIR AT	AT-129
P0725 (*2)	P0725	ENGINE SPEED SIG	AT-131
P0740	P0740	TCC SOLENOID/CIRC	AT-133
P0744	P0744	A/T TCC S/V FNCTN	AT-135
P0745	P0745	L/PRESS SOL/CIRC	AT-137
—	P1701	TCM-POWER SUPPLY	AT-139
—	P1702	TCM-RAM	AT-142
—	P1703	TCM-ROM	AT-143
—	P1704	TCM-EEPROM	AT-144
P1705 (*2)	P1705	TP SEN/CIRC A/T	AT-145
P1716	P1716	TURBINE REV S/CIRC	AT-149
—	P1721	VEH SPD SE/CIR-MTR	AT-151
P1730	P1730	A/T INTERLOCK	AT-153
—	P1731	A/T 1ST E/BRAKING	AT-156
P1752	P1752	I/C SOLENOID/CIRC	AT-158
P1754 (*3)	P1754	I/C SOLENOID FNCTN	AT-160
P1757	P1757	FR/B SOLENOID/CIRC	AT-162
P1759 (*3)	P1759	FR/B SOLENOID FNCT	AT-164
P1762	P1762	D/C SOLENOID/CIRC	AT-166
P1764 (*3)	P1764	D/C SOLENOID FNCTN	AT-168
P1767	P1767	HLR/C SOL/CIRC	AT-170
P1769	P1769	HLR/C SOL FNCTN	AT-172
P1772	P1772	LC/B SOLENOID/CIRC	AT-174
P1774	P1774	LC/B SOLENOID FNCT	AT-176
—	P1815	MANU MODE SW/CIRC	AT-178
—	P1841	ATF PRES SW 1/CIRC	AT-181
—	P1843	ATF PRES SW 3/CIRC	AT-183
—	P1845	ATF PRES SW 5/CIRC	AT-185
—	P1846	ATF PRES SW 6/CIRC	AT-187
U1000	U1000	CAN COMM CIRCUIT	AT-122

*1: These numbers are prescribed by SAE J2012.

*2: For VQ35DE engine.

*3: These malfunctions cannot be displayed MIL if another malfunction is assigned to MIL.

PRECAUTIONS

PRECAUTIONS

PF0:00001

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

ACS004LW

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

WARNING:

- To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, all maintenance must be performed by an authorized NISSAN/INFINITI dealer.
- Improper maintenance, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system. For removal of Spiral Cable and Air Bag Module, see the SRS section.
- Do not use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harnesses or harness connectors.

Precautions for On Board Diagnostic (OBD) System of A/T and Engine

ACS002L5

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.

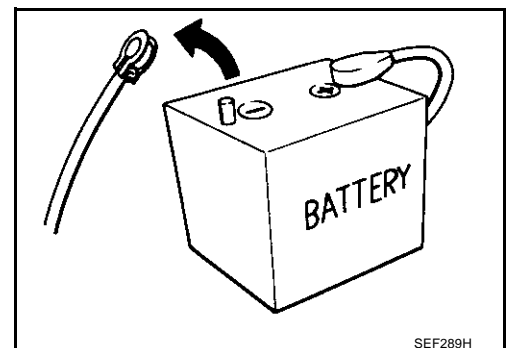
CAUTION:

- Be sure to turn the ignition switch “OFF” and disconnect the negative battery cable 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 EGR system or fuel injection system, etc.
- Be sure to erase the unnecessary malfunction information (repairs completed) from the TCM and ECM before returning the vehicle to the customer.

Precautions

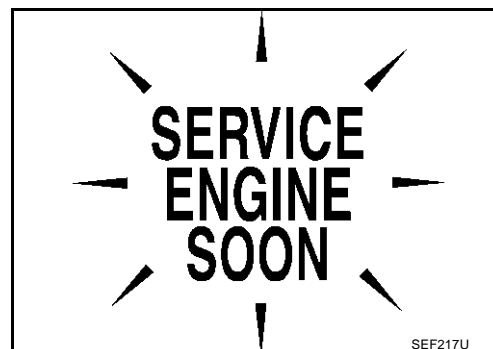
ACS002L6

- Before connecting or disconnecting the A/T assembly 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”.



PRECAUTIONS

- After performing each TROUBLE DIAGNOSIS, perform “DTC (Diagnostic Trouble Code) CONFIRMATION PROCEDURE”.
If the repair is completed the DTC should not be displayed in the “DTC CONFIRMATION PROCEDURE”.



- Always use the specified brand of ATF. Refer to [MA-12, "Fluids and Lubricants"](#) .
- Use paper rags not cloth rags during work.
- After replacing the ATF, dispose of the waste oil using the methods prescribed by law, ordinance, etc.
- Before proceeding with disassembly, thoroughly clean the outside of the transmission. 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.
- Use lint-free cloth or towels for wiping parts clean. Common shop rags can leave fibers that could interfere with the operation of the transmission.
- 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 any time the transmission is disassembled.
- It is very important to perform functional tests whenever they are indicated.
- The valve body contains precision parts and requires extreme care when parts are removed and serviced. Place disassembled valve body parts in order for easier and proper assembly. Care will also prevent springs and small parts from becoming scattered or lost.
- Properly installed valves, sleeves, plugs, etc. will slide along bores in valve body under their own weight.
- Before assembly, apply a coat of recommended ATF to all parts. Apply petroleum jelly to protect O-rings and seals, or hold bearings and washers in place during assembly. Do not use grease.
- Extreme care should be taken to avoid damage to O-rings, seals and gaskets when assembling.
- After overhaul, refill the transmission with new ATF.
- When the A/T drain plug is removed, only some of the fluid is drained. Old A/T fluid will remain in torque converter and ATF cooling system.
Always follow the procedures under “Changing A/T Fluid” in the AT section when changing A/T fluid. Refer to [AT-12, "Changing A/T Fluid"](#) , [AT-12, "Checking A/T Fluid"](#) .

Service Notice or Precautions OBD-II SELF-DIAGNOSIS

ACS002L7

- A/T self-diagnosis is performed by the TCM in combination with the ECM. The results can be read through the blinking pattern of the A/T CHECK indicator or the malfunction indicator lamp (MIL). Refer to the table on [AT-110, "Self-diagnostic Result Test Mode"](#) for the indicator used to display each self-diagnostic result.
- The self-diagnostic results indicated by the MIL are automatically stored in both the ECM and TCM memories.
Always perform the procedure on [AT-50, "HOW TO ERASE DTC"](#) to complete the repair and avoid unnecessary blinking of the MIL.

For details of OBD-II, refer to [EC-67, "ON BOARD DIAGNOSTIC \(OBD\) SYSTEM"](#) (for VQ35DE) or [EC-708, "ON BOARD DIAGNOSTIC \(OBD\) SYSTEM"](#) (for VK45DE).

- **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-89, "HARNESS CONNECTOR"](#) .**

PRECAUTIONS

Wiring Diagrams and Trouble Diagnosis

ACS002L8

When you read wiring diagrams, refer to the following:

- [GI-15, "How to Read Wiring Diagrams"](#).
- [PG-3, "POWER SUPPLY ROUTING CIRCUIT"](#) for power distribution circuit.

When you perform trouble diagnosis, refer to the following:

- [GI-11, "How to Follow Trouble Diagnoses"](#).
- [GI-27, "How to Perform Efficient Diagnosis for an Electrical Incident"](#).

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B

AT

D

E

F

G

H

I

J

K

L

M

PREPARATION

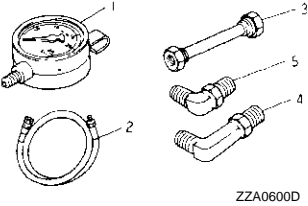
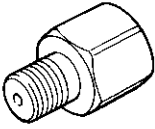
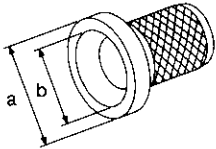
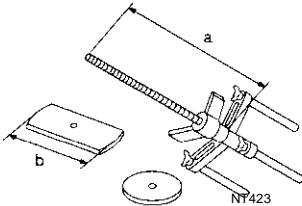
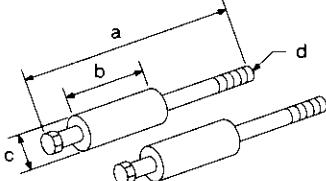
PREPARATION

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Special Service Tools

ACS002L9

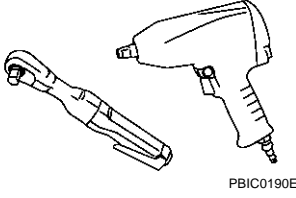
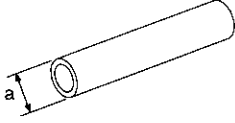
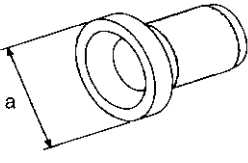
The actual shapes of Kent-Moore tools may differ from those of special service tools illustrated here.

Tool number (Kent-Moore No.) Tool name	Description
ST2505S001 (J-34301-C) Oil pressure gauge set 1 ST25051001 (—) Oil pressure gauge 2 ST25052000 (—) Hose 3 ST25053000 (—) Joint pipe 4 ST25054000 (—) Adapter 5 ST25055000 (—) Adapter	Measuring line pressure  <p style="text-align: right; margin-right: 50px;">ZZA0600D</p>
KV31103600 (J-45674) Joint pipe adapter (With ST25054000)	Measuring line pressure  <p style="text-align: right; margin-right: 50px;">ZZA1227D</p>
ST33400001 (J-26082) Drift a: 60 mm (2.36 in) dia. b: 47 mm (1.85 in) dia.	<ul style="list-style-type: none"> ● Installing rear oil seal (2WD models) ● Installing oil pump housing oil seal  <p style="text-align: right; margin-right: 50px;">NT086</p>
KV31102400 (J-34285 and J-34285-87) Clutch spring compressor a: 320 mm (12.60 in) b: 174 mm (6.85 in)	Installing reverse brake return spring retainer  <p style="text-align: right; margin-right: 50px;">NT423</p>
ST25850000 (J-25721-A) Sliding hammer a: 179 mm (7.05 in) b: 70 mm (2.76 in) c: 40 mm (1.57 in) d: M12X1.75P	Remove oil pump assembly  <p style="text-align: right; margin-right: 50px;">NT422</p>

PREPARATION

Commercial Service Tools

ACS002LA

Tool name	Description
<p>Power tool</p>  <p>PBIC0190E</p>	<p>Loosening bolts and nuts</p>
<p>Drift a: 22mm (0.87 in) dia.</p>  <p>NT083</p>	<p>Installing manual shaft oil seals</p>
<p>Drift a: 64 mm (2.52 in) dia.</p>  <p>SCIA5338E</p>	<p>Installing rear oil seal (AWD models)</p>

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A/T FLUID

PFP:KLE40

Changing A/T Fluid

ACS002LB

1. Warm up ATF.
2. Stop engine.
3. Remove the tightening bolt for ATF level gauge.
4. Drain ATF from drain plug and refill with new ATF. Always refill same volume with drained fluid.
 - To replace the ATF, pour in new fluid at the charging pipe with the engine idling and at the same time drain the old fluid from the radiator cooler hose return side.
 - When the color of the fluid coming out is about the same as the color of the new fluid, the replacement is complete. The amount of new transmission fluid to use should be 30 to 50% increase of the stipulated amount.

ATF: NISSAN Matic Fluid J

Fluid capacity: 10.3 ℓ (10-7/8 US qt, 9-1/8 Imp qt)

CAUTION:

- Use only Genuine NISSAN ATF Matic Fluid J. Do not mix with other fluid.
- Using automatic transmission fluid other than Genuine NISSAN ATF Matic Fluid J will cause deterioration in driveability and automatic transmission durability, and may damage the automatic transmission, which is not covered by the warranty.
- When filling ATF, take care not to splash heat generating parts such as exhaust with ATF.
- Do not reuse drain plug gasket.

Drain plug:

 : 34 N·m (3.5 kg-m, 25 ft-lb)

5. Run engine at idle speed for 5 minutes.
6. Check fluid level and condition. Refer to [AT-12, "Checking A/T Fluid"](#) . If fluid is still dirty, repeat step 2. through 5.
7. Install the removed ATF level gauge in the fluid charging pipe.

Level gauge bolt:

 : 5.1 N·m (0.52 kg-m, 45 in-lb)

Checking A/T Fluid

ACS002LC

1. Warm up engine.
2. Check for fluid leakage.
3. Remove the tightening bolt for ATF level gauge.
4. Before driving, fluid level can be checked at fluid temperatures of 30 to 50°C (86 to 122°F) using "COLD" range on ATF level gauge as follows.
 - a. Park vehicle on level surface and set parking brake.
 - b. Start engine and move selector lever through each gear position. Leave selector lever in "P" position.
 - c. Check fluid level with engine idling.
 - d. Remove ATF level gauge and wipe clean with lint-free paper.

CAUTION:

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

- e. Re-insert ATF level gauge into charging pipe as far as it will go.

CAUTION:

To check fluid level, insert the ATF level gauge until the cap contacts the end of the charging pipe, with the gauge reversed from the normal attachment conditions.

- f. Remove ATF level gauge and note reading. If reading is at low side of range, add fluid to the charging pipe.

CAUTION:

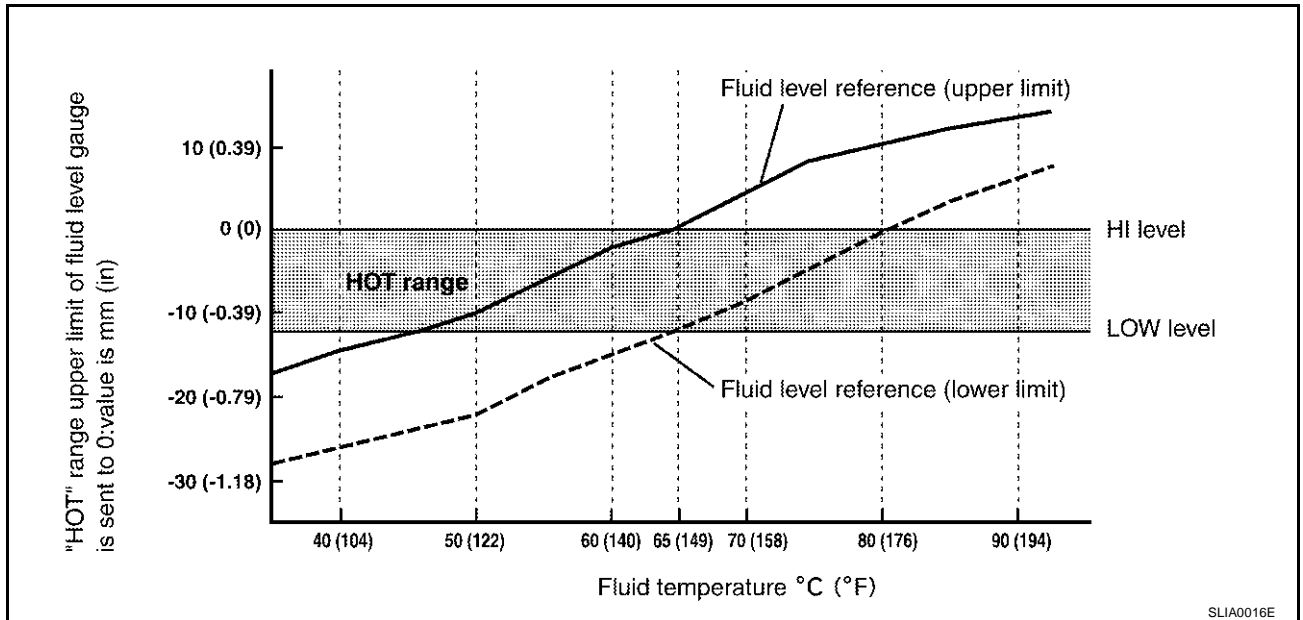
Do not overfill.

A/T FLUID

5. Drive vehicle for approximately 5 minutes in urban areas.
6. Make the fluid temperature approximately 65°C (149°F).

NOTE:

Fluid level will be greatly affected by temperature as shown in figure. Therefore, be certain to perform operation while checking data with CONSULT-II.

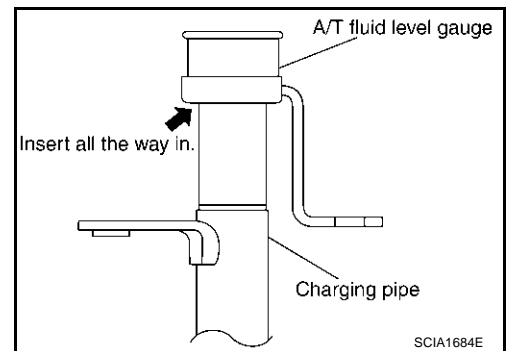


- a. Connect CONSULT-II to data link connector.
- b. Select "MAIN SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
- c. Read out the value of "ATF TEMP 1".
7. Re-check fluid level at fluid temperatures of approximately 65°C (149°F) using "HOT" range on A/T fluid level gauge.

CAUTION:

- When wiping away the fluid level gauge, always use lint-free paper, not a cloth one.
- To check fluid level, insert the ATF level gauge until the cap contacts the end of the charging pipe, with the gauge reversed from the normal attachment conditions as shown.

8. Check fluid condition.
 - If fluid is very dark or smells burned, refer to check operation of A/T. Flush cooling system after repair of A/T.
 - If ATF contains frictional material (clutches, bands, etc.), replace radiator and flush cooler line using cleaning solvent and compressed air after repair of A/T. Refer to [CO-14, "RADIATOR"](#) (for VQ35DE) or [CO-38, "RADIATOR"](#) (for VK45DE).



9. Install the removed ATF level gauge in the fluid charging pipe.

Level gauge bolt:

 : 5.1 N·m (0.52 kg·m, 45 in·lb)

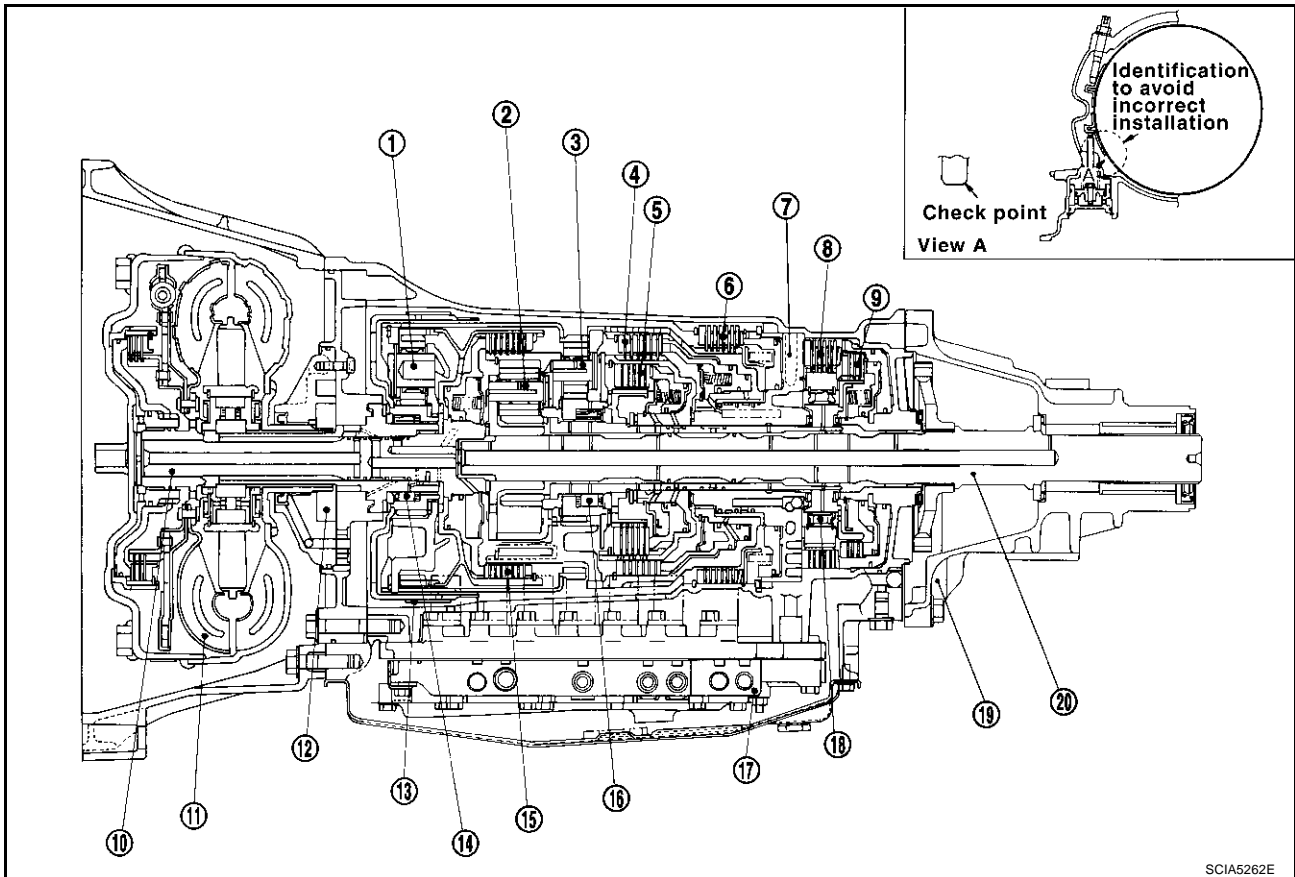
A/T CONTROL SYSTEM

A/T CONTROL SYSTEM

PFP:31036

Cross-Sectional View (2WD Models)

ACS008RW



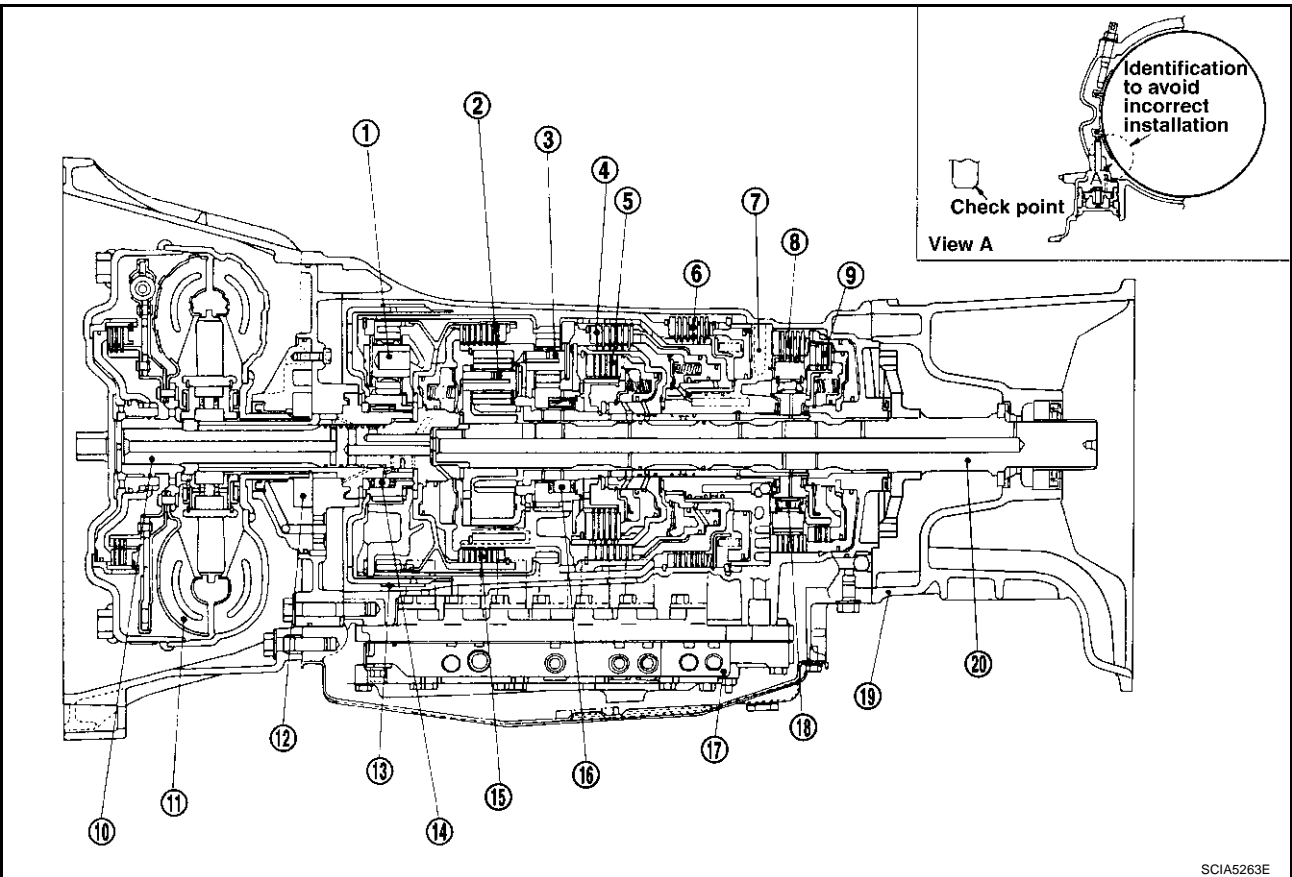
SCIA5262E

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|-------------------------|--------------------------------|----------------------------|
| 1. Front planetary gear | 2. Mid planetary gear | 3. Rear planetary gear |
| 4. Direct clutch | 5. High and low reverse clutch | 6. Reverse brake |
| 7. Drum support | 8. Forward brake | 9. Low coast brake |
| 10. Input shaft | 11. Torque converter | 12. Oil pump |
| 13. Front brake | 14. 3rd one-way clutch | 15. Input clutch |
| 16. 1st one-way clutch | 17. Control valve with TCM | 18. Forward one-way clutch |
| 19. Rear extension | 20. Output shaft | |

A/T CONTROL SYSTEM

Cross-Sectional View (AWD Models)

ACS008RX



SCIA5263E

- | | | |
|-------------------------|--------------------------------|----------------------------|
| 1. Front planetary gear | 2. Mid planetary gear | 3. Rear planetary gear |
| 4. Direct clutch | 5. High and low reverse clutch | 6. Reverse brake |
| 7. Drum support | 8. Forward brake | 9. Low coast brake |
| 10. Input shaft | 11. Torque converter | 12. Oil pump |
| 13. Front brake | 14. 3rd one-way clutch | 15. Input clutch |
| 16. 1st one-way clutch | 17. Control valve with TCM | 18. Forward one-way clutch |
| 19. Adapter case | 20. Output shaft | |

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A/T CONTROL SYSTEM

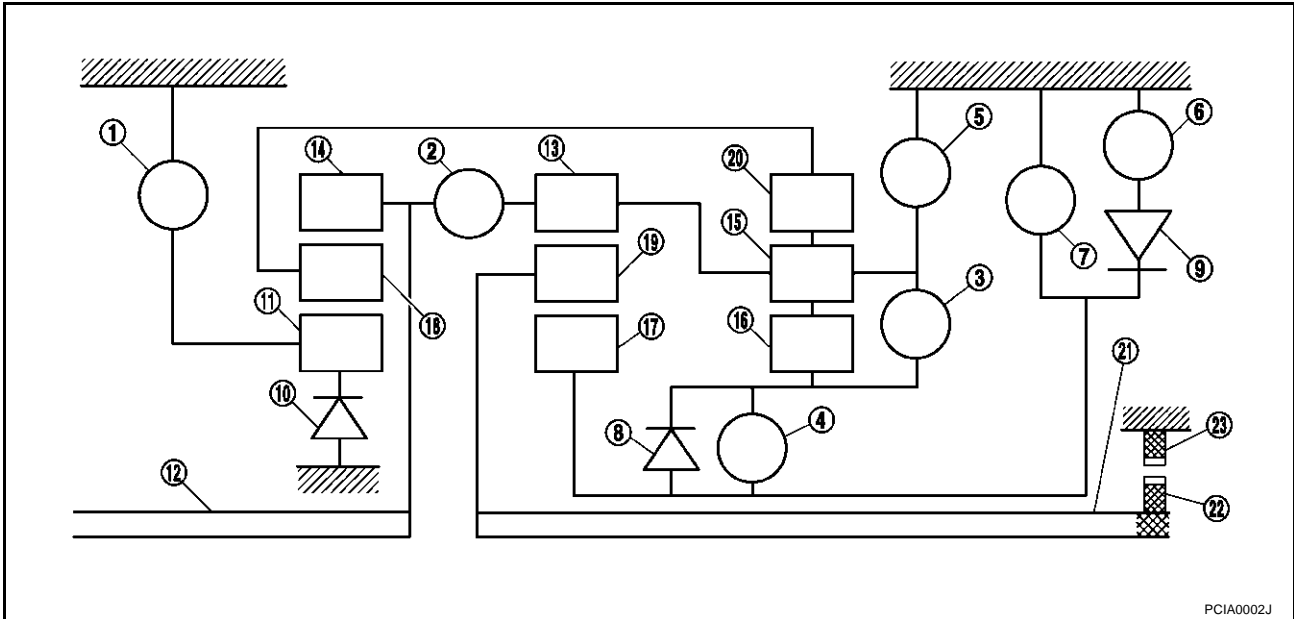
ACS002LE

Shift Mechanism

The automatic transmission uses compact dual planetary gear systems to improve power-transmission efficiency, simplify construction and reduce weight.

It also employs an optimum shift control and super wide gear ratios. They improve starting performance and acceleration during medium and high-speed operation.

CONSTRUCTION



PCIA0002J

- | | | |
|--------------------------------|-------------------------|---------------------------|
| 1. Front brake | 2. Input clutch | 3. Direct clutch |
| 4. High and low reverse clutch | 5. Reverse brake | 6. Forward brake |
| 7. Low coast brake | 8. 1st one-way clutch | 9. Forward one-way clutch |
| 10. 3rd one-way clutch | 11. Front sun gear | 12. Input shaft |
| 13. Mid internal gear | 14. Front internal gear | 15. Rear carrier |
| 16. Rear sun gear | 17. Mid sun gear | 18. Front carrier |
| 19. Mid carrier | 20. Rear internal gear | 21. Output shaft |
| 22. Parking gear | 23. Parking pawl | |

FUNCTION OF CLUTCH AND BRAKE

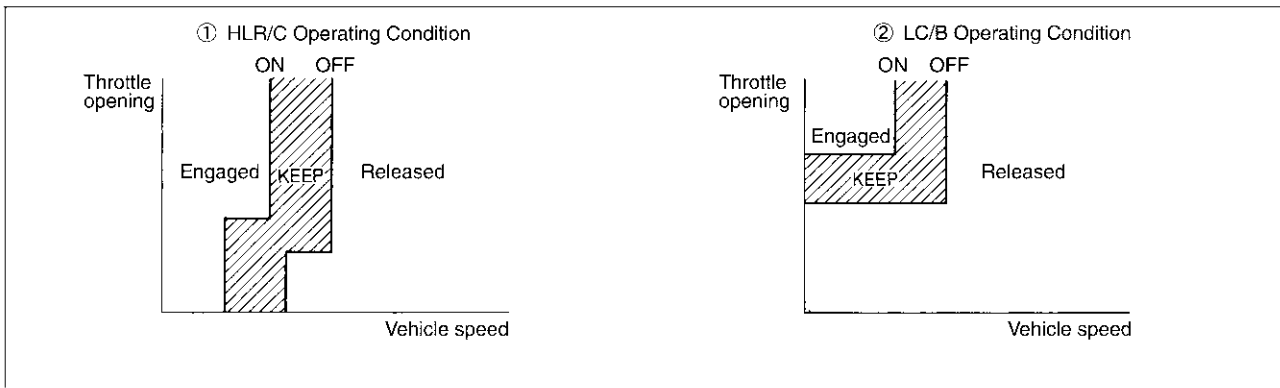
Name of the Part	Abbreviation	Function
Front brake (1)	FR/B	Fastens the front sun gear (11).
Input clutch (2)	I/C	Connects the input shaft (12), the front internal gear (14) and the mid internal gear (13).
Direct clutch (3)	D/C	Connects the rear carrier (15) and the rear sun gear (16).
High and low reverse clutch (4)	HLR/C	Connects the mid sun gear (17) and the rear sun gear (16).
Reverse brake (5)	R/B	Fastens the rear carrier (15).
Forward brake (6)	F/B	Fastens the mid sun gear (17).
Low coast brake (7)	LC/B	Fastens the mid sun gear (17).
1st one-way clutch (8)	1st/O.C	Allows the rear sun gear (16) to turn freely forward relative to the mid sun gear (17) but fastens it for reverse rotation.
Forward one-way clutch (9)	F/O.C	Allows the mid sun gear (17) to turn freely in the forward direction but fastens it for reverse rotation.
3rd one-way clutch (10)	3rd/O.C	Allows the front sun gear (11) to turn freely in the forward direction but fastens it for reverse rotation.

A/T CONTROL SYSTEM

CLUTCH AND BAND CHART

Shift position	I/C	HLR/C	D/C	R/B	FR/B	LC/B	Fwd/B	1st OWC	Fwd OWC	3rd OWC	Remarks
P		△			△						PARK POSITION
R		○		○	○			⊙		⊙	REVERSE POSITION
N		△			△						NEUTRAL POSITION
D	1 st	△ *			△	△ **	○	⊙	⊙	⊙	Automatic shift 1→2→3→4→5
	2 nd		○		△		○		⊙	⊙	
	3 rd		○	○		○	△	◇		⊙	
	4 th	○	○	○			△	◇			
	5 th	○	○			○	△	◇		◇	
M5	5 th	○	○		○		△	◇		◇	Locks (held stationary) in 5th gear
M4	4 th	○	○	○			△	◇			Locks (held stationary) in 4th gear
M3	3 rd		○	○	○		△	◇		⊙	Locks (held stationary) in 3th gear
M2	2 nd			○	○	○	○		⊙	⊙	Locks (held stationary) in 2th gear
M1	1 st		○		○	○	○	⊙	⊙	⊙	Locks (held stationary) in 1th gear

- — Operates
- ⊙ — Operates during "progressive" acceleration.
- ◇ — Operates and affects power transmission while coasting.
- △ — Line pressure is applied but does not affect power transmission.
- △ * — Operates under conditions shown in illustration ①.
- △ ** — Operates under conditions shown in illustration ②. Delay control is applied during D (4,3,2,1) → N shift.



SCIA4755E

A/T CONTROL SYSTEM

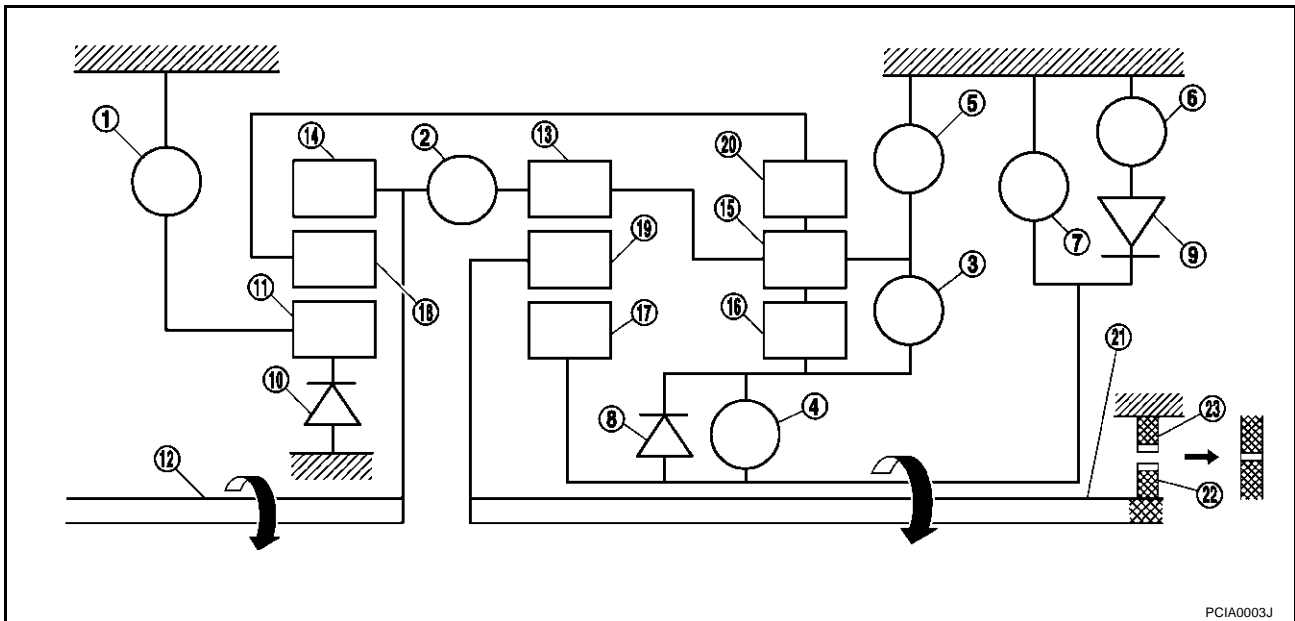
POWER TRANSMISSION

“N” Position

Since both the forward brake and the reverse brake are released, torque from the input shaft drive is not transmitted to the output shaft.

“P” Position

- The same as for the “N” position, both the forward brake and the reverse brake are released, so torque from the input shaft drive is not transmitted to the output shaft.
- The parking pawl linked with the select lever meshes with the parking gear and fastens the output shaft mechanically.

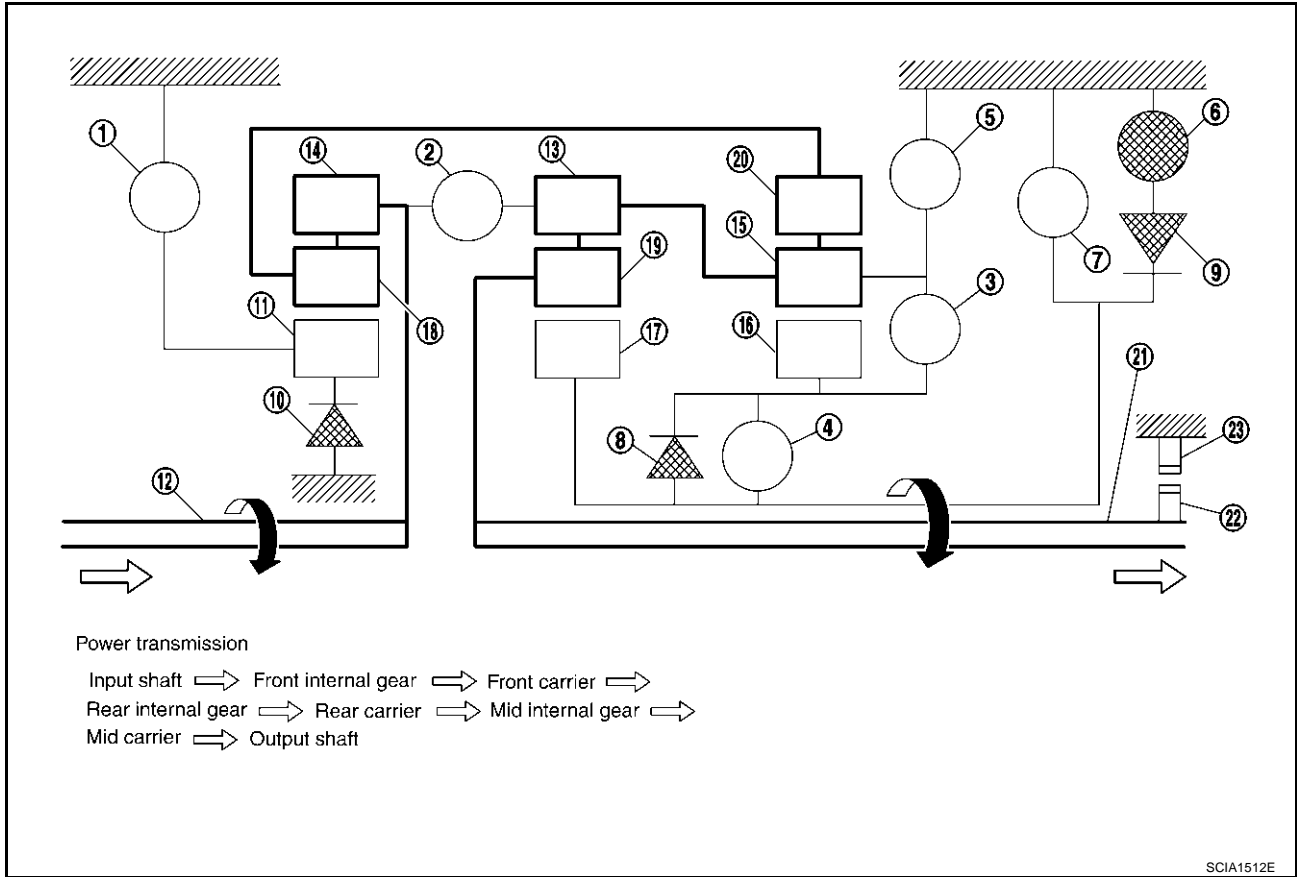


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|--------------------------------|-------------------------|---------------------------|
| 1. Front brake | 2. Input clutch | 3. Direct clutch |
| 4. High and low reverse clutch | 5. Reverse brake | 6. Forward brake |
| 7. Low coast brake | 8. 1st one-way clutch | 9. Forward one-way clutch |
| 10. 3rd one-way clutch | 11. Front sun gear | 12. Input shaft |
| 13. Mid internal gear | 14. Front internal gear | 15. Rear carrier |
| 16. Rear sun gear | 17. Mid sun gear | 18. Front carrier |
| 19. Mid carrier | 20. Rear internal gear | 21. Output shaft |
| 22. Parking gear | 23. Parking pawl | |

A/T CONTROL SYSTEM

"D1" Position

- The forward brake and the forward one-way clutch regulate reverse rotation of the mid sun gear.
- The 1st one-way clutch regulates reverse rotation of the rear sun gear.
- The 3rd one-way clutch regulates reverse rotation of the front sun gear.
- During deceleration, the mid sun gear turns forward, so the forward one-way clutch idles and the engine brake is not activated.

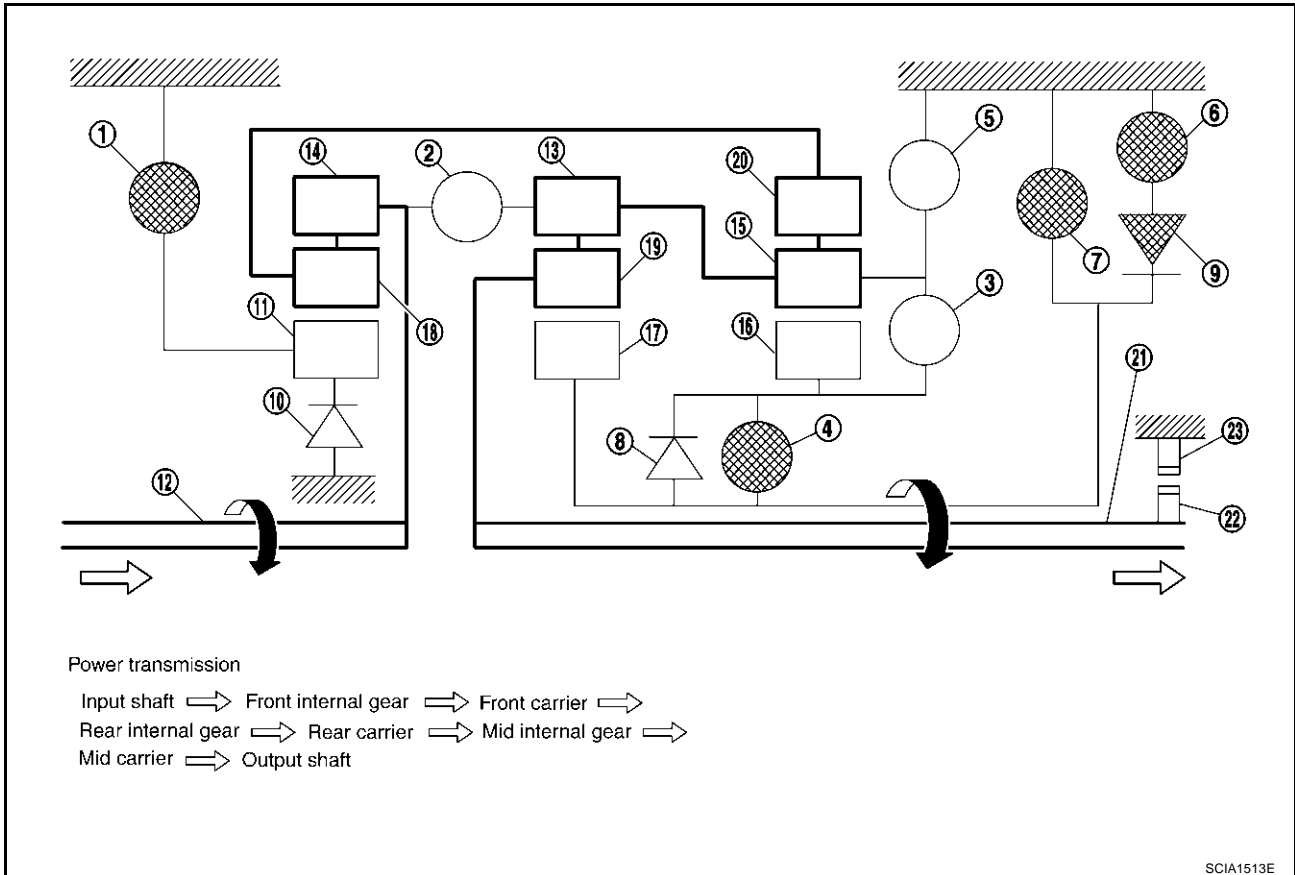


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|--------------------------------|-------------------------|---------------------------|
| 1. Front brake | 2. Input clutch | 3. Direct clutch |
| 4. High and low reverse clutch | 5. Reverse brake | 6. Forward brake |
| 7. Low coast brake | 8. 1st one-way clutch | 9. Forward one-way clutch |
| 10. 3rd one-way clutch | 11. Front sun gear | 12. Input shaft |
| 13. Mid internal gear | 14. Front internal gear | 15. Rear carrier |
| 16. Rear sun gear | 17. Mid sun gear | 18. Front carrier |
| 19. Mid carrier | 20. Rear internal gear | 21. Output shaft |
| 22. Parking gear | 23. Parking pawl | |

A/T CONTROL SYSTEM

“M1” Position

- The front brake fastens the front sun gear.
- The forward brake and the forward one-way clutch regulate reverse rotation of the mid sun gear.
- High and low reverse clutch connects the rear sun gear and the mid sun gear.
- The low coast brake fastens the mid sun gear.
- During deceleration, the low coast brake regulates forward rotation of the mid sun gear and the engine brake functions.

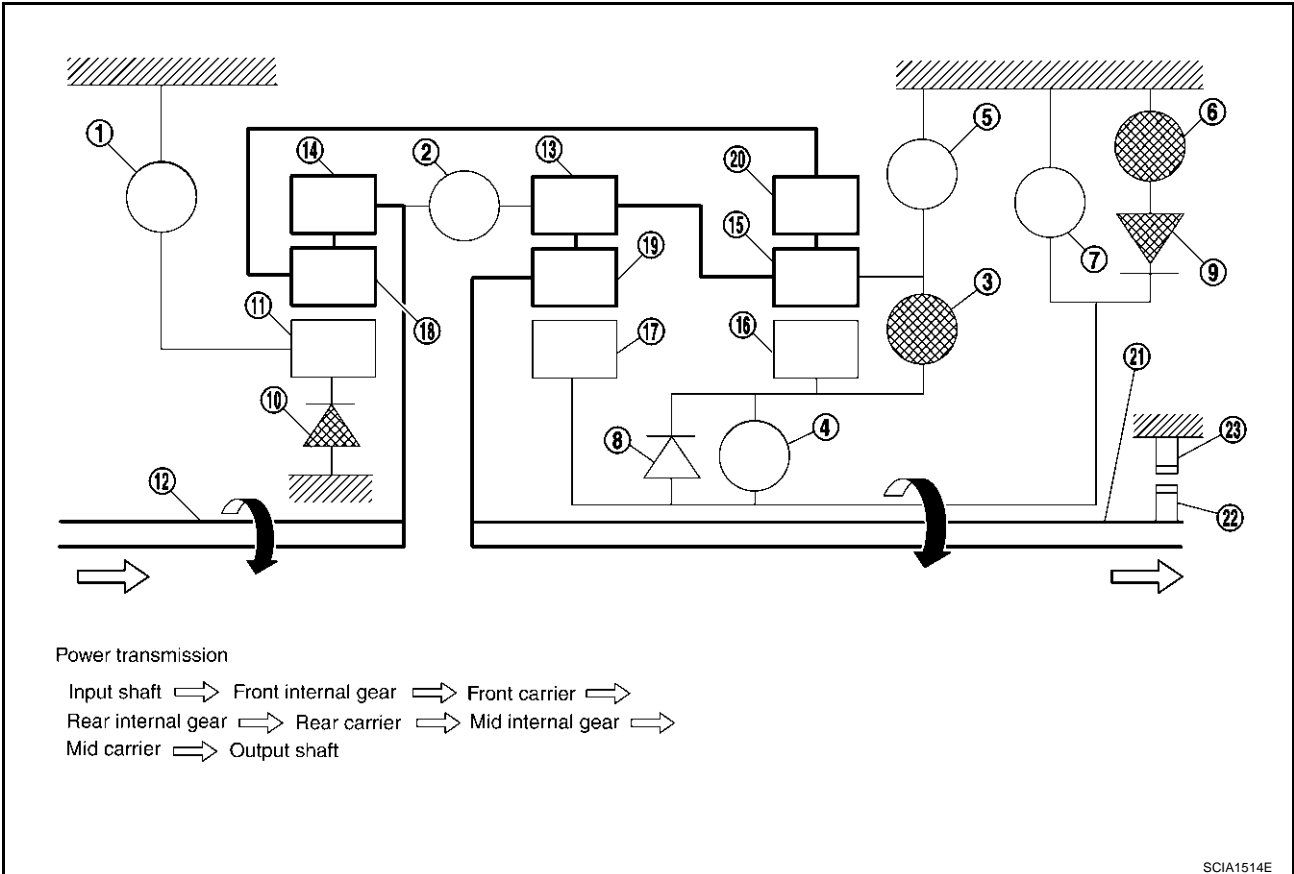


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|--------------------------------|-------------------------|---------------------------|
| 1. Front brake | 2. Input clutch | 3. Direct clutch |
| 4. High and low reverse clutch | 5. Reverse brake | 6. Forward brake |
| 7. Low coast brake | 8. 1st one-way clutch | 9. Forward one-way clutch |
| 10. 3rd one-way clutch | 11. Front sun gear | 12. Input shaft |
| 13. Mid internal gear | 14. Front internal gear | 15. Rear carrier |
| 16. Rear sun gear | 17. Mid sun gear | 18. Front carrier |
| 19. Mid carrier | 20. Rear internal gear | 21. Output shaft |
| 22. Parking gear | 23. Parking pawl | |

A/T CONTROL SYSTEM

“D2 ” Position

- The forward brake and the forward one-way clutch regulate reverse rotation of the mid sun gear.
- The 3rd one-way clutch regulates reverse rotation of the front sun gear.
- The direct clutch is coupled, and the rear carrier and rear sun gear are connected.
- During deceleration, the mid sun gear turns forward, so the forward one-way clutch idles and engine brake is not activated.

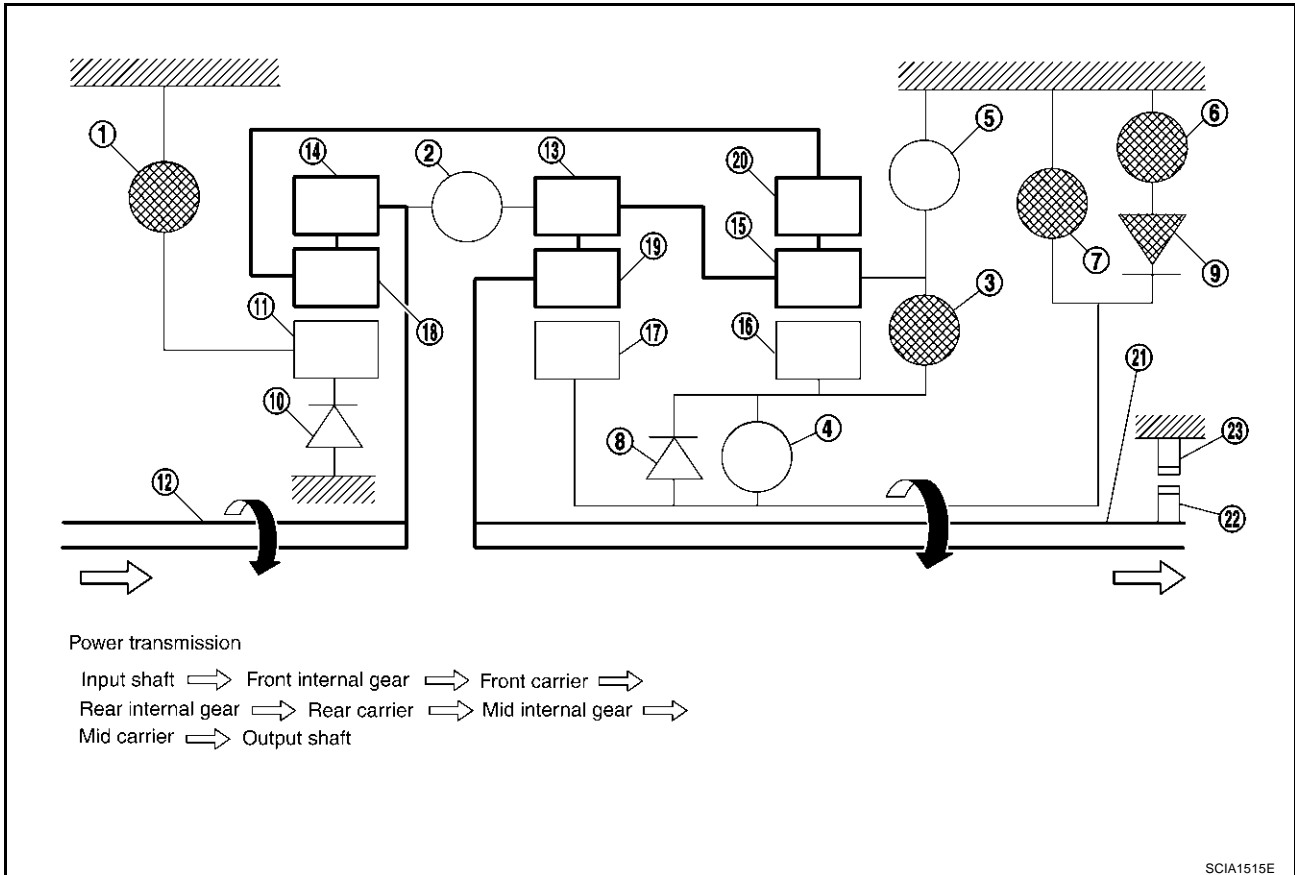


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|--------------------------------|-------------------------|---------------------------|
| 1. Front brake | 2. Input clutch | 3. Direct clutch |
| 4. High and low reverse clutch | 5. Reverse brake | 6. Forward brake |
| 7. Low coast brake | 8. 1st one-way clutch | 9. Forward one-way clutch |
| 10. 3rd one-way clutch | 11. Front sun gear | 12. Input shaft |
| 13. Mid internal gear | 14. Front internal gear | 15. Rear carrier |
| 16. Rear sun gear | 17. Mid sun gear | 18. Front carrier |
| 19. Mid carrier | 20. Rear internal gear | 21. Output shaft |
| 22. Parking gear | 23. Parking pawl | |

A/T CONTROL SYSTEM

“M2” Position

- The front brake fastens the front sun gear.
- The forward brake and the forward one-way clutch regulate reverse rotation of the mid sun gear.
- The direct clutch is coupled, and the rear carrier and rear sun gear are connected.
- The low coast brake fastens the mid sun gear.
- During deceleration, the low coast brake regulates forward rotation of the mid sun gear and the engine brake functions.

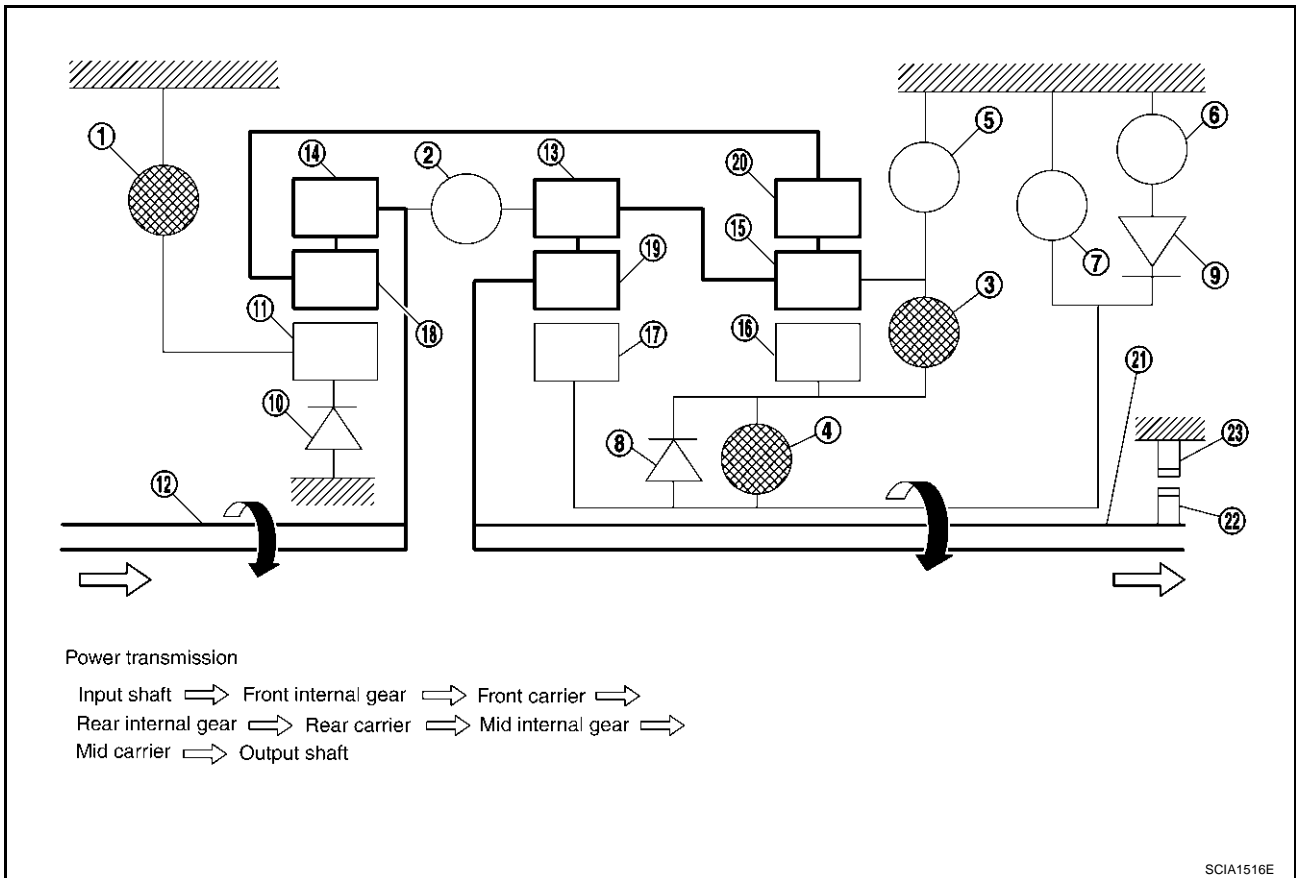


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|--------------------------------|-------------------------|---------------------------|
| 1. Front brake | 2. Input clutch | 3. Direct clutch |
| 4. High and low reverse clutch | 5. Reverse brake | 6. Forward brake |
| 7. Low coast brake | 8. 1st one-way clutch | 9. Forward one-way clutch |
| 10. 3rd one-way clutch | 11. Front sun gear | 12. Input shaft |
| 13. Mid internal gear | 14. Front internal gear | 15. Rear carrier |
| 16. Rear sun gear | 17. Mid sun gear | 18. Front carrier |
| 19. Mid carrier | 20. Rear internal gear | 21. Output shaft |
| 22. Parking gear | 23. Parking pawl | |

A/T CONTROL SYSTEM

“D3” and “M3” Position

- The front brake fastens the front sun gear.
- The direct clutch is coupled, and the rear carrier and rear sun gear are connected.
- The high and low reverse clutch is coupled, and the mid sun gear and rear sun gear are connected.



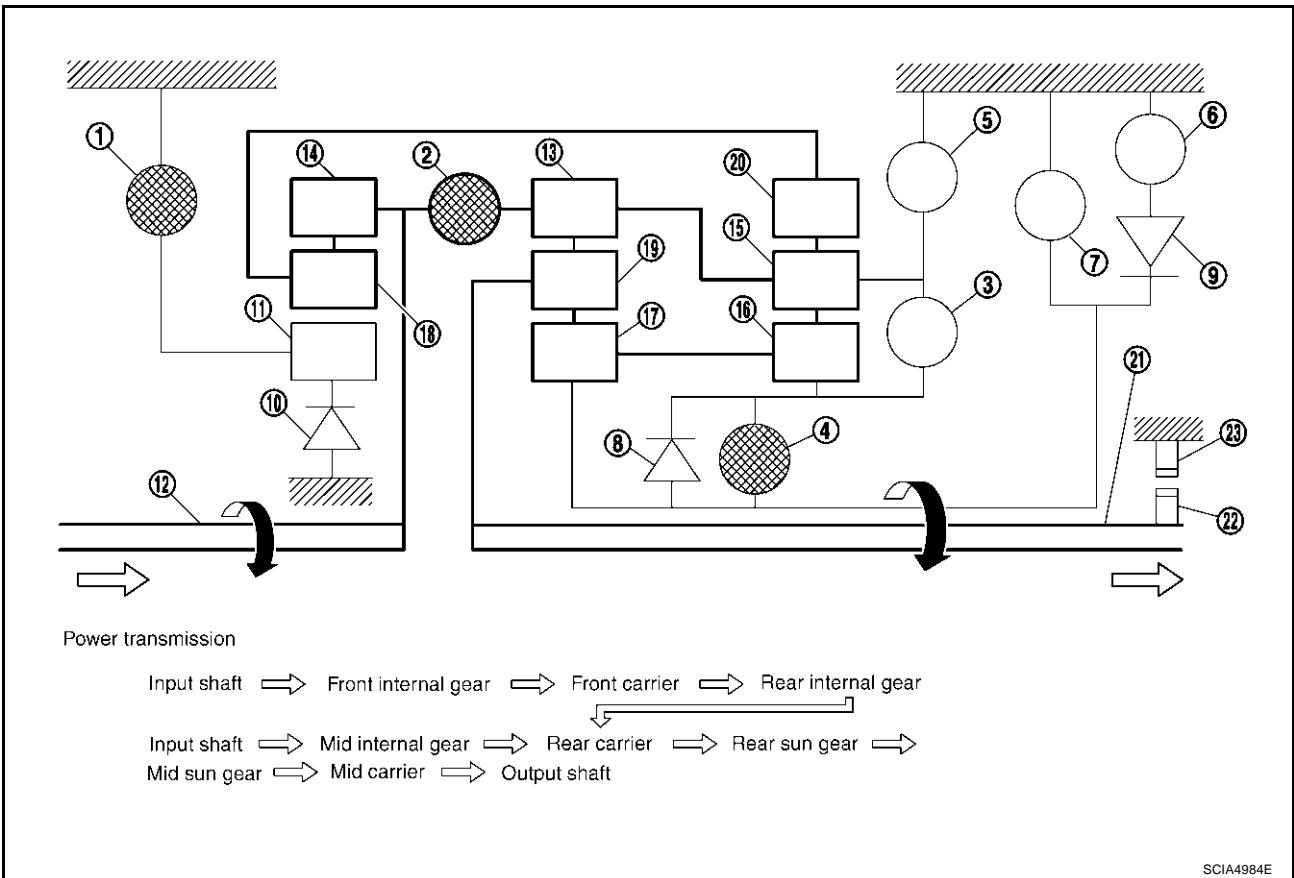
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|--------------------------------|-------------------------|---------------------------|
| 1. Front brake | 2. Input clutch | 3. Direct clutch |
| 4. High and low reverse clutch | 5. Reverse brake | 6. Forward brake |
| 7. Low coast brake | 8. 1st one-way clutch | 9. Forward one-way clutch |
| 10. 3rd one-way clutch | 11. Front sun gear | 12. Input shaft |
| 13. Mid internal gear | 14. Front internal gear | 15. Rear carrier |
| 16. Rear sun gear | 17. Mid sun gear | 18. Front carrier |
| 19. Mid carrier | 20. Rear internal gear | 21. Output shaft |
| 22. Parking gear | 23. Parking pawl | |

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A/T CONTROL SYSTEM

“D5” and “M5” Position

- The front brake fastens the front sun gear.
- The input clutch is coupled, and the front internal gear and mid internal gear are connected.
- The high and low reverse clutch is coupled, and the mid sun gear and rear sun gear are connected.



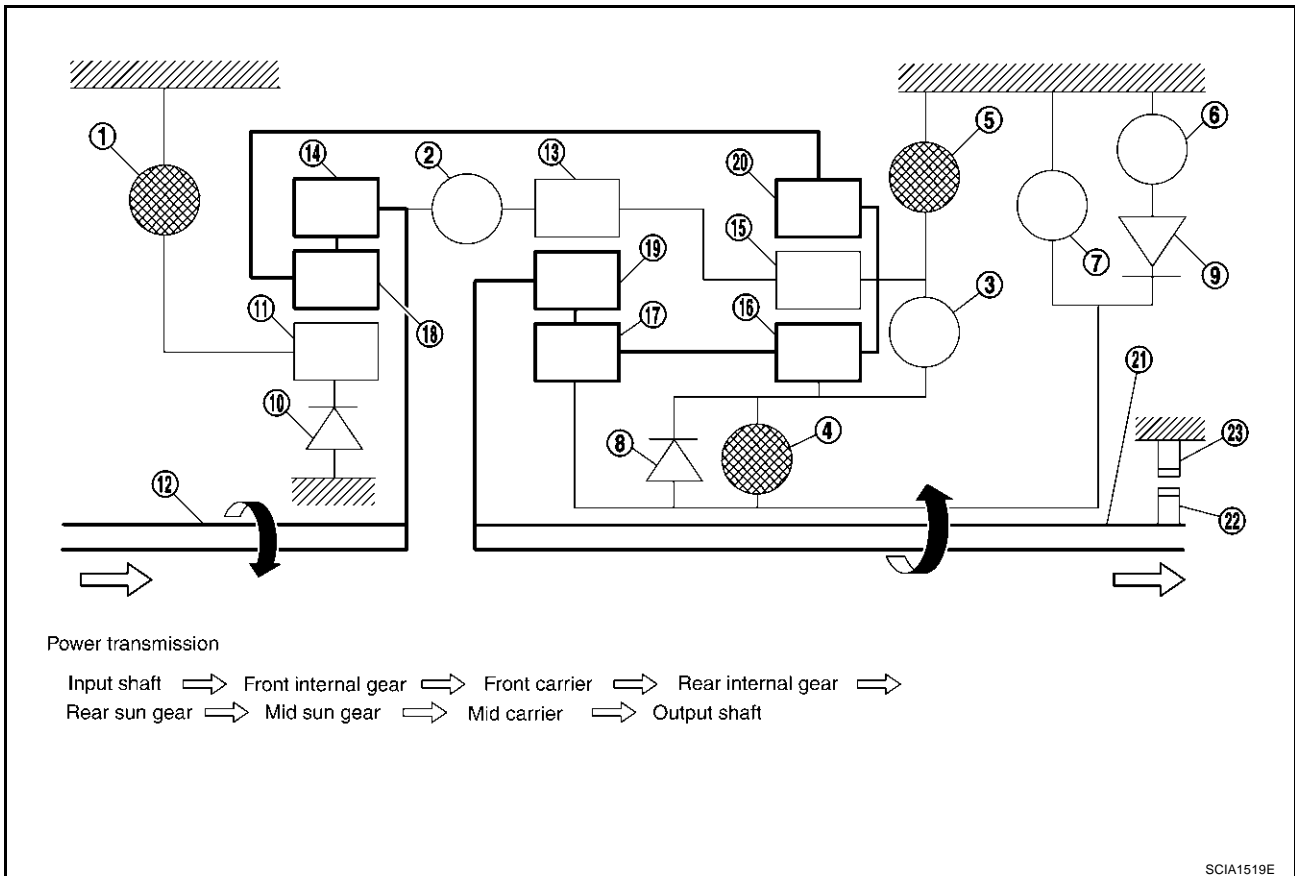
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|--------------------------------|-------------------------|---------------------------|
| 1. Front brake | 2. Input clutch | 3. Direct clutch |
| 4. High and low reverse clutch | 5. Reverse brake | 6. Forward brake |
| 7. Low coast brake | 8. 1st one-way clutch | 9. Forward one-way clutch |
| 10. 3rd one-way clutch | 11. Front sun gear | 12. Input shaft |
| 13. Mid internal gear | 14. Front internal gear | 15. Rear carrier |
| 16. Rear sun gear | 17. Mid sun gear | 18. Front carrier |
| 19. Mid carrier | 20. Rear internal gear | 21. Output shaft |
| 22. Parking gear | 23. Parking pawl | |

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A/T CONTROL SYSTEM

“R” Position

- The front brake fastens the front sun gear.
- The high and low reverse clutch is coupled, and the mid sun gear and rear sun gear are connected.
- The reverse brake fastens the rear carrier.



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|--------------------------------|-------------------------|---------------------------|
| 1. Front brake | 2. Input clutch | 3. Direct clutch |
| 4. High and low reverse clutch | 5. Reverse brake | 6. Forward brake |
| 7. Low coast brake | 8. 1st one-way clutch | 9. Forward one-way clutch |
| 10. 3rd one-way clutch | 11. Front sun gear | 12. Input shaft |
| 13. Mid internal gear | 14. Front internal gear | 15. Rear carrier |
| 16. Rear sun gear | 17. Mid sun gear | 18. Front carrier |
| 19. Mid carrier | 20. Rear internal gear | 21. Output shaft |
| 22. Parking gear | 23. Parking pawl | |

A/T CONTROL SYSTEM

ACS002LF

TCM Function

The function of the TCM is to:

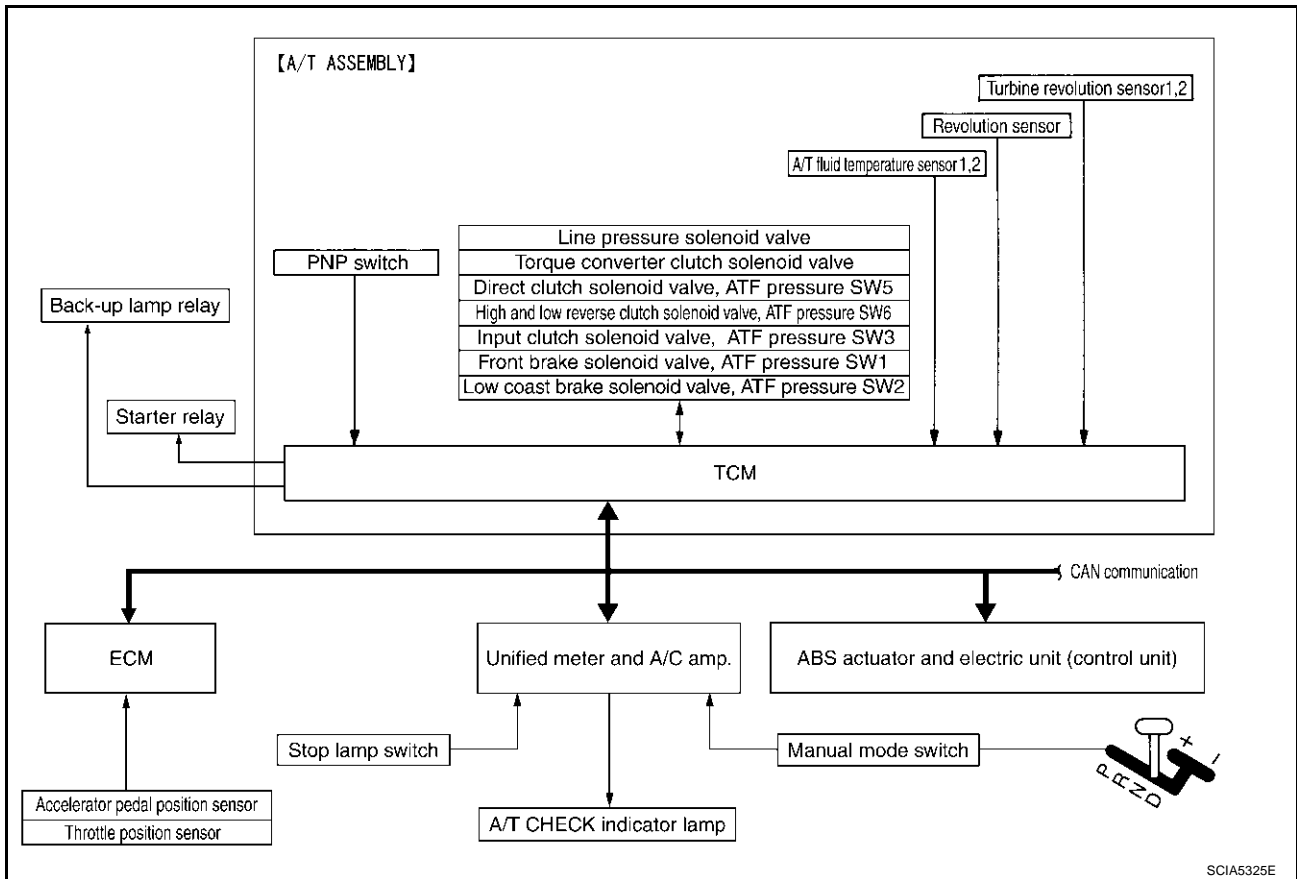
- Receive input signals sent from various switches and sensors.
- Determine required line pressure, shifting point, lock-up operation, and engine brake operation.
- Send required output signals to the respective solenoids.

CONTROL SYSTEM OUTLINE

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

SENSORS (or SIGNALS)		TCM		ACTUATORS
PNP switch Accelerator pedal position sensor Closed throttle position signal Wide open throttle position signal Engine speed signal A/T fluid temperature sensor Revolution sensor Vehicle speed signal Manual mode switch signal Stop lamp switch signal Turbine revolution sensor ATF pressure SW	⇒	Shift control Line pressure control Lock-up control Engine brake control Timing control Fail-safe control Self-diagnosis CONSULT-II communication line Duet-EA control CAN system	⇒	Input clutch solenoid valve Direct clutch solenoid valve Front brake solenoid valve High and low reverse clutch solenoid valve Low coast brake solenoid valve Torque converter clutch solenoid valve Line pressure solenoid valve A/T CHECK indicator lamp Starter relay Back-up lamp relay

CONTROL SYSTEM DIAGRAM



SCIA5325E

A/T CONTROL SYSTEM

ACS003MF

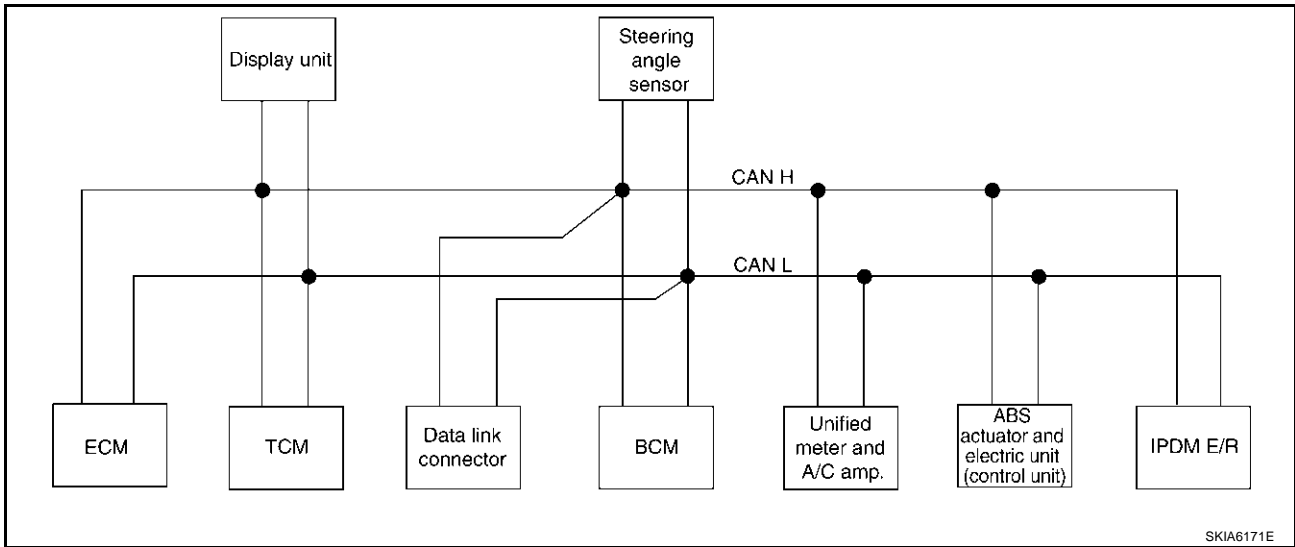
CAN Communication SYSTEM DESCRIPTION

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

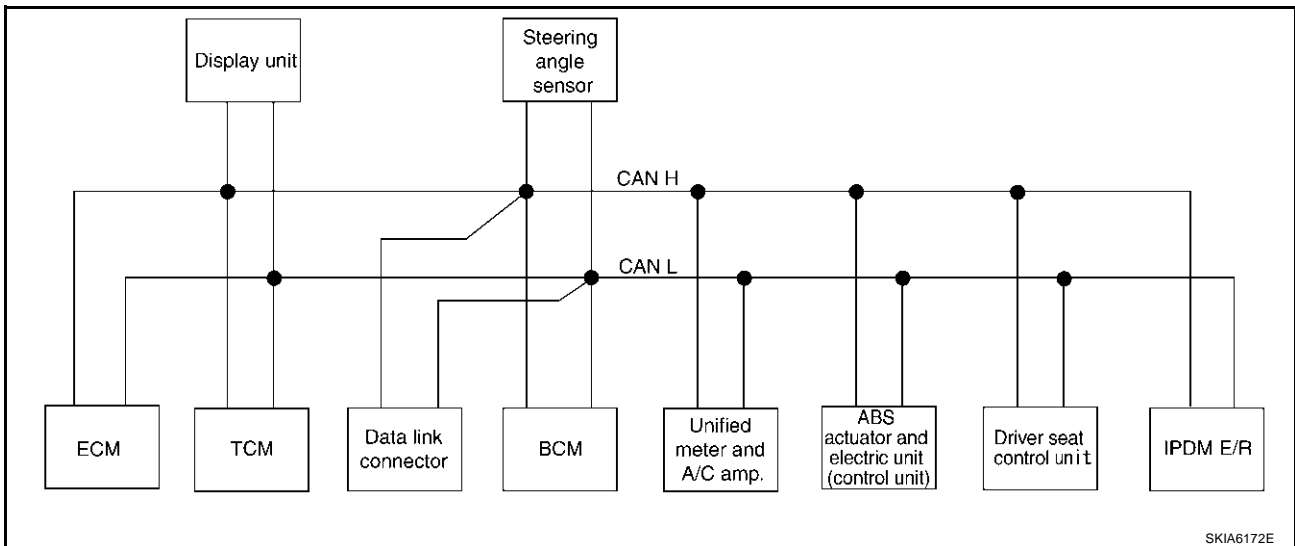
TYPE 1/TYPE2

System Diagram

- Type1



- Type2



A/T CONTROL SYSTEM

Input/Output Signal Chart

T: Transmit R: Receive

Signals	ECM	TCM	Display unit	BCM	Steering angle sensor	Unified meter and A/C amp.	ABS actuator and electric unit (control unit)	Driver seat control unit	IPDM E/R
Engine speed signal	T	R	R			R	R		
Engine status signal	T			R					
Engine coolant temperature signal	T	R				R			
A/T self-diagnosis signal	R	T							
Accelerator pedal position signal	T	R					R		
Closed throttle position signal	T	R							
Wide open throttle position signal	T	R							
Battery voltage signal	T	R							
Key switch signal				T				R	
Ignition switch signal				T				R	R
P range signal		T					R	R	
Stop lamp switch signal		R				T			
ABS operation signal	R						T		
TCS operation signal	R						T		
VDC operation signal	R						T		
Fuel consumption monitor signal	T		R			R			
Input shaft revolution signal	R	T							
Output shaft revolution signal	R	T							
A/C switch signal	R			T					
A/C compressor request signal	T								R
A/C relay status signal	R								T
A/C compressor feedback signal	T					R			
Blower fan motor switch signal	R			T					
A/C control signal			T			R			
			R			T			
Cooling fan speed request signal	T								R
Cooling fan speed signal	R								T
Position light request signal			R	T		R			R
Low beam request signal				T					R
Low beam status signal	R								T
High beam request signal				T		R			R
High beam status signal	R								T
Front fog light request signal				T					R
Day time running light request signal				T		R			
Turn LED burnout status signal				R		T			
Vehicle speed signal						R	T		
	R	R	R	R		T		R	
Sleep wake up signal				T		R		R	R

A/T CONTROL SYSTEM

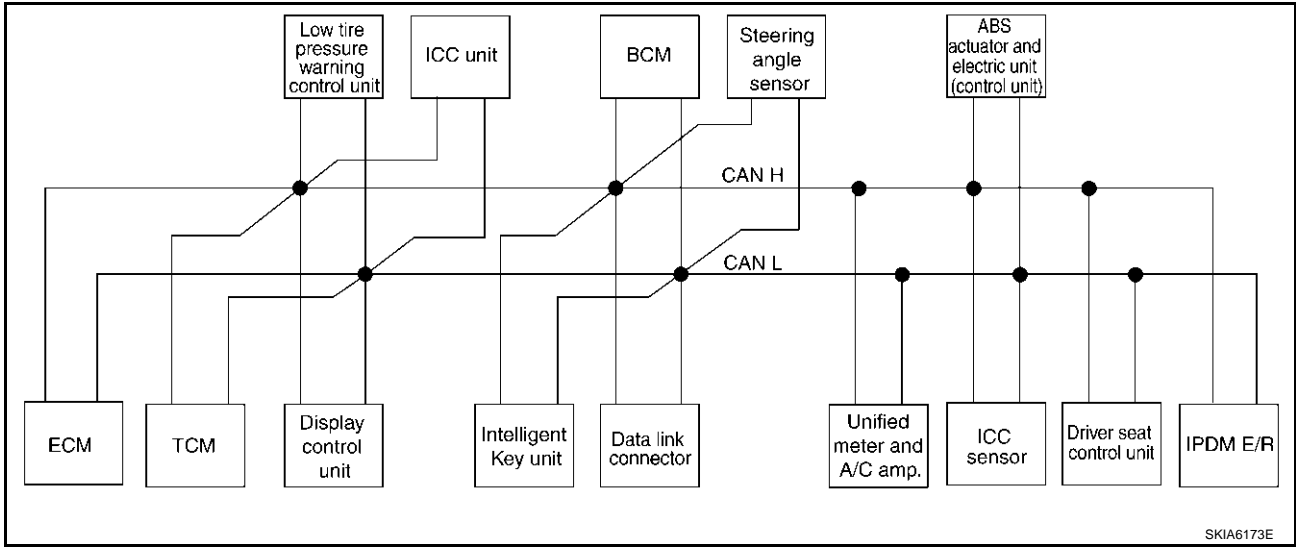
Signals	ECM	TCM	Display unit	BCM	Steering angle sensor	Unified meter and A/C amp.	ABS actuator and electric unit (control unit)	Driver seat control unit	IPDM E/R
Door switch signal			R	T		R		R	R
Turn indicator signal				T		R			
Key fob ID signal				T				R	
Key fob door unlock signal				T				R	
Oil pressure switch signal				R					T
				T		R			
Buzzer output signal				T		R			
Fuel level sensor signal	R					T			
Fuel level low warning signal			R			T			
ASCD operation signal	T	R							
ASCD OD cancel request	T	R							
Front wiper request signal				T					R
Front wiper stop position signal				R					T
Rear window defogger switch signal				T					R
Rear window defogger control signal	R		R	R					T
Hood switch signal				R					T
Theft warning horn request signal				T					R
Horn chirp signal				T					R
Steering angle sensor signal					T		R		
ABS warning lamp signal						R	T		
VDC OFF indicator lamp signal						R	T		
SLIP indicator lamp signal						R	T		
Brake warning lamp signal						R	T		
System setting signal			T	R				R	
A/T CHECK indicator lamp signal		T				R			
A/T position indicator lamp signal		T				R			
A/T shift schedule change demand signal		R					T		
Manual mode signal		R				T			
Not manual mode signal		R				T			
Manual mode shift up signal		R				T			
Manual mode shift down signal		R				T			
Manual mode indicator signal		T				R			
Distance to empty signal			R			T			
Hand brake switch				R		T			

A/T CONTROL SYSTEM

TYPE 3

System Diagram

- Type3



Input/Output Signal Chart

T: Transmit R: Receive

Signals	ECM	TCM	Display control unit	Low tire pressure warning control unit	ICC unit	Intelligent Key unit	BCM	Steering angle sensor	Unified meter and A/C amp.	ICC sensor	ABS actuator and electric unit (control unit)	Driver seat control unit	IPDM E/R
Engine speed signal	T	R	R		R				R		R		
Engine status signal	T						R						
Engine coolant temperature signal	T	R			R				R				
A/T self-diagnosis signal	R	T											
Accelerator pedal position signal	T	R			R						R		
Closed throttle position signal	T	R			R								
Wide open throttle position signal	T	R											
Battery voltage signal	T	R											
Key switch signal							T					R	
Ignition switch signal							T					R	R
P range signal		T			R						R	R	
Stop lamp switch signal		R							T				
ABS operation signal	R				R						T		
TCS operation signal	R				R						T		
VDC operation signal	R				R						T		
Fuel consumption monitor signal	T		R						R				

A/T CONTROL SYSTEM

Signals	ECM	TCM	Display control unit	Low tire pressure warning control unit	ICC unit	Intelligent Key unit	BCM	Steering angle sensor	Unified meter and A/C amp.	ICC sensor	ABS actuator and electric unit (control unit)	Driver seat control unit	IPDM E/R
Input shaft revolution signal	R	T			R								
Output shaft revolution signal	R	T			R								
A/C switch signal	R						T						
A/C compressor request signal	T												R
A/C relay status signal	R												T
A/C compressor feedback signal	T								R				
Blower fan motor switch signal	R						T						
A/C control signal			T						R				
			R						T				
Cooling fan speed signal	R												T
Position light request signal	R						T		R				R
Low beam request signal							T						R
Low beam status signal	R												T
High beam request signal							T		R				R
High beam status signal	R												T
Front fog light request signal							T						R
Day time running light request signal							T		R				
Turn LED burnout status signal							R		T				
Vehicle speed signal					R				R		T		
	R	R	R	R		R	R		T	R		R	
Sleep wake up signal							T		R			R	R
						T	R						
Door switch signal			R			R	T		R			R	R
Turn indicator signal							T		R				
Key fob ID signal							T					R	
Key fob door unlock signal							T					R	
Oil pressure switch signal							R						T
							T		R				
Buzzer output signal							T		R				
						T			R				
					T				R				

A/T CONTROL SYSTEM

Signals	ECM	TCM	Display control unit	Low tire pressure warning control unit	ICC unit	Intelligent Key unit	BCM	Steering angle sensor	Unified meter and A/C amp.	ICC sensor	ABS actuator and electric unit (control unit)	Driver seat control unit	IPDM E/R
Fuel level sensor signal	R								T				
Fuel level low warning signal			R						T				
ICC operation signal	R				T								
Front wiper request signal					R		T						R
Front wiper stop position signal							R						T
Rear window defogger switch signal							T						R
Rear window defogger control signal	R		R				R						T
Hood switch signal							R						T
Theft warning horn request signal							T						R
Horn chirp signal							T						R
Steering angle sensor signal								T			R		
Tire pressure signal				T					R				
Tire pressure data signal			R	T									
ABS warning lamp signal					R				R		T		
VDC OFF indicator lamp signal					R				R		T		
SLIP indicator lamp signal									R		T		
Brake warning lamp signal									R		T		
System setting signal			T			R						R	
Distance to empty signal			R						T				
Hand brake switch signal							R		T				
Door lock/unlock request signal						T	R						
Door lock/unlock status signal						R	T						
Starter permission signal						T	R						
Back door open request signal						T	R						
Power window open request signal						T	R						
Alarm request signal						T	R						
Key warning signal						T			R				
ICC sensor signal					R					T			
ICC warning lamp signal					T				R				

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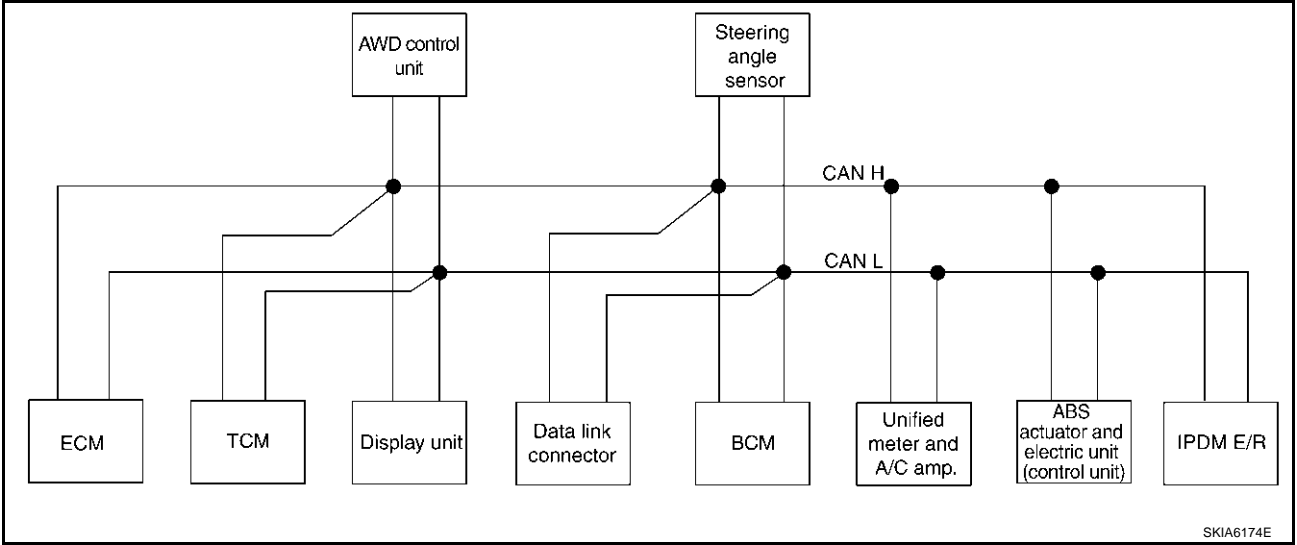
A/T CONTROL SYSTEM

Signals	ECM	TCM	Display control unit	Low tire pressure warning control unit	ICC unit	Intelligent Key unit	BCM	Steering angle sensor	Unified meter and A/C amp.	ICC sensor	ABS actuator and electric unit (control unit)	Driver seat control unit	IPDM E/R
ICC system display signal					T				R				
Current gear position signal		T			R						R		
Steering switch signal	T				R								
ASCD operation signal	T	R											
ASCD OD cancel request	T	R											
ICC OD cancel request	R	R			T								
A/T CHECK indicator lamp signal		T							R				
A/T position indicator lamp signal		T							R				
A/T shift schedule change demand signal		R									T		
Manual mode signal		R							T				
Not manual mode signal		R							T				
Manual mode shift up signal		R							T				
Manual mode shift down signal		R							T				
Manual mode indicator signal		T			R				R				
Ignition knob switch signal						T	R						

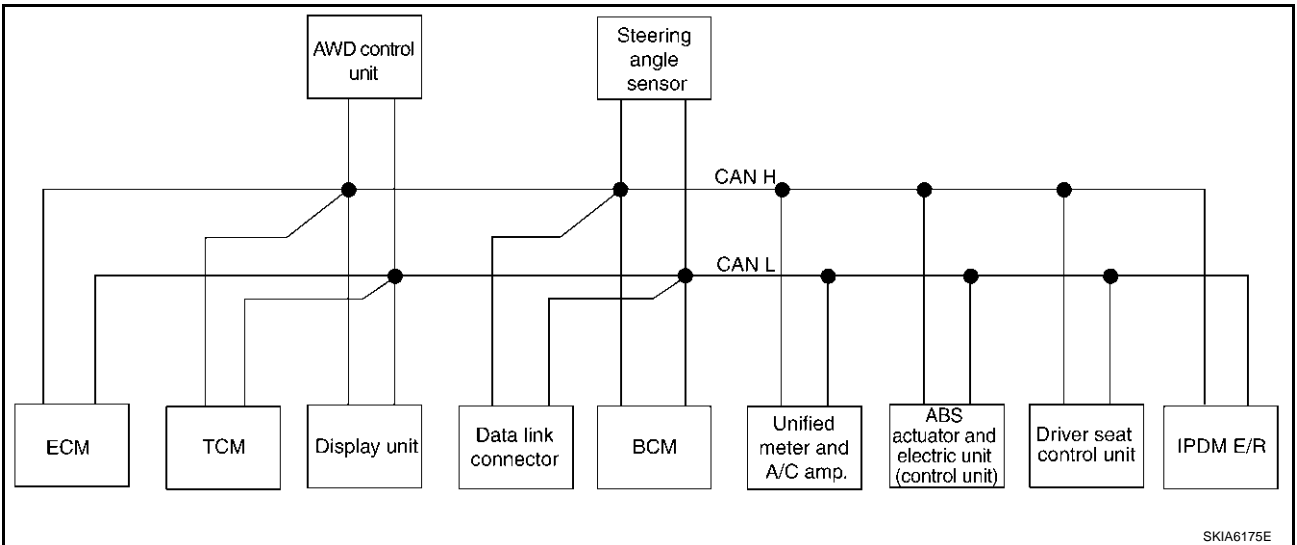
A/T CONTROL SYSTEM

TYPE 4/TYPER5 System Diagram

- Type4



- Type5



Input/Output Signal Chart

T: Transmit R: Receive

Signals	ECM	TCM	Display unit	AWD control unit	BCM	Steering angle sensor	Unified meter and A/C amp.	ABS actuator and electric unit (control unit)	Driver seat control unit	IPDM E/R
A/T self-diagnosis signal	R	T								
ABS operation signal	R			R				T		
TCS operation signal	R							T		
VDC operation signal	R			R				T		
Stop lamp switch signal		R		R			T			
Battery voltage signal	T	R								

A/T CONTROL SYSTEM

Signals	ECM	TCM	Display unit	AWD control unit	BCM	Steering angle sensor	Unified meter and A/C amp.	ABS actuator and electric unit (control unit)	Driver seat control unit	IPDM E/R
Key switch signal					T				R	
Ignition switch signal					T				R	R
P range signal		T						R	R	
Closed throttle position signal	T	R								
Wide open throttle position signal	T	R								
Engine speed signal	T	R	R	R			R	R		
Engine status signal	T				R					
Engine coolant temperature signal	T	R					R			
Accelerator pedal position signal	T	R		R				R		
Fuel consumption monitor signal	T		R				R			
Input shaft revolution signal	R	T								
Output shaft revolution signal	R	T								
A/C switch signal	R				T					
A/C compressor request signal	T									R
A/C relay status signal	R									T
A/C compressor feedback signal	T						R			
Blower fan motor switch signal	R				T					
A/C control signal			T				R			
			R				T			
Cooling fan speed signal	R									T
Position light request signal			R		T		R			R
Low beam request signal					T					R
Low beam status signal	R									T
High beam request signal					T		R			R
High beam status signal	R									T
Front fog light request signal					T					R
Day time running light request signal					T		R			
Turn LED burnout status signal					R		T			
Vehicle speed signal							R	T		
	R	R	R		R		T		R	
Sleep wake up signal					T		R		R	R
Door switch signal			R		T		R		R	R
Turn indicator signal					T		R			
Key fob ID signal					T				R	
Key fob door unlock signal					T				R	
Oil pressure switch signal					R					T
					T		R			
Buzzer output signal					T		R			

A/T CONTROL SYSTEM

Signals	ECM	TCM	Display unit	AWD control unit	BCM	Steering angle sensor	Unified meter and A/C amp.	ABS actuator and electric unit (control unit)	Driver seat control unit	IPDM E/R
Fuel level sensor signal	R						T			
Fuel level low warning signal			R				T			
Front wiper request signal					T					R
Front wiper stop position signal					R					T
Rear window defogger switch signal					T					R
Rear window defogger control signal	R		R		R					T
Hood switch signal					R					T
Theft warning horn request signal					T					R
Horn chirp signal					T					R
Steering angle sensor signal						T		R		
ABS warning lamp signal							R	T		
VDC OFF indicator lamp signal							R	T		
SLIP indicator lamp signal							R	T		
Brake warning lamp signal							R	T		
System setting signal			T		R				R	
AWD warning lamp signal				T			R			
AWD lock indicator lamp signal				T			R			
Distance to empty signal			R				T			
Hand brake switch signal				R	R		T			
ASCD operation signal	T	R								
ASCD OD cancel request	T	R								
A/T CHECK indicator lamp signal		T					R			
A/T position indicator lamp signal		T					R			
A/T shift schedule change demand signal		R						T		
Manual mode signal		R					T			
Not manual mode signal		R					T			
Manual mode shift up signal		R					T			
Manual mode shift down signal		R					T			
Manual mode indicator signal		T					R			

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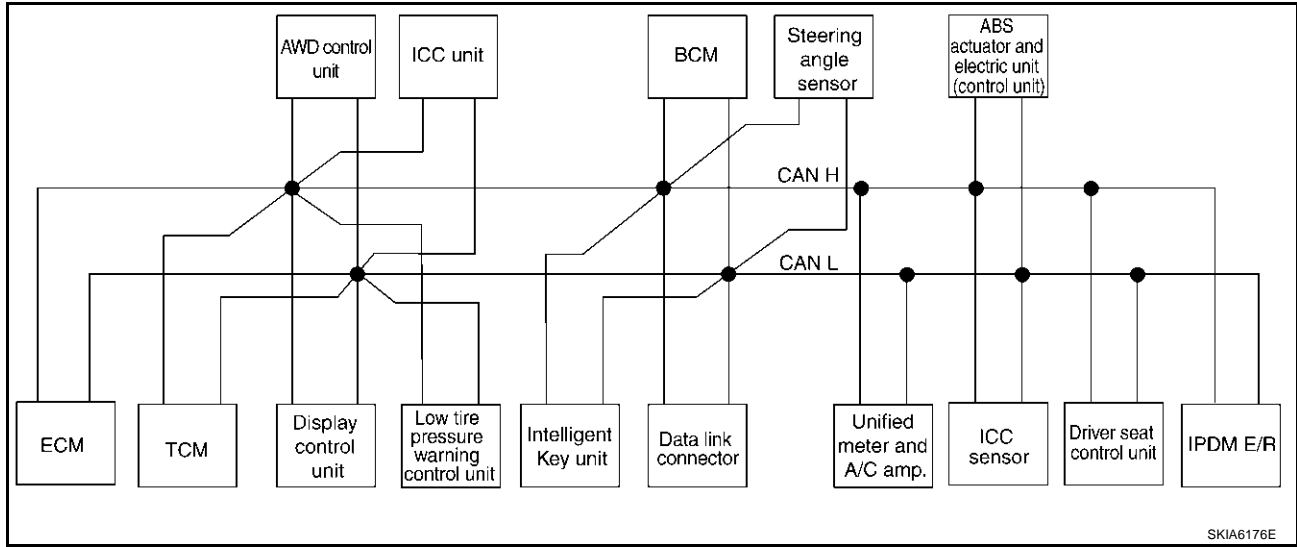
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A/T CONTROL SYSTEM

TYPE 6

System Diagram

- Type6



Input/Output Signal Chart

T: Transmit R: Receive

Signals	ECM	TCM	Display control unit	Low tire pressure warning control unit	AWD control unit	ICC unit	Intelligent Key unit	BCM	Steering angle sensor	Unified meter and A/C amp.	ICC sensor	ABS actuator and electric unit (control unit)	Driver seat control unit	IPDM E/R
A/T self-diagnosis signal	R	T												
ABS operation signal	R				R	R						T		
TCS operation signal	R					R						T		
VDC operation signal	R				R	R					R	T		
Stop lamp switch signal		R			R					T				
Battery voltage signal	T	R												
Key switch signal								T					R	
Ignition switch signal								T					R	R
P range signal		T				R						R	R	
Closed throttle position signal	T	R				R								
Wide open throttle position signal	T	R												
Engine speed signal	T	R	R		R	R				R		R		
Engine status signal	T							R						
Engine coolant temperature signal	T	R				R				R				
Accelerator pedal position signal	T	R			R	R						R		
Fuel consumption monitor signal	T		R							R				
A/T self-diagnosis signal	R	T												

A/T CONTROL SYSTEM

Signals	ECM	TCM	Display control unit	Low tire pressure warning control unit	AWD control unit	ICC unit	Intelligent Key unit	BCM	Steering angle sensor	Unified meter and A/C amp.	ICC sensor	ABS actuator and electric unit (control unit)	Driver seat control unit	IPD M E/R
Input shaft revolution signal	R	T				R								
Output shaft revolution signal	R	T				R								
A/C switch signal	R							T						
A/C compressor request signal	T													R
A/C relay status signal	R													T
A/C compressor feedback signal	T									R				
Blower fan motor switch signal	R							T						
A/C control signal			T							R				
			R							T				
Cooling fan speed signal	R													T
Position light request signal			R					T		R				R
Low beam request signal								T						R
Low beam status signal	R													T
High beam request signal								T		R				R
High beam status signal	R													T
Front fog light request signal								T						R
Day time running light request signal								T		R				
Turn LED burnout status signal								R		T				
Vehicle speed signal						R				R		T		
	R	R	R	R			R	R		T	R		R	
Sleep wake up signal								T		R			R	R
							T	R						
Door switch signal			R				R	T		R			R	R
Key fob ID signal								T					R	
Key fob door unlock signal								T					R	
Oil pressure switch signal								R						T
								T		R				
Buzzer output signal								T		R				
						T				R				
Fuel level sensor signal	R								T					
Fuel level low warning signal			R							T				
ICC operation signal	R					T								

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A/T CONTROL SYSTEM

Signals	ECM	TCM	Display control unit	Low tire pressure warning control unit	AWD control unit	ICC unit	Intelligent Key unit	BCM	Steering angle sensor	Unified meter and A/C amp.	ICC sensor	ABS actuator and electric unit (control unit)	Driver seat control unit	IPD M E/R
Front wiper request signal						R		T						R
Front wiper stop position signal								R						T
Rear window defogger switch signal								T						R
Rear window defogger control signal	R		R					R						T
Hood switch signal								R						T
Theft warning horn request signal								T						R
Horn chirp signal								T						R
Steering angle sensor signal									T			R		
Tire pressure signal				T						R				
Tire pressure data signal			R	T										
ABS warning lamp signal						R				R		T		
VDC OFF indicator lamp signal						R				R		T		
SLIP indicator lamp signal										R		T		
Brake warning lamp signal										R		T		
System setting signal			T				R						R	
AWD warning lamp signal					T					R				
AWD lock indicator lamp signal					T					R				
Distance to empty signal			R							T				
Hand brake switch signal					R			R		T				
Door lock/unlock request signal							T	R						
Door lock/unlock status signal							R	T						
Starter permission signal							T	R						
Back door open request signal							T	R						
Power window open request signal							T	R						
Alarm request signal							T	R						
Key warning signal							T			R				
ICC sensor signal						R					T			
ICC warning lamp signal						T				R				
ICC system display signal						T				R				
Current gear position signal		T				R						R		
Steering switch signal	T					R								

A/T CONTROL SYSTEM

Signals	ECM	TCM	Display control unit	Low tire pressure warning control unit	AWD control unit	ICC unit	Intelligent Key unit	BCM	Steering angle sensor	Unified meter and A/C amp.	ICC sensor	ABS actuator and electric unit (control unit)	Driver seat control unit	IPD M E/ R
ASCD operation signal	T	R												
ASCD OD cancel request	T	R												
ICC OD cancel request	R	R				T								
A/T CHECK indicator lamp signal		T								R				
A/T position indicator lamp signal		T								R				
A/T shift schedule change demand signal		R										T		
Manual mode signal		R								T				
Not manual mode signal		R								T				
Manual mode shift up signal		R								T				
Manual mode shift down signal		R								T				
Manual mode indicator signal		T								R				
Ignition knob switch signal							T	R						

A
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E
F
G
H
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A/T CONTROL SYSTEM

Input/Output Signal of TCM

ACS002LH

Control item		Line pressure control	Vehicle speed control	Shift control	Lock-up control	Engine brake control	Fail-safe function (*3)	Self-diagnostics function	
Input	Accelerator pedal position signal (*5)	X	X	X	X	X	X	X	
	Vehicle speed sensor A/T (revolution sensor)	X	X	X	X		X	X	
	Vehicle speed sensor MTR(*1) (*5)	X	X	X	X			X	
	Closed throttle position signal(*5)	(*2) X	(*2) X		X	(*2) X		(*4) X	
	Wide open throttle position signal(*5)	(*2) X	(*2) X			(*2) X		(*4) X	
	Turbine revolution sensor 1	X	X		X		X	X	
	Turbine revolution sensor 2 (for 4th speed only)	X	X		X		X	X	
	Engine speed signals(*5)				X			X	
	PNP switch	X	X	X	X	X	X	(*4) X	
	Stop lamp switch signal(*5)		X			X		(*4) X	
	A/T fluid temperature sensors 1, 2	X	X	X	X	X	X	X	
	ASCD or ICC	Operation signal(*5)		X	X	X	X		
		Overdrive cancel signal(*5)		X		X	X		
TCM power supply voltage signal		X	X	X	X	X		X	
Output	Direct clutch solenoid (ATF pressure switch 5)		X	X			X	X	
	Input clutch solenoid (ATF pressure switch 3)		X	X			X	X	
	High and low reverse clutch solenoid (ATF pressure switch 6)		X	X			X	X	
	Front brake solenoid (ATF pressure switch 1)		X	X			X	X	
	Low coast brake solenoid (ATF pressure switch 2)		X	X		X	X	X	
	Line pressure solenoid	X	X	X	X	X	X	X	
	TCC solenoid				X		X	X	
	Self-diagnostics table(*5)								X
	Starter relay							X	X

*1: Spare for vehicle speed sensor-A/T (revolution sensor)

*2: Spare for accelerator pedal position signal

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

*4: Used as a condition for starting self-diagnostics; if self-diagnostics are not started, it is judged that there is some kind of error.

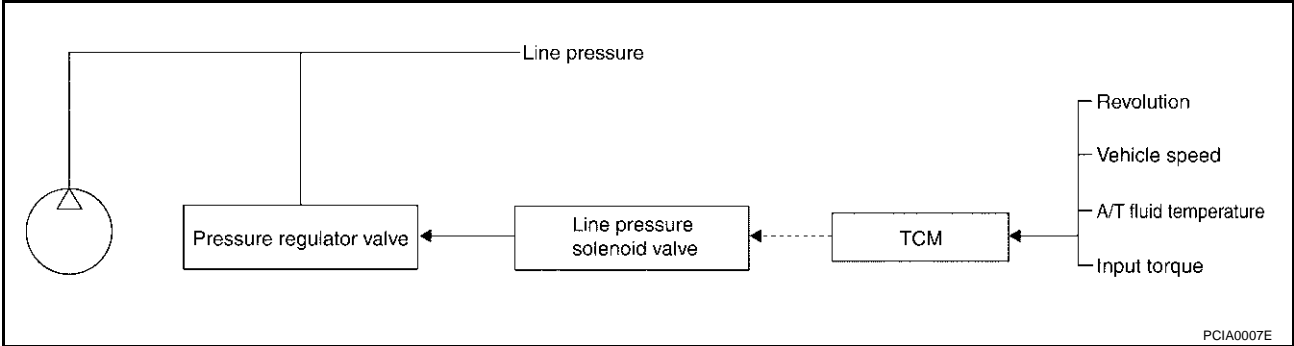
*5: CAN communications

A/T CONTROL SYSTEM

Line Pressure Control

ACS002LI

- 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.
- 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.

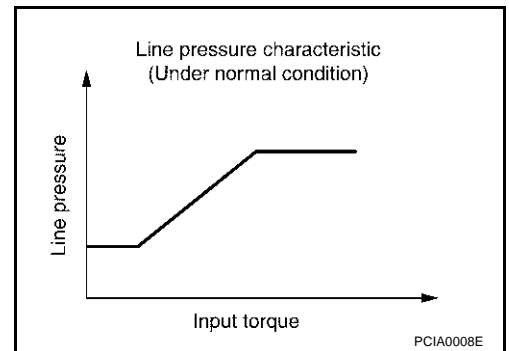


LINE PRESSURE CONTROL IS BASED ON THE TCM LINE PRESSURE CHARACTERISTIC PATTERN

- The TCM has stored in memory a number of patterns for the optimum line pressure characteristic for the driving state.
- In order to obtain the most appropriate line pressure characteristic to meet the current driving state, the TCM controls the line pressure solenoid current valve and thus controls the line pressure.

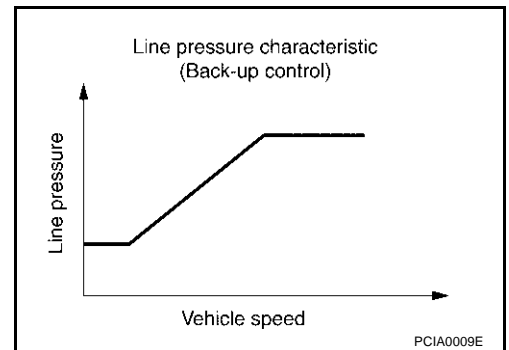
Normal Control

Each clutch is adjusted to the necessary pressure to match the engine drive force.



Back-Up Control (Engine Brake)

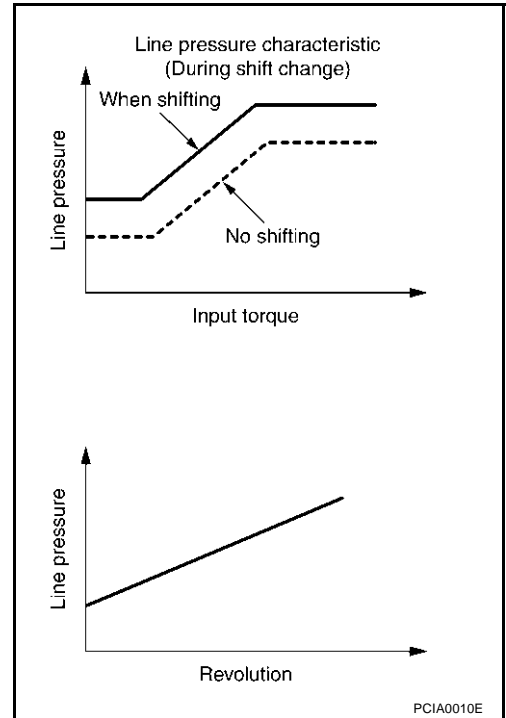
When the select operation is performed during driving and the transmission is shifted down, the line pressure is set according to the vehicle speed.



A/T CONTROL SYSTEM

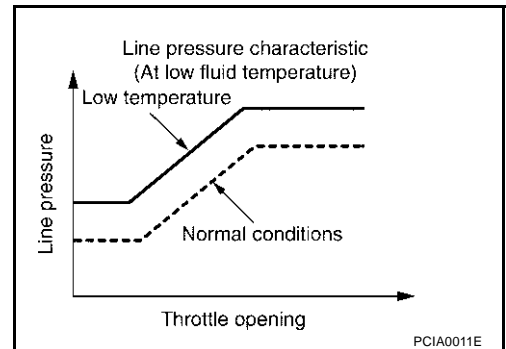
During Shift Change

The necessary and adequate line pressure for shift change is set. For this reason, line pressure pattern setting corresponds to input torque and gearshift selection. Also, line pressure characteristic is set according to engine speed, during engine brake operation.



At Low Fluid Temperature

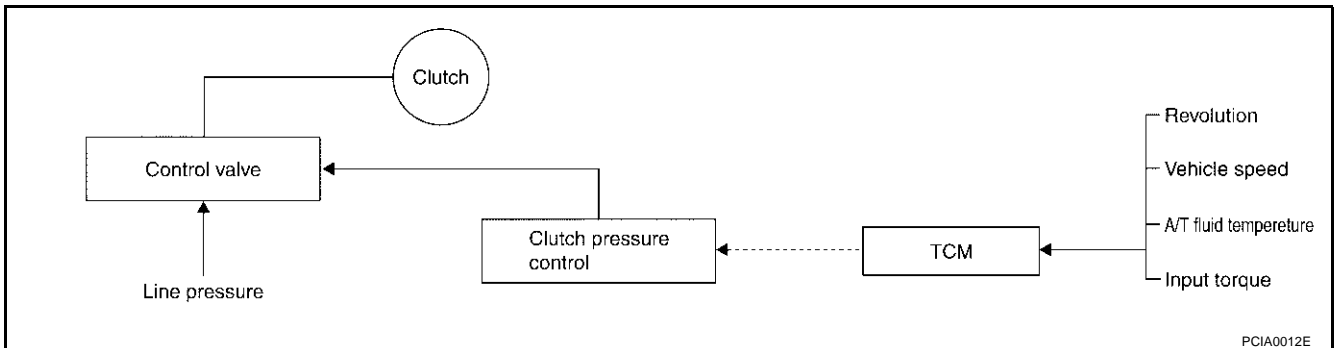
When the A/T fluid temperature drops below the prescribed temperature, in order to speed up the action of each friction element, the line pressure is set higher than the normal line pressure characteristic.



Shift Control

ACS002LJ

The clutch pressure control solenoid is controlled by the signals from the switches and sensors. Thus, the clutch pressure is adjusted to be appropriate to the engine load state and vehicle driving state. It becomes possible to finely control the clutch hydraulic pressure with high precision and a smoother shift change characteristic is attained.

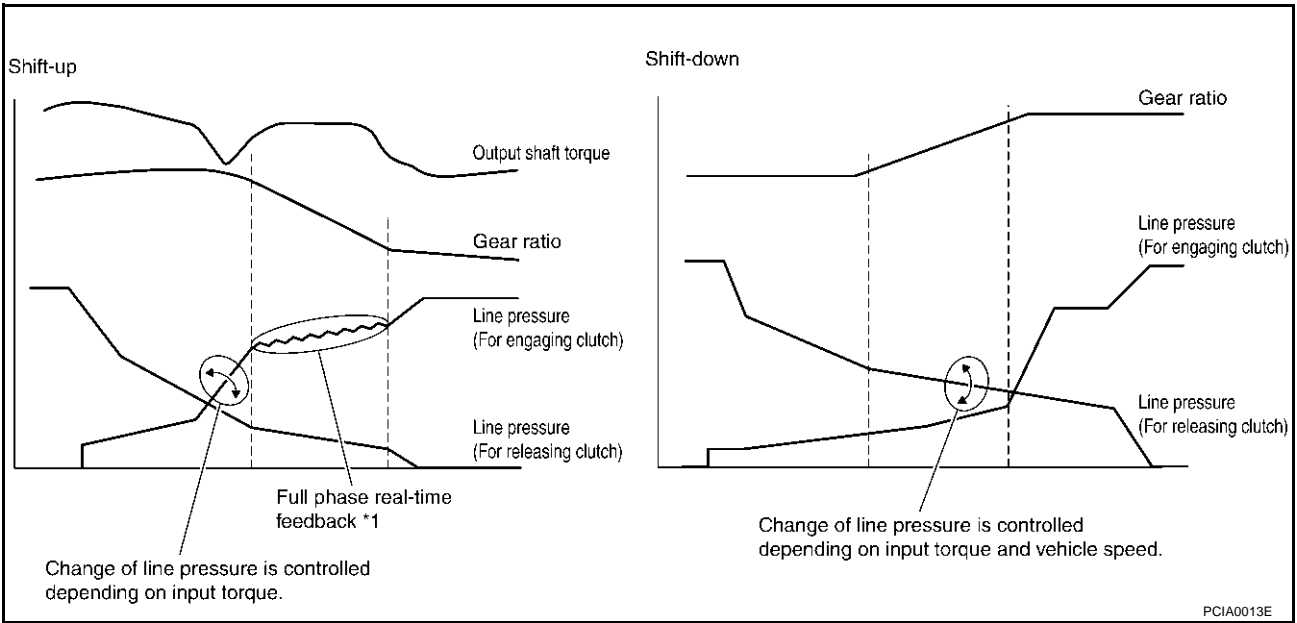


SHIFT CHANGE

The clutch is controlled with the optimum timing and oil pressure by the engine speed, engine torque information, etc.

A/T CONTROL SYSTEM

Shift Change System Diagram



*1: Full phase real-time feedback control monitors movement of gear ratio at gear change, and controls oil pressure at real-time to achieve the best gear ratio.

Lock-Up Control

ACS002LK

The torque converter clutch piston in the torque converter is engaged to eliminate torque converter slip to increase power transmission efficiency.

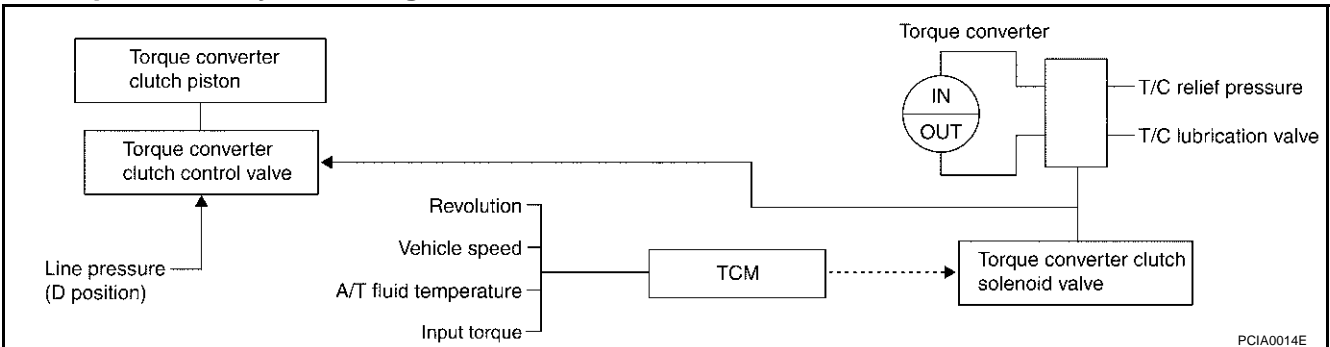
The torque converter clutch control valve operation is controlled by the torque converter clutch solenoid valve, which is controlled by a signal from TCM, and the torque converter clutch control valve engages or releases the torque converter clutch piston.

Lock-up Operation Condition Table

Select lever	D position		M5 position	M4 position
Gear position	5	4	5	4
Lock-up	×	—	×	×
Slip lock-up	×	×	—	—

TORQUE CONVERTER CLUTCH CONTROL VALVE CONTROL

Lock-Up 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.

A/T CONTROL SYSTEM

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.

SMOOTH LOCK-UP CONTROL

When shifting from the lock-up released state to the lock-up applied state, the current output to the torque converter clutch solenoid is controlled with the TCM. In this way, when shifting to the lock-up applied state, the torque converter clutch is temporarily set to the half-clutched state to reduce the shock.

Half-Clutched State

- The current output from the TCM to the torque converter clutch solenoid is varied to gradually increase the torque converter clutch solenoid pressure. In this way, the lock-up apply pressure gradually rises and while the torque converter clutch piston is put into half-clutched status, the torque converter clutch piston operating pressure is increased and the coupling is completed smoothly.

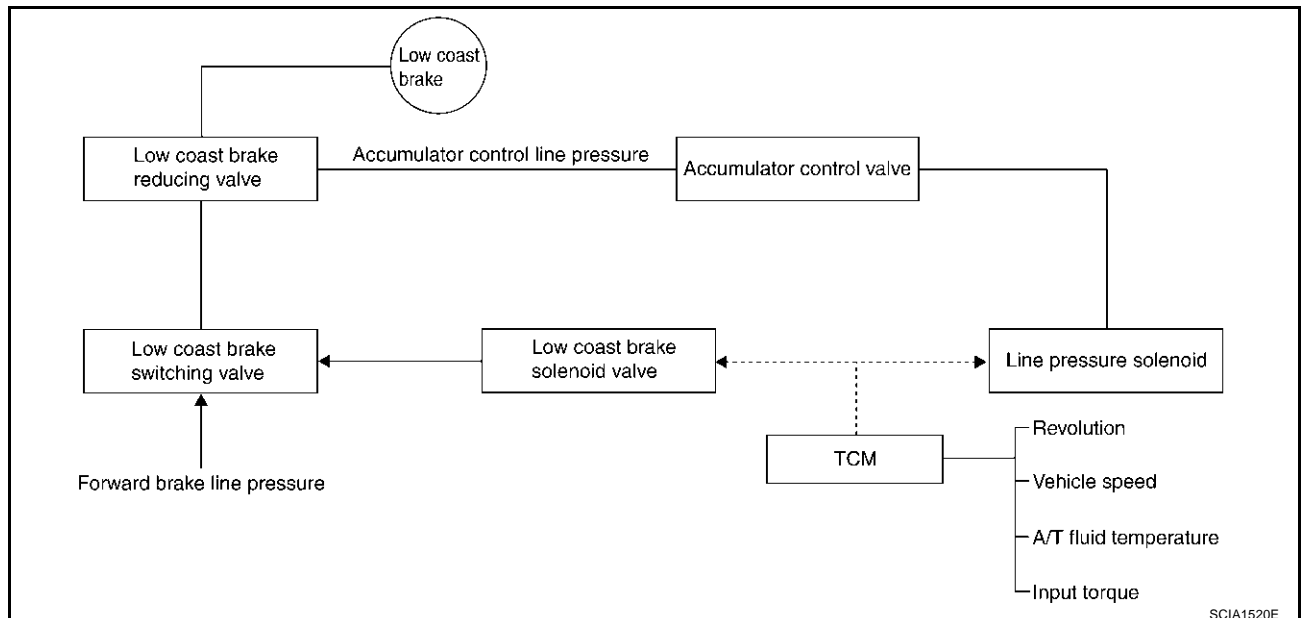
Slip Lock-Up Control

- In the slip region, the torque converter clutch solenoid current is controlled with the TCM to put it into the half-clutched state. This absorbs the engine torque fluctuation and lock-up operates from low speed. This raises the fuel efficiency for 4th and 5th gears at both low speed and when the accelerator has a low degree of opening.

Engine Brake Control

ACS002LL

- The forward one-way clutch transmits the drive force from the engine to the rear wheels. But the reverse drive from the rear wheels is not transmitted to the engine because the one-way clutch is idling. Therefore, the low coast brake solenoid is operated to prevent the forward one-way clutch from idling and the engine brake is operated in the same manner as conventionally.



SCIA1520E

- The operation of the low coast brake solenoid switches the low coast brake switching valve and controls the coupling and releasing of the low coast brake. The low coast brake reducing valve controls the low coast brake coupling force.

A/T CONTROL SYSTEM

Control Valve FUNCTION OF CONTROL VALVE

ACS002LM

Name	Function
Torque converter regulator valve	In order to prevent the pressure supplied to the torque converter from being excessive, the line pressure is adjusted to the optimum pressure (torque converter operating pressure).
Pressure regulator valve Pressure regulator plug Pressure regulator sleeve	Adjusts the oil discharged from the oil pump to the optimum pressure (line pressure) for the driving state.
Front brake control valve	When the front brake is coupled, adjusts the line pressure to the optimum pressure (front brake pressure) and supplies it to the front brake. (In 1st, 2nd, 3rd, and 5th gears, adjusts the clutch pressure.)
Accumulator control valve	Adjusts the pressure (accumulator control pressure) acting on the accumulator piston and low coast reducing valve to the pressure appropriate to the driving state.
Pilot valve A	Adjusts the line pressure and produces the constant pressure (pilot pressure) required for line pressure control, shift change control, and lock-up control.
Pilot valve B	Adjusts the line pressure and produces the constant pressure (pilot pressure) required for shift change control.
Low coast brake switching valve	During engine braking, supplies the line pressure to the low coast brake reducing valve.
Low coast brake reducing valve	When the low coast brake is coupled, adjusts the line pressure to the optimum pressure (low coast brake pressure) and supplies it to the low coast brake.
N-R accumulator	Produces the stabilizing pressure for when N-R is selected.
Direct clutch piston switching valve	Operates in 4th gear and switches the direct clutch coupling capacity.
High and low reverse clutch control valve	When the high and low reverse clutch is coupled, adjusts the line pressure to the optimum pressure (high and low reverse clutch pressure) and supplies it to the high and low reverse clutch. (In 1st, 3rd, 4th and 5th gears, adjusts the clutch pressure.)
Input clutch control valve	When the input clutch is coupled, adjusts the line pressure to the optimum pressure (input clutch pressure) and supplies it to the input clutch. (In 4th and 5th gears, adjusts the clutch pressure.)
Direct clutch control valve	When the direct clutch is coupled, adjusts the line pressure to the optimum pressure (direct clutch pressure) and supplies it to the direct clutch. (In 2nd, 3rd, and 4th gears, adjusts the clutch pressure.)
TCC control valve TCC control plug TCC control sleeve	Switches the lock-up to operating or released. Also, by performing the lock-up operation transiently, lock-up smoothly.
Torque converter lubrication valve	Operates during lock-up to switch the torque converter, cooling, and lubrication system oil path.
Cool bypass valve	Allows excess oil to bypass cooler circuit without being fed into it.
Line pressure relief valve	Discharges excess oil from line pressure circuit.
N-D accumulator	Produces the stabilizing pressure for when N-D is selected.
Manual valve	Sends line pressure to each circuit according to the select position. The circuits to which the line pressure is not sent drain.

A
B
AT
D
E
F
G
H
I
J
K
L
M

A/T CONTROL SYSTEM

FUNCTION OF ATF PRESSURE SWITCH

Name	Function
ATF pressure switch 1 (FR/B)	Detects any malfunction in the front brake hydraulic pressure. When it detects any malfunction, it puts the system into fail-safe mode.
ATF pressure switch 2 (LC/B)	Detects any malfunction in the low coast brake hydraulic pressure. When it detects any malfunction, it puts the system into fail-safe mode.
ATF pressure switch 3 (I/C)	Detects any malfunction in the input clutch hydraulic pressure. When it detects any malfunction, it puts the system into fail-safe mode.
ATF pressure switch 5 (D/C)	Detects any malfunction in the direct clutch hydraulic pressure. When it detects any malfunction, it puts the system into fail-safe mode.
ATF pressure switch 6 (HLR/C)	Detects any malfunction in the high and low reverse clutch hydraulic pressure. When it detects any malfunction, it puts the system into fail-safe mode.

ON BOARD DIAGNOSTIC (OBD) SYSTEM

PFP:00028

Introduction

ACS002LN

The A/T 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 but not the TCM memory.

The second is the TCM original self-diagnosis indicated by the A/T CHECK indicator lamp. The malfunction is stored in the TCM memory. The detected items are overlapped with OBD-II self-diagnostic items. For detail, refer to [AT-110. "Self-diagnostic Result Test Mode"](#).

OBD-II Function for A/T System

ACS002LO

The ECM provides emission-related on board diagnostic (OBD-II) functions for the A/T system. One function is to receive a signal from the TCM used with OBD-related parts of the A/T 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 A/T system parts.

One or Two Trip Detection Logic of OBD-II

ACS002LP

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)

ACS002LQ

HOW TO READ DTC AND 1ST TRIP DTC

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

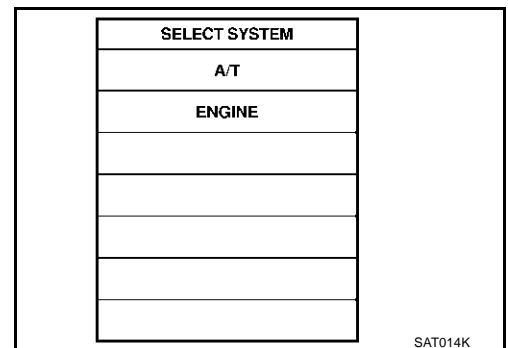
() with **CONSULT-II** or () **GST** CONSULT-II or GST (Generic Scan Tool) Examples: P0705, P0720 etc.

These DTC are prescribed by SAE J2012.

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

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

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



ON BOARD DIAGNOSTIC (OBD) SYSTEM

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

SELF-DIAG RESULTS	
DTC RESULTS	TIME
PNP SW/CIRC [P0705]	0

SAT015K

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

SELF-DIAG RESULTS	
DTC RESULTS	TIME
PNP SW/CIRC [P0705]	1 t

SAT016K

Freeze Frame Data and 1st Trip Freeze Frame Data

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

Data which are stored in the ECM memory, along with the 1st trip DTC, are called 1st trip freeze frame data, and the data, stored together with the DTC data, are called freeze frame data and displayed on CONSULT-II or GST. The 1st trip freeze frame data can only be displayed on the CONSULT-II screen, not on the GST. For detail, refer to [EC-123, "CONSULT-II Function"](#) (for VQ35DE) or [EC-765, "CONSULT-II Function"](#) (for VK45DE).

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 A/T related items)
3	1st trip freeze frame data

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

HOW TO ERASE DTC

The diagnostic trouble code can be erased by CONSULT-II, GST or ECM DIAGNOSTIC TEST MODE as described following.

- If the battery cable is disconnected, the diagnostic trouble code will be lost within 24 hours.
- When you erase the DTC, using CONSULT-II or GST is easier and quicker than switching the mode selector on the ECM.

The following emission-related diagnostic information is cleared from the ECM memory when erasing DTC related to OBD-II. For details, refer to [EC-68, "Emission-related Diagnostic Information"](#) (for VQ35DE) or [EC-709, "Emission-related Diagnostic Information"](#) (for VK45DE).

- Diagnostic trouble codes (DTC)

ON BOARD DIAGNOSTIC (OBD) SYSTEM

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

HOW TO ERASE DTC (WITH CONSULT-II)

- If a DTC is displayed for both ECM and TCM, it is necessary to be erased for both ECM and TCM.
1. If the ignition switch stays "ON" after repair work, be sure to turn ignition switch "OFF" once. Wait at least 10 seconds and then turn it "ON" (engine stopped) again.
 2. Turn CONSULT-II "ON" and touch "A/T".
 3. Touch "SELF-DIAG RESULTS".
 4. Touch "ERASE". (The DTC in the TCM will be erased.) Then touch "BACK" twice.
 5. Touch "ENGINE".
 6. Touch "SELF-DIAG RESULTS".
 7. Touch "ERASE". (The DTC in the ECM will be erased.)

How to erase DTC (With CONSULT-II)

1. If the ignition switch stays "ON" after repair work, be sure to turn ignition switch "OFF" once. Wait at least 10 seconds and then turn it "ON" (engine stopped) again.

SELECT SYSTEM
A/T
ENGINE

2. Turn CONSULT-II "ON", and touch "A/T".

SELECT DIAG MODE
SELF-DIAG RESULTS
DATA MONITOR
CAN DIAG SUPPORT MNTR
FUNCTION TEST
DTC WORK SUPPORT
ECU PART NUMBER

3. Touch "SELF-DIAG RESULTS".

SELF-DIAG RESULTS
DTC RESULTS
TCC SOLENOID/CIRC [P0740]

4. Touch "ERASE". (The DTC in the TCM will be erased.)

SELECT SYSTEM
A/T
ENGINE

5. Touch "ENGINE".

SELECT DIAG MODE
WORK SUPPORT
SELF-DIAG RESULTS
DATA MONITOR
DATA MONITOR(SPEC)
CAN DIAG SUPPORT MNTR
ACTIVE TEST

6. Touch "SELF-DIAG RESULTS".

SELF-DIAG RESULTS	
DTC RESULTS	TIME
TCC SOLENOID/CIRC [P0740]	0

7. Touch "ERASE". (The DTC in the TCM will be erased.)

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ON BOARD DIAGNOSTIC (OBD) SYSTEM

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. Perform "TCM SELF-DIAGNOSTIC PROCEDURE (No Tools)". Refer to [AT-120, "TCM SELF-DIAGNOSTIC PROCEDURE \(NO TOOLS\)"](#) . (The engine warm-up step can be skipped when performing the diagnosis only to erase the DTC.)
3. Select Mode 4 with Generic Scan Tool (GST). For details, refer to [EC-135, "Generic Scan Tool \(GST\) Function"](#) (for VQ35DE) or [EC-777, "Generic Scan Tool \(GST\) Function"](#) (for VK45DE).

HOW TO ERASE DTC (NO TOOLS)

The A/T CHECK indicator lamp is located on the instrument panel.

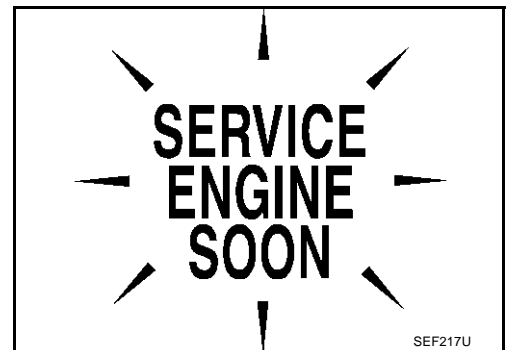
1. If the ignition switch stays "ON" after repair work, be sure to turn ignition switch "OFF" once. Wait at least 10 seconds and then turn it "ON" (engine stopped) again.
2. Perform "TCM SELF-DIAGNOSTIC PROCEDURE (No Tools)". Refer to [AT-120, "TCM SELF-DIAGNOSTIC PROCEDURE \(NO TOOLS\)"](#) . (The engine warm-up step can be skipped when performing the diagnosis only to erase the DTC.)
3. Perform "OBD-II SELF-DIAGNOSTIC PROCEDURE (No tools)". Refer to [EC-81, "No Tools"](#) (for VQ35DE) or [EC-721, "How to Erase DTC"](#) (for VK45DE).

Malfunction Indicator Lamp (MIL) DESCRIPTION

ACS002LR

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-56, "WARNING LAMPS"](#) , or see [EC-641, "MIL AND DATA LINK CONNECTOR"](#) (for VQ35DE) or [EC-1313, "MIL AND DATA LINK CONNECTOR"](#) (for VK45DE).
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

TROUBLE DIAGNOSIS

PPF:00004

DTC Inspection Priority Chart

ACS002LS

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 [AT-122](#).

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

Fail-Safe

ACS002LT

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.

In fail-safe mode, even if the select lever is "D" or "M" mode, the transmission is fixed in 2nd or 4th (depending on the breakdown position), so the customer should feel "slipping" or "poor acceleration". When fail-safe mode is triggered, when the ignition switch is switched "ON", the A/T CHECK indicator lamp flashes for about 8 seconds. (Refer to [AT-120, "TCM SELF-DIAGNOSTIC PROCEDURE \(NO TOOLS\)"](#)).

Even when the electronic circuits are normal, under special conditions (for example, when slamming on the brake with the wheels spinning drastically and stopping the tire rotation), the transmission can go into fail-safe mode. If this happens, switch "OFF" the ignition switch for 10 seconds, then switch it "ON" again to return to the normal shift pattern. Also, the A/T CHECK indicator lamp flashes for about 8 seconds once, then is cleared. Therefore, the customer's vehicle has returned to normal, so handle according to the "diagnostics flow" (Refer to [AT-56](#)).

FAIL-SAFE FUNCTION

If any malfunction occurs in a sensor or solenoid, this function controls the A/T to mark driving possible.

Vehicle Speed Sensor

- Signals are input from two systems - from vehicle speed sensor A/T (revolution sensor) installed on the transmission and from combination meter so normal driving is possible even if there is a malfunction in one of the systems. And if vehicle speed sensor A/T (revolution sensor) has unusual cases, 5th gear and manual mode are prohibited.

Accelerator Pedal Position Sensor

- If there is a malfunction in one of the systems, the accelerator opening angle is controlled by ECM according to a pre-determined accelerator angle to make driving possible. And if there are malfunctions in tow systems, the engine speed is fixed by ECM to a pre-determined engine speed to make driving possible.

Throttle Position Sensor

- If there is a malfunction in one of the systems, the accelerator opening angle is controlled by ECM according to a pre-determined accelerator angle to make driving possible. And if there are malfunctions in tow systems, the accelerator opening angle is controlled by the idle signal sent from the ECM which is based on input indicating either idle condition or off-idle condition (pre-determined accelerator opening) in order to make driving possible.

PNP Switch

- In the unlikely event that a malfunction signal enters the TCM, the position indicator is switched "OFF", the starter relay is switched "OFF" (starter starting is disabled), the back-up lamp relay switched "OFF" (back-up lamp is OFF) and the position is fixed to the "D" range to make driving possible.

Starter Relay

- The starter relay is switched "OFF". (Starter starting is disabled.)

TROUBLE DIAGNOSIS

A/T Interlock

- If there is an A/T interlock judgment malfunction, the transmission is fixed in 2nd gear to make driving possible.

NOTE:

When the vehicle is driven fixed in 2nd gear, a turbine revolution sensor malfunction is displayed, but this is not a turbine revolution sensor malfunction.

- When the coupling pattern below is detected, the fail-safe action corresponding to the pattern is performed.

A/T INTERLOCK COUPLING PATTERN TABLE

●: NG X: OK

Gear position		ATF pressure switch output					Fail-safe function	Clutch pressure output pattern after fail-safe function					
		SW3 (I/C)	SW6 (HLR/C)	SW5 (D/C)	SW1 (FR/B)	SW2 (LC/B)		I/C	HLR/C	D/C	FR/B	LC/B	L/U
A/T interlock coupling pattern	3rd	–	X	X	–	●	Held in 2nd gear	OFF	OFF	ON	OFF	OFF	OFF
	4th	–	X	X	–	●	Held in 2nd gear	OFF	OFF	ON	OFF	OFF	OFF
	5th	X	X	–	X	●	Held in 2nd gear	OFF	OFF	ON	OFF	OFF	OFF

A/T 1st Engine Braking

- When there is an A/T first gear engine brake judgment malfunction, the low coast brake solenoid is switched “OFF” to avoid the engine brake operation.

Line Pressure Solenoid

- The solenoid is switched “OFF” and the line pressure is set to the maximum hydraulic pressure to make driving possible.

Torque Converter Clutch Solenoid

- The solenoid is switched “OFF” to release the lock-up.

Low Coast Brake Solenoid

- When a (electrical or functional) malfunction occurs, in order to make driving possible, if the solenoid is “ON”, the transmission is held in 2nd gear; if the solenoid is “OFF”, the transmission is held in 4th gear. (engine brake is not applied in 1st and 2nd gear.)

Input Clutch Solenoid

- If a (electrical or functional) malfunction occurs with the solenoid either “ON” or “OFF”, the transmission is held in 4th gear to make driving possible.

Direct Clutch Solenoid

- If a (electrical or functional) malfunction occurs with the solenoid either “ON” or “OFF”, the transmission is held in 4th gear to make driving possible.

Front Brake Solenoid

- If a (electrical or functional) malfunction occurs with the solenoid “ON”, in order to make driving possible, the A/T is held in 5th gear; if the solenoid is OFF, 4th gear.

High and Low Reverse Clutch Solenoid

- If a (electrical or functional) malfunction occurs with the solenoid either “ON” or “OFF”, the transmission is held in 4th gear to make driving possible.

Turbine Revolution Sensor 1 or 2

- The control is the same as if there were no turbine revolution sensors, 5th gear and manual mode are prohibited.

TROUBLE DIAGNOSIS

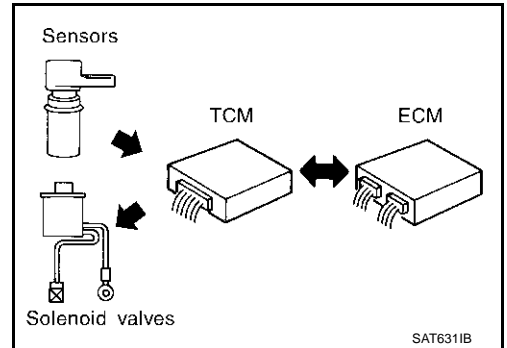
How To Perform Trouble Diagnosis For Quick and Accurate Repair INTRODUCTION

ACS002LU

The TCM receives a signal from the vehicle speed sensor, accelerator pedal position sensor (throttle position sensor) or PNP switch and provides shift control or lock-up control via A/T solenoid valves.

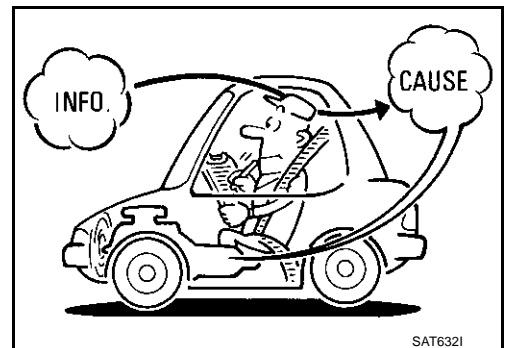
The TCM also communicates with the ECM by means of a signal sent from sensing elements used with the OBD-related parts of the A/T system for malfunction-diagnostic purposes. The TCM is capable of diagnosing malfunctioning parts while the ECM can store malfunctions in its memory.

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



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

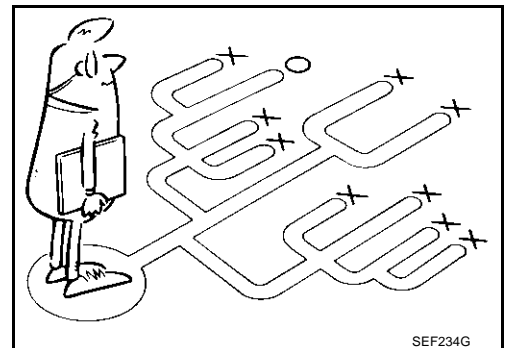
A visual check only may not find the cause of the errors. A road test with CONSULT-II (or GST) or a circuit tester connected should be performed. Follow the [AT-56, "WORK FLOW"](#) .



Before undertaking actual checks, take a few minutes to talk with a customer who approaches with a drive ability 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 [AT-57](#)) should be used.

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

Also check related Service bulletins.



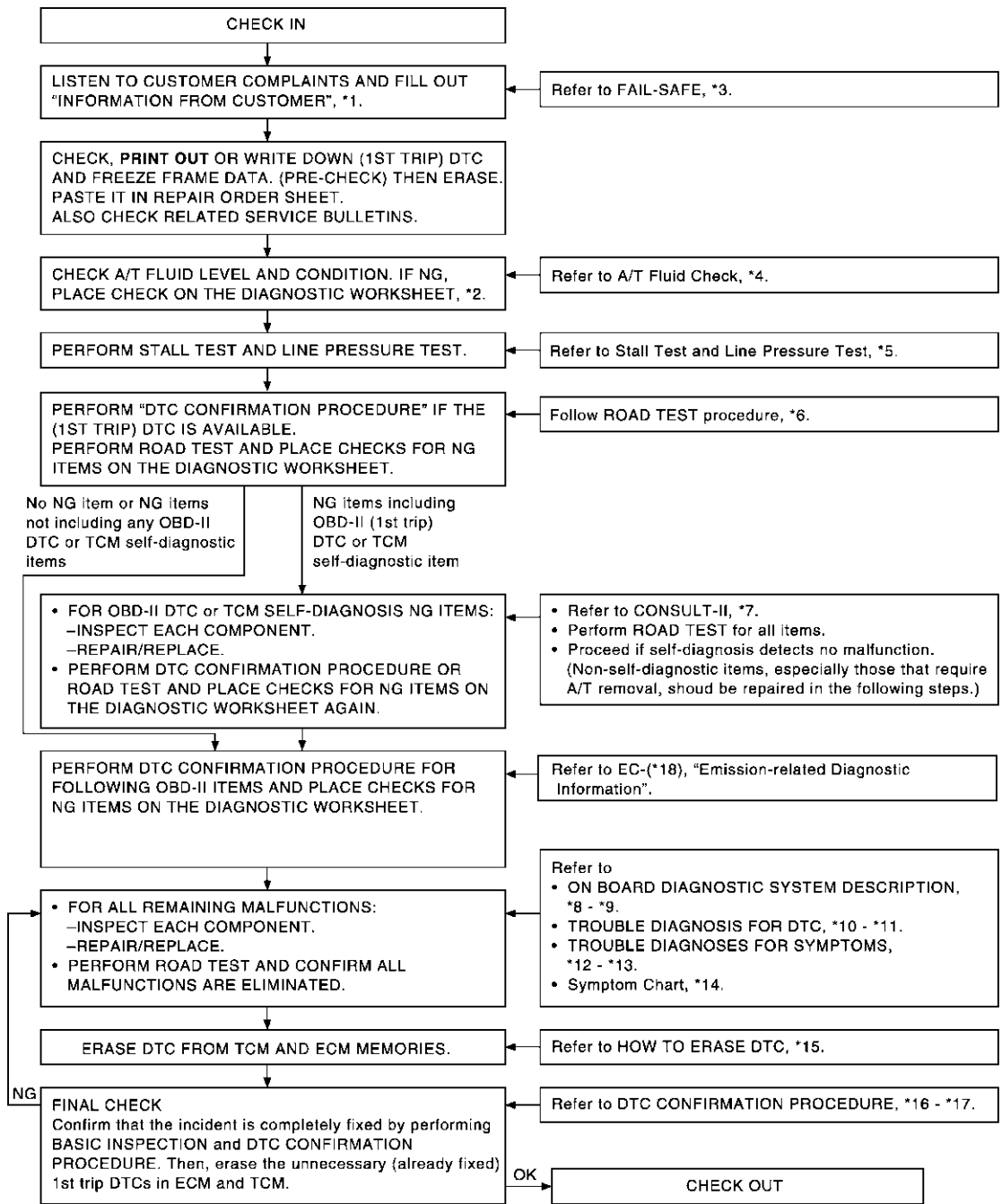
TROUBLE DIAGNOSIS

WORK FLOW

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

Make good use of the two sheets provided, "Information From Customer" (Refer to [AT-57](#)) and "Diagnostic Worksheet Chart" (Refer to [AT-57](#)), to perform the best troubleshooting possible.

Work Flow Chart



*1. [AT-57](#)

*4. [AT-71](#)

*7. [AT-108](#)

*10. [AT-122](#)

*13. [AT-231](#)

*16. [AT-122](#)

*2. [AT-57](#)

*5. [AT-71](#), [AT-72](#)

*8. [AT-49](#)

*11. [AT-127](#), [AT-178](#), [AT-190](#), [AT-145](#)

*14. [AT-82](#)

*17. [AT-187](#)

*3. [AT-53](#)

*6. [AT-74](#)

*9. [AT-120](#)

*12. [AT-191](#)

*15. [AT-50](#)

*18. [EC-68](#) (for VQ35DE) or [EC-709](#) (for VK45DE)

SCIA0501E

TROUBLE DIAGNOSIS

DIAGNOSTIC WORKSHEET

Information From Customer

KEY POINTS

- **WHAT.....** Vehicle and A/T model
- **WHEN.....** Date, Frequencies
- **WHERE.....** Road conditions
- **HOW.....** Operating conditions, Symptoms

Customer name	MR/MS	Model and Year	VIN
Trans. Model		Engine	Mileage
Malfunction Date		Manuf. Date	In Service Date
Frequency	<input type="checkbox"/> Continuous <input type="checkbox"/> Intermittent (times a day)		
Symptoms	<input type="checkbox"/> Vehicle does not move. (<input type="checkbox"/> Any position <input type="checkbox"/> Particular position)		
	<input type="checkbox"/> No up-shift (<input type="checkbox"/> 1st → 2nd <input type="checkbox"/> 2nd → 3rd <input type="checkbox"/> 3rd → 4th <input type="checkbox"/> 4th → 5th)		
	<input type="checkbox"/> No down-shift (<input type="checkbox"/> 5th → 4th <input type="checkbox"/> 4th → 3rd <input type="checkbox"/> 3rd → 2nd <input type="checkbox"/> 2nd → 1st)		
	<input type="checkbox"/> Lock-up malfunction		
	<input type="checkbox"/> Shift point too high or too low.		
	<input type="checkbox"/> Shift shock or slip (<input type="checkbox"/> N → D <input type="checkbox"/> Lock-up <input type="checkbox"/> Any drive position)		
	<input type="checkbox"/> Noise or vibration		
	<input type="checkbox"/> No kick down		
	<input type="checkbox"/> No pattern select		
A/T CHECK indicator lamp	<input type="checkbox"/> Blinks for about 8 seconds.		
	<input type="checkbox"/> Continuously lit		<input type="checkbox"/> Not lit
Malfunction indicator lamp (MIL)	<input type="checkbox"/> Continuously lit		<input type="checkbox"/> Not lit

Diagnostic Worksheet Chart

1	<input type="checkbox"/> Read the item on "cautions concerning fail-safe and understand the customer's complaint."	AT-53
2	<input type="checkbox"/> ATF inspection	AT-71
	<input type="checkbox"/> Leak (Repair leak location.) <input type="checkbox"/> State <input type="checkbox"/> Amount	
3	<input type="checkbox"/> Stall test and line pressure test	
	<input type="checkbox"/> Stall test	
	<input type="checkbox"/> Torque converter one-way clutch <input type="checkbox"/> Front brake <input type="checkbox"/> High and low reverse clutch <input type="checkbox"/> Low coast brake <input type="checkbox"/> Forward brake <input type="checkbox"/> Reverse brake <input type="checkbox"/> Forward one-way clutch	<input type="checkbox"/> 1st one-way clutch <input type="checkbox"/> 3rd one-way clutch <input type="checkbox"/> Engine <input type="checkbox"/> Line pressure low <input type="checkbox"/> Except for input clutch and direct clutch, clutches and brakes OK
	<input type="checkbox"/> Line pressure inspection - Suspected part:	
AT-71, AT-72		

TROUBLE DIAGNOSIS

	<input type="checkbox"/> Perform all road tests and enter checks in required inspection items.	AT-74
4	4-1. Check before engine is started <input type="checkbox"/> The A/T CHECK Indicator Lamp does come on. AT-191 . <input type="checkbox"/> Perform self-diagnostics. Enter checks for detected items.	AT-75
	<input type="checkbox"/> Vehicle speed sensor-A/T. AT-129 . <input type="checkbox"/> Vehicle speed sensor-MTR. AT-151 . <input type="checkbox"/> Direct clutch solenoid valve. AT-166 . <input type="checkbox"/> TCC solenoid valve. AT-133 . <input type="checkbox"/> Line pressure solenoid valve. AT-137 . <input type="checkbox"/> Input clutch solenoid valve. AT-158 . <input type="checkbox"/> Front brake solenoid valve. AT-162 . <input type="checkbox"/> Low coast brake solenoid valve. AT-174 . <input type="checkbox"/> High and low reverse clutch solenoid valve. AT-170 . <input type="checkbox"/> PNP switch. AT-127 . <input type="checkbox"/> A/T fluid temperature sensors 1, 2. AT-147 . <input type="checkbox"/> Turbine revolution sensors 1, 2. AT-149 . <input type="checkbox"/> A/T interlock. AT-153 . <input type="checkbox"/> A/T 1st engine braking. AT-156 . <input type="checkbox"/> Start signal. AT-124 . <input type="checkbox"/> Accelerator pedal position signal. AT-145 . <input type="checkbox"/> Engine speed signal. AT-131 . <input type="checkbox"/> CAN communication. AT-122 . <input type="checkbox"/> TCM power supply. AT-139 . <input type="checkbox"/> Battery <input type="checkbox"/> Other	
	4-2. Idle inspection <input type="checkbox"/> Engine Cannot Be Started in "P" and "N" Position. AT-192 . <input type="checkbox"/> In " P" Position, Vehicle Moves When Pushed. AT-193 . <input type="checkbox"/> In "N" Position Vehicle Moves. AT-194 . <input type="checkbox"/> Large Shock ("N" to "D" Position). AT-195 . <input type="checkbox"/> Vehicle Does Not Creep Backward In "R" Position. AT-198 . <input type="checkbox"/> Vehicle does Not Creep Forward In "D" Position. AT-201 .	AT-75
4-3. Cruise tests Part 1 <input type="checkbox"/> Vehicle Cannot Be Started From D1. AT-204 . <input type="checkbox"/> A/T Does Not Shift: D1 → D2. AT-206 . <input type="checkbox"/> A/T Does Not Shift: D2 → D3. AT-209 . <input type="checkbox"/> A/T Does Not Shift: D3 → D4. AT-211 . <input type="checkbox"/> A/T Does Not Shift: D4 → D5. AT-214 . <input type="checkbox"/> A/T Does Not Perform Lock-up. AT-216 . <input type="checkbox"/> A/T Does Not Hold Lock-up Condition. AT-219 . <input type="checkbox"/> Lock-up Is Not Released. AT-220 . <input type="checkbox"/> Engine Speed Does Not Return To Idle. AT-221 .	AT-76	

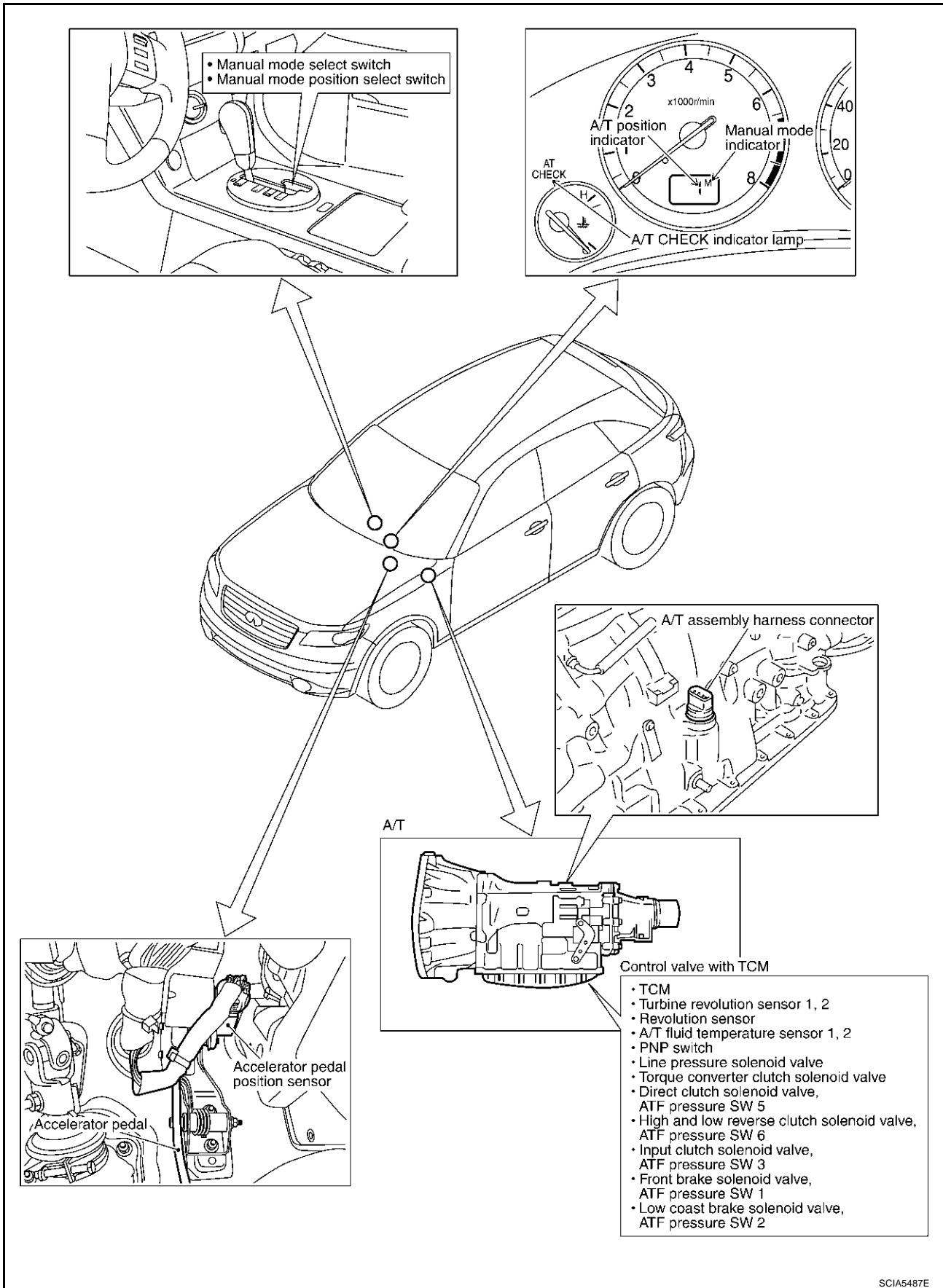
TROUBLE DIAGNOSIS

4	4-3	Part 2	AT-78	A			
		<input type="checkbox"/> Vehicle Cannot Be Started From D1. AT-204 . <input type="checkbox"/> A/T Does Not Shift: D1 → D2. AT-206 . <input type="checkbox"/> A/T Does Not Shift: D2 → D3. AT-209 . <input type="checkbox"/> A/T Does Not Shift: D3 → D4. AT-211 .			B		
		Part 3	AT-79			AT	
	<input type="checkbox"/> Cannot Be Changed To Manual Mode. AT-222 . <input type="checkbox"/> A/T Does Not Shift: 5th gear → 4th gear. AT-223 . <input type="checkbox"/> A/T Does Not Shift: 4th gear → 3rd gear. AT-225 . <input type="checkbox"/> A/T Does Not Shift: 3rd gear → 2nd gear. AT-227 . <input type="checkbox"/> A/T Does Not Shift: 2nd gear → 1st gear. AT-229 . <input type="checkbox"/> Vehicle Does Not Decelerate By Engine Brake. AT-231 . <input type="checkbox"/> Perform self-diagnostics Enter checks for detected items.	D					
	<input type="checkbox"/> Vehicle speed sensor-A/T. AT-129 . <input type="checkbox"/> Vehicle speed sensor-MTR. AT-151 . <input type="checkbox"/> Direct clutch solenoid valve. AT-166 . <input type="checkbox"/> TCC solenoid valve. AT-133 . <input type="checkbox"/> Line pressure solenoid valve. AT-137 . <input type="checkbox"/> Input clutch solenoid valve. AT-158 . <input type="checkbox"/> Front brake solenoid valve. AT-162 . <input type="checkbox"/> Low coast brake solenoid valve. AT-174 . <input type="checkbox"/> High and low reverse clutch solenoid valve. AT-170 . <input type="checkbox"/> PNP switch. AT-127 . <input type="checkbox"/> A/T fluid temperature sensors 1, 2. AT-147 . <input type="checkbox"/> Turbine revolution sensors 1, 2. AT-149 . <input type="checkbox"/> A/T interlock. AT-153 . <input type="checkbox"/> A/T 1st engine braking. AT-156 . <input type="checkbox"/> Start signal. AT-124 . <input type="checkbox"/> Accelerator pedal position signal. AT-145 . <input type="checkbox"/> Engine speed signal. AT-131 . <input type="checkbox"/> CAN communication. AT-122 . <input type="checkbox"/> TCM power supply. AT-139 . <input type="checkbox"/> Battery <input type="checkbox"/> Other	E	F	G	H	I	J
5	<input type="checkbox"/> Inspect each system for items found to be NG in the self-diagnostics and repair or replace the malfunction parts.						
6	<input type="checkbox"/> Perform all road tests and enter the checks again for the required items.		AT-74	K			
7	<input type="checkbox"/> For any remaining NG items, perform the “diagnostics procedure” and repair or replace the malfunction parts. See the chart for diagnostics by symptoms. (This chart also contains other symptoms and inspection procedures.)		AT-82	L			
8	<input type="checkbox"/> Erase the results of the self-diagnostics from the TCM.		AT-108 , AT-120	M			

TROUBLE DIAGNOSIS

A/T Electrical Parts Location

ACS002LV



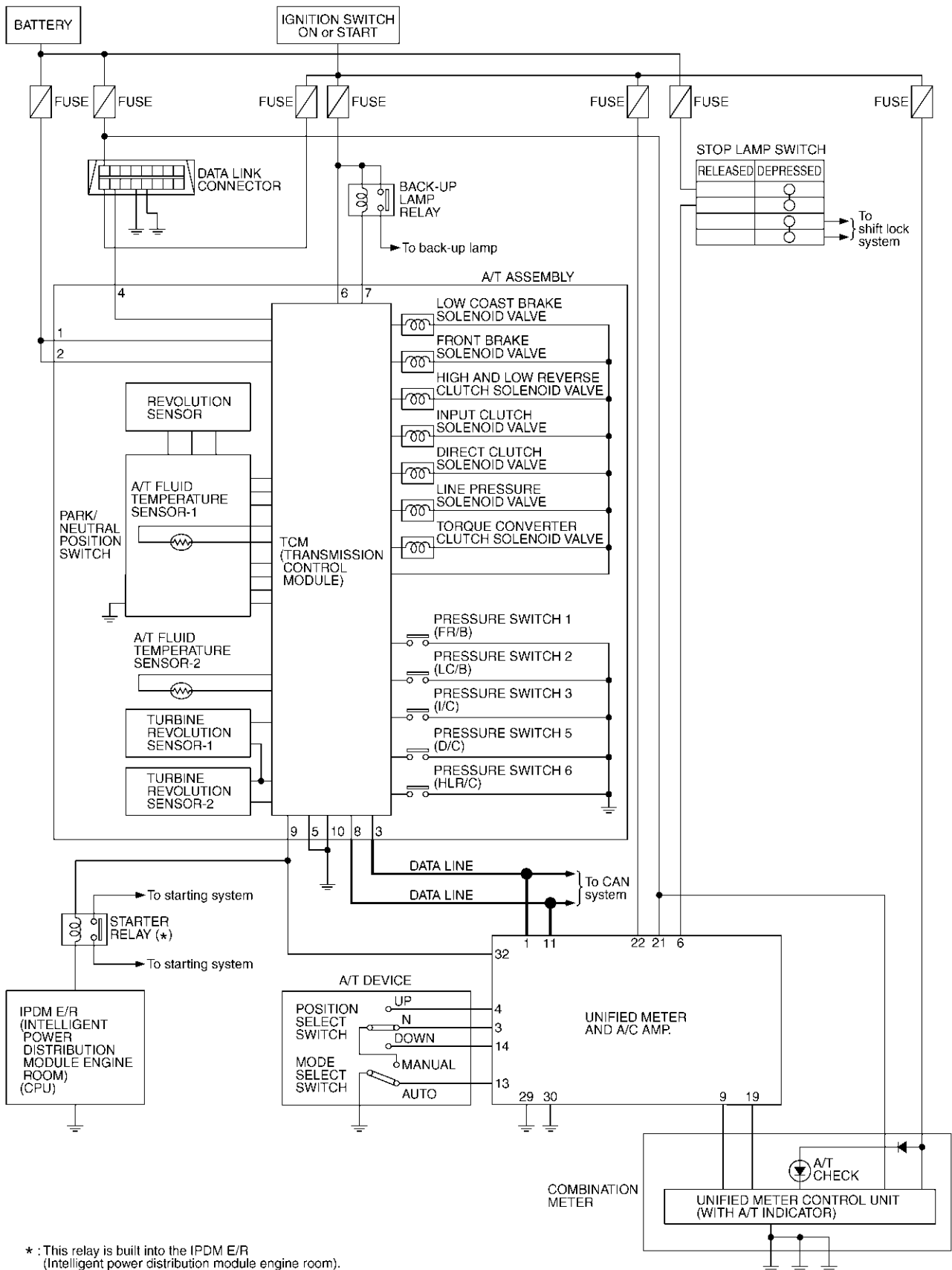
SCIA5487E

TROUBLE DIAGNOSIS

Circuit Diagram

ACS002LW

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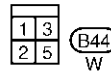
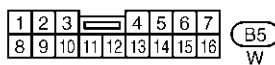
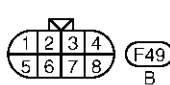
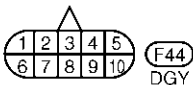
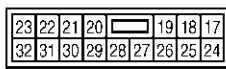
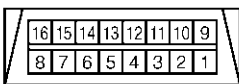
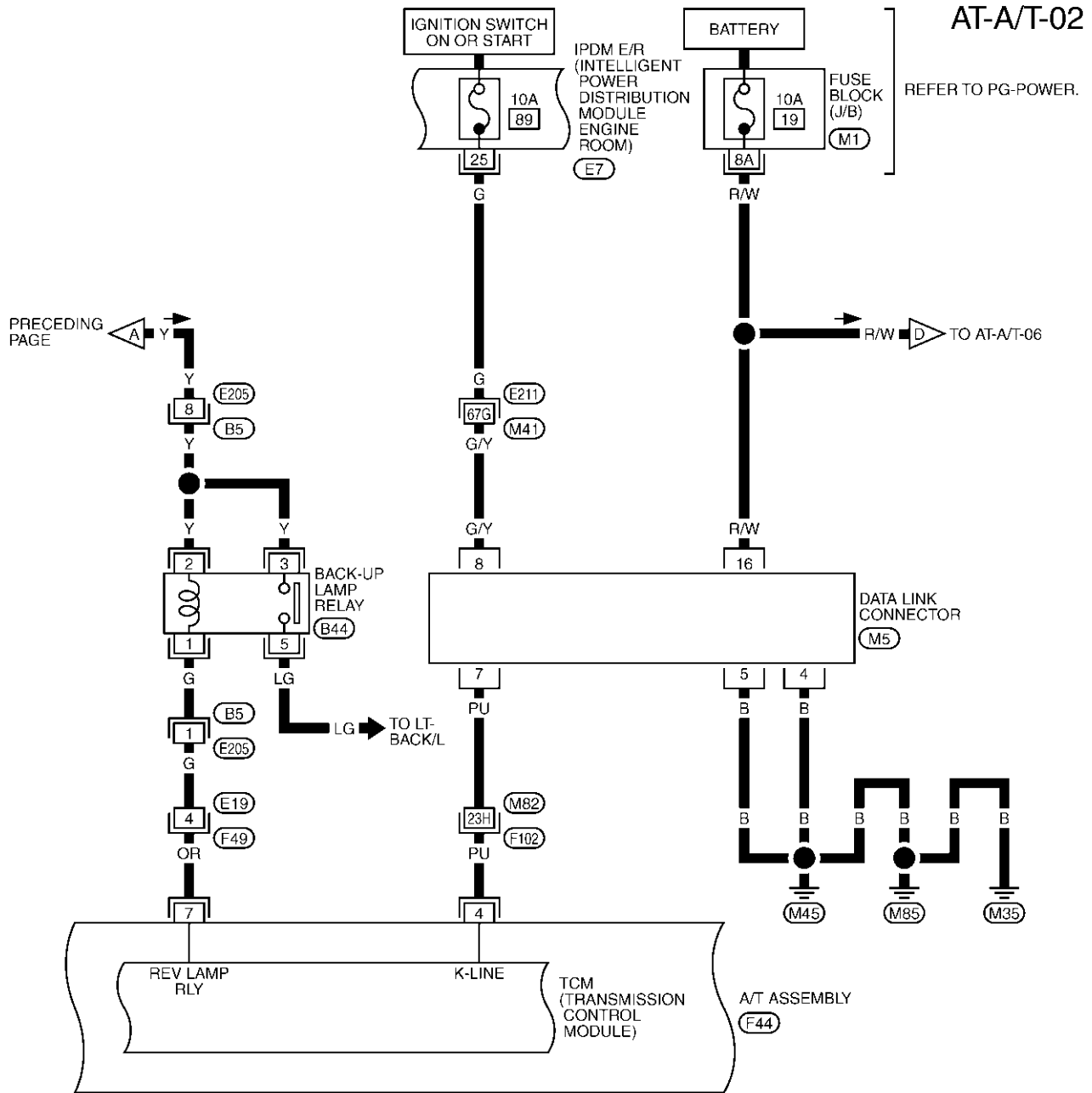
* : This relay is built into the IPDM E/R (Intelligent power distribution module engine room).

TCWH0001E

TROUBLE DIAGNOSIS

AT-A/T-02

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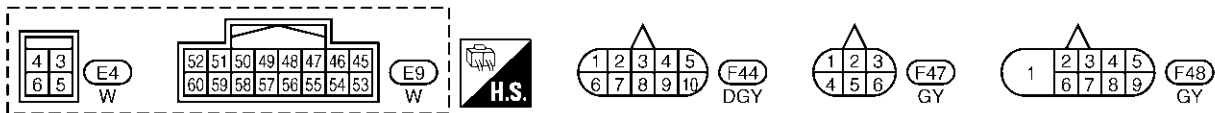
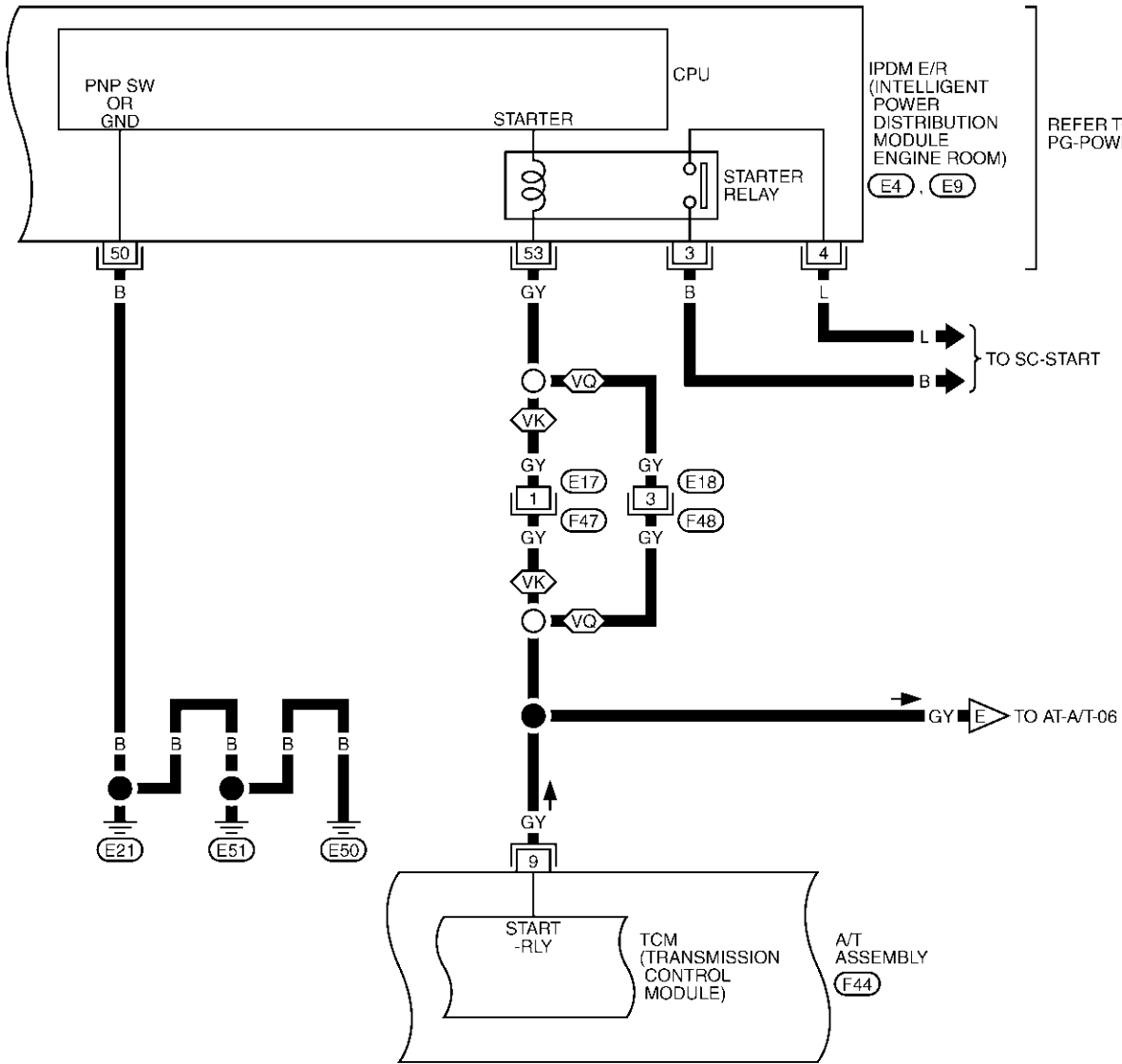
REFER TO THE FOLLOWING.
 (E211), (F102) -SUPER MULTIPLE JUNCTION (SMJ)
 (M1) -FUSE BLOCK-JUNCTION BOX (J/B)

TCWM0151E

TROUBLE DIAGNOSIS

AT-A/T-03

VK : WITH VK ENGINE
VQ : WITH VQ ENGINE

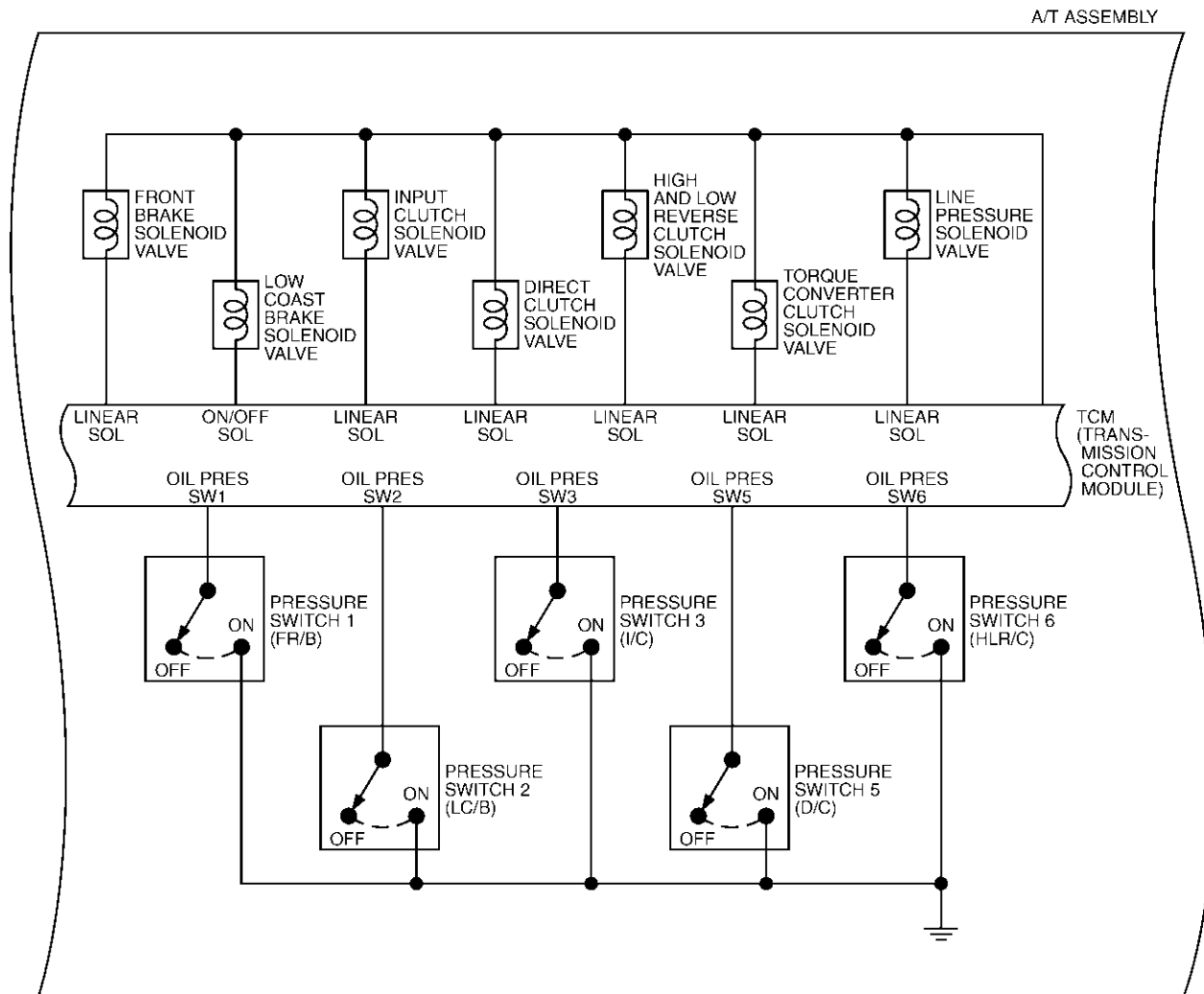


TCWM0152E

TROUBLE DIAGNOSIS

AT-A/T-04

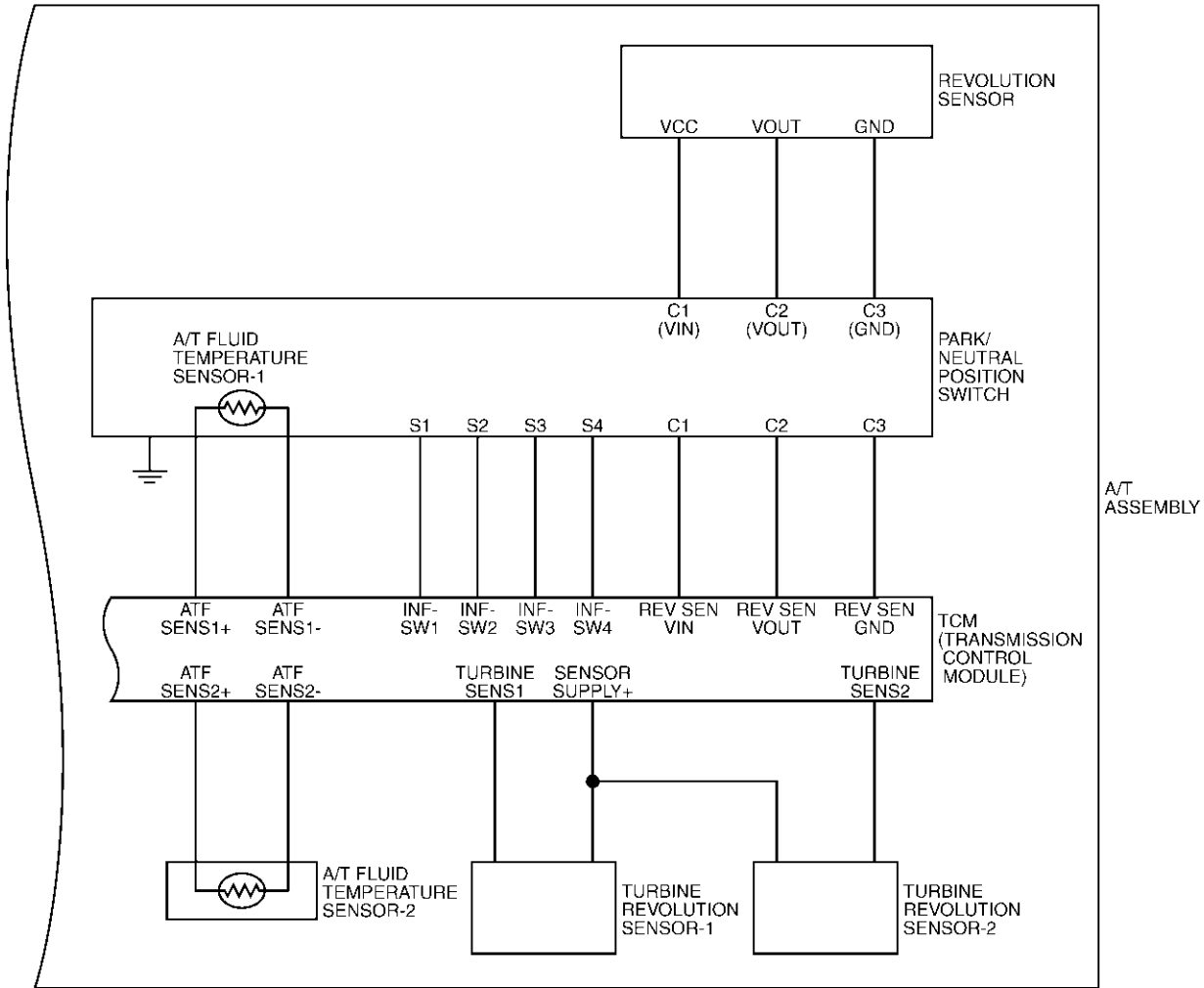
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TROUBLE DIAGNOSIS

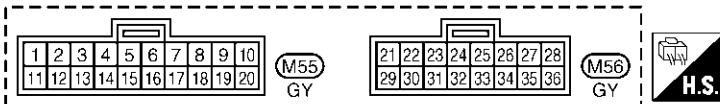
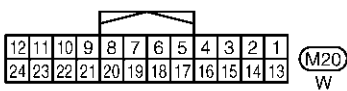
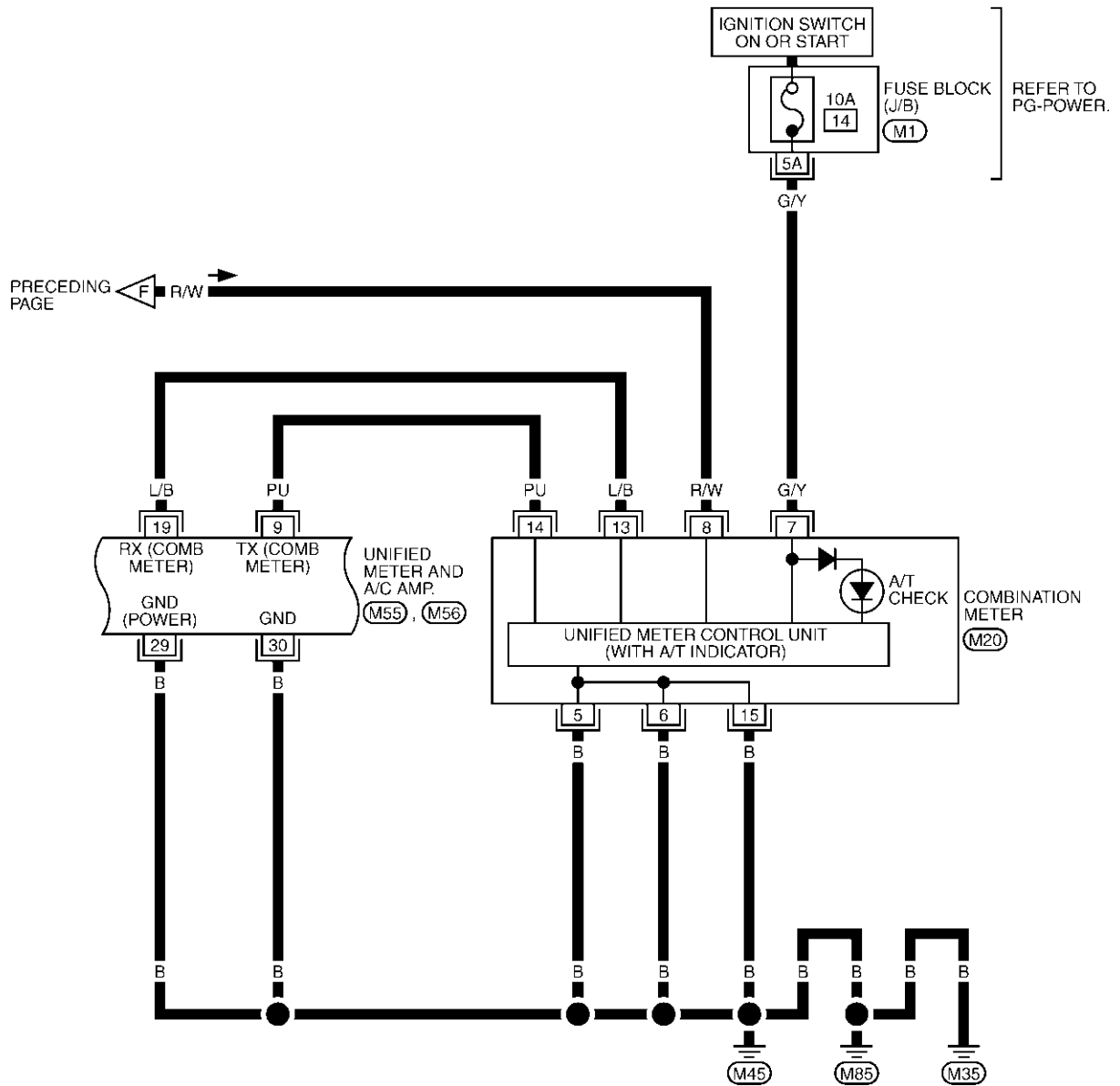
AT-A/T-05



TCWM0154E

TROUBLE DIAGNOSIS

AT-A/T-07



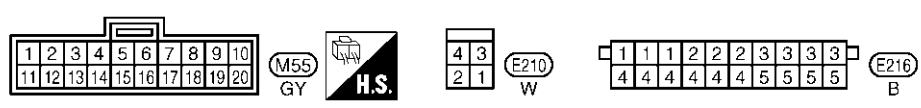
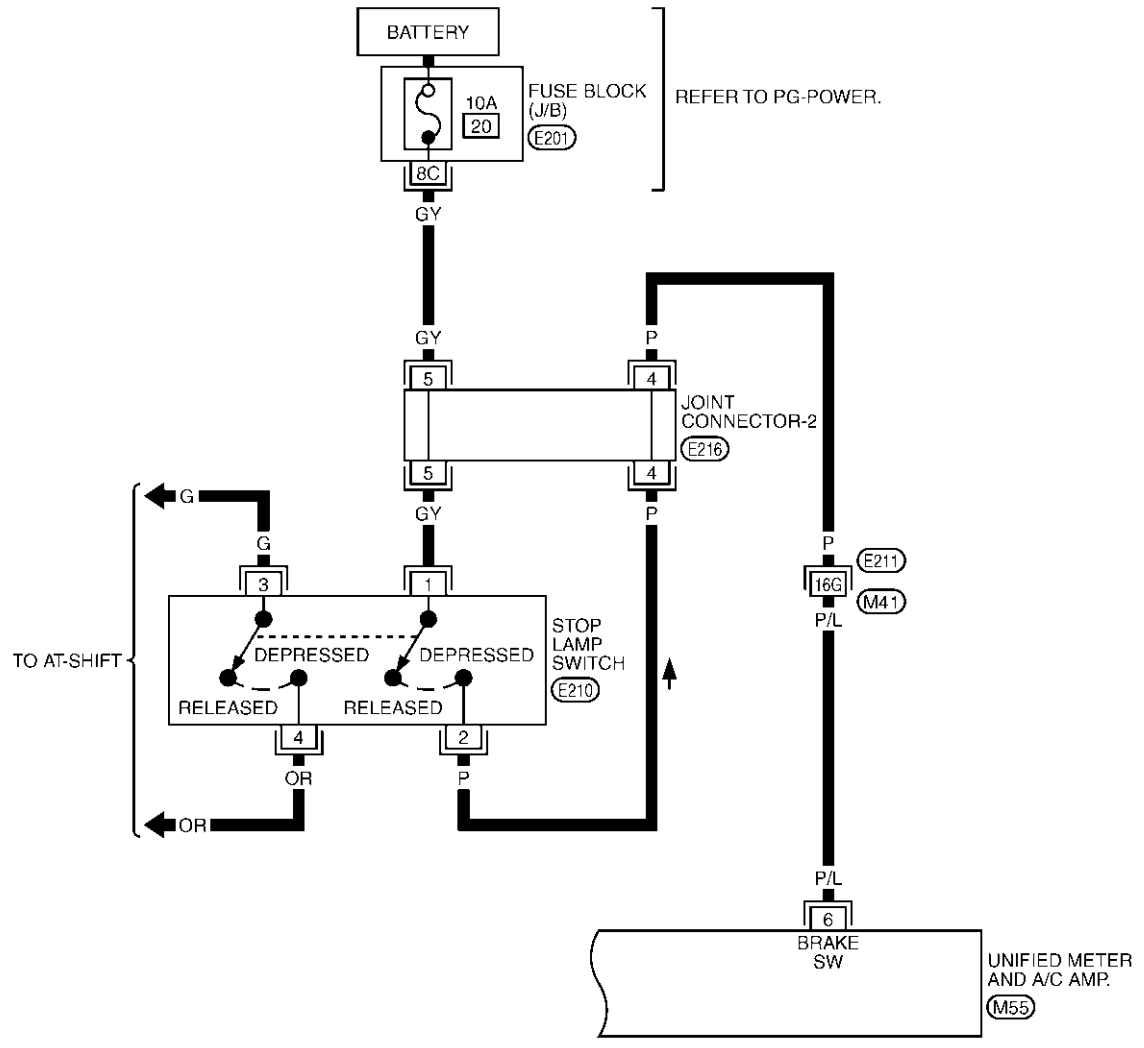
REFER TO THE FOLLOWING.
 M1 - FUSE BLOCK-JUNCTION BOX (J/B)

TCWM0156E

TROUBLE DIAGNOSIS

AT-A/T-08

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REFER TO THE FOLLOWING.
 (E211) -SUPER MULTIPLE JUNCTION (SMJ)
 (E201) -FUSE BLOCK-JUNCTION BOX (J/B)

TCWM0157E

TROUBLE DIAGNOSIS

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

Terminal No.	Wire color	Item	Condition		Data (Approx.)
1	LG	Power supply (Memory back-up)		-	Battery voltage
2	LG	Power supply (Memory back-up)		-	Battery voltage
3	L	CAN-H	-		-
4	PU	K-line (CONSULT-II signal)	The terminal is connected to the data link connector for CONSULT-II.		-
5	B	Ground	-		-
6	Y	Power supply		-	Battery voltage
				-	0V
7	OR	Back-up lamp relay		Selector lever in "R" position.	0V
				Selector lever in other positions.	Battery voltage
8	R	CAN-L	-		-
9	GY	Starter relay		Selector lever in "N", "P" positions.	Battery voltage
				Selector lever in other positions.	0V
10	B	Ground	-		-

TROUBLE DIAGNOSIS

ACS002LY

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Inspections Before Trouble Diagnosis

A/T FLUID CHECK

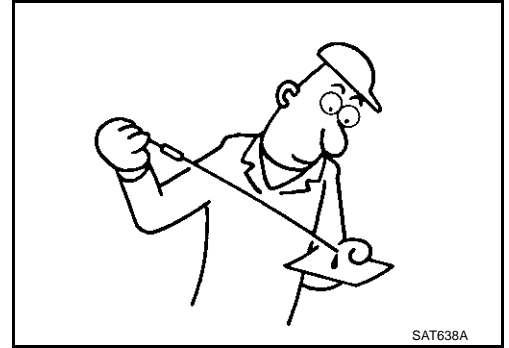
Fluid Leakage and Fluid Level Check

- Inspect for fluid leakage and check the fluid level. Refer to [AT-12, "Checking A/T Fluid"](#).

Fluid Condition Check

Inspect the fluid condition.

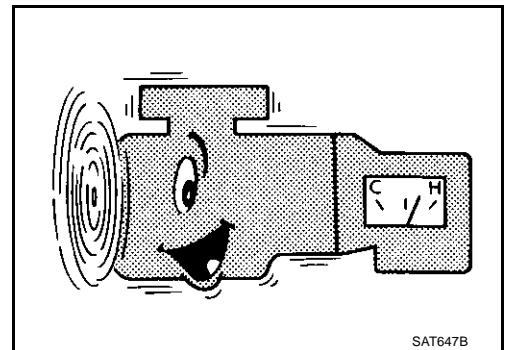
Fluid condition	Conceivable Cause	Required Operation
Varnished (viscous varnish state)	Clutch, brake scorched	Replace the ATF and check the A/T main unit and the vehicle for malfunctions (wire harnesses, cooler pipes, etc.)
Milky white or cloudy	Water in the fluid	Replace the ATF and check for places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



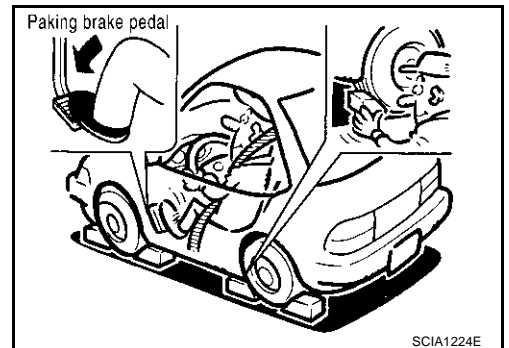
STALL TEST

Stall Test Procedure

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



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

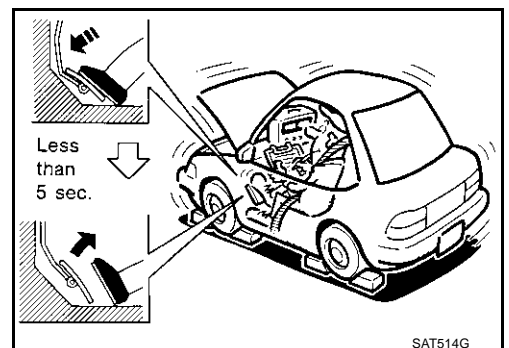


- Engine start, apply foot brake, and place selector lever in "D" position.
- While holding down the foot brake, gradually press down the accelerator pedal.
- Quickly read off the stall speed, then quickly remove your foot from the accelerator pedal.

CAUTION:

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

- Move the selector lever to the "N" position.
- Cool down the ATF.



TROUBLE DIAGNOSIS

CAUTION:

Run the engine at idle for at least one minute.

Stall speed:

VQ35DE engine: 2,650 - 2,950 rpm

VK45DE engine: 2,300 - 2,600 rpm

Judgement of Stall Test

	Selector lever position		Expected problem location
	D, M	R	
Stall rotation	H	O	<ul style="list-style-type: none"> ● Forward brake ● Forward one-way clutch ● 1st one-way clutch ● 3rd one-way clutch
	O	H	<ul style="list-style-type: none"> ● Reverse brake
	L	L	<ul style="list-style-type: none"> ● Engine and torque converter one-way clutch
	H	H	<ul style="list-style-type: none"> ● Line pressure low

O: Stall speed within standard value position

H: Stall speed higher than standard value

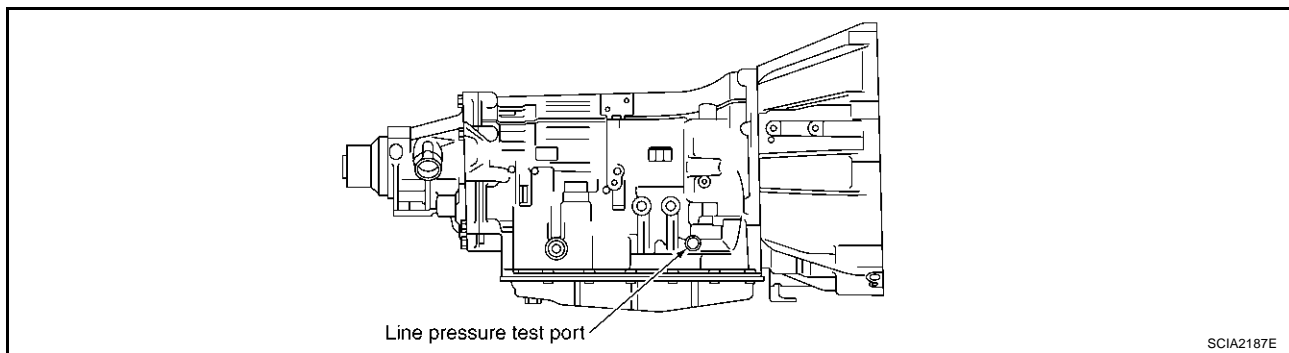
L: Stall speed lower than standard value

Stall test standard value position

Does not shift-up D, M position 1 → 2	Slipping in 2nd, 3rd, 4th gears	Direct clutch slippage
Does not shift-up D, M position 2 → 3	Slipping in 3rd, 4th, 5th gears	High and low reverse clutch slippage
Does not shift-up D, M position 3 → 4	Slipping in 4th, 5th gears	Input clutch slippage
Does not shift-up D, M position 4 → 5	Slipping in 5th gear	Front brake slippage

LINE PRESSURE TEST

Line Pressure Test Port



Line Pressure Test Procedure

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

NOTE:

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

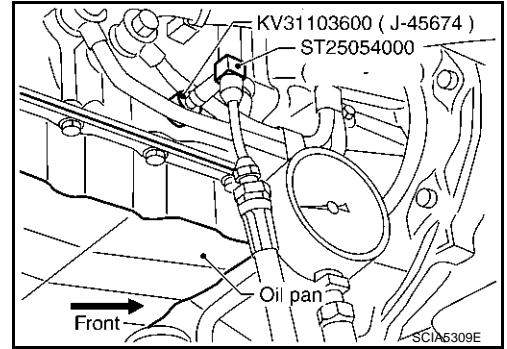
3. Remove the front propeller shaft from vehicle (with AWD models). Refer to [PR-4, "Removal and Installation"](#).

TROUBLE DIAGNOSIS

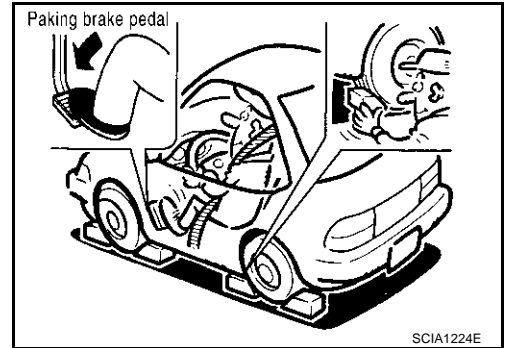
4. After warming up remove the oil pressure detection plug and install the oil pressure gauge [ST2505S001(J-34301-C)].

CAUTION:

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



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



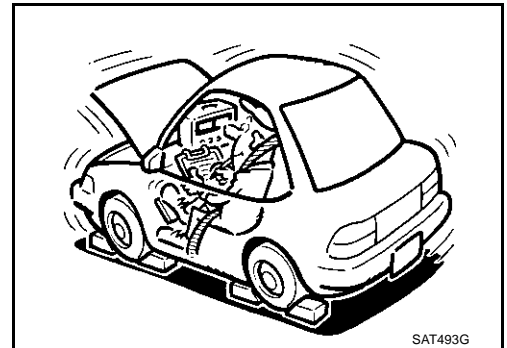
6. Start the engine, then measure the line pressure at both idle and the stall speed.

CAUTION:

- Keep the brake pedal pressed all the way down during measurement.
- When measuring the line pressure at the stall speed, refer to [AT-71, "STALL TEST"](#).

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

 :7.3 N·m (0.74 kg-m, 65 in-lb)



CAUTION:

Do not reuse the O-ring.

Line Pressure

Engine speed	Line pressure kPa (kg/cm ² , psi)	
	R position	D, M positions
At idle speed	392 - 441 (4.0 - 4.5, 57 - 64)	373 - 422 (3.8 - 4.3, 54 - 61)
At stall speed	1,700 - 1,890 (17.3 - 19.3, 247 - 274)	1,310 - 1,500 (13.3 - 15.3, 190 - 218)

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TROUBLE DIAGNOSIS

Judgement of Line Pressure Test

Judgement		Possible cause
Idle speed	Low for all positions (P, R, N, D, M)	<p>Possible causes include malfunctions in the pressure supply system and low oil pump output. For example</p> <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	<p>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.</p>
	High	<p>Possible causes include a sensor malfunction or malfunction in the line pressure adjustment function. For example</p> <ul style="list-style-type: none"> ● Accelerator pedal position signal malfunction ● ATF temperature sensor malfunction ● Line pressure solenoid malfunction (sticking in "OFF" state, filter clog, cut line) ● Pressure regulator valve or plug sticking
Stall speed	Oil pressure does not rise higher than the oil pressure for idle.	<p>Possible causes include a sensor malfunction or malfunction in the pressure adjustment function. For example</p> <ul style="list-style-type: none"> ● Accelerator pedal position signal malfunction ● TCM breakdown ● Line pressure solenoid malfunction (shorting, sticking in "ON" state) ● Pressure regulator valve or plug sticking ● Pilot valve sticking or pilot filter clogged
	The pressure rises, but does not enter the standard position.	<p>Possible causes include malfunctions in the pressure supply system and malfunction in the pressure adjustment function. For example</p> <ul style="list-style-type: none"> ● Accelerator pedal position signal malfunction ● Line pressure solenoid malfunction (sticking, filter clog) ● Pressure regulator valve or plug sticking ● Pilot valve sticking or pilot filter clogged
	Only low for a specific position	<p>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.</p>

ROAD TEST

Description

- The road test inspects overall performance of the A/T and analyzes possible malfunction causes.
- The road test is carried out in the following three stages.
 1. Check before engine is started. Refer to [AT-75](#) .
 2. Check at idle. Refer to [AT-75](#) .
 3. Cruise test
 - Inspect all the items from Part 1 to Part 3. Refer to [AT-76](#) , [AT-78](#) , [AT-79](#) .
 - Before beginning the road test, check the test procedure and inspection items.
 - Test all inspection items until the symptom is uncovered. Diagnose NG items when all road tests are complete.

TROUBLE DIAGNOSIS

Check Before Engine is Started

ACS002LZ

1. CHECK A/T CHECK INDICATOR LAMP

1. Park vehicle on level surface.
2. Move selector lever to "P" position.
3. Turn ignition switch to "OFF" position and wait at least 10 seconds.
4. Turn ignition switch to "ON" position. (Do not start engine.)

Does A/T CHECK indicator lamp light up for about 2 seconds?

YES >> GO TO 2.

NO >> Stop the road test and go to [AT-191, "A/T CHECK Indicator Lamp Does Not Come On"](#) .

2. CHECK A/T CHECK INDICATOR LAMP

Does A/T CHECK indicator lamp flash for about 8 seconds?

YES >> For TCM fail-safe mode, carry out self-diagnostics and record all NG items on the diagnostics worksheet. Refer to [AT-109](#) , [AT-120](#) .

NO >> 1. Turn ignition switch to "OFF" position.

2. Carry out the self-diagnostics and record all NG items on the diagnostics worksheet. Refer to [AT-109](#) , [AT-120](#) .

3. Go to [AT-75, "Check at Idle"](#) .

Check at Idle

ACS002M0

1. CHECK STARTING THE ENGINE

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

Does the engine start?

YES >> GO TO 2.

NO >> Stop the road test and go to [AT-192, "Engine Cannot Be Started In "P" or "N" Position"](#) .

2. CHECK STARTING THE ENGINE

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

Does the engine start in both positions?

YES >> Stop the road test and go to [AT-192, "Engine Cannot Be Started In "P" or "N" Position"](#) .

NO >> GO TO 3.

3. CHECK "P" POSITION FUNCTIONS

1. Move selector lever to "P" position.
2. Turn ignition switch to "OFF" position.
3. Disengage the parking brake.
4. Push the vehicle forward or backward.
5. Engage the parking brake.

When you push the vehicle with disengaging the parking brake, does it move?

YES >> Enter a check mark at "Vehicle moves when pushed in "P" position" on the diagnostics worksheet, then continue the road test.

NO >> GO TO 4.

TROUBLE DIAGNOSIS

4. CHECK "N" POSITION FUNCTIONS

1. Start the engine.
2. Move selector lever to "N" position.
3. Disengage the parking brake.

Does vehicle move forward or backward?

- YES >> Enter a check mark at "Vehicle moves in "N" position" on the diagnostics worksheet, then continue the road test.
- NO >> GO TO 5.

5. CHECK SHIFT SHOCK

1. Engage the brake.
2. Move selector lever to "D" position.

When the transmission is shifted from "N" to "D", is there an excessive shock?

- YES >> Enter a check mark at "Large shock when shifted from N to D" on the diagnostics worksheet, then continue the road test.
- NO >> GO TO 6.

6. CHECK "R" POSITION FUNCTIONS

1. Engage the brake.
2. Move selector lever to "R" position.
3. Disengage the brake for 4 to 5 seconds.

Does the vehicle creep backward?

- YES >> GO TO 7.
- NO >> Enter a check mark at "Vehicle does not creep backward in R position" on the diagnostics worksheet, then continue the road test.

7. CHECK "D" POSITION FUNCTIONS

Inspect whether the vehicle moves forward when the transmission is put into the "D" position.

Does the vehicle move forward in the "D" positions?

- YES >> Go to [AT-76, "Cruise Test - Part 1"](#) , [AT-78, "Cruise Test - Part 2"](#) , and [AT-79, "Cruise Test - Part 3"](#) .
- NO >> Enter a check mark at "Vehicle does not move forward in D positions" on the diagnostics worksheet, then continue the road test.

Cruise Test - Part 1

ACS002M1

1. CHECK STARTING OUT FROM D1

1. Drive the vehicle for about 10 minutes to warm up the engine oil and ATF.
Appropriate temperature for the ATF: 50 - 80°C (122 - 176°F)
2. Park the vehicle on a level surface.
3. Move selector lever to "P" position.
4. Start the engine.
5. Move selector lever to "D" position.
6. Press the accelerator pedal about half way down to accelerate the vehicle.

Ⓟ **With CONSULT-II**

Read off the gear positions.

Starts from D1?

- YES >> GO TO 2.
- NO >> Enter a check mark at "Vehicle cannot be started from D1" on the diagnostics worksheet, then continue the road test.

TROUBLE DIAGNOSIS

2. CHECK SHIFT-UP D1 → D2

Press down the accelerator pedal about half way and inspect if the vehicle shifts up (D1 → D2) at the appropriate speed.

- Refer to [AT-80](#).

With CONSULT-II

Read the gear position, throttle degree of opening, and vehicle speed.

Does the A/T shift-up D1 → D2 at the correct speed?

YES >> GO TO 3.

NO >> Enter a check mark at "A/T does not shift D1 → D2" on the diagnostics worksheet, then continue the road test.

3. CHECK SHIFT-UP D2 → D3

Press down the accelerator pedal about half way and inspect if the vehicle shifts up (D2 → D3) at the appropriate speed.

- Refer to [AT-80](#).

With CONSULT-II

Read the gear position, throttle degree of opening, and vehicle speed.

Does the A/T shift-up D2 → D3 at the correct speed?

YES >> GO TO 4.

NO >> Enter a check mark at "A/T does not shift D2 → D3" on the diagnostics worksheet, then continue the road test.

4. CHECK SHIFT-UP D3 → D4

Press down the accelerator pedal about half way and inspect if the vehicle shifts up (D3 → D4) at the appropriate speed.

- Refer to [AT-80](#).

With CONSULT-II

Read the gear position, throttle degree of opening, and vehicle speed.

Does the A/T shift-up D3 → D4 at the correct speed?

YES >> GO TO 5.

NO >> Enter a check mark at "A/T does not shift D3 → D4" on the diagnostics worksheet, then continue the road test.

5. CHECK SHIFT-UP D4 → D5

Press down the accelerator pedal about half way and inspect if the vehicle shifts up (D4 → D5) at the appropriate speed.

- Refer to [AT-80](#).

With CONSULT-II

Read the gear position, throttle degree of opening, and vehicle speed.

Does the A/T shift-up D4 → D5 at the correct speed?

YES >> GO TO 6.

NO >> Enter a check mark at "A/T does not shift D4 → D5" on the diagnostics worksheet, then continue the road test.

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TROUBLE DIAGNOSIS

6. CHECK LOCK-UP

When releasing accelerator pedal from D5, check lock-up from D5 to L/U.

- Refer to [AT-80](#).

With CONSULT-II

Select "TCC SOLENOID 0.00A" with the "MAIN SIGNAL" mode for A/T.

Does it lock-up?

YES >> GO TO 7.

NO >> Enter a check mark at "A/T does not perform lock-up" on the diagnostics worksheet, then continue the road test.

7. CHECK LOCK-UP HOLD

Does it maintain lock-up status?

YES >> GO TO 8.

NO >> Enter a check mark at "A/T hold does not lock-up condition" on the diagnostics worksheet, then continue the road test.

8. CHECK LOCK-UP RELEASE

Check lock-up cancellation by depressing brake pedal lightly to decelerate.

With CONSULT-II

Select "TCC SOLENOID 0.00A" with the "MAIN SIGNAL" mode for A/T.

Does lock-up cancel?

YES >> GO TO 9.

NO >> Enter a check mark at "Lock-up is not released" on the diagnostics worksheet, then continue the road test.

9. CHECK SHIFT-DOWN D5 → D4

Decelerate by pressing lightly on the brake pedal.

With CONSULT-II

Read the gear position and engine speed.

When the A/T shift-down D5 → D4, does the engine speed drop smoothly back to idle?

YES >> 1. Stop the vehicle.

2. Go to Cruise test - Part 2 (Refer to [AT-78](#)).

NO >> Enter a check mark at "A/T does not shift-down" on the diagnostics worksheet, then continue the road test. Go to Cruise test - Part 2 (Refer to [AT-78](#)).

Cruise Test - Part 2

ACS002M2

1. CHECK STARTING FROM D1

1. Move selector lever the "D" position.
2. Accelerate at half throttle.

With CONSULT-II

Read the gear position.

Does it start from D1?

YES >> GO TO 2.

NO >> Enter a check mark at "Vehicle cannot be started from D1" on the diagnostics worksheet, then continue the road test.

TROUBLE DIAGNOSIS

2. CHECK SHIFT-UP D1 → D2

Press the accelerator pedal down all the way and inspect whether or not the transmission shifts up (D1 → D2) at the correct speed.

- Refer to [AT-80](#) .

With CONSULT-II

Read the gear position, throttle position and vehicle speed.

Does the A/T shift-up D1 → D2 at the correct speed?

YES >> GO TO 3.

NO >> Enter a check mark at “Vehicle does not shift D1 → D2” on the diagnostics worksheet, then continue the road test.

3. CHECK SHIFT-UP D2 → D3

Press the accelerator pedal down all the way and inspect whether or not the transmission shifts up (D2 → D3) at the correct speed.

- Refer to [AT-80](#) .

With CONSULT-II

Read the gear position, throttle position and vehicle speed.

Does the A/T shift-up D2 → D3 at the correct speed?

YES >> GO TO 4.

NO >> Enter a check mark at “Vehicle does not shift D2 → D3” on the diagnostics worksheet, then continue the road test.

4. CHECK SHIFT-UP D3 → D4 AND ENGINE BRAKE

When the transmission changes speed D3 → D4, return the accelerator pedal.

Does the A/T shift-up D3 → D4 and apply the engine brake?

YES >> 1. Stop the vehicle.

2. See [AT-79](#) .

NO >> Enter a check mark at “Vehicle does not shift D3 → D4” on the diagnostics worksheet, then continue the road test.

Cruise Test - Part 3

ACS002M3

1. MANUAL MODE FUNCTION

Move to manual mode from D position.

Does it switch to manual mode?

YES >> GO TO 2.

NO >> Continue road test and add chicanery to “Cannot be changed to manual mode” on diagnostics worksheet.

2. CHECK SHIFT-DOWN

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

With CONSULT-II

Read the gear position.

Is downshifting correctly performed?

YES >> GO TO 3.

NO >> Enter a check mark at “Vehicle does not shift” at the corresponding position (5th → 4th, 4th → 3rd, 3rd → 2nd, 2nd → 1st) on the diagnostics worksheet, then continue the road test.

TROUBLE DIAGNOSIS

3. CHECK ENGINE BRAKE

Does engine braking effectively reduce speed in M1 position?

YES >> 1. Stop the vehicle.

2. Carry out the self-diagnostics. Refer to [AT-109, "SELF-DIAGNOSTIC PROCEDURE \(WITH CONSULT-II\)"](#) , [AT-120, "Diagnostic Procedure Without CONSULT-II"](#) .

NO >> Enter a check mark at "Vehicle does not decelerate by engine brake" on the diagnostics work-sheet, then continue trouble diagnosis.

Vehicle Speed When Shifting Gears 2WD MODELS

ACS002M4

Engine model	VQ35DE							
Throttle position	Vehicle speed km/h (MPH)							
	D1 →D2	D2 →D3	D3 →D4	D4 →D5	D5 →D4	D4 →D3	D3 →D2	D2 →D1
Full throttle	68 - 72 (42 - 45)	106 - 114 (66 - 71)	164 - 174 (102 - 108)	235 - 245 (146 - 152)	231 - 241 (144 - 150)	154 - 164 (96 - 102)	89 - 97 (55 - 60)	37 - 43 (23 - 27)
Half throttle	54 - 58 (34 - 36)	83 - 91 (52 - 57)	126 - 136 (78 - 85)	158 - 168 (98 - 104)	103 - 113 (64 - 70)	74 - 84 (46 - 52)	34 - 42 (21 - 26)	11 - 15 (7 - 9)

- At half throttle, the accelerator opening is 4/8 of the full opening.

AWD MODELS

Engine model	VQ35DE							
Throttle position	Vehicle speed km/h (MPH)							
	D1 →D2	D2 →D3	D3 →D4	D4 →D5	D5 →D4	D4 →D3	D3 →D2	D2 →D1
Full throttle	62 - 66 (39 - 41)	96 - 104 (60 - 65)	149 - 159 (93 - 99)	213 - 223 (132 - 139)	209 - 219 (130 - 136)	121 - 131 (75 - 81)	81 - 89 (50 - 55)	39 - 43 (24 - 27)
Half throttle	49 - 53 (30 - 33)	75 - 83 (47 - 52)	114 - 124 (71 - 77)	141 - 151 (88 - 94)	94 - 104 (58 - 65)	66 - 76 (41 - 47)	31 - 39 (19 - 24)	11 - 15 (7 - 9)

- At half throttle, the accelerator opening is 4/8 of the full opening.

Engine model	VK45DE							
Throttle position	Vehicle speed km/h (MPH)							
	D1 →D2	D2 →D3	D3 →D4	D4 →D5	D5 →D4	D4 →D3	D3 →D2	D2 →D1
Full throttle	64 - 68 (40 - 42)	98 - 106 (61 - 66)	152 - 162 (94 - 101)	219 - 229 (136 - 142)	215 - 225 (134 - 140)	136 - 146 (85 - 91)	85 - 93 (53 - 58)	41 - 45 (25 - 28)
Half throttle	31 - 35 (19 - 22)	59 - 67 (37 - 42)	100 - 110 (62 - 68)	166 - 176 (103 - 109)	107 - 117 (66 - 73)	65 - 75 (40 - 47)	38 - 46 (24 - 29)	12 - 16 (7 - 10)

- At half throttle, the accelerator opening is 4/8 of the full opening.

Vehicle Speed When Performing and Releasing Complete Lock-up 2WD MODELS

ACS002M5

Engine model	VQ35DE	
Throttle position	Vehicle speed km/h (MPH)	
	Lock-up "ON"	Lock-up "OFF"
Closed throttle	63 - 73 (39 - 45)	40 - 48 (25 - 30)
Half throttle	196 - 204 (122 - 127)	153 - 161 (95 - 100)

- At closed throttle, the accelerator opening is less than 1/8 condition.
- At half throttle, the accelerator opening is 4/8 of the full opening.

TROUBLE DIAGNOSIS

AWD MODELS

Engine model	VQ35DE	
Throttle position	Vehicle speed km/h (MPH)	
	Lock-up "ON"	Lock-up "OFF"
Closed throttle	59 - 67 (37 - 42)	56 - 64 (35 - 40)
Half throttle	178 - 186 (111 - 116)	139 - 147 (86 - 91)

- At closed throttle, the accelerator opening is less than 1/8 condition.
- At half throttle, the accelerator opening is 4/8 of the full opening.

Engine model	VK45DE	
Throttle position	Vehicle speed km/h (MPH)	
	Lock-up "ON"	Lock-up "OFF"
Closed throttle	66 - 74 (41 - 46)	53 - 61 (33 - 38)
Half throttle	191 - 199 (119 - 124)	136 - 144 (85 - 89)

- At closed throttle, the accelerator opening is less than 1/8 condition.
- At half throttle, the accelerator opening is 4/8 of the full opening.

Vehicle Speed When Performing and Releasing Slip Lock-up

ACS002M6

2WD MODELS

Engine model	VQ35DE		
Throttle position	Gear position	Vehicle speed km/h (MPH)	
		Slip lock-up "ON"	Slip lock-up "OFF"
Closed throttle	4th	43 - 51 (27 - 32)	40 - 48 (25 - 30)
	5th	51 - 59 (32 - 37)	48 - 56 (30 - 35)

- At closed throttle, the accelerator opening is less than 1/8 condition.

AWD MODELS

Engine model	VQ35DE		
Throttle position	Gear position	Vehicle speed km/h (MPH)	
		Slip lock-up "ON"	Slip lock-up "OFF"
Closed throttle	4th	40 - 48 (25 - 30)	36 - 44 (22 - 27)
	5th	48 - 56 (30 - 35)	45 - 53 (28 - 33)

- At closed throttle, the accelerator opening is less than 1/8 condition.

Engine model	VK45DE		
Throttle position	Gear position	Vehicle speed km/h (MPH)	
		Slip lock-up "ON"	Slip lock-up "OFF"
Closed throttle	4th	39 - 47 (24 - 29)	34 - 42 (21 - 26)
	5th	47 - 55 (29 - 34)	44 - 52 (27 - 32)

- At closed throttle, the accelerator opening is less than 1/8 condition.

TROUBLE DIAGNOSIS

Symptom Chart

ACS008RY

- The diagnostics item numbers show the sequence for inspection. Inspect in order from Item 1.
- Overhaul and inspection inside the A/T only if A/T fluid condition is NG. Refer to [AT-71, "Fluid Condition Check"](#) .

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
1	Shift Shock	Large shock. ("N" → "D" position) Refer to AT-195, "Large Shock ("N" to "D" Position)" .	ON vehicle	1. Engine idle speed	EC-50 (for VQ35DE) or EC-691 (for VK45DE)
				2. Engine speed signal	AT-131
				3. Accelerator pedal position sensor	AT-145
				4. Control linkage adjustment	AT-234
				5. ATF temperature sensor	AT-147
				6. ATF pressure switch 1 and front brake solenoid valve	AT-181, AT-162
				7. CAN communication line	AT-122
				8. Fluid level and state	AT-71
				9. Line pressure test	AT-72
				10. Control valve with TCM	AT-242
			OFF vehicle	11. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-14, "Cross-Sectional View (2WD Models)" or AT-15, "Cross-Sectional View (AWD Models)")	AT-291
2		Shock is too large when changing D1 → D2 or M1 → M2 .	ON vehicle	1. Accelerator pedal position sensor	AT-145
				2. Control linkage adjustment	AT-234
				3. ATF pressure switch 5 and direct clutch solenoid valve	AT-185, AT-166
				4. CAN communication line	AT-122
				5. Engine speed signal	AT-131
				6. Turbine revolution sensor	AT-149
				7. Vehicle speed sensor A/T and vehicle speed sensor MTR	AT-129, AT-151
				8. Fluid level and state	AT-71
				9. Control valve with TCM	AT-242
			OFF vehicle	10. Direct clutch	AT-327

TROUBLE DIAGNOSIS

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
3		Shock is too large when changing D2 → D3 or M2 → M3 .	ON vehicle	1. Accelerator pedal position sensor	AT-145
				2. Control linkage adjustment	AT-234
				3. ATF pressure switch 6, high and low reverse clutch solenoid valve	AT-187 , AT-170
				4. CAN communication line	AT-122
				5. Engine speed signal	AT-131
				6. Turbine revolution sensor	AT-149
				7. Vehicle speed sensor A/T and vehicle speed sensor MTR	AT-129 , AT-151
				8. Fluid level and state	AT-71
				9. Control valve with TCM	AT-242
			OFF vehicle	10. High and low reverse clutch	AT-324
4	Shift Shock	Shock is too large when changing D3 → D4 or M3 → M4 .	ON vehicle	1. Accelerator pedal position sensor	AT-145
				2. Control linkage adjustment	AT-234
				3. ATF pressure switch 3 and input clutch solenoid valve	AT-183 , AT-158
				4. CAN communication line	AT-122
				5. Engine speed signal	AT-131
				6. Turbine revolution sensor	AT-149
				7. Vehicle speed sensor A/T and vehicle speed sensor MTR	AT-129 , AT-151
				8. Fluid level and state	AT-71
				9. Control valve with TCM	AT-242
			OFF vehicle	10. Input clutch	AT-313
5		Shock is too large when changing D4 → D5 or M4 → M5 .	ON vehicle	1. Accelerator pedal position sensor	AT-145
				2. Control linkage adjustment	AT-234
				3. ATF pressure switch 1 and front brake solenoid valve	AT-181 , AT-162
				4. CAN communication line	AT-122
				5. Engine speed signal	AT-131
				6. Turbine revolution sensor	AT-149
				7. Vehicle speed sensor A/T and vehicle speed sensor MTR	AT-129 , AT-151
				8. Fluid level and state	AT-71
				9. Control valve with TCM	AT-242
			OFF vehicle	10. Front brake (brake band)	AT-277
				11. Input clutch	AT-313

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TROUBLE DIAGNOSIS

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
6		Shock is too large for downshift when accelerator pedal is pressed.	ON vehicle	1. Accelerator pedal position sensor	AT-145
				2. Control linkage adjustment	AT-234
				3. CAN communication line	AT-122
				4. Engine speed signal	AT-131
				5. Turbine revolution sensor	AT-149
				6. Vehicle speed sensor A/T and vehicle speed sensor MTR	AT-129, AT-151
				7. Fluid level and state	AT-71
				8. Control valve with TCM	AT-242
			OFF vehicle	9. Front brake (brake band)	AT-277
				10. Input clutch	AT-313
				11. High and low reverse clutch	AT-324
				12. Direct clutch	AT-327
7	Shift Shock	Shock is too large for upshift when accelerator pedal is released.	ON vehicle	1. Accelerator pedal position sensor	AT-145
				2. Control linkage adjustment	AT-234
				3. Engine speed signal	AT-131
				4. CAN communication line	AT-122
				5. Turbine revolution sensor	AT-149
				6. Vehicle speed sensor A/T and vehicle speed sensor MTR	AT-129, AT-151
				7. Fluid level and state	AT-71
				8. Control valve with TCM	AT-242
			OFF vehicle	9. Front brake (brake band)	AT-277
				10. Input clutch	AT-313
				11. High and low reverse clutch	AT-324
				12. Direct clutch	AT-327
8		Shock is too large for lock-up.	ON vehicle	1. Accelerator pedal position sensor	AT-145
				2. Control linkage adjustment	AT-234
				3. Engine speed signal	AT-131
				4. CAN communication line	AT-122
				5. Turbine revolution sensor	AT-149
				6. Vehicle speed sensor A/T and vehicle speed sensor MTR	AT-129, AT-151
				7. Torque converter clutch solenoid valve	AT-133
				8. Fluid level and state	AT-71
				9. Control valve with TCM	AT-242
			OFF vehicle	10. Torque converter	AT-291

TROUBLE DIAGNOSIS

No.	Items	Symptom	Condition	Diagnostic Item	Reference page			
9	Shift Shock	Shock is too large during engine brake.	ON vehicle	1. Accelerator pedal position sensor	AT-145			
				2. Control linkage adjustment	AT-234			
				3. CAN communication line	AT-122			
				4. Fluid level and state	AT-71			
				5. Control valve with TCM	AT-242			
			OFF vehicle	6. Front brake (brake band)	AT-277			
				7. Input clutch	AT-313			
				8. High and low reverse clutch	AT-324			
				9. Direct clutch	AT-327			
10	No Up Shift	Gear does not change from D1 → D2 or from M1 → M2 . Refer to AT-206, "A/T Does Not Shift: D1 → D2" .	ON vehicle	1. Fluid level and state	AT-71			
				2. Vehicle speed sensor A/T and vehicle speed sensor MTR	AT-129, AT-151			
				3. ATF pressure switch 5 and direct clutch solenoid valve	AT-185, AT-166			
				4. Line pressure test	AT-72			
				5. CAN communication line	AT-122			
				6. Control valve with TCM	AT-242			
			OFF vehicle	7. Direct clutch	AT-327			
			11	No Up Shift	Gear does not change from D2 → D3 or from M2 → M3 . Refer to AT-209, "A/T Does Not Shift: D2 → D3" .	ON vehicle	1. Fluid level and state	AT-71
							2. Vehicle speed sensor A/T and vehicle speed sensor MTR	AT-129, AT-151
							3. ATF pressure switch 6, high and low reverse clutch solenoid valve	AT-187, AT-170
							4. Line pressure test	AT-72
							5. CAN communication line	AT-122
6. Control valve with TCM	AT-242							
OFF vehicle	7. High and low reverse clutch	AT-324						
12	No Up Shift	Gear does not change from D3 → D4 or from M3 → M4 . Refer to AT-211, "A/T Does Not Shift: D3 → D4" .	ON vehicle	1. Fluid level and state	AT-71			
				2. Vehicle speed sensor A/T and vehicle speed sensor MTR	AT-129, AT-151			
				3. ATF pressure switch 3 and input clutch solenoid valve	AT-183, AT-158			
				4. ATF pressure switch 1 and front brake solenoid valve	AT-181, AT-162			
				5. Line pressure test	AT-72			
				6. CAN communication line	AT-122			
				7. Control valve with TCM	AT-242			
			OFF vehicle	8. Input clutch	AT-313			

TROUBLE DIAGNOSIS

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
13	No Up Shift	Gear does not change from D4 → D5 or from M4 → M5 . Refer to AT-214, "A/T Does Not Shift: D4 → D5" .	ON vehicle	1. Fluid level and state	AT-71
				2. Vehicle speed sensor A/T and vehicle speed sensor MTR	AT-129, AT-151
				3. ATF pressure switch 1 and front brake solenoid valve	AT-181, AT-162
				4. ATF pressure switch 5 and direct clutch solenoid valve	AT-185, AT-166
				5. Turbine revolution sensor	AT-149
				6. Line pressure test	AT-72
				7. CAN communication line	AT-122
				8. Control valve with TCM	AT-242
			OFF vehicle	9. Front brake (brake band)	AT-291
				10. Input clutch	AT-313
14	No Down Shift	In "D" or "M" range, does not downshift to 4th gear. Refer to AT-223, "A/T Does Not Shift: 5th Gear → 4th Gear" .	ON vehicle	1. Fluid level and state	AT-71
				2. Vehicle speed sensor A/T and vehicle speed sensor MTR	AT-129, AT-151
				3. ATF pressure switch 1 and front brake solenoid valve	AT-181, AT-162
				4. ATF pressure switch 5 and direct clutch solenoid valve	AT-185, AT-166
				5. CAN communication line	AT-122
				6. Line pressure test	AT-72
				7. Control valve with TCM	AT-242
			OFF vehicle	8. Front brake (brake band)	AT-291
				9. Input clutch	AT-313
15	No Down Shift	In "D" or "M" range, does not downshift to 3rd gear. Refer to AT-225, "A/T Does Not Shift: 4th Gear → 3rd Gear" .	ON vehicle	1. Fluid level and state	AT-71
				2. Vehicle speed sensor A/T and vehicle speed sensor MTR	AT-129, AT-151
				3. ATF pressure switch 3 and input clutch solenoid valve	AT-183, AT-158
				4. ATF pressure switch 1 and front brake solenoid valve	AT-181, AT-162
				5. CAN communication line	AT-122
				6. Line pressure test	AT-72
				7. Control valve with TCM	AT-242
			OFF vehicle	8. Input clutch	AT-313

TROUBLE DIAGNOSIS

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
16	No Down Shift	In "D" or "M" range, does not downshift to 2nd gear. Refer to AT-227, "A/T Does Not Shift: 3rd Gear → 2nd Gear" .	ON vehicle	1. Fluid level and state	AT-71
				2. Vehicle speed sensor A/T and vehicle speed sensor MTR	AT-129, AT-151
				3. ATF pressure switch 6, high and low reverse clutch solenoid valve	AT-187, AT-170
				4. CAN communication line	AT-122
				5. Line pressure test	AT-72
				6. Control valve with TCM	AT-242
			OFF vehicle	7. High and low reverse clutch	AT-324
17	No Down Shift	In "D" or "M" range, does not downshift to 1st gear. Refer to AT-229, "A/T Does Not Shift: 2nd Gear → 1st Gear" .	ON vehicle	1. Fluid level and state	AT-71
				2. Vehicle speed sensor A/T and vehicle speed sensor MTR	AT-129, AT-151
				3. ATF pressure switch 5 and direct clutch solenoid valve	AT-185, AT-166
				4. CAN communication line	AT-122
				5. Line pressure test	AT-72
				6. Control valve with TCM	AT-242
			OFF vehicle	7. Direct clutch	AT-327
18	Slips/Will Not engage	When "D" or "M" position, remains in 1st gear.	ON vehicle	1. Fluid level and state	AT-71
				2. Vehicle speed sensor A/T and vehicle speed sensor MTR	AT-129, AT-151
				3. Direct clutch solenoid valve	AT-166
				4. Line pressure test	AT-72
				5. CAN communication line	AT-122
				6. Control valve with TCM	AT-242
			OFF vehicle	7. 3rd one-way clutch	AT-311
				8. 1st one-way clutch	AT-319
				9. Gear system	AT-277
				10. Reverse brake	AT-291
				11. Forward one-way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-14, "Cross-Sectional View (2WD Models)" or AT-15, "Cross-Sectional View (AWD Models)")	AT-291
				12. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-14, "Cross-Sectional View (2WD Models)" or AT-15, "Cross-Sectional View (AWD Models)")	AT-291

TROUBLE DIAGNOSIS

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
19		When "D" or "M" position, remains in 2nd gear.	ON vehicle	1. Fluid level and state	AT-71
				2. Vehicle speed sensor A/T and vehicle speed sensor MTR	AT-129, AT-151
				3. Low coast brake solenoid valve	AT-174
				4. Line pressure test	AT-72
				5. CAN communication line	AT-122
			OFF vehicle	6. Control valve with TCM	AT-242
				7. 3rd one-way clutch	AT-311
				8. Gear system	AT-277
				9. Direct clutch	AT-327
				10. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-14, "Cross-Sectional View (2WD Models)" or AT-15, "Cross-Sectional View (AWD Models)")	AT-291
20	Slips/Will Not engage	When "D" or "M" position, remains in 3rd gear.	ON vehicle	1. Fluid level and state	AT-71
				2. Vehicle speed sensor A/T and vehicle speed sensor MTR	AT-129, AT-151
				3. Line pressure test	AT-72
				4. CAN communication line	AT-122
				5. Control valve with TCM	AT-242
			OFF vehicle	6. 3rd one-way clutch	AT-311
				7. Gear system	AT-277
				8. High and low reverse clutch	AT-324
				9. Forward one-way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-14, "Cross-Sectional View (2WD Models)" or AT-15, "Cross-Sectional View (AWD Models)")	AT-291
				10. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-14, "Cross-Sectional View (2WD Models)" or AT-15, "Cross-Sectional View (AWD Models)")	AT-291

TROUBLE DIAGNOSIS

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
21	Slips/Will Not engage	When "D" or "M" position, remains in 4th gear.	ON vehicle	1. Fluid level and state	AT-71
				2. Vehicle speed sensor A/T and vehicle speed sensor MTR	AT-129, AT-151
				3. ATF pressure switch 3 and input clutch solenoid valve	AT-183, AT-158
				4. ATF pressure switch 5 and direct clutch solenoid valve	AT-185, AT-166
				5. ATF pressure switch 6, high and low reverse clutch solenoid valve	AT-187, AT-170
				6. Low coast brake solenoid valve	AT-174
				7. Front brake solenoid valve	AT-162
				8. Line pressure test	AT-72
				9. CAN communication line	AT-122
				10. Control valve with TCM	AT-242
			OFF vehicle	11. Input clutch	AT-313
				12. Gear system	AT-277
				13. High and low reverse clutch	AT-324
				14. Direct clutch	AT-327
22		When "D" or "M" position, remains in 5th gear.	ON vehicle	1. Fluid level and state	AT-71
				2. Vehicle speed sensor A/T and vehicle speed sensor MTR	AT-129, AT-151
				3. ATF pressure switch 1 and front brake solenoid valve	AT-181, AT-162
				4. Line pressure test	AT-72
				5. CAN communication line	AT-122
				6. Control valve with TCM	AT-242
			OFF vehicle	7. Front brake (brake band)	AT-291
				8. Input clutch	AT-313
				9. Gear system	AT-277
				10. High and low reverse clutch	AT-324

A
B
AT
D
E
F
G
H
I
J
K
L
M

TROUBLE DIAGNOSIS

No.	Items	Symptom	Condition	Diagnostic Item	Reference page			
23	Slips/Will Not Engage	Vehicle cannot be started from D1 . Refer to AT-204 , " Vehicle Cannot Be Started From D1 ".	ON vehicle	1. Fluid level and state	AT-71			
				2. Accelerator pedal position sensor	AT-145			
				3. Line pressure test	AT-72			
				4. CAN communication line	AT-122			
				5. Control valve with TCM	AT-242			
			OFF vehicle	6. Torque converter	AT-291			
				7. Oil pump assembly	AT-308			
				8. 3rd one-way clutch	AT-311			
				9. 1st one-way clutch	AT-319			
				10. Gear system	AT-277			
				11. Reverse brake	AT-291			
				12. Forward one-way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-14 , " Cross-Sectional View (2WD Models) " or AT-15 , " Cross-Sectional View (AWD Models) ")	AT-291			
				13. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-14 , " Cross-Sectional View (2WD Models) " or AT-15 , " Cross-Sectional View (AWD Models) ")	AT-291			
24	Slips/Will Not Engage	Does not lock-up. Refer to AT-216 , " A/T Does Not Perform Lock-Up ".	ON vehicle	1. Fluid level and state	AT-71			
				2. Line pressure test	AT-72			
				3. Engine speed signal	AT-131			
				4. Turbine revolution sensor	AT-149			
				5. Torque converter clutch solenoid valve	AT-133			
				6. CAN communication line	AT-122			
				7. Control valve with TCM	AT-242			
			OFF vehicle	8. Torque converter	AT-291			
				9. Oil pump assembly	AT-308			
			25	Slips/Will Not Engage	Does not hold lock-up condition. Refer to AT-219 , " A/T Does Not Hold Lock-Up Condition ".	ON vehicle	1. Fluid level and state	AT-71
							2. Line pressure test	AT-72
							3. Engine speed signal	AT-131
							4. Turbine revolution sensor	AT-149
5. Torque converter clutch solenoid valve	AT-133							
6. CAN communication line	AT-122							
7. Control valve with TCM	AT-242							
OFF vehicle	8. Torque converter	AT-291						
	9. Oil pump assembly	AT-308						

TROUBLE DIAGNOSIS

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
26		Lock-up is not released. Refer to AT-220 , " Lock-Up Is Not Released ".	ON vehicle	1. Fluid level and state	AT-71
				2. Line pressure test	AT-72
				3. Engine speed signal	AT-131
				4. Turbine revolution sensor	AT-149
				5. Torque converter clutch solenoid valve	AT-133
				6. CAN communication line	AT-122
				7. Control valve with TCM	AT-242
			OFF vehicle	8. Torque converter	AT-291
				9. Oil pump assembly	AT-308
27	Slips/Will Not engage	No shock at all or the clutch slips when vehicle changes speed D1 → D2 or M1 → M2 .	ON vehicle	1. Fluid level and state	AT-71
				2. Vehicle speed sensor A/T and vehicle speed sensor MTR	AT-129 , AT-151
				3. ATF pressure switch 5 and direct clutch solenoid valve	AT-185 , AT-166
				4. CAN communication line	AT-122
				5. Line pressure test	AT-72
				6. Control valve with TCM	AT-242
			OFF vehicle	7. Torque converter	AT-291
				8. Oil pump assembly	AT-308
				9. 3rd one-way clutch	AT-311
				10. Gear system	AT-277
				11. Direct clutch	AT-327
				12. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-14 , " Cross-Sectional View (2WD Models) " or AT-15 , " Cross-Sectional View (AWD Models) ")	AT-291

A
B
AT
D
E
F
G
H
I
J
K
L
M

TROUBLE DIAGNOSIS

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
28	Slips/Will Not engage	No shock at all or the clutch slips when vehicle changes speed D ₂ → D ₃ or M ₂ → M ₃ .	ON vehicle	1. Fluid level and state	AT-71
				2. Vehicle speed sensor A/T and vehicle speed sensor MTR	AT-129 , AT-151
				3. ATF pressure switch 6, high and low reverse clutch solenoid valve	AT-187 , AT-170
				4. CAN communication line	AT-122
				5. Line pressure test	AT-72
				6. Control valve with TCM	AT-242
			OFF vehicle	7. Torque converter	AT-291
				8. Oil pump assembly	AT-308
				9. 3rd one-way clutch	AT-311
				10. Gear system	AT-277
				11. High and low reverse clutch	AT-324
				12. Forward one-way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-14 , " Cross-Sectional View (2WD Models) " or AT-15 , " Cross-Sectional View (AWD Models) ")	AT-291
				13. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-14 , " Cross-Sectional View (2WD Models) " or AT-15 , " Cross-Sectional View (AWD Models) ")	AT-291
29		No shock at all or the clutch slips when vehicle changes speed D ₃ → D ₄ or M ₃ → M ₄ .	ON vehicle	1. Fluid level and state	AT-71
				2. Vehicle speed sensor A/T and vehicle speed sensor MTR	AT-129 , AT-151
				3. ATF pressure switch 3 and input clutch solenoid valve	AT-183 , AT-158
				4. ATF pressure switch 1 and front brake solenoid valve	AT-181 , AT-162
				5. CAN communication line	AT-122
				6. Line pressure test	AT-72
				7. Control valve with TCM	AT-242
			OFF vehicle	8. Torque converter	AT-291
				9. Oil pump assembly	AT-308
				10. Input clutch	AT-313
				11. Gear system	AT-277
				12. High and low reverse clutch	AT-324
				13. Direct clutch	AT-327

TROUBLE DIAGNOSIS

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
30	Slips/Will Not engage	No shock at all or the clutch slips when vehicle changes speed D4 → D5 or M4 → M5 .	ON vehicle	1. Fluid level and state	AT-71
				2. Vehicle speed sensor A/T and vehicle speed sensor MTR	AT-129, AT-151
				3. ATF pressure switch 1 and front brake solenoid valve	AT-181, AT-162
				4. ATF pressure switch 5 and direct clutch solenoid valve	AT-185, AT-166
				5. CAN communication line	AT-122
				6. Line pressure test	AT-72
				7. Control valve with TCM	AT-242
			OFF vehicle	8. Torque converter	AT-291
				9. Oil pump assembly	AT-308
				10. Front brake (brake band)	AT-291
				11. Input clutch	AT-313
				12. Gear system	AT-277
				13. High and low reverse clutch	AT-324
31	Slips/Will Not engage	When you press the accelerator pedal and shift speed D5 → D4 or M5 → M4 the engine idles or the transmission slips.	ON vehicle	1. Fluid level and state	AT-71
				2. Vehicle speed sensor A/T and vehicle speed sensor MTR	AT-129, AT-151
				3. ATF pressure switch 1 and front brake solenoid valve	AT-181, AT-162
				4. ATF pressure switch 5 and direct clutch solenoid valve	AT-185, AT-166
				5. CAN communication line	AT-122
				6. Line pressure test	AT-72
				7. Control valve with TCM	AT-242
			OFF vehicle	8. Torque converter	AT-291
				9. Oil pump assembly	AT-308
				10. Input clutch	AT-313
				11. Gear system	AT-277
				12. High and low reverse clutch	AT-324
				13. Direct clutch	AT-327

A
B
AT
D
E
F
G
H
I
J
K
L
M

TROUBLE DIAGNOSIS

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
32	Slips/Will Not engage	When you press the accelerator pedal and shift speed D4 → D3 or M4 → M3 the engine idles or the transmission slips.	ON vehicle	1. Fluid level and state	AT-71
				2. Vehicle speed sensor A/T and vehicle speed sensor MTR	AT-129 , AT-151
				3. ATF pressure switch 3 and input clutch solenoid valve	AT-183 , AT-158
				4. ATF pressure switch 1 and front brake solenoid valve	AT-181 , AT-162
				5. CAN communication line	AT-122
				6. Line pressure test	AT-72
				7. Control valve with TCM	AT-242
			OFF vehicle	8. Torque converter	AT-291
				9. Oil pump assembly	AT-308
				10. 3rd one-way clutch	AT-311
				11. Gear system	AT-277
				12. High and low reverse clutch	AT-324
				13. Forward one-way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-14 , " Cross-Sectional View (2WD Models) " or AT-15 , " Cross-Sectional View (AWD Models) ")	AT-291
				14. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-14 , " Cross-Sectional View (2WD Models) " or AT-15 , " Cross-Sectional View (AWD Models) ")	AT-291
33		When you press the accelerator pedal and shift speed D3 → D2 or M3 → M2 the engine idles or the transmission slips.	ON vehicle	1. Fluid level and state	AT-71
				2. Vehicle speed sensor A/T and vehicle speed sensor MTR	AT-129 , AT-151
				3. ATF pressure switch 6, high and low reverse clutch solenoid valve	AT-187 , AT-170
				4. ATF pressure switch 5 and direct clutch solenoid valve	AT-185 , AT-166
				5. CAN communication line	AT-122
				6. Line pressure test	AT-72
				7. Control valve with TCM	AT-242
			OFF vehicle	8. Torque converter	AT-291
				9. Oil pump assembly	AT-308
				10. 3rd one-way clutch	AT-311
				11. Gear system	AT-277
				12. Direct clutch	AT-327
				13. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-14 , " Cross-Sectional View (2WD Models) " or AT-15 , " Cross-Sectional View (AWD Models) ")	AT-291

TROUBLE DIAGNOSIS

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
34	Slips/Will Not Engage	When you press the accelerator pedal and shift speed D2 → D1 or M2 → M1 the engine idles or the transmission slips.	ON vehicle	1. Fluid level and state	AT-71
				2. Vehicle speed sensor A/T and vehicle speed sensor MTR	AT-129, AT-151
				3. ATF pressure switch 5 and direct clutch solenoid valve	AT-185, AT-166
				4. CAN communication line	AT-122
				5. Line pressure test	AT-72
				6. Control valve with TCM	AT-242
			OFF vehicle	7. Torque converter	AT-291
				8. Oil pump assembly	AT-308
				9. 3rd one-way clutch	AT-311
				10. 1st one-way clutch	AT-319
				11. Gear system	AT-277
				12. Reverse brake	AT-291
				13. Forward one-way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-14, "Cross-Sectional View (2WD Models)" or AT-15, "Cross-Sectional View (AWD Models)")	AT-291
				14. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-14, "Cross-Sectional View (2WD Models)" or AT-15, "Cross-Sectional View (AWD Models)")	AT-291
35	With selector lever in "D" position, acceleration is extremely poor.		ON vehicle	1. Fluid level and state	AT-71
				2. Line pressure test	AT-72
				3. Accelerator pedal position sensor	AT-145
				4. CAN communication line	AT-122
				5. PNP switch	AT-127
				6. Control linkage adjustment	AT-234
				7. Control valve with TCM	AT-242
			OFF vehicle	8. Torque converter	AT-291
				9. Oil pump assembly	AT-308
				10. 1st one-way clutch	AT-319
				11. Gear system	AT-277
				12. Reverse brake	AT-291
				13. Forward one-way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-14, "Cross-Sectional View (2WD Models)" or AT-15, "Cross-Sectional View (AWD Models)")	AT-291
				14. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-14, "Cross-Sectional View (2WD Models)" or AT-15, "Cross-Sectional View (AWD Models)")	AT-291

TROUBLE DIAGNOSIS

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
36		With selector lever in "R" position, acceleration is extremely poor.	ON vehicle	1. Fluid level and state	AT-71
				2. Line pressure test	AT-72
				3. Accelerator pedal position sensor	AT-145
				4. ATF pressure switch 6, high and low reverse clutch solenoid valve	AT-187 , AT-170
				5. CAN communication line	AT-122
				6. PNP switch	AT-127
				7. Control linkage adjustment	AT-234
				8. Control valve with TCM	AT-242
			OFF vehicle	9. Gear system	AT-277
				10. Output shaft	AT-291
				11. Reverse brake	AT-291
37	Slips/Will Not Engage	While starting off by accelerating in 1st, engine races or slippage occurs.	ON vehicle	1. Fluid level and state	AT-71
				2. Line pressure test	AT-72
				3. Accelerator pedal position sensor	AT-145
				4. CAN communication line	AT-122
				5. Control valve with TCM	AT-242
			OFF vehicle	6. Torque converter	AT-291
				7. Oil pump assembly	AT-308
				8. 3rd one-way clutch	AT-311
				9. 1st one-way clutch	AT-319
				10. Gear system	AT-277
				11. Reverse brake	AT-291
				12. Forward one-way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-14 , " Cross-Sectional View (2WD Models) " or AT-15 , " Cross-Sectional View (AWD Models) ")	AT-291
				13. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-14 , " Cross-Sectional View (2WD Models) " or AT-15 , " Cross-Sectional View (AWD Models) ")	AT-291

TROUBLE DIAGNOSIS

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
38		While accelerating in 2nd, engine races or slippage occurs.	ON vehicle	1. Fluid level and state	AT-71
				2. Line pressure test	AT-72
				3. Accelerator pedal position sensor	AT-145
				4. CAN communication line	AT-122
				5. ATF pressure switch 5 and direct clutch solenoid valve	AT-185, AT-166
				6. Control valve with TCM	AT-242
			OFF vehicle	7. Torque converter	AT-291
				8. Oil pump assembly	AT-308
				9. 3rd one-way clutch	AT-311
				10. Gear system	AT-277
				11. Direct clutch	AT-327
				12. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-14, " Cross-Sectional View (2WD Models) " or AT-15, " Cross-Sectional View (AWD Models) ")	AT-291
39	Slips/Will Not Engage	While accelerating in 3rd, engine races or slippage occurs.	ON vehicle	1. Fluid level and state	AT-71
				2. Line pressure test	AT-72
				3. Accelerator pedal position sensor	AT-145
				4. CAN communication line	AT-122
				5. ATF pressure switch 6, high and low reverse clutch solenoid valve	AT-187, AT-170
				6. Control valve with TCM	AT-242
			OFF vehicle	7. Torque converter	AT-291
				8. Oil pump assembly	AT-308
				9. 3rd one-way clutch	AT-311
				10. Gear system	AT-277
				11. High and low reverse clutch	AT-324
				12. Forward one-way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-14, " Cross-Sectional View (2WD Models) " or AT-15, " Cross-Sectional View (AWD Models) ")	AT-291
				13. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-14, " Cross-Sectional View (2WD Models) " or AT-15, " Cross-Sectional View (AWD Models) ")	AT-291

A
B
AT
D
E
F
G
H
I
J
K
L
M

TROUBLE DIAGNOSIS

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
40		While accelerating in 4th, engine races or slippage occurs.	ON vehicle	1. Fluid level and state	AT-71
				2. Line pressure test	AT-72
				3. Accelerator pedal position sensor	AT-145
				4. CAN communication line	AT-122
				5. ATF pressure switch 3 and input clutch solenoid valve	AT-183 , AT-158
				6. Control valve with TCM	AT-242
			OFF vehicle	7. Torque converter	AT-291
				8. Oil pump assembly	AT-308
				9. Input clutch	AT-313
				10. Gear system	AT-277
				11. High and low reverse clutch	AT-324
				12. Direct clutch	AT-327
41	Slips/Will Not Engage	While accelerating in 5th, engine races or slippage occurs.	ON vehicle	1. Fluid level and state	AT-71
				2. Line pressure test	AT-72
				3. Accelerator pedal position sensor	AT-145
				4. CAN communication line	AT-122
				5. ATF pressure switch 1 and front brake solenoid valve	AT-181 , AT-162
				6. Control valve with TCM	AT-242
			OFF vehicle	7. Torque converter	AT-291
				8. Oil pump assembly	AT-308
				9. Front brake (brake band)	AT-291
				10. Input clutch	AT-313
				11. Gear system	AT-277
				12. High and low reverse clutch	AT-324
42		Slips at lock-up.	ON vehicle	1. Fluid level and state	AT-71
				2. Line pressure test	AT-72
				3. Engine speed signal	AT-131
				4. Turbine revolution sensor	AT-149
				5. Torque converter clutch solenoid valve	AT-133
				6. CAN communication line	AT-122
				7. Control valve with TCM	AT-242
			OFF vehicle	8. Torque converter	AT-291
				9. Oil pump assembly	AT-308

TROUBLE DIAGNOSIS

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
43	Slips/Will Not Engage	No creep at all. Refer to AT-198 . "Vehicle Does Not Creep Backward In "R" Position", AT-201 . "Vehicle Does Not Creep Forward In "D" Position"	ON vehicle	1. Fluid level and state	AT-71
				2. Line pressure test	AT-72
				3. Accelerator pedal position sensor	AT-145
				4. ATF pressure switch 5 and direct clutch solenoid valve	AT-185 , AT-166
				5. PNP switch	AT-127
				6. CAN communication line	AT-122
				7. Control linkage adjustment	AT-234
				8. Control valve with TCM	AT-242
			OFF vehicle	9. Torque converter	AT-291
				10. Oil pump assembly	AT-308
				11. 1st one-way clutch	AT-319
				12. Gear system	AT-277
				13. Reverse brake	AT-291
				14. Direct clutch	AT-327
				15. Forward one-way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-14 , " Cross-Sectional View (2WD Models) " or AT-15 , " Cross-Sectional View (AWD Models) ")	AT-291
				16. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-14 , " Cross-Sectional View (2WD Models) " or AT-15 , " Cross-Sectional View (AWD Models) ")	AT-291
44	Vehicle cannot run in all positions.		ON vehicle	1. Fluid level and state	AT-71
				2. Line pressure test	AT-72
				3. PNP switch	AT-127
				4. Control linkage adjustment	AT-234
				5. Control valve with TCM	AT-242
			OFF vehicle	6. Oil pump assembly	AT-308
				7. Gear system	AT-277
				8. Output shaft	AT-291

A
B
AT
D
E
F
G
H
I
J
K
L
M

TROUBLE DIAGNOSIS

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
45	Slips/Will Not Engage	With selector lever in "D" position, driving is not possible.	ON vehicle	1. Fluid level and state	AT-71
				2. Line pressure test	AT-72
				3. PNP switch	AT-127
				4. Control linkage adjustment	AT-234
				5. Control valve with TCM	AT-242
			OFF vehicle	6. Torque converter	AT-291
				7. Oil pump assembly	AT-308
				8. 1st one-way clutch	AT-319
				9. Gear system	AT-277
				10. Reverse brake	AT-291
				11. Forward one-way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-14. "Cross-Sectional View (2WD Models)" or AT-15. "Cross-Sectional View (AWD Models)")	AT-291
				12. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-14. "Cross-Sectional View (2WD Models)" or AT-15. "Cross-Sectional View (AWD Models)")	AT-291
46		With selector lever in "R" position, driving is not possible.	ON vehicle	1. Fluid level and state	AT-71
				2. Line pressure test	AT-72
				3. PNP switch	AT-127
				4. Control linkage adjustment	AT-234
				5. Control valve with TCM	AT-242
			OFF vehicle	6. Gear system	AT-277
				7. Output shaft	AT-291
				8. Reverse brake	AT-291
47	Does Not Change	Does not change M5 → M4.	ON vehicle	1. PNP switch	AT-127
				2. Fluid level and state	AT-71
				3. Control linkage adjustment	AT-234
				4. Manual mode switch	AT-178
				5. ATF pressure switch 1	AT-181
				6. CAN communication line	AT-122
				7. Control valve with TCM	AT-242
			OFF vehicle	8. Front brake (brake band)	AT-291

TROUBLE DIAGNOSIS

No.	Items	Symptom	Condition	Diagnostic Item	Reference page	
48	Does Not Change	Does not change M4 → M3.	ON vehicle	1. PNP switch	AT-127	
				2. Fluid level and state	AT-71	
				3. Control linkage adjustment	AT-234	
				4. Manual mode switch	AT-178	
				5. ATF pressure switch 1 and ATF pressure switch 3	AT-181, AT-183	
				6. CAN communication line	AT-122	
				7. Control valve with TCM	AT-242	
OFF vehicle		8. Front brake (brake band)	AT-291			
		9. Input clutch	AT-313			
49			Does not change M3 → M2.	ON vehicle	1. PNP switch	AT-127
					2. Fluid level and state	AT-71
					3. Control linkage adjustment	AT-234
					4. Manual mode switch	AT-178
					5. ATF pressure switch 6	AT-187
	6. CAN communication line				AT-122	
	7. Control valve with TCM				AT-242	
	OFF vehicle			8. Front brake (brake band)	AT-291	
				9. Input clutch	AT-313	
				10. High and low reverse clutch	AT-324	
50		Does not change M2 → M1.	ON vehicle	1. PNP switch	AT-127	
				2. Fluid level and state	AT-71	
				3. Control linkage adjustment	AT-234	
				4. Manual mode switch	AT-178	
				5. ATF pressure switch 5	AT-185	
				6. CAN communication line	AT-122	
				7. Control valve with TCM	AT-242	
			OFF vehicle	8. Input clutch	AT-313	
				9. High and low reverse clutch	AT-324	
				10. Direct clutch	AT-327	
51		Can not be changed to manual mode. Refer to AT-222 , " Cannot Be Changed to Manual Mode ".	ON vehicle	1. Manual mode switch	AT-178	
				2. Turbine revolution sensor	AT-149	
				3. CAN communication line	AT-122	
52	Others	Shift point is high in "D" position.	ON vehicle	1. Vehicle speed sensor A/T and vehicle speed sensor MTR	AT-129, AT-151	
				2. Accelerator pedal position sensor	AT-145	
				3. CAN communication line	AT-122	
				4. ATF temperature sensor	AT-147	
				5. Control valve with TCM	AT-242	

TROUBLE DIAGNOSIS

No.	Items	Symptom	Condition	Diagnostic Item	Reference page			
53		Shift point is low in "D" position.	ON vehicle	1. Vehicle speed sensor A/T and vehicle speed sensor MTR	AT-129 , AT-151			
				2. Accelerator pedal position sensor	AT-145			
				3. CAN communication line	AT-122			
				4. Control valve with TCM	AT-242			
54		Judder occurs during lock-up.	ON vehicle	1. Fluid level and state	AT-71			
				2. Engine speed signal	AT-131			
				3. Turbine revolution sensor	AT-149			
				4. Vehicle speed sensor A/T and vehicle speed sensor MTR	AT-129 , AT-151			
			OFF vehicle	5. Accelerator pedal position sensor	AT-145			
				6. CAN communication line	AT-122			
				7. Torque converter clutch solenoid valve	AT-133			
				8. Control valve with TCM	AT-242			
55	Others	Strange noise in "R" position.	ON vehicle	9. Torque converter	AT-291			
				OFF vehicle	1. Fluid level and state	AT-71		
					2. Engine speed signal	AT-131		
					3. CAN communication line	AT-122		
			4. Control valve with TCM		AT-242			
			56		Strange noise in "N" position.	ON vehicle	5. Torque converter	AT-291
							6. Oil pump assembly	AT-308
							7. Gear system	AT-277
							8. High and low reverse clutch	AT-324
OFF vehicle	9. Reverse brake	AT-291						
	1. Fluid level and state	AT-71						
	2. Engine speed signal	AT-131						
			ON vehicle	3. CAN communication line	AT-122			
				4. Control valve with TCM	AT-242			
				5. Torque converter	AT-291			
				6. Oil pump assembly	AT-308			
			OFF vehicle	7. Gear system	AT-277			

TROUBLE DIAGNOSIS

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
57		Strange noise in "D" position.	ON vehicle	1. Fluid level and state	AT-71
				2. Engine speed signal	AT-131
				3. CAN communication line	AT-122
				4. Control valve with TCM	AT-242
			OFF vehicle	5. Torque converter	AT-291
				6. Oil pump assembly	AT-308
				7. Gear system	AT-277
				8. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-14 , " Cross-Sectional View (2WD Models) " or AT-15 , " Cross-Sectional View (AWD Models) ")	AT-291
58	Others	Vehicle dose not decelerate by engine brake. Refer to AT-231 , " Vehicle Does Not Decelerate By Engine Brake " .	ON vehicle	1. PNP switch	AT-127
				2. Fluid level and state	AT-71
				3. Control linkage adjustment	AT-234
				4. Manual mode switch	AT-178
				5. ATF pressure switch 5	AT-185
				6. CAN communication line	AT-122
				7. Control valve with TCM	AT-242
			OFF vehicle	8. Input clutch	AT-313
				9. High and low reverse clutch	AT-324
				10. Direct clutch	AT-327
59		Engine brake does not work M5 → M4.	ON vehicle	1. PNP switch	AT-127
				2. Fluid level and state	AT-71
				3. Control linkage adjustment	AT-234
				4. Manual mode switch	AT-178
				5. ATF pressure switch 1	AT-181
				6. CAN communication line	AT-122
				7. Control valve with TCM	AT-242
			OFF vehicle	8. Front brake (brake band)	AT-291
60		Engine brake does not work M4 → M3.	ON vehicle	1. PNP switch	AT-127
				2. Fluid level and state	AT-71
				3. Control linkage adjustment	AT-234
				4. Manual mode switch	AT-178
				5. ATF pressure switch 1 and ATF pressure switch 3	AT-181 , AT-183
				6. CAN communication line	AT-122
				7. Control valve with TCM	AT-242
			OFF vehicle	8. Front brake (brake band)	AT-291
				9. Input clutch	AT-313

A
B
AT
D
E
F
G
H
I
J
K
L
M

TROUBLE DIAGNOSIS

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
61		Engine brake does not work M3 → M2.	ON vehicle	1. PNP switch	AT-127
				2. Fluid level and state	AT-71
				3. Control linkage adjustment	AT-234
				4. Manual mode switch	AT-178
				5. ATF pressure switch 6	AT-187
				6. CAN communication line	AT-122
				7. Control valve with TCM	AT-242
			OFF vehicle	8. Front brake (brake band)	AT-291
				9. Input clutch	AT-313
				10. High and low reverse clutch	AT-324
62	Others	Engine brake does not work M2 → M1.	ON vehicle	1. PNP switch	AT-127
				2. Fluid level and state	AT-71
				3. Control linkage adjustment	AT-234
				4. Manual mode switch	AT-178
				5. ATF pressure switch 5	AT-185
				6. CAN communication line	AT-122
				7. Control valve with TCM	AT-242
			OFF vehicle	8. Input clutch	AT-313
				9. High and low reverse clutch	AT-324
				10. Direct clutch	AT-327
63		Maximum speed low.	ON vehicle	1. Fluid level and state	AT-71
				2. Line pressure test	AT-72
				3. Accelerator pedal position sensor	AT-145
				4. CAN communication line	AT-122
				5. Direct clutch solenoid valve	AT-166
				6. Control valve with TCM	AT-242
			OFF vehicle	7. Torque converter	AT-291
				8. Oil pump assembly	AT-308
				9. Input clutch	AT-313
				10. Gear system	AT-277
				11. High and low reverse clutch	AT-324
				12. Direct clutch	AT-327
				13. Forward one-way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-14, "Cross-Sectional View (2WD Models)" or AT-15, "Cross-Sectional View (AWD Models)")	AT-291
				14. Forward brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-14, "Cross-Sectional View (2WD Models)" or AT-15, "Cross-Sectional View (AWD Models)")	AT-291

TROUBLE DIAGNOSIS

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
64		Extremely large creep.	ON vehicle	1. Engine idle speed	EC-50 (for VQ35DE) or EC-691 (for VK45DE)
				2. CAN communication line	AT-122
				3. ATF pressure switch 5	AT-185
			OFF vehicle	4. Torque converter	AT-291
65		With selector lever in "P" position, vehicle does not enter parking condition or, with selector lever in another position, parking condition is not cancelled. Refer to AT-193 , " In "P" Position, Vehicle Moves When Pushed ".	ON vehicle	1. PNP switch	AT-127
				2. Control linkage adjustment	AT-234
			OFF vehicle	3. Parking pawl components	AT-254 (2WD models) or AT-291 (AWD models)
66	Others	Vehicle runs with transmission in "P" position.	ON vehicle	1. PNP switch	AT-127
				2. Fluid level and state	AT-71
				3. Control linkage adjustment	AT-234
				4. Control valve with TCM	AT-242
			OFF vehicle	5. Parking pawl components	AT-254 (2WD models) or AT-291 (AWD models)
				6. Gear system	AT-277
67		Vehicle runs with transmission in "N" position. Refer to AT-194 , " In "N" Position, Vehicle Moves ".	ON vehicle	1. PNP switch	AT-127
				2. Fluid level and state	AT-71
				3. Control linkage adjustment	AT-234
				4. Control valve with TCM	AT-242
			OFF vehicle	5. Input clutch	AT-313
				6. Gear system	AT-277
				7. Direct clutch	AT-327
				8. Reverse brake	AT-291
				9. Forward one-way clutch (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-14 , " Cross-Sectional View (2WD Models) " or AT-15 , " Cross-Sectional View (AWD Models) ")	AT-291
				10. Low coast brake (Parts behind drum support is impossible to perform inspection by disassembly. Refer to AT-14 , " Cross-Sectional View (2WD Models) " or AT-15 , " Cross-Sectional View (AWD Models) ")	AT-291

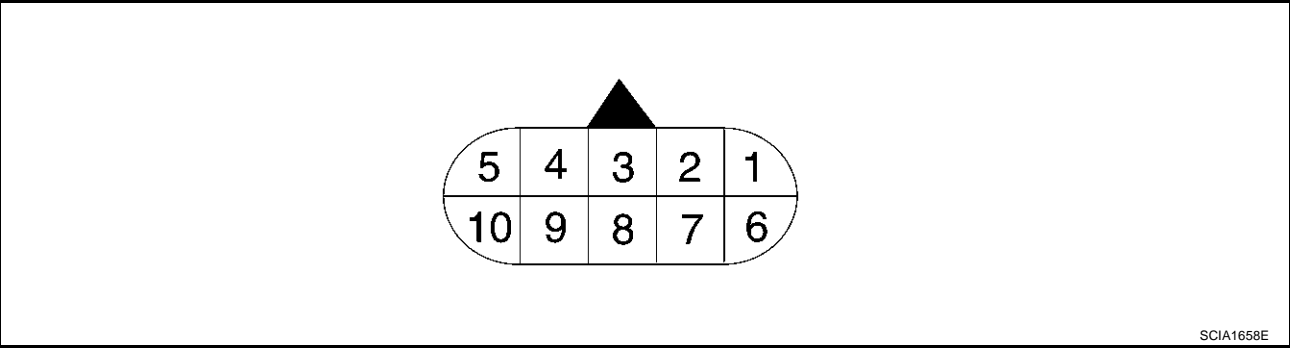
TROUBLE DIAGNOSIS

No.	Items	Symptom	Condition	Diagnostic Item	Reference page
68		Engine does not start in "N" or "P" position. Refer to AT-192 , " Engine Cannot Be Started In "P" or "N" Position ".	ON vehicle	1. Ignition switch and starter	PG-3, SC-10
				2. Control linkage adjustment	AT-234
				3. PNP switch	AT-127
69		Engine starts in positions other than "N" or "P".	ON vehicle	1. Ignition switch and starter	PG-3, SC-10
				2. Control linkage adjustment	AT-234
				3. PNP switch	AT-127
70		Engine stall.	ON vehicle	1. Fluid level and state	AT-71
				2. Engine speed signal	AT-131
				3. Turbine revolution sensor	AT-149
				4. Torque converter clutch solenoid valve	AT-133
				5. CAN communication line	AT-122
				6. Control valve with TCM	AT-242
			OFF vehicle	7. Torque converter	AT-291
71	Others	Engine stalls when select lever shifted "N" → "D", "R".	ON vehicle	1. Fluid level and state	AT-71
				2. Engine speed signal	AT-131
				3. Turbine revolution sensor	AT-149
				4. Torque converter clutch solenoid valve	AT-133
				5. CAN communication line	AT-122
				6. Control valve with TCM	AT-242
			OFF vehicle	7. Torque converter	AT-291
72		Engine speed does not return to idle. Refer to AT-221 , " Engine Speed Does Not Return To Idle ".	ON vehicle	1. Fluid level and state	AT-71
				2. ATF pressure switch 5 and direct clutch solenoid valve	AT-185, AT-166
				3. ATF pressure switch 1 and front brake solenoid valve	AT-181, AT-162
				4. Accelerator pedal position sensor	AT-145
				5. Vehicle speed sensor A/T and vehicle speed sensor MTR	AT-129, AT-151
				6. CAN communication line	AT-122
				7. Control valve with TCM	AT-242
			OFF vehicle	8. Front brake (brake band)	AT-291
				9. Direct clutch	AT-327

TROUBLE DIAGNOSIS

TCM Input/Output Signal Reference Values A/T ASSEMBLY TERMINAL CONNECTOR LAYOUT

ACS002M8



TCM INSPECTION TABLE

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

Terminal No.	Wire color	Item	Condition		Data (Approx.)
1	LG	Power supply (Memory back-up)		-	Battery voltage
2	LG	Power supply (Memory back-up)		-	Battery voltage
3	L	CAN-H		-	-
4	PU	K-line (CONSULT-II signal)	The terminal is connected to the data link connector for CONSULT-II.		-
5	B	Ground		-	-
6	Y	Power supply		-	Battery voltage
				-	0V
7	OR	Back-up lamp relay		Selector lever in "R" position.	0V
				Selector lever in other positions.	Battery voltage
8	R	CAN-L		-	-
9	GY	Starter relay		Selector lever in "N", "P" positions.	Battery voltage
				Selector lever in other positions.	0V
10	B	Ground		-	-

TROUBLE DIAGNOSIS

CONSULT-II

ACS002M9

After performing "SELF-DIAGNOSTIC PROCEDURE (WITH CONSULT-II)" (Refer to [AT-109](#)), place check marks for results on the [AT-57, "DIAGNOSTIC WORKSHEET"](#) . Reference pages are provided following the items.

NOTICE:

1. The CONSULT-II electrically displays shift timing and lock-up timing (that is, operation timing of each solenoid).
Check for time difference between actual shift timing and the CONSULT-II display. If the difference is noticeable, mechanical parts (except solenoids, sensors, etc.) may be malfunctioning. Check mechanical parts using applicable diagnostic procedures.
2. Shift schedule (which implies gear position) displayed on CONSULT-II and that indicated in Service Manual may differ slightly. This occurs because of the following reasons:
 - Actual shift schedule has more or less tolerance or allowance,
 - Shift schedule indicated in Service Manual refers to the point where shifts start, and
 - Gear position displayed on CONSULT-II indicates the point where shifts are completed.
3. Display of solenoid valves on CONSULT-II changes at the start of shifting, while gear position is displayed upon completion of shifting (which is computed by TCM).
4. Additional CONSULT-II information can be found in the Operation Manual supplied with the CONSULT-II unit.

FUNCTION

Diagnostic test mode	Function	Reference page
Self-diagnostic results	Self-diagnostic results can be read and erased quickly.	AT-110
Data monitor	Input/Output data in the ECM can be read.	AT-113
CAN diagnostic support monitor	The results of transmit/receive diagnosis of CAN communication can be read.	—
Function test	Conducted by CONSULT-II instead of a technician to determine whether each system is "OK" or "NG".	—
DTC work support	Select the operating condition to confirm Diagnosis Trouble Codes.	AT-116
ECM part number	ECM part number can be read.	—

TROUBLE DIAGNOSIS

CONSULT-II REFERENCE VALUE

Item name	Condition	Display value (Approx.)
VHCL/S SE-A/T	During driving	Approximately matches the speedometer reading.
VHCL/S SE-MTR		
ENGINE SPEED	Engine running	Closely matches the tachometer reading.
TURBINE REV	During driving (lock-up ON)	Approximately matches the engine speed.
OUTPUT REV	During driving	Approximately matches the output shaft speed.
ATF TEMP SE 1	0°C (32° F) - 20°C (68°F) - 80°C (176°F)	2.2 - 1.8 - 0.6 V
ATF TEMP SE 2		2.2 - 1.7 - 0.45 V
TCC SOLENOID	When perform slip lock-up	0.2 - 0.4 A
	When perform lock-up	0.4 - 0.6 A
LINE PRES SOL	During driving	0.2 - 0.6 A
FR/B SOLENOID	Front brake solenoid valve operates.	0.6 - 0.8 A
	Other conditions	0 - 0.05 A
I/C SOLENOID	Input clutch solenoid valve operates.	0.6 - 0.8 A
	Other conditions	0 - 0.05 A
D/C SOLENOID	Direct clutch solenoid valve operates.	0.6 - 0.8 A
	Other conditions	0 - 0.05 A
HLR/C SOL	High and low reverse clutch solenoid valve operates.	0.6 - 0.8 A
	Other conditions	0 - 0.05 A

Ⓟ SELF-DIAGNOSTIC PROCEDURE (WITH CONSULT-II)

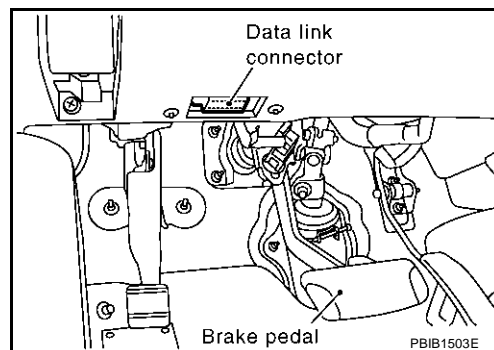
CONSULT-II Setting Procedure

CAUTION:

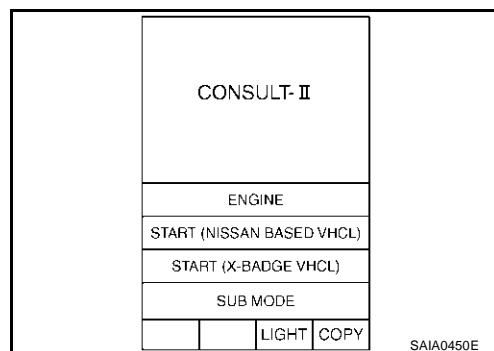
If CONSULT-II is used with no connection of CONSULT-II CONVERTER, malfunctions might be detected in self-diagnosis depending on control unit which carry out CAN communication.

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

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

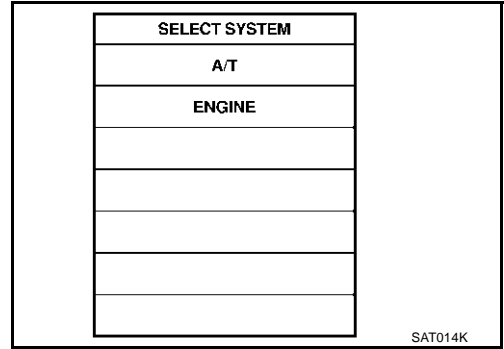


- Turn ignition switch "ON". (Do not start engine.)
- Touch "START (NISSAN BASED VHCL)".

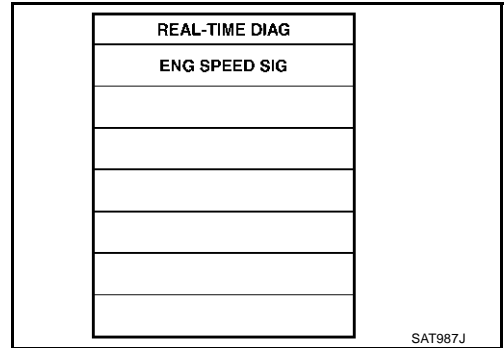


TROUBLE DIAGNOSIS

5. Touch "ENGINE" for OBD-II detected items or touch "A/T" for TCM self-diagnosis.
 If "A/T" or "ENGINE" is not indicated, go to [GI-40, "CONSULT-II Data Link Connector \(DLC\) Circuit"](#) .



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



Self-diagnostic Result Test Mode

X: Applicable, —: Not applicable

Items (CONSULT-II screen terms)	Malfunction is detected when...	TCM self-diagnosis		OBD-II (DTC)
		A/T CHECK indicator lamp	"A/T" with CONSULT-II	MIL indicator lamp*1, "ENGINE" with CONSULT-II or GST
CAN COMM CIRCUIT	<ul style="list-style-type: none"> When a malfunction is detected in CAN communications 	X	U1000	U1000
STARTER RELAY/CIRC	<ul style="list-style-type: none"> If this signal is ON other than in P or N position, this is judged to be a malfunction. (And if it is OFF in P or N position, this too is judged to be a malfunction.) 	X	P0615	—
PNP SW/CIRC	<ul style="list-style-type: none"> PNP switch 1-4 signals input with impossible pattern P position is detected from N position without any other position being detected in between. 	X	P0705	P0705
VEH SPD SEN/CIR AT (Revolution sensor)	<ul style="list-style-type: none"> Signal from vehicle speed sensor A/T (Revolution sensor) not input due to cut line or the like Unexpected signal input during running After ignition switch is turned ON, unexpected signal input from vehicle speed sensor MTR before the vehicle starts moving 	X	P0720	P0720
ENGINE SPEED SIG	<ul style="list-style-type: none"> TCM does not receive the CAN communication signal from the ECM. 	X	P0725	P0725 *3
TCC SOLENOID/CIRC	<ul style="list-style-type: none"> Normal voltage not applied to solenoid due to cut line, short, or the like 	X	P0740	P0740
A/T TCC S/V FNCTN	<ul style="list-style-type: none"> A/T cannot perform lock-up even if electrical circuit is good. TCM detects as irregular by comparing difference value with slip rotation. 	X	P0744	P0744*2

TROUBLE DIAGNOSIS

Items (CONSULT-II screen terms)	Malfunction is detected when...	TCM self-diagnosis		OBD-II (DTC)
		A/T CHECK indicator lamp	"A/T" with CONSULT-II	MIL indicator lamp*1, "ENGINE" with CONSULT-II or GST
L/PRESS SOL/ CIRC	<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. 	X	P0745	P0745
TCM-POWER SUPPLY	<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-diagnostics memory function stops This is not a malfunction message (Whenever shutting "OFF" a power supply to the TCM, this message appears on the screen.) 	—	P1701	—
TCM-RAM	<ul style="list-style-type: none"> TCM memory (RAM) is malfunctioning. 	—	P1702	—
TCM-ROM	<ul style="list-style-type: none"> TCM memory (ROM) is malfunctioning. 	—	P1703	—
TCM-EEPROM	<ul style="list-style-type: none"> TCM memory (EEP ROM) is malfunctioning. 	—	P1704	—
TP SEN/CIRC A/T	<ul style="list-style-type: none"> TCM does not receive the proper accelerator pedal position signals (input by CAN communication) from ECM. 	X	P1705	P1705 *3
ATF TEMP SEN/ CIRC	<ul style="list-style-type: none"> During running, the ATF temperature sensor signal voltage is excessively high or low 	X	P1710	P0710
TURBINE REV S/ CIRC	<ul style="list-style-type: none"> TCM does not receive the proper voltage signal from the sensor. TCM detects an irregularity only at position of 4th gear for turbine revolution sensor 2. 	X	P1716	P1716
VEH SPD SE/ CIR-MTR	<ul style="list-style-type: none"> Signal (CAN communication) from vehicle speed sensor MTR not input due to cut line or the like Unexpected signal input during running 	—	P1721	—
A/T INTERLOCK	<ul style="list-style-type: none"> Except during shift change, the gear position and ATF pressure switch states are monitored and comparative judgment made. 	X	P1730	P1730
A/T 1ST E/BRAKING	<ul style="list-style-type: none"> Each ATF pressure switch and solenoid current is monitored and if a pattern is detected having engine braking 1st gear other than in the M1 position, a malfunction is detected. 	X	P1731	—
I/C SOLENOID/ CIRC	<ul style="list-style-type: none"> Normal voltage not applied to solenoid due to functional malfunction, cut line, short, or the like TCM detects as irregular by comparing target value with monitor value. 	X	P1752	P1752
I/C SOLENOID FNCTN	<ul style="list-style-type: none"> TCM detects that actual gear ratio is irregular, and relation between gear position and condition of ATF pressure switch 3 is irregular during depressing accelerator pedal. (Other than during shift change) TCM detects that relation between gear position and condition of ATF pressure switch 3 is irregular during releasing accelerator pedal. (Other than during shift change) 	X	P1754	P1754*2
FR/B SOLENOID/ CIRC	<ul style="list-style-type: none"> Normal voltage not applied to solenoid due to functional malfunction, cut line, short, or the like TCM detects as irregular by comparing target value with monitor value. 	X	P1757	P1757

A
B
AT
D
E
F
G
H
I
J
K
L
M

TROUBLE DIAGNOSIS

Items (CONSULT-II screen terms)	Malfunction is detected when...	TCM self-diagnosis		OBD-II (DTC)
		A/T CHECK indicator lamp	"A/T" with CONSULT-II	MIL indicator lamp*1, "ENGINE" with CONSULT-II or GST
FR/B SOLENOID FNCT	<ul style="list-style-type: none"> ● TCM detects that actual gear ratio is irregular, and relation between gear position and condition of ATF pressure switch 1 is irregular during depressing accelerator pedal. (Other than during shift change) ● TCM detects that relation between gear position and condition of ATF pressure switch 1 is irregular during releasing accelerator pedal. (Other than during shift change) 	X	P1759	P1759*2
D/C SOLENOID/ CIRC	<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. 	X	P1762	P1762
D/C SOLENOID FNCTN	<ul style="list-style-type: none"> ● TCM detects that actual gear ratio is irregular, and relation between gear position and condition of ATF pressure switch 5 is irregular during depressing accelerator pedal. (Other than during shift change) ● TCM detects that relation between gear position and condition of ATF pressure switch 5 is irregular during releasing accelerator pedal. (Other than during shift change) 	X	P1764	P1764*2
HLR/C SOL/CIRC	<ul style="list-style-type: none"> ● Normal voltage not applied to solenoid due to functional malfunction, cut line, short, or the like ● TCM detects as irregular by comparing target value with monitor value. 	X	P1767	P1767
HLR/C SOL FNCTN	<ul style="list-style-type: none"> ● TCM detects that actual gear ratio is irregular, and relation between gear position and condition of ATF pressure switch 6 is irregular during depressing accelerator pedal. (Other than during shift change) ● TCM detects that relation between gear position and condition of ATF pressure switch 6 is irregular during releasing accelerator pedal. (Other than during shift change) 	X	P1769	P1769*2
LC/B SOLENOID/ CIRC	<ul style="list-style-type: none"> ● Normal voltage not applied to solenoid due to functional malfunction, cut line, short, or the like 	X	P1772	P1772
LC/B SOLENOID FNCT	<ul style="list-style-type: none"> ● TCM detects an improper voltage drop when it tries to operate the solenoid valve. ● Condition of ATF pressure switch 2 is different from monitor value, and relation between gear position and actual gear ratio is irregular. 	X	P1774	P1774*2
MANU MODE SW/ CIRC	<ul style="list-style-type: none"> ● When an impossible pattern of switch signals is detected, a malfunction is detected. 	—	P1815	—
ATF PRES SW 1/ CIRC	<ul style="list-style-type: none"> ● TCM detects that actual gear ratio is normal, and relation between gear position and condition of ATF pressure switch 1 is irregular during depressing accelerator pedal. (Other than during shift change) 	—	P1841	—
ATF PRES SW 3/ CIRC	<ul style="list-style-type: none"> ● TCM detects that actual gear ratio is normal, and relation between gear position and condition of ATF pressure switch 3 is irregular during depressing accelerator pedal. (Other than during shift change) 	—	P1843	—
ATF PRES SW 5/ CIRC	<ul style="list-style-type: none"> ● TCM detects that actual gear ratio is normal, and relation between gear position and condition of ATF pressure switch 5 is irregular during depressing accelerator pedal. (Other than during shift change) 	—	P1845	—

TROUBLE DIAGNOSIS

Items (CONSULT-II screen terms)	Malfunction is detected when...	TCM self-diagnosis		OBD-II (DTC)
		A/T CHECK indicator lamp	"A/T" with CONSULT-II	MIL indicator lamp*1, "ENGINE" with CONSULT-II or GST
ATF PRES SW 6/ CIRC	<ul style="list-style-type: none"> TCM detects that actual gear ratio is normal, and relation between gear position and condition of ATF pressure switch 6 is irregular during depressing accelerator pedal. (Other than during shift change) 	—	P1846	—
NO DTC IS DETECTED FURTHER TESTING MAY BE REQUIRED	<ul style="list-style-type: none"> No NG item has been detected. 	—	X	X

*1: Refer to [AT-52, "Malfunction Indicator Lamp \(MIL\)"](#) .

*2: These malfunctions cannot be displayed MIL if another malfunction is assigned to MIL.

*3: For VQ35DE engine.

Data Monitor Mode (A/T)

X: Standard, —: Not applicable

Monitored item (Unit)	Monitor Item Selection			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	
VHCL/S SE-A/T (km/h)	X	X	X	Revolution sensor
VHCL/S SE-MTR (km/h)	X	—	X	
ACCELE POSI (0.0/8)	X	—	X	Accelerator pedal position signal
THROTTLE POSI (0.0/8)	X	X	X	Degree of opening for accelerator recognized by the TCM For fail-safe operation, the specific value used for control is displayed.
CLSD THL POS (ON-OFF display)	X	—	X	Signal input with CAN communications
W/O THL POS (ON-OFF display)	X	—	X	
BRAKE SW (ON-OFF display)	X	—	X	Stop lamp switch
GEAR	—	X	X	Gear position recognized by the TCM updated after gear-shifting
ENGINE SPEED (rpm)	X	X	X	
TURBINE REV (rpm)	X	X	X	
OUTPUT REV (rpm)	X	X	X	
GEAR RATIO	—	X	X	
TC SLIP SPEED (rpm)	—	X	X	Difference between engine speed and torque converter input shaft speed
F SUN GW REV (rpm)	—	—	X	
F CARR GR REV (rpm)	—	—	X	
ATF TEMP SE 1 (V)	X	—	X	
ATF TEMP SE 2 (V)	X	—	X	
ATF TEMP 1 (°C)	—	X	X	
ATF TEMP 2 (°C)	—	X	X	
BATTERY BOLT (V)	X	—	X	
ATF PRES SW 1 (ON-OFF display)	X	X	X	(for FR/B solenoid)
ATF PRES SW 2 (ON-OFF display)	X	X	X	(for LC/B solenoid)

TROUBLE DIAGNOSIS

Monitored item (Unit)	Monitor Item Selection			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	
ATF PRES SW 3 (ON-OFF display)	X	X	X	(for I/C solenoid)
ATF PRES SW 5 (ON-OFF display)	X	X	X	(for D/C solenoid)
ATF PRES SW 6 (ON-OFF display)	X	X	X	(for HLR/C solenoid)
PNP SW 1 (ON-OFF display)	X	—	X	
PNP SW 2 (ON-OFF display)	X	—	X	
PNP SW 3 (ON-OFF display)	X	—	X	
PNP SW 4 (ON-OFF display)	X	—	X	
1 POSITION SW (ON-OFF display)	X	—	X	
SLCTLVR POSI	—	X	X	Selector lever position is recognized by the TCM. For fail-safe operation, the specific value used for control is displayed.
OD CONT SW (ON-OFF display)	X	—	X	Not mounted but displayed.
POWER SHIFT SW (ON-OFF display)	X	—	X	
HOLD SW (ON-OFF display)	X	—	X	
MANU MODE SW (ON-OFF display)	X	—	X	
NON M-MODE SW (ON-OFF display)	X	—	X	
UP SW LEVER (ON-OFF display)	X	—	X	
DOWN SW LEVER (ON-OFF display)	X	—	X	
SFT UP ST SW (ON-OFF display)	—	—	X	Not mounted but displayed.
SFT DWN ST SW (ON-OFF display)	—	—	X	
ASCD-OD CUT (ON-OFF display)	—	—	X	
ASCD-CRUISE (ON-OFF display)	—	—	X	
ABS SIGNAL (ON-OFF display)	—	—	X	
ACC OD CUT (ON-OFF display)	—	—	X	
ACC SIGNAL (ON-OFF display)	—	—	X	
TCS GR/P KEEP (ON-OFF display)	—	—	X	
TCS SIGNAL 2 (ON-OFF display)	—	—	X	
TCS SIGNAL 1 (ON-OFF display)	—	—	X	
TCC SOLENOID (A)	—	X	X	
LINE PRES SOL (A)	—	X	X	
I/C SOLENOID (A)	—	X	X	
FR/B SOLENOID (A)	—	X	X	
D/C SOLENOID (A)	—	X	X	
HLR/C SOL (A)	—	X	X	
ON OFF SOL (ON-OFF display)	—	—	X	LC/B solenoid
TCC SOL MON (A)	—	—	X	
L/P SOL MON (A)	—	—	X	
I/C SL MON (A)	—	—	X	
FR/B SOL MON (A)	—	—	X	
D/C SOL MON (A)	—	—	X	
HLR/C SOL MON (A)	—	—	X	

TROUBLE DIAGNOSIS

Monitored item (Unit)	Monitor Item Selection			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	
ONOFF SOL MON (ON-OFF display)	—	—	X	LC/B solenoid
P POSI IND (ON-OFF display)	—	—	X	
R POSI IND (ON-OFF display)	—	—	X	
N POSI IND (ON-OFF display)	—	—	X	
D POSI IND (ON-OFF display)	—	—	X	
4TH POSI IND (ON-OFF display)	—	—	X	
3RD POSI IND (ON-OFF display)	—	—	X	
2ND POSI IND (ON-OFF display)	—	—	X	
1ST POSI IND (ON-OFF display)	—	—	X	
MANU MODE IND (ON-OFF display)	—	—	X	
POWER M LAMP (ON-OFF display)	—	—	X	
F-SAFE IND/L (ON-OFF display)	—	—	X	
ATF WARN LAMP (ON-OFF display)	—	—	X	
BACK-UP LAMP (ON-OFF display)	—	—	X	
STARTER RELAY (ON-OFF display)	—	—	X	
PNP SW3 MON (ON-OFF display)	—	—	X	
C/V CLB ID1	—	—	X	
C/V CLB ID2	—	—	X	
C/V CLB ID3	—	—	X	
UNIT CLB ID1	—	—	X	
UNIT CLB ID2	—	—	X	
UNIT CLB ID3	—	—	X	
TRGT GR RATIO	—	—	X	
ENGINE TORQUE (Nm)	—	—	X	
ENG TORQUE D (Nm)	—	—	X	
INPUT TRQ S (Nm)	—	—	X	
INPUT TRQ L/P (Nm)	—	—	X	
TRGT PRES TCC (kPa)	—	—	X	
TRGT PRES L/P (kPa)	—	—	X	
TRGT PRES I/C (kPa)	—	—	X	
TRGT PRES FR/B (kPa)	—	—	X	
TRGT PRES D/C (kPa)	—	—	X	
TRG PRE HLR/C (kPa)	—	—	X	
SHIFT PATTERN	—	—	X	
DRV CST JUDGE	—	—	X	
START RLY MON	—	—	X	
NEXT GR POSI	—	—	X	
SHIFT MODE	—	—	X	
MANU GR POSI	—	—	X	
VEHICLE SPEED (km/h)	—	X	X	Vehicle speed recognized by the TCM.
Voltage (V)	—	—	X	Displays the value measured by the voltage probe.

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TROUBLE DIAGNOSIS

Monitored item (Unit)	Monitor Item Selection			Remarks
	ECU INPUT SIGNALS	MAIN SIGNALS	SELECTION FROM MENU	
Frequency (Hz)	—	—	X	The value measured by the pulse probe is displayed.
DUTY-HI (high) (%)	—	—	X	
DUTY-LOW (low) (%)	—	—	X	
PLS WIDTH-HI (ms)	—	—	X	
PLS WIDTH-LOW (ms)	—	—	X	

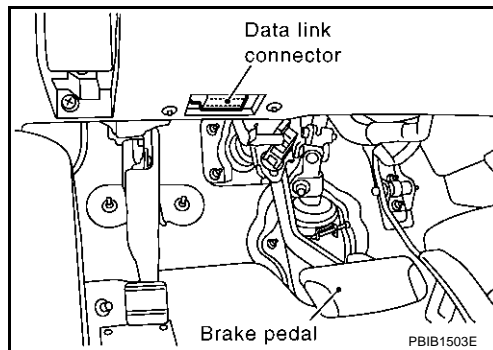
DTC WORK SUPPORT MODE WITH CONSULT-II

CONSULT-II Setting Procedure

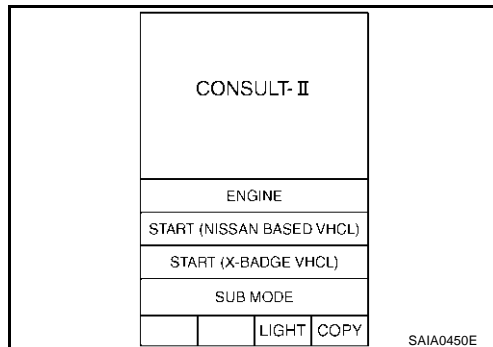
CAUTION:

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

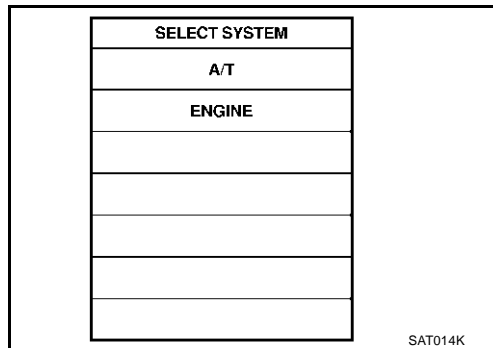
- For details, refer to the separate "CONSULT-II Operation Manual".
1. Turn ignition switch "OFF".
 2. Connect CONSULT-II and CONSULT-II CONVERTER to data link connector, which is located in instrument lower panel on driver side.



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

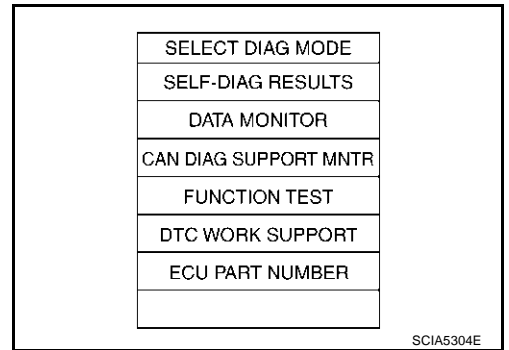


5. Touch "A/T".
If "A/T" is not indicated, go to [GI-40, "CONSULT-II Data Link Connector \(DLC\) Circuit"](#).



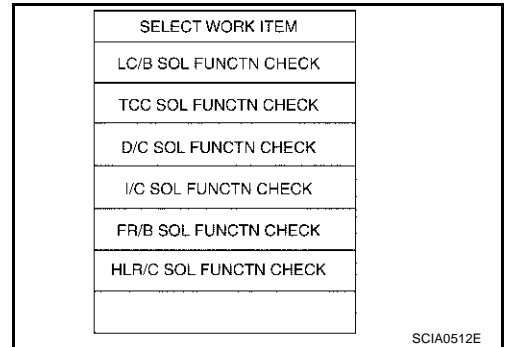
TROUBLE DIAGNOSIS

6. Touch "DTC WORK SUPPORT".



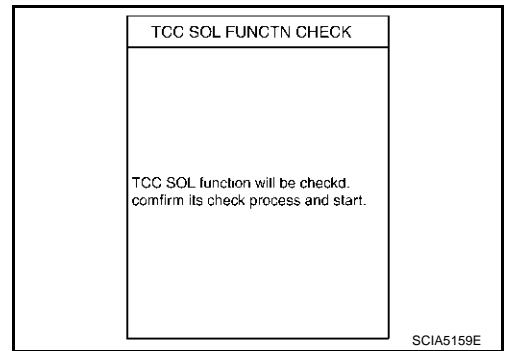
A
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7. Touch select item menu.



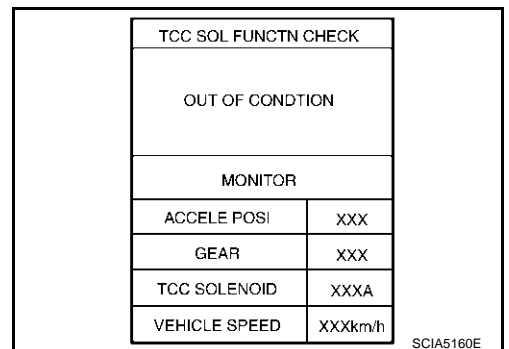
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8. Touch "START".



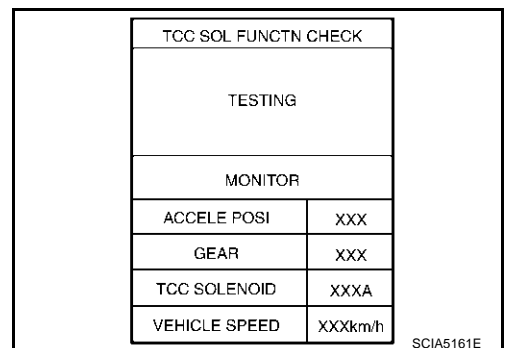
H
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9. Perform driving test according to "DTC CONFIRMATION PROCEDURE" in "TROUBLE DIAGNOSIS FOR DTC".



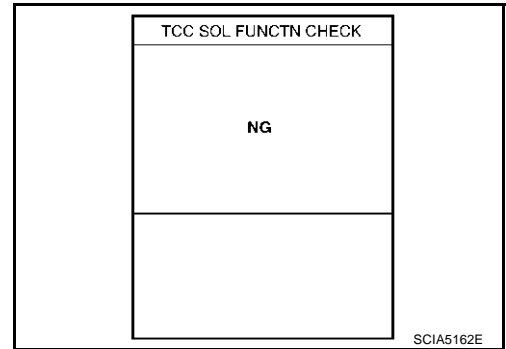
L
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- When testing conditions are satisfied, CONSULT-II screen changes from "OUT OF CONDITION" to "TESTING".

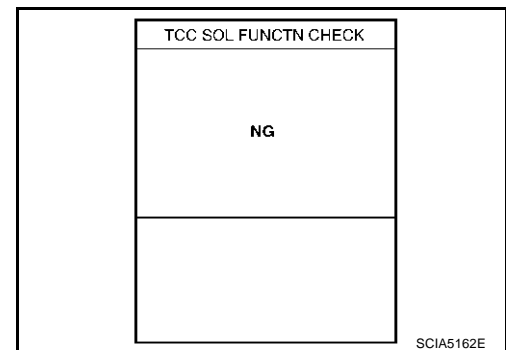
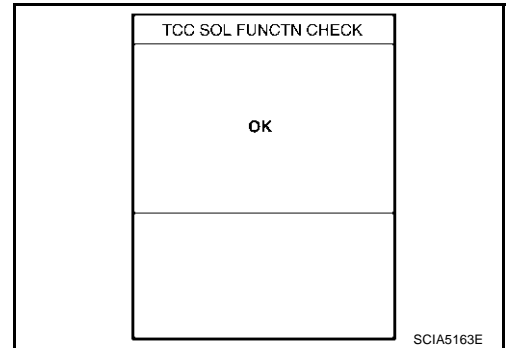


TROUBLE DIAGNOSIS

10. Stop vehicle. If “NG” appears on the screen, malfunction may exist. Go to “DIAGNOSTIC PROCEDURE”.
11. Perform test drive to check gear shift feeling in accordance with instructions displayed.
12. Touch “YES” or “NO”.
13. CONSULT-II procedure is ended.



If “NG” appears on the screen, a malfunction may exist. Go to “DIAGNOSTIC PROCEDURE”.



TROUBLE DIAGNOSIS

DTC WORK SUPPORT MODE

DTC work support item	Description	Check item
I/C SOL FUNCTN CHECK*	—	—
FR/B SOL FUNCTN CHECK*	—	—
D/C SOL FUNCTN CHECK*	—	—
HLR/C SOL FUNCTN CHECK*	—	—
LC/B SOL FUNCTN CHECK*	—	—
TCC SOL FUNCTN CHECK	Following items for "TCC solenoid function (lock-up) " can be confirmed. ● Self-diagnosis status (whether the diagnosis is being performed or not) ● Self-diagnosis result (OK or NG)	● TCC solenoid valve ● Hydraulic control circuit

*: Do not use, but displayed.

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TROUBLE DIAGNOSIS

ACS002MA

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

Refer to [EC-135, "Generic Scan Tool \(GST\) Function"](#) (for VQ35DE) or [EC-777, "Generic Scan Tool \(GST\) Function"](#) (for VK45DE).

OBD-II SELF-DIAGNOSTIC PROCEDURE (NO TOOLS)

Refer to [EC-82, "Malfunction Indicator Lamp \(MIL\)"](#) (for VQ35DE) or [EC-723, "Malfunction Indicator Lamp \(MIL\)"](#) (for VK45DE).

TCM SELF-DIAGNOSTIC PROCEDURE (NO TOOLS)

Description

In the unlikely event of a malfunction in the electrical system, when the ignition switch is switched "ON", the A/T CHECK indicator lamp lights up for 2 seconds, then flashes for 8 seconds. If there is no malfunction, when the ignition switch is turned "ON", the indicator lamp lights up for 2 seconds. As a method for locating the suspect circuit, when the self-diagnostics start signal is input, the memory for the malfunction location is output and the A/T CHECK indicator lamp flashes to display the corresponding DTC.

Diagnostic Procedure

1. CHECK A/T CHECK INDICATOR LAMP

1. Start the engine with selector lever in "P" position. Warm engine to normal operating temperature.
2. Turn ignition switch "ON" and "OFF" at least twice, then leave it in the "OFF" position.
3. Wait 10 seconds.
4. Turn ignition switch to "ON" position. (Do not start engine.)
5. Does A/T CHECK indicator lamp come on for about 2 seconds?

YES or NO

YES >> GO TO 2.

NO >> GO TO [AT-191, "A/T CHECK Indicator Lamp Does Not Come On"](#).

2. JUDGEMENT PROCEDURE STEP 1

1. Turn ignition switch "OFF".
2. Push shift lock release button.
3. Move selector lever from "P" to "D" position.
4. Release accelerator pedal. (Set the closed throttle position signal "ON".)
5. Depress brake pedal. (Stop lamp switch signal "ON".)
6. Turn ignition switch "ON".
7. Wait 3 seconds.
8. Move the selector lever to the Manual shift gate side. (Manual mode switch "ON".)
9. Release brake pedal. (Stop lamp switch signal "OFF".)
10. Move the selector lever to "D" position. (Manual mode switch "OFF".)
11. Depress brake pedal. (Stop lamp switch signal "ON".)
12. Release brake pedal. (Stop lamp switch signal "OFF".)
13. Depress accelerator pedal fully and release it.

>> GO TO 3.

TROUBLE DIAGNOSIS

3. CHECK SELF-DIAGNOSIS CODE

Check A/T CHECK indicator lamp.

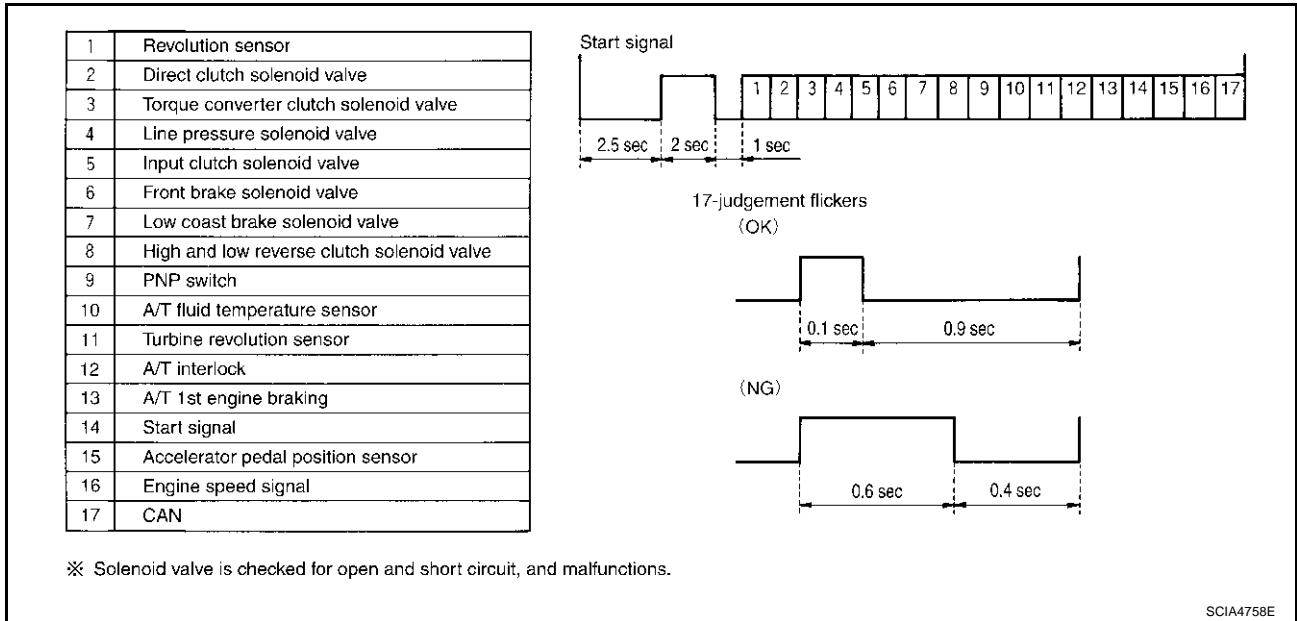
Refer to [AT-121, "Judgement Self-Diagnosis Code"](#) .

If the system does not go into self-diagnostics. Refer to [AT-127, "DTC P0705 PARK/NEUTRAL POSITION SWITCH"](#) , [AT-189, "CLOSED THROTTLE POSITION AND WIDE OPEN THROTTLE POSITION CIRCUIT"](#) , [AT-178, "DTC P1815 MANUAL MODE SWITCH"](#) , [AT-190, "BRAKE SIGNAL CIRCUIT"](#) .

>> DIAGNOSIS END

Judgement Self-Diagnosis Code

If there is a malfunction, the lamp lights up for the time corresponding to the suspect circuit.



Erase Self-Diagnosis

- In order to make it easier to find the cause of hard-to-duplicate malfunctions, malfunction information is stored into the control unit as necessary during use by the user. This memory is not erased no matter how many times the ignition switch is turned ON and OFF.
- However, this information is erased by turning ignition switch "OFF" after performing self-diagnostics or by erasing the memory using the CONSULT-II.

DTC U1000 CAN COMMUNICATION LINE

DTC U1000 CAN COMMUNICATION LINE

PFP:23710

Description

ACS002MB

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

ACS002MC

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

Possible Cause

ACS002MD

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

DTC Confirmation Procedure

ACS002ME

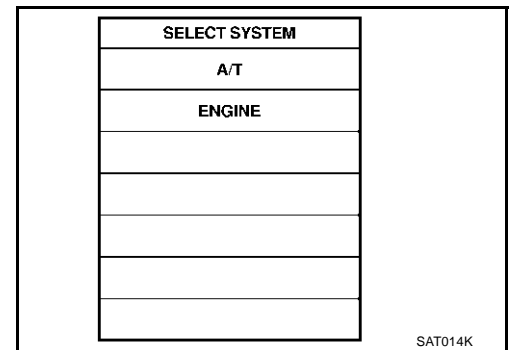
NOTE:

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

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

Ⓟ WITH CONSULT-II

1. Turn ignition switch "ON". (Do not start engine.)
2. Select "DATA MONITOR" mode for "ENGINE" with CONSULT-II.
3. Start engine and wait for at least 6 seconds.
4. If DTC is detected, go to [AT-123, "Diagnostic Procedure"](#).



Ⓢ WITH GST

Follow the procedure "WITH CONSULT-II".

DTC U1000 CAN COMMUNICATION LINE

Diagnostic Procedure

ACS002MF

1. CHECK CAN COMMUNICATION CIRCUIT

④ With CONSULT-II

1. Turn ignition switch "ON" and start engine.
2. Select "SELF-DIAG RESULTS" mode for "A/T" with CONSULT-II.

Is any malfunction of the "CAN COMM CIRCUIT" indicated?

- YES >> Print out CONSULT-II screen, GO TO LAN section.
Refer to [LAN-4, "Precautions When Using CONSULT-II"](#)
- NO >> **INSPECTION END**

SELF-DIAG RESULTS			
DTC RESULTS			
CAN COMM CIRCUIT [U1000]			
ERASE		PRINT	
MODE	BACK	LIGHT	COPY

PCIA0061E

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DTC P0615 START SIGNAL CIRCUIT

DTC P0615 START SIGNAL CIRCUIT

PFP:25230

Description

ACS003LO

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

CONSULT-II Reference Value

ACS003K2

Item name	Condition	Display value
STARTER RELAY	Selector lever in "N", "P" position.	ON
	Selector lever in other position.	OFF

On Board Diagnosis Logic

ACS002MH

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code "STARTER RELAY/CIRC" with CONSULT-II or 14th judgement flicker without CONSULT-II is detected when detects as irregular when park/neutral (PNP) relay (starter relay) is switched "ON" other than at "P" or "N" position. (Or when switched "OFF" at "P" or "N" position).

Possible Cause

ACS003LP

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

DTC Confirmation Procedure

ACS002MJ

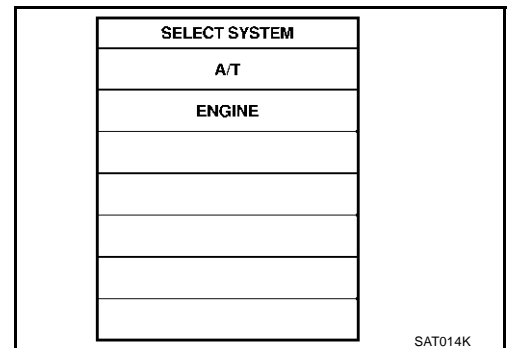
NOTE:

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

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

WITH CONSULT-II

1. Turn ignition switch "ON". (Do not start engine.)
2. Select "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Start engine.
4. Drive vehicle for at least 2 consecutive seconds.
5. If DTC is detected, go to [AT-125, "Diagnostic Procedure"](#) .



DTC P0615 START SIGNAL CIRCUIT

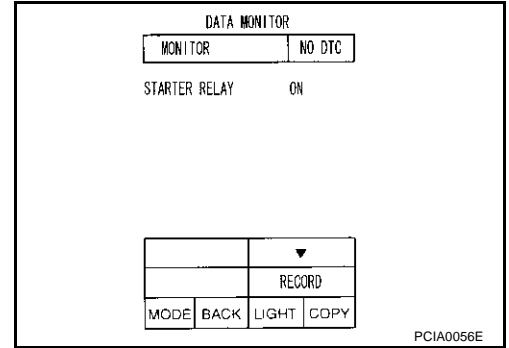
ACS002MK

Diagnostic Procedure

1. CHECK STARTER RELAY

With CONSULT-II

- Turn ignition switch "ON". (Do not start engine.)
- Select "SELECTION FROM MENU" in "DATA MONITOR" mode for "A/T" with CONSULT-II and check monitor "STARTER RELAY" ON/OFF.



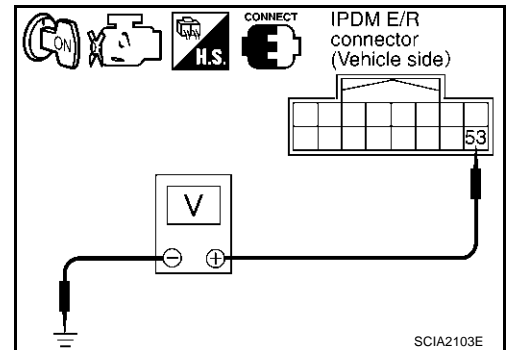
Without CONSULT-II

- Turn ignition switch "ON". (Do not start engine.)
- Check voltage between the IPDM E/R connector and ground. Refer to [AT-62, "Wiring Diagram — AT —"](#).

Item	Connector No.	Terminal No. (Wiring color)	Shift position	Voltage (Approx.)
Starter relay	E9	53 (GY)	Ground	N and P: Battery voltage R and D: 0V

OK or NG

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



2. DETECT MALFUNCTIONING ITEM

Check the following items:

- Starter relay, Refer to [SC-10, "STARTING SYSTEM"](#).
- Open or short-circuits in the harness between TCM and the IPDM E/R.

OK or NG

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

3. CHECK TCM

Perform TCM input/output signal inspection. Refer to [AT-107, "TCM Input/Output Signal Reference Values"](#).

OK or NG

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

4. DETECT MALFUNCTIONING ITEM

Check the following items:

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

OK or NG

- OK >> Replace the transmission assembly. Refer to [AT-269, "Removal and Installation \(2WD Models\)"](#), [AT-272, "Removal and Installation \(AWD Models\)"](#).
- NG >> Repair or replace damaged parts.

DTC P0615 START SIGNAL CIRCUIT

5. CHECK DTC

Perform DTC Confirmation Procedure.

- Refer to [AT-124, "DTC Confirmation Procedure"](#).

OK or NG

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

DTC P0705 PARK/NEUTRAL POSITION SWITCH

DTC P0705 PARK/NEUTRAL POSITION SWITCH

PF3:32006

Description

ACS002ML

- The park/neutral position (PNP) switch includes a transmission position switch.
- The transmission range switch detects the selector lever position and sends a signal to the TCM.

CONSULT-II Reference Value

ACS003K3

Item name	Condition	Display value
SLCTLVR POSI	Selector lever in "N", "P" position.	N/P
	Selector lever in "R" position.	R
	Selector lever in "D" position.	D

On Board Diagnosis Logic

ACS002MM

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "PNP SW/CIRC" with CONSULT-II or P0705 without CONSULT-II is detected under the following conditions.
 - When TCM does not receive the correct voltage signal from the PNP switch 1, 2, 3, 4 based on the gear position.
 - When no other position but "P" position is detected from "N" positions.

Possible Cause

ACS002MN

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

DTC Confirmation Procedure

ACS002MO

CAUTION:

Always drive vehicle at a safe speed.

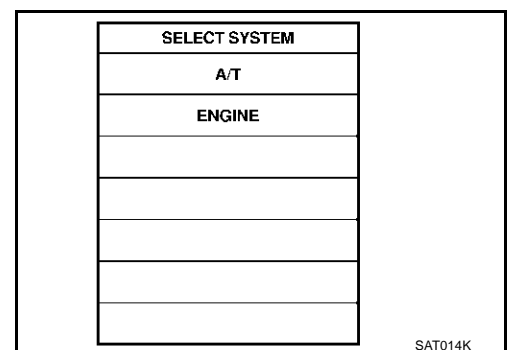
NOTE:

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

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

WITH CONSULT-II

1. Turn ignition switch "ON". (Do not start engine.)
2. Select "DATA MONITOR" mode for "ENGINE" with CONSULT-II.
3. Start engine.
4. Drive vehicle and maintain the following conditions for at least 2 consecutive seconds.
THRTL POS SEN: More than 1.2V
5. If DTC is detected, go to [AT-128, "Diagnostic Procedure"](#).



WITH GST

Follow the procedure "With CONSULT-II".

DTC P0705 PARK/NEUTRAL POSITION SWITCH

ACS002MP

Diagnostic Procedure

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

Ⓜ With CONSULT-II

1. Turn ignition switch "ON". (Do not start engine.)
2. Select "MAIN SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Read out "N·P", "R" and "D" position switches moving selector lever to each position.

OK or NG

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

DATA MONITOR	
MONITOR	NO. DTC
ATF PRES SW 2	OFF
ATF PRES SW 3	OFF
ATF PRES SW 5	OFF
ATF PRES SW 6	OFF
SLCT LVR POS1	N·P

Δ	▽		
RECORD			
MODE	BACK	LIGHT	COPY

PCIA0034E

2. CHECK TCM

Perform TCM input/output signal inspection. Refer to [AT-107, "TCM Input/Output Signal Reference Values"](#) .

OK or NG

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

3. DETECT MALFUNCTIONING ITEM

Check the following items:

- Power supply and ground circuit for TCM.
- A/T assembly harness connector pin terminals for damage or loose connection with harness connector.

OK or NG

- OK >> Replace the transmission assembly. Refer to [AT-269, "Removal and Installation \(2WD Models\)"](#) , [AT-272, "Removal and Installation \(AWD Models\)"](#) .
- NG >> Repair or replace damaged parts.

4. CHECK DTC

Perform DTC Confirmation Procedure.

- Refer to [AT-127, "DTC Confirmation Procedure"](#) .

OK or NG

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

DTC P0720 VEHICLE SPEED SENSOR A/T (REVOLUTION SENSOR)

DTC P0720 VEHICLE SPEED SENSOR A/T (REVOLUTION SENSOR)

PF0:32702

Description

ACS002MQ

The revolution sensor detects the revolution of the idler gear parking pawl lock gear and emits a pulse signal. The pulse signal is sent to the TCM which converts it into vehicle speed.

CONSULT-II Reference Value

ACS003K4

Item name	Condition	Display value (km/h)
VHCL/S SE·A/T	During driving	Approximately matches the speedometer reading.

On Board Diagnosis Logic

ACS002MR

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "VEH SPD SEN/CIR AT" with CONSULT-II or P0720 without CONSULT-II is detected under the following conditions.
 - When TCM does not receive the proper voltage signal from the sensor.
 - After ignition switch is turned "ON", irregular signal input from vehicle speed sensor MTR before the vehicle starts moving.

Possible Cause

ACS002MS

- Harness or connectors
(The sensor circuit is open or shorted.)
- Revolution sensor
- Vehicle speed sensor MTR

DTC Confirmation Procedure

ACS002MT

CAUTION:

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

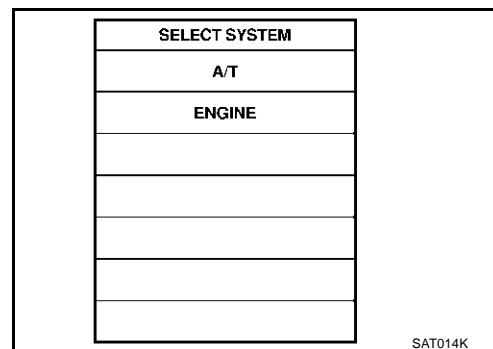
NOTE:

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

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

WITH CONSULT-II

1. Turn ignition switch "ON". (Do not start engine.)
2. Select "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Drive vehicle and check for an increase of "VHCL/S SE·A/T" value in response to "VHCL/S SE·MTR" value.
If the check result is NG, go to [AT-130, "Diagnostic Procedure"](#).
If the check result is OK, go to following step.
4. Select "DATA MONITOR" mode for "ENGINE" with CONSULT-II.
5. Start engine and maintain the following conditions for at least 5 consecutive seconds.
VHCL SPEED SE: 30 km/h (19 MPH) or more
THRTL POS SEN: More than 1.0/8
Selector lever: "D" position
Driving location: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.
If the check result is NG, go to [AT-130, "Diagnostic Procedure"](#).
If the check result is OK, go to following step.
6. Maintain the following conditions for at least 5 consecutive seconds.
ENGINE SPEED: 3,500 rpm or more
THRTL POS SEN: More than 1.0/8
Selector lever: "D" position
Driving location: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.
If the check result is NG, go to [AT-130, "Diagnostic Procedure"](#).



DTC P0720 VEHICLE SPEED SENSOR A/T (REVOLUTION SENSOR)

WITH GST

Follow the procedure "With CONSULT-II".

Diagnostic Procedure

ACS002MU

1. CHECK INPUT SIGNALS

With CONSULT-II

1. Turn ignition switch "ON". (Do not start engine.)
2. Select "ECU INPUT SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Start the engine.
4. Read out the value of "VHCL/S SE-A/T" while driving.
Check the value changes according to driving speed.

OK or NG

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

DATA MONITOR	
MONITOR	NO DTC
VHCL/S SE-A/T	0km/h
VHCL/S SE-MTR	0km/h
ACCELE POSI	0.0/8
THROTTLE POS	0.0/8
CLSD THL POS	ON
W/O THL POS	OFF
▽	
RECORD	
MODE	BACK
LIGHT	COPY

SCIA2148E

2. CHECK TCM

Perform TCM input/output signal inspection. Refer to [AT-107, "TCM Input/Output Signal Reference Values"](#) .

OK or NG

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

3. DETECT MALFUNCTIONING ITEM

Check the following items:

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

OK or NG

- OK >> Replace the transmission assembly. Refer to [AT-269, "Removal and Installation \(2WD Models\)"](#) , [AT-272, "Removal and Installation \(AWD Models\)"](#) .
NG >> Repair or replace damaged parts.

4. CHECK DTC

Perform DTC Confirmation Procedure.

- Refer to [AT-129, "DTC Confirmation Procedure"](#) .

OK or NG

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

DTC P0725 ENGINE SPEED SIGNAL

DTC P0725 ENGINE SPEED SIGNAL

PFP:24825

Description

ACS002MV

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

CONSULT-II Reference Value

ACS003K5

Item name	Condition	Display value (rpm)
ENGINE SPEED	Engine running	Closely matches the tachometer reading.

On Board Diagnosis Logic

ACS002MW

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “ENGINE SPEED SIG” with CONSULT-II or P0725* without CONSULT-II is detected when TCM does not receive the ignition signal from ECM during engine cranking or running.
*: For VQ35DE engine.

Possible Cause

ACS002MX

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

DTC Confirmation Procedure

ACS002MY

CAUTION:

Always drive vehicle at a safe speed.

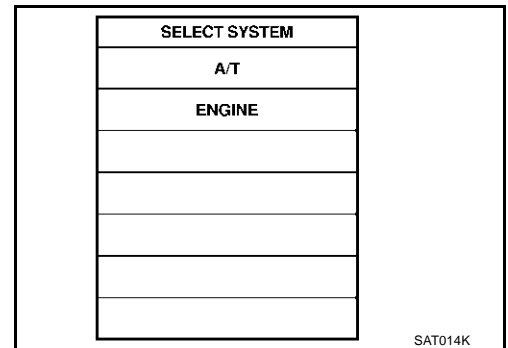
NOTE:

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

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

WITH CONSULT-II

1. Turn ignition switch “ON” and select “DATA MONITOR” mode for “A/T” with CONSULT-II.
2. Start engine and maintain the following conditions for at least 10 consecutive seconds.
VHCL SPEED SE: 10 km/h (6 MPH) or more
ACCELE POSI: More than 1/8
Selector lever: “D” position
3. If DTC is detected, go to [AT-131, "Diagnostic Procedure"](#).



WITH GST

Follow the procedure “With CONSULT-II”.

Diagnostic Procedure

ACS002MZ

1. CHECK CAN COMMUNICATION LINE

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

Yes or No

- Yes >> Check CAN communication line. Refer to [AT-122, "DTC U1000 CAN COMMUNICATION LINE"](#).
- No >> GO TO 2.

DTC P0725 ENGINE SPEED SIGNAL

2. CHECK DTC WITH TCM

With CONSULT-II

1. Start engine.
2. Select "ECU INPUT SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. While monitoring engine speed, check for engine speed change corresponding to wide-open throttle position signal.

DATA MONITOR	
MONITOR	NO. DTC
W/O THL POS	OFF
BRAKE SW	OFF
ENGINE SPEED	0 rpm
TURBINE REV	0 rpm
OUTPUT REV	0 rpm

▽	
RECORD	
MODE	BACK LIGHT COPY

PCIA0041E

With GST

Follow the procedure "With CONSULT-II".

OK or NG

OK >> GO TO 3.

NG >> Check the ignition signal circuit.

- Refer to [EC-591, "IGNITION SIGNAL"](#) (for VQ35DE) or [EC-1263, "IGNITION SIGNAL"](#) (for VK45DE).

3. CHECK TCM

Perform TCM input/output signal inspection. Refer to [AT-107, "TCM Input/Output Signal Reference Values"](#).

OK or NG

OK >> GO TO 5.

NG >> GO TO 4.

4. DETECT MALFUNCTIONING ITEM

Check the following items:

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

OK or NG

OK >> Replace the transmission assembly. Refer to [AT-269, "Removal and Installation \(2WD Models\)"](#), [AT-272, "Removal and Installation \(AWD Models\)"](#).

NG >> Repair or replace damaged parts.

5. CHECK DTC

Perform DTC Confirmation Procedure.

- Refer to [AT-131, "DTC Confirmation Procedure"](#).

OK or NG

OK >> **INSPECTION END**

NG >> GO TO 3.

DTC P0740 TORQUE CONVERTER CLUTCH SOLENOID VALVE

DTC P0740 TORQUE CONVERTER CLUTCH SOLENOID VALVE

PFP:31940

Description

ACS002N0

- The torque converter clutch solenoid valve is activated, with the gear in D4 , D5 by the TCM in response to signals sent from the vehicle speed sensor and accelerator pedal position sensor (throttle position sensor). Torque converter clutch piston operation will then be controlled.
- Lock-up operation, however, is prohibited when A/T fluid temperature is too low.
- When the accelerator pedal is depressed (less than 1/8) in lock-up condition, the engine speed should not change abruptly. If there is a big jump in engine speed, there is no lock-up.

CONSULT-II Reference Value

ACS002N1

Item name	Condition	Display value (Approx.) (A)
TCC SOLENOID	When performing slip lock-up	0.2 - 0.4
	When performing lock-up	0.4 - 0.6

On Board Diagnosis Logic

ACS002N2

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "TCC SOLENOID/CIRC" with CONSULT-II or P0740 without CONSULT-II is detected under the following conditions.
 - When TCM detects an improper voltage drop when it tries to operate the solenoid valve.
 - When TCM detects as irregular by comparing target value with monitor value.

Possible Cause

ACS002N3

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

DTC Confirmation Procedure

ACS002N4

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

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

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

WITH CONSULT-II

1. Turn ignition switch "ON". (Do not start engine.)
2. Select "DATA MONITOR" mode for "ENGINE" with CONSULT-II.
3. Start engine and maintain the following conditions for at least 5 consecutive seconds.

VHCL SPEED SE: 80 km/h (50 MPH) or more

ACCELE POS: 0.5/8 - 1.0/8

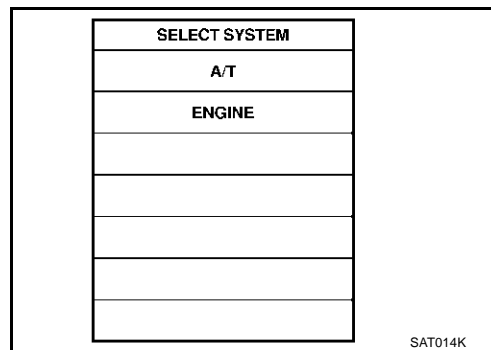
SELECTOR LEVER: "D" position

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

4. If DTC is detected go to [AT-134, "Diagnostic Procedure"](#).

WITH GST

Follow the procedure "With CONSULT-II".



DTC P0740 TORQUE CONVERTER CLUTCH SOLENOID VALVE

Diagnostic Procedure

ACS002N5

1. CHECK TCM

Perform TCM input/output signal inspection. Refer to [AT-107, "TCM Input/Output Signal Reference Values"](#) .

OK or NG

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

2. DETECT MALFUNCTIONING ITEM

Check the following items:

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

OK or NG

- OK >> Replace the transmission assembly. Refer to [AT-269, "Removal and Installation \(2WD Models\)"](#) , [AT-272, "Removal and Installation \(AWD Models\)"](#) .
- NG >> Repair or replace damaged parts.

3. CHECK DTC

Perform DTC Confirmation Procedure.

- Refer to [AT-133, "DTC Confirmation Procedure"](#) .

OK or NG

- OK >> **INSPECTION END**
- NG >> GO TO 1.

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

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

PFP:31940

Description

ACS002N6

This malfunction is detected when the A/T does not shift into 5th gear position or the torque converter clutch does not lock-up as instructed by the TCM. This is not only caused by electrical malfunction (circuits open or shorted) but also by mechanical malfunction such as control valve sticking, improper solenoid valve operation, etc.

CONSULT-II Reference Value

ACS003KT

Item name	Condition	Display value (Approx.) (A)
TCC SOLENOID	When performing slip lock-up	0.2 - 0.4
	When performing lock-up	0.4 - 0.6

On Board Diagnosis Logic

ACS002N7

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "A/T TCC S/V FNCTN" with CONSULT-II or P0744 without CONSULT-II is detected under the following conditions.
 - When A/T cannot perform lock-up even if electrical circuit is good.
 - When TCM detects as irregular by comparing difference value with slip rotation.

Possible Cause

ACS002N8

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

DTC Confirmation Procedure

ACS002N9

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

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

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

WITH CONSULT-II

1. Start engine and Select "TCC S/V FNCTN CHECK" of "DTC WORK SUPPORT" mode for "A/T" with CONSULT-II and touch "START".
2. Accelerate vehicle to more than 80 km/h (50 MPH) and maintain the following condition continuously until "TESTING" has turned to "COMPLETE". (It will take approximately 30 seconds after "TESTING" shows.)

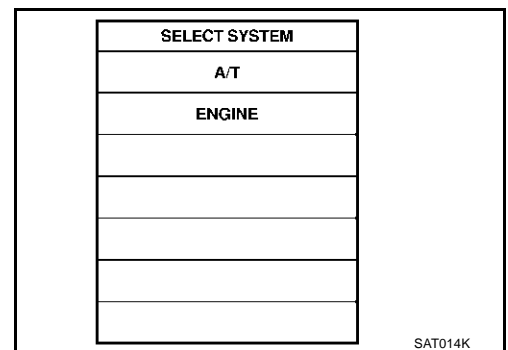
ACCELE POSI: More than 1.0/8 (at all times during step 4)

TCC SOLENOID: 0.4 - 0.6 A

Selector lever: "D" position

[Reference speed: Constant speed of more than 80 km/h (50 MPH)]

- Make sure "GEAR" shows "5".
 - For shift schedule, refer to [AT-352, "Vehicle Speed When Performing and Releasing Complete Lock-up"](#).
 - If "TESTING" does not appear on CONSULT-II for a long time, select "SELF-DIAG RESULTS". In case a 1st trip DTC other than P0744 is shown, refer to applicable "TROUBLE DIAGNOSIS FOR DTC".
3. Make sure that "OK" is displayed. (If "NG" is displayed, refer to "DIAGNOSTIC PROCEDURE".)
Refer to [AT-136, "Diagnostic Procedure"](#).
Refer to shift schedule, [AT-352, "Vehicle Speed When Performing and Releasing Complete Lock-up"](#).



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

WITH GST

Follow the procedure "With CONSULT-II".

Diagnostic Procedure

ACS002NA

1. CHECK TCM

Perform TCM input/output signal inspection. Refer to [AT-107, "TCM Input/Output Signal Reference Values"](#) .

OK or NG

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

2. DETECT MALFUNCTIONING ITEM

Check the following items:

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

OK or NG

- OK >> Replace the transmission assembly. Refer to [AT-269, "Removal and Installation \(2WD Models\)"](#) , [AT-272, "Removal and Installation \(AWD Models\)"](#) .
- NG >> Repair or replace damaged parts.

3. CHECK DTC

Perform DTC Confirmation Procedure.

- Refer to [AT-135, "DTC Confirmation Procedure"](#) .

OK or NG

- OK >> **INSPECTION END**
- NG >> GO TO 1.

DTC P0745 LINE PRESSURE SOLENOID VALVE

DTC P0745 LINE PRESSURE SOLENOID VALVE

PFP:31940

Description

ACS002NB

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.

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

CONSULT-II Reference Value

ACS003KU

Item name	Condition	Display value (Approx.) (A)
LINE PRES SOL	During driving	0.2 - 0.6

On Board Diagnosis Logic

ACS002NC

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "L/PRESS SOL/CIRC" with CONSULT-II or P0745 without CONSULT-II is detected under the following conditions.
 - When TCM detects an improper voltage drop when it tries to operate the solenoid valve.
 - When TCM detects as irregular by comparing target value with monitor value.

Possible Cause

ACS002ND

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

DTC Confirmation Procedure

ACS002NE

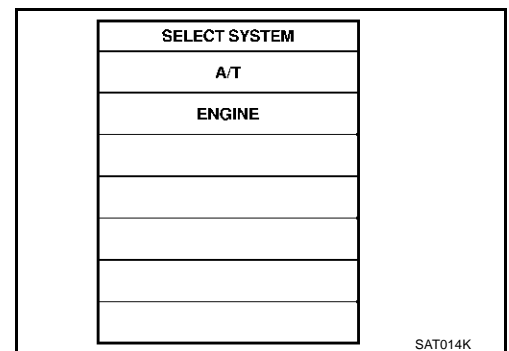
NOTE:

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

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

Ⓟ WITH CONSULT-II

1. Turn ignition switch "ON" and select "DATA MONITOR" mode for "ENGINE" with CONSULT-II.
2. Engine start and wait at least 5 second.
3. If DTC is detected, go to ["AT-138, "Diagnostic Procedure"](#) .



Ⓢ WITH GST

Follow the procedure "With CONSULT-II".

DTC P0745 LINE PRESSURE SOLENOID VALVE

ACS002NF

Diagnostic Procedure

1. CHECK TCM

Perform TCM input/output signal inspection. Refer to [AT-107, "TCM Input/Output Signal Reference Values"](#) .

OK or NG

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

2. DETECT MALFUNCTIONING ITEM

Check the following items:

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

OK or NG

- OK >> Replace the transmission assembly. Refer to [AT-269, "Removal and Installation \(2WD Models\)"](#) , [AT-272, "Removal and Installation \(AWD Models\)"](#) .
- NG >> Repair or replace damaged parts.

3. CHECK DTC

Perform DTC Confirmation Procedure.

- Refer to [AT-137, "DTC Confirmation Procedure"](#) .

OK or NG

- OK >> **INSPECTION END**
- NG >> GO TO 1.

DTC P1701 TRANSMISSION CONTROL MODULE (POWER SUPPLY)

DTC P1701 TRANSMISSION CONTROL MODULE (POWER SUPPLY)

PF3:31036

Description

ACS002NG

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

On Board Diagnosis Logic

ACS002NH

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

Possible Cause

ACS002NI

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

DTC Confirmation Procedure

ACS002NJ

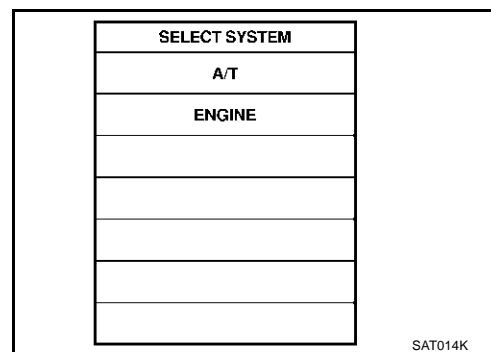
NOTE:

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

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

Ⓟ WITH CONSULT-II

1. Turn ignition switch "ON". (Do not start engine.)
2. Select "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Wait for at least 2 consecutive seconds.
4. If DTC is detected, go to [AT-140, "Diagnostic Procedure"](#).



DTC P1701 TRANSMISSION CONTROL MODULE (POWER SUPPLY)

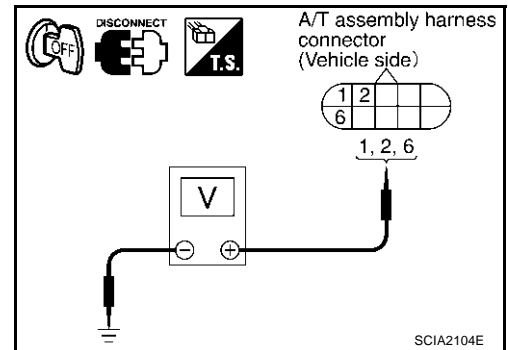
ACS002NK

Diagnostic Procedure

1. CHECK TCM POWER SOURCE STEP 1

1. Turn ignition switch "OFF".
2. Disconnect A/T assembly harness connector.
3. Check voltage between A/T assembly harness connector and ground. Refer to [AT-62, "Wiring Diagram — AT —"](#) .

Item	Connector No.	Terminal No. (Wire color)	Voltage
TCM	F44	1 (LG) - Ground	Battery voltage
		2 (LG) - Ground	
		6 (Y) - Ground	0V



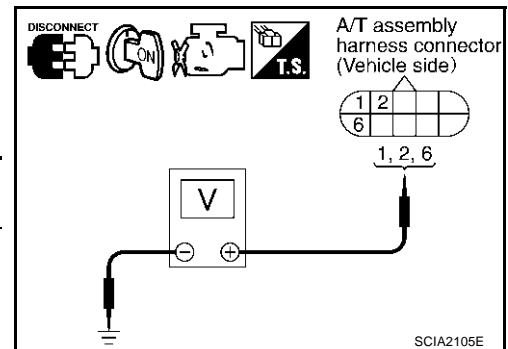
OK or NG

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

2. CHECK TCM POWER SOURCE STEP 2

1. Disconnect A/T assembly harness connector.
2. Turn ignition switch "ON". (Do not start engine.)
3. Check voltage between A/T assembly harness connector and ground. Refer to [AT-62, "Wiring Diagram — AT —"](#) .

Item	Connector No.	Terminal No. (Wire color)	Voltage
TCM	F44	1 (LG) - Ground	Battery voltage
		2 (LG) - Ground	
		6 (Y) - Ground	



OK or NG

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

3. DETECT MALFUNCTIONING ITEM

Check the following items:

- Harness for short or open between battery and A/T assembly harness connector terminals 1, 2
- Harness for short or open between ignition switch and A/T assembly harness connector terminal 6
- 10A fuse (No. 37, located in the fuse and fusible link block) and 10A fuse (No. 83, located in the IPDM E/R)
- Ignition switch, Refer to [PG-3, "POWER SUPPLY ROUTING CIRCUIT"](#)

OK or NG

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

DTC P1701 TRANSMISSION CONTROL MODULE (POWER SUPPLY)

4. CHECK TCM GROUND CIRCUIT

1. Turn ignition switch "OFF".
2. Disconnect A/T assembly harness connector.
3. Check continuity between A/T assembly harness connector terminal 5 (B), 10 (B) and ground. Refer to [AT-62, "Wiring Diagram —AT—"](#).

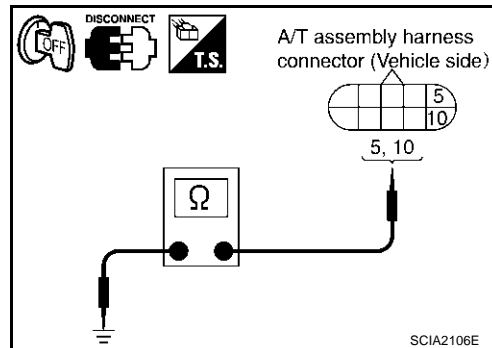
Continuity should exist.

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

OK or NG

OK >> GO TO 5.

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



5. CHECK DTC

Perform DTC Confirmation Procedure.

- Refer to [AT-139, "DTC Confirmation Procedure"](#).

OK or NG

OK >> **INSPECTION END**

NG >> GO TO 6.

6. DETECT MALFUNCTIONING ITEM

The A/T assembly harness connector pin terminals for damage or loose connection with harness connector.

OK or NG

OK >> Replace the transmission assembly. Refer to [AT-269, "Removal and Installation \(2WD Models\)"](#), [AT-272, "Removal and Installation \(AWD Models\)"](#).

NG >> Repair or replace damaged parts.

DTC P1702 TRANSMISSION CONTROL MODULE (RAM)

DTC P1702 TRANSMISSION CONTROL MODULE (RAM)

PFP:31036

Description

ACS002NL

The TCM consists of a microcomputer and connectors for ground, power supply and for signal inputs and outputs. The TCM controls the A/T.

On Board Diagnosis Logic

ACS002NM

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code "TCM-RAM" with CONSULT-II is detected when TCM memory RAM is malfunctioning.

Possible Cause

ACS002NN

TCM.

DTC Confirmation Procedure

ACS002NO

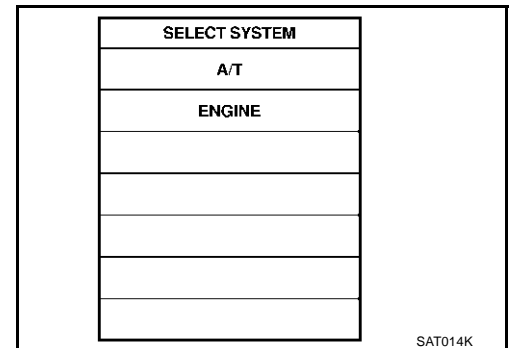
NOTE:

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

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

Ⓜ WITH CONSULT-II

1. Turn ignition switch "ON". (Do not start engine.)
2. Select "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Start engine.
4. Run engine for at least 2 consecutive seconds at idle speed.
5. If DTC is detected, go to [AT-142, "Diagnostic Procedure"](#).



Diagnostic Procedure

ACS002NP

1. CHECK DTC

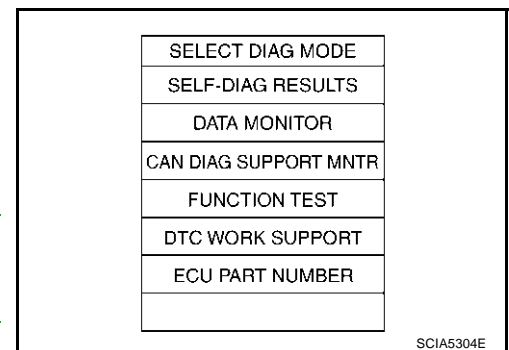
Ⓜ With CONSULT-II

1. Turn ignition switch "ON". (Do not start engine.)
2. Select "SELF DIAG RESULTS" mode for "A/T" with CONSULT-II.
3. Touch "ERASE".
4. Turn ignition switch "OFF" and wait at least 10 seconds.
5. Perform DTC confirmation procedure, [AT-142, "DTC Confirmation Procedure"](#).

Is the "TCM-RAM" displayed again?

YES >> Replace the transmission assembly. Refer to [AT-269, "Removal and Installation \(2WD Models\)"](#), [AT-272, "Removal and Installation \(AWD Models\)"](#).

NO >> **INSPECTION END**



DTC P1703 TRANSMISSION CONTROL MODULE (ROM)

DTC P1703 TRANSMISSION CONTROL MODULE (ROM)

PF3:31036

Description

ACS002NQ

The TCM consists of a microcomputer and connectors for ground, power supply and for signal inputs and outputs. The TCM controls the A/T.

On Board Diagnosis Logic

ACS002NR

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code "TCM-ROM" with CONSULT-II is detected when TCM memory ROM is malfunctioning.

Possible Cause

ACS002NS

TCM.

DTC Confirmation Procedure

ACS002NT

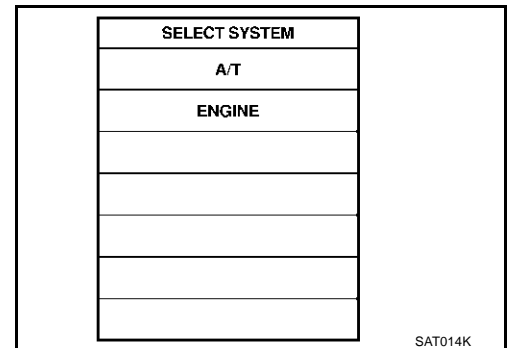
NOTE:

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

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

Ⓜ WITH CONSULT-II

1. Turn ignition switch to "ON". (Do not start engine.)
2. Select "DATA MONITOR" mode for A/T with CONSULT-II.
3. Start engine.
4. Run engine for at least 2 consecutive seconds at idle speed.
5. If DTC is detected, go to [AT-143, "Diagnostic Procedure"](#).



Diagnostic Procedure

ACS002NU

1. CHECK DTC

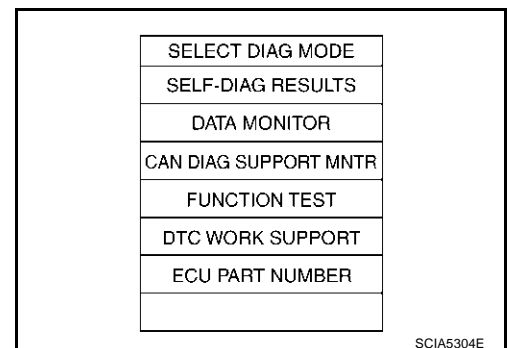
Ⓜ With CONSULT-II

1. Turn ignition switch "ON". (Do not start engine.)
2. Select "SELF DIAG RESULTS" mode for "A/T" with CONSULT-II.
3. Touch "ERASE".
4. Turn ignition switch "OFF" and wait at least 10 seconds.
5. Perform DTC confirmation procedure, [AT-143, "DTC Confirmation Procedure"](#).

Is the "TCM-ROM" displayed again?

YES >> Replace the transmission assembly. Refer to [AT-269, "Removal and Installation \(2WD Models\)"](#), [AT-272, "Removal and Installation \(AWD Models\)"](#).

NO >> **INSPECTION END**



DTC P1704 TRANSMISSION CONTROL MODULE (EEPROM)

DTC P1704 TRANSMISSION CONTROL MODULE (EEPROM)

PFP:31036

Description

ACS002NV

The TCM consists of a microcomputer and connectors for ground, power supply and for signal inputs and outputs. The TCM controls the A/T.

On Board Diagnosis Logic

ACS002NW

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code "TCM-EEPROM" with CONSULT-II is detected when TCM memory EEPROM is malfunctioning.

Possible Cause

ACS002NX

TCM.

DTC Confirmation Procedure

ACS002NY

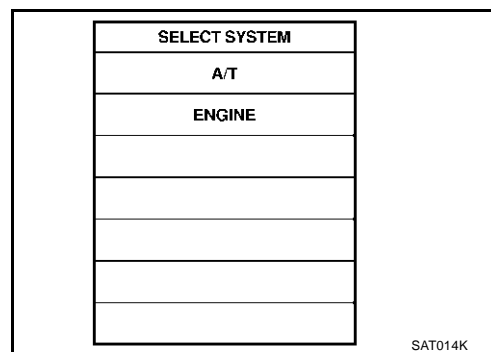
NOTE:

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

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

Ⓜ WITH CONSULT-II

1. Turn ignition switch "ON". (Do not start engine.)
2. Select "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Start engine.
4. Run engine for at least 2 consecutive seconds at idle speed.
5. If DTC is detected, go to [AT-144, "Diagnostic Procedure"](#).



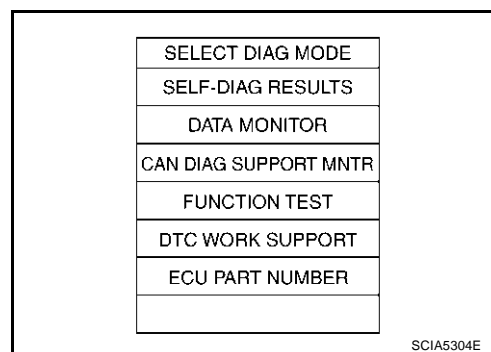
Diagnostic Procedure

ACS002NZ

1. CHECK DTC

Ⓜ With CONSULT-II

1. Turn ignition switch "ON" and select "SELF-DIAG RESULTS" mode for "A/T" with CONSULT-II.
2. Move selector lever to "R" position.
3. Depress accelerator pedal (Full throttle position).
4. Touch "ERASE".
5. Turn ignition switch "OFF" and wait at least 10 seconds.
6. Turn ignition switch "ON" with selector lever "P" position.
7. Perform "DTC Confirmation Procedure". Refer to [AT-144, "DTC Confirmation Procedure"](#).



Is the "TCM-EEPROM" displayed again?

- YES >> Replace the transmission assembly. Refer to [AT-269, "Removal and Installation \(2WD Models\)"](#) , [AT-272, "Removal and Installation \(AWD Models\)"](#) .
- NO >> **INSPECTION END**

DTC P1705 THROTTLE POSITION SENSOR

DTC P1705 THROTTLE POSITION SENSOR

PFP:22620

Description

ACS00200

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

On Board Diagnosis Logic

ACS00201

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "TP SEN/CIRC A/T" with CONSULT-II or P1705* without CONSULT-II is detected when TCM does not receive the proper accelerator pedal position signals (input by CAN communication) from ECM.
*: For VQ35DE engine.

Possible Cause

ACS00202

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

DTC Confirmation Procedure

ACS00203

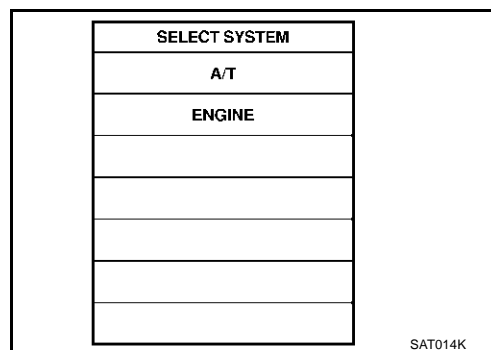
NOTE:

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

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

WITH CONSULT-II

1. Turn ignition switch "ON". (Do not start engine.)
2. Select "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Start engine and let it idle for 1 second.
4. If DTC is detected, go to ["AT-145, "Diagnostic Procedure"](#) .



WITH GST

Follow the procedure "With CONSULT-II".

Diagnostic Procedure

ACS00204

1. CHECK CAN COMMUNICATION LINE

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

YES or NO

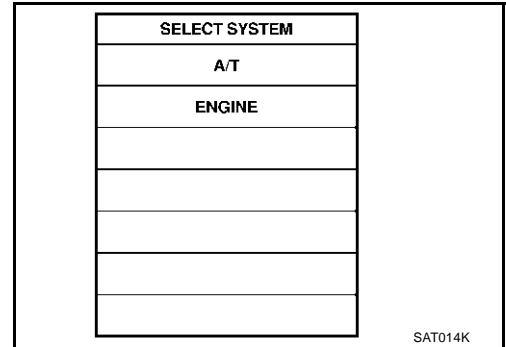
- YES >> Check CAN communication line. Refer to ["AT-122, "DTC U1000 CAN COMMUNICATION LINE"](#) .
NO >> GO TO 2.

DTC P1705 THROTTLE POSITION SENSOR

2. CHECK DTC WITH ECM

With CONSULT-II

1. Turn ignition switch "ON". (Do not start engine.)
2. Select "SELF-DIAG RESULTS" mode for "ENGINE" with CONSULT-II. Refer to [EC-123, "CONSULT-II Function"](#) (for VQ35DE) or [EC-765, "CONSULT-II Function"](#) (for VK45DE).



With GST

Follow the procedure "With CONSULT-II".

OK or NG

OK >> GO TO 3.

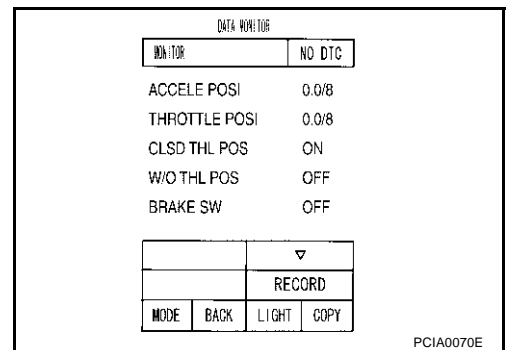
NG >> Check the DTC detected item. Refer to [EC-123, "CONSULT-II Function"](#) (for VQ35DE) or [EC-765, "CONSULT-II Function"](#) (for VK45DE).

- If CAN communication line is detected, go to [AT-122, "DTC U1000 CAN COMMUNICATION LINE"](#).

3. CHECK DTC WITH TCM

With CONSULT-II

1. Turn ignition switch "ON". (Do not start engine.)
2. Select "ECU INPUT SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Depress accelerator pedal and read out the value of "ACCLE POS" and "THROTTLE POSI".
Check engine speed changes according to throttle position.
4. Select "SELF-DIAG RESULTS" mode for "ENGINE" with CONSULT-II. Refer to [EC-127, "SELF-DIAG RESULTS MODE"](#) (for VQ35DE) or [EC-769, "SELF-DIAG RESULTS MODE"](#) (for VK45DE).



With GST

Follow the procedure "With CONSULT-II".

OK or NG

OK >> GO TO 4.

NG >> Repair or replace damaged parts.

4. CHECK DTC

Perform DTC Confirmation Procedure.

- Refer to [AT-145, "DTC Confirmation Procedure"](#).

OK or NG

OK >> **INSPECTION END**

NG >> Replace the transmission assembly. Refer to [AT-269, "Removal and Installation \(2WD Models\)"](#), [AT-272, "Removal and Installation \(AWD Models\)"](#).

DTC P1710 A/T FLUID TEMPERATURE SENSOR CIRCUIT

DTC P1710 A/T FLUID TEMPERATURE SENSOR CIRCUIT

PFP:31940

Description

ACS00205

The A/T fluid temperature sensor detects the A/T fluid temperature and sends a signal to the TCM.

CONSULT-II Reference Value

ACS00206

Item name	Condition °C (°F)	Display value (Approx.) V
ATF TEMP SE 1	0 (32) - 20 (68) - 80 (176)	2.2 - 1.8 - 0.6 V
ATF TEMP SE 2		2.2 - 1.7 - 0.45 V

On Board Diagnosis Logic

ACS00207

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "ATF TEMP SEN/CIRC" with CONSULT-II or P1710 (A/T), P0710 (ENGINE) without CONSULT-II is detected when TCM receives an excessively low or high voltage from the sensor.

Possible Cause

ACS00208

- Harness or connectors
(The sensor circuit is open or shorted.)
- A/T fluid temperature sensors 1, 2

DTC Confirmation Procedure

ACS00209

CAUTION:

Always drive vehicle at a safe speed.

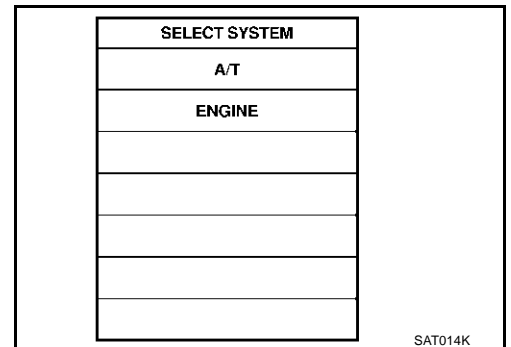
NOTE:

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

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

WITH CONSULT-II

1. Turn ignition switch "ON". (Do not start engine.)
2. Select "DATA MONITOR" mode for "ENGINE" with CONSULT-II.
3. Start engine and maintain the following conditions for at least 10 minutes (Total). (It is not necessary to maintain continuously.)
VHCL SPEED SE: 10 km/h (6 MPH) or more
THRTL POS SEN: More than 1.0/8
Selector lever: "D" position
4. If DTC is detected, go to [AT-148, "Diagnostic Procedure"](#).



WITH GST

Follow the procedure "With CONSULT-II".

DTC P1710 A/T FLUID TEMPERATURE SENSOR CIRCUIT

ACS0020A

Diagnostic Procedure

1. CHECK FLUID TEMPERATURES SENSOR (WITH CONSULT-II)

Ⓜ With CONSULT-II

1. Start engine.
2. Select "ECU INPUT SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Read out the value of "ATF TEMP SE 1" or "ATF TEMP SE 2".

Item name	Condition °C (°F)	Display value (Approx.) V
ATF TEMP SE 1	0 (32) - 20 (68) - 80 (176)	2.2 - 1.8 - 0.6 V
ATF TEMP SE 2		2.2 - 1.7 - 0.45 V

OK or NG

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

DATA MONITOR	
MONITOR	NO. DTC
OUTPUT REV	0 rpm
ATF TEMP SE 1	1.84 v
ATF TEMP SE 2	1.72 v
BATTERY BOLT	11.5 v
ATF PRES SW 1	OFF

Δ	▽		
RECORD			
MODE	BACK	LIGHT	COPY

PCIA0039E

2. CHECK TCM

Perform TCM input/output signal inspection. Refer to [AT-107, "TCM Input/Output Signal Reference Values"](#).

OK or NG

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

3. DETECT MALFUNCTIONING ITEM

Check the following items:

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

OK or NG

- OK >> Replace the transmission assembly. Refer to [AT-269, "Removal and Installation \(2WD Models\)"](#), [AT-272, "Removal and Installation \(AWD Models\)"](#).
- NG >> Repair or replace damaged parts.

4. CHECK DTC

Perform DTC Confirmation Procedure.

- Refer to [AT-147, "DTC Confirmation Procedure"](#).

OK or NG

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

DTC P1716 TURBINE REVOLUTION SENSOR

DTC P1716 TURBINE REVOLUTION SENSOR

PFP:31935

Description

ACS0020B

The turbine revolution sensor detects input shaft rpm (revolutions per minute). It is located on the input side of the automatic transmission. Monitors revolution of sensor 1 and sensor 2 for non-standard conditions.

CONSULT-II Reference Value

ACS003KD

Item name	Condition	Display value (rpm)
TURBINE REV	During driving (lock-up ON)	Approximately matches the engine speed.

On Board Diagnosis Logic

ACS0020C

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "TURBINE REV S/CIRC" with CONSULT-II or P1716 without CONSULT-II is detected under the following conditions.
 - When TCM does not receive the proper voltage signal from the sensor.
 - When TCM detects an irregularity only at position of 4th gear for turbine revolution sensor 2.

Possible Cause

ACS0020D

- Harness or connectors
(The sensor circuit is open or shorted.)
- Turbine revolution sensor 1, 2

DTC Confirmation Procedure

ACS0020E

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

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

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

WITH CONSULT-II

1. Turn ignition switch "ON". (Do not start engine.)
2. Select "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Start engine and maintain the following conditions for at least 5 consecutive seconds.

VHCL SPEED SE: 40 km/h (25 MPH) or more

ENGINE SPEED: 1,500 rpm or more

ACCELE POS: 0.5/8 or more

Selector lever: "D" position

Gear position (Turbine revolution sensor 1): 4th or 5th position

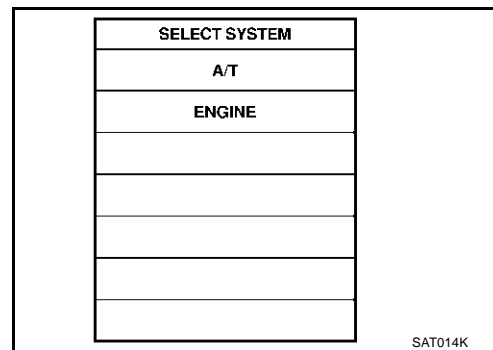
Gear position (Turbine revolution sensor 2): All position

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

4. If DTC is detected, go to [AT-150, "Diagnostic Procedure"](#).

WITH GST

Follow the procedure "With CONSULT-II".



DTC P1716 TURBINE REVOLUTION SENSOR

ACS0020F

Diagnostic Procedure

1. CHECK INPUT SIGNALS

Ⓜ With CONSULT-II

1. Start engine.
2. Select "ECU INPUT SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Vehicle start and read out the value of "TURBINE REV".

OK or NG

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

DATA MONITOR	
MONITOR	NO. DTC
W/O THL POS	OFF
BRAKE SW	OFF
ENGINE SPEED	0 rpm
TURBINE REV	0 rpm
OUTPUT REV	0 rpm

▽			
RECORD			
MODE	BACK	LIGHT	COPY

PCIA0041E

2. CHECK TCM

Perform TCM input/output signal inspection. Refer to [AT-107, "TCM Input/Output Signal Reference Values"](#).

OK or NG

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

3. DETECT MALFUNCTIONING ITEM

Check the following items:

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

OK or NG

- OK >> Replace the transmission assembly. Refer to [AT-269, "Removal and Installation \(2WD Models\)"](#), [AT-272, "Removal and Installation \(AWD Models\)"](#).
- NG >> Repair or replace damaged parts.

4. CHECK DTC

Perform DTC Confirmation Procedure.

- Refer to [AT-149, "DTC Confirmation Procedure"](#).

OK or NG

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

DTC P1721 VEHICLE SPEED SENSOR MTR

DTC P1721 VEHICLE SPEED SENSOR MTR

PDF:24814

Description

ACS0020G

The vehicle speed sensor-MTR signal is transmitted from combination meter to TCM by CAN communication line. The signal functions as an auxiliary device to the revolution sensor when it is malfunctioning. The TCM will then use the vehicle speed sensor-MTR signal.

CONSULT-II Reference Value

ACS003KE

Item name	Condition	Display value (Approx.) (km/h)
VHCL/S SE-MTR	During driving	Approximately matches the speedometer reading.

On Board Diagnosis Logic

ACS0020H

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code "VHE SPD SE-MTR" with CONSULT-II is detected when TCM does not receive the proper vehicle speed sensor MTR signal (input by CAN communication) from combination meter.

Possible Cause

ACS0020I

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

DTC Confirmation Procedure

ACS0020J

CAUTION:

Always drive vehicle at a safe speed.

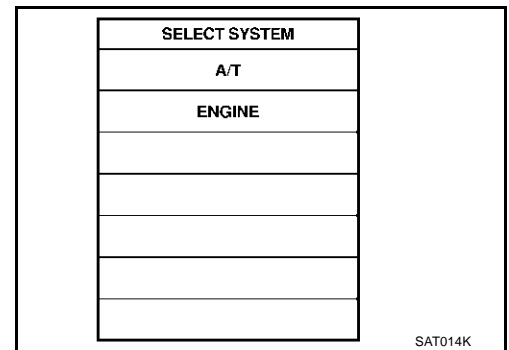
NOTE:

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

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

WITH CONSULT-II

1. Turn ignition switch "ON". (Do not start engine.)
2. Select "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Start engine and maintain the following conditions for at least 5 consecutive seconds.
ACCELE POS: 1/8 or less
VHCL SPEED SE: 30 km/h (17 MPH) or more
4. If DTC is detected, go to [AT-151, "Diagnostic Procedure"](#).



Diagnostic Procedure

ACS0020K

1. CHECK CAN COMMUNICATION LINE

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

YES or NO

- YES >> Check CAN communication line. Refer to [AT-122, "DTC U1000 CAN COMMUNICATION LINE"](#).
NO >> GO TO 2.

DTC P1721 VEHICLE SPEED SENSOR MTR

2. CHECK INPUT SIGNALS

With CONSULT-II

1. Start engine.
2. Select "ECU INPUT SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Drive vehicle and read out the value of "VHCL/S SE·MTR".

DATA MONITOR			
MONITOR	NO DTC		
VHCL/S SE-A/T	0km/h		
VHCL/S SE-MTR	0km/h		
ACCELE POSI	0.0/8		
THROTTLE POS	0.0/8		
CLSD THL POS	ON		
W/O THL POS	OFF		
▽			
RECORD			
MODE	BACK	LIGHT	COPY

SCIA2148E

Without CONSULT-II

1. Start engine.
2. Drive vehicle.
3. Perform self-diagnosis. Refer to [DI-48, "CONSULT-II Function"](#) .

OK or NG

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

3. CHECK TCM

Perform TCM input/output signal inspection. Refer to [AT-107, "TCM Input/Output Signal Reference Values"](#) .

OK or NG

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

4. DETECT MALFUNCTIONING ITEM

Check the following items:

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

OK or NG

- OK >> Replace the transmission assembly. Refer to [AT-269, "Removal and Installation \(2WD Models\)"](#) , [AT-272, "Removal and Installation \(AWD Models\)"](#) .
NG >> Repair or replace damaged parts.

5. CHECK DTC

Perform DTC Confirmation Procedure.

- Refer to [AT-151, "DTC Confirmation Procedure"](#) .

OK or NG

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

DTC P1730 A/T INTERLOCK

DTC P1730 A/T INTERLOCK

PPF:00000

Description

ACS0020L

- Fail-safe function to detect interlock conditions.

On Board Diagnosis Logic

ACS0020M

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “A/T INTERLOCK” with CONSULT-II or P1730 without CONSULT-II is detected when TCM does not receive the proper voltage signal from the sensor and switch.
- TCM monitors and compares gear position and conditions of each ATF pressure switch when gear is steady.

Possible Cause

ACS0020N

- Harness or connectors
(The solenoid and switch circuit is open or shorted.)
- Low coast brake solenoid valve
- ATF pressure switch 2

DTC Confirmation Procedure

ACS0020O

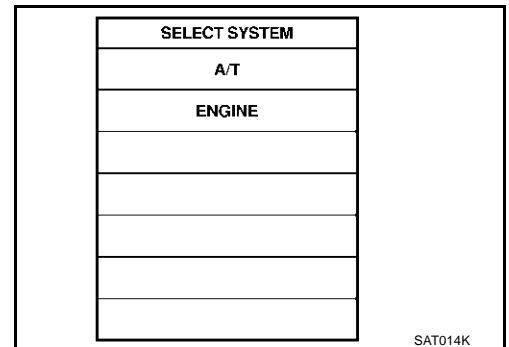
NOTE:

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

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

WITH CONSULT-II

1. Turn ignition switch “ON”. (Do not start engine.)
2. Select “DATA MONITOR” mode for “A/T” with CONSULT-II.
3. Start engine.
4. Drive vehicle and maintain the following conditions for at least 2 consecutive seconds.
Selector lever: “D” position
5. If DTC is detected, go to [AT-154, "Diagnostic Procedure"](#) .



WITH GST

Follow the procedure “With CONSULT-II”.

DTC P1730 A/T INTERLOCK

ACS0020P

Judgement of A/T Interlock

When A/T Interlock is judged to be malfunctioning, the vehicle should be fixed in 2nd gear, and should be set in a condition in which it can travel.

When one of the following fastening patterns is detected, the fail-safe function in correspondence with the individual pattern should be performed.

A/T INTERLOCK COUPLING PATTERN TABLE

●: NG, X: OK

Gear position		ATF pressure switch output					Fail-safe function	Clutch pressure output pattern after fail-safe function					
		SW3 (I/C)	SW6 (HLR/C)	SW5 (D/C)	SW1 (FR/B)	SW2 (LC/B)		I/C	HLR/C	D/C	FR/B	LC/B	L/U
A/T interlock coupling pattern	3rd	-	X	X	-	●	Held in 2nd gear	OFF	OFF	ON	OFF	OFF	OFF
	4th	-	X	X	-	●	Held in 2nd gear	OFF	OFF	ON	OFF	OFF	OFF
	5th	X	X	-	X	●	Held in 2nd gear	OFF	OFF	ON	OFF	OFF	OFF

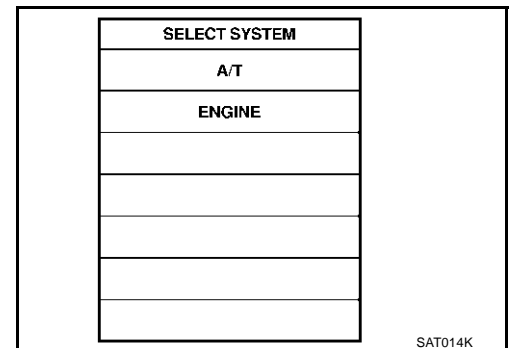
Diagnostic Procedure

ACS0020Q

1. SELF-DIAGNOSIS

Ⓟ With CONSULT-II

1. Start engine.
2. Select "SELF-DIAG RESULTS" mode for "A/T" with CONSULT-II.
3. Drive vehicle.



ⓧ Without CONSULT-II

1. Drive vehicle.
2. Stop vehicle and turn ignition switch OFF.
3. Turn ignition switch "ON". (Do not start engine.)
4. Perform self-diagnosis. Refer to [AT-120, "TCM SELF-DIAGNOSTIC PROCEDURE \(NO TOOLS\)"](#).

OK or NG

OK >> GO TO 2.

NG >> Check low coast brake solenoid valve circuit and function. Refer to [AT-174, "DTC P1772 LOW COAST BRAKE SOLENOID VALVE"](#), [AT-176, "DTC P1774 LOW COAST BRAKE SOLENOID VALVE FUNCTION"](#).

2. CHECK TCM

Perform TCM input/output signal inspection. Refer to [AT-107, "TCM Input/Output Signal Reference Values"](#).

OK or NG

OK >> GO TO 4.

NG >> GO TO 3.

DTC P1730 A/T INTERLOCK

3. DETECT MALFUNCTIONING ITEM

Check the following items:

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

OK or NG

- OK >> Replace the transmission assembly. Refer to [AT-269, "Removal and Installation \(2WD Models\)"](#), [AT-272, "Removal and Installation \(AWD Models\)"](#).
- NG >> Repair or replace damaged parts.

4. CHECK DTC

Perform DTC Confirmation Procedure.

- Refer to [AT-153, "DTC Confirmation Procedure"](#).

OK or NG

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

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DTC P1731 A/T 1ST ENGINE BRAKING

DTC P1731 A/T 1ST ENGINE BRAKING

PFP:00000

Description

ACS002OR

Fail-safe function to prevent sudden decrease in speed by engine brake other than at M1 position.

CONSULT-II Reference Value

ACS003KG

Item name	Condition	Display value
ON OFF SOL	Low coast brake solenoid valve operates.	ON
	Other conditions	OFF
ATF PRES SW 2	Low coast brake solenoid valve operates.	ON
	Other conditions	OFF

On Board Diagnosis Logic

ACS002OS

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code "A/T 1ST E/BRAKING" with CONSULT-II or 13th judgement flicker without CONSULT-II is detected under the following conditions.
 - When TCM does not receive the proper voltage signal from the sensor.
 - When TCM monitors each ATF pressure switch and solenoid monitor value, and detects as irregular when engine brake of 1st gear acts other than at M1 position.

Possible Cause

ACS002OT

- Harness or connectors
(The sensor circuit is open or shorted.)
- Low coast brake solenoid valve
- ATF pressure switch 2

DTC Confirmation Procedure

ACS002OU

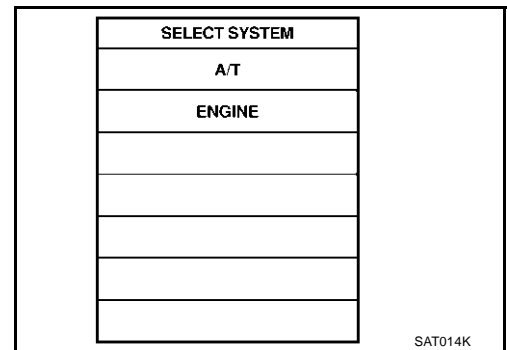
NOTE:

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

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

WITH CONSULT-II

1. Turn ignition switch "ON". (Do not start engine.)
2. Select "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Start engine.
4. Drive vehicle and maintain the following conditions for at least 2 consecutive seconds.
ENGINE SPEED: 1,200 rpm
Selector lever: "M" position
Gear position: 1st gear
5. If DTC is detected, go to [AT-157, "Diagnostic Procedure"](#).



DTC P1731 A/T 1ST ENGINE BRAKING

ACS0020V

Diagnostic Procedure

1. INPUT SIGNALS (WITH CONSULT-II)

With CONSULT-II

1. Start the engine.
2. Select "ECU INPUT SIGNALS" or "MAIN SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Drive vehicle in the "M" position (1st gear), and confirm the ON/OFF actuation of the "ATF PRES SW 2".

OK or NG

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

DATA MONITOR			
MONITOR		NO DTC	
ATF PRES SW 1		OFF	
ATF PRES SW 2		OFF	
ATF PRES SW 3		OFF	
ATF PRES SW 5		OFF	
ATF PRES SW 6		OFF	

△		▽	
RECORD			
MODE	BACK	LIGHT	COPY

PCIA0067E

2. CHECK TCM

Perform TCM input/output signal inspection. Refer to [AT-107, "TCM Input/Output Signal Reference Values"](#).

OK or NG

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

3. DETECT MALFUNCTIONING ITEM

Check the following items:

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

OK or NG

- OK >> Replace the transmission assembly. Refer to [AT-269, "Removal and Installation \(2WD Models\)"](#), [AT-272, "Removal and Installation \(AWD Models\)"](#).
- NG >> Repair or replace damaged parts.

4. CHECK DTC

Perform DTC Confirmation Procedure.

- Refer to [AT-156, "DTC Confirmation Procedure"](#).

OK or NG

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

DTC P1752 INPUT CLUTCH SOLENOID VALVE

DTC P1752 INPUT CLUTCH SOLENOID VALVE

PDF:31940

Description

ACS0020W

Input clutch solenoid valve is controlled by the TCM in response to signals sent from the PNP switch, vehicle speed sensor and accelerator pedal position sensor (throttle position sensor). Gears will then be shifted to the optimum position.

CONSULT-II Reference Value

ACS003KS

Item name	Condition	Display value (Approx.)
I/C SOLENOID	Input clutch solenoid valve operates.	0.6 - 0.8 A
	Other conditions	0 - 0.05 A

On Board Diagnosis Logic

ACS0020X

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "I/C SOLENOID/CIRC" with CONSULT-II or P1752 without CONSULT-II is detected under the following conditions.
 - When TCM detects an improper voltage drop when it tries to operate the solenoid valve.
 - When TCM detects as irregular by comparing target value with monitor value.

Possible Cause

ACS0020Y

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

DTC Confirmation Procedure

ACS0020Z

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-II

1. Turn ignition switch "ON". (Do not start engine.)
2. Select "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Start engine.
4. Drive vehicle and maintain the following conditions for at least 5 consecutive seconds.

ACCELE POS: 1.5/8 - 2.0/8

Selector lever: "D" position

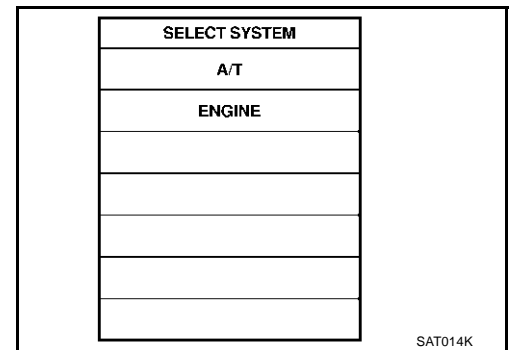
Gear position: 3rd ⇒ 4th Gear (I/C ON/OFF)

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

5. If DTC is detected go to "[AT-159, "Diagnostic Procedure"](#)".

④ WITH GST

Follow the procedure "With CONSULT-II".



SAT014K

DTC P1752 INPUT CLUTCH SOLENOID VALVE

Diagnostic Procedure

ACS002P0

1. CHECK TCM

Perform TCM input/output signal inspection. Refer to [AT-107, "TCM Input/Output Signal Reference Values"](#).

OK or NG

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

2. DETECT MALFUNCTIONING ITEM

Check the following items:

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

OK or NG

- OK >> Replace the transmission assembly. Refer to [AT-269, "Removal and Installation \(2WD Models\)"](#), [AT-272, "Removal and Installation \(AWD Models\)"](#).
- NG >> Repair or replace damaged parts.

3. CHECK DTC

Perform DTC Confirmation Procedure.

- Refer to [AT-158, "DTC Confirmation Procedure"](#).

OK or NG

- OK >> **INSPECTION END**
- NG >> GO TO 1.

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DTC P1754 INPUT CLUTCH SOLENOID VALVE FUNCTION

DTC P1754 INPUT CLUTCH SOLENOID VALVE FUNCTION

PFP:31940

Description

ACS002P1

- Input clutch solenoid valve is controlled by the TCM in response to signals sent from the PNP switch, vehicle speed sensor and accelerator pedal position sensor (throttle position sensor). Gears will then be shifted to the optimum position.
- 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.

CONSULT-II Reference Value

ACS003K1

Item name	Condition	Display value (Approx.)
I/C SOLENOID	Input clutch solenoid valve operates.	0.6 - 0.8 A
	Other conditions	0 - 0.05 A
ATF PRES SW 3	Input clutch solenoid valve operates.	OFF
	Other conditions	ON

On Board Diagnosis Logic

ACS002P2

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "I/C SOLENOID FNCTN" with CONSULT-II or P1754 without CONSULT-II is detected under the following conditions.
 - When TCM detects that actual gear ratio is irregular, and relation between gear position and condition of pressure switch 3 is irregular during depressing accelerator pedal. (Other than during shift change)
 - When TCM detects that relation between gear position and condition of ATF pressure switch 3 is irregular during releasing accelerator pedal. (Other than during shift change)

Possible Cause

ACS002P3

- Harness or connectors
(The solenoid and switch circuits are open or shorted.)
- Input clutch solenoid valve
- ATF pressure switch 3

DTC Confirmation Procedure

ACS002P4

CAUTION:

Always drive vehicle at a safe speed.

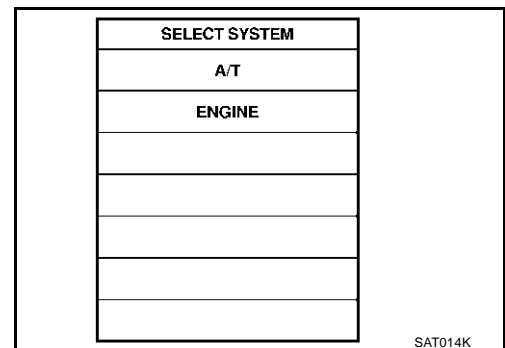
NOTE:

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

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

WITH CONSULT-II

1. Start engine.
2. Accelerate vehicle to maintain the following conditions.
ACCELE POSI: 1.5/8 - 2.0/8
Selector lever: "D" position
Gear position: 3rd ⇒ 4th Gear (I/C ON/OFF)
Driving location: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.
3. Perform step "2" again.
4. Turn ignition switch "OFF", then perform step "1" to "3" again.
5. Check "SELF-DIAG RESULTS" mode for "A/T" with CONSULT-II. If DTC (P1754) is detected, refer to [AT-161, "Diagnostic Procedure"](#).
If DTC (P1752) is detected, go to [AT-159, "Diagnostic Procedure"](#).
If DTC (P1843) is detected, go to [AT-184, "Diagnostic Procedure"](#).



DTC P1754 INPUT CLUTCH SOLENOID VALVE FUNCTION

WITH GST

Follow the procedure "With CONSULT-II".

Diagnostic Procedure

ACS002P5

1. INPUT SIGNALS

With CONSULT-II

1. Start engine.
2. Select "ECU INPUT SIGNALS" or "MAIN SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Drive vehicle in the "D" position (3rd ⇒ 4th gear), and confirm the ON/OFF actuation of the "ATF PRES SW 3".

DATA MONITOR	
MONITOR	NO DTC
ATF PRES SW 1	OFF
ATF PRES SW 2	OFF
ATF PRES SW 3	OFF
ATF PRES SW 5	OFF
ATF PRES SW 6	OFF

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PCIA0067E

With GST

Follow the procedure "With CONSULT-II".

OK or NG

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

2. CHECK TCM

Perform TCM input/output signal inspection. Refer to [AT-107, "TCM Input/Output Signal Reference Values"](#) .

OK or NG

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

3. DETECT MALFUNCTIONING ITEM

Check the following items:

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

OK or NG

- OK >> Replace the transmission assembly. Refer to [AT-269, "Removal and Installation \(2WD Models\)"](#) , [AT-272, "Removal and Installation \(AWD Models\)"](#) .
NG >> Repair or replace damaged parts.

4. CHECK DTC

Perform DTC Confirmation Procedure.

- Refer to [AT-160, "DTC Confirmation Procedure"](#) .

OK or NG

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

DTC P1757 FRONT BRAKE SOLENOID VALVE

DTC P1757 FRONT BRAKE SOLENOID VALVE

PF3:31940

Description

ACS002P6

Front brake solenoid valve is controlled by the TCM in response to signals sent from the PNP switch, vehicle speed sensor and accelerator pedal position sensor (throttle position sensor). Gears will then be shifted to the optimum position.

CONSULT-II Reference Value

ACS003KJ

Item name	Condition	Display value (Approx.)
FR/B SOLENOID	Front brake solenoid valve operates.	0.6 - 0.8 A
	Other conditions	0 - 0.05 A

On Board Diagnosis Logic

ACS002P7

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "FR/B SOLENOID/CIRC" with CONSULT-II or P1757 without CONSULT-II is detected under the following conditions.
 - When TCM detects an improper voltage drop when it tries to operate the solenoid valve.
 - When TCM detects as irregular by comparing target value with monitor value.

Possible Cause

ACS002P8

- Harness or connectors
(The solenoid circuit is open or shorted.)
- Front brake solenoid valve

DTC Confirmation Procedure

ACS002P9

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

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

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

WITH CONSULT-II

1. Turn ignition switch "ON". (Do not start engine.)
2. Select "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Start engine.
4. Drive vehicle and maintain the following conditions for at least 5 consecutive seconds.

ACCELE POS: 1.5/8 - 2.0/8

Selector lever: "D" position

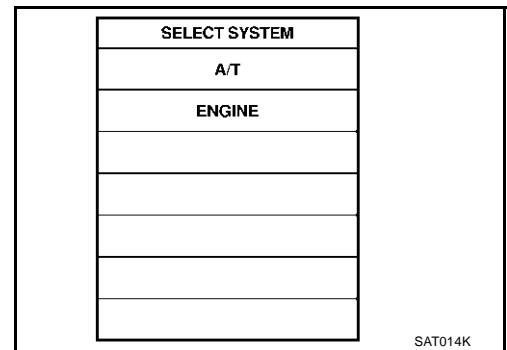
Gear position: 3rd ⇒ 4th Gear (FR/B ON/OFF)

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

5. If DTC is detected go to [AT-163, "Diagnostic Procedure"](#).

WITH GST

Follow the procedure "With CONSULT-II".



DTC P1757 FRONT BRAKE SOLENOID VALVE

Diagnostic Procedure

ACS002PA

1. CHECK TCM

Perform TCM input/output signal inspection. Refer to [AT-107, "TCM Input/Output Signal Reference Values"](#).

OK or NG

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

2. DETECT MALFUNCTIONING ITEM

Check the following items:

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

OK or NG

- OK >> Replace the transmission assembly. Refer to [AT-269, "Removal and Installation \(2WD Models\)"](#), [AT-272, "Removal and Installation \(AWD Models\)"](#).
- NG >> Repair or replace damaged parts.

3. CHECK DTC

Perform DTC Confirmation Procedure.

- Refer to [AT-162, "DTC Confirmation Procedure"](#).

OK or NG

- OK >> **INSPECTION END**
- NG >> GO TO 1.

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DTC P1759 FRONT BRAKE SOLENOID VALVE FUNCTION

DTC P1759 FRONT BRAKE SOLENOID VALVE FUNCTION

PFP:31940

Description

ACS002PB

- Front brake solenoid valve is controlled by the TCM in response to signals sent from the PNP switch, vehicle speed sensor and accelerator pedal position sensor (throttle position sensor). Gears will then be shifted to the optimum position.
- 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.

CONSULT-II Reference Value

ACS003KK

Item name	Condition	Display value (Approx.)
FR/B SOLENOID	Front brake solenoid valve operates.	0.6 - 0.8 A
	Other conditions	0 - 0.05 A
ATF PRES SW 1	Front brake solenoid valve operates.	ON
	Other conditions	OFF

On Board Diagnosis Logic

ACS002PC

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "FR/B SOLENOID FNCT" with CONSULT-II or P1759 without CONSULT-II is detected under the following conditions.
 - When TCM detects that actual gear ratio is irregular, and relation between gear position and condition of ATF pressure switch 1 is irregular during depressing accelerator pedal. (Other than during shift change)
 - When TCM detects that relation between gear position and condition of ATF pressure switch 1 is irregular during releasing accelerator pedal. (Other than during shift change)

Possible Cause

ACS002PD

- Harness or connectors
(The solenoid and switch circuits are open or shorted.)
- Front brake solenoid valve
- ATF pressure switch 1

DTC Confirmation Procedure

ACS002PE

CAUTION:

Always drive vehicle at a safe speed.

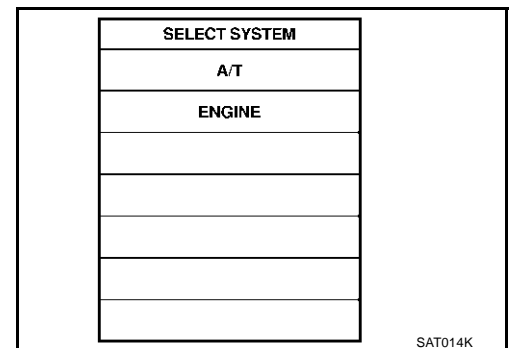
NOTE:

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

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

WITH CONSULT-II

1. Start engine.
2. Accelerate vehicle to maintain the following conditions.
ACCELE POS: 1.5/8 - 2.0/8
Selector lever: "D" position
Gear position: 3rd ⇒ 4th Gear (FR/B ON/OFF)
Driving location: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.
3. Perform step "2" again.
4. Turn ignition switch "OFF", then perform step "1" to "3" again.
5. Check "SELF-DIAG RESULTS" mode for "A/T" with CONSULT-II. If DTC (P1759) is detected, refer to [AT-165, "Diagnostic Procedure"](#).
If DTC (P1757) is detected, go to [AT-163, "Diagnostic Procedure"](#).
If DTC (P1841) is detected, go to [AT-182, "Diagnostic Procedure"](#).



DTC P1759 FRONT BRAKE SOLENOID VALVE FUNCTION

WITH GST

Follow the procedure "With CONSULT-II".

Diagnostic Procedure

ACS002PF

1. INPUT SIGNALS

With CONSULT-II

1. Start engine.
2. Select "ECU INPUT SIGNALS" or "MAIN SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Drive vehicle in the "D" position (3rd ⇒ 4th gear), and confirm the ON/OFF actuation of the "ATF PRES SW 1".

DATA MONITOR	
MONITOR	NO DTC
ATF PRES SW 1	OFF
ATF PRES SW 2	OFF
ATF PRES SW 3	OFF
ATF PRES SW 5	OFF
ATF PRES SW 6	OFF

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With GST

Follow the procedure "With CONSULT-II".

OK or NG

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

2. CHECK TCM

Perform TCM input/output signal inspection. Refer to [AT-107, "TCM Input/Output Signal Reference Values"](#).

OK or NG

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

3. DETECT MALFUNCTIONING ITEM

Check the following items:

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

OK or NG

- OK >> Replace the transmission assembly. Refer to [AT-269, "Removal and Installation \(2WD Models\)"](#), [AT-272, "Removal and Installation \(AWD Models\)"](#).
- NG >> Repair or replace damaged parts.

4. CHECK DTC

Perform DTC Confirmation Procedure.

- Refer to [AT-165, "Diagnostic Procedure"](#).

OK or NG

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

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DTC P1762 DIRECT CLUTCH SOLENOID VALVE

DTC P1762 DIRECT CLUTCH SOLENOID VALVE

PF3:31940

Description

ACS002PG

Direct clutch solenoid valve is controlled by the TCM in response to signals sent from the PNP switch, vehicle speed sensor and accelerator pedal position sensor (throttle position sensor). Gears will then be shifted to the optimum position.

CONSULT-II Reference Value

ACS003KL

Item name	Condition	Display value (Approx.)
D/C SOLENOID	Direct clutch solenoid valve operates.	0.6 - 0.8 A
	Other conditions	0 - 0.05 A

On Board Diagnosis Logic

ACS002PH

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "D/C SOLENOID/CIRC" with CONSULT-II or P1762 without CONSULT-II is detected under the following conditions.
 - When TCM detects an improper voltage drop when it tries to operate the solenoid valve.
 - When TCM detects as irregular by comparing target value with monitor value.

Possible Cause

ACS002PI

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

DTC Confirmation Procedure

ACS002PJ

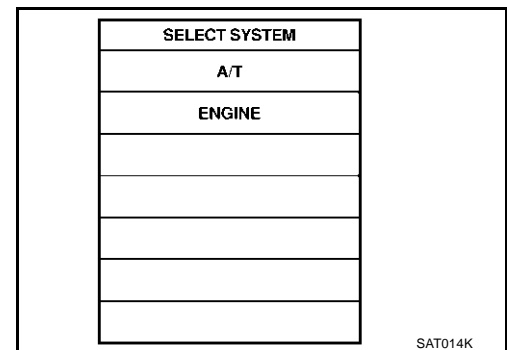
NOTE:

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

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

WITH CONSULT-II

1. Turn ignition switch "ON". (Do not start engine.)
2. Select "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Start engine.
4. Drive vehicle and maintain the following conditions for at least 5 consecutive seconds.
ACCELE POS: 1.5/8 - 2.0/8
Selector lever: "D" position
Gear position: 1st ⇒ 2nd Gear (D/C ON/OFF)
Driving location: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.
5. If DTC is detected, go to [AT-167, "Diagnostic Procedure"](#).



WITH GST

Follow the procedure "With CONSULT-II".

DTC P1762 DIRECT CLUTCH SOLENOID VALVE

Diagnostic Procedure

ACS002PK

1. CHECK TCM

Perform TCM input/output signal inspection. Refer to [AT-107, "TCM Input/Output Signal Reference Values"](#).

OK or NG

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

2. DETECT MALFUNCTIONING ITEM

Check the following items:

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

OK or NG

- OK >> Replace the transmission assembly. Refer to [AT-269, "Removal and Installation \(2WD Models\)"](#), [AT-272, "Removal and Installation \(AWD Models\)"](#).
- NG >> Repair or replace damaged parts.

3. CHECK DTC

Perform DTC Confirmation Procedure.

- Refer to [AT-166, "DTC Confirmation Procedure"](#).

OK or NG

- OK >> **INSPECTION END**
- NG >> GO TO 1.

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DTC P1764 DIRECT CLUTCH SOLENOID VALVE FUNCTION

DTC P1764 DIRECT CLUTCH SOLENOID VALVE FUNCTION

PFP:31940

Description

ACS002PL

- Direct clutch solenoid valve is controlled by the TCM in response to signals sent from the PNP switch, vehicle speed sensor and accelerator pedal position sensor (throttle position sensor). Gears will then be shifted to the optimum position.
- 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.

CONSULT-II Reference Value

ACS003KM

Item name	Condition	Display value (Approx.)
D/C SOLENOID	Direct clutch solenoid valve operates.	0.6 - 0.8 A
	Other conditions	0 - 0.05 A
ATF PRES SW 5	Direct clutch solenoid valve operates.	OFF
	Other conditions	ON

On Board Diagnosis Logic

ACS002PM

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "D/C SOLENOID FNCTN" with CONSULT-II or P1764 without CONSULT-II is detected under the following conditions.
 - When TCM detects that actual gear ratio is irregular, and relation between gear position and condition of ATF pressure switch 5 is irregular during depressing accelerator pedal. (Other than during shift change)
 - When TCM detects that relation between gear position and condition of ATF pressure switch 5 is irregular during releasing accelerator pedal. (Other than during shift change)

Possible Cause

ACS002PN

- Harness or connectors
(The solenoid and switch circuits are open or shorted.)
- Direct clutch solenoid valve
- ATF pressure switch 5

DTC Confirmation Procedure

ACS002PO

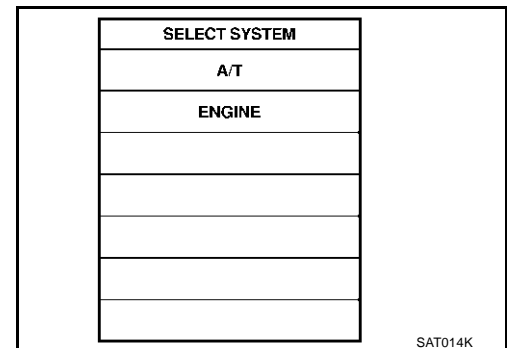
NOTE:

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

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

WITH CONSULT-II

1. Start engine.
2. Accelerate vehicle to maintain the following conditions.
ACCELE POS: 1.5/8 - 2.0/8
Selector lever: "D" position
Gear position: 1st ⇒ 2nd Gear (D/C ON/OFF)
Driving location: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.
3. Perform step "2" again.
4. Turn ignition switch "OFF", then perform step "1" to "3" again.
5. Check "SELF-DIAG RESULTS" mode for "A/T" with CONSULT-II. If DTC (P1764) is detected, refer to [AT-169, "Diagnostic Procedure"](#).
If DTC (P1762) is detected, go to [AT-167, "Diagnostic Procedure"](#).
If DTC (P1845) is detected, go to [AT-186, "Diagnostic Procedure"](#).



WITH GST

Follow the procedure "With CONSULT-II".

DTC P1764 DIRECT CLUTCH SOLENOID VALVE FUNCTION

ACS002PP

Diagnostic Procedure

1. INPUT SIGNALS

With CONSULT-II

1. Start engine.
2. Select "ECU INPUT SIGNALS" or "MAIN SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Drive vehicle in the "D" position (1st ⇒ 2nd gear), and confirm the ON/OFF actuation of the "ATF PRES SW 5".

With GST

Follow the procedure "With CONSULT-II".

OK or NG

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

DATA MONITOR			
MONITOR		NO DTC	
ATF PRES SW 1		OFF	
ATF PRES SW 2		OFF	
ATF PRES SW 3		OFF	
ATF PRES SW 5		OFF	
ATF PRES SW 6		OFF	

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2. CHECK TCM

Perform TCM input/output signal inspection. Refer to [AT-107, "TCM Input/Output Signal Reference Values"](#).

OK or NG

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

3. DETCT MALFUNCTIONING ITEM

Check the following items:

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

OK or NG

- OK >> Replace the transmission assembly. Refer to [AT-269, "Removal and Installation \(2WD Models\)"](#), [AT-272, "Removal and Installation \(AWD Models\)"](#).
- NG >> Repair or replace damaged parts.

4. CHECK DTC

Perform DTC Confirmation Procedure.

- Refer to [AT-168, "DTC Confirmation Procedure"](#).

OK or NG

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

DTC P1767 HIGH AND LOW REVERSE CLUTCH SOLENOID VALVE

DTC P1767 HIGH AND LOW REVERSE CLUTCH SOLENOID VALVE

PDF:31940

Description

ACS002PQ

High and low reverse clutch solenoid valve is controlled by the TCM in response to signals sent from the PNP switch, vehicle speed sensor and accelerator pedal position sensor (throttle position sensor). Gears will then be shifted to the optimum position.

CONSULT-II Reference Value

ACS003KN

Item name	Condition	Display value (Approx.)
HLR/C SOL	High and low reverse clutch solenoid valve operates.	0.6 - 0.8 A
	Other conditions	0 - 0.05 A

On Board Diagnosis Logic

ACS002PR

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "HLR/C SOL/CIRC" with CONSULT-II or P1767 without CONSULT-II is detected under the following conditions.
 - When TCM detects an improper voltage drop when it tries to operate the solenoid valve.
 - When TCM detects as irregular by comparing target value with monitor value.

Possible Cause

ACS002PS

- Harness or connectors
(The solenoid circuit is open or shorted.)
- High and low reverse clutch solenoid valve

DTC Confirmation Procedure

ACS002PT

CAUTION:

Always drive vehicle at a safe speed.

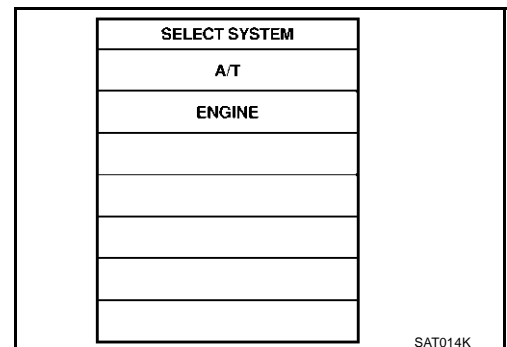
NOTE:

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

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

WITH CONSULT-II

1. Turn ignition switch "ON". (Do not start engine.)
2. Select "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Start engine.
4. Drive vehicle and maintain the following conditions for at least 5 consecutive seconds.
ACCELE POS: 1.5/8 - 2.0/8
Selector lever: "D" position
Gear position: 2nd ⇒ 3rd Gear (HLR/C ON/OFF)
Driving location: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.
5. If DTC is detected, go to [AT-171, "Diagnostic Procedure"](#).



WITH GST

Follow the procedure "With CONSULT-II".

DTC P1767 HIGH AND LOW REVERSE CLUTCH SOLENOID VALVE

Diagnostic Procedure

ACS002PU

1. CHECK TCM

Perform TCM input/output signal inspection. Refer to [AT-107, "TCM Input/Output Signal Reference Values"](#).

OK or NG

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

2. DETECT MALFUNCTIONING ITEM

Check the following items:

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

OK or NG

- OK >> Replace the transmission assembly. Refer to [AT-269, "Removal and Installation \(2WD Models\)"](#), [AT-272, "Removal and Installation \(AWD Models\)"](#).
- NG >> Repair or replace damaged parts.

3. CHECK DTC

Perform DTC Confirmation Procedure.

- Refer to [AT-170, "DTC Confirmation Procedure"](#).

OK or NG

- OK >> **INSPECTION END**
- NG >> GO TO 1.

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DTC P1769 HIGH AND LOW REVERSE CLUTCH SOLENOID VALVE FUNCTION

DTC P1769 HIGH AND LOW REVERSE CLUTCH SOLENOID VALVE FUNCTION

PFP:31940

Description

ACS002PV

- High and low reverse clutch solenoid valve is controlled by the TCM in response to signals sent from the PNP switch, vehicle speed sensor and accelerator pedal position sensor (throttle position sensor). Gears will then be shifted to the optimum position.
- 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.

CONSULT-II Reference Value

ACS003KO

Item name	Condition	Display value (Approx.)
HLR/C SOL	High and low reverse clutch solenoid valve operates.	0.6 - 0.8 A
	Other conditions	0 - 0.05 A
ATF PRES SW 6	High and low reverse clutch solenoid valve operates.	OFF
	Other conditions	ON

On Board Diagnosis Logic

ACS002PW

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "HLR/C SOL FNCTN" with CONSULT-II or P1769 without CONSULT-II is detected under the following conditions.
 - When TCM detects that actual gear ratio is irregular, and relation between gear position and condition of ATF pressure switch 6 is irregular during depressing accelerator pedal. (Other than during shift change)
 - When TCM detects that relation between gear position and condition of ATF pressure switch 6 is irregular during releasing accelerator pedal. (Other than during shift change)

Possible Cause

ACS002PX

- Harness or connectors
(The solenoid and switch circuits are open or shorted.)
- High and low reverse clutch solenoid valve
- ATF pressure switch 6

DTC Confirmation Procedure

ACS002PY

CAUTION:

Always drive vehicle at a safe speed.

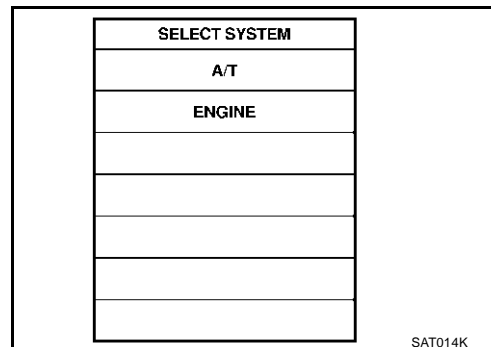
NOTE:

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

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

WITH CONSULT-II

1. Start engine.
2. Accelerate vehicle to maintain the following conditions.
ACCELE POS: 1.5/8 - 2.0/8
Selector lever: "D" position
Gear position: 2nd ⇒ 3rd Gear (HLR/C ON/OFF)
Driving location: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.
3. Perform step "2" again.
4. Turn ignition switch "OFF", then perform step "1" to "3" again.
5. Check "SELF-DIAG RESULTS" mode for "A/T" with CONSULT-II. If DTC (P1769) is detected, refer to [AT-173, "Diagnostic Procedure"](#). If DTC (P1767) is detected, go to [AT-171, "Diagnostic Procedure"](#).



DTC P1769 HIGH AND LOW REVERSE CLUTCH SOLENOID VALVE FUNCTION

If DTC (P1846) is detected, go to [AT-188, "Diagnostic Procedure"](#).

WITH GST

Follow the procedure "With CONSULT-II".

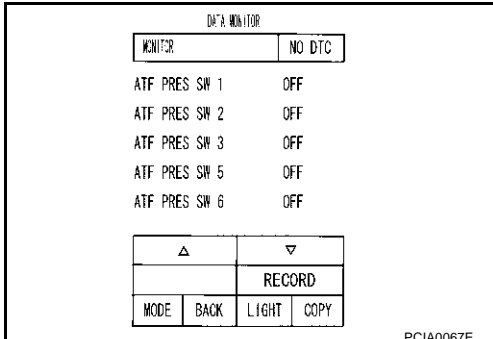
Diagnostic Procedure

ACS002PZ

1. INPUT SIGNALS

With CONSULT-II

1. Start the engine.
2. Select "ECU INPUT SIGNALS" or "MAIN SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Drive vehicle in the "D" position (2nd ⇒ 3rd gear), and confirm the ON/OFF actuation of the "ATF PRES SW 6".



DATA MONITOR	
MONITOR	NO DTC
ATF PRES SW 1	OFF
ATF PRES SW 2	OFF
ATF PRES SW 3	OFF
ATF PRES SW 5	OFF
ATF PRES SW 6	OFF

▲	▼		
RECORD			
MODE	BACK	LIGHT	COPY

PCIA0067E

With GST

Follow the procedure "With CONSULT-II".

OK or NG

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

2. CHECK TCM

Perform TCM input/output signal inspection. Refer to [AT-107, "TCM Input/Output Signal Reference Values"](#).

OK or NG

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

3. DETECT MALFUNCTIONING ITEM

Check the following items:

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

OK or NG

- OK >> Replace the transmission assembly. Refer to [AT-269, "Removal and Installation \(2WD Models\)"](#), [AT-272, "Removal and Installation \(AWD Models\)"](#).
- NG >> Repair or replace damaged parts.

4. CHECK DTC

Perform DTC Confirmation Procedure.

- Refer to [AT-172, "DTC Confirmation Procedure"](#).

OK or NG

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

DTC P1772 LOW COAST BRAKE SOLENOID VALVE

DTC P1772 LOW COAST BRAKE SOLENOID VALVE

PFP:31940

Description

ACS002Q0

Low coast brake solenoid valve is turned "ON" or "OFF" by the TCM in response to signals sent from the PNP switch, vehicle speed sensor and accelerator pedal position sensor (throttle position sensor). Gears will then be shifted to the optimum position.

CONSULT-II Reference Value

ACS003KP

Item name	Condition	Display value
ON OFF SOL	Low coast brake solenoid valve operates.	ON
	Other conditions	OFF

On Board Diagnosis Logic

ACS002Q1

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "LC/B SOLENOID/CIRC" with CONSULT-II or P1772 without CONSULT-II is detected when TCM detects an improper voltage drop when it tries to operate the solenoid valve.

Possible Cause

ACS002Q2

- Harness or connectors
(The solenoid circuit is open or shorted.)
- Low coast brake solenoid valve

DTC Confirmation Procedure

ACS002Q3

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.

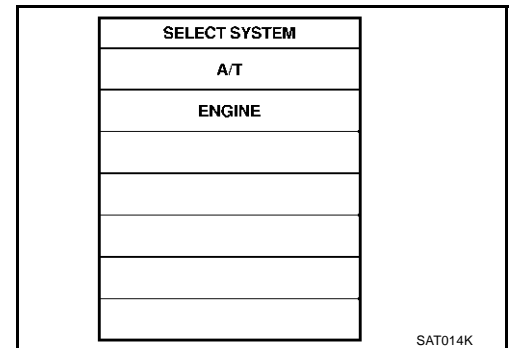
④ WITH CONSULT-II

1. Turn ignition switch "ON". (Do not start engine.)
2. Select "DATA MONITOR" mode for "ENGINE" with CONSULT-II.
3. Start engine.
4. Drive vehicle and maintain the following conditions for at least 5 consecutive seconds.

Selector lever: "M" position

Gear position: "M1-1st" or "M2-2nd" gear (LC/B ON/OFF)

5. If DTC is detected, go to [AT-175, "Diagnostic Procedure"](#).



SAT014K

④ WITH GST

Follow the procedure "With CONSULT-II".

DTC P1772 LOW COAST BRAKE SOLENOID VALVE

Diagnostic Procedure

ACS002Q4

1. CHECK TCM

Perform TCM input/output signal inspection. Refer to [AT-107, "TCM Input/Output Signal Reference Values"](#) .

OK or NG

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

2. DETECT MALFUNCTIONING ITEM

Check the following items:

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

OK or NG

- OK >> Replace the transmission assembly. Refer to [AT-269, "Removal and Installation \(2WD Models\)"](#) , [AT-272, "Removal and Installation \(AWD Models\)"](#) .
- NG >> Repair or replace damaged parts.

3. CHECK DTC

Perform DTC Confirmation Procedure.

- Refer to [AT-174, "DTC Confirmation Procedure"](#) .

OK or NG

- OK >> **INSPECTION END**
- NG >> GO TO 1.

A

B

AT

D

E

F

G

H

I

J

K

L

M

DTC P1774 LOW COAST BRAKE SOLENOID VALVE FUNCTION

DTC P1774 LOW COAST BRAKE SOLENOID VALVE FUNCTION

PFP:31940

Description

ACS002Q5

- Low coast brake solenoid valve is turned “ON” or “OFF” by the TCM in response to signals sent from the PNP switch, vehicle speed sensor and accelerator pedal position sensor (throttle position sensor). Gears will then be shifted to the optimum position.
- 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.

CONSULT-II Reference Value

ACS003KQ

Item name	Condition	Display value
ON OFF SOL	Low coast brake solenoid valve operates.	ON
	Other conditions	OFF
ATF PRES SW 2	Low coast brake solenoid valve operates.	ON
	Other conditions	OFF

On Board Diagnosis Logic

ACS002Q6

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “LC/B SOLENOID FNCT” with CONSULT-II or P1774 without CONSULT-II is detected under the following conditions.
 - When TCM detects that actual gear ratio is irregular, and relation between gear position and condition of ATF pressure switch 2 is irregular during depressing accelerator pedal. (Other than during shift change)
 - When TCM detects that relation between gear position and condition of ATF pressure switch 2 is irregular during releasing accelerator pedal. (Other than during shift change)

Possible Cause

ACS002Q7

- Harness or connectors
(The solenoid and switch circuits are open or shorted.)
- Low coast brake solenoid valve
- ATF pressure switch 2

DTC Confirmation Procedure

ACS002Q8

CAUTION:

Always drive vehicle at a safe speed.

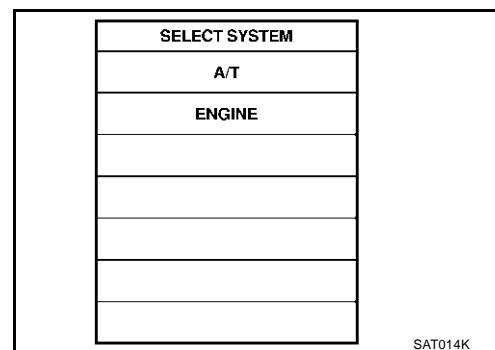
NOTE:

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

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

WITH CONSULT-II

1. Start engine.
2. Accelerate vehicle to maintain the following conditions.
Selector lever: “M” position
Gear position: “M1-1st” or “M2-2nd” gear (LC/B ON/OFF)
3. Perform step “2” again.
4. Turn ignition switch “OFF”, then perform step “1” to “3” again.
5. Check “SELF-DIAG RESULTS” mode for “A/T” with CONSULT-II. If DTC (P1774) is detected, refer to [AT-177. "Diagnostic Procedure"](#).
If DTC (P1772) is detected, go to [AT-175. "Diagnostic Procedure"](#).



WITH GST

Follow the procedure “With CONSULT-II”.

DTC P1774 LOW COAST BRAKE SOLENOID VALVE FUNCTION

Diagnostic Procedure

ACS002Q9

1. INPUT SIGNALS

With CONSULT-II

1. Start the engine.
2. Select "ECU INPUT SIGNALS" or "MAIN SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Drive vehicle in the manual mode ("M1-1st" or "M2-2nd" gear), and confirm the ON/OFF actuation of the "ATF PRES SW 2".

With GST

Follow the procedure "With CONSULT-II".

OK or NG

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

DATA MONITOR			
MONITOR		NO DTC	
ATF PRES SW 1		OFF	
ATF PRES SW 2		OFF	
ATF PRES SW 3		OFF	
ATF PRES SW 5		OFF	
ATF PRES SW 6		OFF	

△		▽	
RECORD			
MODE	BACK	LIGHT	COPY

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2. CHECK TCM

Perform TCM input/output signal inspection. Refer to [AT-107, "TCM Input/Output Signal Reference Values"](#).

OK or NG

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

3. DETECT MALFUNCTIONING ITEM

Check the following items:

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

OK or NG

- OK >> Replace the transmission assembly. Refer to [AT-269, "Removal and Installation \(2WD Models\)"](#), [AT-272, "Removal and Installation \(AWD Models\)"](#).
- NG >> Repair or replace damaged parts.

4. CHECK DTC

Perform DTC Confirmation Procedure.

- Refer to [AT-176, "DTC Confirmation Procedure"](#).

OK or NG

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

DTC P1815 MANUAL MODE SWITCH

DTC P1815 MANUAL MODE SWITCH

PFP:34901

Description

ACS002QA

When an impossible pattern of switch signals is detected, this is judged to be an irregularity.

CONSULT-II Reference Value in Data Monitor Mode

ACS002QB

Monitor Item	Condition	Reference Value
MANU MODE SW [ON - OFF]	Manual shift gate position (neutral)	ON
	Other than the above	OFF
NON M-MODE SW [ON - OFF]	Manual shift gate position	OFF
	Other than the above	ON
UP SW LEVER [ON - OFF]	Select lever: + side	ON
	Other than the above	OFF
DOWN SW LEVER [ON - OFF]	Select lever: - side	ON
	Other than the above	OFF

On Board Diagnosis Logic

ACS002QC

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code "MANU MODE SW/CIR" with CONSULT-II is detected when TCM monitors Manual mode, Non manual mode, Up or Down switch signal, and detects as irregular when impossible input pattern occurs 1 second or more.

Possible Cause

ACS002QD

- Harness or connectors (These switches circuit is open or shorted.)
- Mode select switch (Into control device)
- Position select switch (Into control device)

DTC Confirmation Procedure

ACS002QE

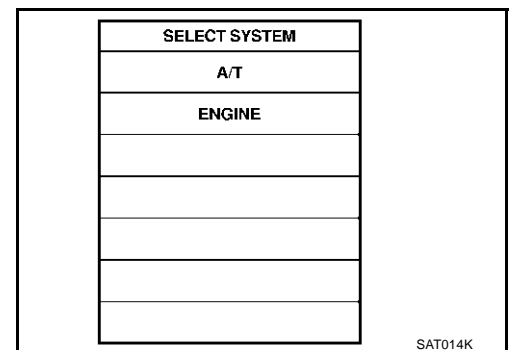
NOTE:

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

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

WITH CONSULT-II

1. Turn ignition switch "ON". (Do not start engine.)
2. Select "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Move selector lever to "M" position.
4. Start engine and drive vehicle for at least 2 consecutive seconds.
5. If DTC is detected, go to [AT-178, "Diagnostic Procedure"](#).



SAT014K

Diagnostic Procedure

ACS002QF

1. CHECK CAN COMMUNICATION LINE

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

Yes or No

- Yes >> Check CAN communication line. Refer to [AT-122, "DTC U1000 CAN COMMUNICATION LINE"](#).
No >> GO TO 2.

DTC P1815 MANUAL MODE SWITCH

2. CHECK MANUAL MODE SWITCH CIRCUIT

With CONSULT-II

1. Turn ignition switch "ON". (Do not start engine.)
2. Select "UNIFIED METER AND A/C AMP INPUT SIGNALS" in "DATA MONITOR" mode for "METER A/C AMP" with CONSULT-II.
3. Read out ON/OFF switching action of the "AT-M GEAR".

DATA MONITOR	
MONITOR	
AT-M IND	OFF
AT-M GEAR	OFF
P RANGE IND	ON
R RANGE IND	OFF
N RANGE IND	OFF
D RANGE IND	OFF

PKIA2062E

Without CONSULT-II

Drive vehicle in the manual mode, and confirm that the actual gear position and the meter's indication of the position mutually coincide when the selector lever is shifted to the "+ (up)" or "- (down)" side (1st ↔ 5th gear).

OK or NG

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

3. DETECT MALFUNCTIONING ITEM

Check the following items.

- Manual mode switch. Refer to [AT-180, "Component Inspection"](#).
- Pin terminals for damage or loose connection with harness connector.
- Open circuit or short to ground or short to power in harness or connector for A/T device (manual mode switch).

OK or NG

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

4. CHECK TCM

Perform TCM input/output signal inspection. Refer to [AT-107, "TCM Input/Output Signal Reference Values"](#).

OK or NG

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

5. DETECT MALFUNCTIONING ITEM

Check the following items:

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

OK or NG

- OK >> Replace the transmission assembly. Refer to [AT-269, "Removal and Installation \(2WD Models\)"](#), [AT-272, "Removal and Installation \(AWD Models\)"](#).
- NG >> Repair or replace damaged parts.

DTC P1815 MANUAL MODE SWITCH

6. CHECK DTC

Perform DTC Confirmation Procedure.

- Refer to [AT-178, "DTC Confirmation Procedure"](#).

OK or NG

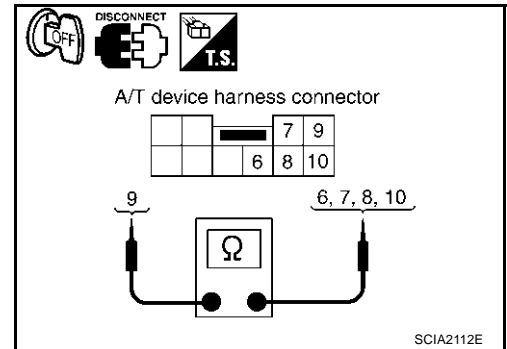
OK >> **INSPECTION END**
 NG >> GO TO 4.

Component Inspection MANUAL MODE SWITCH

ACS002QG

Check continuity between terminals.

Item	Position	Connector No.	Terminal No. (Unit side)	Continuity
Manual mode (select) switch	Auto	M67	9 - 10	Yes
	Manual		6 - 9	
UP switch	UP		8 - 9	
DOWN switch	DOWN		7 - 9	



Position Indicator Lamp DIAGNOSTIC PROCEDURE

ACS002QH

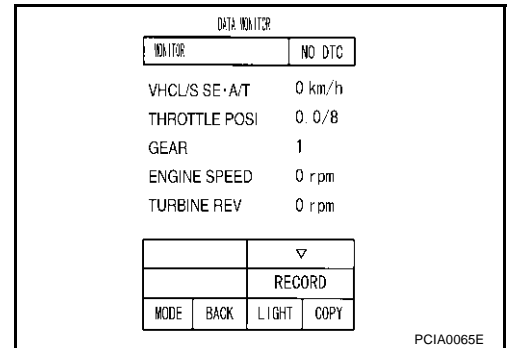
1. CHECK INPUT SIGNALS (WITH CONSULT-II)

With CONSULT-II

- Start engine.
- Select "MAIN SIGNALS" in "DATA MONITOR" mode for A/T with CONSULT-II and read out the value of "GEAR".
- Drive vehicle in the manual mode, and confirm that the actual gear position and the meter's indication of the position mutually coincide when the select lever is shifted to the "+" (up) or "-" (down) side (1st ↔ 5th gear).

OK or NG

OK >> **INSPECTION END**
 NG >> Check the following items.



Position Indicator Lamp Symptom Chart

Items	Presumed Location of Trouble
The actual gear position does not change, or shifting into the manual mode is not possible (no gear shifting in the manual mode possible). The position indicator lamp is not indicated.	Manual mode switch Refer to AT-178, "DTC P1815 MANUAL MODE SWITCH" . A/T main system (Fail-safe function actuated) <ul style="list-style-type: none"> Refer to AT-109, "SELF-DIAGNOSTIC PROCEDURE (WITH CONSULT-II)".
The actual gear position changes, but the position indicator lamp is not indicated.	Perform the self-diagnosis function. <ul style="list-style-type: none"> Refer to AT-109, "SELF-DIAGNOSTIC PROCEDURE (WITH CONSULT-II)".
The actual gear position and the indication on the position indicator lamp do not coincide.	Perform the self-diagnosis function. <ul style="list-style-type: none"> Refer to AT-109, "SELF-DIAGNOSTIC PROCEDURE (WITH CONSULT-II)".
Only a specific position or positions is/are not indicated on the position indicator lamp.	Check the unified meter and A/C amp. Refer to DI-4, "COMBINATION METERS" .

DTC P1841 ATF PRESSURE SWITCH 1

DTC P1841 ATF PRESSURE SWITCH 1

PFP:25240

Description

ACS002QI

Fail-safe function to detect front brake clutch solenoid valve condition.

CONSULT-II Reference Value

ACS003KR

Item name	Condition	Display value
ATF PRES SW 1	Front brake solenoid valve operates.	ON
	Other conditions	OFF

On Board Diagnosis Logic

ACS002QJ

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code "ATF PRES SW 1/CIRC" with CONSULT-II is detected when TCM detects that actual gear ratio is normal, and relation between gear position and condition of ATF pressure switch 1 is irregular during depressing accelerator pedal. (Other than during shift change)

Possible Cause

ACS002QK

- ATF pressure switch 1
- Harness or connectors
(The switch circuit is open or shorted.)

DTC Confirmation Procedure

ACS002QL

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

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

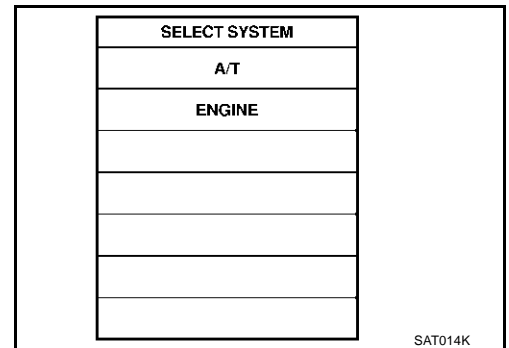
After the repair, perform the following procedure to confirm the malfunction is eliminated.

Ⓟ WITH CONSULT-II

1. Start engine.
2. Accelerate vehicle to maintain the following conditions.
ACCELE POS: 1.5/8 - 2.0/8
Selector lever: "D" position
Gear position: 3rd ⇒ 4th Gear (FR/B ON/OFF)
Driving location: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.
3. Perform step "2" again.
4. Turn ignition switch "OFF", then perform step "1" to "3" again.
5. Check "SELF-DIAG RESULTS" mode for "A/T" with CONSULT-II.

If DTC (P1841) is detected, go to [AT-182. "Diagnostic Procedure"](#) .

If DTC (P1757) is detected, go to [AT-163. "Diagnostic Procedure"](#) .



DTC P1841 ATF PRESSURE SWITCH 1

ACS002QM

Diagnostic Procedure

1. INPUT SIGNALS (WITH CONSULT-II)

Ⓜ With CONSULT-II

1. Start engine.
2. Select "ECU INPUT SIGNALS" or "MAIN SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Drive vehicle in the "D" position (3rd ⇒ 4th gear), and confirm the ON/OFF actuation of the "ATF PRES SW 1".

OK or NG

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

DATA MONITOR			
MONITOR		NO. DTC	
ATF PRES SW 1		OFF	
ATF PRES SW 2		OFF	
ATF PRES SW 3		OFF	
ATF PRES SW 5		OFF	
ATF PRES SW 6		OFF	

△		▽	
RECORD			
MODE	BACK	LIGHT	COPY

PCIA0067E

2. CHECK TCM

Perform TCM input/output signal inspection. Refer to [AT-107, "TCM Input/Output Signal Reference Values"](#).

OK or NG

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

3. DETECT MALFUNCTIONING ITEM

Check the following items:

- Power supply and ground circuit for TCM.
- A/T assembly harness connector pin terminals for damage or loose connection with harness connector.

OK or NG

- OK >> Replace the transmission assembly. Refer to [AT-269, "Removal and Installation \(2WD Models\)"](#), [AT-272, "Removal and Installation \(AWD Models\)"](#).
- NG >> Repair or replace damaged parts.

4. CHECK DTC

Perform DTC Confirmation Procedure.

- Refer to [AT-181, "DTC Confirmation Procedure"](#).

OK or NG

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

DTC P1843 ATF PRESSURE SWITCH 3

DTC P1843 ATF PRESSURE SWITCH 3

PFP:25240

Description

ACS002QN

Fail-safe function to detect input clutch solenoid valve condition.

CONSULT-II Reference Value

ACS003JZ

Item name	Condition	Display value
ATF PRES SW 3	Input clutch solenoid valve operates.	OFF
	Other conditions	ON

On Board Diagnosis Logic

ACS002QO

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code "ATF PRES SW 3/CIRC" with CONSULT-II is detected when TCM detects that actual gear ratio is normal, and relation between gear position and condition of ATF pressure switch 3 is irregular during depressing accelerator pedal. (Other than during shift change)

Possible Cause

ACS002QP

- ATF pressure switch 3
- Harness or connectors
(The switch circuit is open or shorted.)

DTC Confirmation Procedure

ACS002QQ

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

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

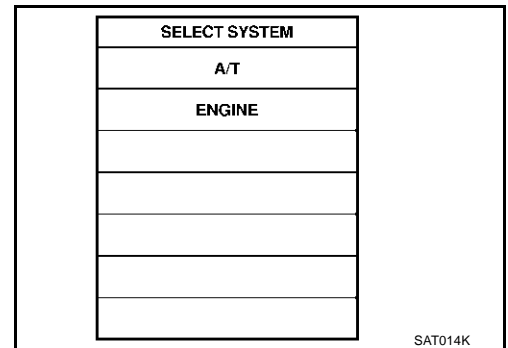
After the repair, perform the following procedure to confirm the malfunction is eliminated.

Ⓟ WITH CONSULT-II

1. Start engine.
2. Accelerate vehicle to maintain the following conditions.
ACCELE POS: 1.5/8 - 2.0/8
Selector lever: "D" position
Gear position: 3rd ⇒ 4th Gear (I/C ON/OFF)
Driving location: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.
3. Perform step "2" again.
4. Turn ignition switch "OFF", then perform step "1" to "3" again.
5. Check "SELF-DIAG RESULTS" mode for "A/T" with CONSULT-II.

If DTC (P1843) is detected, go to [AT-184. "Diagnostic Procedure"](#) .

If DTC (P1752) is detected, go to [AT-159. "Diagnostic Procedure"](#) .



DTC P1843 ATF PRESSURE SWITCH 3

ACS002QR

Diagnostic Procedure

1. INPUT SIGNALS (WITH CONSULT-II)

Ⓜ With CONSULT-II

1. Start engine.
2. Select "ECU INPUT SIGNALS" or "MAIN SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Drive vehicle in the "D" position (3rd ⇒ 4th gear), and confirm the ON/OFF actuation of the "ATF PRES SW 3".

OK or NG

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

DATA MONITOR			
MONITOR		NO. DTC	
ATF PRES SW 1		OFF	
ATF PRES SW 2		OFF	
ATF PRES SW 3		OFF	
ATF PRES SW 5		OFF	
ATF PRES SW 6		OFF	

▲		▼	
RECORD			
MODE	BACK	LIGHT	COPY

PCIA0067E

2. CHECK TCM

Perform TCM input/output signal inspection. Refer to [AT-107, "TCM Input/Output Signal Reference Values"](#).

OK or NG

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

3. DETECT MALFUNCTIONING ITEM

Check the following items:

- Power supply and ground circuit for TCM.
- A/T assembly harness connector pin terminals for damage or loose connection with harness connector.

OK or NG

- OK >> Replace the transmission assembly. Refer to [AT-269, "Removal and Installation \(2WD Models\)"](#), [AT-272, "Removal and Installation \(AWD Models\)"](#).
- NG >> Repair or replace damaged parts.

4. CHECK DTC

Perform DTC Confirmation Procedure.

- Refer to [AT-183, "DTC Confirmation Procedure"](#).

OK or NG

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

DTC P1845 ATF PRESSURE SWITCH 5

DTC P1845 ATF PRESSURE SWITCH 5

PFP:25240

Description

ACS002QS

Fail-safe function to detect direct clutch solenoid valve condition.

CONSULT-II Reference Value

ACS003K0

Item name	Condition	Display value
ATF PRES SW 5	Direct clutch solenoid valve operates.	OFF
	Other conditions	ON

On Board Diagnosis Logic

ACS002QT

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code "ATF PRES SW 5/CIRC" with CONSULT-II is detected when TCM detects that actual gear ratio is normal, and relation between gear position and condition of ATF pressure switch 5 is irregular during depressing accelerator pedal. (Other than during shift change)

Possible Cause

ACS002QU

- ATF pressure switch 5
- Harness or connectors
(The switch circuit is open or shorted.)

DTC Confirmation Procedure

ACS002QV

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

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

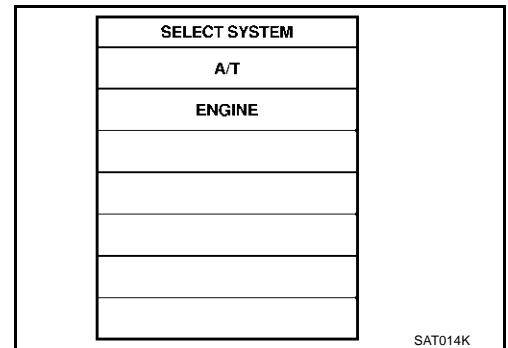
After the repair, perform the following procedure to confirm the malfunction is eliminated.

Ⓟ WITH CONSULT-II

1. Start engine.
2. Accelerate vehicle to maintain the following conditions.
ACCELE POS: 1.5/8 - 2.0/8
Selector lever: "D" position
Gear position: 1st ⇒ 2nd Gear (D/C ON/OFF)
Driving location: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.
3. Perform step "2" again.
4. Turn ignition switch "OFF", then perform step "1" to "3" again.
5. Check "SELF-DIAG RESULTS" mode for "A/T" with CONSULT-II.

If DTC (P1845) is detected, go to [AT-186. "Diagnostic Procedure"](#) .

If DTC (P1762) is detected, go to [AT-167. "Diagnostic Procedure"](#) .



DTC P1845 ATF PRESSURE SWITCH 5

ACS002QW

Diagnostic Procedure

1. INPUT SIGNALS (WITH CONSULT-II)

Ⓜ With CONSULT-II

1. Start engine.
2. Select "ECU INPUT SIGNALS" or "MAIN SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Drive vehicle in the "D" position (1st ⇒ 2nd gear), and confirm the ON/OFF actuation of the "ATF PRES SW 5".

OK or NG

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

DATA MONITOR	
MONITOR	NO. DTC
ATF PRES SW 1	OFF
ATF PRES SW 2	OFF
ATF PRES SW 3	OFF
ATF PRES SW 5	OFF
ATF PRES SW 6	OFF

Δ	▽		
RECORD			
MODE	BACK	LIGHT	COPY

PCIA0067E

2. CHECK TCM

Perform TCM input/output signal inspection. Refer to [AT-107, "TCM Input/Output Signal Reference Values"](#).

OK or NG

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

3. DETECT MALFUNCTIONING ITEM

Check the following items:

- Power supply and ground circuit for TCM.
- A/T assembly harness connector pin terminals for damage or loose connection with harness connector.

OK or NG

- OK >> Replace the transmission assembly. Refer to [AT-269, "Removal and Installation \(2WD Models\)"](#), [AT-272, "Removal and Installation \(AWD Models\)"](#).
- NG >> Repair or replace damaged parts.

4. CHECK DTC

Perform DTC Confirmation Procedure.

- Refer to [AT-185, "DTC Confirmation Procedure"](#).

OK or NG

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

DTC P1846 ATF PRESSURE SWITCH 6

DTC P1846 ATF PRESSURE SWITCH 6

PF2:25240

Description

ACS002QX

Fail-safe function to detect high and low reverse clutch solenoid valve condition.

CONSULT-II Reference Value

ACS003K1

Item name	Condition	Display value
ATF PRES SW 6	High and low reverse clutch solenoid valve operates.	OFF
	Other conditions	ON

On Board Diagnosis Logic

ACS002QY

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code "ATF PRES SW 6/CIRC" with CONSULT-II is detected when TCM detects that actual gear ratio is normal, and relation between gear position and condition of ATF pressure switch 6 is irregular during depressing accelerator pedal. (Other than during shift change)

Possible Cause

ACS002QZ

- ATF pressure switch 6
- Harness or connectors
(The switch circuit is open or shorted.)

DTC Confirmation Procedure

ACS002R0

CAUTION:

Always drive vehicle at a safe speed.

NOTE:

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

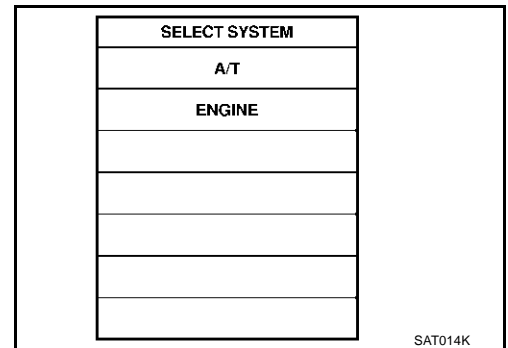
After the repair, perform the following procedure to confirm the malfunction is eliminated.

Ⓟ WITH CONSULT-II

1. Start engine.
2. Accelerate vehicle to maintain the following conditions.
ACCELE POS: 1.5/8 - 2.0/8
Selector lever: "D" position
Gear position: 2nd ⇒ 3rd Gear (HLR/C ON/OFF)
Driving location: Driving the vehicle uphill (increased engine load) will help maintain the driving conditions required for this test.
3. Perform step "2" again.
4. Turn ignition switch "OFF", then perform step "1" to "3" again.
5. Check "SELF-DIAG RESULTS" mode for "A/T" with CONSULT-II.

If DTC (P1846) is detected, go to [AT-188, "Diagnostic Procedure"](#).

If DTC (P1767) is detected, go to [AT-171, "Diagnostic Procedure"](#).



SAT014K

DTC P1846 ATF PRESSURE SWITCH 6

ACS002R1

Diagnostic Procedure

1. INPUT SIGNALS (WITH CONSULT-II)

Ⓜ With CONSULT-II

1. Start the engine.
2. Select "ECU INPUT SIGNALS" or "MAIN SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
3. Drive vehicle in the "D" position (2nd ⇒ 3rd gear), and confirm the ON/OFF actuation of the "ATF PRES SW 6".

OK or NG

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

DATA MONITOR			
MONITOR		NO. DTC	
ATF PRES SW 1		OFF	
ATF PRES SW 2		OFF	
ATF PRES SW 3		OFF	
ATF PRES SW 5		OFF	
ATF PRES SW 6		OFF	

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RECORD			
MODE	BACK	LIGHT	COPY

PCIA0067E

2. CHECK TCM

Perform TCM input/output signal inspection. Refer to [AT-107, "TCM Input/Output Signal Reference Values"](#) .

OK or NG

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

3. DETECT MALFUNCTIONING ITEM

Check the following items:

- Power supply and ground circuit for TCM.
- A/T assembly harness connector pin terminals for damage or loose connection with harness connector.

OK or NG

- OK >> Replace the transmission assembly. Refer to [AT-269, "Removal and Installation \(2WD Models\)"](#) , [AT-272, "Removal and Installation \(AWD Models\)"](#) .
NG >> Repair or replace damaged parts.

4. CHECK DTC

Perform DTC Confirmation Procedure.

- Refer to [AT-187, "DTC Confirmation Procedure"](#) .

OK or NG

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

CLOSED THROTTLE POSITION AND WIDE OPEN THROTTLE POSITION CIRCUIT

CLOSED THROTTLE POSITION AND WIDE OPEN THROTTLE POSITION CIRCUIT

PFP:18002

Diagnostic Procedure

ACS002R2

1. CHECK CAN COMMUNICATION LINE

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

YES or NO

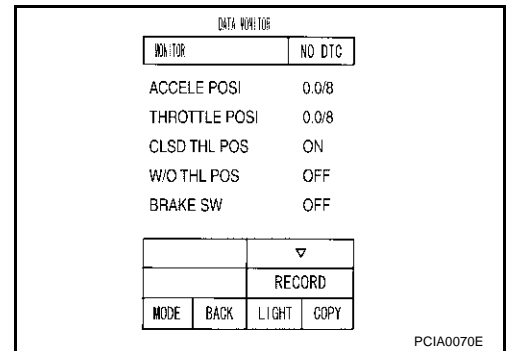
- YES >> Check CAN communication line. Refer to [AT-122, "DTC U1000 CAN COMMUNICATION LINE"](#).
 NO >> GO TO 2.

2. CHECK THROTTLE POSITION SIGNAL CIRCUIT

 **With CONSULT-II**

- Turn ignition switch "ON". (Do not start engine.)
- Select "ECU INPUT SIGNALS" in "DATA MONITOR" mode for "A/T" with CONSULT-II.
- Depress accelerator pedal and read out the value of "CLSD THL POS" and "W/O THL POS".

Accelerator Pedal Operation	Monitor Item	
	CLSD THL POS	W/O THL POS
Released	ON	OFF
Fully depressed	OFF	ON



OK or NG

OK >> **INSPECTION END**

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

- Perform the self-diagnosis for "ENGINE" with CONSULT-II.
- Open circuit or short to ground or short to power in harness or connectors.
- Pin terminals for damage or loose connection with harness connector.

BRAKE SIGNAL CIRCUIT

PFP:25320

ACS002R3

BRAKE SIGNAL CIRCUIT

Diagnostic Procedure

1. CHECK CAN COMMUNICATION LINE

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

YES or NO

- YES >> Check CAN communication line. Refer to [AT-122, "DTC U1000 CAN COMMUNICATION LINE"](#) .
NO >> GO TO 2.

2. CHECK STOP LAMP SWITCH CIRCUIT

Ⓟ With CONSULT-II

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

OK or NG

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

DATA MONITOR	
MONITOR	NO DTC
ACCELE POSI	0.0/8
THROTTLE POSI	0.0/8
CLSD THL POS	ON
W/O THL POS	OFF
BRAKE SW	OFF

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RECORD			
MODE	BACK	LIGHT	COPY

PCIA0070E

3. CHECK STOP LAMP SWITCH

Check continuity between stop lamp switch harness connector E210 terminals 1 (GY) and 2 (P).

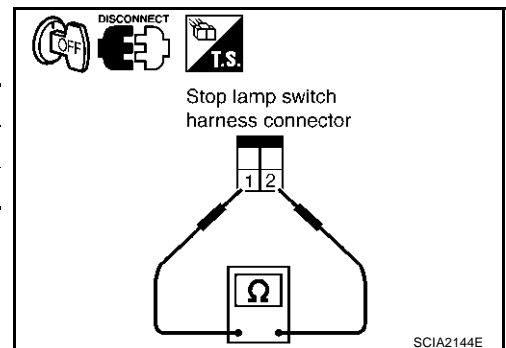
Condition	Continuity
When brake pedal is depressed	Yes
When brake pedal is released	No

Check stop lamp switch after adjusting brake pedal — refer to [BR-6, "BRAKE PEDAL"](#) .

OK or NG

- OK >> **INSPECTION END**
NG >> Check the following items. If NG, repair or replace damaged parts.

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



TROUBLE DIAGNOSIS FOR SYMPTOMS

TROUBLE DIAGNOSIS FOR SYMPTOMS

PFP:00007

A/T CHECK Indicator Lamp Does Not Come On SYMPTOM:

ACS008S0

A/T CHECK indicator lamp does not come on for about 2 seconds when turning ignition switch to "ON".

DIAGNOSTIC PROCEDURE

1. CHECK CAN COMMUNICATION LINE

Perform self-diagnosis. Refer to [AT-109, "SELF-DIAGNOSTIC PROCEDURE \(WITH CONSULT-II\)"](#) , [AT-120, "TCM SELF-DIAGNOSTIC PROCEDURE \(NO TOOLS\)"](#) .

Is a malfunction in the CAN communication indicated in the results?

- YES >> Check CAN communication line. Refer to [AT-122, "DTC U1000 CAN COMMUNICATION LINE"](#) .
- NO >> GO TO 2.

2. CHECK A/T CHECK INDICATOR LAMP CIRCUIT

Check the combination meter. Refer to [DI-4, "COMBINATION METERS"](#) .

OK or NG

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

3. CHECK TCM POWER SUPPLY AND GROUND CIRCUIT

Check TCM power supply and ground circuit. Refer to [AT-139, "DTC P1701 TRANSMISSION CONTROL MODULE \(POWER SUPPLY\)"](#) .

OK or NG

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

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TROUBLE DIAGNOSIS FOR SYMPTOMS

ACS008S1

Engine Cannot Be Started In "P" or "N" Position

SYMPTOM:

- Engine cannot be started with selector lever in "P" or "N" position.
- Engine can be started with selector lever in "D" or "R" position.

DIAGNOSTIC PROCEDURE

1. CHECK PNP SWITCH CIRCUIT

Perform self-diagnosis. Refer to [AT-109, "SELF-DIAGNOSTIC PROCEDURE \(WITH CONSULT-II\)"](#) , [AT-120, "TCM SELF-DIAGNOSTIC PROCEDURE \(NO TOOLS\)"](#) .

Do the self-diagnosis results indicate PNP switch?

- YES >> Check the malfunctioning system. Refer to [AT-127, "DTC P0705 PARK/NEUTRAL POSITION SWITCH"](#) .
- NO >> GO TO 2.

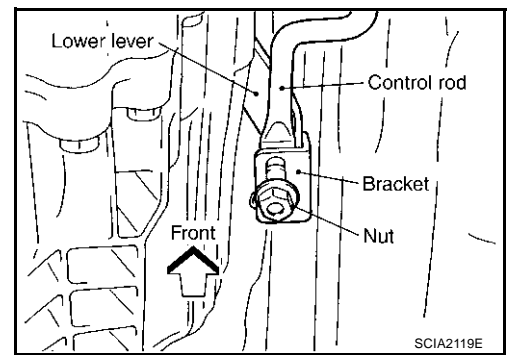
2. CHECK CONTROL LINKAGE

Check the control linkage.

- Refer to [AT-234, "Checking of A/T Position"](#) .

OK or NG

- OK >> GO TO 3.
- NG >> Adjust control linkage. Refer to [AT-234, "Adjustment of A/T Position"](#) .



3. CHECK STARTING SYSTEM

Check starting system. Refer to [SC-10, "STARTING SYSTEM"](#) .

OK or NG

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

TROUBLE DIAGNOSIS FOR SYMPTOMS

ACS008S2

In "P" Position, Vehicle Moves When Pushed SYMPTOM:

Even though the selector lever is set in the "P" position, the parking mechanism is not actuated, allowing the vehicle to be moved when it is pushed.

DIAGNOSTIC PROCEDURE

1. CHECK PNP SWITCH CIRCUIT

Perform self-diagnosis. Refer to [AT-109, "SELF-DIAGNOSTIC PROCEDURE \(WITH CONSULT-II\)"](#) , [AT-120, "TCM SELF-DIAGNOSTIC PROCEDURE \(NO TOOLS\)"](#) .

Do the self-diagnosis results indicate PNP switch?

- YES >> Check the malfunctioning system. Refer to [AT-127, "DTC P0705 PARK/NEUTRAL POSITION SWITCH"](#) .
- NO >> GO TO 2.

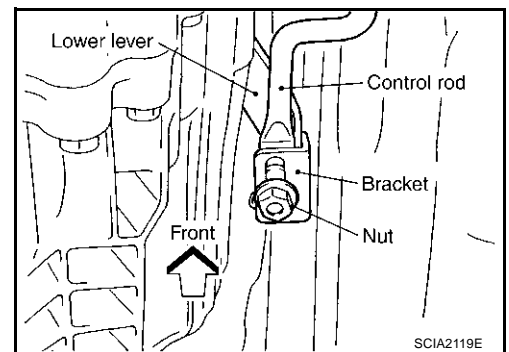
2. CHECK CONTROL LINKAGE

Check the control linkage.

- Refer to [AT-234, "Checking of A/T Position"](#) .

OK or NG

- OK >> GO TO 3.
- NG >> Adjust control linkage. Refer to [AT-234, "Adjustment of A/T Position"](#) .



3. CHECK PARKING COMPONENTS

Check parking components. Refer to [AT-254, "Parking Components \(2WD Models Only\)"](#) (2WD models) or [AT-291, "Disassembly"](#) (AWD models).

OK or NG

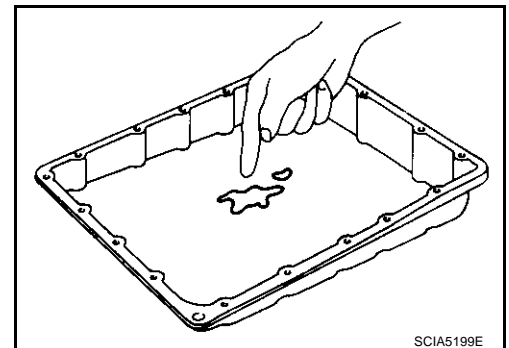
- OK >> GO TO 4.
- NG >> Repair or replace damaged parts.

4. CHECK A/T FLUID CONDITION

- Remove oil pan. Refer to [AT-242, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#) .
- Check A/T fluid condition. Refer to [AT-71, "Fluid Condition Check"](#) .

OK or NG

- OK >> **INSPECTION END**
- NG >> Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-82, "Symptom Chart"](#) (Symptom No.65).



TROUBLE DIAGNOSIS FOR SYMPTOMS

ACS008S3

In "N" Position, Vehicle Moves

SYMPTOM:

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

DIAGNOSTIC PROCEDURE

1. CHECK PNP SWITCH CIRCUIT

Perform self-diagnosis. Refer to [AT-109, "SELF-DIAGNOSTIC PROCEDURE \(WITH CONSULT-II\)"](#) , [AT-120, "TCM SELF-DIAGNOSTIC PROCEDURE \(NO TOOLS\)"](#) .

Do the self-diagnostic results indicate PNP switch?

- YES >> Check the malfunctioning system. Refer to [AT-127, "DTC P0705 PARK/NEUTRAL POSITION SWITCH"](#) .
- NO >> GO TO 2.

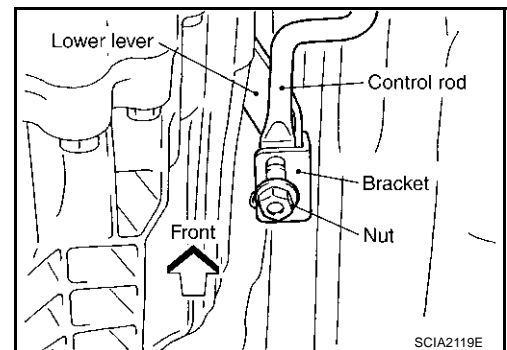
2. CHECK CONTROL LINKAGE

Check the control linkage.

- Refer to [AT-234, "Checking of A/T Position"](#) .

OK or NG

- OK >> GO TO 3.
- NG >> Adjust control linkage. Refer to [AT-234, "Adjustment of A/T Position"](#) .

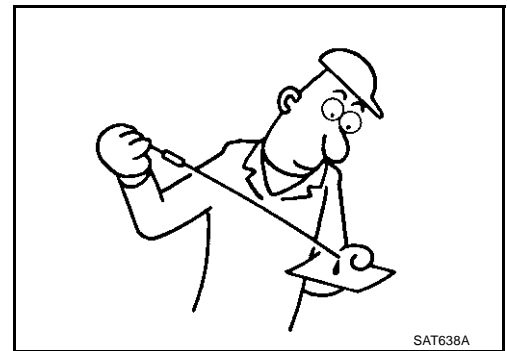


3. CHECK A/T FLUID LEVEL

Check A/T fluid level. Refer to [AT-12, "Checking A/T Fluid"](#) .

OK or NG

- OK >> GO TO 4.
- NG >> Refill ATF.

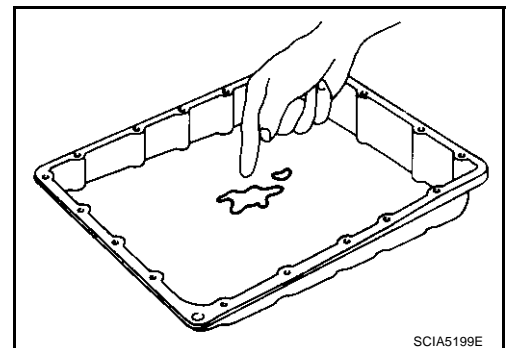


4. CHECK A/T FLUID CONDITION

- Remove oil pan. Refer to [AT-242, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#) .
- Check A/T fluid condition. Refer to [AT-71, "Fluid Condition Check"](#) .

OK or NG

- OK >> GO TO 5.
- NG >> Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-82, "Symptom Chart"](#) (Symptom No.67).



TROUBLE DIAGNOSIS FOR SYMPTOMS

5. CHECK SYMPTOM

Check again. Refer to [AT-75, "Check at Idle"](#) .

OK or NG

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

6. CHECK TCM

1. Check TCM input/output signals. Refer to [AT-107, "TCM Input/Output Signal Reference Values"](#) .
2. If NG, recheck A/T assembly harness connector terminals for damage or loose connection with harness connector.

OK or NG

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

Large Shock ("N" to "D" Position) SYMPTOM:

ACS008S4

A noticeable shock occurs when the selector lever is shifted from the "N" to "D" position.

DIAGNOSTIC PROCEDURE

1. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis. Refer to [AT-109, "SELF-DIAGNOSTIC PROCEDURE \(WITH CONSULT-II\)"](#) .

Do the self-diagnostic results indicate A/T fluid temperature sensor, engine speed signal, accelerator pedal position sensor, ATF pressure switch 1, front brake solenoid valve, CAN communication line?

- YES >> Check the malfunctioning system. Refer to [AT-147, "DTC P1710 A/T FLUID TEMPERATURE SENSOR CIRCUIT"](#) , [AT-131, "DTC P0725 ENGINE SPEED SIGNAL"](#) , [EC-562, "DTC P2122, P2123 APP SENSOR"](#) (for VQ35DE) or [EC-1226, "DTC P2122, P2123 APP SENSOR"](#) (for VK45DE), [EC-569, "DTC P2127, P2128 APP SENSOR"](#) (for VQ35DE) or [EC-1233, "DTC P2127, P2128 APP SENSOR"](#) (for VK45DE), [EC-583, "DTC P2138 APP SENSOR"](#) (for VQ35DE) or [EC-1247, "DTC P2138 APP SENSOR"](#) (for VK45DE), [AT-145, "DTC P1705 THROTTLE POSITION SENSOR"](#) , [AT-181, "DTC P1841 ATF PRESSURE SWITCH 1"](#) , [AT-162, "DTC P1757 FRONT BRAKE SOLENOID VALVE"](#) , [AT-122, "DTC U1000 CAN COMMUNICATION LINE"](#) .

- NO >> GO TO 2.

2. ENGINE IDLE SPEED

Check the engine idle speed. Refer to [EC-50, "Idle Speed and Ignition Timing Check"](#) (for VQ35DE) or [EC-691, "Idle Speed and Ignition Timing Check"](#) (for VK45DE).

OK or NG

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

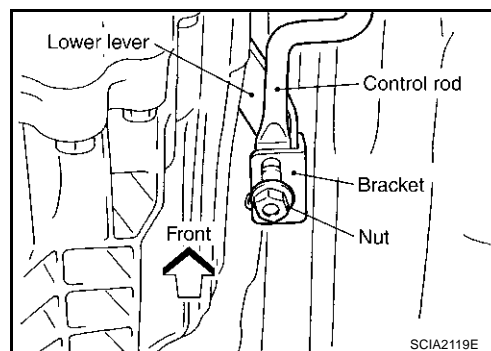
3. CHECK CONTROL LINKAGE

Check the control linkage.

- Refer to [AT-234, "Checking of A/T Position"](#) .

OK or NG

- OK >> GO TO 4.
- NG >> Adjust control linkage. Refer to [AT-234, "Adjustment of A/T Position"](#) .



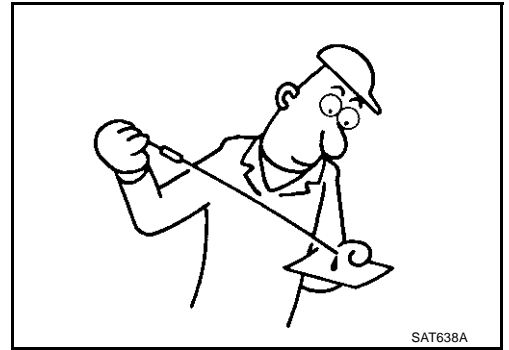
TROUBLE DIAGNOSIS FOR SYMPTOMS

4. CHECK A/T FLUID LEVEL

Check the A/T fluid level. Refer to [AT-12, "Checking A/T Fluid"](#) .

OK or NG

- OK >> GO TO 5.
- NG >> Refill ATF.

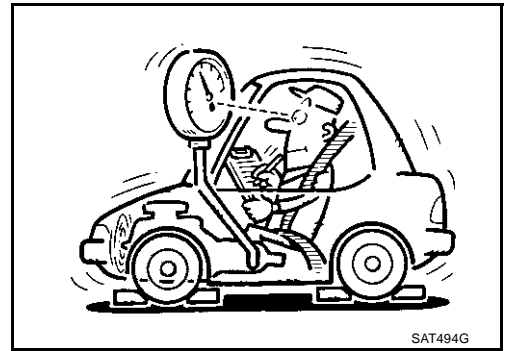


5. CHECK LINE PRESSURE

Check line pressure at idle with selector lever in "D" position. Refer to [AT-72, "LINE PRESSURE TEST"](#) .

OK or NG

- OK >> GO TO 8.
- NG - 1 >> Line pressure high: GO TO 6.
- NG - 2 >> Line pressure low: GO TO 7.



6. DETECT MALFUNCTIONING ITEM

1. Check control valve with TCM. Refer to [AT-242, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#) .
2. Disassemble A/T. Refer to [AT-291, "DISASSEMBLY"](#) .
3. Check the following items:
 - Oil pump assembly. Refer to [AT-308, "Oil Pump"](#) .

OK or NG

- OK >> GO TO 8.
- NG >> Repair or replace damaged parts.

7. DETECT MALFUNCTIONING ITEM

1. Check control valve with TCM. Refer to [AT-242, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#) .
2. Disassemble A/T. Refer to [AT-291, "DISASSEMBLY"](#) .
3. Check the following items:
 - Oil pump assembly. Refer to [AT-308, "Oil Pump"](#) .
 - Power train system. Refer to [AT-291, "DISASSEMBLY"](#) .
 - Transmission case. Refer to [AT-291, "DISASSEMBLY"](#) .

OK or NG

- OK >> GO TO 8.
- NG >> Repair or replace damaged parts.

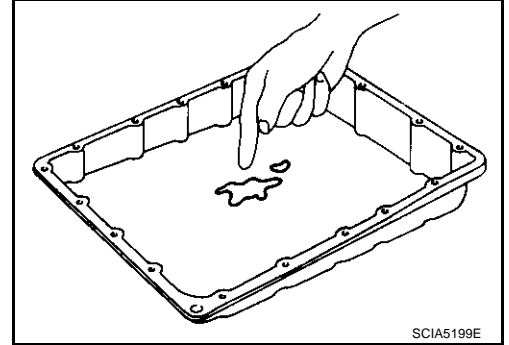
TROUBLE DIAGNOSIS FOR SYMPTOMS

8. CHECK A/T FLUID CONDITION

1. Remove oil pan. Refer to [AT-242, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#) .
2. Check A/T fluid condition. Refer to [AT-71, "Fluid Condition Check"](#) .

OK or NG

- OK >> GO TO 10.
- NG >> GO TO 9.



9. DETECT MALFUNCTIONING ITEM

- Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-82, "Symptom Chart"](#) (Symptom No.1).

OK or NG

- OK >> GO TO 10.
- NG >> Repair or replace damaged parts.

10. CHECK SYMPTOM

Check again. Refer to [AT-75, "Check at Idle"](#) .

OK or NG

- OK >> **INSPECTION END**
- NG >> GO TO 11.

11. CHECK TCM

1. Check TCM input/output signals. Refer to [AT-107, "TCM Input/Output Signal Reference Values"](#) .
2. If NG, recheck A/T assembly harness connector 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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TROUBLE DIAGNOSIS FOR SYMPTOMS

ACS008S5

Vehicle Does Not Creep Backward In "R" Position

SYMPTOM:

The vehicle does not creep in the "R" position. Or an extreme lack of acceleration is observed.

DIAGNOSTIC PROCEDURE

1. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis. Refer to [AT-109, "SELF-DIAGNOSTIC PROCEDURE \(WITH CONSULT-II\)"](#) .

Do the self-diagnostic results indicate accelerator pedal position sensor, ATF pressure switch 6, high and low reverse clutch solenoid valve, CAN communication line, PNP switch?

YES >> Check the malfunctioning system. Refer to [EC-562, "DTC P2122, P2123 APP SENSOR"](#) (for VQ35DE) or [EC-1226, "DTC P2122, P2123 APP SENSOR"](#) (for VK45DE), [EC-569, "DTC P2127, P2128 APP SENSOR"](#) (for VQ35DE) or [EC-1233, "DTC P2127, P2128 APP SENSOR"](#) (for VK45DE), [EC-583, "DTC P2138 APP SENSOR"](#) (for VQ35DE) or [EC-1247, "DTC P2138 APP SENSOR"](#) (for VK45DE), [AT-145, "DTC P1705 THROTTLE POSITION SENSOR"](#) , [AT-187, "DTC P1846 ATF PRESSURE SWITCH 6"](#) , [AT-170, "DTC P1767 HIGH AND LOW REVERSE CLUTCH SOLENOID VALVE"](#) , [AT-122, "DTC U1000 CAN COMMUNICATION LINE"](#) , [AT-127, "DTC P0705 PARK/NEUTRAL POSITION SWITCH"](#) .

NO >> GO TO 2.

2. CHECK CONTROL LINKAGE

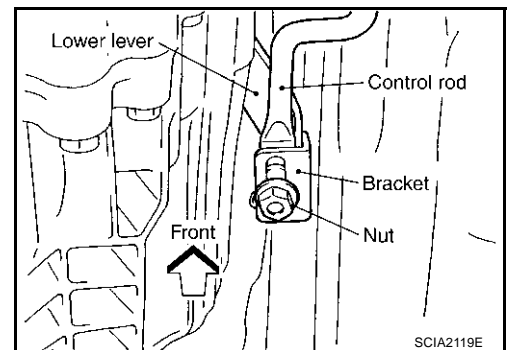
Check the control linkage.

- Refer to [AT-234, "Checking of A/T Position"](#) .

OK or NG

OK >> GO TO 3.

NG >> Adjust control linkage. Refer to [AT-234, "Adjustment of A/T Position"](#) .



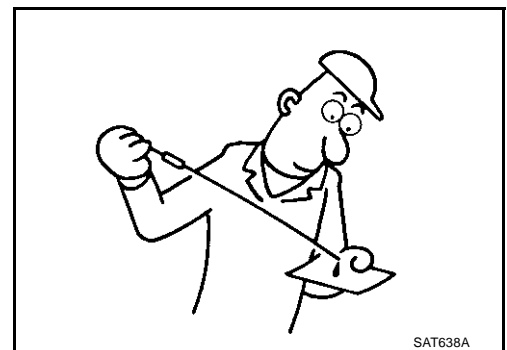
3. CHECK A/T FLUID LEVEL

Check A/T fluid level. Refer to [AT-12, "Checking A/T Fluid"](#) .

OK or NG

OK >> GO TO 4.

NG >> Refill ATF.



TROUBLE DIAGNOSIS FOR SYMPTOMS

4. CHECK STALL TEST

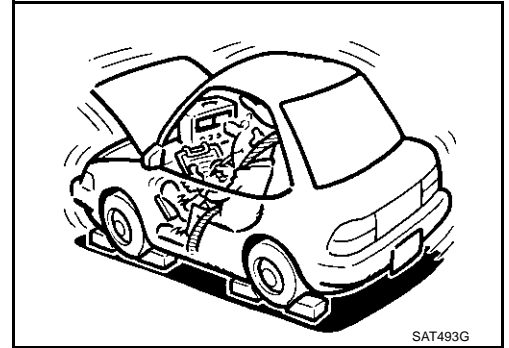
Check stall revolution with selector lever in "M" and "R" positions. Refer to [AT-71, "STALL TEST"](#) .

OK or NG

OK >> GO TO 6.

OK in "M" position, NG in "R" position>>GO TO 5

NG in both "M" and "R" positions>>GO TO 8.



5. DETECT MALFUNCTIONING ITEM

1. Disassemble A/T. Refer to [AT-291, "DISASSEMBLY"](#) .

2. Check the following items:

- Reverse brake. Refer to [AT-291, "DISASSEMBLY"](#) .

OK or NG

OK >> GO TO 9.

NG >> Repair or replace damaged parts.

6. CHECK LINE PRESSURE

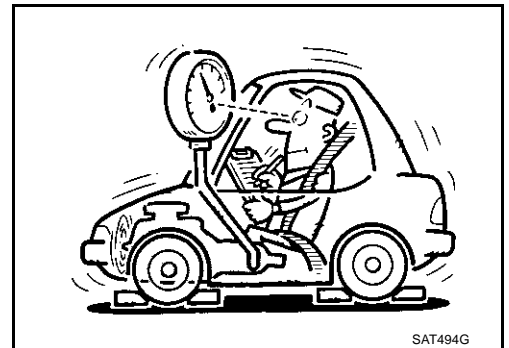
Check the line pressure with the engine idling. Refer to [AT-72, "LINE PRESSURE TEST"](#) .

OK or NG

OK >> GO TO 9.

NG - 1 >> Line pressure high: GO TO 7.

NG - 2 >> Line pressure low: GO TO 8.



7. DETECT MALFUNCTIONING ITEM

1. Check control valve with TCM. Refer to [AT-242, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#) .

2. Disassemble A/T. Refer to [AT-291, "DISASSEMBLY"](#) .

3. Check the following items:

- Oil pump assembly. Refer to [AT-308, "Oil Pump"](#) .

OK or NG

OK >> GO TO 9.

NG >> Repair or replace damaged parts.

TROUBLE DIAGNOSIS FOR SYMPTOMS

8. DETECT MALFUNCTIONING ITEM

1. Check control valve with TCM. Refer to [AT-242, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#) .
2. Disassemble A/T. Refer to [AT-291, "DISASSEMBLY"](#) .
3. Check the following items:
 - Oil pump assembly. Refer to [AT-308, "Oil Pump"](#) .
 - Power train system. Refer to [AT-291, "DISASSEMBLY"](#) .
 - Transmission case. Refer to [AT-291, "DISASSEMBLY"](#) .

OK or NG

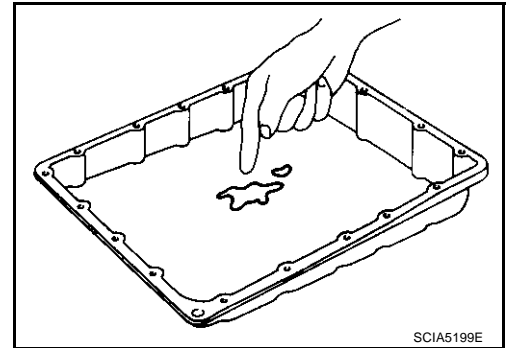
- OK >> GO TO 9.
NG >> Repair or replace damaged parts.

9. CHECK A/T FLUID CONDITION

1. Remove oil pan. Refer to [AT-242, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#) .
2. Check A/T fluid condition. Refer to [AT-71, "Fluid Condition Check"](#) .

OK or NG

- OK >> GO TO 10.
NG >> GO TO 13.



10. DETECT MALFUNCTIONING ITEM

- Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-82, "Symptom Chart"](#) (Symptom No.43).

OK or NG

- OK >> GO TO 11.
NG >> Repair or replace damaged parts.

11. CHECK SYMPTOM

Check again. Refer to [AT-75, "Check at Idle"](#) .

OK or NG

- OK >> **INSPECTION END**
NG >> GO TO 12.

12. CHECK TCM

1. Check TCM input/output signals. Refer to [AT-107, "TCM Input/Output Signal Reference Values"](#) .
2. If NG, recheck A/T assembly harness connector terminals for damage or loose connection with harness connector.

OK or NG

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

TROUBLE DIAGNOSIS FOR SYMPTOMS

13. DETECT MALFUNCTIONING ITEM

- Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-82, "Symptom Chart"](#) (Symptom No.43).

OK or NG

- OK >> GO TO 11.
- NG >> Repair or replace damaged parts.

Vehicle Does Not Creep Forward In "D" Position

ACS00856

SYMPTOM:

Vehicle does not creep forward when selecting "D" position.

DIAGNOSTIC PROCEDURE

1. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis. Refer to [AT-109, "SELF-DIAGNOSTIC PROCEDURE \(WITH CONSULT-II\)"](#), [AT-120, "TCM SELF-DIAGNOSTIC PROCEDURE \(NO TOOLS\)"](#).

Do the self-diagnostic results indicate accelerator pedal position sensor, CAN communication line, PNP switch?

- YES >> Check the malfunctioning system. Refer to [EC-562, "DTC P2122, P2123 APP SENSOR"](#) (for VQ35DE) or [EC-1226, "DTC P2122, P2123 APP SENSOR"](#) (for VK45DE), [EC-569, "DTC P2127, P2128 APP SENSOR"](#) (for VQ35DE) or [EC-1233, "DTC P2127, P2128 APP SENSOR"](#) (for VK45DE), [EC-583, "DTC P2138 APP SENSOR"](#) (for VQ35DE) or [EC-1247, "DTC P2138 APP SENSOR"](#) (for VK45DE), [AT-145, "DTC P1705 THROTTLE POSITION SENSOR"](#), [AT-122, "DTC U1000 CAN COMMUNICATION LINE"](#), [AT-127, "DTC P0705 PARK/NEUTRAL POSITION SWITCH"](#).
- NO >> GO TO 2.

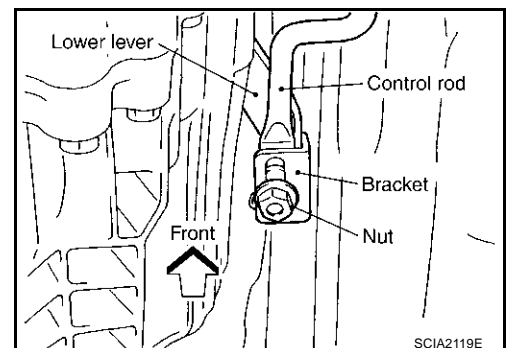
2. CHECK CONTROL LINKAGE

Check the control linkage.

- Refer to [AT-234, "Checking of A/T Position"](#).

OK or NG

- OK >> GO TO 3.
- NG >> Adjust control linkage. Refer to [AT-234, "Adjustment of A/T Position"](#).

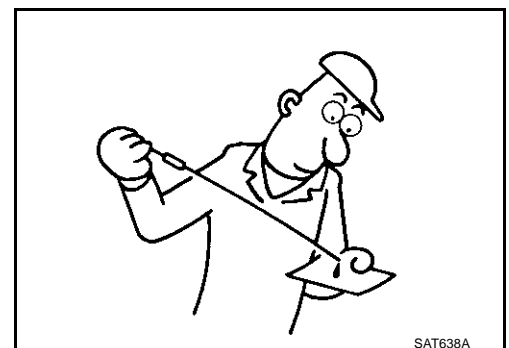


3. CHECK A/T FLUID LEVEL

Check A/T fluid level. Refer to [AT-12, "Checking A/T Fluid"](#).

OK or NG

- OK >> GO TO 4.
- NG >> Refill ATF.



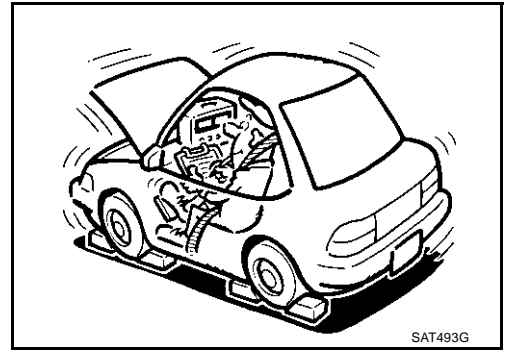
TROUBLE DIAGNOSIS FOR SYMPTOMS

4. CHECK STALL TEST

Check stall revolution with selector lever in "D" position. Refer to [AT-71, "STALL TEST"](#) .

OK or NG

- OK >> GO TO 5.
- NG >> GO TO 7.

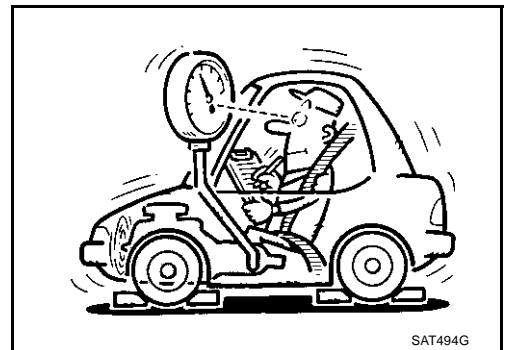


5. CHECK LINE PRESSURE

Check line pressure at idle with selector lever in "D" position. Refer to [AT-72, "LINE PRESSURE TEST"](#) .

OK or NG

- OK >> GO TO 8.
- NG - 1 >> Line pressure high: GO TO 6.
- NG - 2 >> Line pressure low: GO TO 7.



6. DETECT MALFUNCTIONING ITEM

1. Check control valve with TCM. Refer to [AT-242, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#) .
2. Disassemble A/T. Refer to [AT-291, "DISASSEMBLY"](#) .
3. Check the following items:
 - Oil pump assembly. Refer to [AT-308, "Oil Pump"](#) .

OK or NG

- OK >> GO TO 8.
- NG >> Repair or replace damaged parts.

7. DETECT MALFUNCTIONING ITEM

1. Check control valve with TCM. Refer to [AT-242, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#) .
2. Disassemble A/T. Refer to [AT-291, "DISASSEMBLY"](#) .
3. Check the following items:
 - Oil pump assembly. Refer to [AT-308, "Oil Pump"](#) .
 - Power train system. Refer to [AT-291, "DISASSEMBLY"](#) .
 - Transmission case. Refer to [AT-291, "DISASSEMBLY"](#) .

OK or NG

- OK >> GO TO 8.
- NG >> Repair or replace damaged parts.

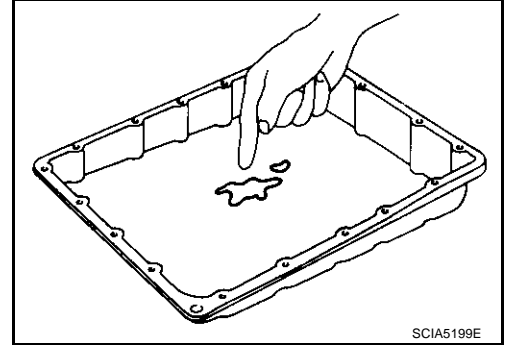
TROUBLE DIAGNOSIS FOR SYMPTOMS

8. CHECK A/T FLUID CONDITION

1. Remove oil pan. Refer to [AT-242, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#) .
2. Check A/T fluid condition. Refer to [AT-71, "Fluid Condition Check"](#) .

OK or NG

- OK >> GO TO 9.
- NG >> GO TO 12.



9. DETECT MALFUNCTIONING ITEM

- Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-82, "Symptom Chart"](#) (Symptom No.43).

OK or NG

- OK >> GO TO 10.
- NG >> Repair or replace damaged parts.

10. CHECK SYMPTOM

Check again. Refer to [AT-75, "Check at Idle"](#) .

OK or NG

- OK >> **INSPECTION END**
- NG >> GO TO 11.

11. CHECK TCM

1. Check TCM input/output signals. Refer to [AT-107, "TCM Input/Output Signal Reference Values"](#) .
2. If NG, recheck A/T assembly harness connector terminals for damage or loose connection with harness connector.

OK or NG

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

12. DETECT MALFUNCTIONING ITEM

- Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-82, "Symptom Chart"](#) (Symptom No.43).

OK or NG

- OK >> GO TO 10.
- NG >> Repair or replace damaged parts.

A
B
AT
D
E
F
G
H
I
J
K
L
M

TROUBLE DIAGNOSIS FOR SYMPTOMS

ACS008S7

Vehicle Cannot Be Started From D1

SYMPTOM:

Vehicle cannot be started from D1 on cruise test - Part 1.

DIAGNOSTIC PROCEDURE

1. CONFIRM THE SYMPTOM

Check if vehicle creeps in "R" position.

OK or NG

OK >> GO TO 2.

NG >> Refer to [AT-198, "Vehicle Does Not Creep Backward In "R" Position"](#) .

2. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis. Refer to [AT-109, "SELF-DIAGNOSTIC PROCEDURE \(WITH CONSULT-II\)"](#) , [AT-120, "TCM SELF-DIAGNOSTIC PROCEDURE \(NO TOOLS\)"](#)

Is any malfunction detected by self-diagnostic results?

YES >> Check the malfunctioning system. Refer to [AT-110, "Self-diagnostic Result Test Mode"](#) , [AT-121, "Judgement Self-Diagnosis Code"](#) .

NO >> GO TO 3.

3. CHECK ACCELERATOR POSITION (APP) SENSOR

Check accelerator pedal position (APP) sensor. Refer to [AT-145, "DTC P1705 THROTTLE POSITION SENSOR"](#)

OK or NG

OK >> GO TO 4.

NG >> Repair or replace accelerator pedal position (APP) sensor.

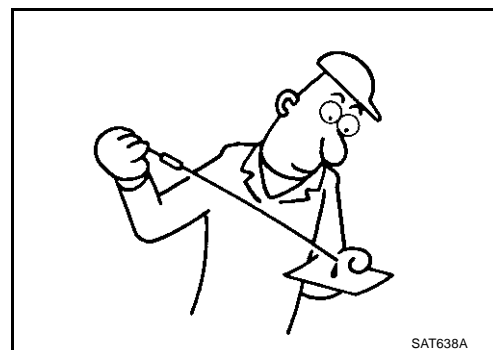
4. CHECK A/T FLUID LEVEL

Check A/T fluid level. Refer to [AT-12, "Checking A/T Fluid"](#) .

OK or NG

OK >> GO TO 5.

NG >> Refill ATF.



5. CHECK LINE PRESSURE

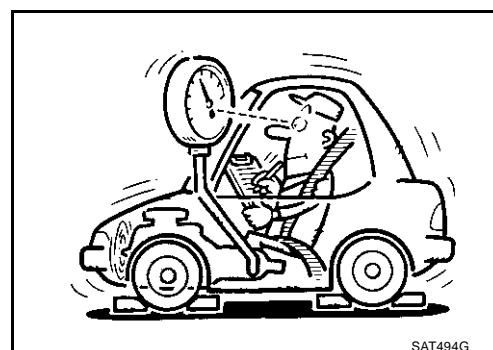
Check line pressure at the engine stall point. Refer to [AT-72, "LINE PRESSURE TEST"](#) .

OK or NG

OK >> GO TO 8.

NG - 1 >> Line pressure high: GO TO 6.

NG - 2 >> Line pressure low: GO TO 7.



TROUBLE DIAGNOSIS FOR SYMPTOMS

6. DETECT MALFUNCTIONING ITEM

1. Check control valve with TCM. Refer to [AT-242, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#) .
2. Disassemble A/T. Refer to [AT-291, "DISASSEMBLY"](#) .
3. Check the following items:
 - Oil pump assembly. Refer to [AT-308, "Oil Pump"](#) .

OK or NG

- OK >> GO TO 8.
- NG >> Repair or replace damaged parts.

7. DETECT MALFUNCTIONING ITEM

1. Check control valve with TCM. Refer to [AT-242, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#) .
2. Disassemble A/T. Refer to [AT-291, "DISASSEMBLY"](#) .
3. Check the following items:
 - Oil pump assembly. Refer to [AT-308, "Oil Pump"](#) .
 - Power train system. Refer to [AT-291, "DISASSEMBLY"](#) .
 - Transmission case. Refer to [AT-291, "DISASSEMBLY"](#) .

OK or NG

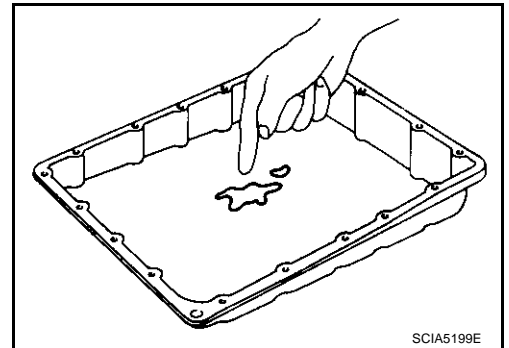
- OK >> GO TO 8.
- NG >> Repair or replace damaged parts.

8. CHECK A/T FLUID CONDITION

1. Remove oil pan. Refer to [AT-242, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#) .
2. Check A/T fluid condition. Refer to [AT-71, "Fluid Condition Check"](#) .

OK or NG

- OK >> GO TO 9.
- NG >> GO TO 12.



9. DETECT MALFUNCTIONING ITEM

- Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-82, "Symptom Chart"](#) (Symptom No.23).

OK or NG

- OK >> GO TO 10.
- NG >> Repair or replace damaged parts.

10. CHECK SYMPTOM

Check again. Refer to [AT-76, "Cruise Test - Part 1"](#) , [AT-78, "Cruise Test - Part 2"](#) .

OK or NG

- OK >> **INSPECTION END**
- NG >> GO TO 11.

TROUBLE DIAGNOSIS FOR SYMPTOMS

11. CHECK TCM

1. Check TCM input/output signals. Refer to [AT-107, "TCM Input/Output Signal Reference Values"](#) .
2. If NG, recheck A/T assembly harness connector terminals for damage or loose connection with harness connector.

OK or NG

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

12. DETECT MALFUNCTIONING ITEM

- Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-82, "Symptom Chart"](#) (Symptom No.23).

OK or NG

- OK >> GO TO 10.
NG >> Repair or replace damaged parts.

A/T Does Not Shift: D1 → D2

ACS008S8

SYMPTOM:

The vehicle does not shift-up from the D1 to D2 gear at the specified speed.

DIAGNOSTIC PROCEDURE

1. CONFIRM THE SYMPTOM

Check if vehicle creeps forward in "D" position and vehicle can be started from D1.

OK or NG

- OK >> GO TO 2.
NG >> Refer to [AT-201, "Vehicle Does Not Creep Forward In "D" Position"](#) , [AT-204, "Vehicle Cannot Be Started From D1"](#) .

2. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis. Refer to [AT-109, "SELF-DIAGNOSTIC PROCEDURE \(WITH CONSULT-II\)"](#) .

Do the self-diagnostic results indicate ATF pressure switch 5, direct clutch solenoid valve, accelerator pedal position sensor, vehicle speed sensor A/T (revolution sensor) and vehicle speed sensor MTR?

- YES >> Check the malfunctioning system. Refer to [AT-185, "DTC P1845 ATF PRESSURE SWITCH 5"](#) , [AT-166, "DTC P1762 DIRECT CLUTCH SOLENOID VALVE"](#) , [EC-562, "DTC P2122, P2123 APP SENSOR"](#) (for VQ35DE) or [EC-1226, "DTC P2122, P2123 APP SENSOR"](#) (for VK45DE), [EC-569, "DTC P2127, P2128 APP SENSOR"](#) (for VQ35DE) or [EC-1233, "DTC P2127, P2128 APP SENSOR"](#) (for VK45DE), [EC-583, "DTC P2138 APP SENSOR"](#) (for VQ35DE) or [EC-1247, "DTC P2138 APP SENSOR"](#) (for VK45DE), [AT-145, "DTC P1705 THROTTLE POSITION SENSOR"](#) , [AT-129, "DTC P0720 VEHICLE SPEED SENSOR A/T \(REVOLUTION SENSOR\)"](#) , [AT-151, "DTC P1721 VEHICLE SPEED SENSOR MTR"](#) .

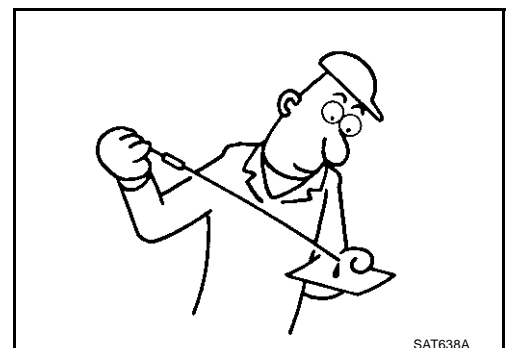
- NO >> GO TO 3.

3. CHECK A/T FLUID LEVEL

Check A/T fluid level. Refer to [AT-12, "Checking A/T Fluid"](#) .

OK or NG

- OK >> GO TO 4.
NG >> Refill ATF.



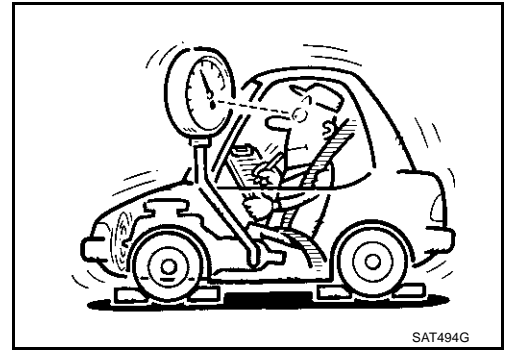
TROUBLE DIAGNOSIS FOR SYMPTOMS

4. CHECK LINE PRESSURE

Check line pressure at the engine stall point. Refer to [AT-72, "LINE PRESSURE TEST"](#) .

OK or NG

- OK >> GO TO 7.
- NG - 1 >> Line pressure high: GO TO 5.
- NG - 2 >> Line pressure low: GO TO 6.



5. DETECT MALFUNCTIONING ITEM

1. Check control valve with TCM. Refer to [AT-242, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#) .
2. Disassemble A/T. Refer to [AT-291, "DISASSEMBLY"](#) .
3. Check the following items:
 - Oil pump assembly. Refer to [AT-308, "Oil Pump"](#) .

OK or NG

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

6. DETECT MALFUNCTIONING ITEM

1. Check control valve with TCM. Refer to [AT-242, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#) .
2. Disassemble A/T. Refer to [AT-291, "DISASSEMBLY"](#) .
3. Check the following items:
 - Oil pump assembly. Refer to [AT-308, "Oil Pump"](#) .
 - Power train system. Refer to [AT-291, "DISASSEMBLY"](#) .
 - Transmission case. Refer to [AT-291, "DISASSEMBLY"](#) .

OK or NG

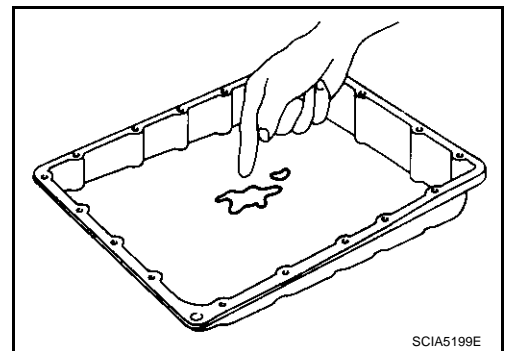
- OK >> GO TO 7.
- NG >> Repair or replace damaged parts.

7. CHECK A/T FLUID CONDITION

1. Remove oil pan. Refer to [AT-242, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#) .
2. Check A/T fluid condition. Refer to [AT-71, "Fluid Condition Check"](#) .

OK or NG

- OK >> GO TO 8.
- NG >> GO TO 11.



TROUBLE DIAGNOSIS FOR SYMPTOMS

8. DETECT MALFUNCTIONING ITEM

- Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-82, "Symptom Chart"](#) (Symptom No.10).

OK or NG

- OK >> GO TO 9.
NG >> Repair or replace damaged parts.

9. CHECK SYMPTOM

Check again. Refer to [AT-76, "Cruise Test - Part 1"](#) , [AT-78, "Cruise Test - Part 2"](#) .

OK or NG

- OK >> **INSPECTION END**
NG >> GO TO 10.

10. CHECK TCM

1. Check TCM input/output signals. Refer to [AT-107, "TCM Input/Output Signal Reference Values"](#) .
2. If NG, recheck A/T assembly harness connector terminals for damage or loose connection with harness connector.

OK or NG

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

11. DETECT MALFUNCTIONING ITEM

- Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-82, "Symptom Chart"](#) (Symptom No.10).

OK or NG

- OK >> GO TO 9.
NG >> Repair or replace damaged parts.

TROUBLE DIAGNOSIS FOR SYMPTOMS

ACS008S9

A/T Does Not Shift: D2 → D3

SYMPTOM:

The vehicle does not shift-up from D2 to D3 gear at the specified speed.

DIAGNOSTIC PROCEDURE

1. CONFIRM THE SYMPTOM

Check if vehicle creeps forward in "D" position and vehicle can be started from D1.

OK or NG

OK >> GO TO 2.

NG >> Refer to [AT-201, "Vehicle Does Not Creep Forward In "D" Position"](#) , [AT-204, "Vehicle Cannot Be Started From D1"](#) .

2. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis. Refer to [AT-109, "SELF-DIAGNOSTIC PROCEDURE \(WITH CONSULT-II\)"](#) .

Do the self-diagnostic results indicate ATF pressure switch 6, high and low reverse clutch solenoid valve, accelerator pedal position sensor, vehicle speed sensor A/T (revolution sensor) and vehicle speed sensor MTR?

YES >> Check the malfunctioning system. Refer to [AT-187, "DTC P1846 ATF PRESSURE SWITCH 6"](#) , [AT-170, "DTC P1767 HIGH AND LOW REVERSE CLUTCH SOLENOID VALVE"](#) , [EC-562, "DTC P2122, P2123 APP SENSOR"](#) (for VQ35DE) or [EC-1226, "DTC P2122, P2123 APP SENSOR"](#) (for VK45DE), [EC-569, "DTC P2127, P2128 APP SENSOR"](#) (for VQ35DE) or [EC-1233, "DTC P2127, P2128 APP SENSOR"](#) (for VK45DE), [EC-583, "DTC P2138 APP SENSOR"](#) (for VQ35DE) or [EC-1247, "DTC P2138 APP SENSOR"](#) (for VK45DE), [AT-145, "DTC P1705 THROTTLE POSITION SENSOR"](#) , [AT-129, "DTC P0720 VEHICLE SPEED SENSOR A/T \(REVOLUTION SENSOR\)"](#) , [AT-151, "DTC P1721 VEHICLE SPEED SENSOR MTR"](#) .

NO >> GO TO 3.

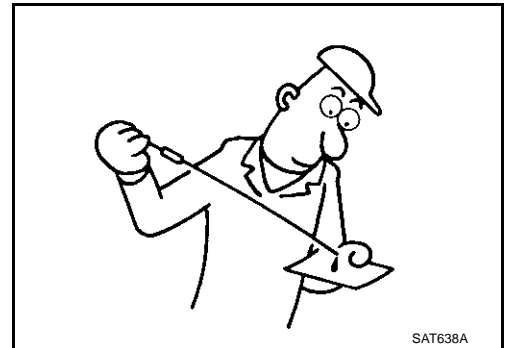
3. CHECK A/T FLUID LEVEL

Check A/T fluid level. Refer to [AT-12, "Checking A/T Fluid"](#) .

OK or NG

OK >> GO TO 4.

NG >> Refill ATF.



SAT638A

4. CHECK LINE PRESSURE

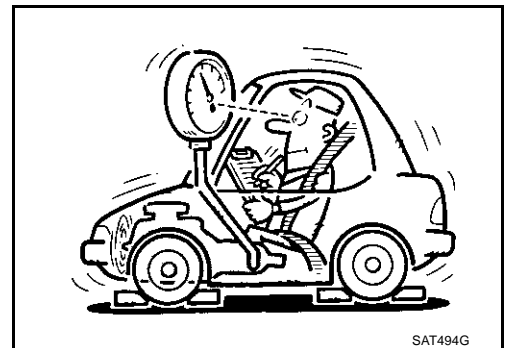
Check line pressure at the engine stall point. Refer to [AT-72, "LINE PRESSURE TEST"](#) .

OK or NG

OK >> GO TO 7.

NG - 1 >> Line pressure high: GO TO 5.

NG - 2 >> Line pressure low: GO TO 6.



SAT494G

TROUBLE DIAGNOSIS FOR SYMPTOMS

5. DETECT MALFUNCTIONING ITEM

1. Check control valve with TCM. Refer to [AT-242, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#) .
2. Disassemble A/T. Refer to [AT-291, "DISASSEMBLY"](#) .
3. Check the following items:
 - Oil pump assembly. Refer to [AT-308, "Oil Pump"](#) .

OK or NG

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

6. DETECT MALFUNCTIONING ITEM

1. Check control valve with TCM. Refer to [AT-242, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#) .
2. Disassemble A/T. Refer to [AT-291, "DISASSEMBLY"](#) .
3. Check the following items:
 - Oil pump assembly. Refer to [AT-308, "Oil Pump"](#) .
 - Power train system. Refer to [AT-291, "DISASSEMBLY"](#) .
 - Transmission case. Refer to [AT-291, "DISASSEMBLY"](#) .

OK or NG

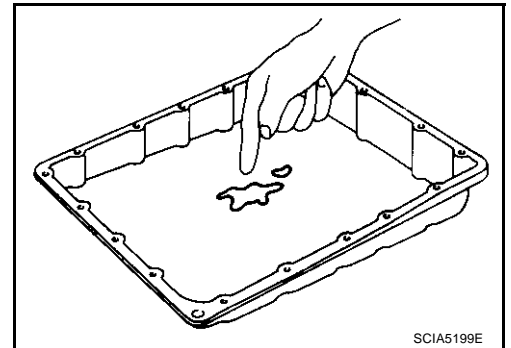
- OK >> GO TO 7.
- NG >> Repair or replace damaged parts.

7. CHECK A/T FLUID CONDITION

1. Remove oil pan. Refer to [AT-242, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#) .
2. Check A/T fluid condition. Refer to [AT-71, "Fluid Condition Check"](#) .

OK or NG

- OK >> GO TO 8.
- NG >> GO TO 11.



8. DETECT MALFUNCTIONING ITEM

- Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-82, "Symptom Chart"](#) (Symptom No.11).

OK or NG

- OK >> GO TO 9.
- NG >> Repair or replace damaged parts.

9. CHECK SYMPTOM

Check again. Refer to [AT-76, "Cruise Test - Part 1"](#) , [AT-78, "Cruise Test - Part 2"](#) .

OK or NG

- OK >> **INSPECTION END**
- NG >> GO TO 10.

TROUBLE DIAGNOSIS FOR SYMPTOMS

10. CHECK TCM

1. Check TCM input/output signals. Refer to [AT-107, "TCM Input/Output Signal Reference Values"](#) .
2. If NG, recheck A/T assembly harness connector terminals for damage or loose connection with harness connector.

OK or NG

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

11. DETECT MALFUNCTIONING ITEM

- Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-82, "Symptom Chart"](#) (Symptom No.11).

OK or NG

- OK >> GO TO 9.
NG >> Repair or replace damaged parts.

A/T Does Not Shift: D3 → D4

ACS008SA

SYMPTOM:

- The vehicle does not shift-up from the D3 to D4 gear at the specified speed.
- The vehicle does not shift-up from the D3 to D4 gear unless A/T is warmed up.

DIAGNOSTIC PROCEDURE

1. CONFIRM THE SYMPTOM

Check if vehicle creeps forward in "D" position and vehicle can be started from D1.

OK or NG

- OK >> GO TO 2.
NG >> Refer to [AT-201, "Vehicle Does Not Creep Forward In "D" Position"](#) , [AT-204, "Vehicle Cannot Be Started From D1"](#) .

2. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis. Refer to [AT-109, "SELF-DIAGNOSTIC PROCEDURE \(WITH CONSULT-II\)"](#) .

Do the self-diagnostic results indicate ATF pressure switch 1, ATF pressure switch 3, front brake solenoid valve, input clutch solenoid valve, accelerator pedal position sensor, vehicle speed sensor A/T (revolution sensor) and vehicle speed sensor MTR?

- YES >> Check the malfunctioning system. Refer to [AT-181, "DTC P1841 ATF PRESSURE SWITCH 1"](#) , [AT-183, "DTC P1843 ATF PRESSURE SWITCH 3"](#) , [AT-158, "DTC P1752 INPUT CLUTCH SOLENOID VALVE"](#) , [AT-162, "DTC P1757 FRONT BRAKE SOLENOID VALVE"](#) , [EC-562, "DTC P2122, P2123 APP SENSOR"](#) (for VQ35DE) or [EC-1226, "DTC P2122, P2123 APP SENSOR"](#) (for VK45DE), [EC-569, "DTC P2127, P2128 APP SENSOR"](#) (for VQ35DE) or [EC-1233, "DTC P2127, P2128 APP SENSOR"](#) (for VK45DE), [EC-583, "DTC P2138 APP SENSOR"](#) (for VQ35DE) or [EC-1247, "DTC P2138 APP SENSOR"](#) (for VK45DE), [AT-145, "DTC P1705 THROTTLE POSITION SENSOR"](#) , [AT-129, "DTC P0720 VEHICLE SPEED SENSOR A/T \(REVOLUTION SENSOR\)"](#) , [AT-151, "DTC P1721 VEHICLE SPEED SENSOR MTR"](#) .

- NO >> GO TO 3.

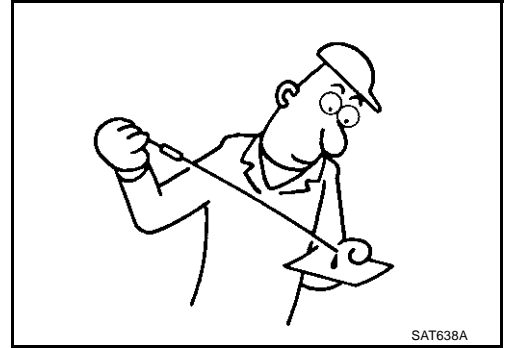
TROUBLE DIAGNOSIS FOR SYMPTOMS

3. CHECK A/T FLUID LEVEL

Check A/T fluid level. Refer to [AT-12, "Checking A/T Fluid"](#) .

OK or NG

- OK >> GO TO 4.
- NG >> Refill ATF.

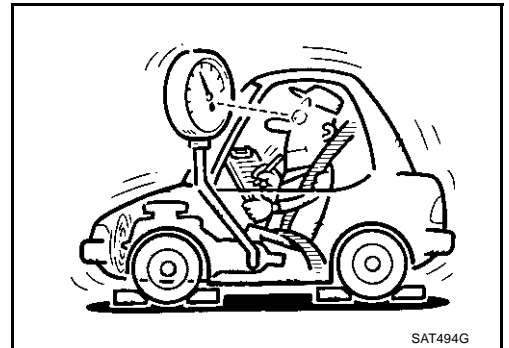


4. CHECK LINE PRESSURE

Check line pressure at the engine stall point. Refer to [AT-72, "LINE PRESSURE TEST"](#) .

OK or NG

- OK >> GO TO 7.
- NG - 1 >> Line pressure high: GO TO 5.
- NG - 2 >> Line pressure low: GO TO 6.



5. DETECT MALFUNCTIONING ITEM

1. Check control valve with TCM. Refer to [AT-242, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#) .
2. Disassemble A/T. Refer to [AT-291, "DISASSEMBLY"](#) .
3. Check the following items:
 - Oil pump assembly. Refer to [AT-308, "Oil Pump"](#) .

OK or NG

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

6. DETECT MALFUNCTIONING ITEM

1. Check control valve with TCM. Refer to [AT-242, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#) .
2. Disassemble A/T. Refer to [AT-291, "DISASSEMBLY"](#) .
3. Check the following items:
 - Oil pump assembly. Refer to [AT-308, "Oil Pump"](#) .
 - Power train system. Refer to [AT-291, "DISASSEMBLY"](#) .
 - Transmission case. Refer to [AT-291, "DISASSEMBLY"](#) .

OK or NG

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

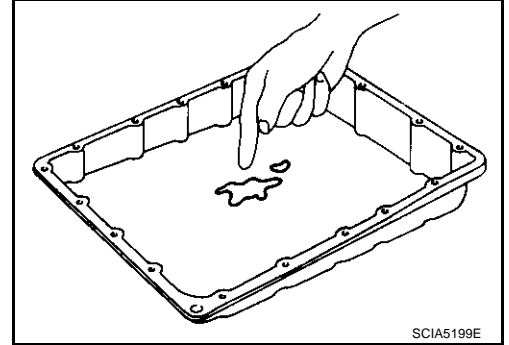
TROUBLE DIAGNOSIS FOR SYMPTOMS

7. CHECK A/T FLUID CONDITION

1. Remove oil pan. Refer to [AT-242, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#) .
2. Check A/T fluid condition. Refer to [AT-71, "Fluid Condition Check"](#) .

OK or NG

- OK >> GO TO 8.
- NG >> GO TO 11.



8. DETECT MALFUNCTIONING ITEM

- Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-82, "Symptom Chart"](#) (Symptom No.12).

OK or NG

- OK >> GO TO 9.
- NG >> Repair or replace damaged parts.

9. CHECK SYMPTOM

Check again. Refer to [AT-76, "Cruise Test - Part 1"](#) , [AT-78, "Cruise Test - Part 2"](#) .

OK or NG

- OK >> **INSPECTION END**
- NG >> GO TO 10.

10. CHECK TCM

1. Check TCM input/output signals. Refer to [AT-107, "TCM Input/Output Signal Reference Values"](#) .
2. If NG, recheck A/T assembly harness connector terminals for damage or loose connection with harness connector.

OK or NG

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

11. DETECT MALFUNCTIONING ITEM

- Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-82, "Symptom Chart"](#) (Symptom No.12).

OK or NG

- OK >> GO TO 9.
- NG >> Repair or replace damaged parts.

A
B
AT
D
E
F
G
H
I
J
K
L
M

TROUBLE DIAGNOSIS FOR SYMPTOMS

ACS008SB

A/T Does Not Shift: D4 → D5

SYMPTOM:

- The vehicle does not shift-up from the D4 to D5 gear at the specified speed.
- The vehicle does not shift-up from the D4 to D5 gear unless A/T is warmed up.

DIAGNOSTIC PROCEDURE

1. CONFIRM THE SYMPTOM

Check if vehicle creeps forward in "D" position and vehicle can be started from D1.

OK or NG

OK >> GO TO 2.

NG >> Refer to [AT-201, "Vehicle Does Not Creep Forward In "D" Position"](#) , [AT-204, "Vehicle Cannot Be Started From D1"](#) .

2. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis. Refer to [AT-109, "SELF-DIAGNOSTIC PROCEDURE \(WITH CONSULT-II\)"](#) .

Do the self-diagnostic results indicate ATF pressure switch 1, ATF pressure switch 5, front brake solenoid valve, direct clutch solenoid valve, accelerator pedal position sensor, turbine revolution sensor, vehicle speed sensor A/T (revolution sensor) and vehicle speed sensor MTR?

YES >> Check the malfunctioning system. Refer to [AT-181, "DTC P1841 ATF PRESSURE SWITCH 1"](#) , [AT-185, "DTC P1845 ATF PRESSURE SWITCH 5"](#) , [AT-162, "DTC P1757 FRONT BRAKE SOLENOID VALVE"](#) , [AT-166, "DTC P1762 DIRECT CLUTCH SOLENOID VALVE"](#) , [EC-562, "DTC P2122, P2123 APP SENSOR"](#) (for VQ35DE) or [EC-1226, "DTC P2122, P2123 APP SENSOR"](#) (for VK45DE), [EC-569, "DTC P2127, P2128 APP SENSOR"](#) (for VQ35DE) or [EC-1233, "DTC P2127, P2128 APP SENSOR"](#) (for VK45DE), [EC-583, "DTC P2138 APP SENSOR"](#) (for VQ35DE) or [EC-1247, "DTC P2138 APP SENSOR"](#) (for VK45DE), [AT-145, "DTC P1705 THROTTLE POSITION SENSOR"](#) , [AT-149, "DTC P1716 TURBINE REVOLUTION SENSOR"](#) , [AT-129, "DTC P0720 VEHICLE SPEED SENSOR A/T \(REVOLUTION SENSOR\)"](#) , [AT-151, "DTC P1721 VEHICLE SPEED SENSOR MTR"](#) .

NO >> GO TO 3.

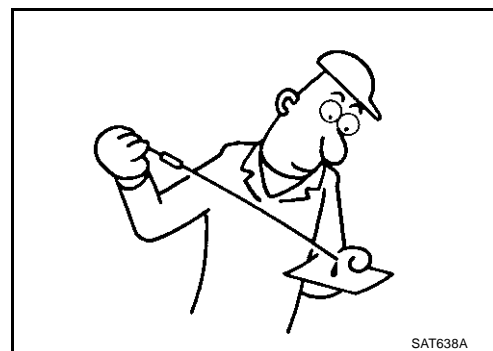
3. CHECK A/T FLUID LEVEL

Check A/T fluid level. Refer to [AT-12, "Checking A/T Fluid"](#) .

OK or NG

OK >> GO TO 4.

NG >> Refill ATF.



4. CHECK LINE PRESSURE

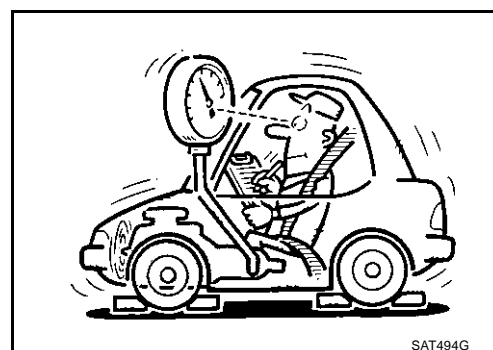
Check line pressure at the engine stall point. Refer to [AT-72, "LINE PRESSURE TEST"](#) .

OK or NG

OK >> GO TO 7.

NG - 1 >> Line pressure high: GO TO 5.

NG - 2 >> Line pressure low: GO TO 6.



TROUBLE DIAGNOSIS FOR SYMPTOMS

5. DETECT MALFUNCTIONING ITEM

1. Check control valve with TCM. Refer to [AT-242, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#) .
2. Disassemble A/T. Refer to [AT-291, "DISASSEMBLY"](#) .
3. Check the following items:
 - Oil pump assembly. Refer to [AT-308, "Oil Pump"](#) .

OK or NG

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

6. DETECT MALFUNCTIONING ITEM

1. Check control valve with TCM. Refer to [AT-242, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#) .
2. Disassemble A/T. Refer to [AT-291, "DISASSEMBLY"](#) .
3. Check the following items:
 - Oil pump assembly. Refer to [AT-308, "Oil Pump"](#) .
 - Power train system. Refer to [AT-291, "DISASSEMBLY"](#) .
 - Transmission case. Refer to [AT-291, "DISASSEMBLY"](#) .

OK or NG

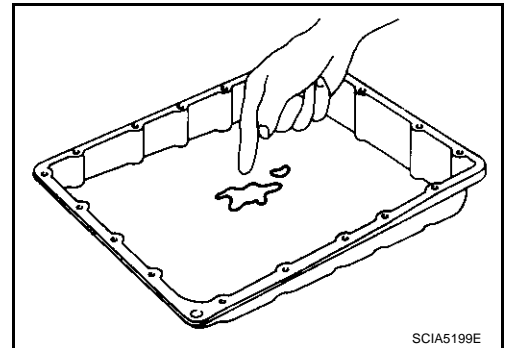
- OK >> GO TO 7.
- NG >> Repair or replace damaged parts.

7. CHECK A/T FLUID CONDITION

1. Remove oil pan. Refer to [AT-242, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#) .
2. Check A/T fluid condition. Refer to [AT-71, "Fluid Condition Check"](#) .

OK or NG

- OK >> GO TO 8.
- NG >> GO TO 11.



8. DETECT MALFUNCTIONING ITEM

- Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-82, "Symptom Chart"](#) (Symptom No.13).

OK or NG

- OK >> GO TO 9.
- NG >> Repair or replace damaged parts.

9. CHECK SYMPTOM

Check again. Refer to [AT-76, "Cruise Test - Part 1"](#) .

OK or NG

- OK >> **INSPECTION END**
- NG >> GO TO 10.

TROUBLE DIAGNOSIS FOR SYMPTOMS

10. CHECK TCM

1. Check TCM input/output signals. Refer to [AT-107, "TCM Input/Output Signal Reference Values"](#) .
2. If NG, recheck A/T assembly harness connector terminals for damage or loose connection with harness connector.

OK or NG

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

11. DETECT MALFUNCTIONING ITEM

- Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-82, "Symptom Chart"](#) (Symptom No.13).

OK or NG

- OK >> GO TO 9.
NG >> Repair or replace damaged parts.

A/T Does Not Perform Lock-Up

ACS008SC

SYMPTOM:

A/T does not perform lock-up at the specified speed.

DIAGNOSTIC PROCEDURE

1. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis. Refer to [AT-109, "SELF-DIAGNOSTIC PROCEDURE \(WITH CONSULT-II\)"](#) , [AT-120, "TCM SELF-DIAGNOSTIC PROCEDURE \(NO TOOLS\)"](#) .

Do the self-diagnostic results indicate torque converter clutch solenoid valve, engine speed signal, turbine revolution sensor, accelerator pedal position sensor, CAN communication?

- YES >> Check the malfunctioning system. Refer to [AT-133, "DTC P0740 TORQUE CONVERTER CLUTCH SOLENOID VALVE"](#) , [AT-131, "DTC P0725 ENGINE SPEED SIGNAL"](#) , [AT-149, "DTC P1716 TURBINE REVOLUTION SENSOR"](#) , [EC-562, "DTC P2122, P2123 APP SENSOR"](#) (for VQ35DE) or [EC-1226, "DTC P2122, P2123 APP SENSOR"](#) (for VK45DE), [EC-569, "DTC P2127, P2128 APP SENSOR"](#) (for VQ35DE) or [EC-1233, "DTC P2127, P2128 APP SENSOR"](#) (for VK45DE), [EC-583, "DTC P2138 APP SENSOR"](#) (for VQ35DE) or [EC-1247, "DTC P2138 APP SENSOR"](#) (for VK45DE), [AT-145, "DTC P1705 THROTTLE POSITION SENSOR"](#) , [AT-122, "DTC U1000 CAN COMMUNICATION LINE"](#) .

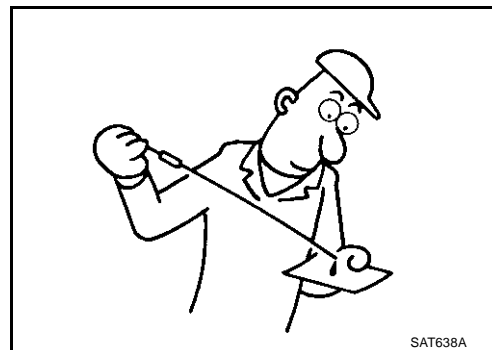
- NO >> GO TO 2.

2. CHECK A/T FLUID LEVEL

Check A/T fluid level. Refer to [AT-12, "Checking A/T Fluid"](#) .

OK or NG

- OK >> GO TO 3.
NG >> Refill ATF.



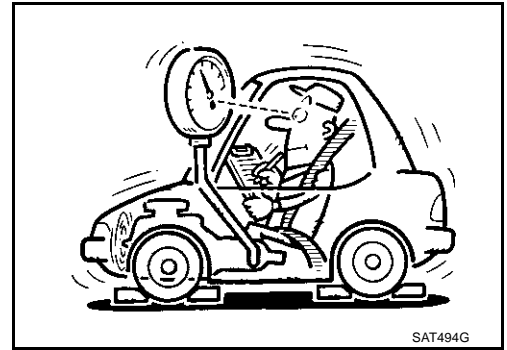
TROUBLE DIAGNOSIS FOR SYMPTOMS

3. CHECK LINE PRESSURE

Check line pressure at the engine stall point. Refer to [AT-72, "LINE PRESSURE TEST"](#) .

OK or NG

- OK >> GO TO 6.
- NG - 1 >> Line pressure high: GO TO 4.
- NG - 2 >> Line pressure low: GO TO 5.



4. DETECT MALFUNCTIONING ITEM

1. Check control valve with TCM. Refer to [AT-242, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#) .
2. Disassemble A/T. Refer to [AT-291, "DISASSEMBLY"](#) .
3. Check the following items:
 - Oil pump assembly. Refer to [AT-308, "Oil Pump"](#) .

OK or NG

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

5. DETECT MALFUNCTIONING ITEM

1. Check control valve with TCM. Refer to [AT-242, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#) .
2. Disassemble A/T. Refer to [AT-291, "DISASSEMBLY"](#) .
3. Check the following items:
 - Oil pump assembly. Refer to [AT-308, "Oil Pump"](#) .
 - Power train system. Refer to [AT-291, "DISASSEMBLY"](#) .
 - Transmission case. Refer to [AT-291, "DISASSEMBLY"](#) .

OK or NG

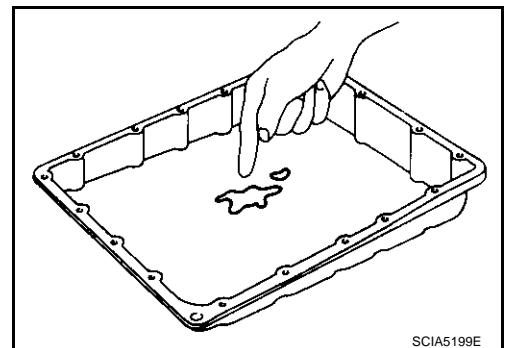
- OK >> GO TO 6.
- NG >> Repair or replace damaged parts.

6. CHECK A/T FLUID CONDITION

1. Remove oil pan. Refer to [AT-242, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#) .
2. Check A/T fluid condition. Refer to [AT-71, "Fluid Condition Check"](#) .

OK or NG

- OK >> GO TO 7.
- NG >> GO TO 10.



TROUBLE DIAGNOSIS FOR SYMPTOMS

7. DETECT MALFUNCTIONING ITEM

- Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-82, "Symptom Chart"](#) (Symptom No.24).

OK or NG

- OK >> GO TO 8.
NG >> Repair or replace damaged parts.

8. CHECK SYMPTOM

Check again. Refer to [AT-76, "Cruise Test - Part 1"](#) .

OK or NG

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

9. CHECK TCM

1. Check TCM input/output signals. Refer to [AT-107, "TCM Input/Output Signal Reference Values"](#) .
2. If NG, recheck A/T assembly harness connector terminals for damage or loose connection with harness connector.

OK or NG

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

10. DETECT MALFUNCTIONING ITEM

- Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-82, "Symptom Chart"](#) (Symptom No.24).

OK or NG

- OK >> GO TO 8.
NG >> Repair or replace damaged parts.

TROUBLE DIAGNOSIS FOR SYMPTOMS

ACS008SD

A/T Does Not Hold Lock-Up Condition

SYMPTOM:

The lock-up condition cannot be maintained for more than 30 seconds.

DIAGNOSTIC PROCEDURE

1. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis. Refer to [AT-109, "SELF-DIAGNOSTIC PROCEDURE \(WITH CONSULT-II\)"](#) , [AT-120, "TCM SELF-DIAGNOSTIC PROCEDURE \(NO TOOLS\)"](#) .

Do the self-diagnostic results indicate torque converter clutch solenoid valve, engine speed signal, turbine revolution sensor, CAN communication?

YES >> Check the malfunctioning system. Refer to [AT-133, "DTC P0740 TORQUE CONVERTER CLUTCH SOLENOID VALVE"](#) , [AT-131, "DTC P0725 ENGINE SPEED SIGNAL"](#) , [AT-149, "DTC P1716 TURBINE REVOLUTION SENSOR"](#) , [AT-122, "DTC U1000 CAN COMMUNICATION LINE"](#) .

NO >> GO TO 2.

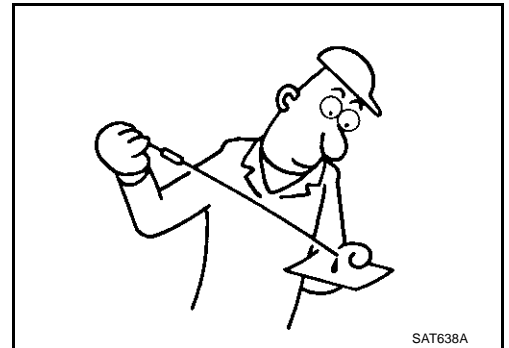
2. CHECK A/T FLUID LEVEL

Check A/T fluid level. Refer to [AT-12, "Checking A/T Fluid"](#) .

OK or NG

OK >> GO TO 3.

NG >> Refill ATF.



SAT638A

3. CHECK A/T FLUID CONDITION

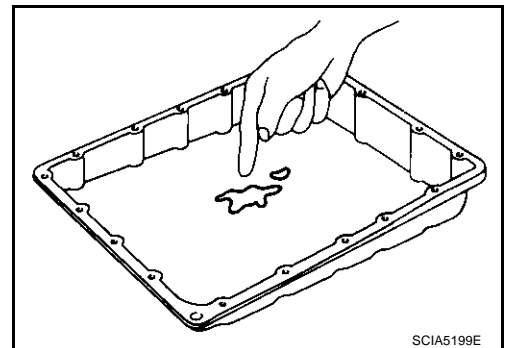
1. Remove oil pan. Refer to [AT-242, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#) .

2. Check A/T fluid condition. Refer to [AT-71, "Fluid Condition Check"](#) .

OK or NG

OK >> GO TO 4.

NG >> GO TO 7.



SCIA5199E

4. DETECT MALFUNCTIONING ITEM

● Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-82, "Symptom Chart"](#) (Symptom No.25).

OK or NG

OK >> GO TO 5.

NG >> Repair or replace damaged parts.

TROUBLE DIAGNOSIS FOR SYMPTOMS

5. CHECK SYMPTOM

Check again. Refer to [AT-76, "Cruise Test - Part 1"](#) .

OK or NG

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

6. CHECK TCM

1. Check TCM input/output signals. Refer to [AT-107, "TCM Input/Output Signal Reference Values"](#) .
2. If NG, recheck A/T assembly harness connector terminals for damage or loose connection with harness connector.

OK or NG

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

7. DETECT MALFUNCTIONING ITEM

- Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-82, "Symptom Chart"](#) (Symptom No.25).

OK or NG

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

Lock-Up Is Not Released

SYMPTOM:

ACS008SE

The lock-up condition cannot be cancelled even after releasing the accelerator pedal.

DIAGNOSTIC PROCEDURE

1. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis. Refer to [AT-109, "SELF-DIAGNOSTIC PROCEDURE \(WITH CONSULT-II\)"](#) , [AT-120, "TCM SELF-DIAGNOSTIC PROCEDURE \(NO TOOLS\)"](#) .

Do the self-diagnostic results indicate torque converter clutch solenoid valve, engine speed signal, turbine revolution sensor, CAN communication?

YES >> Check the malfunctioning system. Refer to [AT-133, "DTC P0740 TORQUE CONVERTER CLUTCH SOLENOID VALVE"](#) , [AT-131, "DTC P0725 ENGINE SPEED SIGNAL"](#) , [AT-149, "DTC P1716 TURBINE REVOLUTION SENSOR"](#) , [AT-122, "DTC U1000 CAN COMMUNICATION LINE"](#) .

NO >> GO TO 2.

2. CHECK SYMPTOM

Check again. Refer to [AT-76, "Cruise Test - Part 1"](#) .

OK or NG

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

3. CHECK TCM

1. Check TCM input/output signals. Refer to [AT-107, "TCM Input/Output Signal Reference Values"](#) .
2. If NG, recheck A/T assembly harness connector terminals for damage or loose connection with harness connector.

OK or NG

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

TROUBLE DIAGNOSIS FOR SYMPTOMS

ACS008SF

Engine Speed Does Not Return To Idle

SYMPTOM:

When a shift-down is performed, the engine speed does not smoothly return to the idling speed.

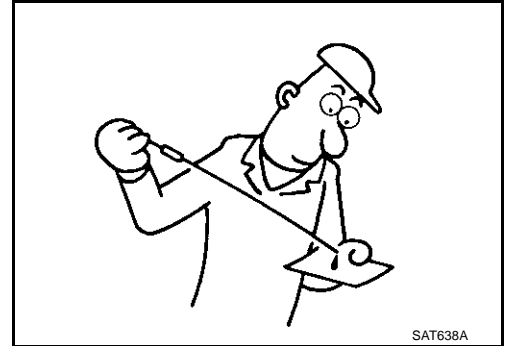
DIAGNOSTIC PROCEDURE

1. CHECK A/T FLUID LEVEL

Check A/T fluid level. Refer to [AT-12, "Checking A/T Fluid"](#) .

OK or NG

- OK >> GO TO 2.
- NG >> Refill ATF.



2. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis. Refer to [AT-109, "SELF-DIAGNOSTIC PROCEDURE \(WITH CONSULT-II\)"](#) .

Do the self-diagnostic results indicate front brake solenoid valve, direct clutch solenoid valve, ATF pressure switch 1, ATF pressure switch 5, accelerator pedal position sensor, vehicle speed sensor A/T (revolution sensor) and vehicle speed sensor MTR?

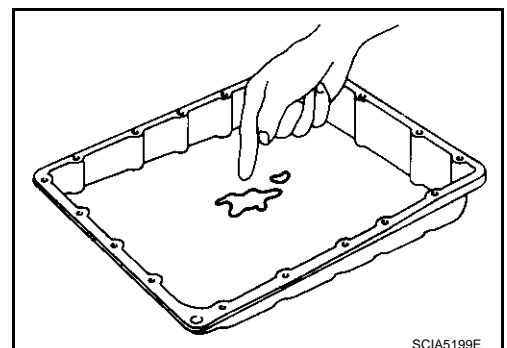
- YES >> Check the malfunctioning system. Refer to [AT-162, "DTC P1757 FRONT BRAKE SOLENOID VALVE"](#) , [AT-166, "DTC P1762 DIRECT CLUTCH SOLENOID VALVE"](#) , [AT-181, "DTC P1841 ATF PRESSURE SWITCH 1"](#) , [AT-185, "DTC P1845 ATF PRESSURE SWITCH 5"](#) , [EC-562, "DTC P2122, P2123 APP SENSOR"](#) (for VQ35DE) or [EC-1226, "DTC P2122, P2123 APP SENSOR"](#) (for VK45DE), [EC-569, "DTC P2127, P2128 APP SENSOR"](#) (for VQ35DE) or [EC-1233, "DTC P2127, P2128 APP SENSOR"](#) (for VK45DE), [EC-583, "DTC P2138 APP SENSOR"](#) (for VQ35DE) or [EC-1247, "DTC P2138 APP SENSOR"](#) (for VK45DE), [AT-145, "DTC P1705 THROTTLE POSITION SENSOR"](#) , [AT-129, "DTC P0720 VEHICLE SPEED SENSOR A/T \(REVOLUTION SENSOR\)"](#) , [AT-151, "DTC P1721 VEHICLE SPEED SENSOR MTR"](#) .
- NO >> GO TO 3.

3. CHECK A/T FLUID CONDITION

1. Remove oil pan. Refer to [AT-242, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#) .
2. Check A/T fluid condition. Refer to [AT-71, "Fluid Condition Check"](#) .

OK or NG

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



4. DETECT MALFUNCTIONING ITEM

- Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-82, "Symptom Chart"](#) (Symptom No.72).

OK or NG

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

TROUBLE DIAGNOSIS FOR SYMPTOMS

5. CHECK SYMPTOM

Check again. Refer to [AT-76, "Cruise Test - Part 1"](#) .

OK or NG

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

6. CHECK TCM

1. Check TCM input/output signals. Refer to [AT-107, "TCM Input/Output Signal Reference Values"](#) .
2. If NG, recheck A/T assembly harness connector terminals for damage or loose connection with harness connector.

OK or NG

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

7. DETECT MALFUNCTIONING ITEM

- Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-82, "Symptom Chart"](#) (Symptom No.72).

OK or NG

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

Cannot Be Changed to Manual Mode **SYMPTOM:**

ACS008SG

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

DIAGNOSTIC PROCEDURE

1. MANUAL MODE SWITCH

Check the manual mode switch. Refer to [AT-178, "DTC P1815 MANUAL MODE SWITCH"](#) .

OK or NG

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

2. CHECK SELF-DIAGNOSIS RESULTS

Perform self-diagnosis. Refer to [AT-109, "SELF-DIAGNOSTIC PROCEDURE \(WITH CONSULT-II\)"](#) .

Do the self-diagnosis results indicate turbine revolution sensor?

YES >> Check the malfunctioning system. Refer to [AT-149, "DTC P1716 TURBINE REVOLUTION SENSOR"](#) .
NO >> **INSPECTION END**

TROUBLE DIAGNOSIS FOR SYMPTOMS

ACS008SH

A/T Does Not Shift: 5th Gear → 4th Gear

SYMPTOM:

When shifted from M5 to M4 position in manual mode, does not downshift from 5th to 4th gear.

DIAGNOSTIC PROCEDURE

1. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis. Refer to [AT-109, "SELF-DIAGNOSTIC PROCEDURE \(WITH CONSULT-II\)"](#) .

Do the self-diagnostic results indicate PNP switch, ATF pressure switch 1?

YES >> Check the malfunctioning system. Refer to [AT-127, "DTC P0705 PARK/NEUTRAL POSITION SWITCH"](#) , [AT-181, "DTC P1841 ATF PRESSURE SWITCH 1"](#) .

NO >> GO TO 2.

2. CHECK A/T FLUID LEVEL

Check A/T fluid level. Refer to [AT-12, "Checking A/T Fluid"](#) .

OK or NG

OK >> GO TO 3.

NG >> Refill ATF.



3. CHECK CONTROL LINKAGE

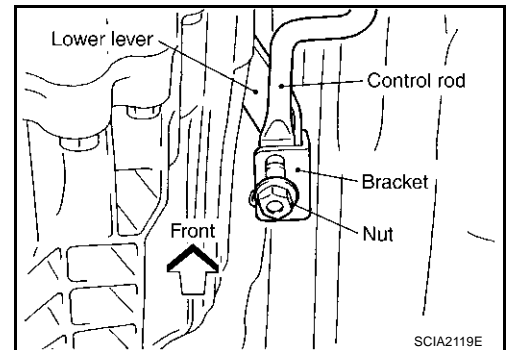
Check the control linkage.

- Refer to [AT-234, "Checking of A/T Position"](#) .

OK or NG

OK >> GO TO 4.

NG >> Adjust control linkage. Refer to [AT-234, "Adjustment of A/T Position"](#) .



4. MANUAL MODE SWITCH

Check the manual mode switch. Refer to [AT-178, "DTC P1815 MANUAL MODE SWITCH"](#) .

OK or NG

OK >> GO TO 5.

NG >> Repair or replace damaged parts.

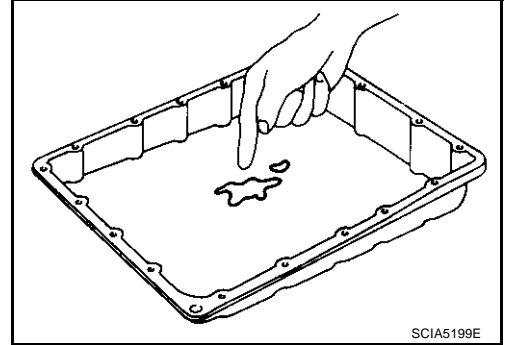
TROUBLE DIAGNOSIS FOR SYMPTOMS

5. CHECK A/T FLUID CONDITION

1. Remove oil pan. Refer to [AT-242, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#) .
2. Check A/T fluid condition. Refer to [AT-71, "Fluid Condition Check"](#) .

OK or NG

- OK >> GO TO 6.
NG >> GO TO 9.



6. DETECT MALFUNCTIONING ITEM

- Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-82, "Symptom Chart"](#) (Symptom No.14).

OK or NG

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

7. CHECK SYMPTOM

Check again. Refer to [AT-79, "Cruise Test - Part 3"](#) .

OK or NG

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

8. CHECK TCM

1. Check TCM input/output signals. Refer to [AT-107, "TCM Input/Output Signal Reference Values"](#) .
2. If NG, recheck A/T assembly harness connector terminals for damage or loose connection with harness connector.

OK or NG

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

9. DETECT MALFUNCTIONING ITEM

- Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-82, "Symptom Chart"](#) (Symptom No.14).

OK or NG

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

TROUBLE DIAGNOSIS FOR SYMPTOMS

A/T Does Not Shift: 4th Gear → 3rd Gear

ACS008SI

SYMPTOM:

When shifted from M4 to M3 position in manual mode, does not downshift from 4th to 3rd gear.

DIAGNOSTIC PROCEDURE

1. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis. Refer to [AT-109, "SELF-DIAGNOSTIC PROCEDURE \(WITH CONSULT-II\)"](#) .

Do the self-diagnostic results indicate PNP switch, ATF pressure switch 1, ATF pressure switch 3?

YES >> Check the malfunctioning system. Refer to [AT-127, "DTC P0705 PARK/NEUTRAL POSITION SWITCH"](#) , [AT-181, "DTC P1841 ATF PRESSURE SWITCH 1"](#) , [AT-183, "DTC P1843 ATF PRESSURE SWITCH 3"](#) .

NO >> GO TO 2.

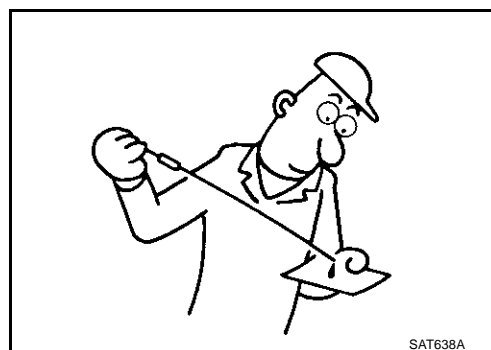
2. CHECK A/T FLUID LEVEL

Check A/T fluid level. Refer to [AT-12, "Checking A/T Fluid"](#) .

OK or NG

OK >> GO TO 3.

NG >> Refill ATF.



3. CHECK CONTROL LINKAGE

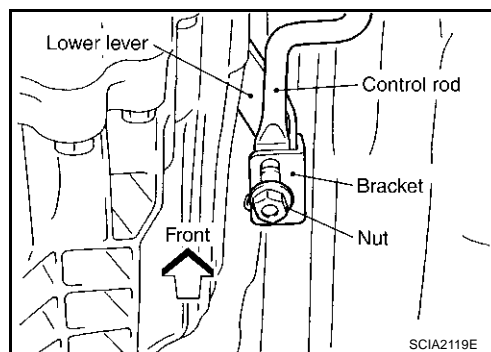
Check the control linkage.

- Refer to [AT-234, "Checking of A/T Position"](#) .

OK or NG

OK >> GO TO 4.

NG >> Adjust control linkage. Refer to [AT-234, "Adjustment of A/T Position"](#) .



4. MANUAL MODE SWITCH

Check the manual mode switch. Refer to [AT-178, "DTC P1815 MANUAL MODE SWITCH"](#) .

OK or NG

OK >> GO TO 5.

NG >> Repair or replace damaged parts.

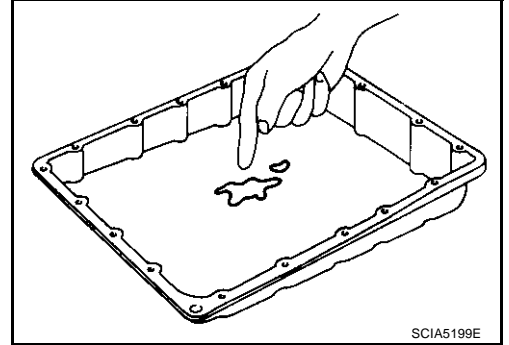
TROUBLE DIAGNOSIS FOR SYMPTOMS

5. CHECK A/T FLUID CONDITION

1. Remove oil pan. Refer to [AT-242, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#) .
2. Check A/T fluid condition. Refer to [AT-71, "Fluid Condition Check"](#) .

OK or NG

- OK >> GO TO 6.
NG >> GO TO 9.



6. DETECT MALFUNCTIONING ITEM

- Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-82, "Symptom Chart"](#) (Symptom No.15).

OK or NG

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

7. CHECK SYMPTOM

Check again. Refer to [AT-79, "Cruise Test - Part 3"](#) .

OK or NG

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

8. CHECK TCM

1. Check TCM input/output signals. Refer to [AT-107, "TCM Input/Output Signal Reference Values"](#) .
2. If NG, recheck A/T assembly harness connector terminals for damage or loose connection with harness connector.

OK or NG

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

9. DETECT MALFUNCTIONING ITEM

- Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-82, "Symptom Chart"](#) (Symptom No.15).

OK or NG

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

TROUBLE DIAGNOSIS FOR SYMPTOMS

ACS008SJ

A/T Does Not Shift: 3rd Gear → 2nd Gear

SYMPTOM:

When shifted from M3 to M2 position in manual mode, does not downshift from 3rd to 2nd gear.

DIAGNOSTIC PROCEDURE

1. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis. Refer to [AT-109, "SELF-DIAGNOSTIC PROCEDURE \(WITH CONSULT-II\)"](#) .

Do the self-diagnostic results indicate PNP switch, ATF pressure switch 6?

YES >> Check the malfunctioning system. Refer to [AT-127, "DTC P0705 PARK/NEUTRAL POSITION SWITCH"](#) , [AT-187, "DTC P1846 ATF PRESSURE SWITCH 6"](#) .

NO >> GO TO 2.

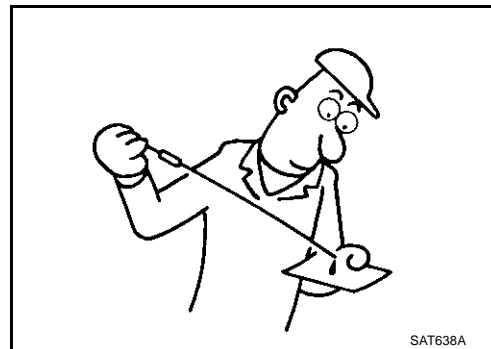
2. CHECK A/T FLUID LEVEL

Check A/T fluid level. Refer to [AT-12, "Checking A/T Fluid"](#) .

OK or NG

OK >> GO TO 3.

NG >> Refill ATF.



3. CHECK CONTROL LINKAGE

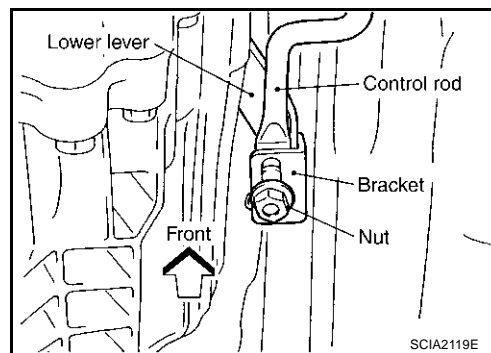
Check the control linkage.

- Refer to [AT-234, "Checking of A/T Position"](#) .

OK or NG

OK >> GO TO 4.

NG >> Adjust control linkage. Refer to [AT-234, "Adjustment of A/T Position"](#) .



4. MANUAL MODE SWITCH

Check the manual mode switch. Refer to [AT-178, "DTC P1815 MANUAL MODE SWITCH"](#) .

OK or NG

OK >> GO TO 5.

NG >> Repair or replace damaged parts.

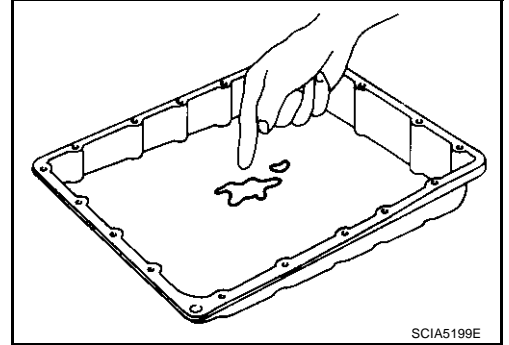
TROUBLE DIAGNOSIS FOR SYMPTOMS

5. CHECK A/T FLUID CONDITION

1. Remove oil pan. Refer to [AT-242, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#) .
2. Check A/T fluid condition. Refer to [AT-71, "Fluid Condition Check"](#) .

OK or NG

- OK >> GO TO 6.
NG >> GO TO 9.



6. DETECT MALFUNCTIONING ITEM

- Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-82, "Symptom Chart"](#) (Symptom No.16).

OK or NG

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

7. CHECK SYMPTOM

Check again. Refer to [AT-79, "Cruise Test - Part 3"](#) .

OK or NG

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

8. CHECK TCM

1. Check TCM input/output signals. Refer to [AT-107, "TCM Input/Output Signal Reference Values"](#) .
2. If NG, recheck A/T assembly harness connector terminals for damage or loose connection with harness connector.

OK or NG

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

9. DETECT MALFUNCTIONING ITEM

- Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-82, "Symptom Chart"](#) (Symptom No.16).

OK or NG

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

TROUBLE DIAGNOSIS FOR SYMPTOMS

ACS008SK

A/T Does Not Shift: 2nd Gear → 1st Gear

SYMPTOM:

When shifted from M2 to M1 position in manual mode, does not downshift from 2nd to 1st gear.

DIAGNOSTIC PROCEDURE

1. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis. Refer to [AT-109, "SELF-DIAGNOSTIC PROCEDURE \(WITH CONSULT-II\)"](#) .

Do the self-diagnostic results indicate PNP switch, ATF pressure switch 5?

YES >> Check the malfunctioning system. Refer to [AT-127, "DTC P0705 PARK/NEUTRAL POSITION SWITCH"](#) , [AT-185, "DTC P1845 ATF PRESSURE SWITCH 5"](#) .

NO >> GO TO 2.

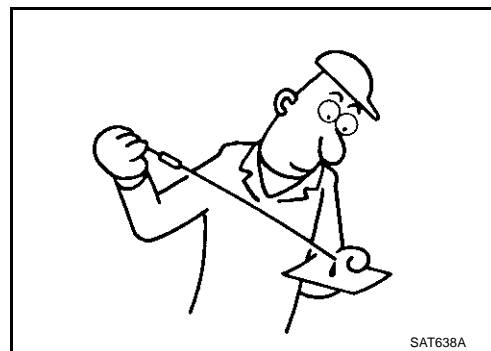
2. CHECK A/T FLUID LEVEL

Check A/T fluid level. Refer to [AT-12, "Checking A/T Fluid"](#) .

OK or NG

OK >> GO TO 3.

NG >> Refill ATF.



3. CHECK CONTROL LINKAGE

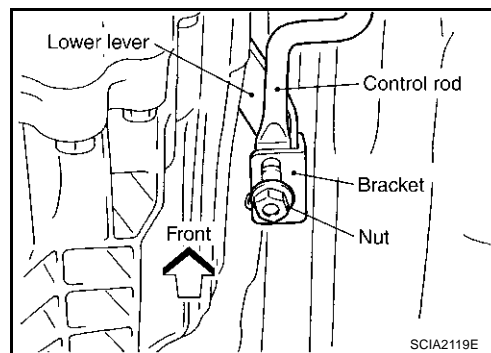
Check the control linkage.

- Refer to [AT-234, "Checking of A/T Position"](#) .

OK or NG

OK >> GO TO 4.

NG >> Adjust control linkage. Refer to [AT-234, "Adjustment of A/T Position"](#) .



4. MANUAL MODE SWITCH

Check the manual mode switch. Refer to [AT-178, "DTC P1815 MANUAL MODE SWITCH"](#) .

OK or NG

OK >> GO TO 5.

NG >> Repair or replace damaged parts.

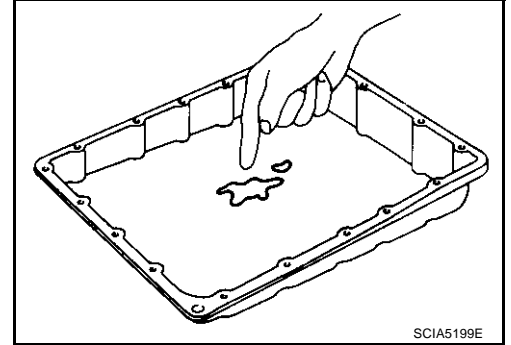
TROUBLE DIAGNOSIS FOR SYMPTOMS

5. CHECK A/T FLUID CONDITION

1. Remove oil pan. Refer to [AT-242, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#) .
2. Check A/T fluid condition. Refer to [AT-71, "Fluid Condition Check"](#) .

OK or NG

- OK >> GO TO 6.
NG >> GO TO 9.



6. DETECT MALFUNCTIONING ITEM

- Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-82, "Symptom Chart"](#) (Symptom No.17).

OK or NG

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

7. CHECK SYMPTOM

Check again. Refer to [AT-79, "Cruise Test - Part 3"](#) .

OK or NG

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

8. CHECK TCM

1. Check TCM input/output signals. Refer to [AT-107, "TCM Input/Output Signal Reference Values"](#) .
2. If NG, recheck A/T assembly harness connector terminals for damage or loose connection with harness connector.

OK or NG

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

9. DETECT MALFUNCTIONING ITEM

- Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-82, "Symptom Chart"](#) (Symptom No.17).

OK or NG

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

TROUBLE DIAGNOSIS FOR SYMPTOMS

ACS008SL

Vehicle Does Not Decelerate By Engine Brake

SYMPTOM:

No engine brake is applied when the gear is shifted from the 2nd to 1st gear.

DIAGNOSTIC PROCEDURE

1. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis. Refer to [AT-109, "SELF-DIAGNOSTIC PROCEDURE \(WITH CONSULT-II\)"](#) .

Do the self-diagnostic results indicate PNP switch, ATF pressure switch 5?

YES >> Check the malfunctioning system. Refer to [AT-127, "DTC P0705 PARK/NEUTRAL POSITION SWITCH"](#) , [AT-185, "DTC P1845 ATF PRESSURE SWITCH 5"](#) .

NO >> GO TO 2.

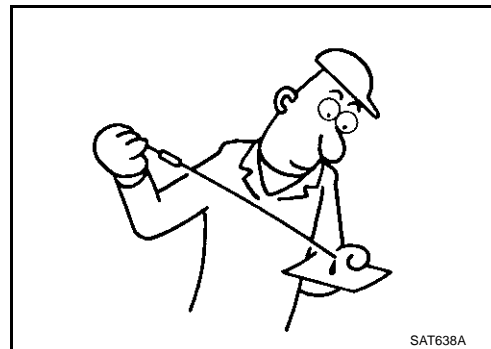
2. CHECK A/T FLUID LEVEL

Check A/T fluid level. Refer to [AT-12, "Checking A/T Fluid"](#) .

OK or NG

OK >> GO TO 3.

NG >> Refill ATF.



3. CHECK CONTROL LINKAGE

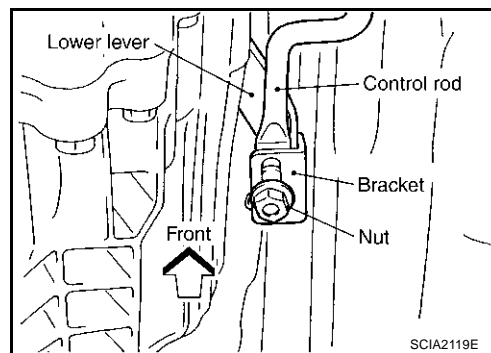
Check the control linkage.

● Refer to [AT-234, "Checking of A/T Position"](#) .

OK or NG

OK >> GO TO 4.

NG >> Adjust control linkage. Refer to [AT-234, "Adjustment of A/T Position"](#) .



4. MANUAL MODE SWITCH

Check the manual mode switch. Refer to [AT-178, "DTC P1815 MANUAL MODE SWITCH"](#) .

OK or NG

OK >> GO TO 5.

NG >> Repair or replace damaged parts.

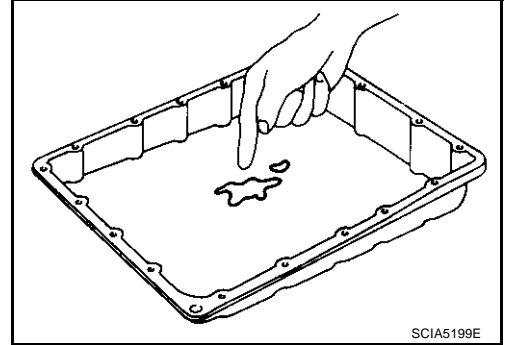
TROUBLE DIAGNOSIS FOR SYMPTOMS

5. CHECK A/T FLUID CONDITION

1. Remove oil pan. Refer to [AT-242, "Control Valve with TCM and A/T Fluid Temperature Sensor 2"](#) .
2. Check A/T fluid condition. Refer to [AT-71, "Fluid Condition Check"](#) .

OK or NG

- OK >> GO TO 6.
NG >> GO TO 9.



6. DETECT MALFUNCTIONING ITEM

- Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-82, "Symptom Chart"](#) (Symptom No.58).

OK or NG

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

7. CHECK SYMPTOM

Check again. Refer to [AT-79, "Cruise Test - Part 3"](#) .

OK or NG

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

8. CHECK TCM

1. Check TCM input/output signals. Refer to [AT-107, "TCM Input/Output Signal Reference Values"](#) .
2. If NG, recheck A/T assembly harness connector terminals for damage or loose connection with harness connector.

OK or NG

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

9. DETECT MALFUNCTIONING ITEM

- Check the malfunction items. If any items are damaged, repair or replace damaged parts. Refer to [AT-82, "Symptom Chart"](#) (Symptom No.58).

OK or NG

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

SHIFT CONTROL SYSTEM

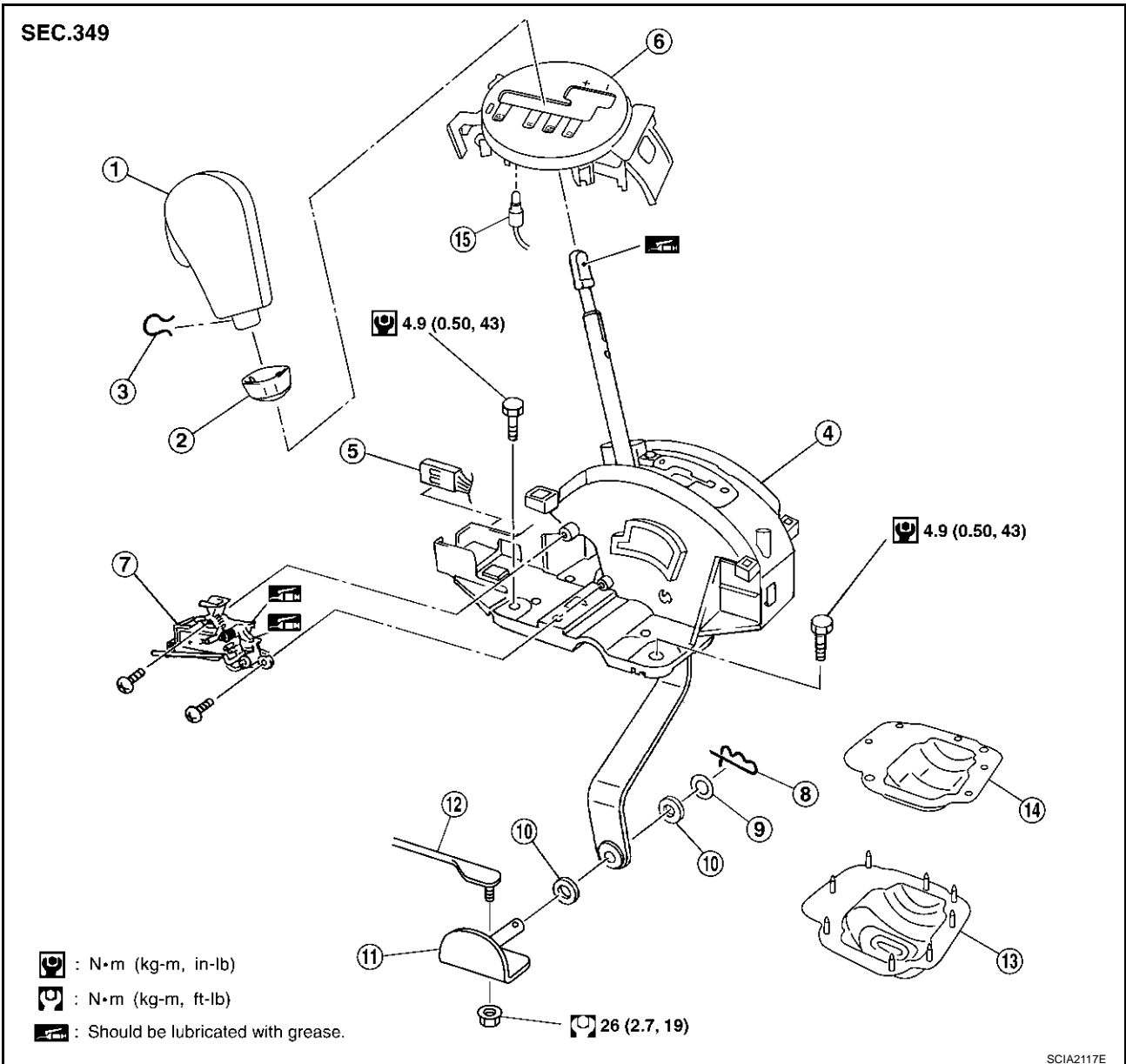
SHIFT CONTROL SYSTEM

PFP:34901

Control Device Removal and Installation

ACS002RQ

A
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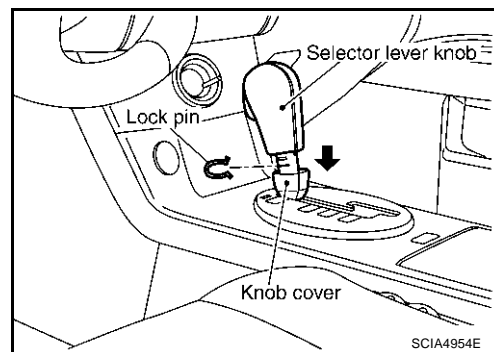


- | | | |
|--|---------------------------------|-----------------------------|
| 1. selector lever knob | 2. Knob cover | 3. Lock pin |
| 4. Control device assembly | 5. A/T device harness connector | 6. Position indicator plate |
| 7. Shift lock solenoid and park position switch assembly | 8. Snap pin | 9. Conical washer |
| 10. Plain washer | 11. Bracket | 12. Control rod |
| 13. Dust cover | 14. Dust cover plate | 15. Position lamp |

SHIFT CONTROL SYSTEM

REMOVAL

1. Disconnect lower lever of control device and control rod.
2. Remove knob cover below selector lever downward.
3. Pull lock pin out of selector lever knob.
4. Remove selector lever knob.
5. Remove console finisher.
 - Refer to [IP-10, "INSTRUMENT PANEL ASSEMBLY"](#) .
6. Remove center console.
 - Refer to [IP-10, "INSTRUMENT PANEL ASSEMBLY"](#) .
7. Remove key interlock cable from control device.
 - Refer to [AT-239, "KEY INTERLOCK CABLE"](#) .
8. Disconnect A/T device harness connector.
9. Remove control device assembly.



INSTALLATION

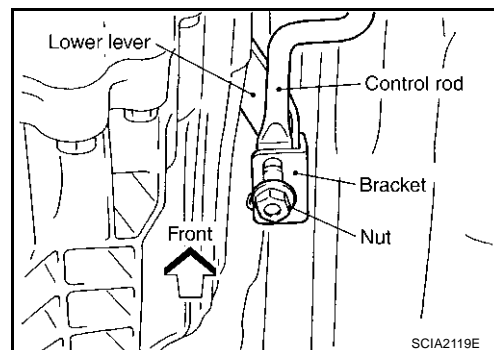
Install in reverse order of removal. Be careful of the following:

- After installation is completed, adjust and check A/T position.

Adjustment of A/T Position

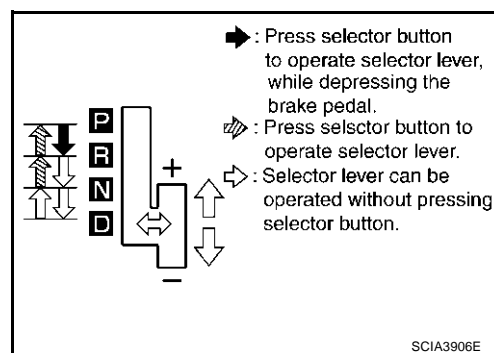
1. Loosen nut of control rod.
2. Place PNP switch and selector lever in "P" position.
3. While pressing lower lever toward rear of vehicle (in P position direction), tighten nut to specified torque.

 :26 N·m (2.7 kg·m, 19 ft·lb)



Checking of A/T Position

1. Place selector lever in "P" position, and turn ignition switch ON (engine stop).
2. Make sure selector lever can be shifted to other than "P" position when brake pedal is depressed. Also make sure selector lever can be shifted from "P" position only when brake pedal is depressed.
3. Move the selector lever and check for excessive effort, sticking, noise or rattle.
4. Confirm the selector lever stops at each position with the feel of engagement when it is moved through all the positions. Check whether or not the actual position the selector lever is in matches the position shown by the shift position indicator and the transmission body.
5. The method of operating the lever to individual positions correctly should be as shown in the figure.
6. When selector button is pressed in "P", "R", or "N" position without applying forward/backward force to selector lever, check button operation for sticking.
7. Confirm the back-up lamps illuminate only when lever is placed in the "R" position. Confirm the back-up lamps does not illuminate when selector lever is pushed against "R" position in the "P" or "N" position.
8. Confirm the engine can only be started with the selector lever in the "P" and "N" positions.
9. Make sure transmission is locked completely in "P" position.
10. When selector lever is set to manual shift gate, make sure manual mode is displayed on combination meter.
Shift selector lever to "+" and "-" sides, and make sure set shift position changes.



A/T SHIFT LOCK SYSTEM

A/T SHIFT LOCK SYSTEM

PFP:34950

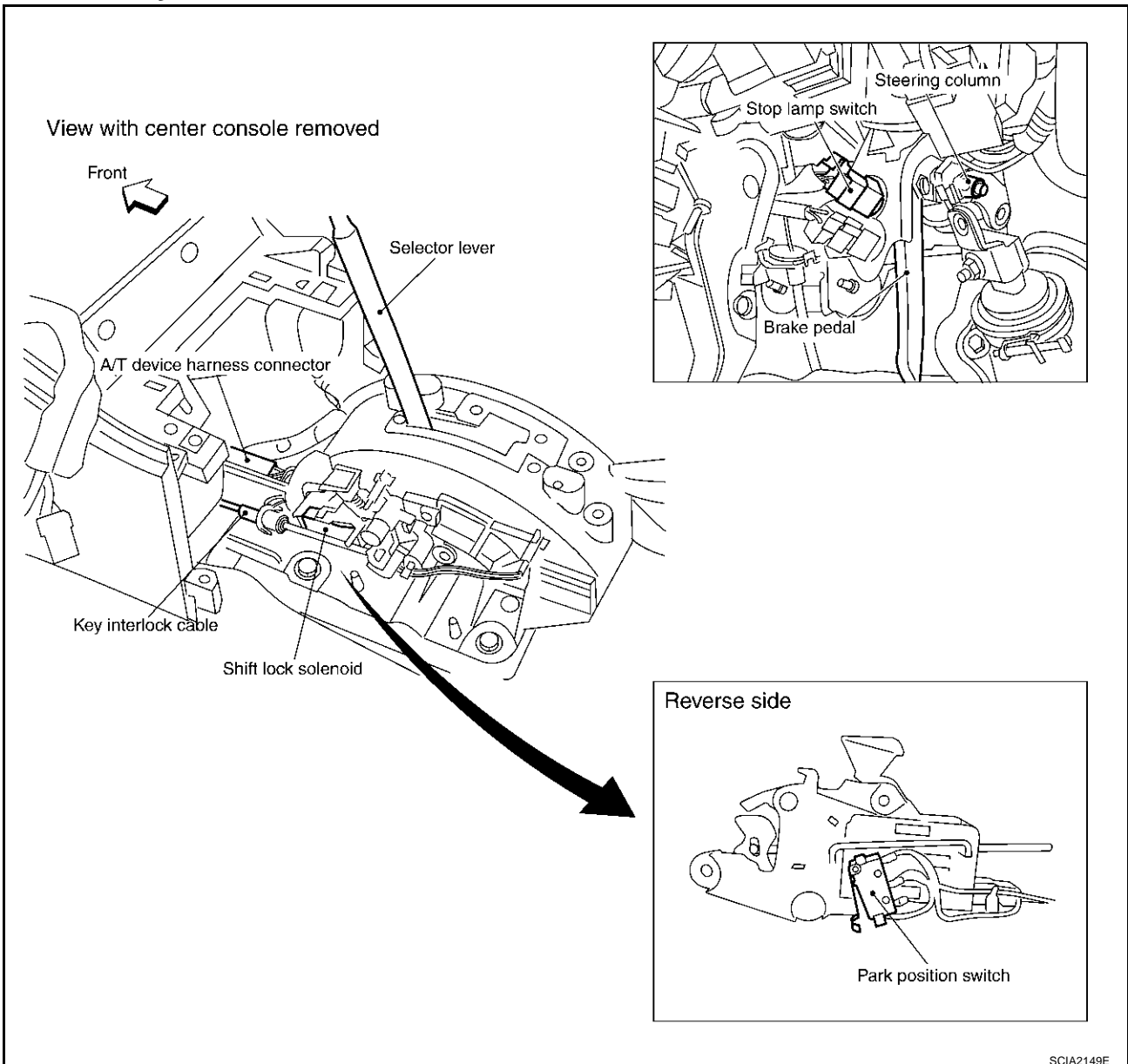
Description

ACS002RT

- The mechanical key interlock mechanism also operates as a shift lock:
With the ignition switch turned to ON, the selector lever cannot be shifted from "P" (parking) to any other position unless the brake pedal is depressed.
With the key removed, the selector lever cannot be shifted from "P" to any other position.
The key cannot be removed unless the selector lever is placed in "P".
- The shift lock and key interlock mechanisms are controlled by the ON-OFF operation of the shift lock solenoid and by the operation of the rotator and slider located inside the key cylinder.

Shift Lock System Electrical Parts Location

ACS002RU

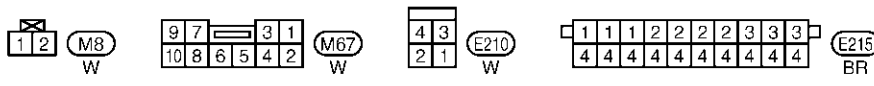
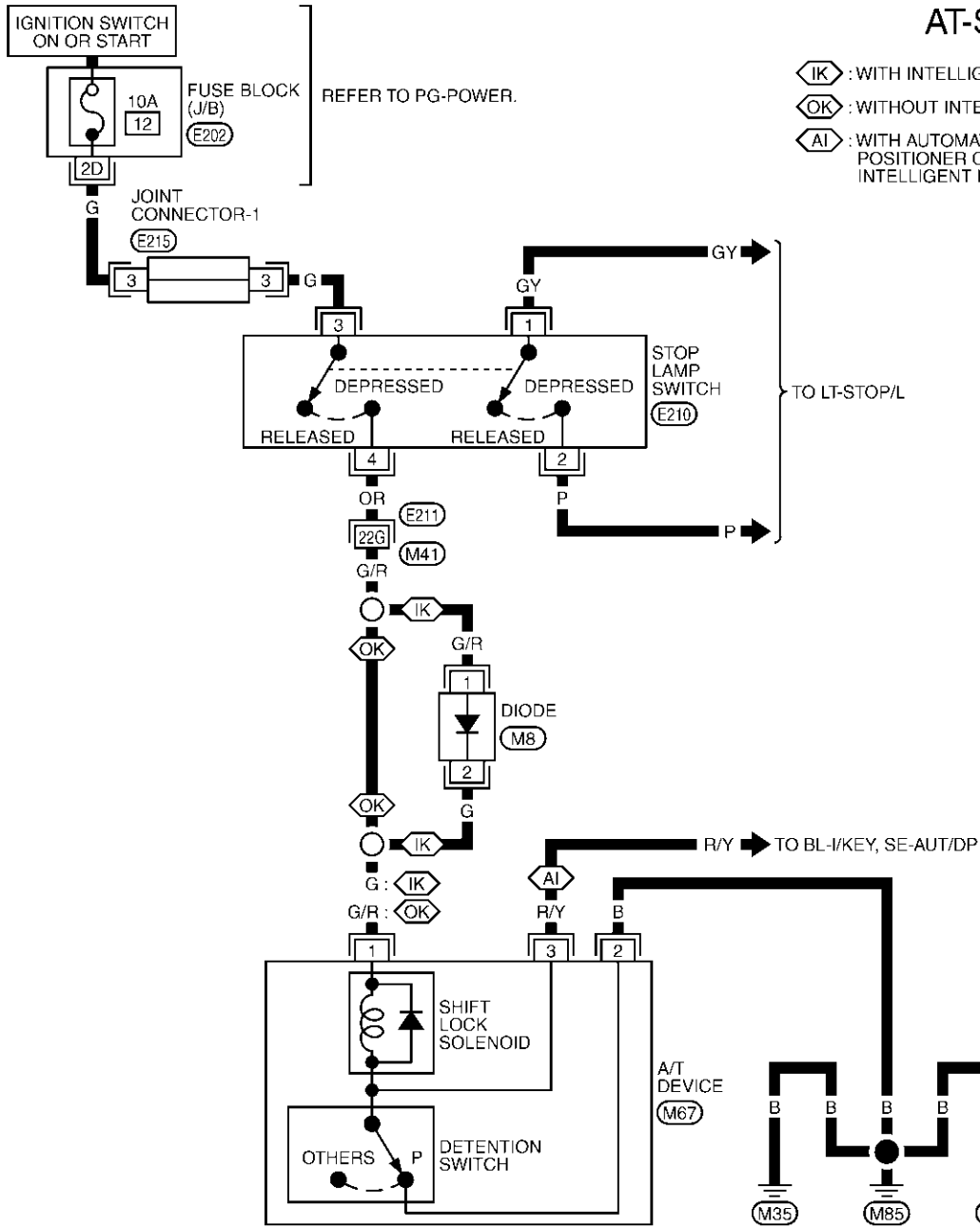


A/T SHIFT LOCK SYSTEM

ACS002RV

Wiring Diagram — AT — SHIFT

AT-SHIFT-01



REFER TO THE FOLLOWING.
 (E211) -SUPER MULTIPLE JUNCTION (SMJ)
 (E202) -FUSE BLOCK-JUNCTION BOX (J/B)

TCWM0149E

A/T SHIFT LOCK SYSTEM

ACS002RW

Diagnostic Procedure

SYMPTOM 1:

- Selector lever cannot be moved from “P” position with key in ON position and brake pedal applied.
- Selector lever can be moved from “P” position with key in ON position and brake pedal released.
- Selector lever can be moved from “P” position when key 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”.

1. CHECK KEY INTERLOCK CABLE

Check the key interlock cable for damage.

OK or NG

- OK >> GO TO 2.
- NG >> Repair key interlock cable. Refer to [AT-239, "KEY INTERLOCK CABLE"](#).

2. CHECK SELECTOR LEVER POSITION

Check the selector lever position for damage.

OK or NG

- OK >> GO TO 3.
- NG >> Adjust control linkage. Refer to [AT-234, "Adjustment of A/T Position"](#).

3. CHECK SHIFT LOCK SOLENOID AND PARK POSITION SWITCH

1. Connect A/T device harness connector.
2. Turn ignition switch “ON”.
3. Selector lever is set in “P” position.
4. 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.

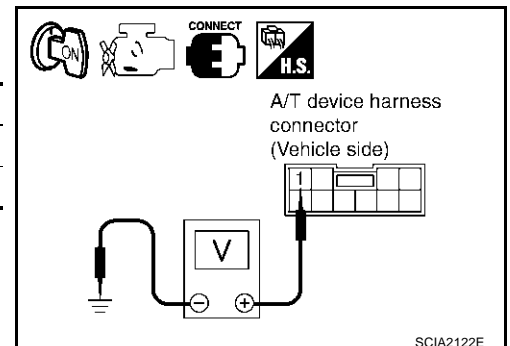
4. CHECK POWER SOURCE

1. Turn ignition switch “ON”. (Do not start engine.)
2. Check the voltage between A/T device harness connector M67 terminal 1 (G/R) and ground.

Condition	Brake pedal	Data (Approx.)
When ignition switch is turned to “ON” position.	Depressed	Battery voltage
	Released	0V

OK or NG

- OK >> GO TO 7.
- NG >> GO TO 5.



A/T SHIFT LOCK SYSTEM

5. CHECK STOP LAMP SWITCH

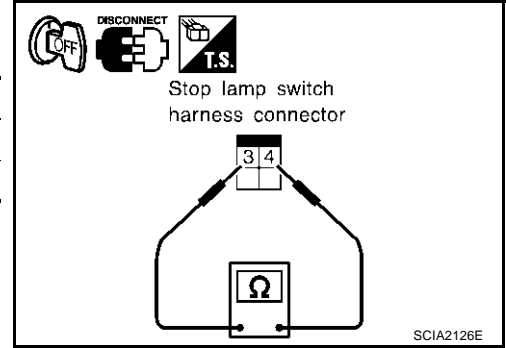
1. Turn ignition switch "OFF".
2. Disconnect stop lamp switch harness connector.
3. Check continuity between stop lamp switch harness connector E210 terminals 3 (G) and 4 (OR).

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

Check stop lamp switch after adjusting brake pedal — refer to [BR-6, "BRAKE PEDAL"](#) .

OK or NG

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



6. DETECT MALFUNCTIONING ITEM

Check the following items. If any items are damaged, repair or replace damaged parts.

- Harness for short or open between ignition switch and stop lamp switch harness terminal 3 (G)
- Harness for short or open between stop lamp switch harness terminal 4 (O/R) and A/T device harness terminal 1 (G/R).
- 10A fuse [No.12, located in the fuse block (J/B)]
- Ignition switch (Refer to [PG-3, "POWER SUPPLY ROUTING CIRCUIT"](#) .)

OK or NG

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

7. CHECK GROUND CIRCUIT

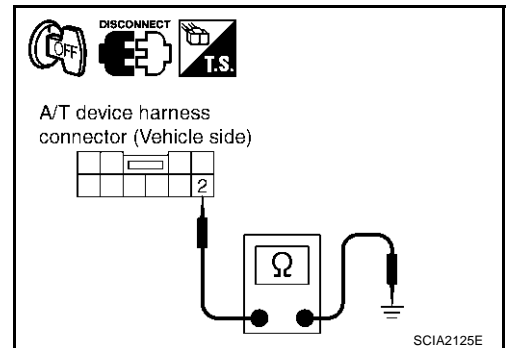
1. Turn ignition switch "OFF".
2. Disconnect A/T device harness connector.
3. Check continuity between A/T device harness connector M67 terminal 2 (B) and ground.

Continuity should exist.

4. Connect A/T device harness connector.

OK or NG

- OK >> Replace shift lock solenoid or park position switch (detention switch).
- NG >> Repair open circuit or short to ground or short to power in harness or connectors.



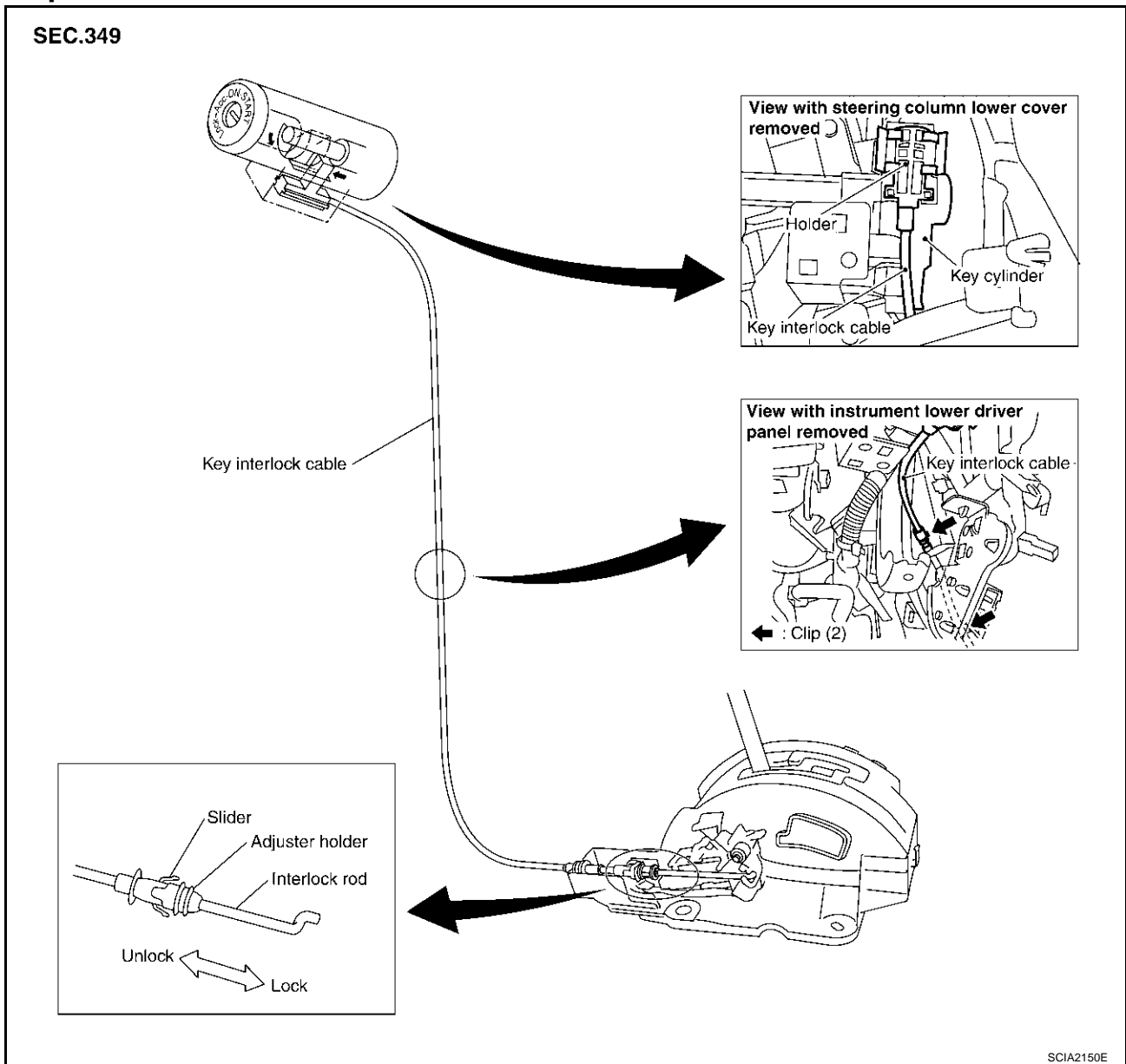
KEY INTERLOCK CABLE

KEY INTERLOCK CABLE

PFP:34908

Components

ACS002RX



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 control device, make sure that casing cap and bracket are firmly secured in their positions. If casing cap be removed with an external load of less than 39.2 N (4.0 kg, 8.8 lb), replace key interlock cable with new one.

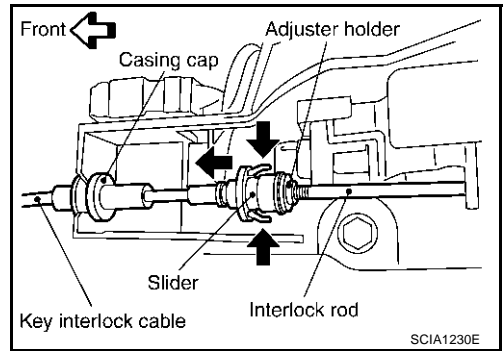
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KEY INTERLOCK CABLE

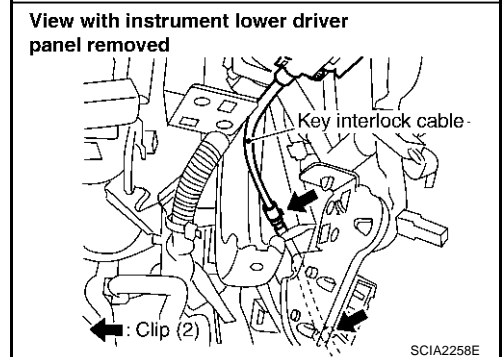
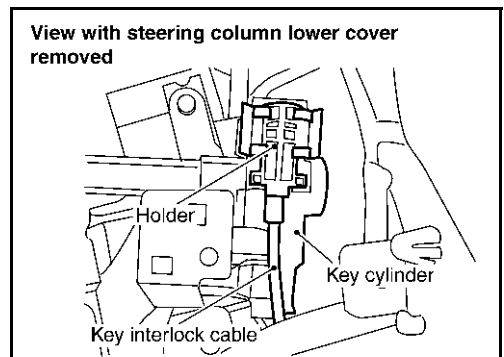
ACS002RY

Removal

1. Unlock slider by squeezing lock tabs on slider from adjuster holder.
2. Remove casing cap from bracket of control device and remove interlock rod from cable.



3. Remove holder from key cylinder and remove key interlock cable.

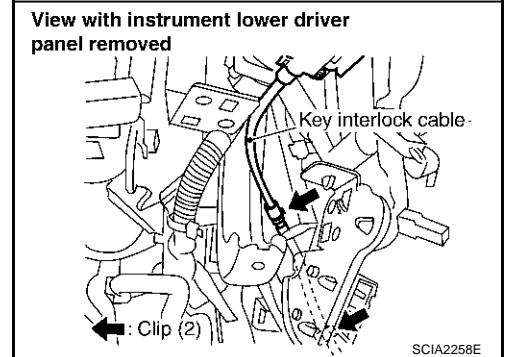
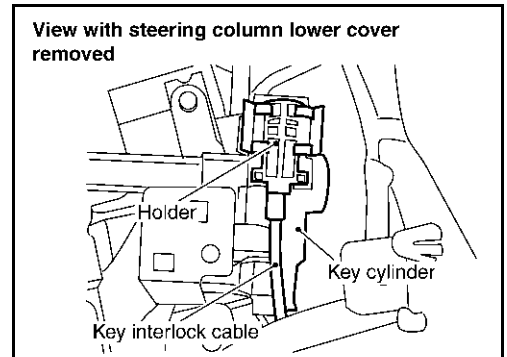


KEY INTERLOCK CABLE

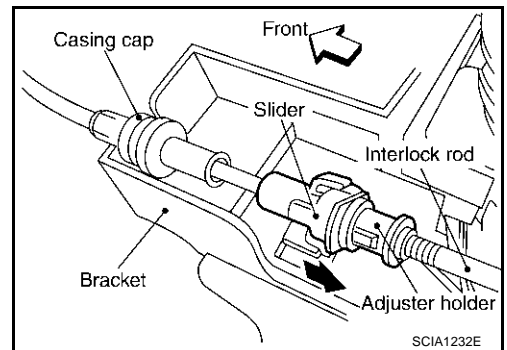
ACS002RZ

Installation

1. Set key interlock cable to key cylinder and install holder.
2. Clamp cable and fix to control cable with band.
3. Turn ignition key to lock position.
4. Set selector lever to P position.



5. Insert interlock rod into adjuster holder.
6. Install casing cap to bracket.
7. Move slider in order to fix adjuster holder to interlock rod.



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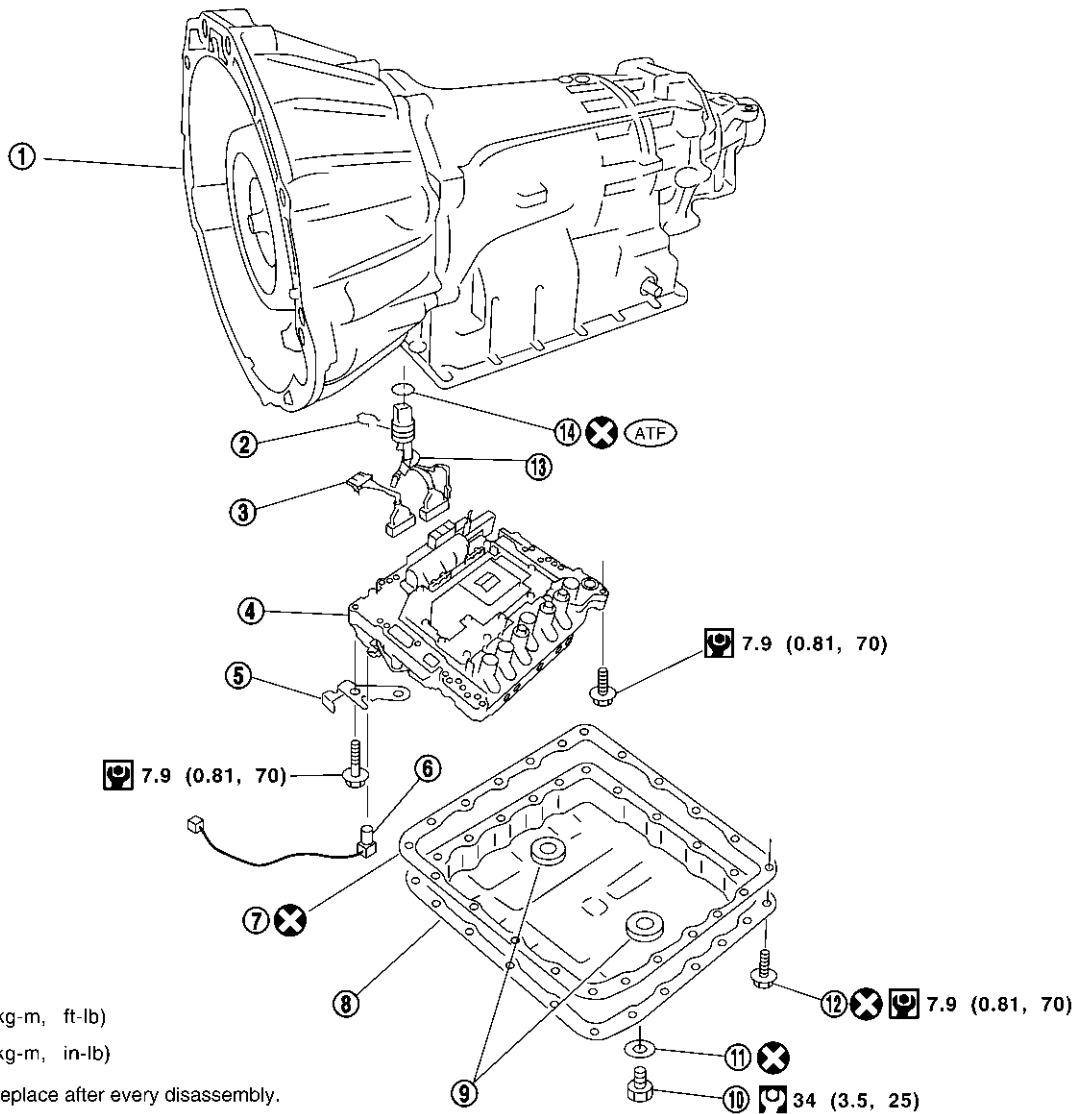
ON-VEHICLE SERVICE

PFP:00000

Control Valve with TCM and A/T Fluid Temperature Sensor 2 COMPONENTS

ACS008T4

SEC.313 · 314 · 315 · 316 · 317 · 319



SCIA5478E

- | | | |
|----------------------------|-----------------------|-----------------------------------|
| 1. Transmission | 2. Snap ring | 3. Sub-harness |
| 4. Control valve with TCM | 5. Bracket | 6. A/T fluid temperature sensor 2 |
| 7. Oil pan gasket | 8. Oil pan | 9. Magnet |
| 10. Drain plug | 11. Drain plug gasket | 12. Oil pan mounting bolt |
| 13. Terminal cord assembly | 14. O-ring | |

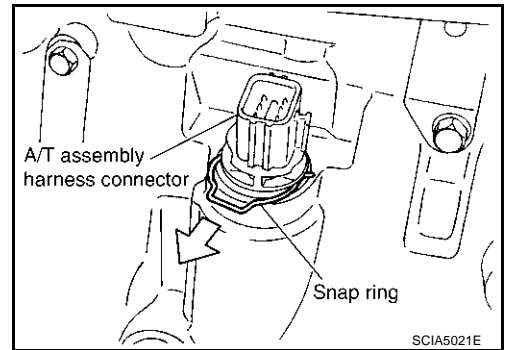
CONTROL VALVE WITH TCM ASSEMBLY REMOVAL AND INSTALLATION

Removal

1. Disconnect negative battery terminal.
2. Drain ATF through drain plug.
3. Remove front cross bar. Refer to [FSU-8. "Components"](#).
4. Disconnect heated oxygen sensor 2 harness connector.
5. Disconnect A/T assembly harness connector.

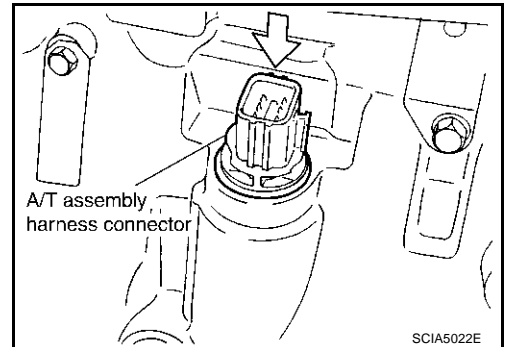
ON-VEHICLE SERVICE

6. Remove snap ring from A/T assembly harness connector.

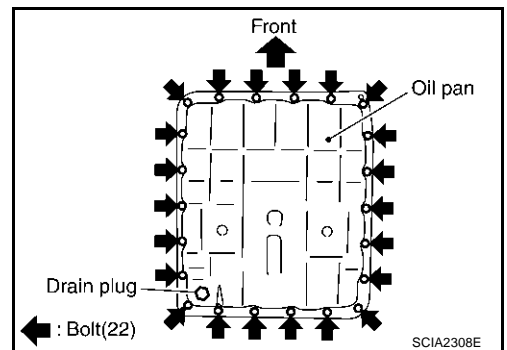


7. Push A/T assembly harness connector.

CAUTION:
Be careful not to damage connector.

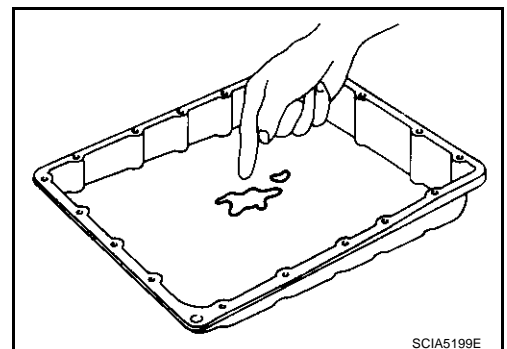


8. Remove oil pan and oil pan gasket.

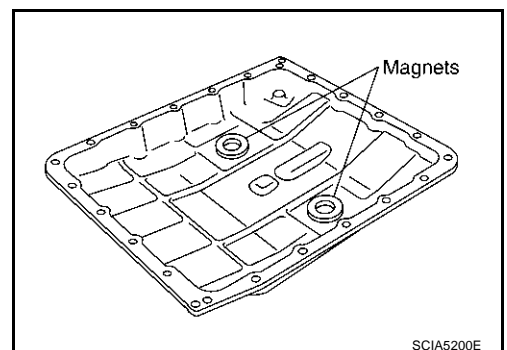


9. Check foreign materials in oil pan to help determine causes of malfunction. If the A/T fluid is very dark, smells burned, or contains foreign particles, the frictional material (clutches, band) may need replacement. A tacky film that will not wipe clean indicates varnish build up. Varnish can cause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

- If frictional material is detected, replace radiator after repair of A/T. Refer to [CO-14, "RADIATOR"](#) (for VQ35DE) or [CO-38, "RADIATOR"](#) (for VK45DE).



10. Remove magnets from oil pan.

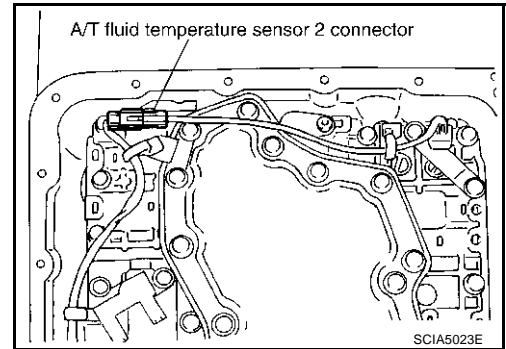


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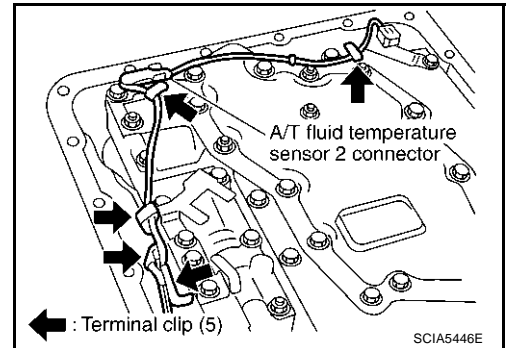
ON-VEHICLE SERVICE

11. Disconnect A/T fluid temperature sensor 2 connector.

CAUTION:
Be careful not to damage connector.

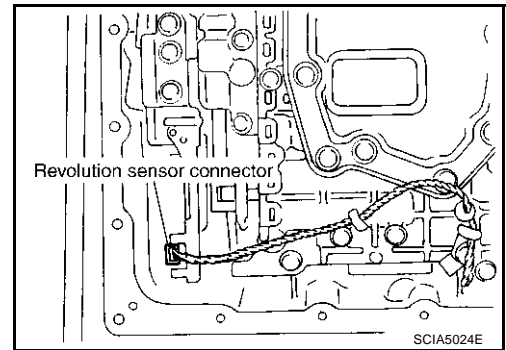


12. Straighten terminal clips to free terminal cord assembly and A/T fluid temperature sensor 2 harness.

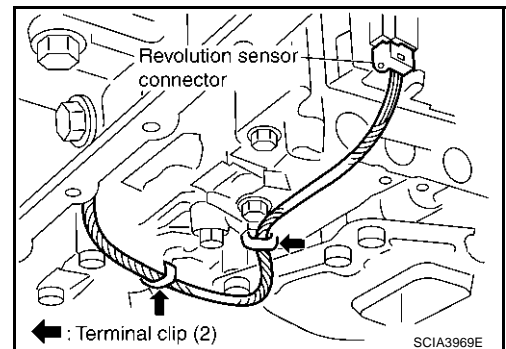


13. Disconnect revolution sensor connector.

CAUTION:
Be careful not to damage connector.

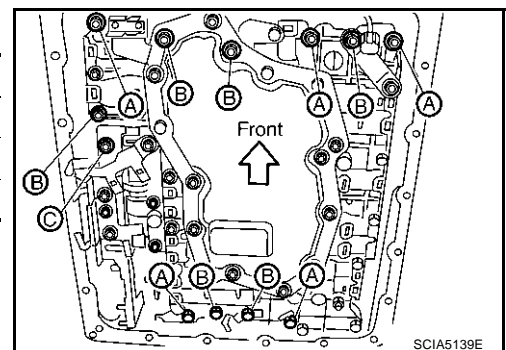


14. Straighten terminal clips to free revolution sensor harness.



15. Remove bolts A, B and C from control valve with TCM.

Bolt symbol	Length mm (in)	Number of bolts
A	42 (1.65)	5
B	55 (2.17)	6
C	40 (1.57)	1

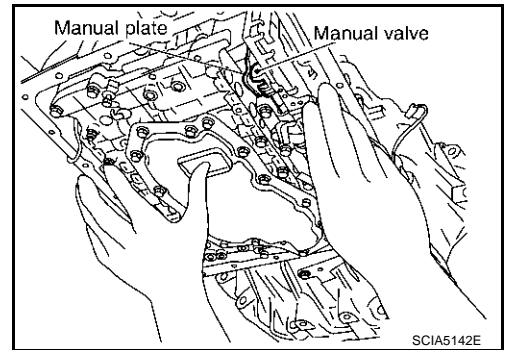


ON-VEHICLE SERVICE

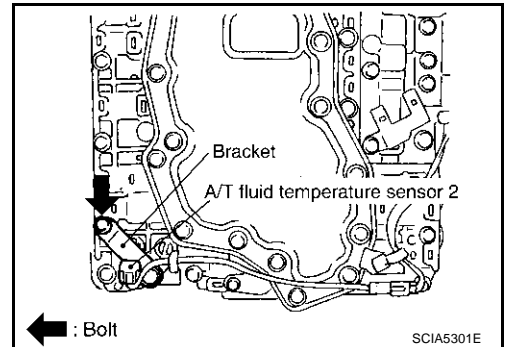
16. Remove control valve with TCM from transmission case.

CAUTION:

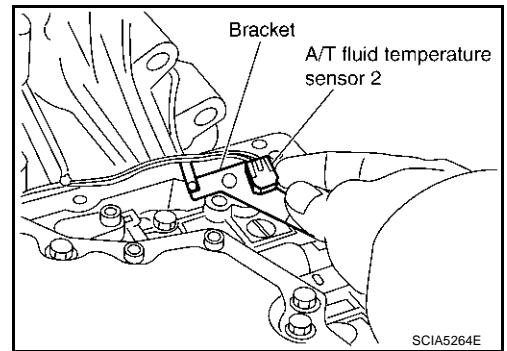
When removing, be careful with the manual valve notch and manual plate height. Remove it vertically.



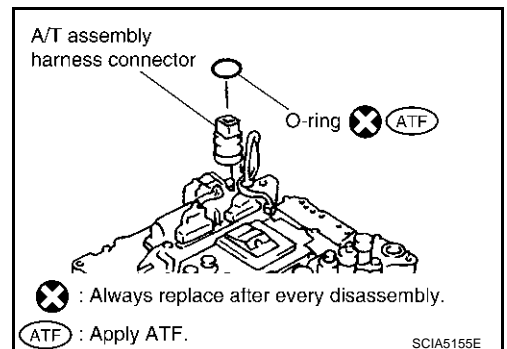
17. Remove A/T fluid temperature sensor 2 with bracket from control valve with TCM.



18. Remove bracket from A/T fluid temperature sensor 2.



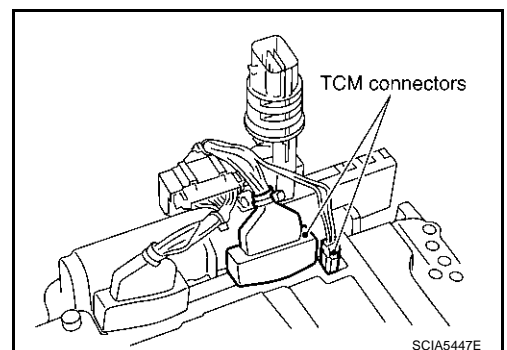
19. Remove O-ring from A/T assembly harness connector.



20. Disconnect TCM connectors.

CAUTION:

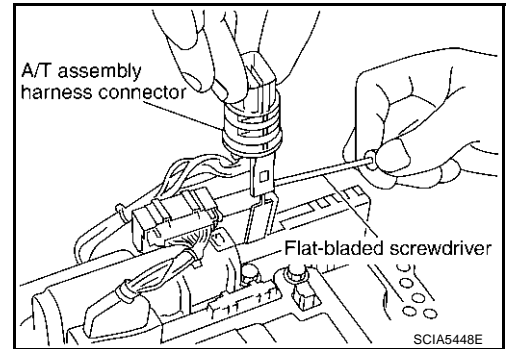
Be careful not to damage connectors.



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ON-VEHICLE SERVICE

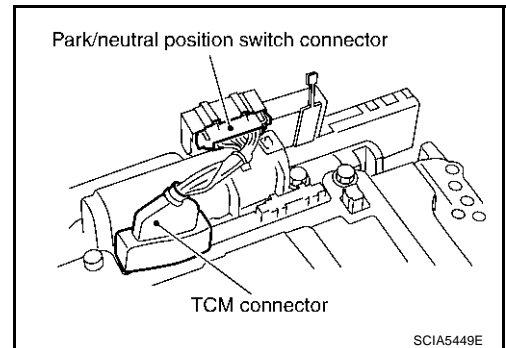
21. Remove A/T assembly harness connector from control valve with TCM using a flat-bladed screwdriver.



22. Disconnect TCM connector and park/neutral position switch connector.

CAUTION:

Be careful not to damage connectors.

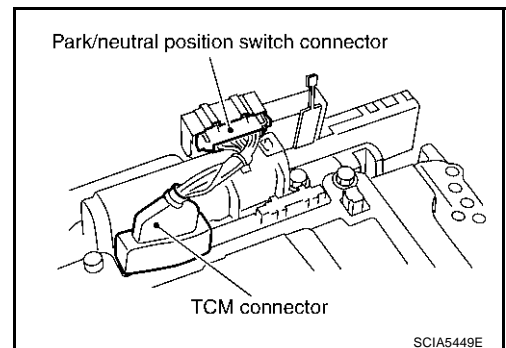


Installation

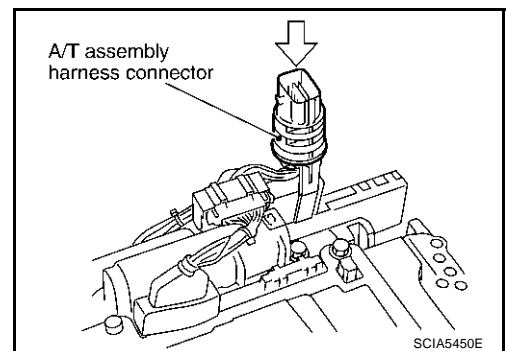
CAUTION:

After completing installation, check A/T fluid leakage and fluid level. Refer to [AT-12, "Changing A/T Fluid"](#) , [AT-12, "Checking A/T Fluid"](#) .

1. Connect TCM connector and park/neutral position switch connector.

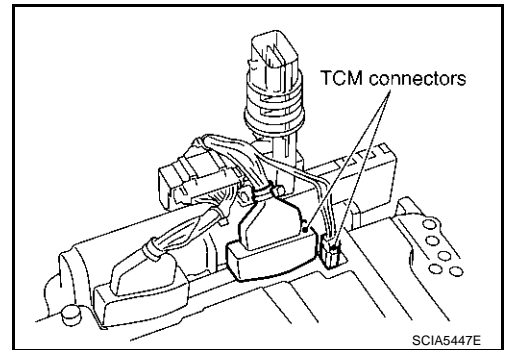


2. Install A/T assembly harness connector from control valve with TCM.



ON-VEHICLE SERVICE

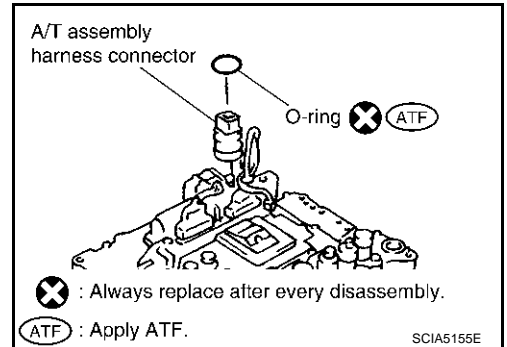
3. Connect TCM connectors.



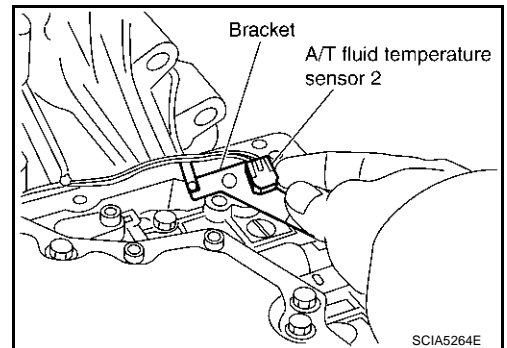
4. Install O-ring in A/T assembly harness connector.

CAUTION:

- Do not reuse O-ring.
- Apply ATF to O-ring.



5. Install A/T fluid temperature sensor 2 to bracket.

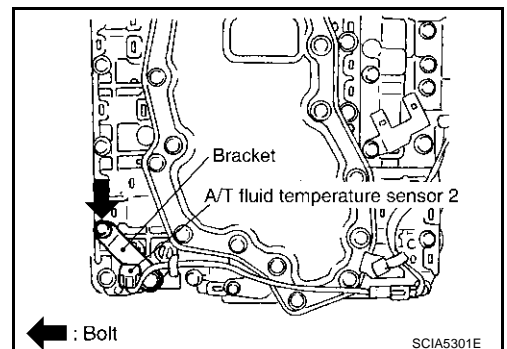


6. Install A/T fluid temperature sensor 2 (with bracket) in control valve with TCM.

CAUTION:

Adjust bolt hole of bracket to bolt hole of control valve with TCM.

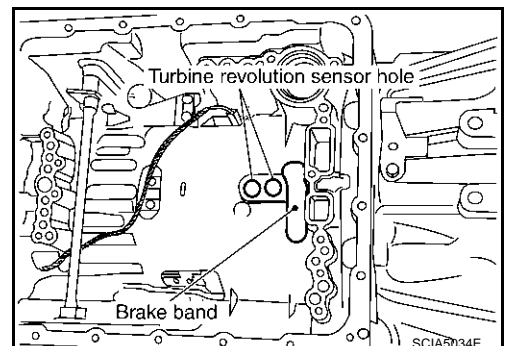
 : 7.9 N·m (0.81 kg·m, 70 in·lb)



7. Install control valve with TCM in transmission case.

CAUTION:

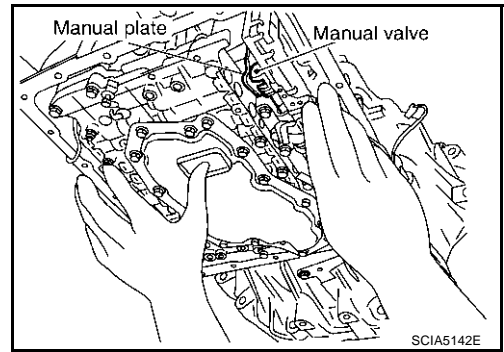
- Make sure that turbine revolution sensor securely installs turbine revolution sensor hole.
- Hang down revolution sensor harness toward outside so as not to disturb installation of control valve with TCM.
- Adjust A/T assembly harness connector of control valve with TCM to terminal hole of transmission case.



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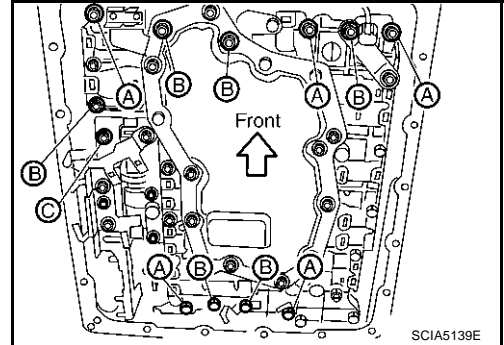
ON-VEHICLE SERVICE

- Assemble it so that manual valve cutout is engaged with manual plate projection.



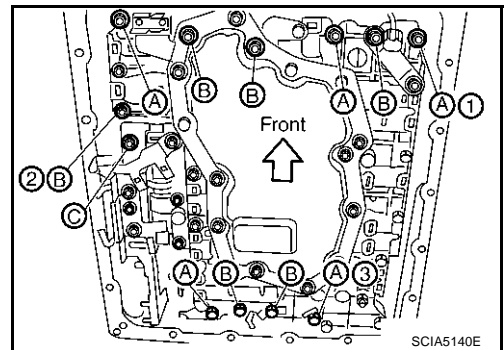
8. Install bolts A, B and C in control valve with TCM.

Bolt symbol	Length mm (in)	Number of bolts
A	42 (1.65)	5
B	55 (2.17)	6
C	40 (1.57)	1

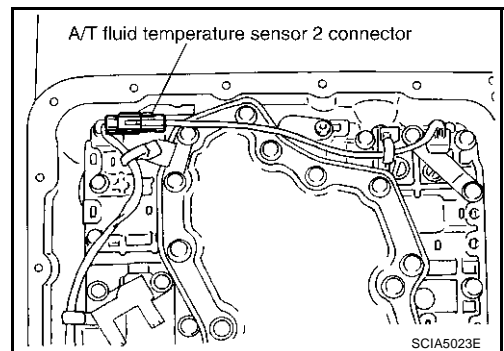


9. Tighten bolt 1, 2 and 3 temporarily to prevent dislocation. After that tighten them in order (1 → 2 → 3), and then tighten other bolts.

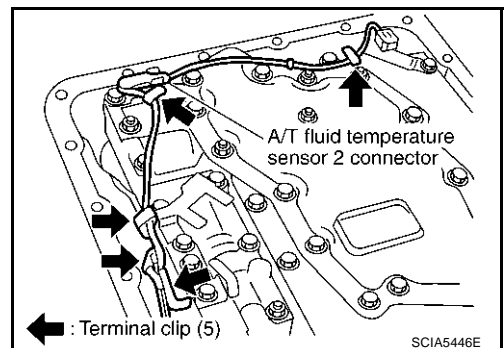
 : 7.9 N·m (0.81 kg-m, 70 in-lb)



10. Connect A/T fluid temperature sensor 2 connector.

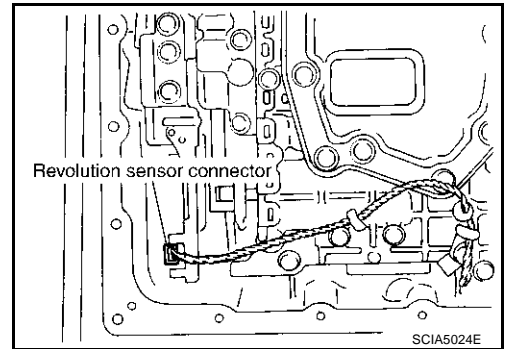


11. Securely fasten terminal cord assembly and A/T fluid temperature sensor 2 harness with terminal clips.

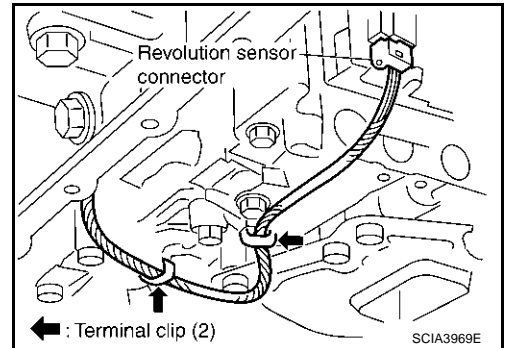


ON-VEHICLE SERVICE

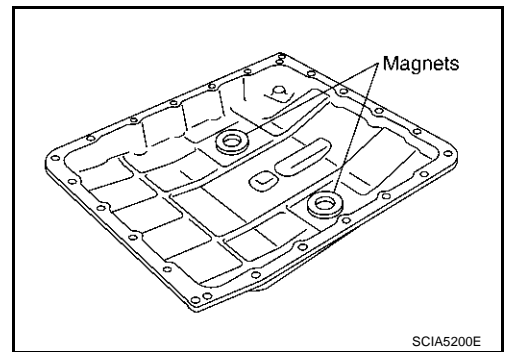
12. Connect revolution sensor connector.



13. Securely fasten revolution sensor harness with terminal clips.



14. Install magnets in oil pan.



15. Install oil pan to transmission case.

a. Install oil pan gasket to oil pan.

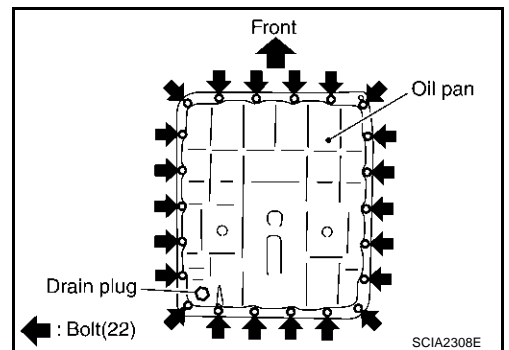
CAUTION:

- Do not reuse oil pan gasket.
- Install it in the direction to align hole positions.
- Complete remove all moisture, oil and old gasket, etc. from oil pan gasket mounting surface.

b. Install oil pan (with oil pan gasket) to transmission case.

CAUTION:

- Install it so that drain plug comes to the position as shown in the figure.
- Be careful not to pinch harnesses.
- Complete remove all moisture, oil and old gasket, etc. from oil pan mounting surface.



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ON-VEHICLE SERVICE

- c. Tighten oil pan mounting bolts to the specified torque in numerical order shown in the figure after temporarily tightening them.

CAUTION:

Do not reuse oil pan mounting bolts.

 : 7.9 N·m (0.81 kg-m, 70 in-lb)

16. Install drain plug to oil pan.

CAUTION:

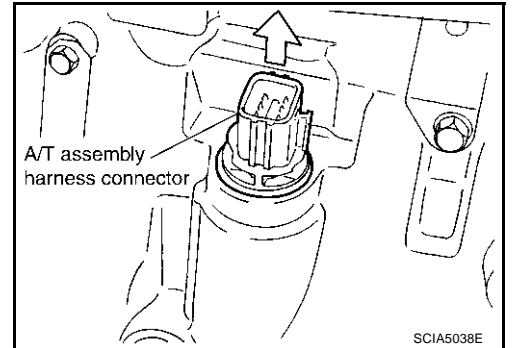
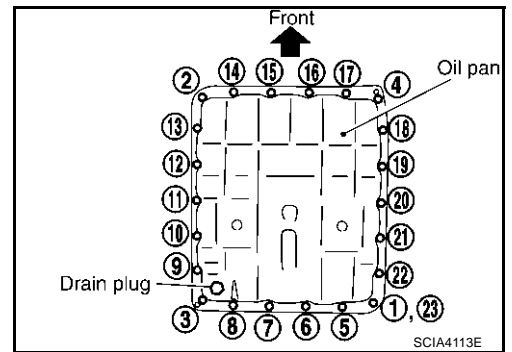
Do not reuse drain plug gasket.

 : 34 N·m (3.5 kg-m, 25 ft-lb)

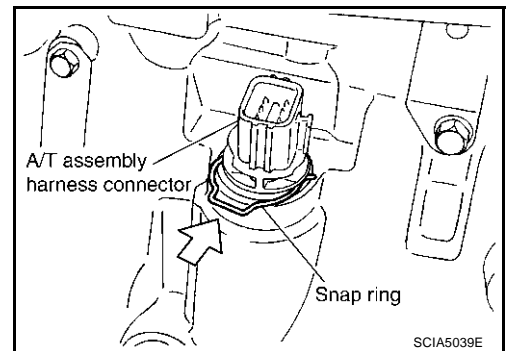
17. Pull up A/T assembly harness connector.

CAUTION:

Be careful not to damage connector.



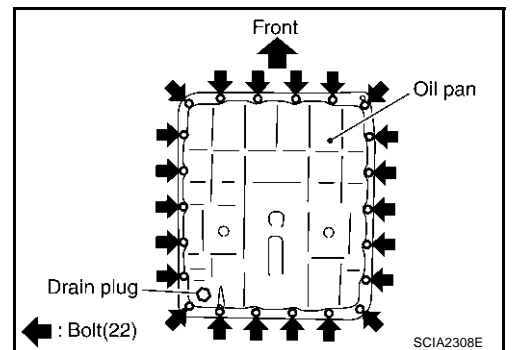
18. Install snap ring to A/T assembly harness connector.
 19. Connect A/T assembly harness connector.
 20. Connect heated oxygen sensor 2 harness connector.
 21. Install front cross bar. Refer to [FSU-8, "Components"](#) .
 22. Pour ATF into transmission assembly. Refer to [AT-12, "Changing A/T Fluid"](#) .
 23. Connect negative battery terminal.



A/T FLUID TEMPERATURE SENSOR 2 REMOVAL AND INSTALLATION

Removal

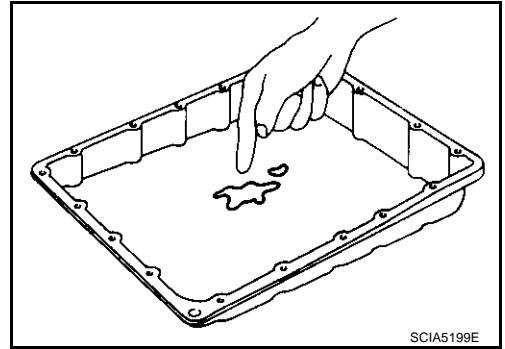
1. Disconnect negative battery terminal.
2. Remove front cross bar. Refer to [FSU-8, "Components"](#) .
3. Disconnect heated oxygen sensor 2 harness connector.
4. Drain ATF through drain plug.
5. Remove oil pan and oil pan gasket.



ON-VEHICLE SERVICE

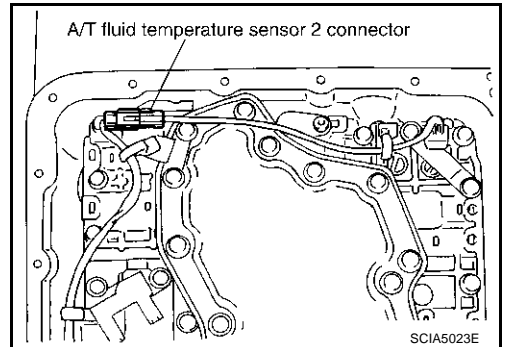
6. Check foreign materials in oil pan to help determine causes of malfunction. If the A/T fluid is very dark, smells burned, or contains foreign particles, the frictional material (clutches, band) may need replacement. A tacky film that will not wipe clean indicates varnish build up. Varnish can cause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

- If frictional material is detected, replace radiator after repair of A/T. Refer to [CO-14, "RADIATOR"](#) (for VQ35DE) or [CO-38, "RADIATOR"](#) (for VK45DE).

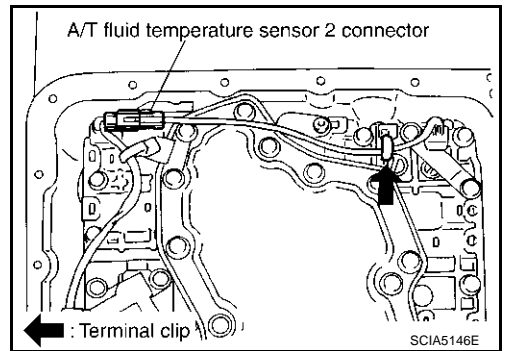


7. Disconnect A/T fluid temperature sensor 2 connector.

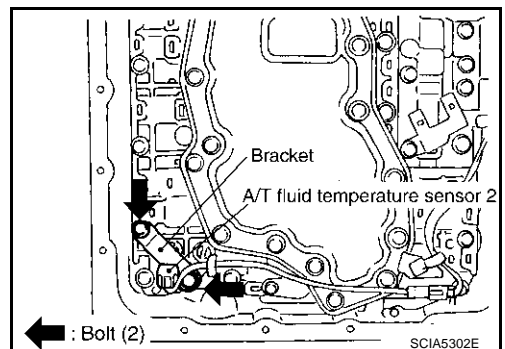
CAUTION:
Be careful not to damage connector.



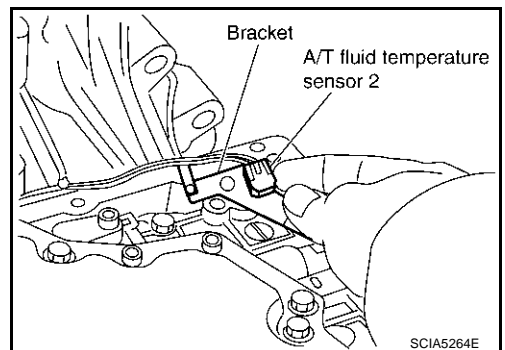
8. Straighten terminal clip to free A/T fluid temperature sensor 2 harness.



9. Remove A/T fluid temperature sensor 2 with bracket from control valve with TCM.



10. Remove bracket from A/T fluid temperature sensor 2.



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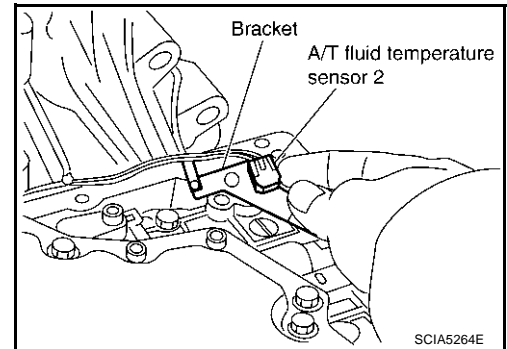
ON-VEHICLE SERVICE

Installation

CAUTION:

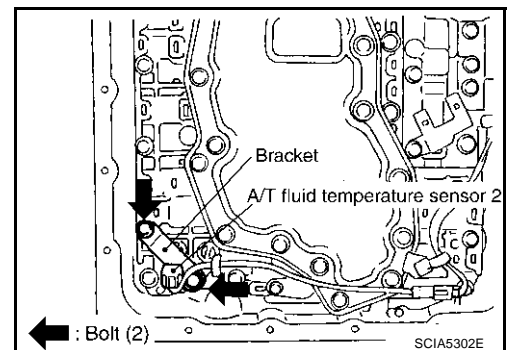
After completing installation, check A/T fluid leakage and fluid level. Refer to [AT-12, "Changing A/T Fluid"](#) , [AT-12, "Checking A/T Fluid"](#) .

1. Install A/T fluid temperature sensor 2 to bracket.

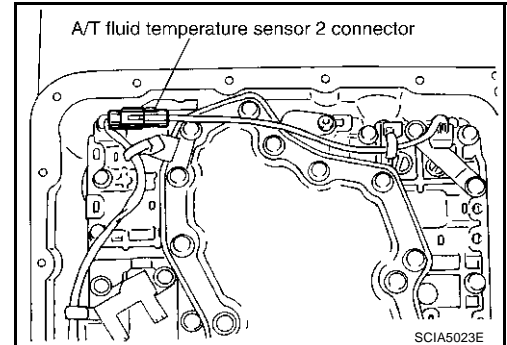


2. Install A/T fluid temperature sensor 2 (with bracket) in control valve with TCM.

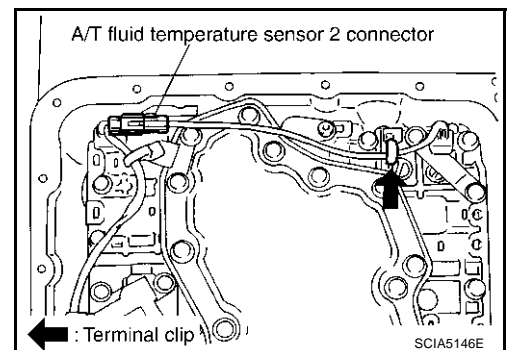
 : 7.9 N·m (0.81 kg·m, 70 in·lb)



3. Connect A/T fluid temperature sensor 2 connector.



4. Securely fasten A/T fluid temperature sensor 2 harness with terminal clip.



5. Install oil pan to transmission case.

- a. Install oil pan gasket to oil pan.

CAUTION:

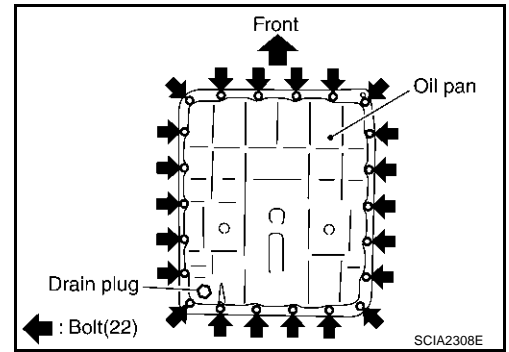
- Do not reuse oil pan gasket.
- Install it in the direction to align hole positions.
- Complete remove all moisture, oil and old gasket, etc. from oil pan mounting surface.

ON-VEHICLE SERVICE

- b. Install oil pan (with oil pan gasket) to transmission case.

CAUTION:

- Install it so that drain plug comes to the position as shown in the figure.
- Be careful not to pinch harnesses.
- Complete remove all moisture, oil and old gasket, etc. from oil pan mounting surface.



- c. Tighten oil pan mounting bolts to the specified torque in numerical order shown in the figure after temporarily tightening them.

CAUTION:

Do not reuse oil pan mounting bolts.

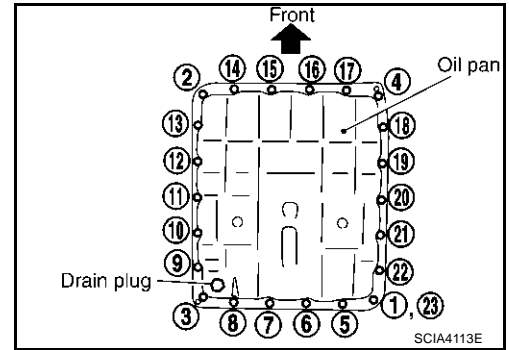
 : 7.9 N·m (0.81 kg-m, 70 in-lb)

6. Install drain plug to oil pan.

CAUTION:

Do not reuse drain plug gasket.

 : 34 N·m (3.5 kg-m, 25 ft-lb)



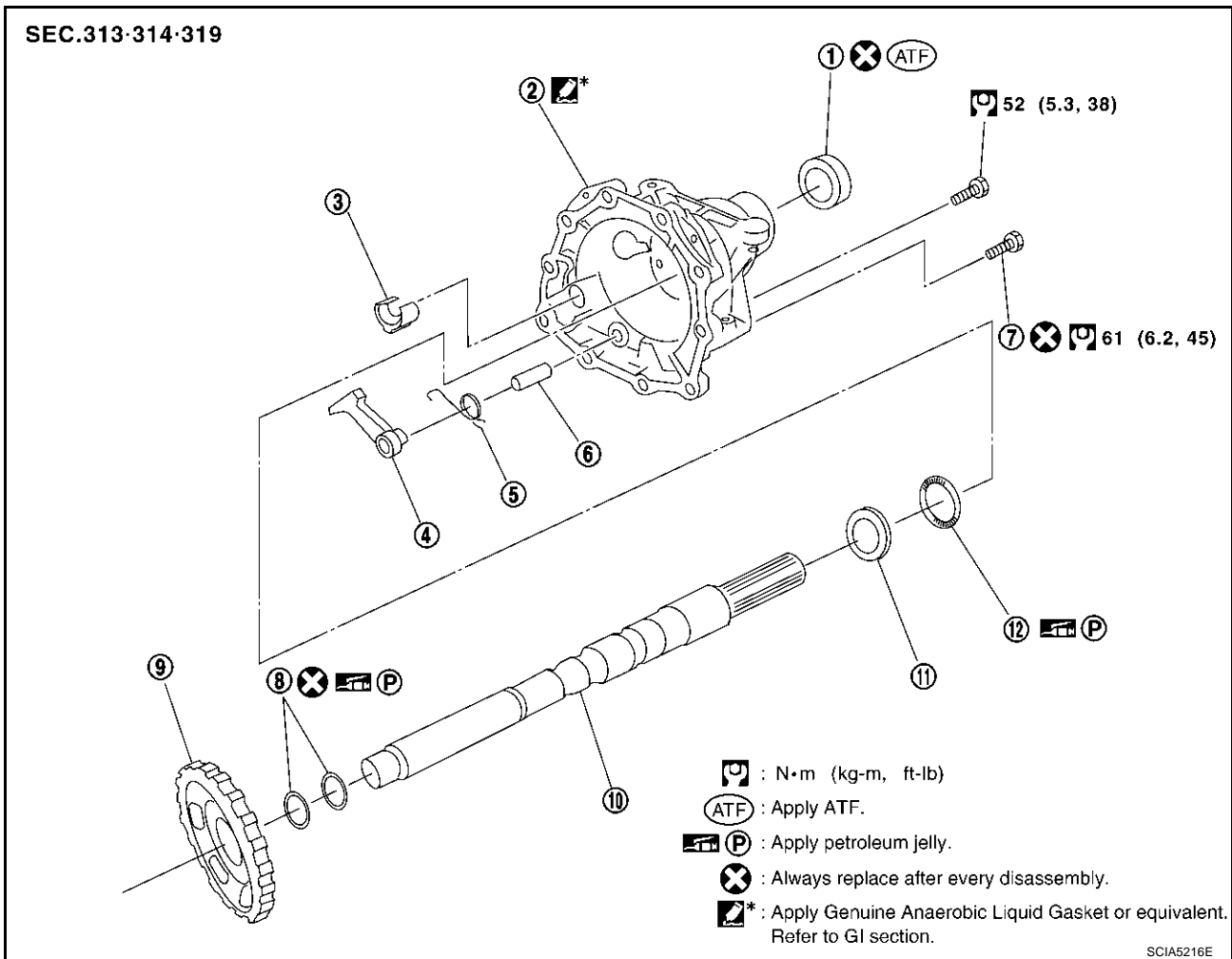
7. Connect heated oxygen sensor 2 harness connector.
8. Install front cross bar. Refer to [FSU-8, "Components"](#) .
9. Pour ATF into transmission assembly. Refer to [AT-12, "Changing A/T Fluid"](#) .
10. Connect negative battery terminal.

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ON-VEHICLE SERVICE

ACS00875

Parking Components (2WD Models Only) COMPONENTS



- | | | |
|----------------------|-------------------|-----------------------------|
| 1. Rear oil seal | 2. Rear extension | 3. Parking actuator support |
| 4. Parking pawl | 5. Return spring | 6. Pawl shaft |
| 7. Self-sealing bolt | 8. Seal ring | 9. Parking gear |
| 10. Output shaft | 11. Bearing race | 12. Needle bearing |

REMOVAL

1. Drain ATF through drain plug.
2. Remove exhaust front tube and center muffler with power tool. Refer to [EX-3, "Removal and Installation"](#) .
3. Remove rear propeller shaft. Refer to [PR-8, "Removal and Installation"](#) .
4. Support transmission assembly with a transmission jack.

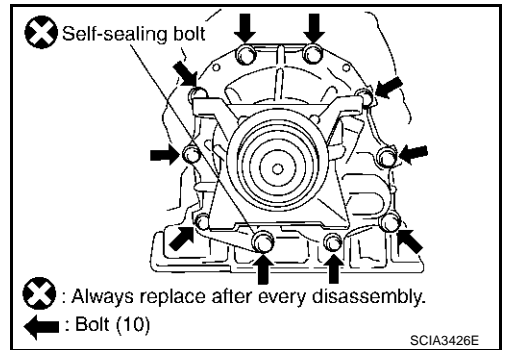
CAUTION:

When setting transmission jack, be careful not to allow it to collide against the drain plug.

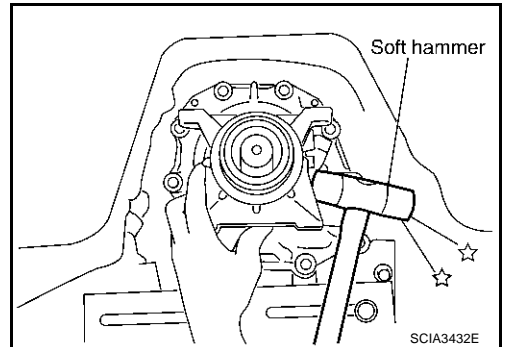
5. Remove engine rear member with power tool. Refer to [AT-269, "Removal and Installation \(2WD Models\)"](#)

ON-VEHICLE SERVICE

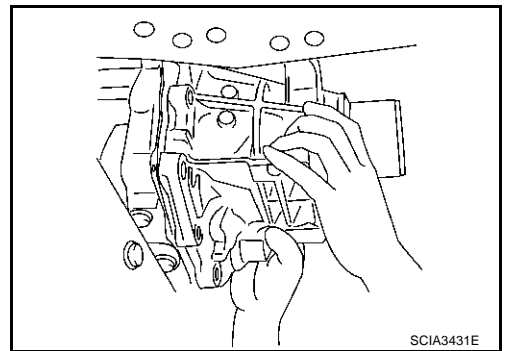
6. Remove tightening bolts for rear extension assembly and transmission case.



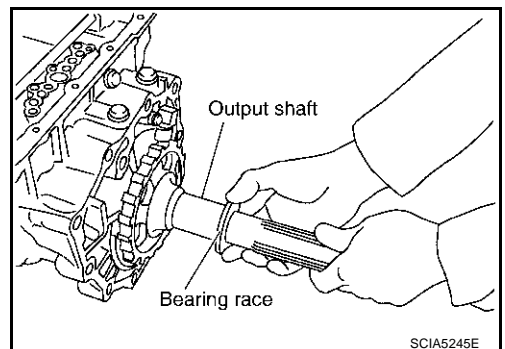
7. Tap rear extension assembly with soft hammer.



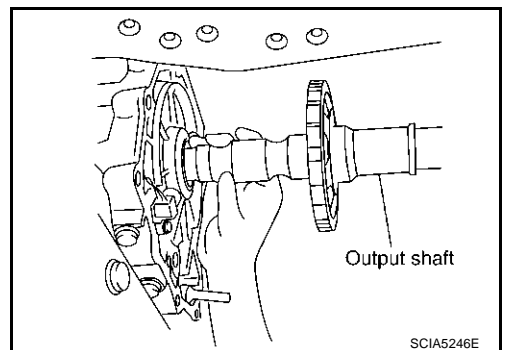
8. Remove rear extension assembly from transmission case. (With needle bearing.)



9. Remove bearing race from output shaft.



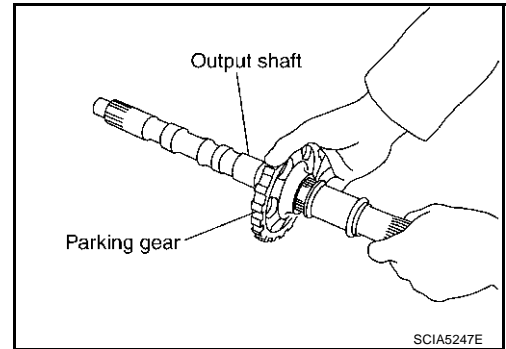
10. Remove output shaft from transmission case by rotating left/right.



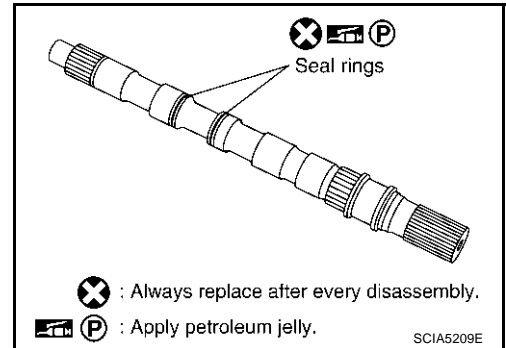
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ON-VEHICLE SERVICE

11. Remove parking gear from output shaft.

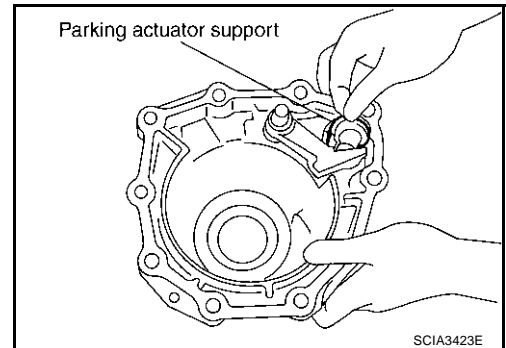


12. Remove seal rings from output shaft.

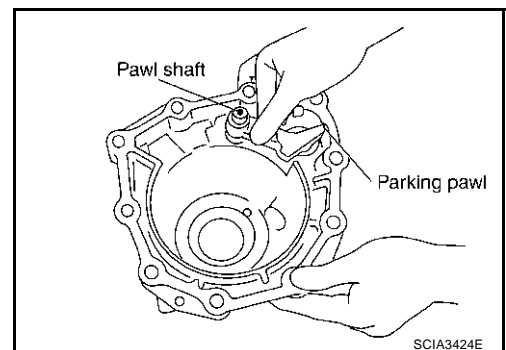


13. Remove needle bearing from rear extension.

14. Remove parking actuator support from rear extension.

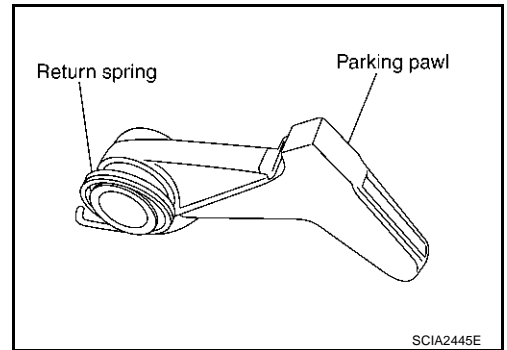


15. Remove parking pawl (with return spring) and pawl shaft from rear extension.



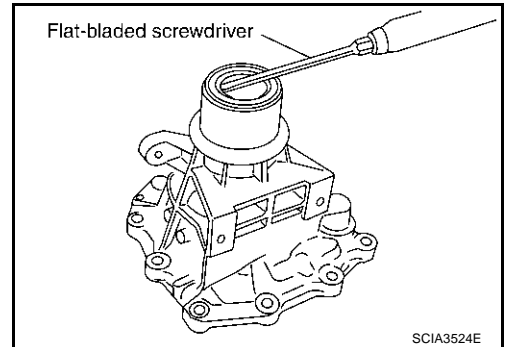
ON-VEHICLE SERVICE

16. Remove return spring from parking pawl.



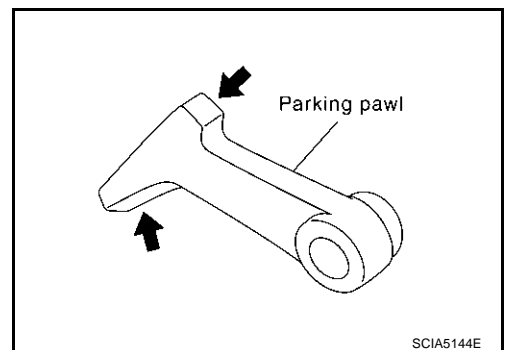
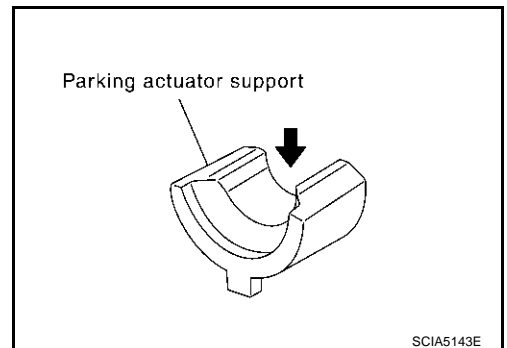
17. Remove rear oil seal from rear extension.

CAUTION:
Be careful not to scratch rear extension.



INSPECTION

- If the contact surface on parking actuator support, parking pawl, etc. has excessive wear, abrasion, bend, or any other damage, replace the components.



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ON-VEHICLE SERVICE

INSTALLATION

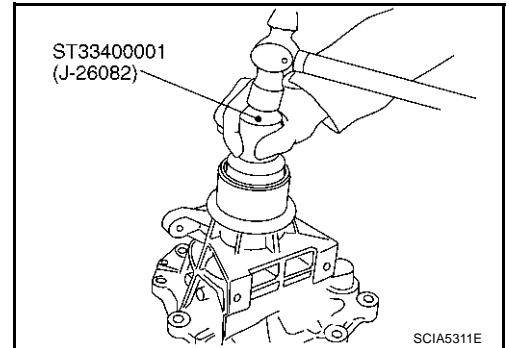
CAUTION:

After completing installation, check A/T fluid leakage and fluid level. Refer to [AT-12, "Changing A/T Fluid"](#) , [AT-12, "Checking A/T Fluid"](#) .

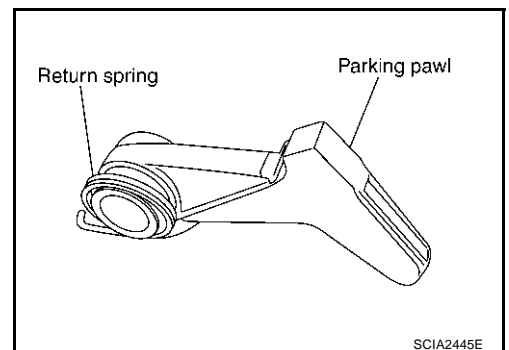
1. As shown in the right figure illustration, use a drift to drive rear oil seal into the rear extension until it is flush.

CAUTION:

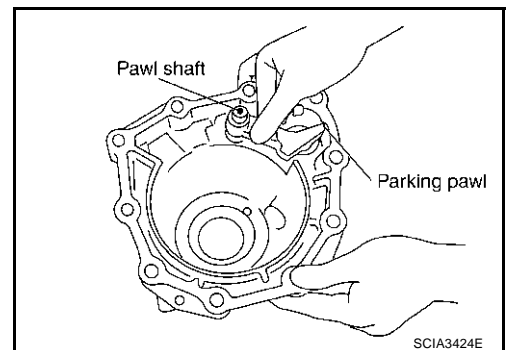
- Apply ATF to rear oil seal.
- Do not reuse rear oil seal.



2. Install return spring to parking pawl.



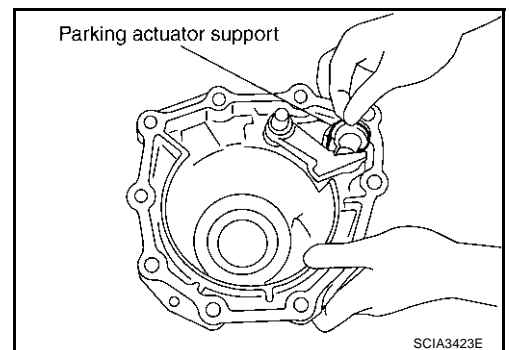
3. Install parking pawl (with return spring) and pawl shaft to rear extension.



4. Install parking actuator support to rear extension.
5. Install needle bearing to rear extension.

CAUTION:

Apply petroleum jelly to needle bearing.

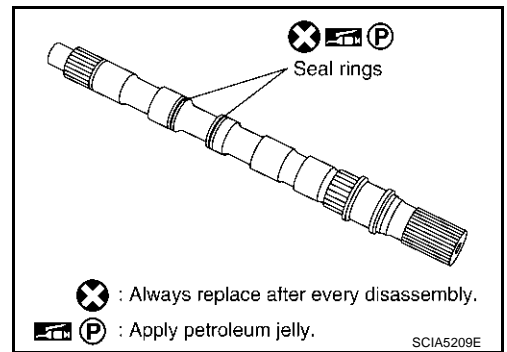


ON-VEHICLE SERVICE

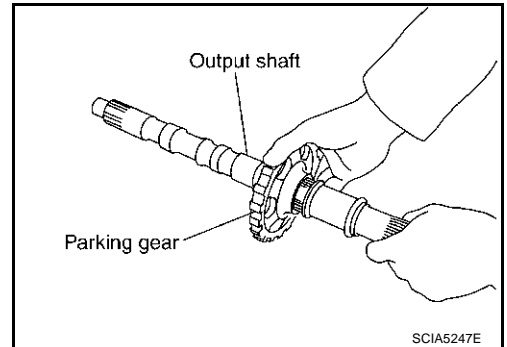
6. Install seal rings in output shaft.

CAUTION:

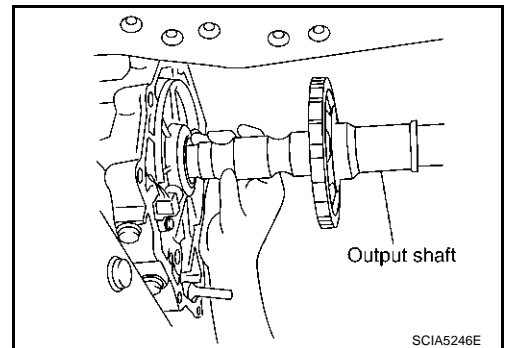
- Do not reuse seal rings.
- Apply petroleum jelly to seal rings.



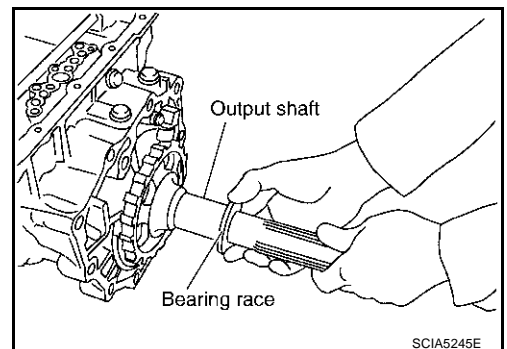
7. Install parking gear to output shaft



8. Install output shaft to transmission case.



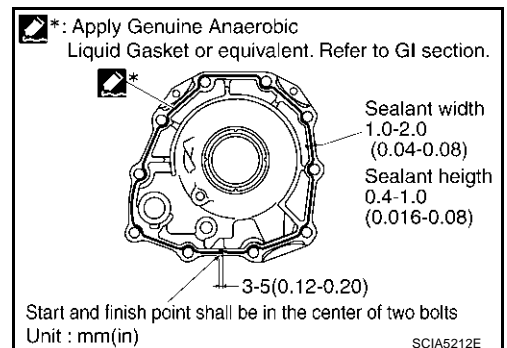
9. Install bearing race to output shaft.



10. Apply recommended sealant (Genuine Anaerobic Liquid Gasket or equivalent. Refer to [GI-48, "Recommended Chemical Products and Sealants"](#) .) to rear extension assembly as shown in illustration.

CAUTION:

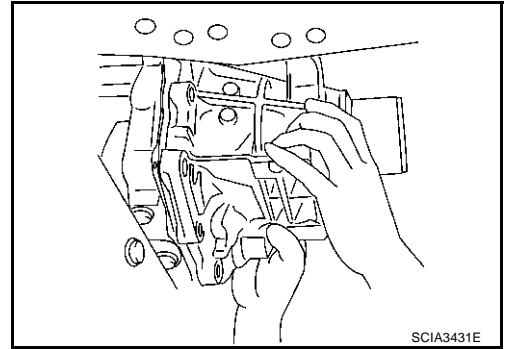
Complete remove all moisture, oil and old sealant, etc. from the transmission case and rear extension assembly mounting surfaces.



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ON-VEHICLE SERVICE

11. Install rear extension assembly to transmission case. (With needle bearing.)



12. Tighten rear extension assembly mounting bolts to specified torque.

CAUTION:

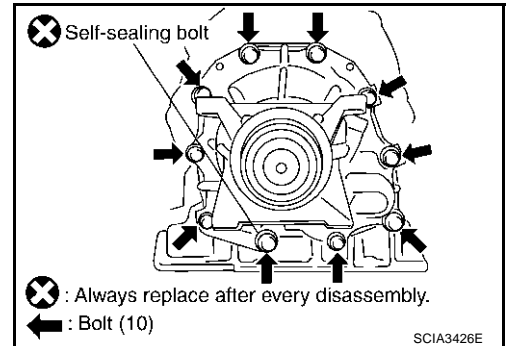
Do not reuse self-sealing bolt.

Rear extension assembly mounting bolt

 : 52 N·m (5.3 Kg-m, 38 ft-lb)

Self-sealing bolt

 : 61 N·m (6.2 Kg-m, 45 ft-lb)



13. Install engine rear member. Refer to [AT-269, "Removal and Installation \(2WD Models\)"](#) .
14. Install rear propeller shaft. Refer to [PR-8, "Removal and Installation"](#) .
15. Install exhaust front tube and center muffler. Refer to [EX-3, "Removal and Installation"](#) .
16. Install drain plug in oil pan.

CAUTION:

Do not reuse drain plug gasket.

 : 34 N·m (3.5 kg-m, 25 ft-lb)

17. Pour ATF into transmission assembly. Refer to [AT-12, "Changing A/T Fluid"](#) .

ON-VEHICLE SERVICE

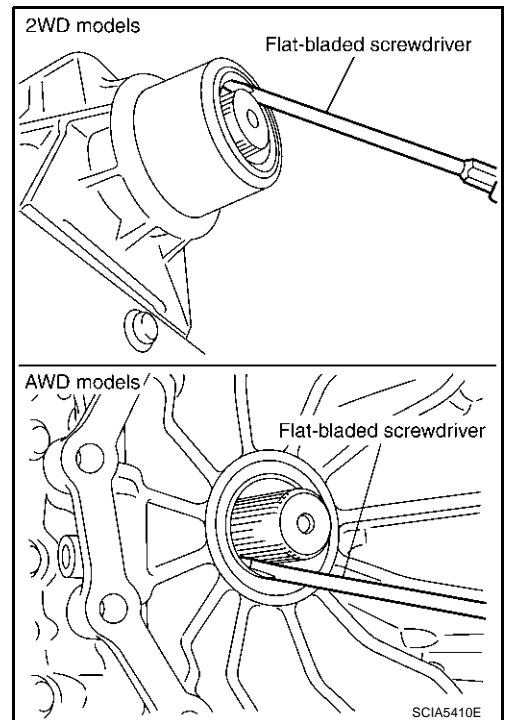
ACS008T6

Rear Oil Seal REMOVAL

1. Remove center muffler with power tool. Refer to [EX-3, "Removal and Installation"](#) .
2. Remove rear propeller shaft. Refer to [PR-8, "Removal and Installation"](#) .
3. Remove transfer assembly from transmission assembly (AWD models). Refer to [TF-13, "Removal and Installation from Vehicle"](#) .
4. Remove rear oil seal using a flat-bladed screwdriver.

CAUTION:

Be careful not to scratch rear extension assembly (2WD models) or adapter case assembly (AWD models).



INSTALLATION

CAUTION:

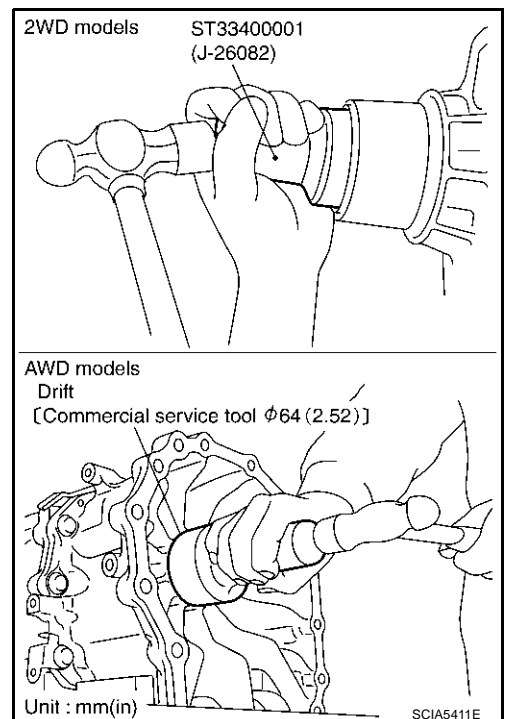
After completing installation, check A/T fluid leakage and fluid level. Refer to [AT-12, "Changing A/T Fluid"](#) , [AT-12, "Checking A/T Fluid"](#) .

1. As shown in the right figure illustration, use the drift to drive rear oil seal into rear extension assembly (2WD models) or adapter case assembly (AWD models) until it is flush.

CAUTION:

- Apply ATF to rear oil seal.
- Do not reuse rear oil seal.

2. Install transfer assembly to transmission assembly (AWD models). Refer to [TF-13, "Removal and Installation from Vehicle"](#) .
3. Install rear propeller shaft. Refer to [PR-8, "Removal and Installation"](#) .
4. Install center muffler. Refer to [EX-3, "Removal and Installation"](#) .

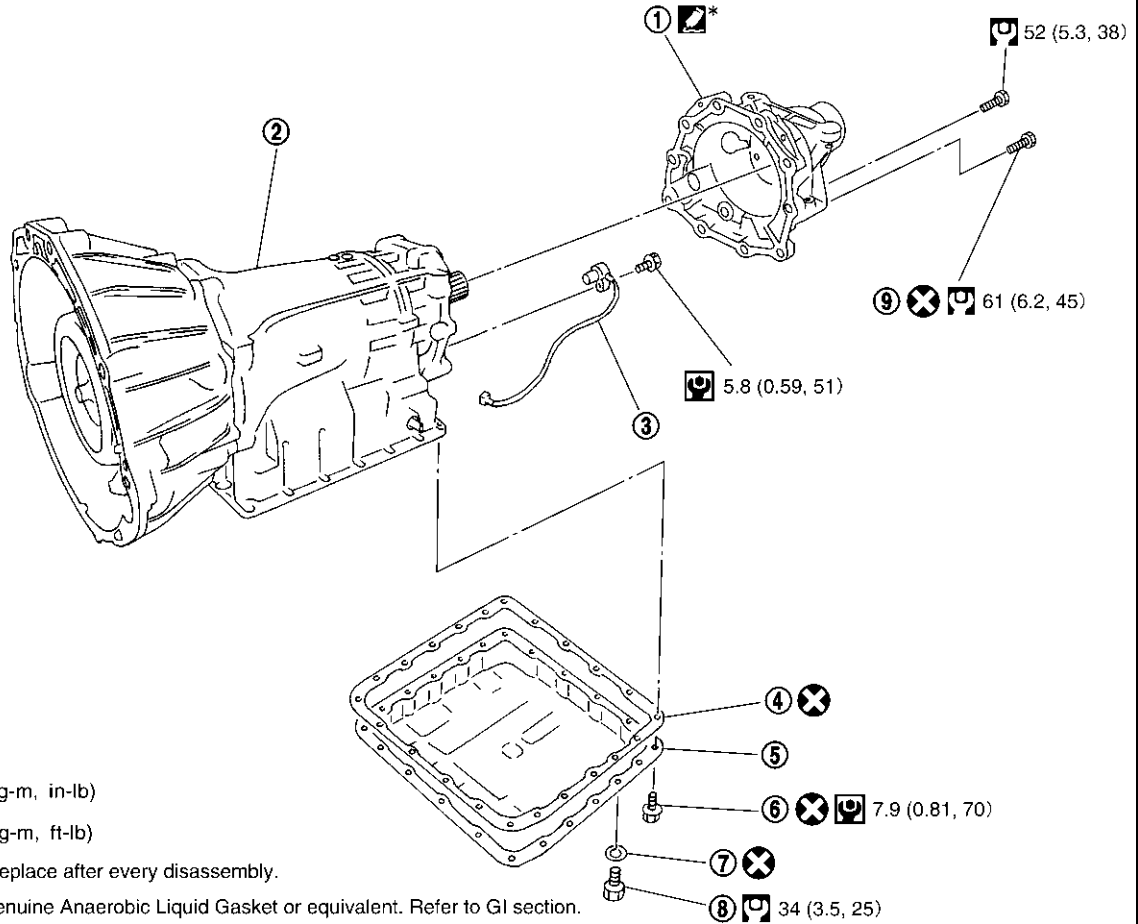


ON-VEHICLE SERVICE

Revolution Sensor Components (2WD Models Only) COMPONENTS

ACS008T7

SEC. 313-314-319

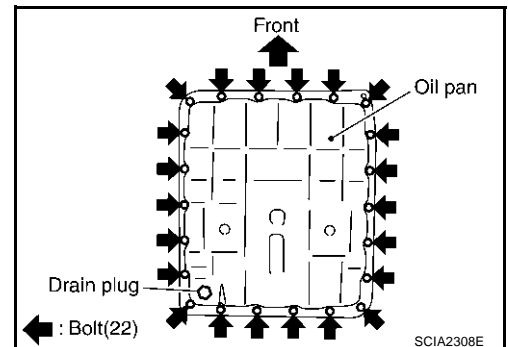


SCIA5145E

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|----------------------|-----------------|--------------------------|
| 1. Rear extension | 2. Transmission | 3. Revolution sensor |
| 4. Oil pan gasket | 5. Oil pan | 6. Oil pan mounting bolt |
| 7. Drain plug gasket | 8. Drain plug | 9. Self-sealing bolt |

REMOVAL

1. Disconnect negative battery terminal.
2. Drain ATF through drain plug.
3. Remove front cross bar. Refer to [FSU-8, "Components"](#) .
4. Remove exhaust front tube and center muffler with power tool. Refer to [EX-3, "Removal and Installation"](#) .
5. Remove rear propeller shaft. Refer to [PR-8, "Removal and Installation"](#) .
6. Remove oil pan and oil pan gasket.



ON-VEHICLE SERVICE

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

- If frictional material is detected, replace radiator after repair of A/T. Refer to [CO-14, "RADIATOR"](#) (for VQ35DE) or [CO-38, "RADIATOR"](#) (for VK45DE).

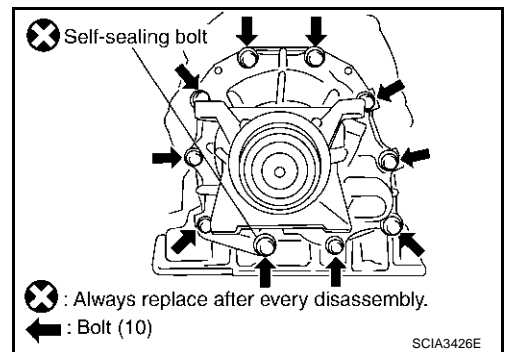
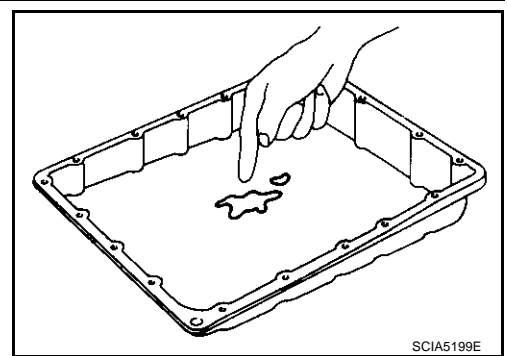
8. Support transmission assembly with a transmission jack.

CAUTION:

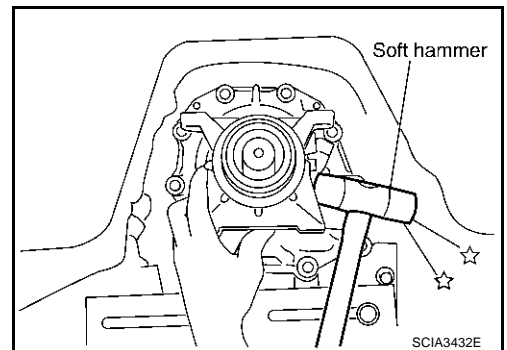
When setting transmission jack, place wooden blocks to prevent from damaging control valve with TCM and transmission case.

9. Remove engine rear member with power tool. Refer to [AT-269, "Removal and Installation \(2WD Models\)"](#)

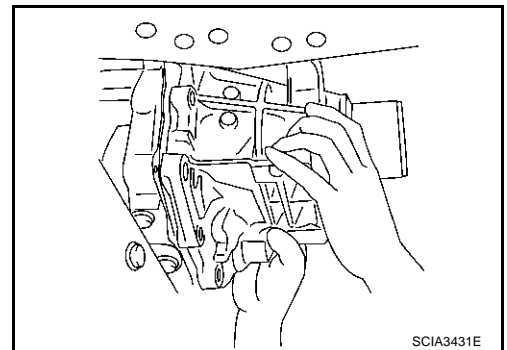
10. Remove tightening bolts for rear extension assembly and transmission case.



11. Tap rear extension assembly with soft hammer.



12. Remove rear extension assembly from transmission case. (With needle bearing.)



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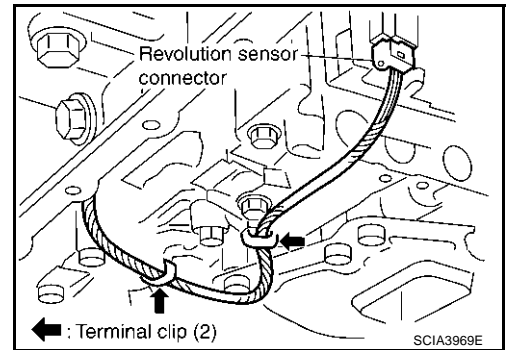
ON-VEHICLE SERVICE

13. Disconnect revolution sensor connector.

CAUTION:

Be careful not to damage connector

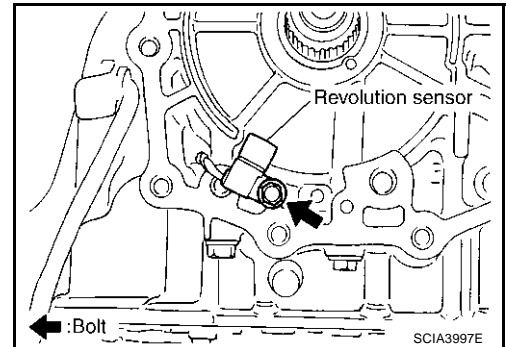
14. Straighten terminal clips to free revolution sensor harness.



15. Remove revolution sensor from transmission case.

CAUTION:

- Do not subject it to impact by dropping or hitting it.
- Do not disassemble.
- Do not allow metal filings, etc., to get on the sensor's front edge magnetic area.
- Do not place in an area affected by magnetism.



INSTALLATION

CAUTION:

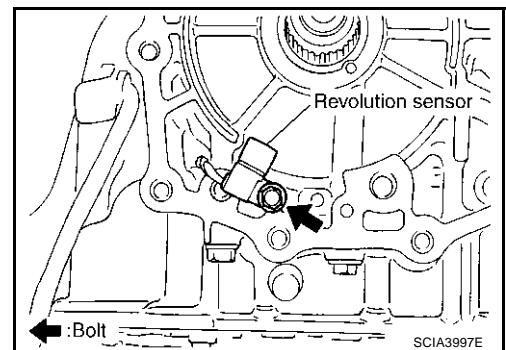
After completing installation, check A/T fluid leakage and fluid level. Refer to [AT-12, "Changing A/T Fluid"](#) , [AT-12, "Checking A/T Fluid"](#) .

1. Install revolution sensor in transmission case.

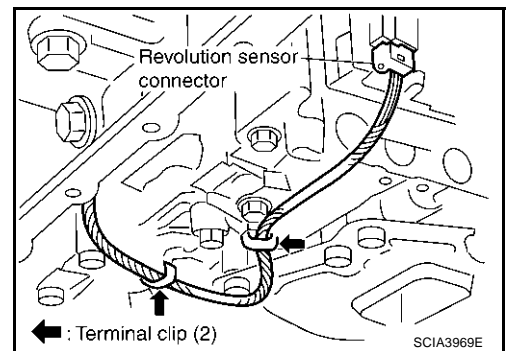
CAUTION:

- Do not subject it to impact by dropping or hitting it.
- Do not disassemble.
- Do not allow metal filings, etc., to get on the sensor's front edge magnetic area.
- Do not place in an area affected by magnetism.

 : 5.8 N·m (0.59 kg·m, 51 in·lb)



2. Connect revolution sensor connector.
3. Securely fasten revolution sensor harness with clips.

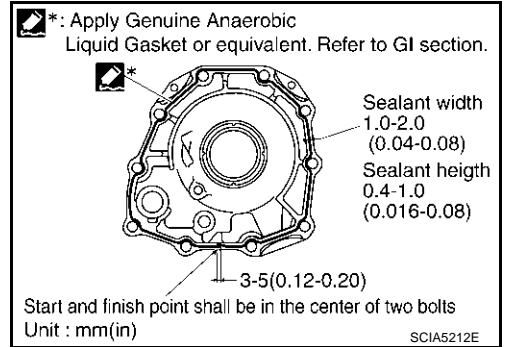


ON-VEHICLE SERVICE

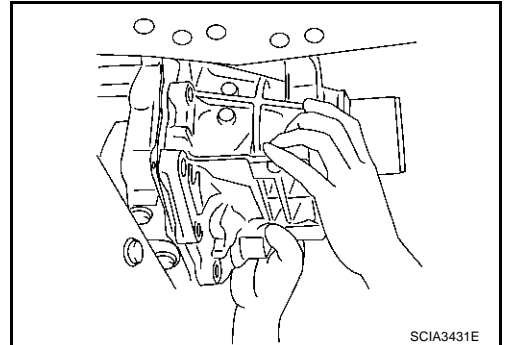
4. Apply recommended sealant (Genuine Anaerobic Liquid Gasket or equivalent. Refer to [GI-48, "Recommended Chemical Products and Sealants"](#) .) to rear extension assembly as shown in illustration.

CAUTION:

Complete remove all moisture, oil and old sealant, etc. from transmission case and rear extension assembly mounting surfaces.



5. Install rear extension assembly to transmission case. (With needle bearing.)



6. Tighten rear extension assembly mounting bolts to specified torque.

CAUTION:

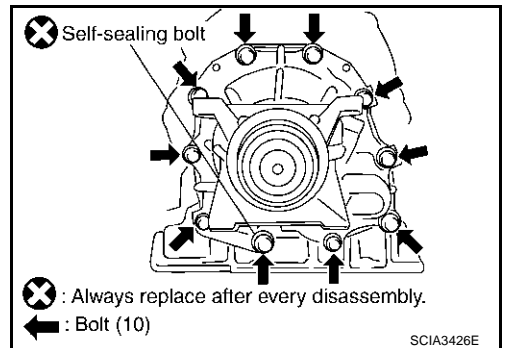
Do not reuse self-sealing bolt.

Rear extension assembly mounting bolt

 : 52 N·m (5.3 Kg-m, 38 ft-lb)

Self-sealing bolt

 : 61 N·m (6.2 Kg-m, 45 ft-lb)



7. Install engine rear member. Refer to [AT-269, "Removal and Installation \(2WD Models\)"](#) .

8. Install oil pan to transmission case.

- a. Install oil pan gasket to oil pan.

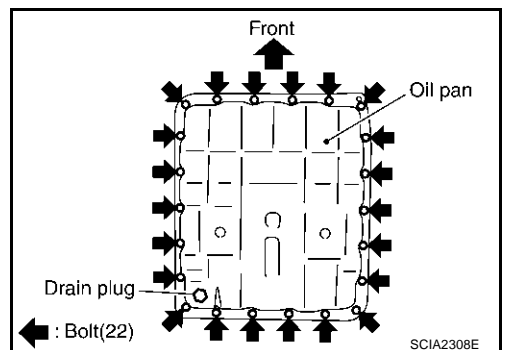
CAUTION:

- Do not reuse oil pan gasket.
- Install it in the direction to align hole positions.
- Complete remove all moisture, oil and old gasket, etc. from oil pan mounting surface.

- b. Install oil pan (with oil pan gasket) to transmission case.

CAUTION:

- Install it so that drain plug comes to the position as shown in the figure.
- Be careful not to pinch harnesses.
- Complete remove all moisture, oil and old gasket, etc. from oil pan mounting surface.



ON-VEHICLE SERVICE

- c. Tighten oil pan mounting bolts to the specified torque in numerical order shown in the figure after temporarily tightening them.

CAUTION:

Do not reuse oil pan mounting bolts.

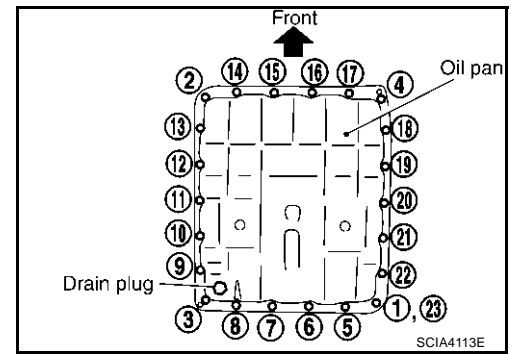
 : 7.9 N·m (0.81 kg·m, 70 in·lb)

9. Install drain plug to oil pan.

CAUTION:

Do not reuse drain plug gasket.

 : 34 N·m (3.5 kg·m, 25 ft·lb)



10. Install rear propeller shaft. Refer to [PR-8, "Removal and Installation"](#) .
11. Install exhaust front tube and center muffler. Refer to [EX-3, "Removal and Installation"](#) .
12. Install front cross bar. Refer to [FSU-8, "Components"](#) .
13. Pour ATF into transmission assembly. Refer to [AT-12, "Changing A/T Fluid"](#) .
14. Connect negative battery terminal.

AIR BREATHER HOSE

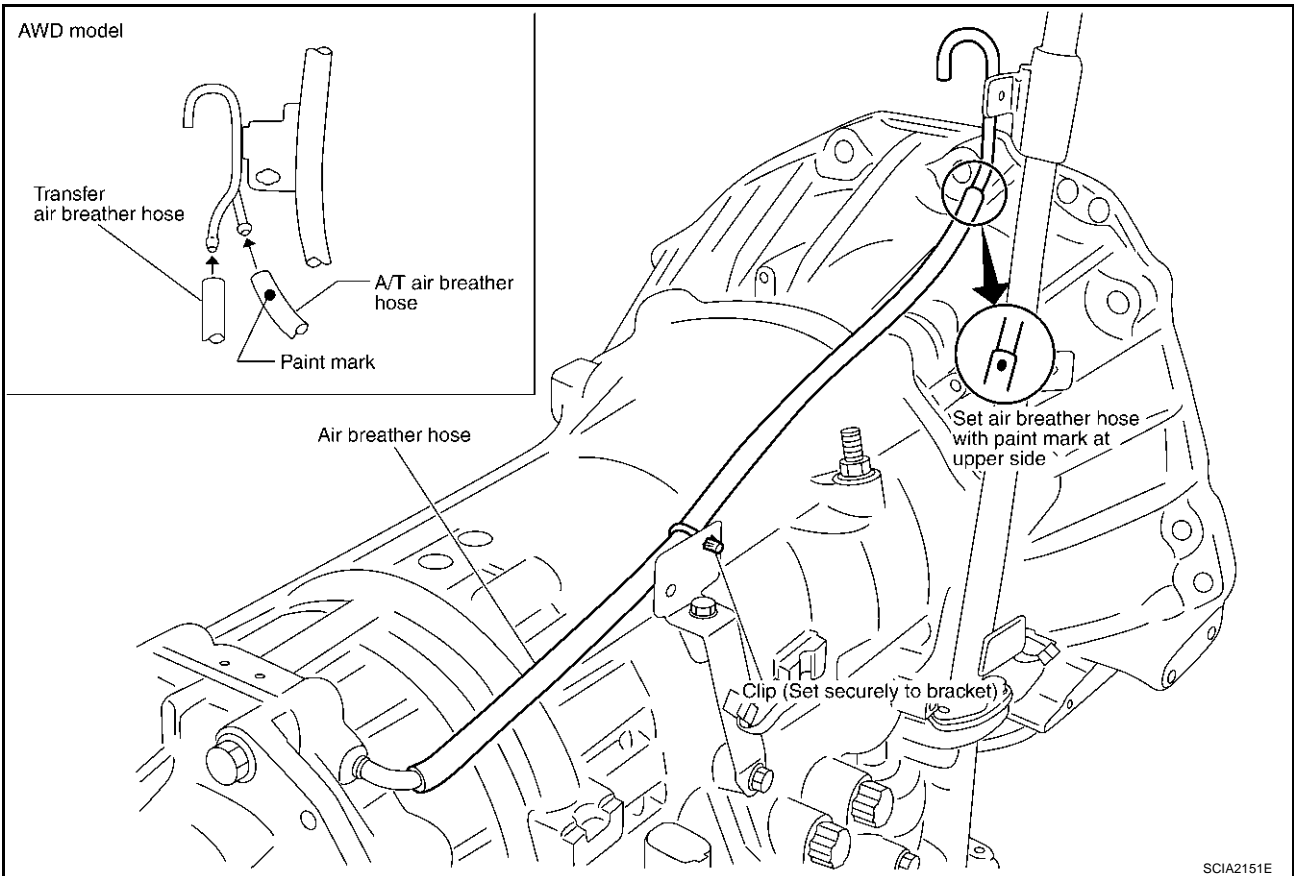
PFP:31098

AIR BREATHER HOSE

Removal and Installation VQ35DE ENGINE MODELS

ACS002S0

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



CAUTION:

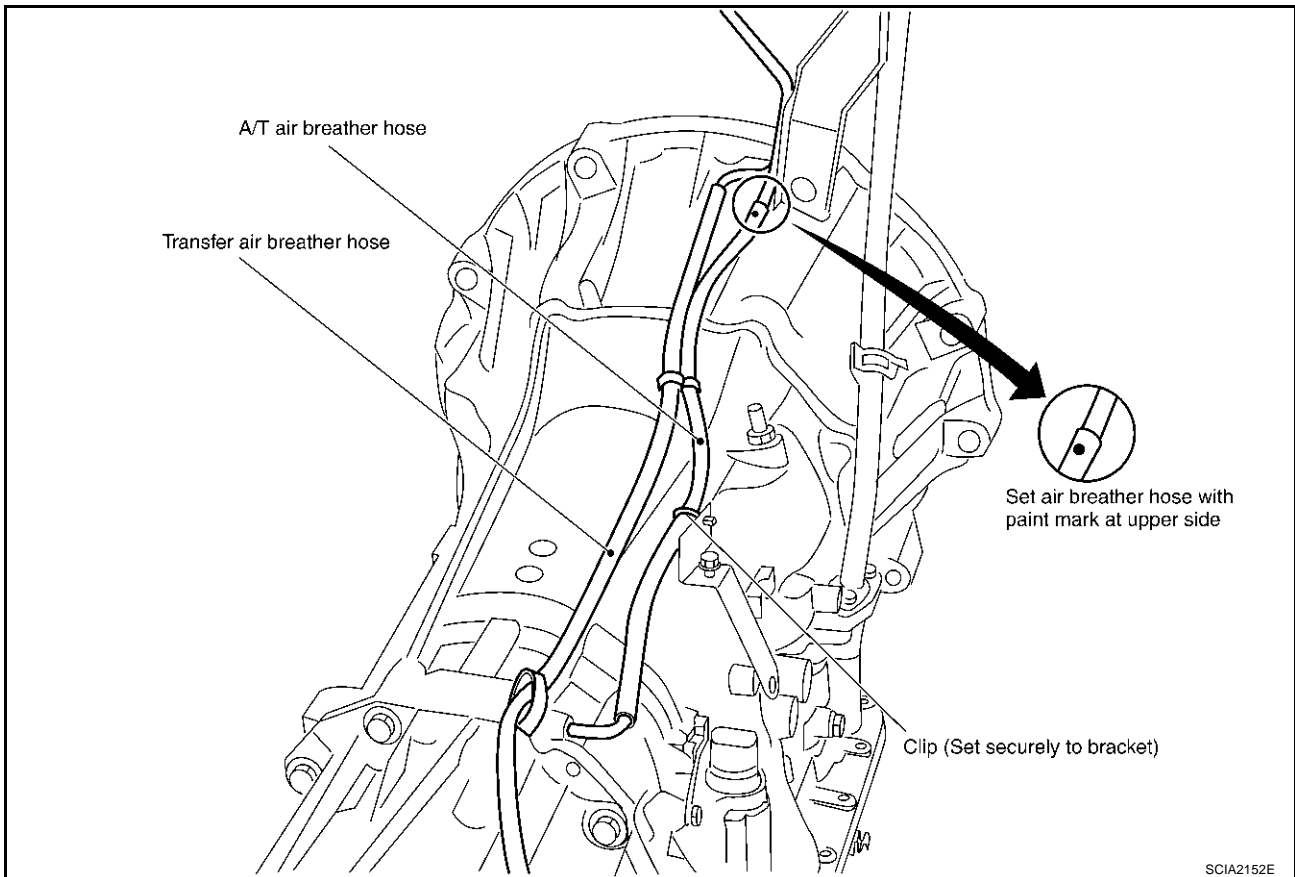
- When installing an air breather hose, be careful not to be crushed or blocked by folding or bending the hose.
- When inserting a hose to the transmission tube, be sure to insert it fully until its end reaches the tube bend R portion.

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AIR BREATHER HOSE

VK45DE ENGINE MODELS

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



CAUTION:

- When installing an air breather hose, be careful not to be crushed or blocked by folding or bending the hose.
- When inserting a hose to the transmission tube, be sure to insert it fully until its end reaches the tube bend R portion.

TRANSMISSION ASSEMBLY

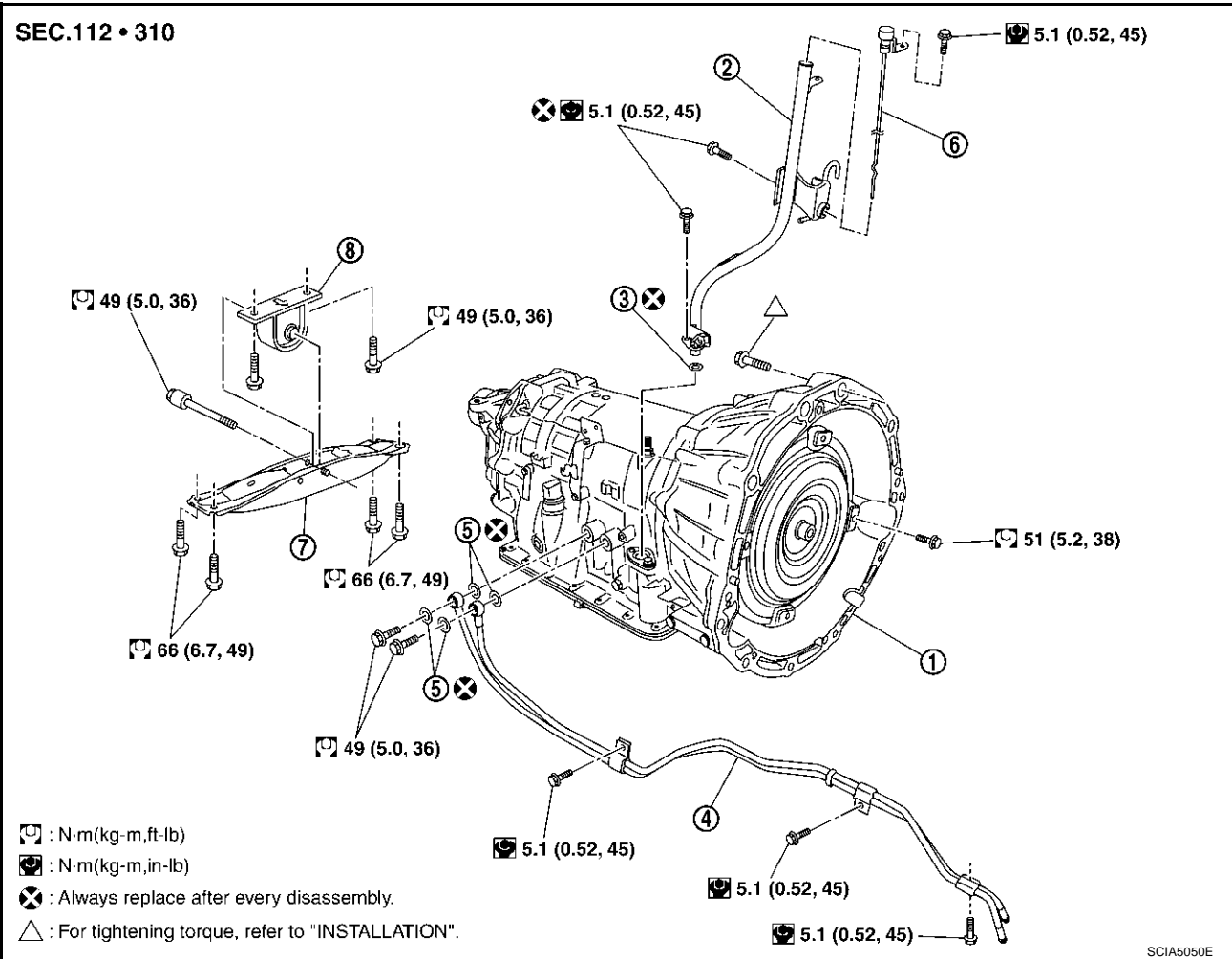
TRANSMISSION ASSEMBLY

PF3:31020

Removal and Installation (2WD Models) COMPONENTS

ACS002S1

SEC.112 • 310



- | | | |
|--------------------------|----------------------------|--------------------------|
| 1. Transmission assembly | 2. A/T fluid charging pipe | 3. O-ring |
| 4. Fluid cooler tube | 5. Copper washer | 6. A/T fluid level gauge |
| 7. Engine rear member | 8. Insulator | |

REMOVAL

CAUTION:

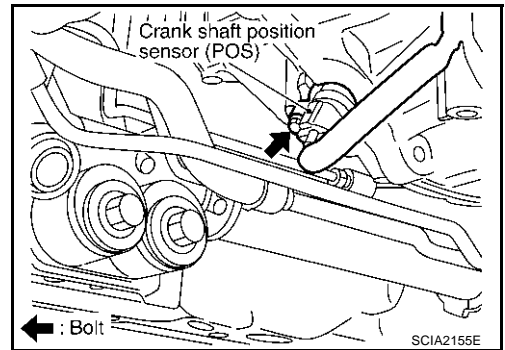
When removing the A/T assembly from engine, first remove the crankshaft position sensor (POS) from the A/T assembly.

Be careful not to damage sensor edge.

1. Disconnect the negative battery terminal.
2. Remove engine cover.
3. Remove A/T fluid level gauge.
4. Remove engine under cover with power tool.
5. Remove exhaust front tube and center muffler with power tool. Refer to [EX-3, "Removal and Installation"](#).
6. Remove three way catalyst. Refer to [EM-25, "Removal and Installation"](#).
7. Remove rear propeller shaft. Refer to [PR-8, "Removal and Installation"](#).
8. Remove A/T control rod. Refer to [AT-233, "SHIFT CONTROL SYSTEM"](#).

TRANSMISSION ASSEMBLY

9. Remove crankshaft position sensor (POS) from A/T assembly.
10. Remove starter motor. Refer to [SC-18, "VQ35DE ENGINE MODELS \(2WD\)"](#).
11. Remove fluid cooler tube.
12. Remove dust cover from converter housing part.



13. Turn crankshaft, and remove the four tightening bolts for drive plate and torque converter.

CAUTION:

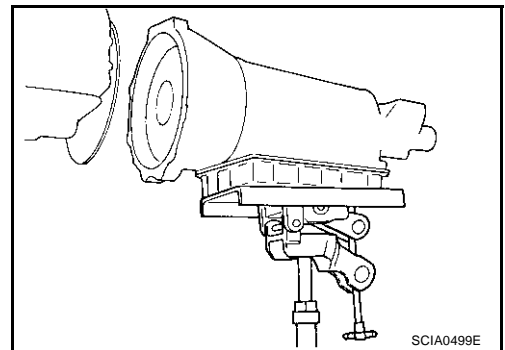
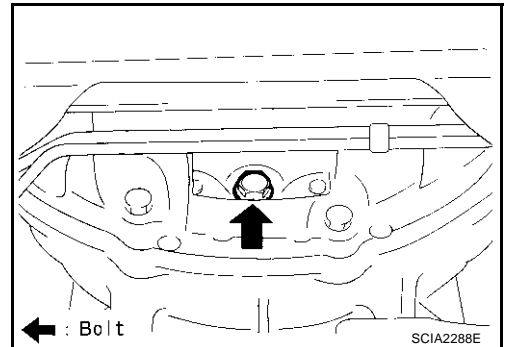
When turning crankshaft, turn it clockwise as viewed from the front of the engine.

14. Support A/T assembly with a transmission jack.

CAUTION:

When setting the transmission jack, be careful not to allow it to collide against the drain plug.

15. Remove engine rear member with power tool.
16. Remove air breather hose. Refer to [AT-267, "Removal and Installation"](#).
17. Disconnect A/T unit assembly connector.
18. Remove A/T fluid charging pipe from A/T assembly.
19. Plug up openings such as the fluid charging pipe hole, etc.
20. Remove bolts fixing A/T assembly to engine with power tool.
21. Remove A/T assembly from vehicle with a transmission jack.
 - Secure torque converter to prevent it from dropping.
 - Secure A/T assembly to a jack.

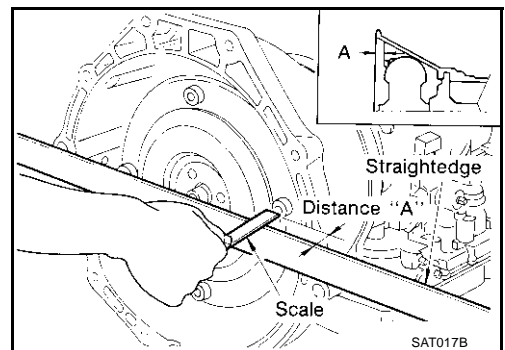


INSPECTION

Installation and Inspection of Torque Converter

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

Distance "A": 25.0 mm (0.98 in) or more



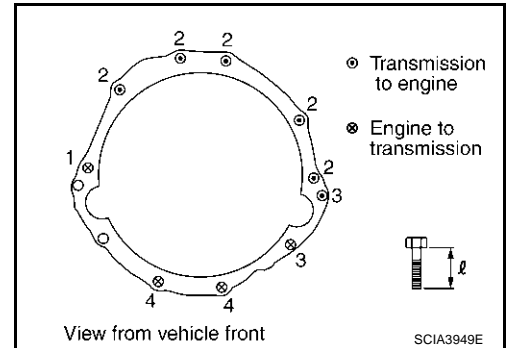
TRANSMISSION ASSEMBLY

INSTALLATION

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

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

Bolt No.	1	2	3	4
Number of bolts	1	5	2	2
Bolt length "ℓ"mm (in)	55 (2.17)	65 (2.56)	65 (2.56)	35 (1.38)
Tightening torque N-m (kg-m, ft-lb)	75 (7.7, 55)		55 (5.6, 41)	47 (4.8, 35)

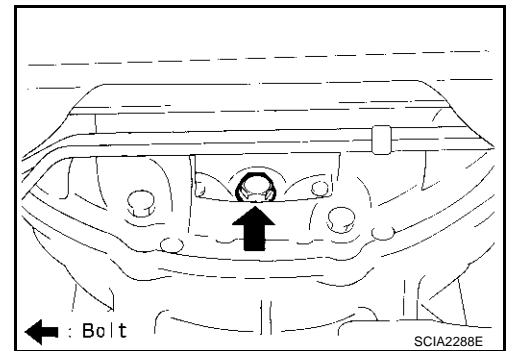


- Align the positions of tightening bolts for drive plate with those of the torque converter, and temporarily tighten the bolts. Then, tighten the bolts with the specified torque.

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

CAUTION:

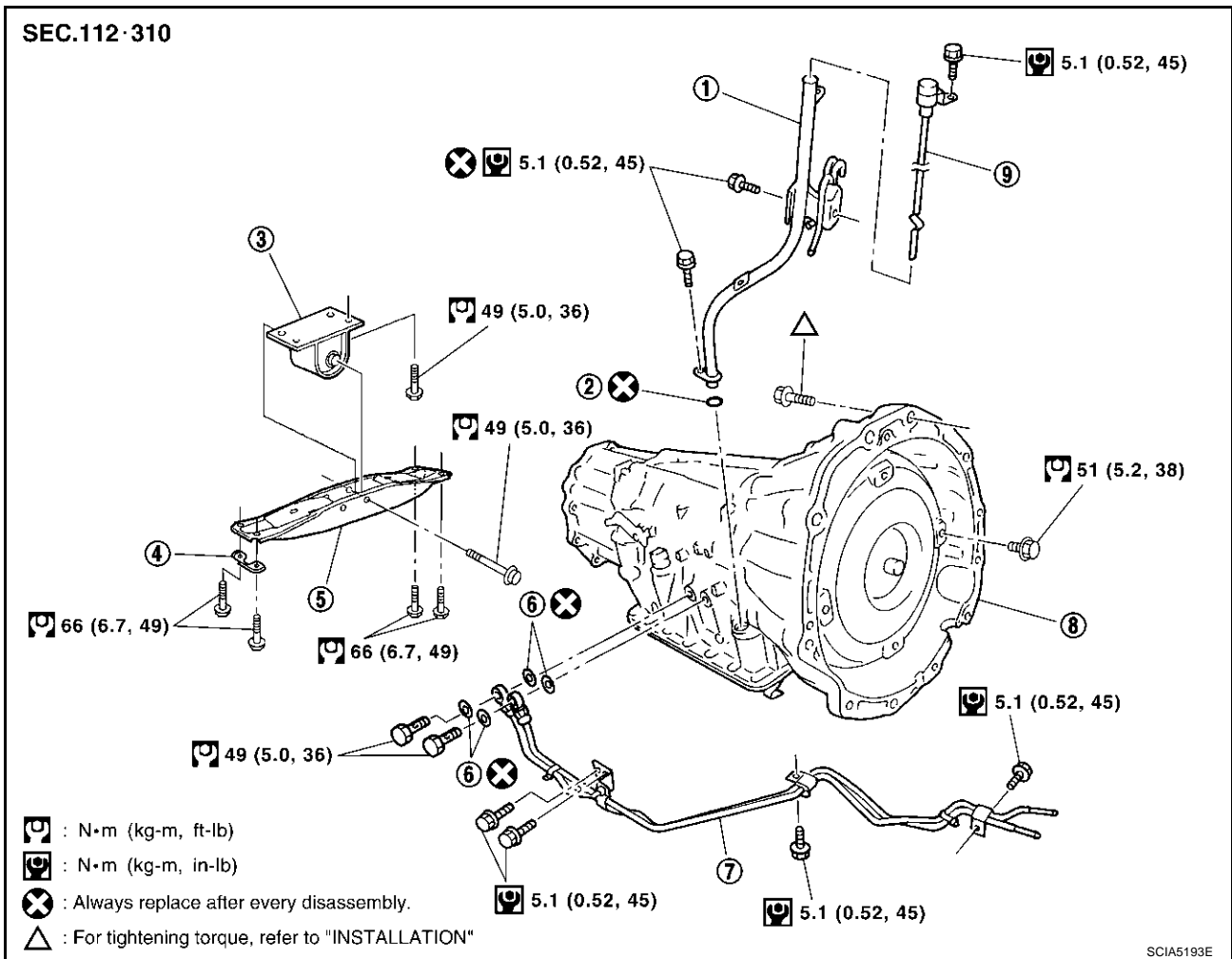
- When turning crankshaft, turn it clockwise as viewed from the front of the engine.
- When tightening the tightening bolts for the torque converter after fixing the crankshaft pulley bolts, be sure to confirm the tightening torque of the crankshaft pulley mounting bolts.
- After converter is installed to drive plate, rotate crankshaft several turns and check to be sure that transmission rotates freely without binding.
- Install crankshaft position sensor (POS). Refer to [EM-28, "Removal and Installation"](#).
- After completing installation, check fluid leakage, fluid level, and the positions of A/T. Refer to [AT-12, "Changing A/T Fluid"](#), [AT-234, "Adjustment of A/T Position"](#), [AT-234, "Checking of A/T Position"](#).



TRANSMISSION ASSEMBLY

ACS0033A

Removal and Installation (AWD Models) COMPONENTS (FOR VQ35DE)



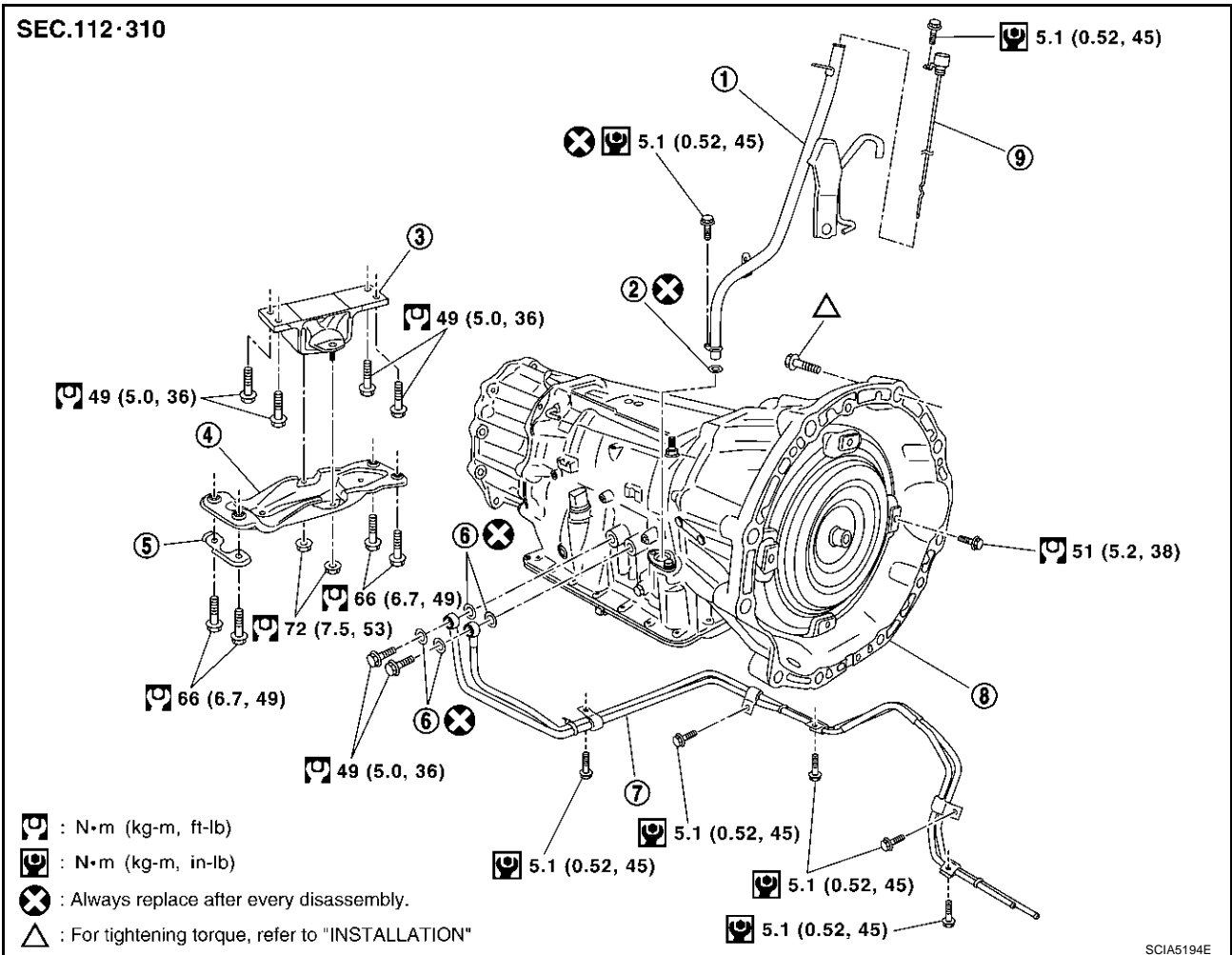
SCIA5193E

- | | | |
|--------------------------|----------------------------|--------------------------|
| 1. Transmission assembly | 2. A/T fluid charging pipe | 3. O-ring |
| 4. Fluid cooler tube | 5. Copper washer | 6. A/T fluid level gauge |
| 7. Engine rear member | 8. Insulator | |

TRANSMISSION ASSEMBLY

COMPONENTS (FOR VK45DE)

SEC.112·310



- | | | |
|--------------------------|----------------------------|--------------------------|
| 1. Transmission assembly | 2. A/T fluid charging pipe | 3. O-ring |
| 4. Fluid cooler tube | 5. Copper washer | 6. A/T fluid level gauge |
| 7. Engine rear member | 8. Insulator | |

REMOVAL

CAUTION:

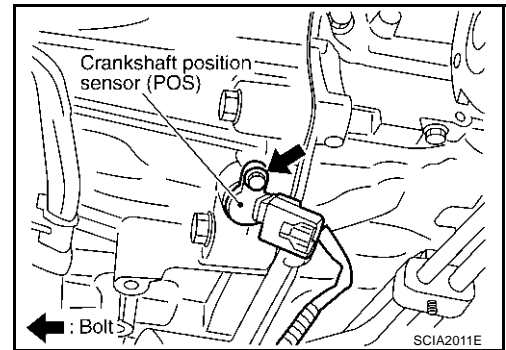
When removing the A/T assembly from engine, first remove the crankshaft position sensor (POS) from the A/T assembly.

Be careful not to damage sensor edge.

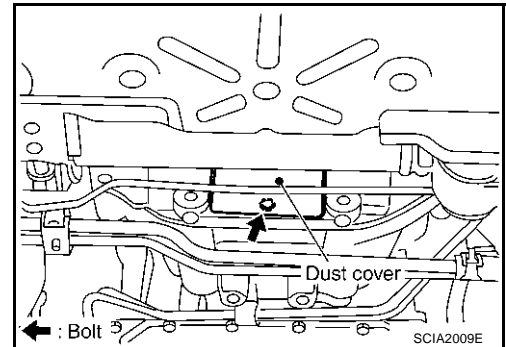
1. Disconnect the negative battery terminal.
2. Remove engine cover with power tool.
3. Remove A/T fluid level gauge.
4. Remove engine under cover with power tool.
5. Remove exhaust front tube and center muffler with power tool. Refer to [EX-3, "Removal and Installation"](#).
6. Remove three way catalyst. Refer to [EM-25, "Removal and Installation"](#) (for VQ35DE models) or [EM-177, "Removal and Installation"](#) (for VK45DE models).
7. Remove propeller shaft. Refer to [PR-4, "Removal and Installation"](#), [PR-8, "Removal and Installation"](#).
8. Remove A/T control rod. Refer to [AT-233, "SHIFT CONTROL SYSTEM"](#).

TRANSMISSION ASSEMBLY

9. Remove crankshaft position sensor (POS) from A/T assembly.
10. Remove starter motor. Refer to [SC-19, "VQ35DE ENGINE MODELS \(AWD\)"](#) or [SC-17, "VK45DE ENGINE MODELS"](#).
11. Disconnect A/T fluid cooler tube from A/T assembly.



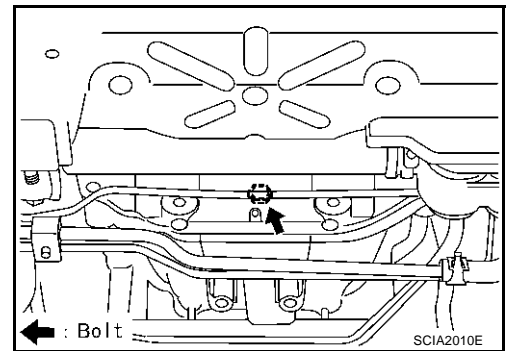
12. Remove dust cover from converter housing part.



13. Turn crankshaft, and remove the four tightening bolts for drive plate and torque converter.

CAUTION:

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



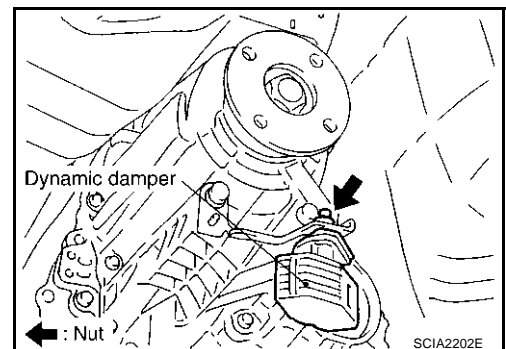
14. Remove dynamic damper (for VQ35DE models). Refer to [TF-14, "Components"](#).

15. Support A/T assembly with a transmission jack.

CAUTION:

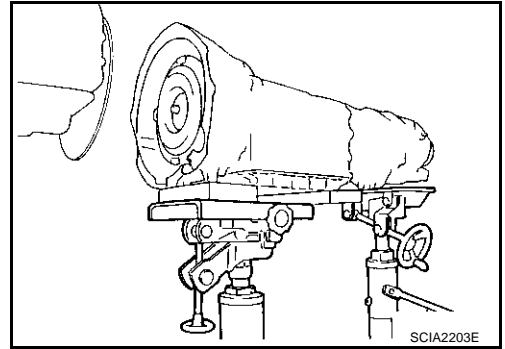
When setting the transmission jack, be careful not to allow it to collide against the drain plug.

16. Remove engine rear member with power tool.
17. Tilt the mission slightly to keep the clearance between body and mission, and then disconnect air breather hose from charging pipe. Refer to [AT-267, "Removal and Installation"](#).
18. Disconnect A/T unit assembly connector and transfer unit connector.
19. Remove A/T fluid charging pipe.
20. Plug up openings such as the fluid charging pipe hole, etc.
21. Remove bolts fixing A/T assembly to engine with power tool.



TRANSMISSION ASSEMBLY

22. Remove A/T assembly with transfer from vehicle.
- Secure torque converter to prevent it from dropping.
 - Secure A/T assembly to a jack.
23. Remove transfer from A/T assembly. Refer to [TF-13, "Removal and Installation from Vehicle"](#).



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INSPECTION

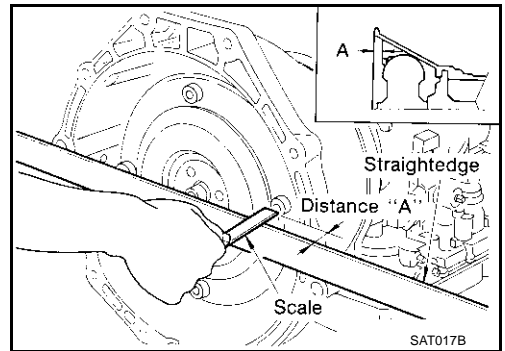
Installation and Inspection of Torque Converter

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

Distance "A"

VQ35DE models: 25.0 mm (0.98 in) or more

VK45DE models: 22.0 mm (0.87 in) or more



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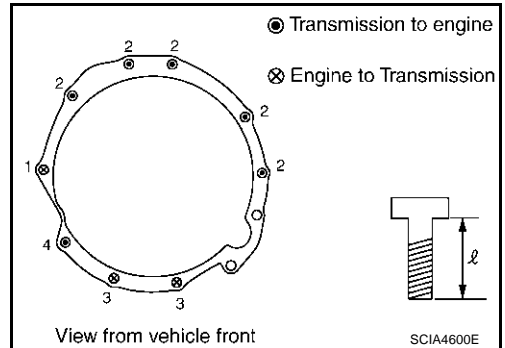
INSTALLATION

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

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

For VQ35DE models

Bolt No.	1	2	3	4
Number of bolts	1	5	2	1
Bolt length "ℓ"mm (in)	55 (2.17)	65 (2.56)	35 (1.38)	65 (2.56)
Tightening torque N·m (kg·m, ft·lb)	75 (7.7, 55)		47 (4.8, 35)	34 (3.5, 25)

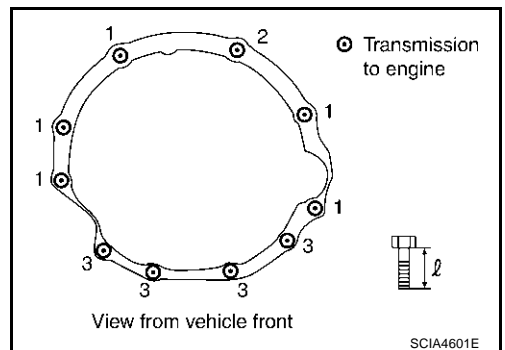


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For VK45DE models

Bolt No.	1	2*	3
Number of bolts	5	1	4
Bolt length "ℓ"mm (in)	70 (2.76)	70 (2.76)	65 (2.56)
Tightening torque N·m (kg·m, ft·lb)	113 (12, 83)		74.0 (7.5, 55)

*: No.2 bolt also secures A/T fluid charging pipe.



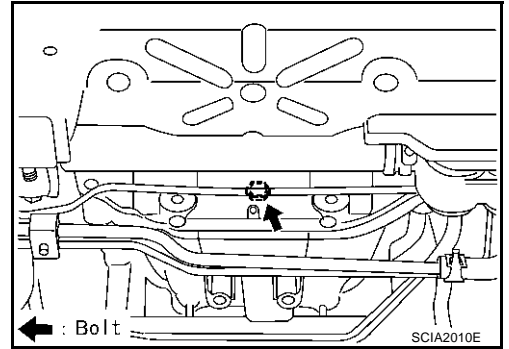
TRANSMISSION ASSEMBLY

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

 : 51 N·m (5.2 kg-m, 38 ft-lb)

CAUTION:

- When turning crankshaft, turn it clockwise as viewed from the front of the engine.
- When tightening the tightening bolts for the torque converter after fixing the crankshaft pulley bolts, be sure to confirm the tightening torque of the crankshaft pulley mounting bolts.
- After converter is installed to drive plate, rotate crankshaft several turns and check to be sure that transmission rotates freely without binding.
- Install crankshaft position sensor (POS). Refer to [EM-28, "Removal and Installation"](#) , [EM-180, "Removal and Installation"](#) .
- After completing installation, check fluid leakage, fluid level, and the positions of A/T. Refer to [AT-12, "Changing A/T Fluid"](#) , [AT-234, "Adjustment of A/T Position"](#) , [AT-234, "Checking of A/T Position"](#) .



OVERHAUL

- | | | |
|------------------------|-------------------------------------|----------------------------|
| 1. O-ring | 2. Oil pump cover | 3. O-ring |
| 4. Oil pump housing | 5. Self-sealing bolt | 6. Torque converter |
| 7. Converter housing | 8. Oil pump housing oil seal | 9. Bearing race |
| 10. Needle bearing | 11. O-ring | 12. Front carrier assembly |
| 13. Snap ring | 14. Front sun gear | 15. 3rd one-way clutch |
| 16. Snap ring | 17. Bearing race | 18. Needle bearing |
| 19. Seal ring | 20. Input clutch assembly | 21. Needle bearing |
| 22. Rear internal gear | 23. Brake band | 24. Mid carrier assembly |
| 25. Needle bearing | 26. Bearing race | 27. Rear carrier assembly |
| 28. Needle bearing | 29. Mid sun gear | 30. Seal ring |
| 31. Rear sun gear | 32. 1st one-way clutch | 33. Snap ring |
| 34. Needle bearing | 35. High and low reverse clutch hub | 36. Snap ring |
| 37. Bearing race | 38. Needle bearing | |

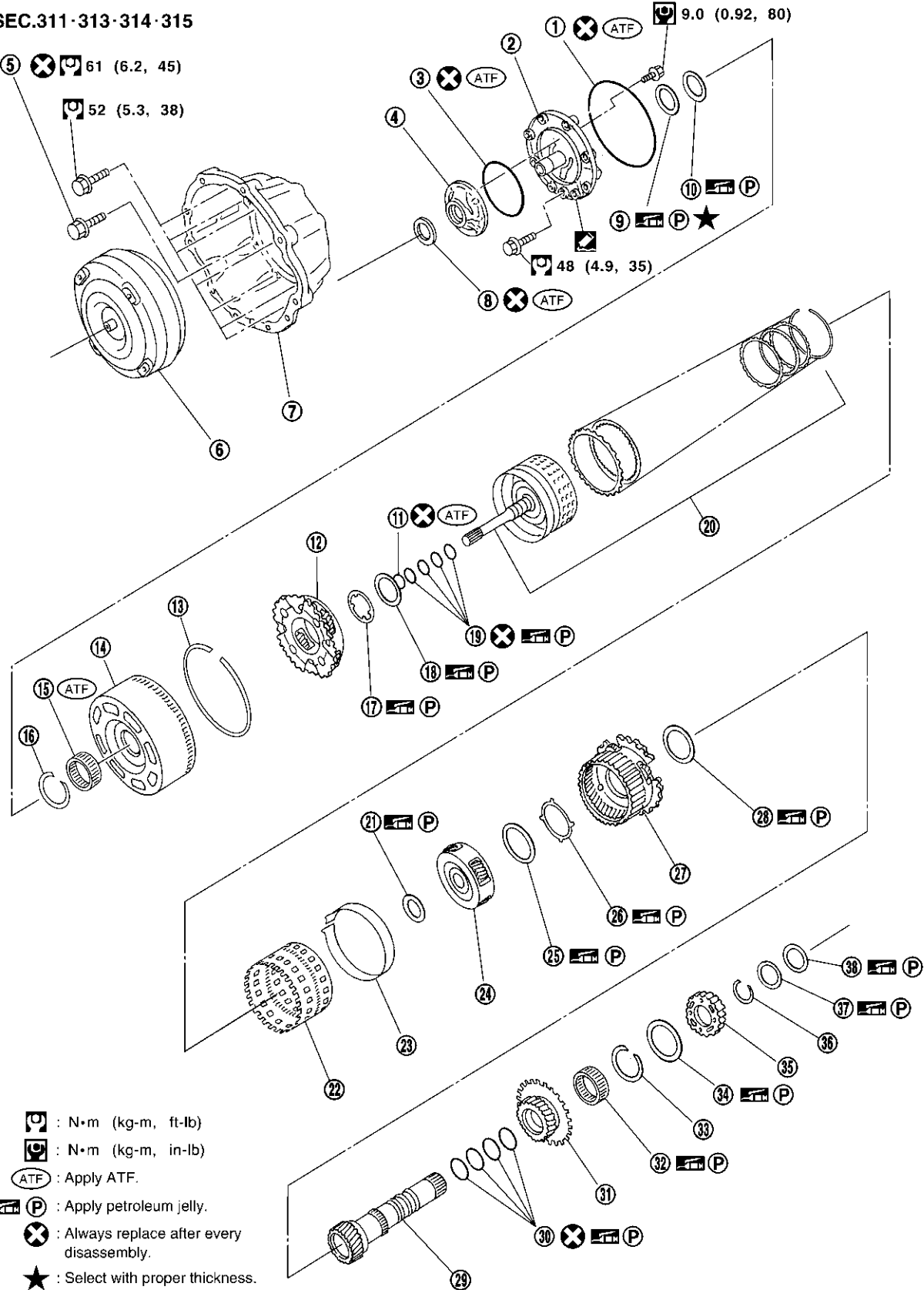
OVERHAUL

91X60, 91X61 and 91X62 models

SEC.311-313-314-315

5 61 (6.2, 45)

52 (5.3, 38)



: N•m (kg-m, ft-lb)

: N•m (kg-m, in-lb)

: Apply ATF.

(P) : Apply petroleum jelly.

: Always replace after every disassembly.

★ : Select with proper thickness.

: Apply Genuine RTV silicone sealant or equivalent. Refer to GI section.

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1. O-ring

2. Oil pump cover

3. O-ring

4. Oil pump housing

5. Self-sealing bolt

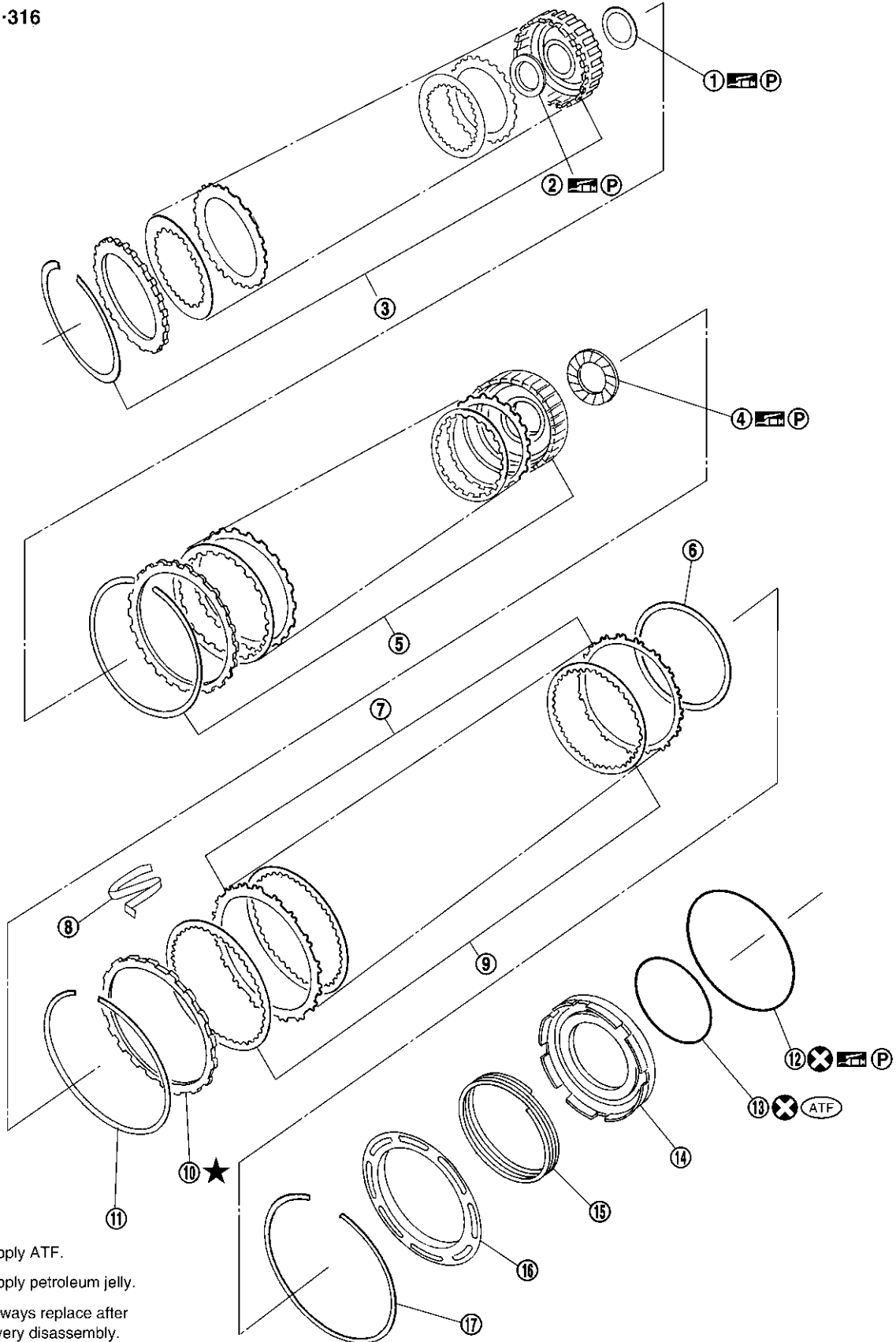
6. Torque converter

OVERHAUL

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|------------------------|-------------------------------------|----------------------------|
| 7. Converter housing | 8. Oil pump housing oil seal | 9. Bearing race |
| 10. Needle bearing | 11. O-ring | 12. Front carrier assembly |
| 13. Snap ring | 14. Front sun gear | 15. 3rd one-way clutch |
| 16. Snap ring | 17. Bearing race | 18. Needle bearing |
| 19. Seal ring | 20. Input clutch assembly | 21. Needle bearing |
| 22. Rear internal gear | 23. Brake band | 24. Mid carrier assembly |
| 25. Needle bearing | 26. Bearing race | 27. Rear carrier assembly |
| 28. Needle bearing | 29. Mid sun gear | 30. Seal ring |
| 31. Rear sun gear | 32. 1st one-way clutch | 33. Snap ring |
| 34. Needle bearing | 35. High and low reverse clutch hub | 36. Snap ring |
| 37. Bearing race | 38. Needle bearing | |

OVERHAUL

SEC.315-316



- (ATF) : Apply ATF.
- (P) : Apply petroleum jelly.
- (X) : Always replace after every disassembly.
- (★) : Select with proper thickness.

SCIA5043E

- | | | |
|-------------------|---------------------------|---|
| 1. Needle bearing | 2. Bearing race | 3. High and low reverse clutch assembly |
| 4. Needle bearing | 5. Direct clutch assembly | 6. Reverse brake dish plate |

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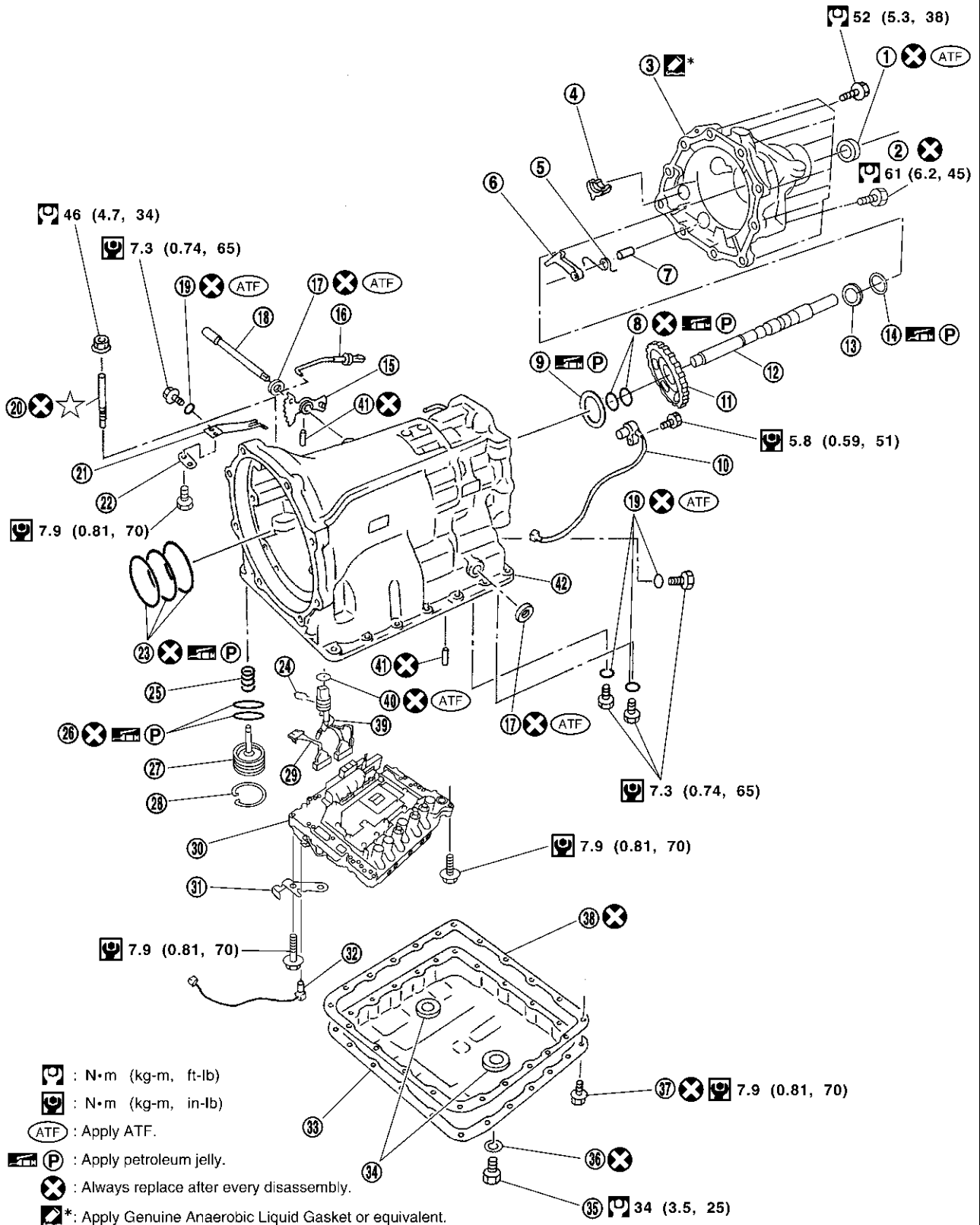
OVERHAUL

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|-----------------------------------|--------------------------|------------------------------|
| 7. Reverse brake driven plate | 8. N-spring | 9. Reverse brake drive plate |
| 10. Reverse brake retaining plate | 11. Snap ring | 12. Lip seal |
| 13. D-ring | 14. Reverse brake piston | 15. Return spring |
| 16. Spring retainer | 17. Snap ring | |

OVERHAUL

2WD models

SEC.313 · 314 · 315 · 316 · 317 · 319



- 1. Rear oil seal
- 4. Parking actuator support

- 2. Self-sealing bolt
- 5. Return spring

- 3. Rear extension
- 6. Parking pawl

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SCIA5479E

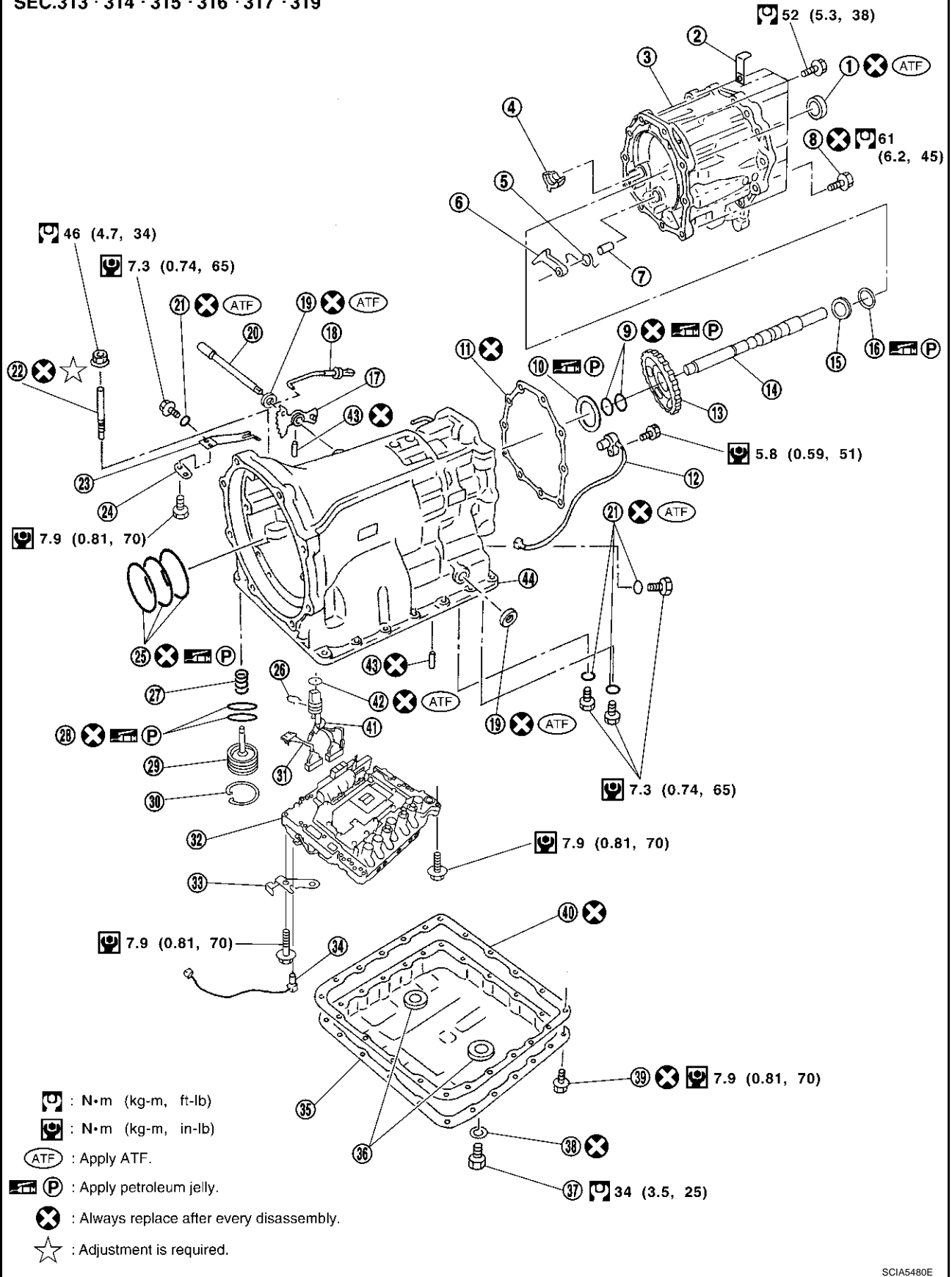
OVERHAUL

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|---------------------------|------------------------------------|----------------------------|
| 7. Pawl shaft | 8. Seal ring | 9. Needle bearing |
| 10. Revolution sensor | 11. Parking gear | 12. Output shaft |
| 13. Bearing race | 14. Needle bearing | 15. Manual plate |
| 16. Parking rod | 17. Manual shaft oil seal | 18. Manual shaft |
| 19. O-ring | 20. Band servo anchor end pin | 21. Detent spring |
| 22. Spacer | 23. Seal ring | 24. Snap ring |
| 25. Return spring | 26. O-ring | 27. Servo assembly |
| 28. Snap ring | 29. Sub-harness | 30. Control valve with TCM |
| 31. Bracket | 32. A/T fluid temperature sensor 2 | 33. Oil pan |
| 34. Magnet | 35. Drain plug | 36. Drain plug gasket |
| 37. Oil pan mounting bolt | 38. Oil pan gasket | 39. Terminal cord assembly |
| 40. O-ring | 41. Retaining pin | 42. Transmission case |

OVERHAUL

AWD models

SEC.313 · 314 · 315 · 316 · 317 · 319



- 1. Rear oil seal
- 4. Parking actuator support

- 2. Bracket
- 5. Return spring

- 3. Adapter case
- 6. Parking pawl

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SCIA5480E

OVERHAUL

- | | | |
|------------------------------------|----------------------------|---------------------------|
| 7. Pawl shaft | 8. Self-sealing bolt | 9. Seal ring |
| 10. Needle bearing | 11. Gasket | 12. Revolution sensor |
| 13. Parking gear | 14. Output shaft | 15. Bearing race |
| 16. Needle bearing | 17. Manual plate | 18. Parking rod |
| 19. Manual shaft oil seal | 20. Manual shaft | 21. O-ring |
| 22. Band servo anchor end pin | 23. Detent spring | 24. Spacer |
| 25. Seal ring | 26. Snap ring | 27. Return spring |
| 28. O-ring | 29. Servo assembly | 30. Snap ring |
| 31. Sub-harness | 32. Control valve with TCM | 33. Bracket |
| 34. A/T fluid temperature sensor 2 | 35. Oil pan | 36. Magnet |
| 37. Drain plug | 38. Drain plug gasket | 39. Oil pan mounting bolt |
| 40. Oil pan gasket | 41. Terminal cord assembly | 42. O-ring |
| 43. Retaining pin | 44. Transmission case | |

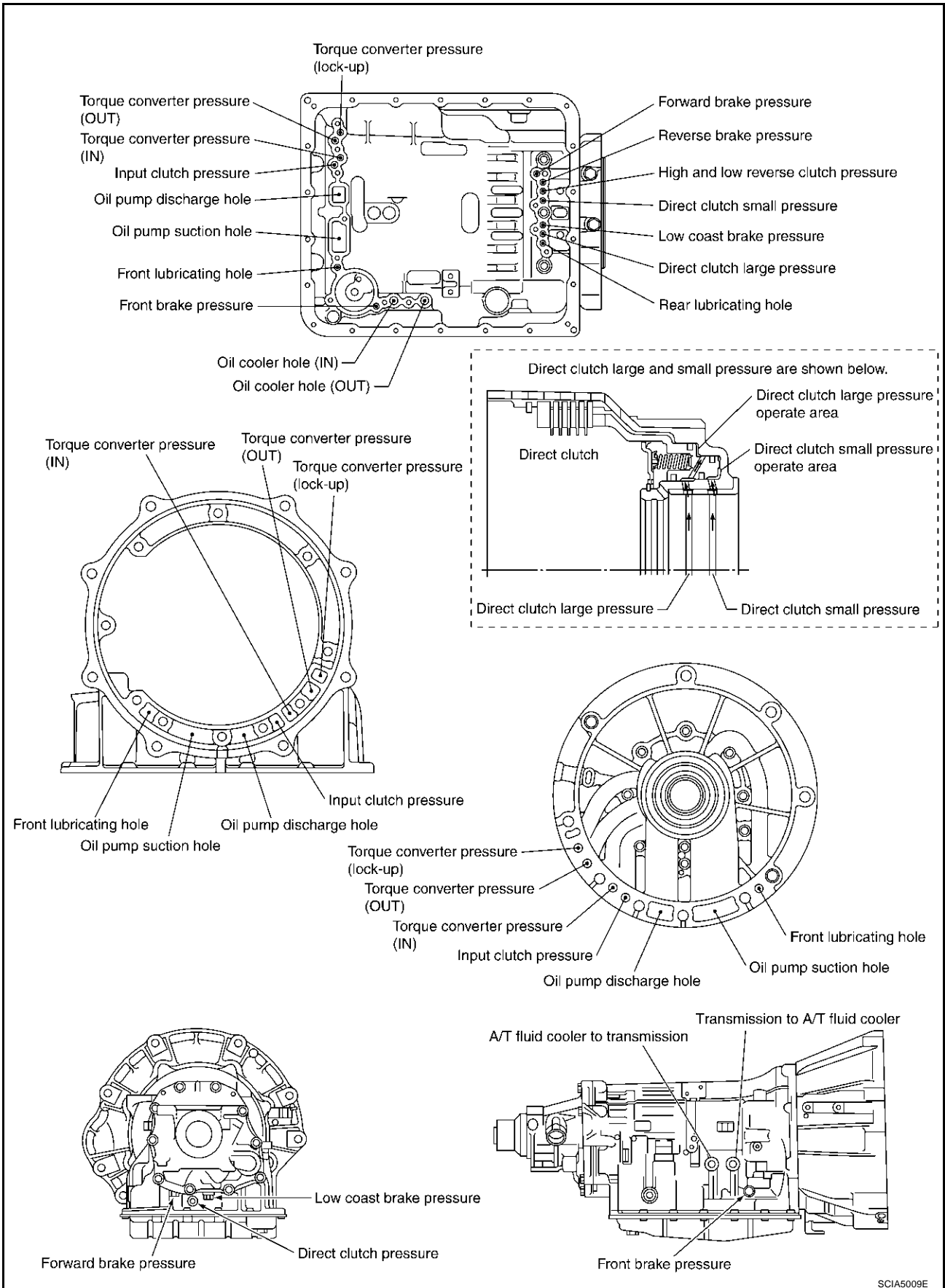
OVERHAUL

Oil Channel

ACS008SN

2WD models

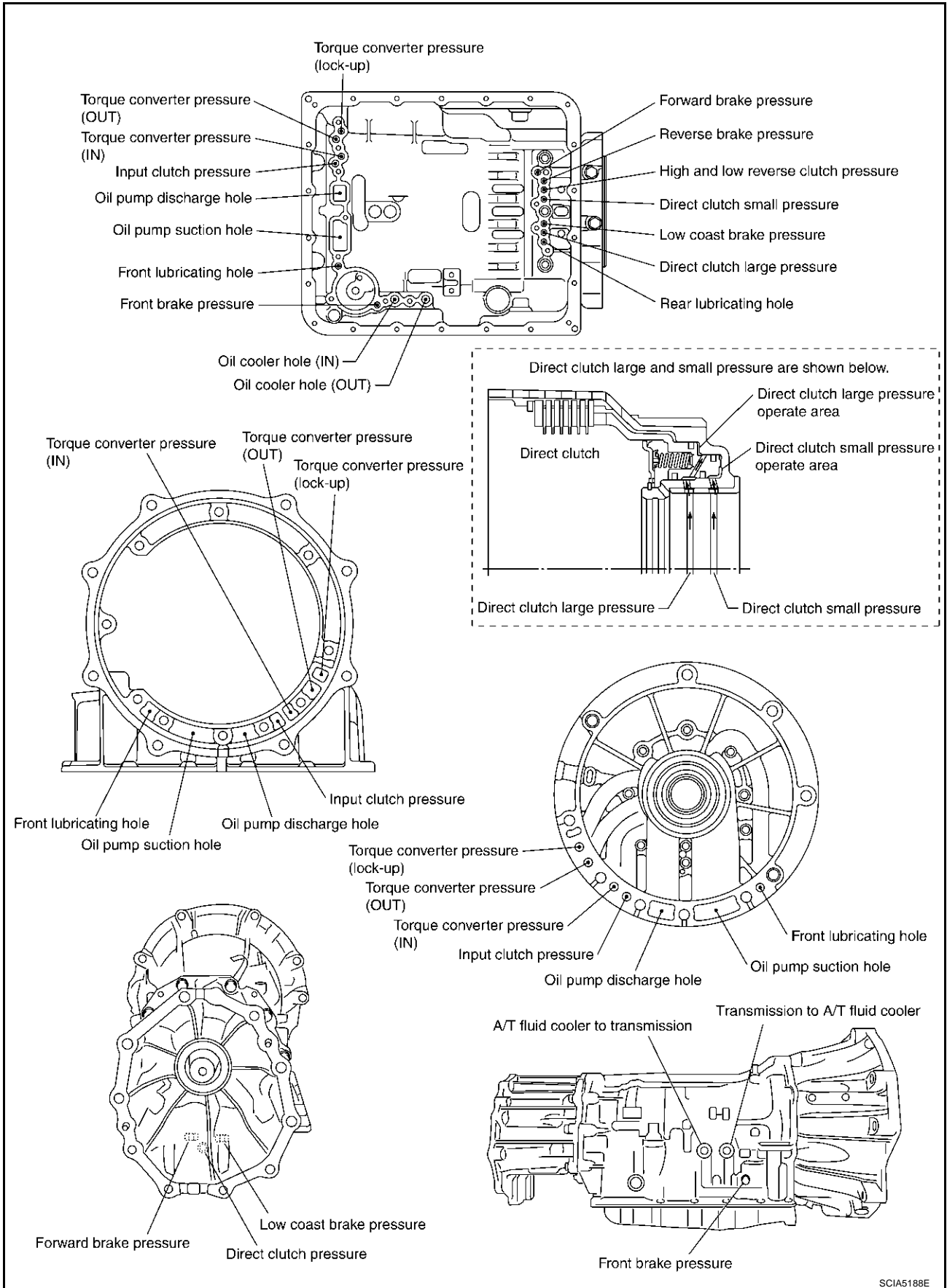
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SCIA5009E

OVERHAUL

AWD models



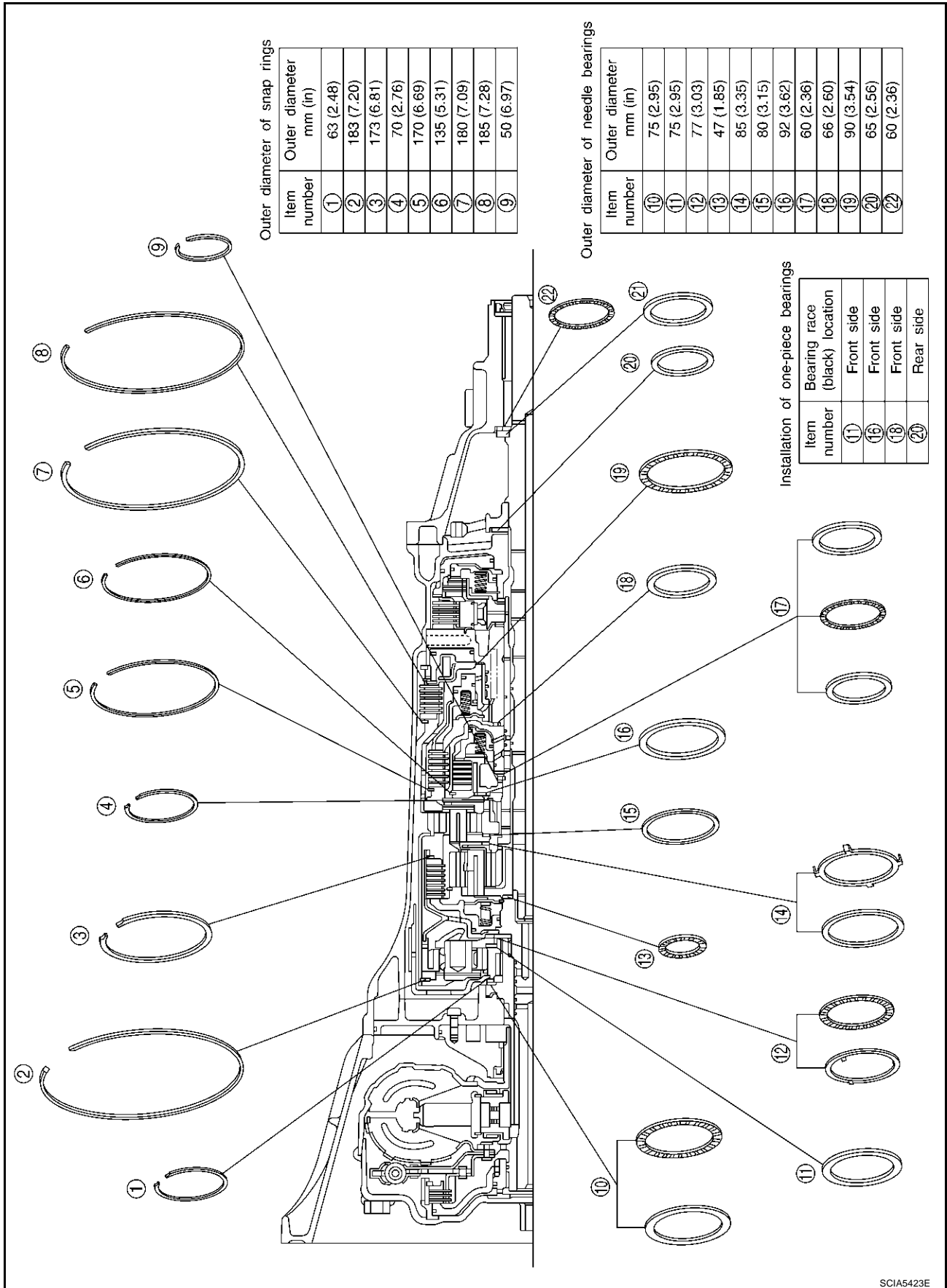
SCIA5188E

OVERHAUL

Locations of Adjusting Shims, Needle Bearings, Thrust Washers and Snap Rings

ACS008SO

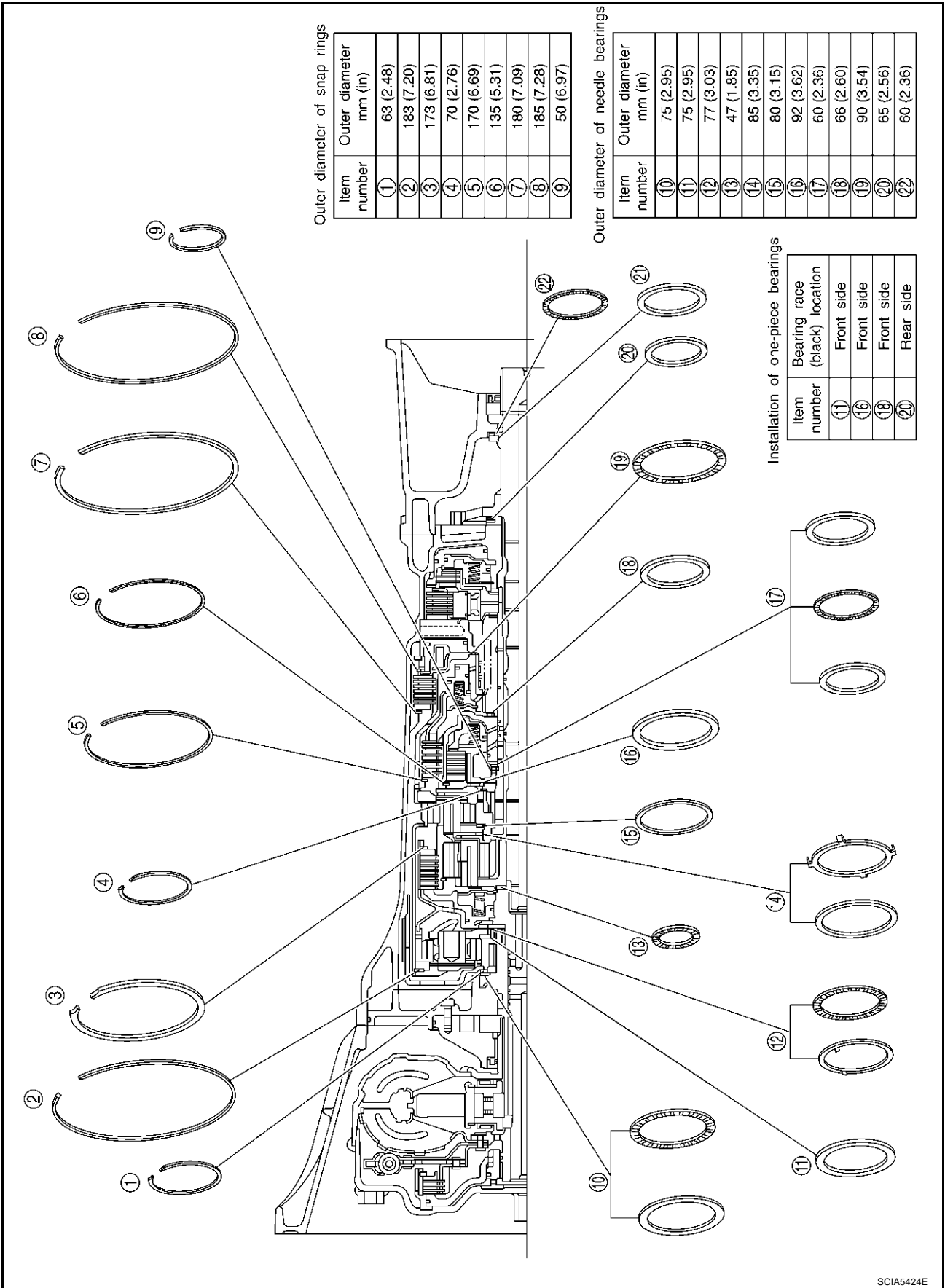
2WD models



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OVERHAUL

AWD models



Outer diameter of snap rings

Item number	Outer diameter mm (in)
①	63 (2.48)
②	183 (7.20)
③	173 (6.81)
④	70 (2.76)
⑤	170 (6.69)
⑥	135 (5.31)
⑦	180 (7.09)
⑧	185 (7.28)
⑨	50 (6.97)

Outer diameter of needle bearings

Item number	Outer diameter mm (in)
⑩	75 (2.95)
⑪	75 (2.95)
⑫	77 (3.03)
⑬	47 (1.85)
⑭	85 (3.35)
⑮	80 (3.15)
⑯	92 (3.62)
⑰	60 (2.36)
⑱	66 (2.60)
⑲	90 (3.54)
⑳	65 (2.56)
㉑	60 (2.36)

Installation of one-piece bearings

Item number	Bearing race (black) location
⑪	Front side
⑱	Front side
⑲	Front side
㉑	Rear side

SCIA5424E

DISASSEMBLY

PFP:31020

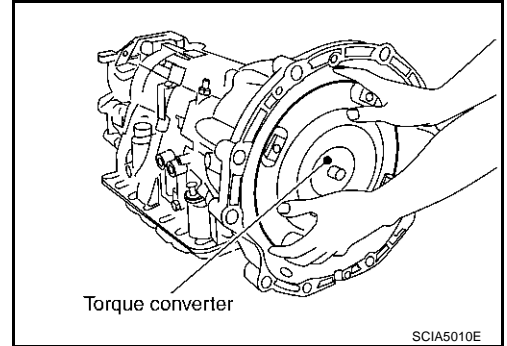
Disassembly

ACS008SP

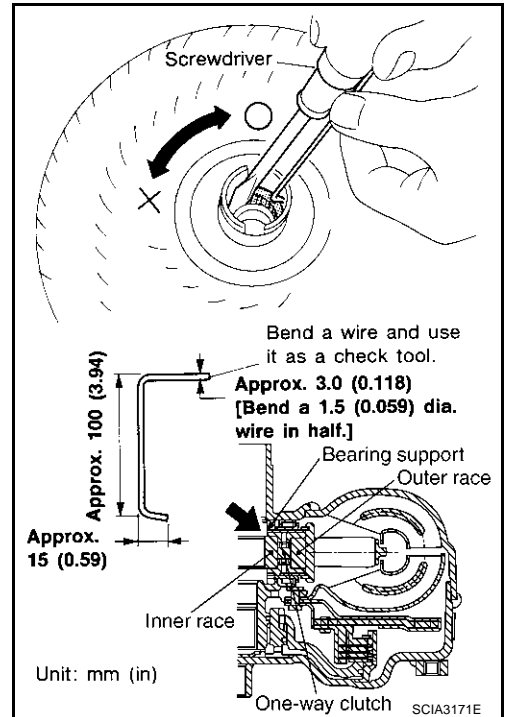
CAUTION:

Do not disassemble parts behind Drum Support. Refer to [AT-14, "Cross-Sectional View \(2WD Models\)"](#) or [AT-15, "Cross-Sectional View \(AWD Models\)"](#).

1. Drain ATF through drain plug.
2. Remove torque converter by holding it firmly and turing while pulling straight out.



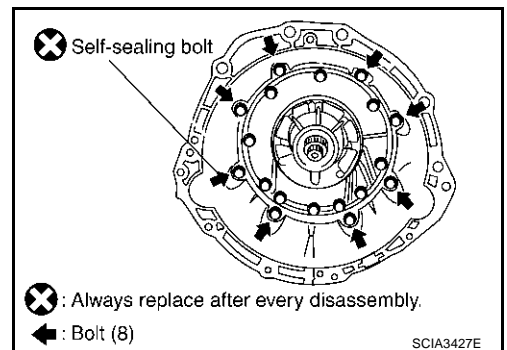
3. Check torque converter one-way clutch using check tool as shown at figure.
 - a. Insert check tool into the groove of bearing support built into one-way clutch outer race.
 - b. When fixing bearing support with check tool, rotate one-way clutch spline using screwdriver.
 - c. Check that inner race rotates clockwise only. If not, replace torque converter assembly.



4. Remove converter housing from transmission case.

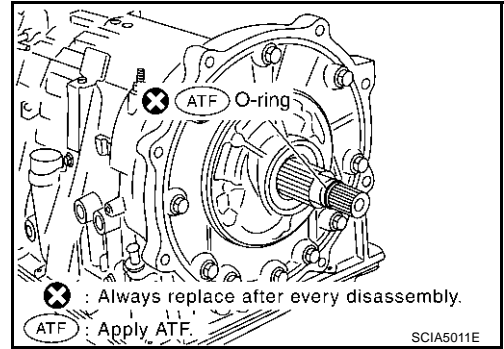
CAUTION:

Be careful not to scratch converter housing.

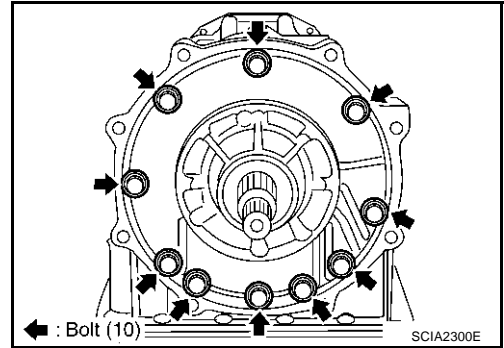


DISASSEMBLY

5. Remove O-ring from input clutch assembly.



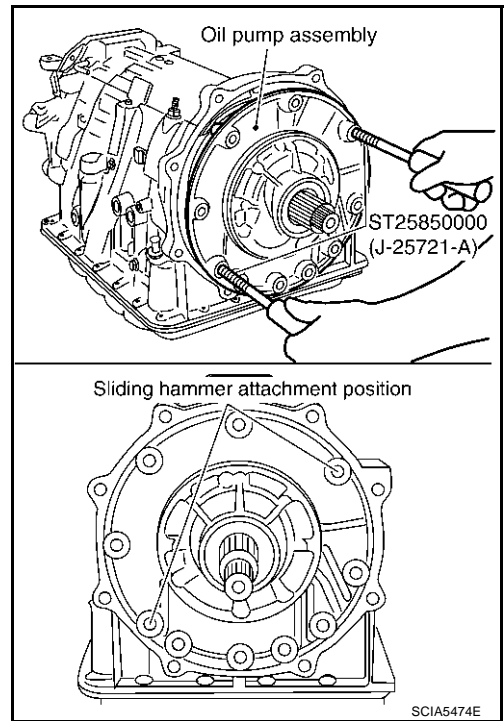
6. Remove tightening bolts for oil pump assembly and transmission case.



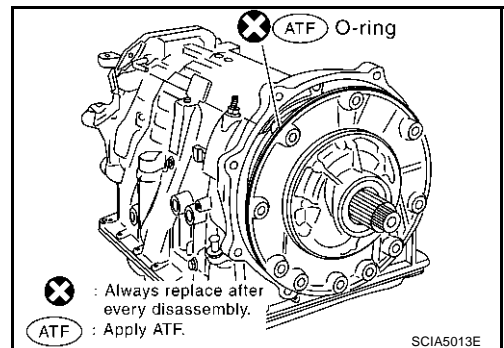
7. Attach the sliding hammers to oil pump assembly and extract it evenly from transmission case.

CAUTION:

- Fully tighten sliding hammer screw.
- Make sure that bearing race is installed to the oil pump assembly edge surface.



- 8. Remove O-ring from oil pump assembly.
- 9. Remove bearing race from oil pump assembly.
- 10. Remove needle bearing from front sun gear.

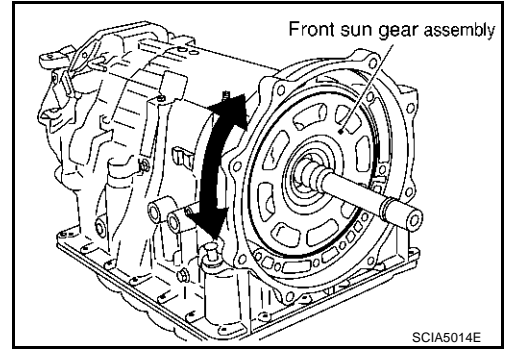


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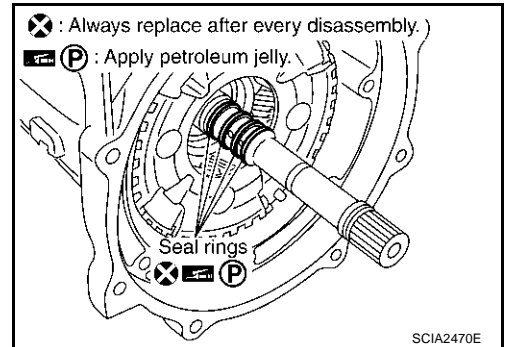
11. Remove front sun gear assembly from front carrier assembly.

NOTE:

Remove front sun gear by rotating left/right.



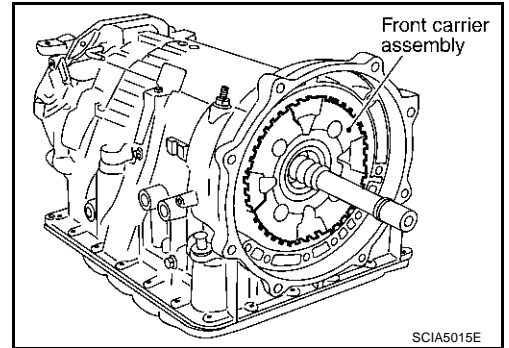
12. Remove seal rings from input clutch assembly.



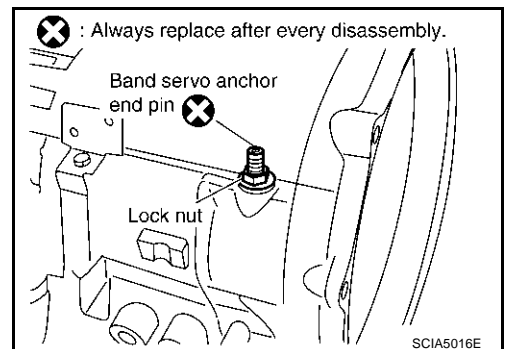
13. Remove front carrier assembly from rear carrier assembly. (With input clutch assembly and rear internal gear.)

CAUTION:

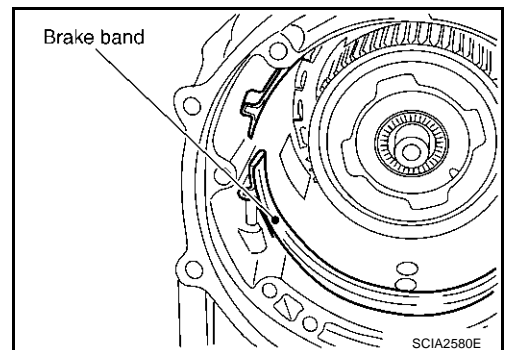
Be careful to remove it with needle bearing.



14. Loosen lock nut and remove band servo anchor end pin from transmission case.



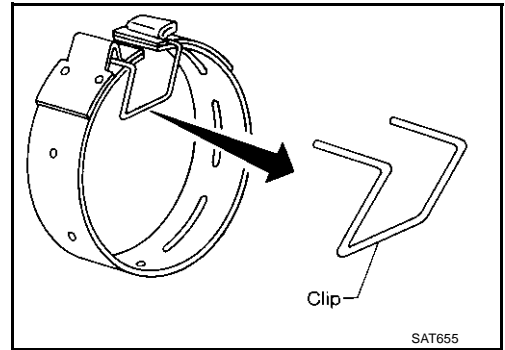
15. Remove brake band from transmission case.



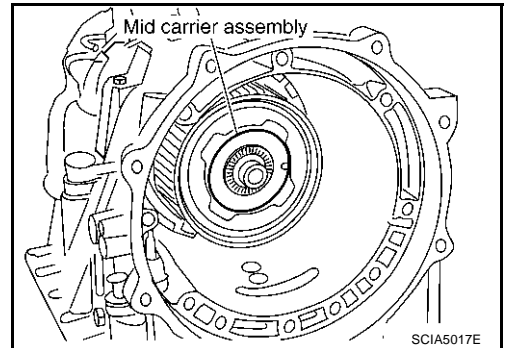
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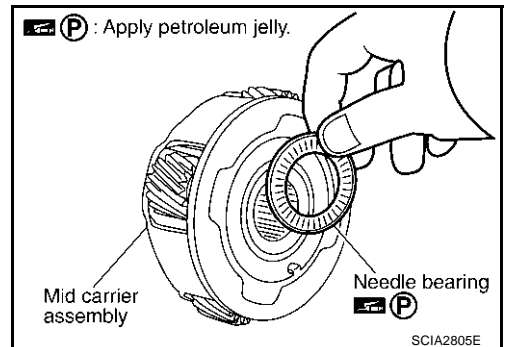
- To prevent brake linings from cracking or peeling, do not stretch the flexible band unnecessarily. When removing the brake band, always secure it with a clip as shown in the figure at right. Leave the clip in position after removing the brake band.
- Check brake band facing for damage, cracks, wear or burns.



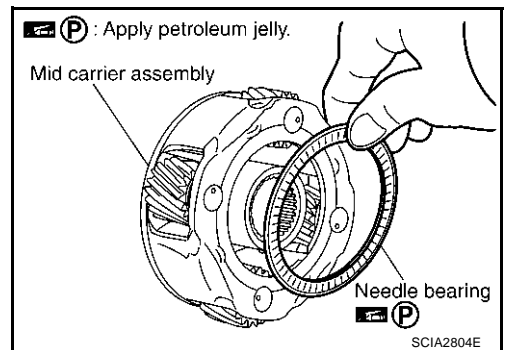
16. Remove mid carrier assembly and rear carrier assembly as a unit.



17. Remove mid carrier assembly from rear carrier assembly.
18. Remove needle bearing (front side) from mid carrier assembly.

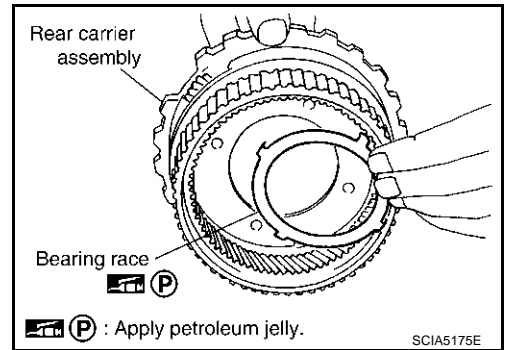


19. Remove needle bearing (rear side) from mid carrier assembly.

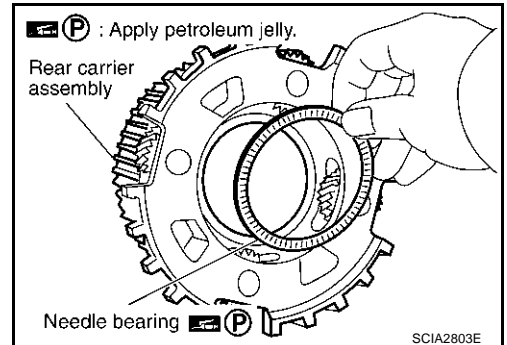


DISASSEMBLY

20. Remove bearing race from rear carrier assembly.



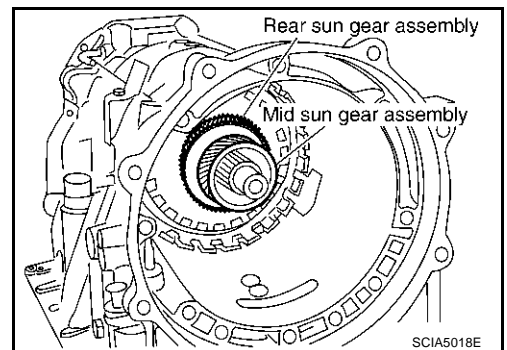
21. Remove needle bearing from rear carrier assembly.



22. Remove mid sun gear assembly, rear sun gear assembly and high and low reverse clutch hub as a unit.

CAUTION:

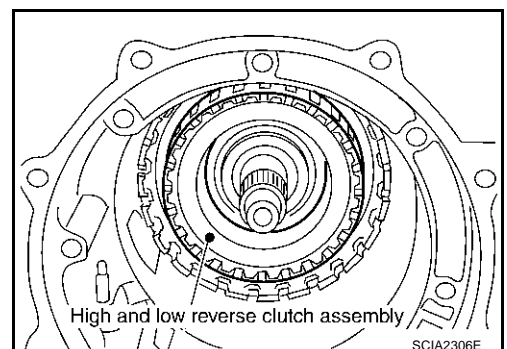
Be careful to remove them with bearing race and needle bearing.



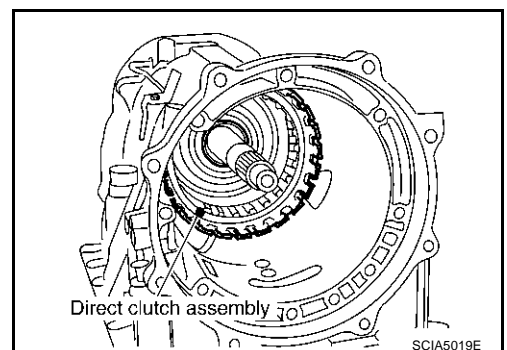
23. Remove high and low reverse clutch assembly from direct clutch assembly.

CAUTION:

Make sure that needle bearing is installed to the high and low reverse clutch assembly edge surface.



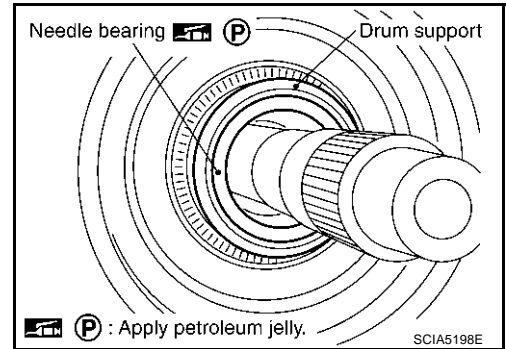
24. Remove direct clutch assembly from reverse brake.



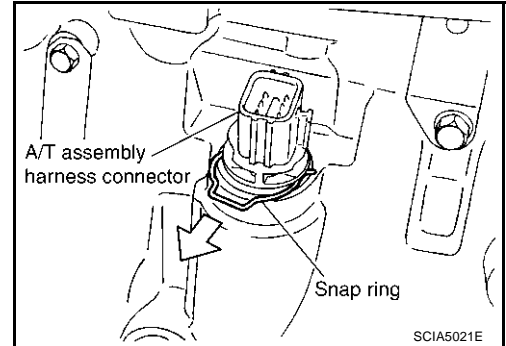
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DISASSEMBLY

25. Remove needle bearing from drum support.

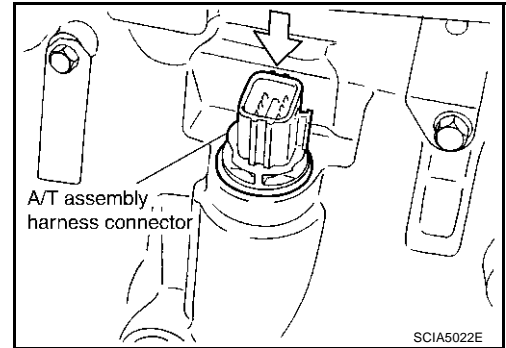


26. Remove snap ring from A/T assembly harness connector.

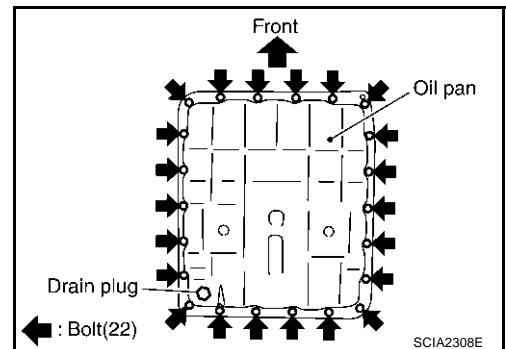


27. Push A/T assembly harness connector.

CAUTION:
Be careful not to damage connector.

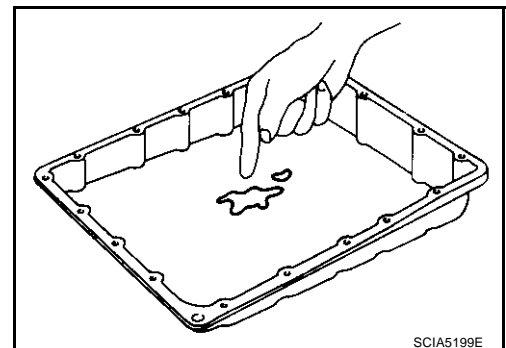


28. Remove oil pan and oil pan gasket.



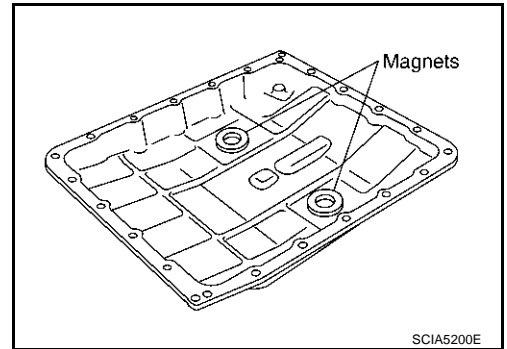
29. Check foreign materials in oil pan to help determine causes of malfunction. If the A/T fluid is very dark, smells burned, or contains foreign particles, the frictional material (clutches, band) may need replacement. A tacky film that will not wipe clean indicates varnish build up. Varnish can cause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

- If frictional material is detected, replace radiator after repair of A/T. Refer to [CO-14. "RADIATOR"](#) (for VQ35DE) or [CO-38. "RADIATOR"](#) (for VK45DE).



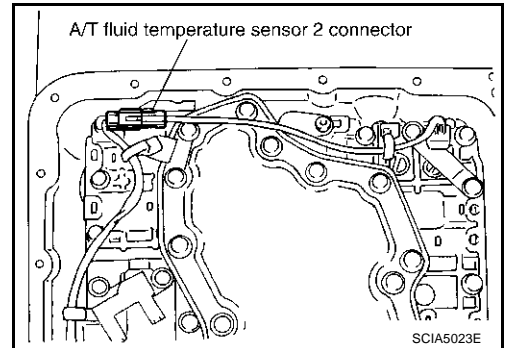
DISASSEMBLY

30. Remove magnets from oil pan.

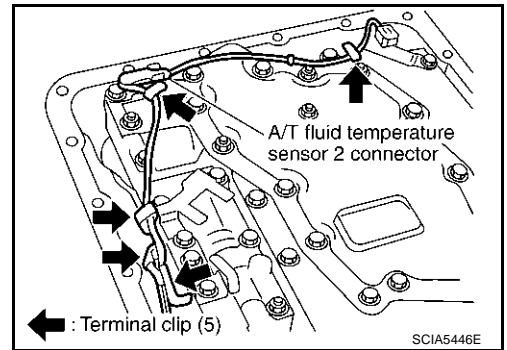


31. Disconnect A/T fluid temperature sensor 2 connector.

CAUTION:
Be careful not to damage connector.

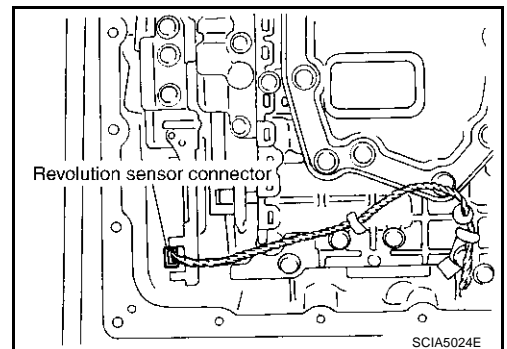


32. Straighten terminal clips to free terminal cord assembly and A/T fluid temperature sensor 2 harness.

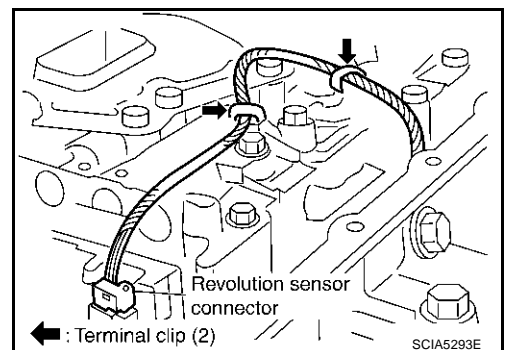


33. Disconnect revolution sensor connector.

CAUTION:
Be careful not to damage connector.



34. Straighten terminal clips to free revolution sensor harness.

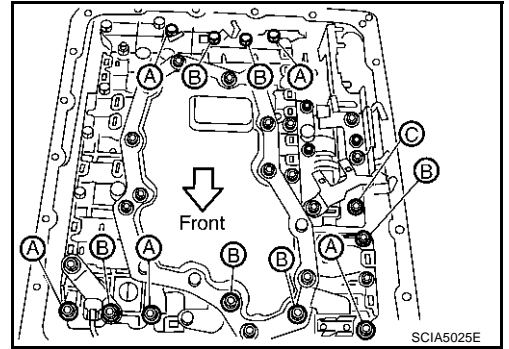


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DISASSEMBLY

35. Remove bolts A, B and C from control valve with TCM.

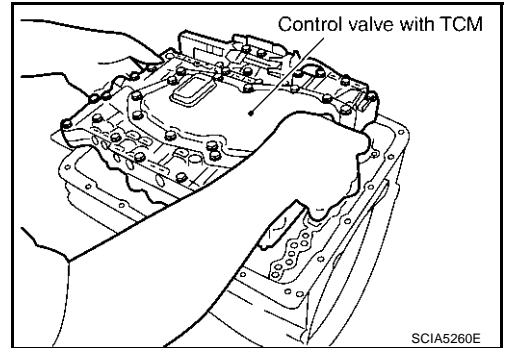
Bolt symbol	Length mm (in)	Number of bolts
A	42 (1.65)	5
B	55 (2.17)	6
C	40 (1.57)	1



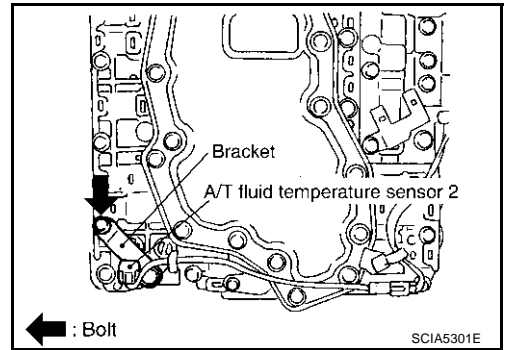
36. Remove control valve with TCM from transmission case.

CAUTION:

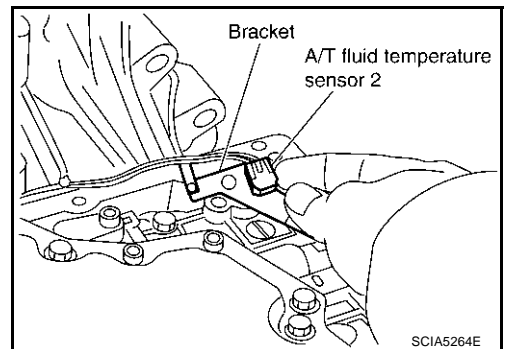
When removing, be careful with the manual valve notch and manual plate height. Remove it vertically.



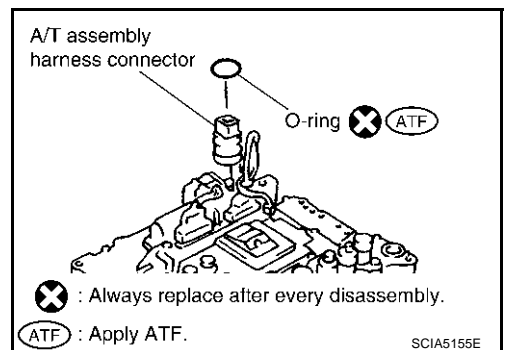
37. Remove A/T fluid temperature sensor 2 with bracket from control valve with TCM.



38. Remove bracket from A/T fluid temperature sensor 2.



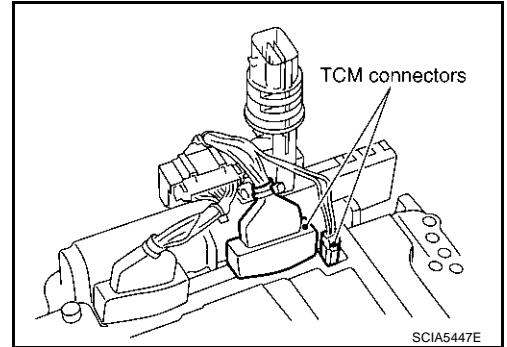
39. Remove O-ring from A/T assembly harness connector.



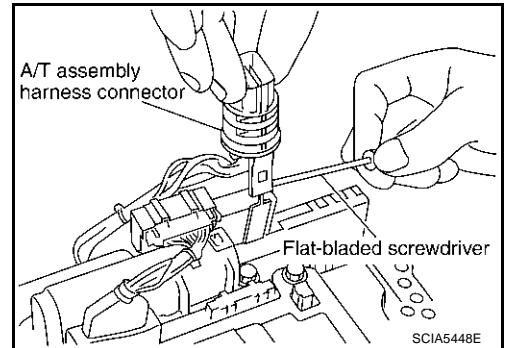
DISASSEMBLY

40. Disconnect TCM connectors.

CAUTION:
Be careful not to damage connectors.

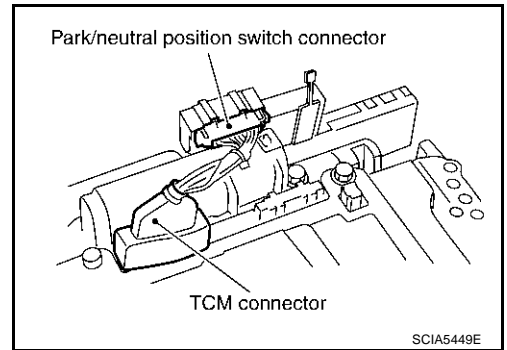


41. Remove A/T assembly harness connector from control valve with TCM using a flat-bladed screwdriver.



42. Disconnect TCM connector and park/neutral position switch connector.

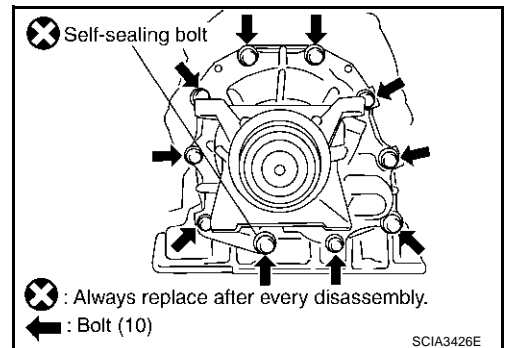
CAUTION:
Be careful not to damage connectors.



43. Remove rear extension assembly (2WD models) or adapter case assembly (AWD models) according to the following procedures.

a. **2WD models**

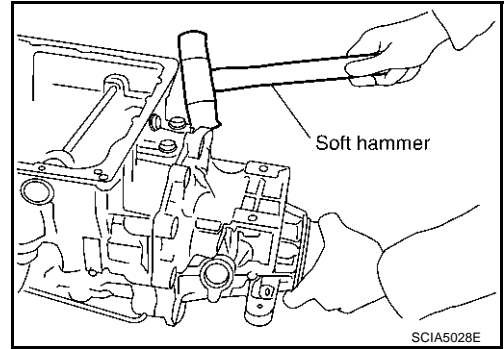
i. Remove tightening bolts for rear extension assembly and transmission case.



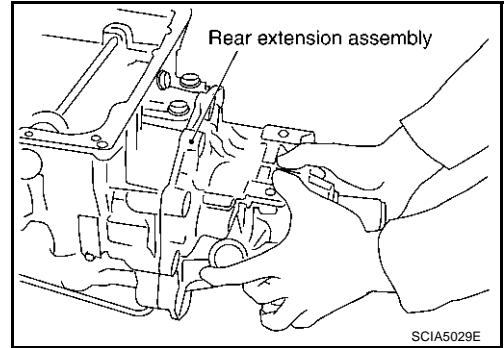
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DISASSEMBLY

ii. Tap rear extension assembly with soft hammer.

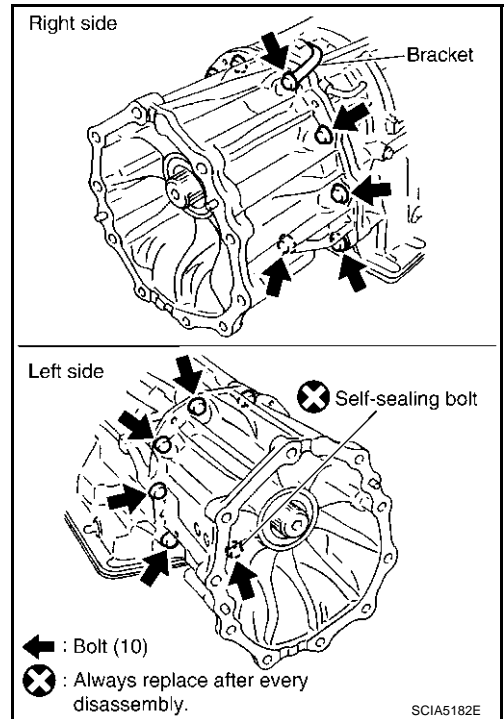


iii. Remove rear extension assembly from transmission case. (With needle bearing.)



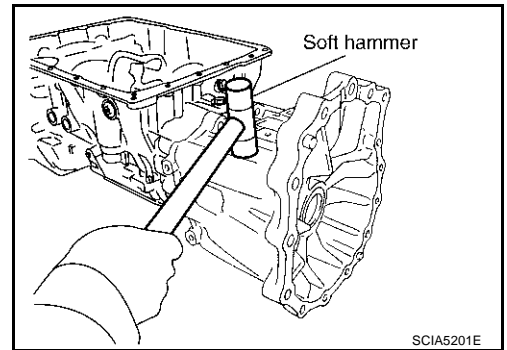
b. AWD models

i. Remove tightening bolts for adapter case assembly and transmission case. (With bracket)

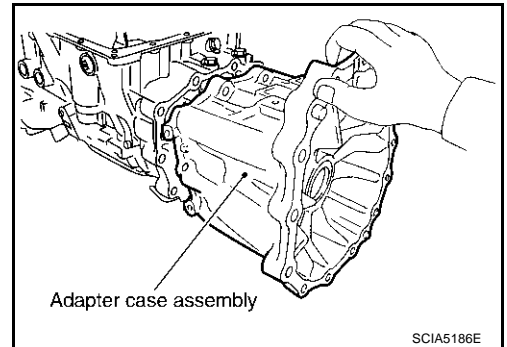


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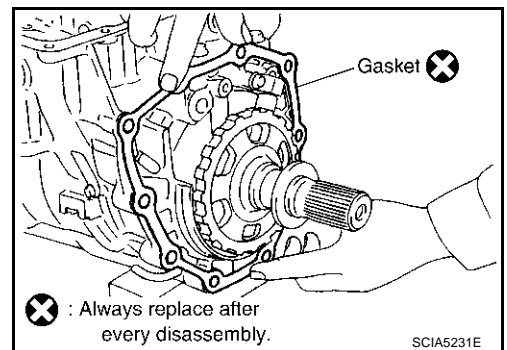
ii. Tap adapter case assembly with soft hammer.



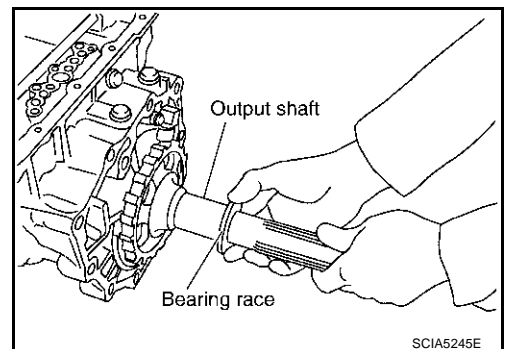
iii. Remove adapter case assembly from transmission case. (With needle bearing)



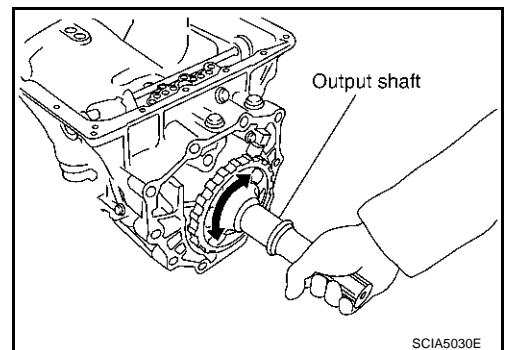
iv. Remove gasket from transmission case.



44. Remove bearing race from output shaft.

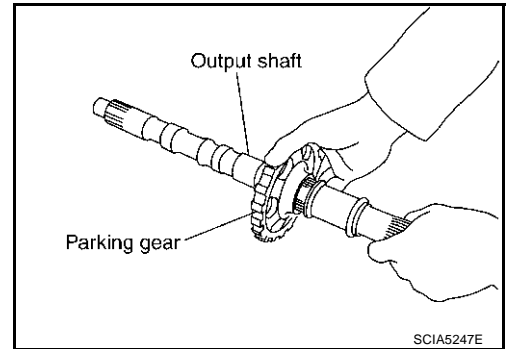


45. Remove output shaft from transmission case by rotating left/right.

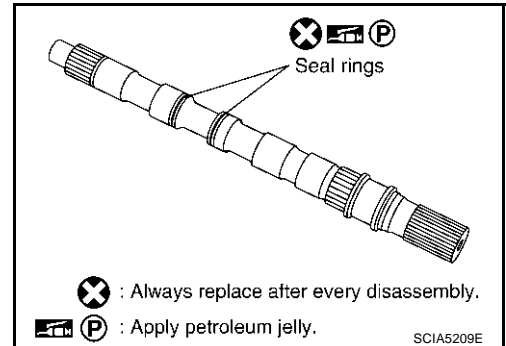


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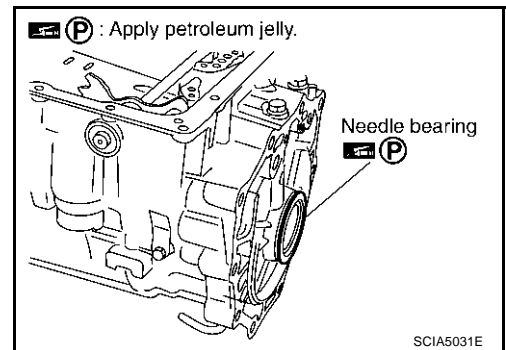
46. Remove parking gear from output shaft.



47. Remove seal rings from output shaft.



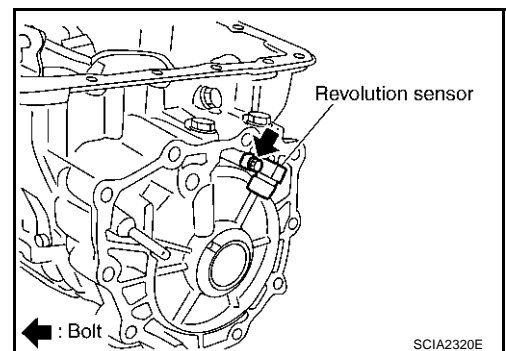
48. Remove needle bearing from transmission case.



49. Remove revolution sensor from transmission case.

CAUTION:

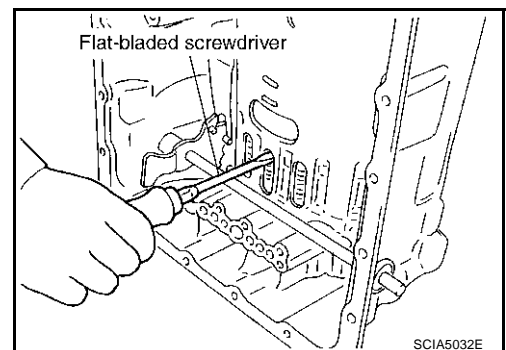
- Do not subject it to impact by dropping or hitting it.
- Do not disassemble.
- Do not allow metal filings, etc., to get on the sensor's front edge magnetic area.
- Do not place in an area affected by magnetism.



50. Remove reverse brake snap ring (fixing plate) using 2 flat-bladed screwdrivers.

NOTE:

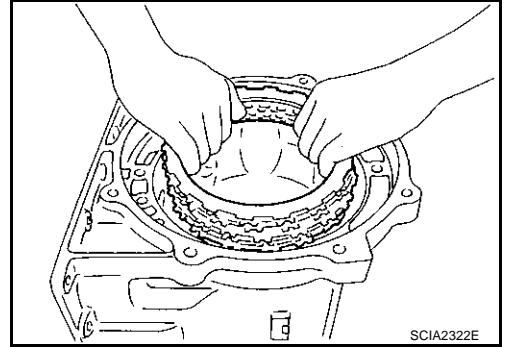
Press out snap ring from the transmission case oil pan side gap using a flat-bladed screwdriver, and remove it using another screwdriver.



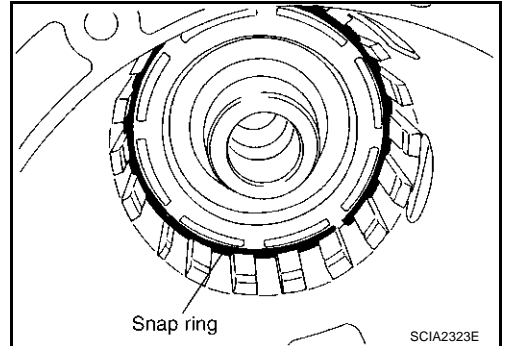
DISASSEMBLY

51. Remove reverse brake retaining plate, drive plates, driven plates and dish plate from transmission case.

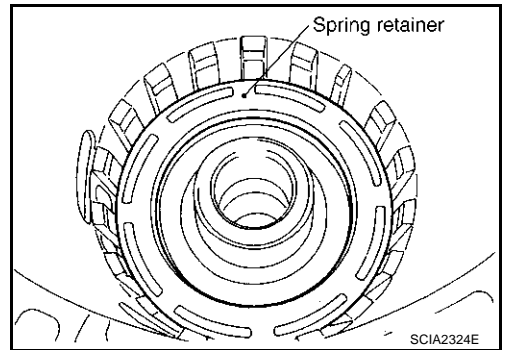
CAUTION:
Be careful to remove it with N-spring.



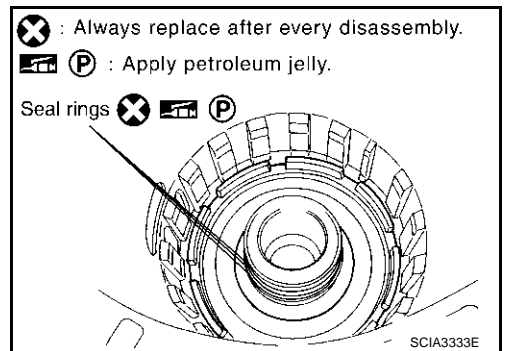
52. Remove snap ring (fixing spring retainer) using a flat-bladed screwdriver.



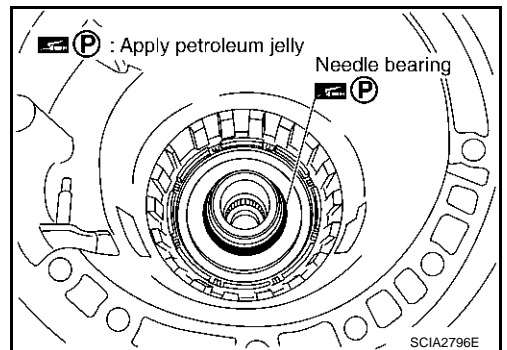
53. Remove spring retainer and return spring from transmission case.



54. Remove seal rings from drum support.



55. Remove needle bearing from drum support edge surface.



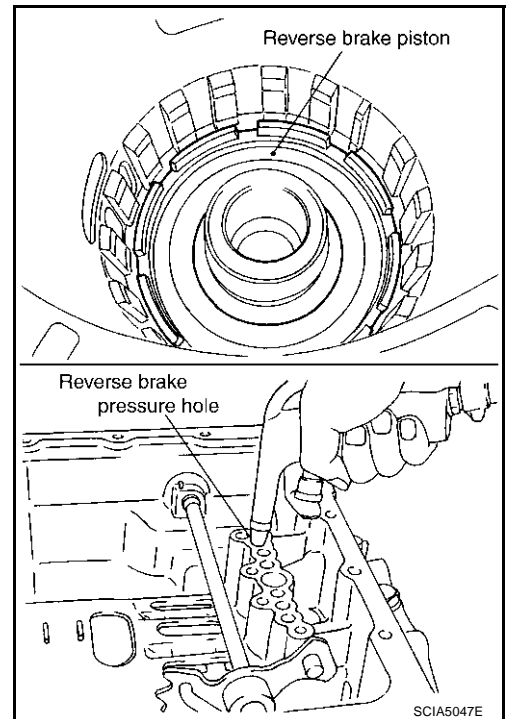
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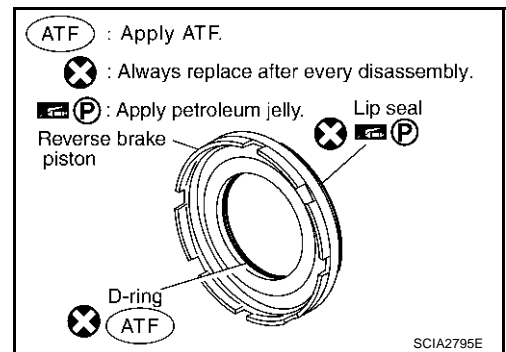
56. Remove reverse brake piston from transmission case with compressed air. Refer to [AT-287, "Oil Channel"](#) .

CAUTION:

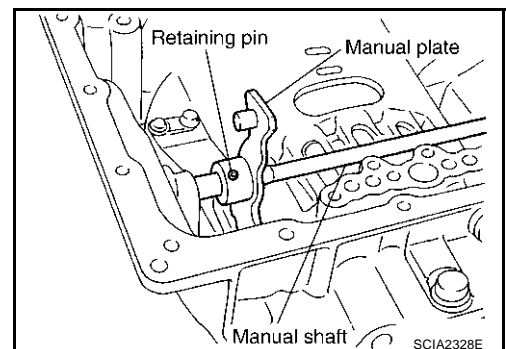
Care should be taken not to abruptly blow air. It makes pistons incline, as the result, it becomes hard to disassemble the pistons.



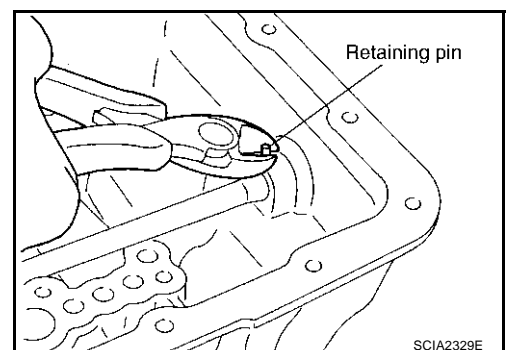
57. Remove lip seal and D-ring from reverse brake piston.



58. Use a pin punch (4mm dia. commercial service tool) to knock out retaining pin.

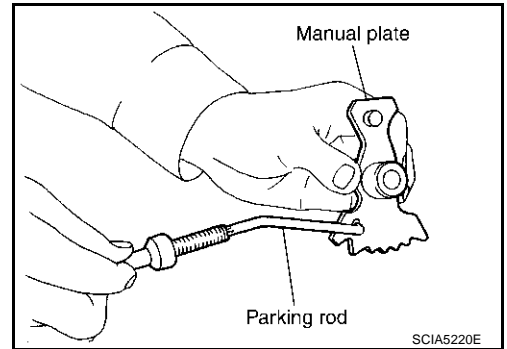


59. Remove manual shaft retaining pin with nippers.
60. Remove manual plate (with parking rod) from manual shaft.

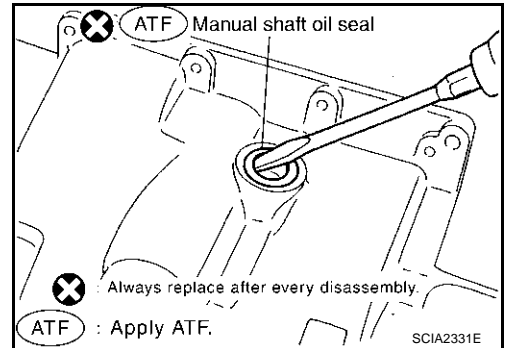


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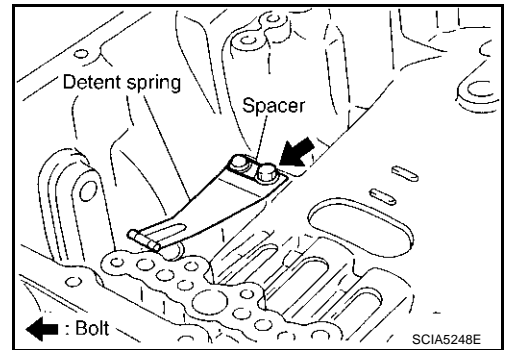
- 61. Remove parking rod from manual plate.
- 62. Remove manual shaft from transmission case.



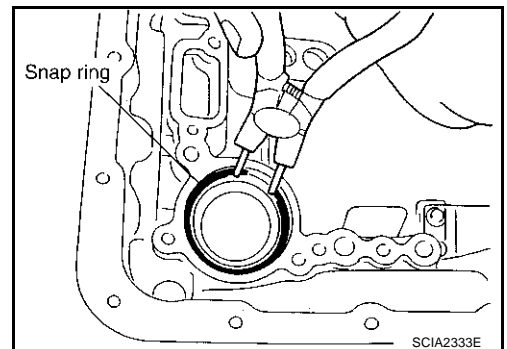
- 63. Remove manual shaft oil seals using a flat-bladed screwdriver.
CAUTION:
Be careful not to scratch transmission case.



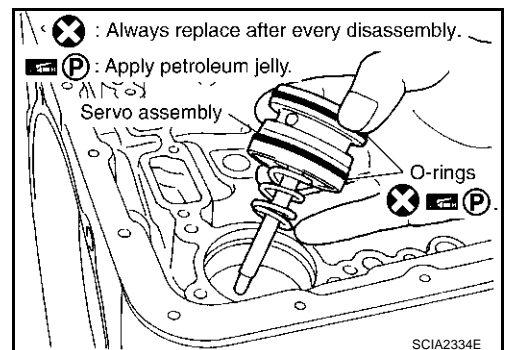
- 64. Remove detent spring and spacer from transmission case.



- 65. Using snap ring pliers, remove snap ring from transmission case.



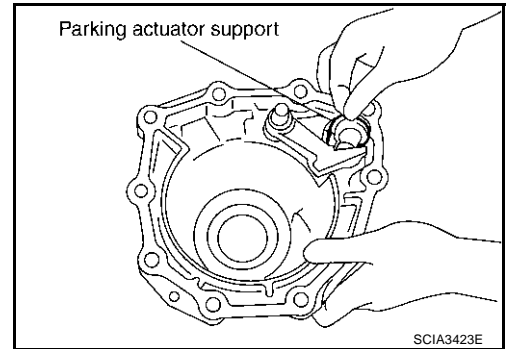
- 66. Remove servo assembly (with return spring) from transmission case.
- 67. Remove return spring from servo assembly.
- 68. Remove O-rings from servo assembly.



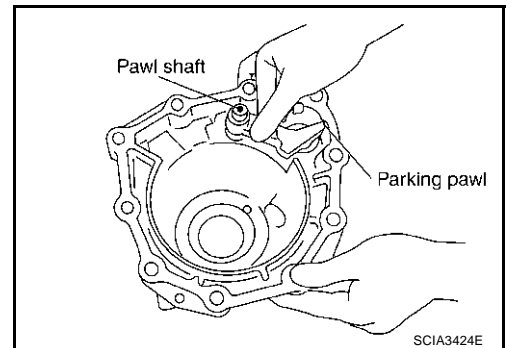
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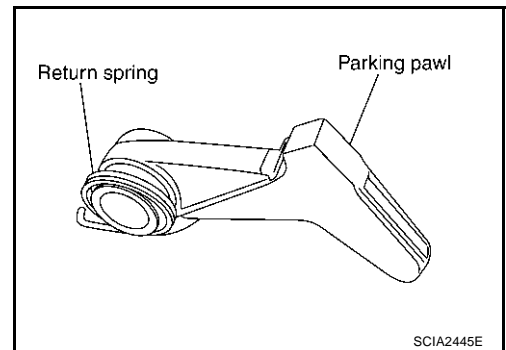
69. Remove parking actuator support from rear extension (2WD models) or adapter case (AWD models).



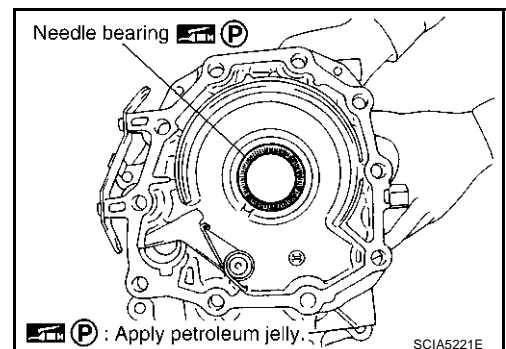
70. Remove parking pawl (with return spring) and pawl shaft from rear extension (2WD models) or adapter case (AWD models).



71. Remove return spring from parking pawl.



72. Remove needle bearing from rear extension (2WD models) or adapter case (AWD models).

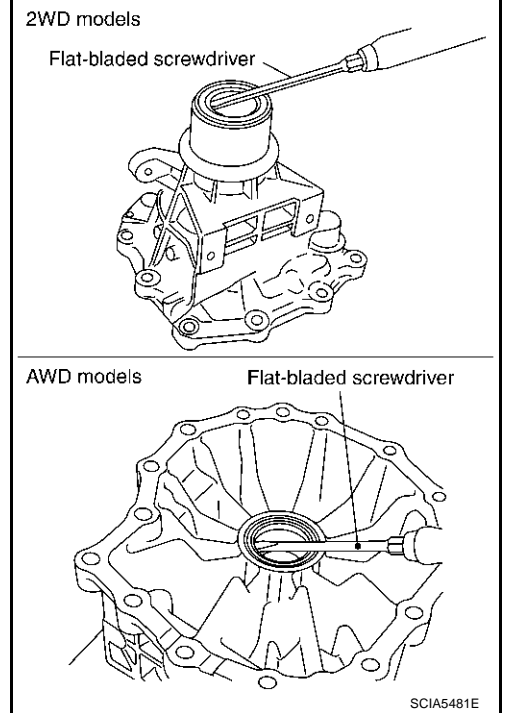


DISASSEMBLY

73. Remove rear oil seal from rear extension (2WD models) or adapter case (AWD models).

CAUTION:

Be careful not to scratch rear extension (2WD models) or adapter case (AWD models).



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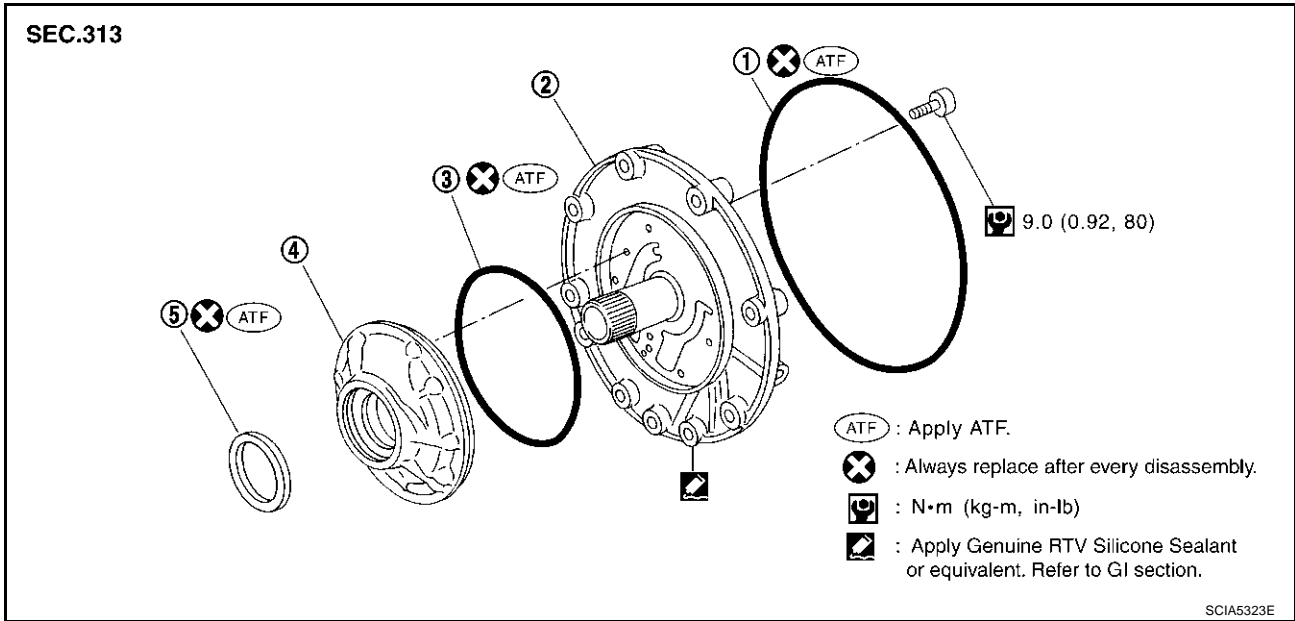
REPAIR FOR COMPONENT PARTS

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ACS008SQ

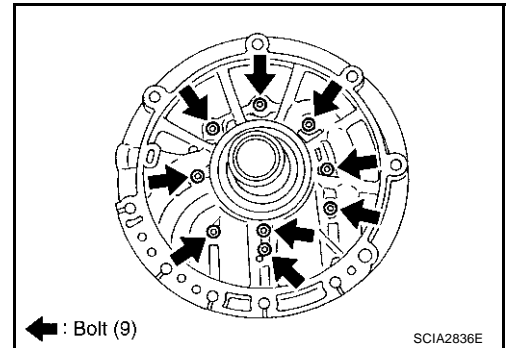
REPAIR FOR COMPONENT PARTS

Oil Pump COMPONENTS



DISASSEMBLY

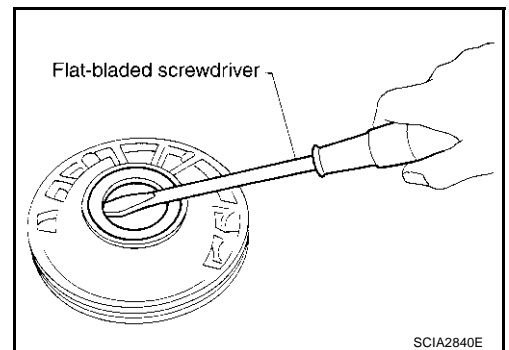
1. Remove oil pump housing from oil pump cover.



2. Remove oil pump housing oil seal using a flat-bladed screwdriver.

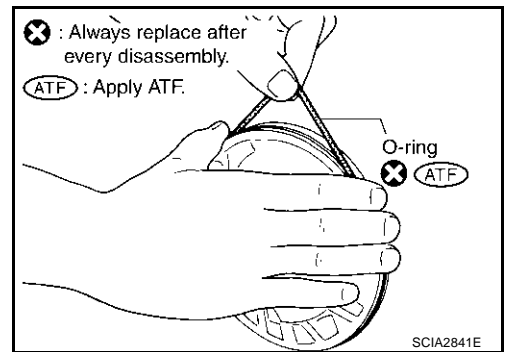
CAUTION:

Be careful not to scratch oil pump housing.

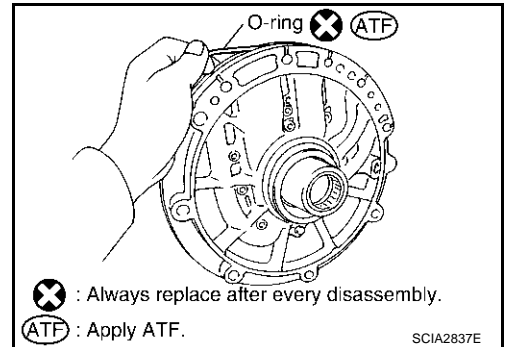


REPAIR FOR COMPONENT PARTS

3. Remove O-ring from oil pump housing.



4. Remove O-ring from oil pump cover.

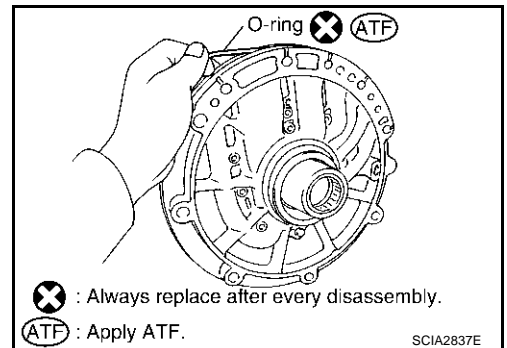


ASSEMBLY

1. Install O-ring to oil pump cover.

CAUTION:

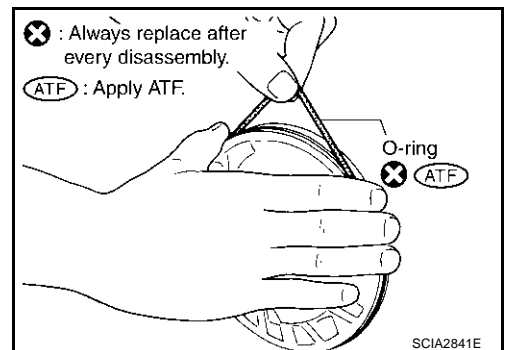
- Do not reuse O-ring.
- Apply ATF to O-ring.



2. Install O-ring to oil pump housing.

CAUTION:

- Do not reuse O-ring.
- Apply ATF to O-ring.



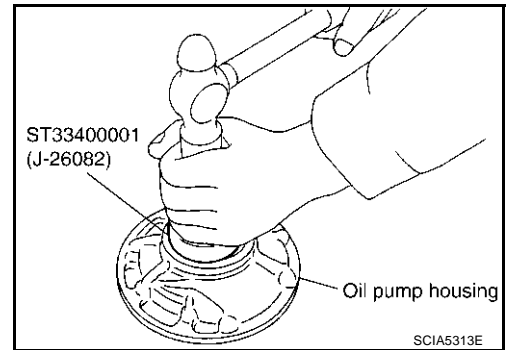
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REPAIR FOR COMPONENT PARTS

3. Using the drift, install oil pump housing oil seal to the oil pump housing until it is flush.

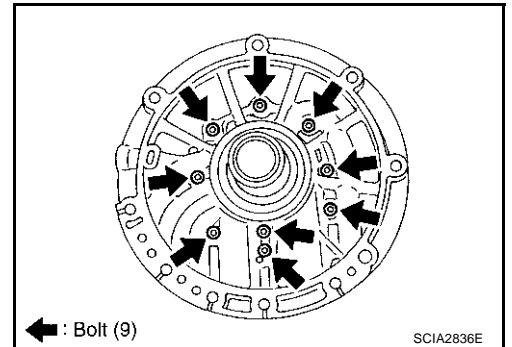
CAUTION:

- Do not reuse oil seal.
- Apply ATF to oil seal.



4. Install oil pump housing to oil pump cover.

 : 9.0 N·m (0.92 kg-m, 80 in-lb.)

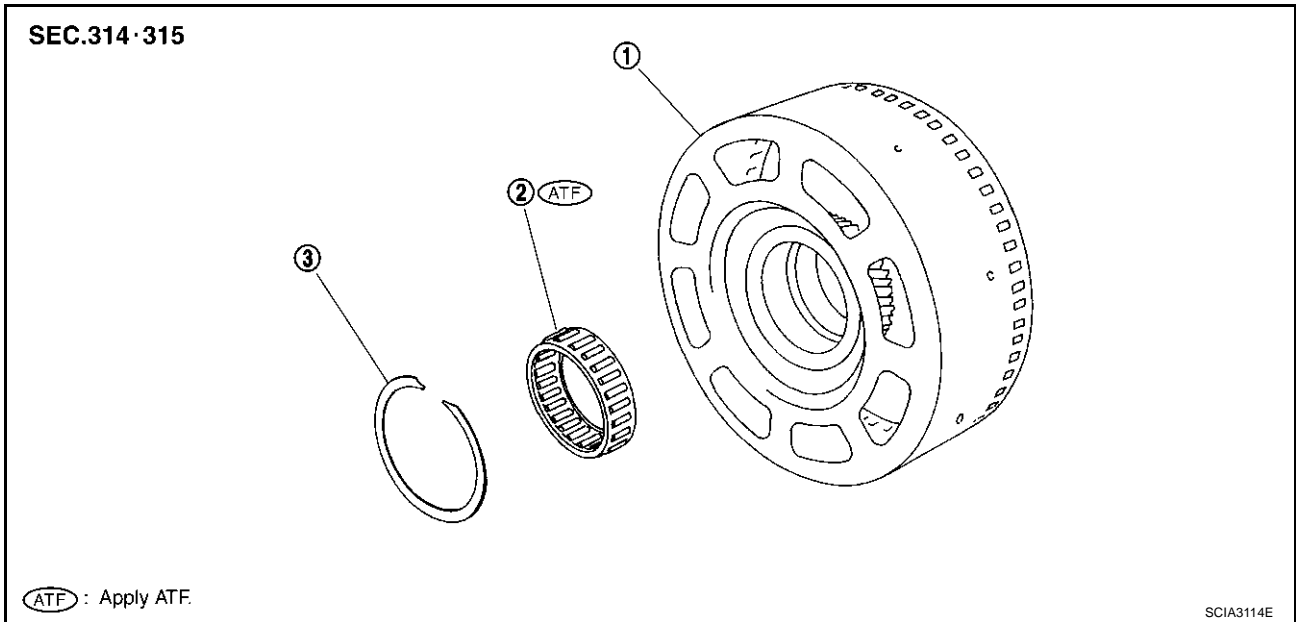


REPAIR FOR COMPONENT PARTS

Front Sun Gear, 3rd One-Way Clutch COMPONENTS

ACS008SR

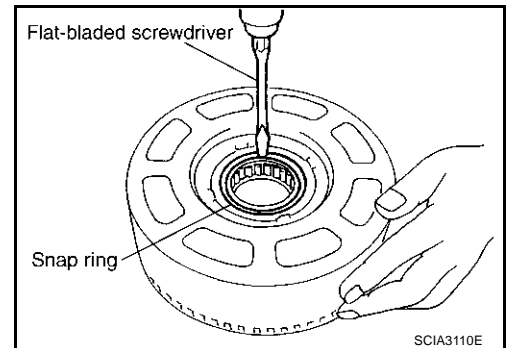
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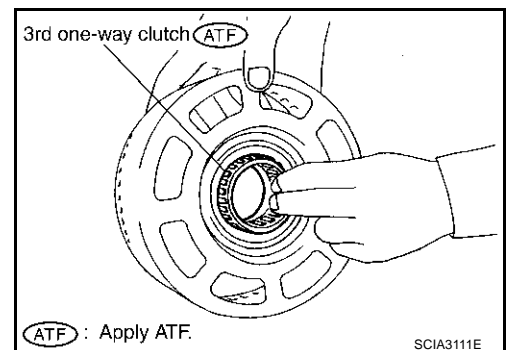
1. Front sun gear
2. 3rd one-way clutch
3. Snap ring

DISASSEMBLY

1. Using a flat-bladed screwdriver, remove snap ring from front sun gear.



2. Remove 3rd one-way clutch from front sun gear.



REPAIR FOR COMPONENT PARTS

INSPECTION

3rd One-way Clutch

- Check frictional surface for wear or damage.

CAUTION:

If necessary, replace the 3rd one-way clutch.

Front Sun Gear Snap Ring

- Check for deformation, fatigue or damage.

CAUTION:

If necessary, replace the snap ring.

Front Sun Gear

- Check for deformation, fatigue or damage.

CAUTION:

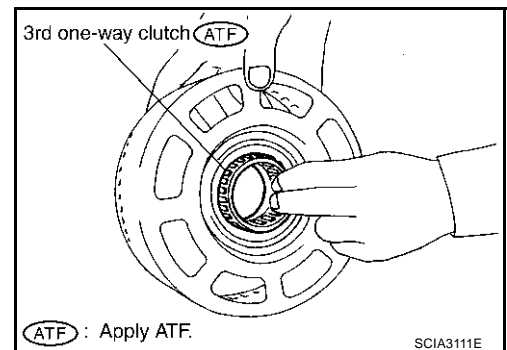
If necessary, replace the front sun gear.

ASSEMBLY

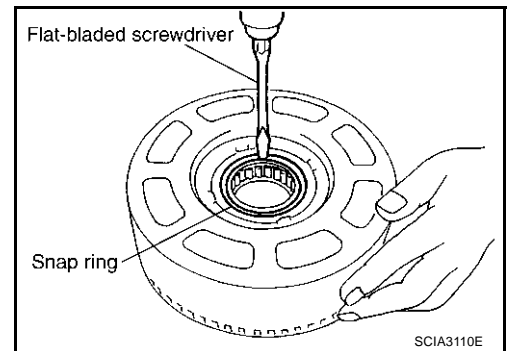
1. Install 3rd one-way clutch in front sun gear.

CAUTION:

Apply ATF to 3rd one-way clutch.



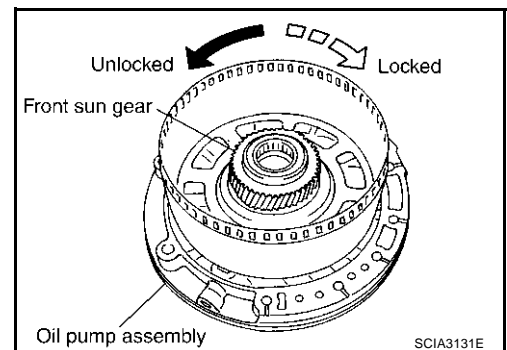
2. Using a flat-bladed screwdriver, install snap ring in front sun gear.



3. Check operation of 3rd one-way clutch.
 - a. Hold oil pump assembly and turn front sun gear.
 - b. Check 3rd one-way clutch for correct locking and unlocking directions.

CAUTION:

If not as shown in illustration, check installation direction of 3rd one-way clutch.

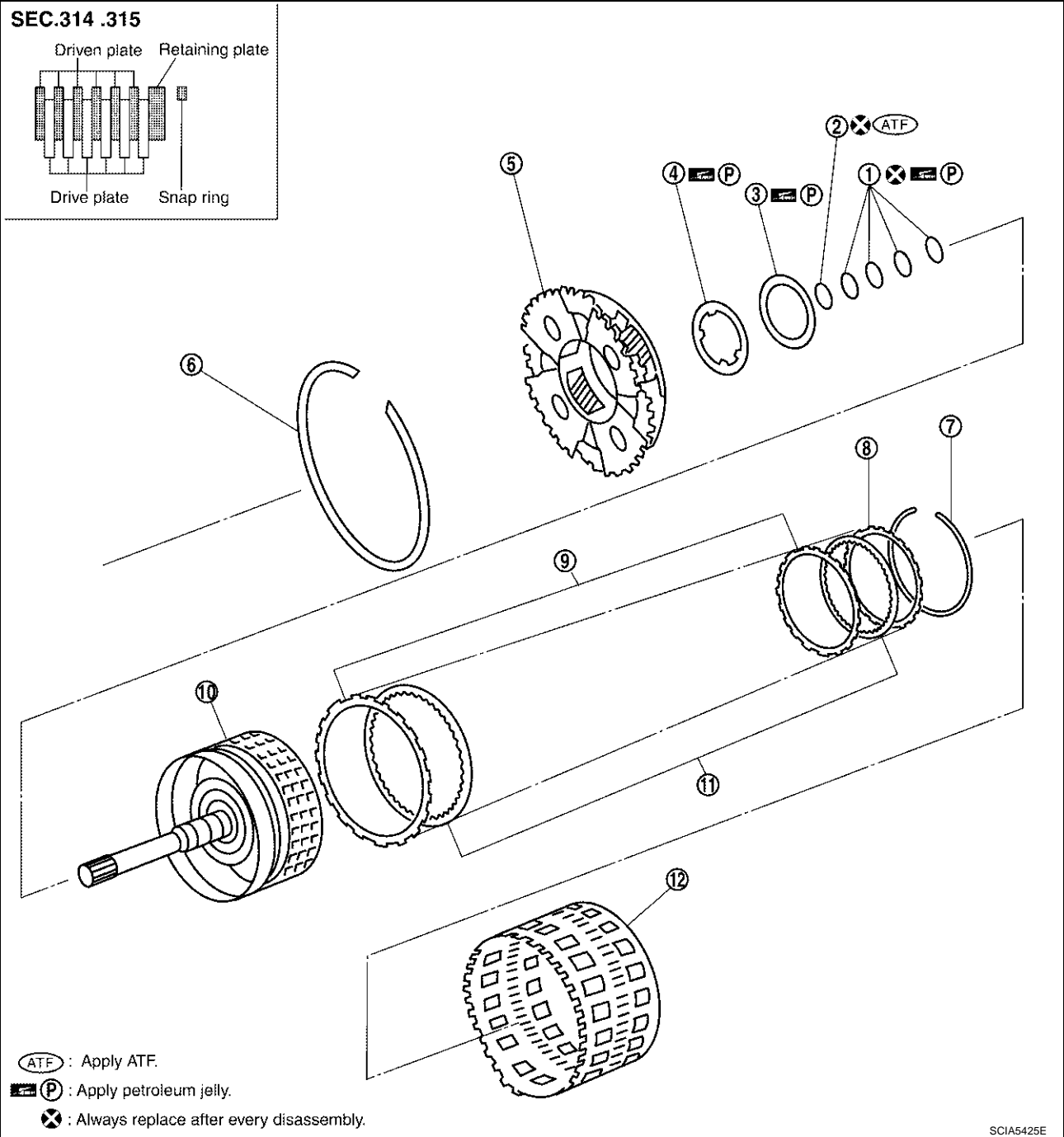


REPAIR FOR COMPONENT PARTS

Front Carrier, Input Clutch, Rear Internal Gear COMPONENTS

ACS008SS

VQ35DE models

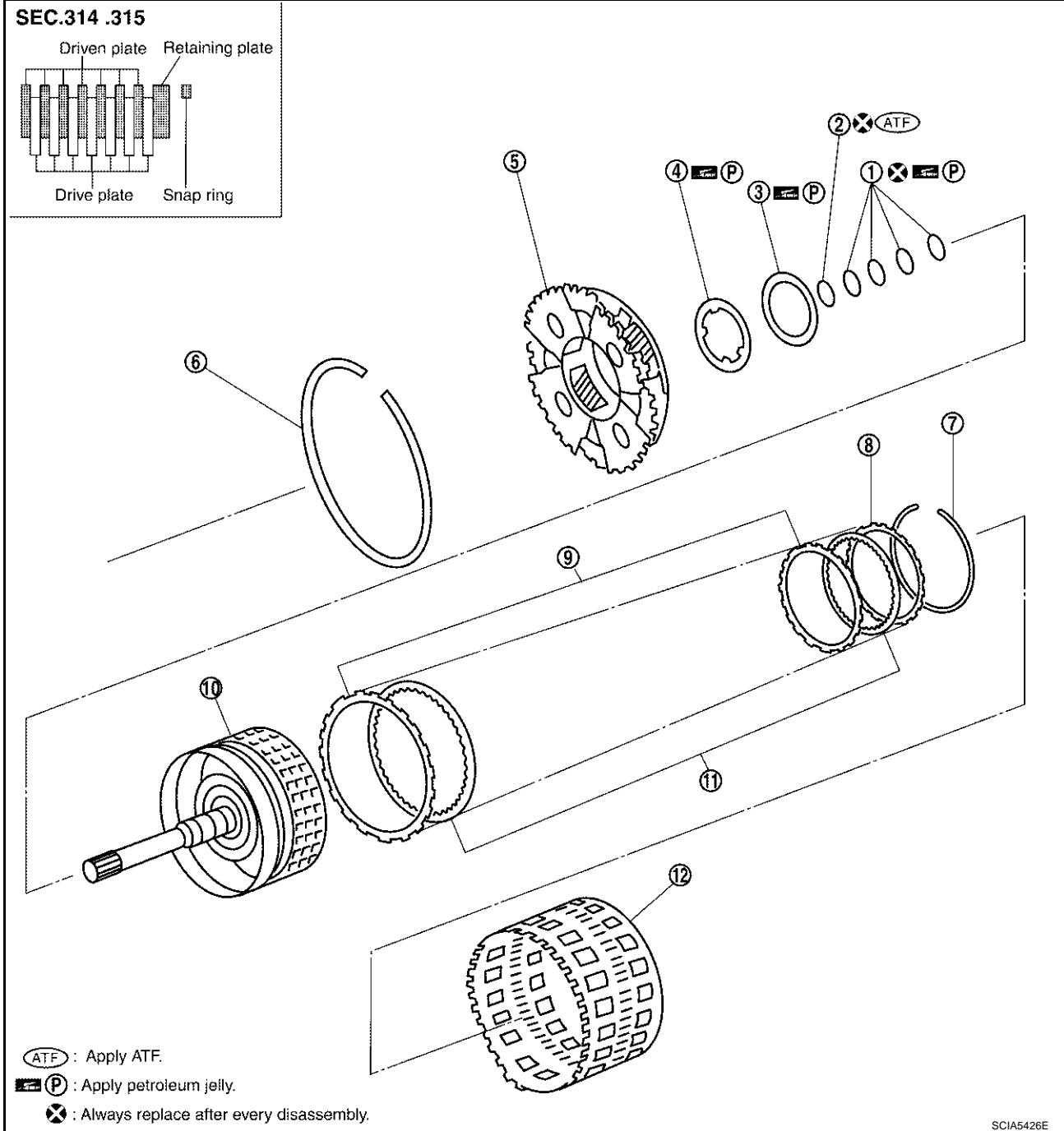


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|-----------------------|---------------------------|------------------------|
| 1. Seal ring | 2. O-ring | 3. Needle bearing |
| 4. Bearing race | 5. Front carrier assembly | 6. Snap ring |
| 7. Snap ring | 8. Retaining plate | 9. Driven plate |
| 10. Input clutch drum | 11. Drive plate | 12. Rear internal gear |

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REPAIR FOR COMPONENT PARTS

VK45DE models



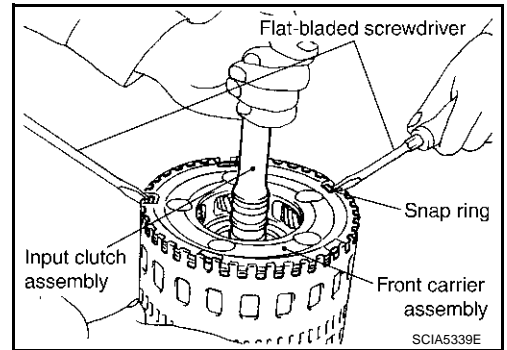
SCIA5426E

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|-----------------------|---------------------------|------------------------|
| 1. Seal ring | 2. O-ring | 3. Needle bearing |
| 4. Bearing race | 5. Front carrier assembly | 6. Snap ring |
| 7. Snap ring | 8. Retaining plate | 9. Driven plate |
| 10. Input clutch drum | 11. Drive plate | 12. Rear internal gear |

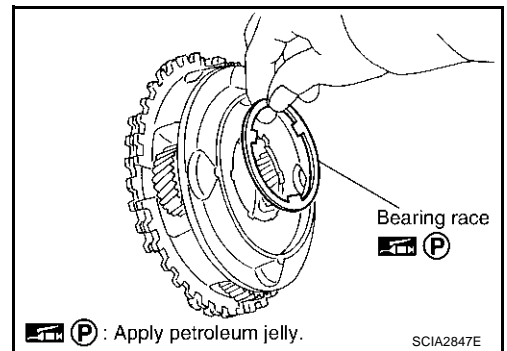
REPAIR FOR COMPONENT PARTS

DISASSEMBLY

1. Compress snap ring using 2 flat-bladed screwdrivers.
2. Remove front carrier assembly and input clutch assembly from rear internal gear.
3. Remove front carrier assembly from input clutch assembly.

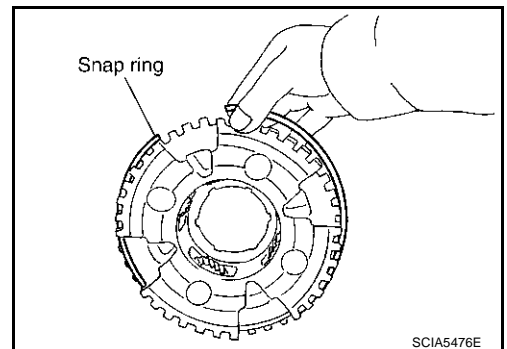


- a. Remove bearing race from front carrier assembly.



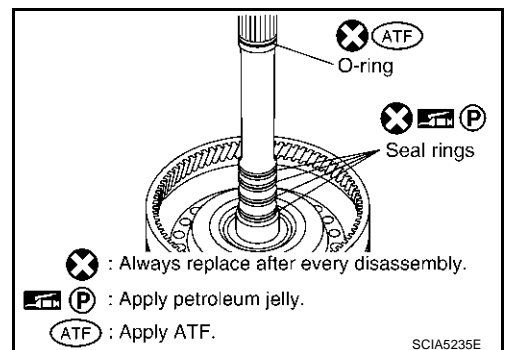
- b. Remove snap ring from front carrier assembly.

CAUTION:
Do not expand snap ring excessively.



4. Disassemble input clutch assembly.

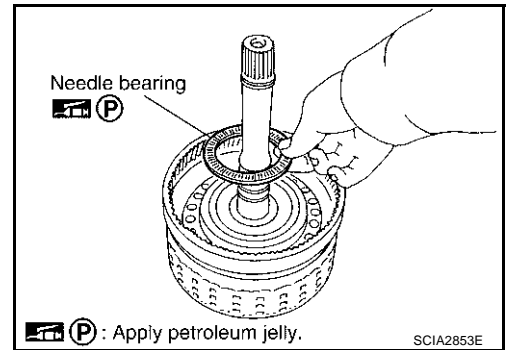
- a. Remove O-ring and seal rings from input clutch assembly.



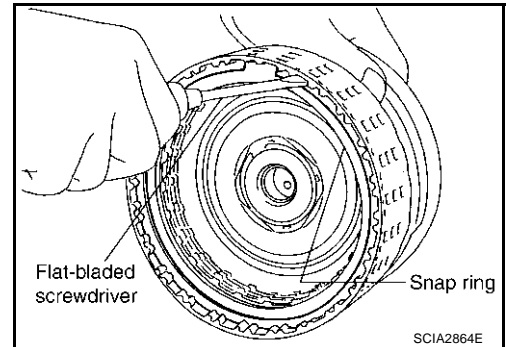
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REPAIR FOR COMPONENT PARTS

- b. Remove needle bearing from input clutch assembly.



- c. Using a flat-bladed screwdriver, remove snap ring from input clutch drum.
- d. Remove drive plates, driven plates and retaining plate from input clutch drum.



INSPECTION

Front Carrier Snap Ring

- Check for deformation, fatigue or damage.

CAUTION:

If necessary, replace the snap ring.

Input Clutch Snap Ring

- Check for deformation, fatigue or damage.

CAUTION:

If necessary, replace the input clutch assembly.

Input Clutch Drum

- Check for deformation, fatigue or damage or burns.

CAUTION:

If necessary, replace the input clutch assembly.

Input Clutch Drive Plates

- Check facing for burns, cracks or damage.

CAUTION:

If necessary, replace the input clutch assembly.

Input Clutch Retaining Plates and Driven Plates

- Check facing for burns, cracks or damage.

CAUTION:

If necessary, replace the input clutch assembly.

Front Carrier

- Check for deformation, fatigue or damage.

CAUTION:

If necessary, replace the front carrier assembly.

Rear Internal Gear

- Check for deformation, fatigue or damage.

CAUTION:

If necessary, replace the rear internal gear assembly.

REPAIR FOR COMPONENT PARTS

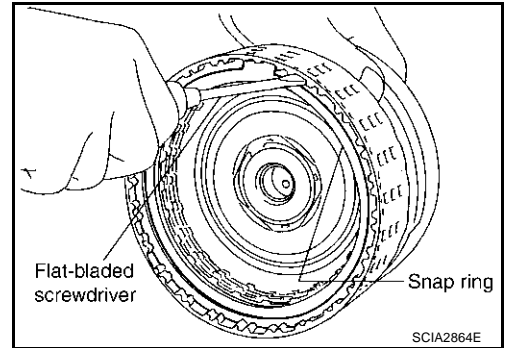
ASSEMBLY

1. Install input clutch.
 - a. Install drive plates, driven plates and retaining plate in input clutch drum.

CAUTION:

Take care with order of plates.

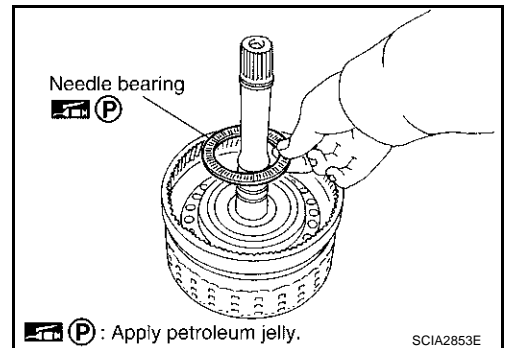
- b. Using a flat-bladed screwdriver, install snap ring in input clutch drum.



- c. Install needle bearing in input clutch assembly.

CAUTION:

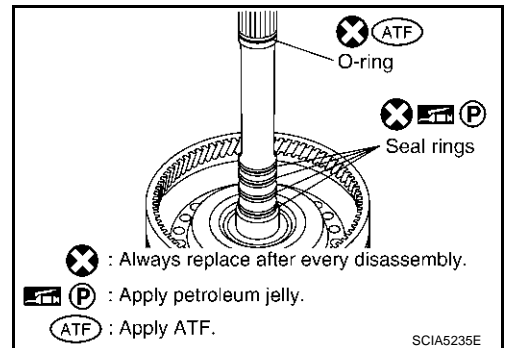
Apply petroleum jelly to needle bearing.



- d. Install O-ring and seal rings in input clutch assembly.

CAUTION:

- Do not reuse O-ring and seal rings.
- Apply ATF to O-ring.
- Apply petroleum jelly to seal rings.

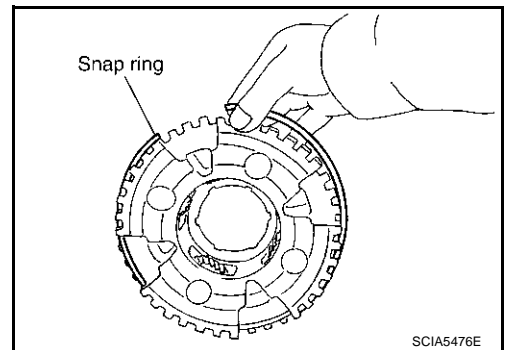


2. Install front carrier assembly.

- a. Install snap ring to front carrier assembly.

CAUTION:

Do not expand snap ring excessively.



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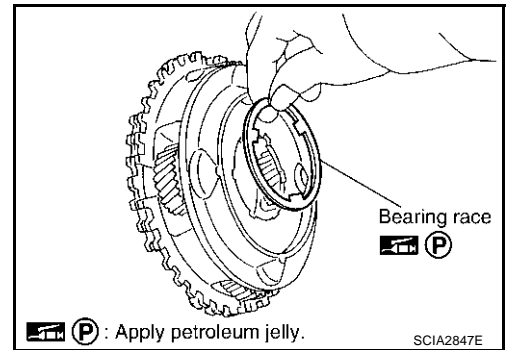
REPAIR FOR COMPONENT PARTS

- b. Install bearing race in front carrier assembly.

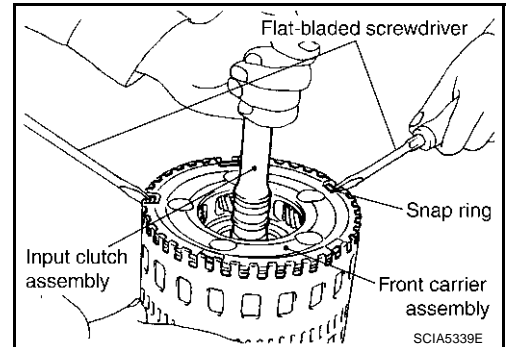
CAUTION:

Apply petroleum jelly to bearing race.

- c. Install front carrier assembly to input clutch assembly.



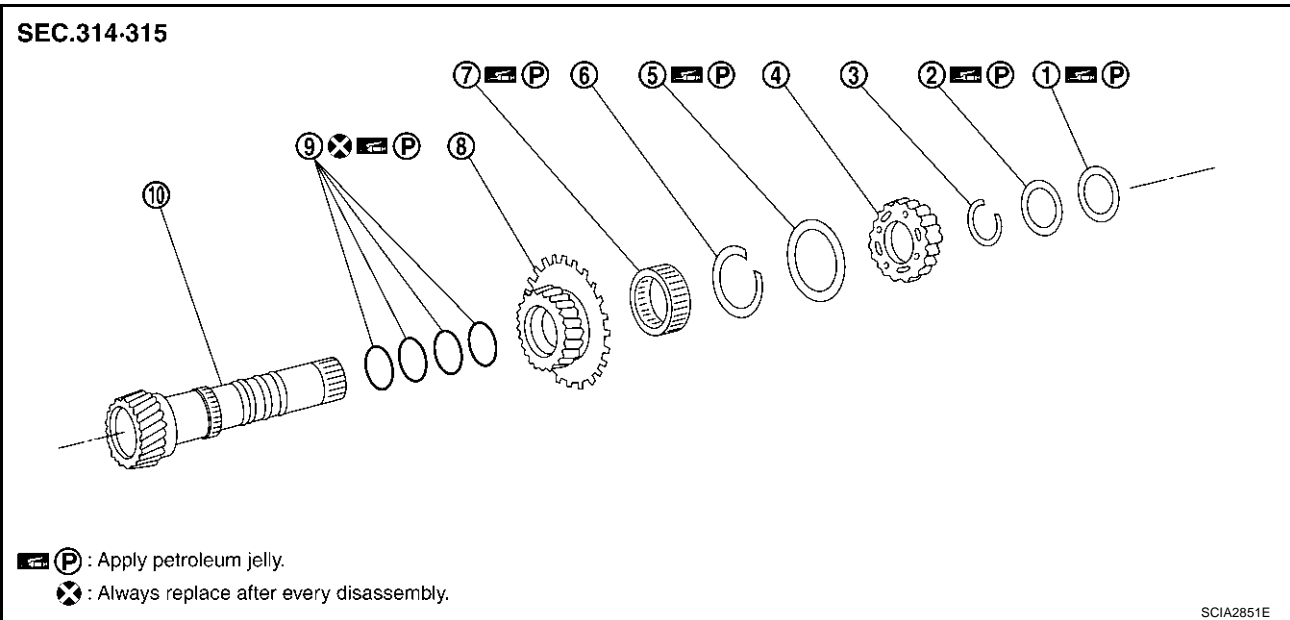
3. Compress snap ring using 2 flat-bladed screwdrivers.
4. Install front carrier assembly and input clutch assembly to rear internal gear.



REPAIR FOR COMPONENT PARTS

Mid Sun Gear, Rear Sun Gear, High and Low Reverse Clutch Hub COMPONENTS

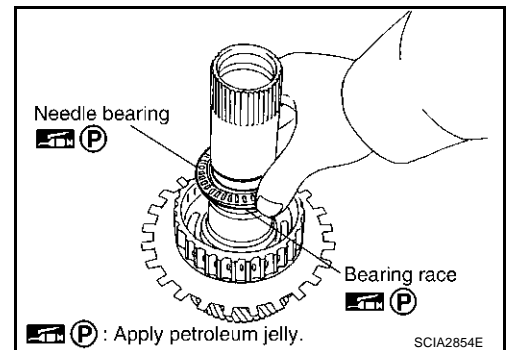
ACS008ST



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|------------------------------------|-------------------|--------------|
| 1. Needle bearing | 2. Bearing race | 3. Snap ring |
| 4. High and low reverse clutch hub | 5. Needle bearing | 6. Snap ring |
| 7. 1st one-way clutch | 8. Rear sun gear | 9. Seal ring |
| 10. Mid sun gear | | |

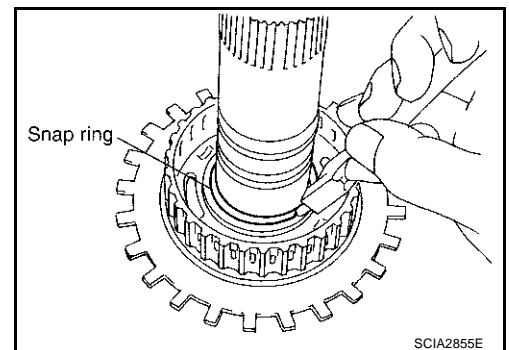
DISASSEMBLY

1. Remove needle bearing and bearing race from high and low reverse clutch hub.



2. Using snap ring pliers, remove snap ring from mid sun gear assembly.

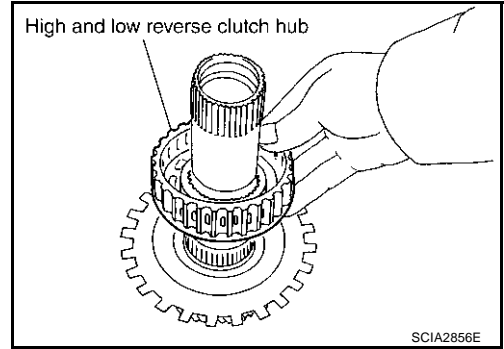
CAUTION:
Do not expand snap ring excessively.



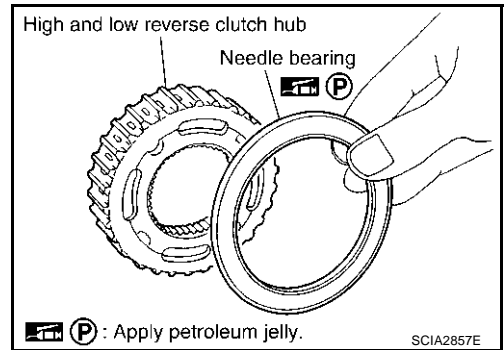
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REPAIR FOR COMPONENT PARTS

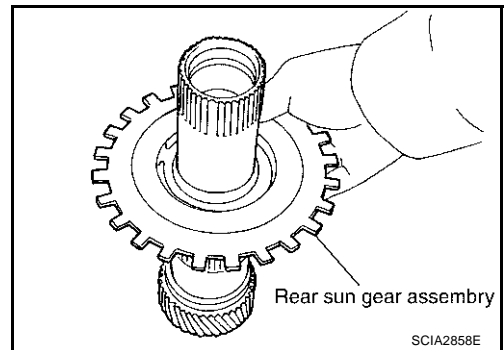
3. Remove high and low reverse clutch hub from mid sun gear assembly.



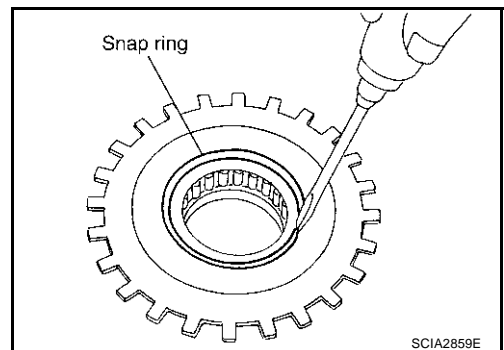
- a. Remove needle bearing from high and low reverse clutch hub.



4. Remove rear sun gear assembly from mid sun gear assembly.

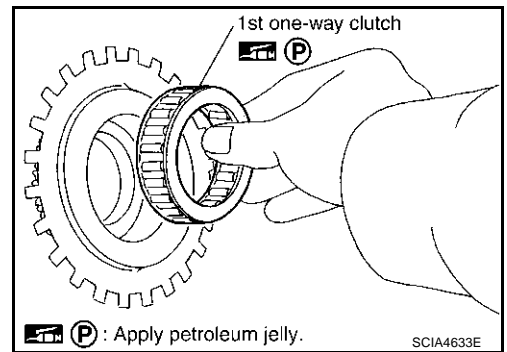


- a. Using a flat-bladed screwdriver, remove snap ring from rear sun gear.

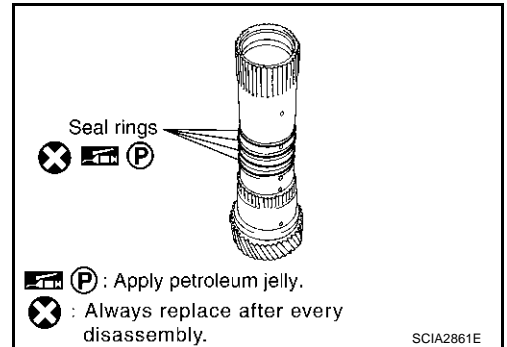


REPAIR FOR COMPONENT PARTS

- b. Remove 1st one-way clutch from rear sun gear.



5. Remove seal rings from mid sun gear.



INSPECTION

High and Low Reverse Clutch Hub Snap Ring, Rear Sun Gear Snap Ring

- Check for deformation, fatigue or damage.

CAUTION:

If necessary, replace the snap ring.

1st One-way Clutch

- Check frictional surface for wear or damage.

CAUTION:

If necessary, replace the 1st one-way clutch.

Mid Sun Gear

- Check for deformation, fatigue or damage.

CAUTION:

If necessary, replace the mid sun gear.

Rear Sun Gear

- Check for deformation, fatigue or damage.

CAUTION:

If necessary, replace the rear sun gear.

High and Low Reverse Clutch Hub

- Check for deformation, fatigue or damage.

CAUTION:

If necessary, replace the high and low reverse clutch hub.

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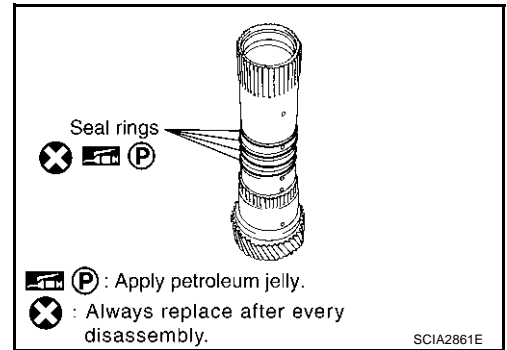
REPAIR FOR COMPONENT PARTS

ASSEMBLY

1. Install seal rings to mid sun gear.

CAUTION:

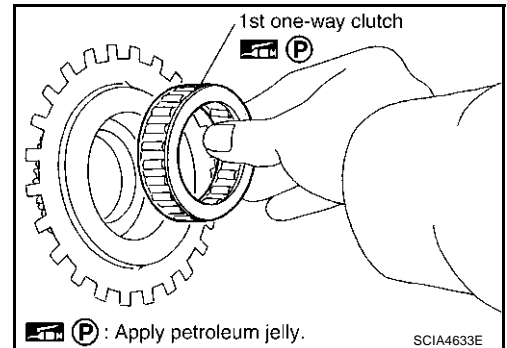
- Do not reuse seal rings.
- Apply petroleum jelly to seal rings.



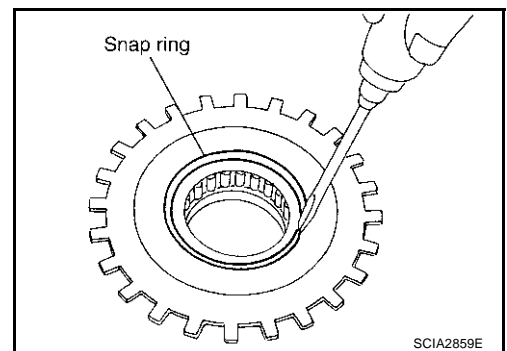
2. Install 1st one-way clutch to rear sun gear.

CAUTION:

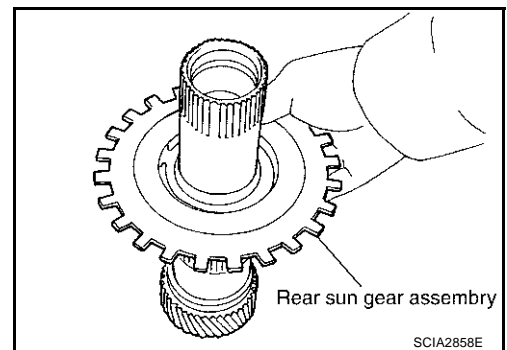
- Apply petroleum jelly to 1st one-way clutch.



3. Using a flat-bladed screwdriver, install snap ring to rear sun gear.



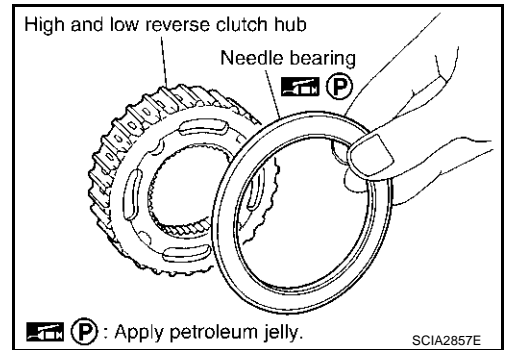
4. Install rear sun gear assembly to mid sun gear assembly.



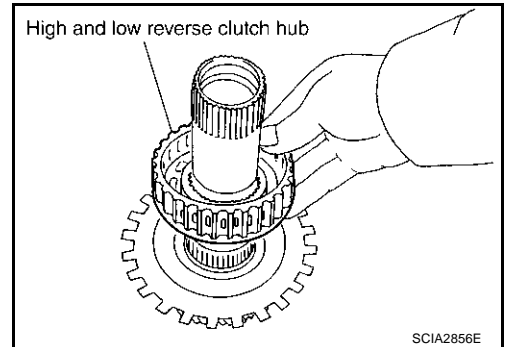
REPAIR FOR COMPONENT PARTS

5. Install needle bearing to high and low reverse clutch hub.

CAUTION:
Apply petroleum jelly to needle bearing.

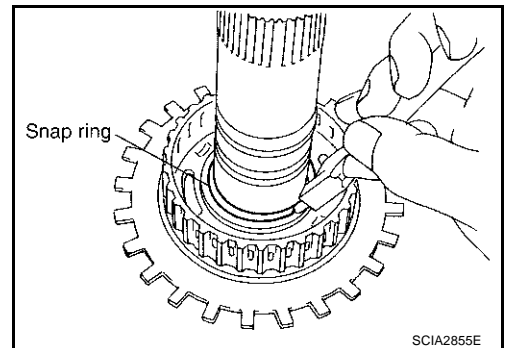


6. Install high and low reverse clutch hub to mid sun gear assembly.



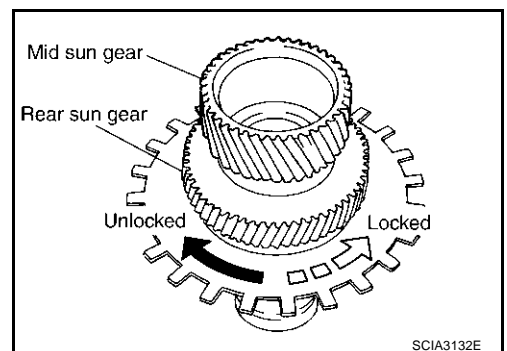
7. Using snap ring pliers, install snap ring to mid sun gear assembly.

CAUTION:
Do not expand snap ring excessively.



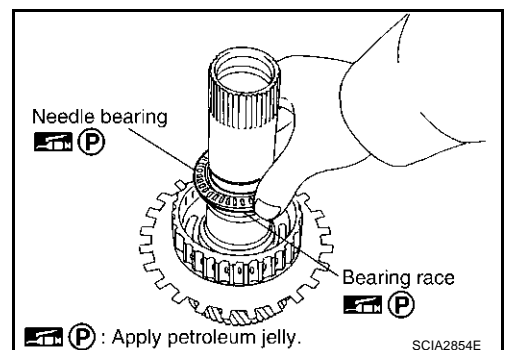
8. Check operation of 1st one-way clutch.
a. Hold mid sun gear and turn rear sun gear.
b. Check 1st one-way clutch for correct locking and unlocking directions.

CAUTION:
If not as shown in illustration, check installation direction of 1st one-way clutch.



9. Install needle bearing and bearing race to high and low reverse clutch hub.

CAUTION:
Apply petroleum jelly to needle bearing and bearing race.



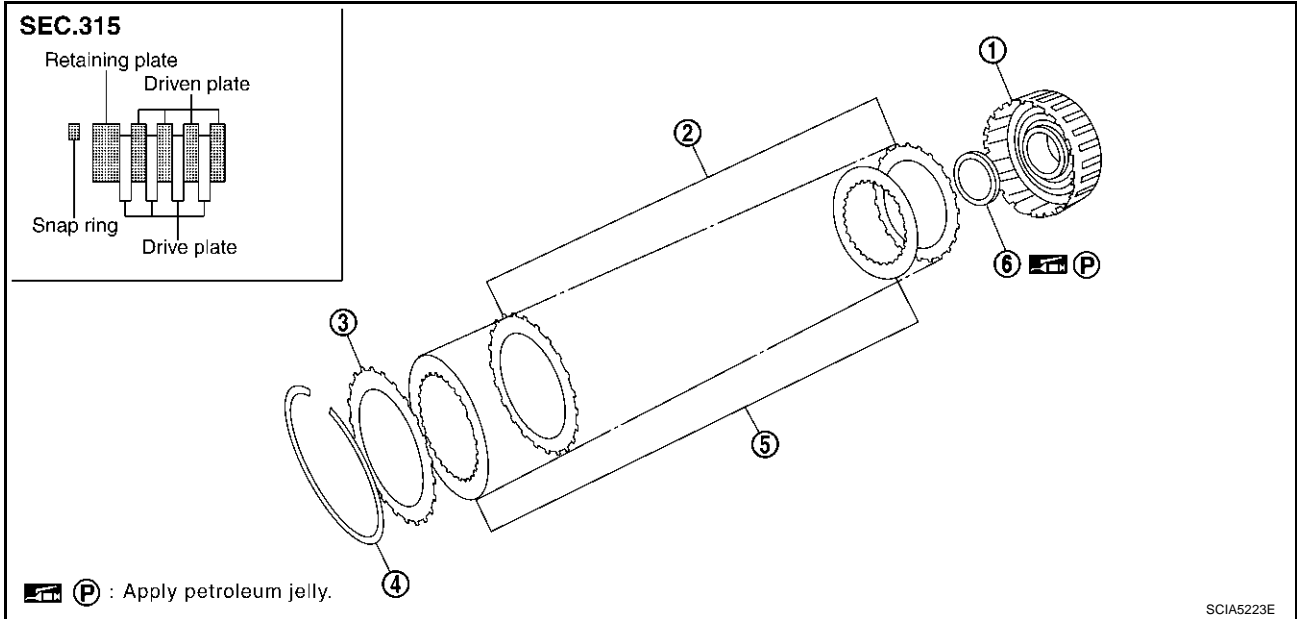
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REPAIR FOR COMPONENT PARTS

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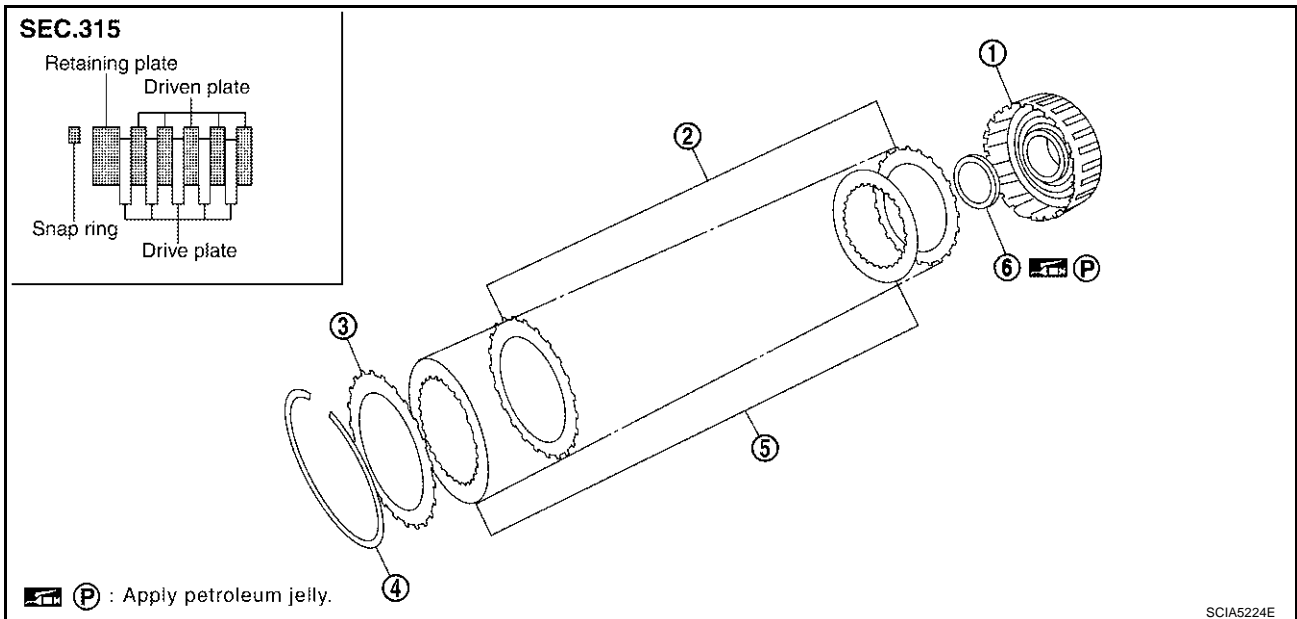
High and Low Reverse Clutch COMPONENTS

VQ35DE models



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| 1. High and low reverse clutch drum | 2. Driven plate | 3. Retaining plate |
| 4. Snap ring | 5. Drive plate | 6. Bearing race |

VK45DE models

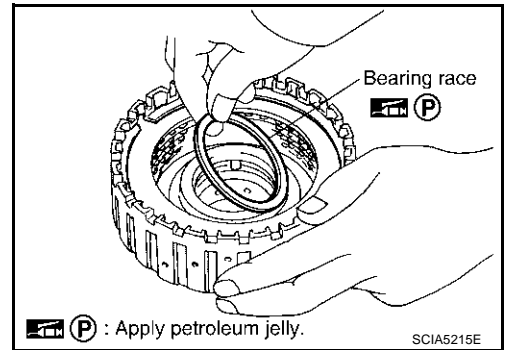


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|-------------------------------------|-----------------|--------------------|
| 1. High and low reverse clutch drum | 2. Driven plate | 3. Retaining plate |
| 4. Snap ring | 5. Drive plate | 6. Bearing race |

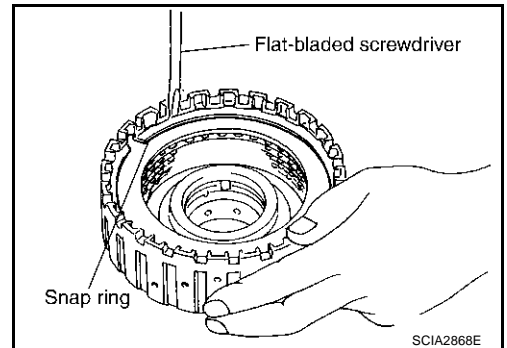
REPAIR FOR COMPONENT PARTS

DISASSEMBLY

1. Remove bearing race from high and low reverse clutch drum.



2. Using a flat-bladed screwdriver, remove snap ring from high and low reverse clutch drum.
3. Remove drive plates, driven plates and retaining plate from high and low reverse clutch drum.



INSPECTION

- Check the following, and replace high and low reverse clutch assembly if necessary.

High and Low Reverse Clutch Snap Ring

- Check for deformation, fatigue or damage.

High and Low Reverse Clutch Drive Plates

- Check facing for burns, cracks or damage.

High and Low Reverse Clutch Retaining Plates and Driven Plates

- Check facing for burns, cracks or damage.

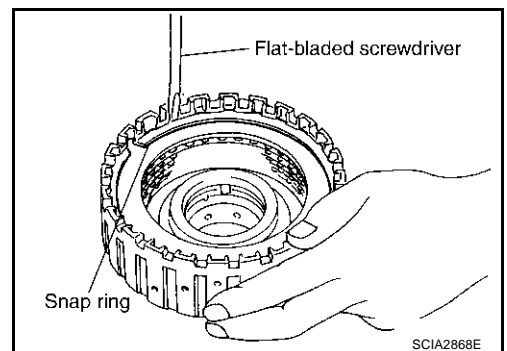
ASSEMBLY

1. Install drive plates, driven plates and retaining plate in high and low reverse clutch drum.

CAUTION:

Take care with order of plates.

2. Using a flat-bladed screwdriver, install snap ring in high and low reverse clutch drum.



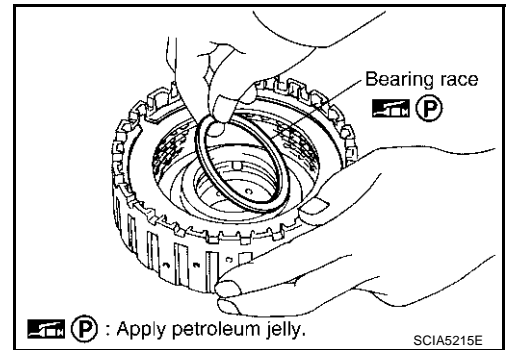
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REPAIR FOR COMPONENT PARTS

3. Install bearing race to high and low reverse clutch drum.

CAUTION:

Apply petroleum jelly to bearing race.



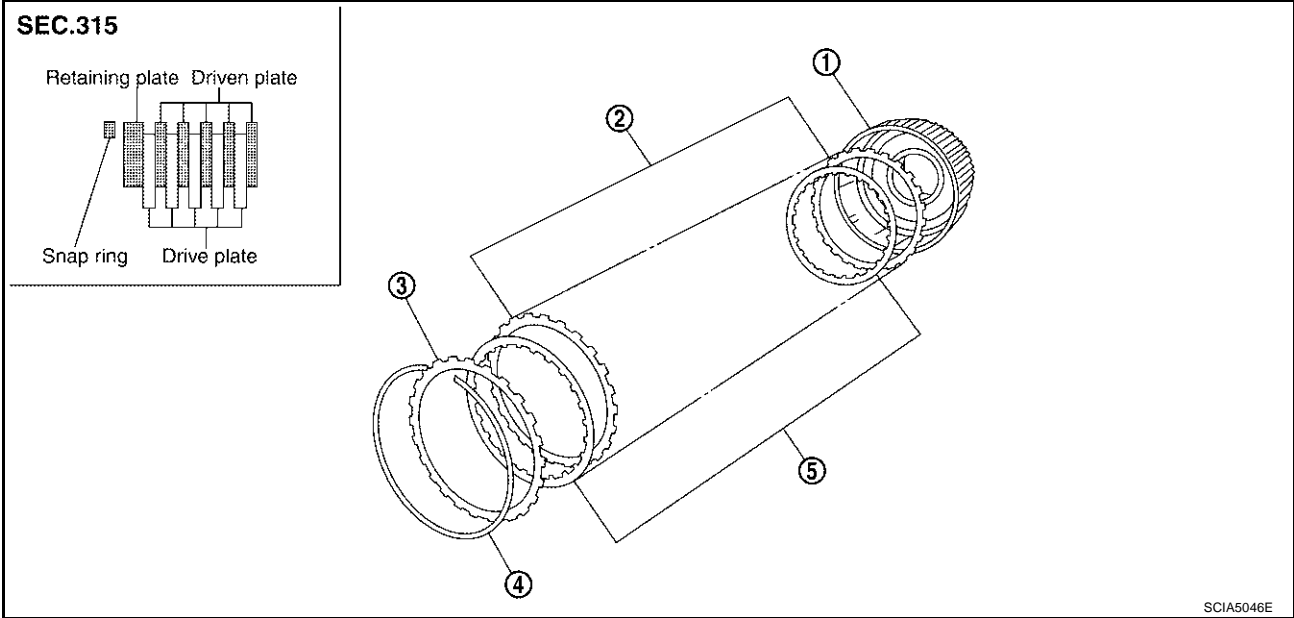
REPAIR FOR COMPONENT PARTS

ACS008SV

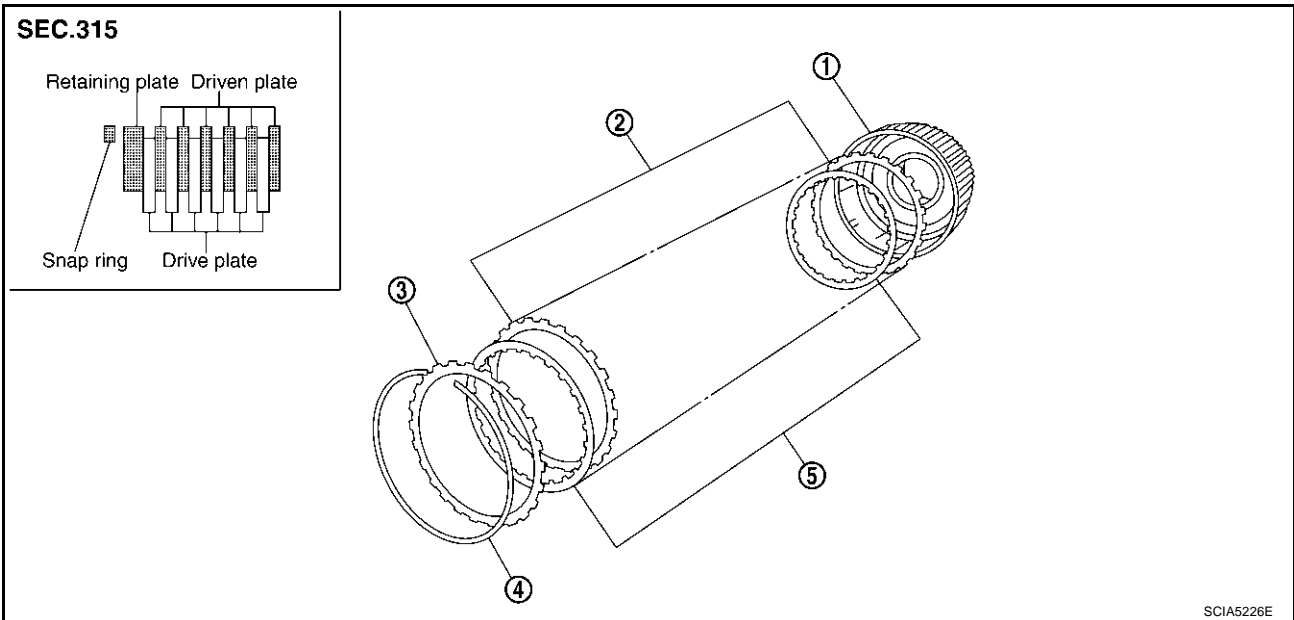
Direct Clutch COMPONENTS

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VQ35DE models



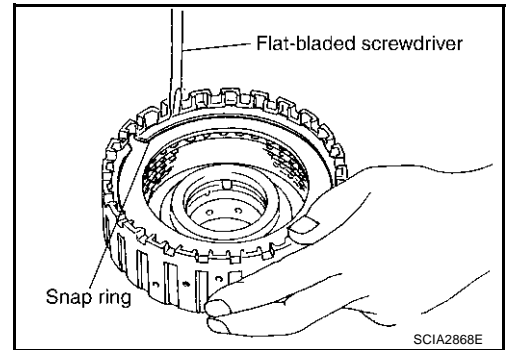
VK45DE models



REPAIR FOR COMPONENT PARTS

DISASSEMBLY

1. Using a flat-bladed screwdriver, remove snap ring from direct clutch drum.
2. Remove drive plates, driven plates and retaining plate from direct clutch drum.



INSPECTION

- Check the following, and replace direct clutch assembly if necessary.

Direct Clutch Snap Ring

- Check for deformation, fatigue or damage.

Direct Clutch Drive Plates

- Check facing for burns, cracks or damage.

Direct Clutch Retaining Plates and Driven Plates

- Check facing for burns, cracks or damage.

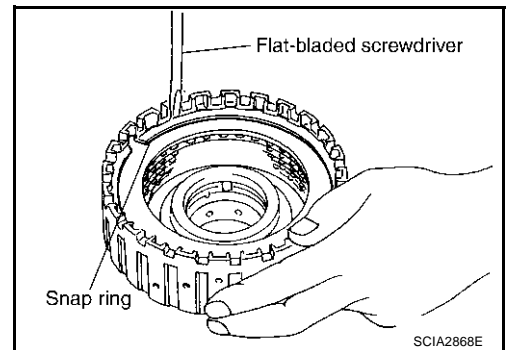
ASSEMBLY

1. Install drive plates, driven plates and retaining plate in direct clutch drum.

CAUTION:

Take care with order of plates.

2. Using a flat-bladed screwdriver, install snap ring in direct clutch drum.



ASSEMBLY

ASSEMBLY

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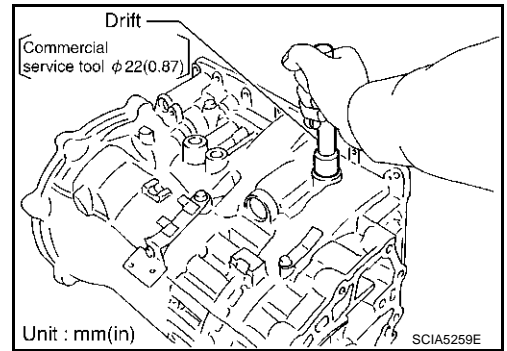
Assembly (1)

ACS008SW

1. As shown in the right figure illustration, use a drift [commercial service tool $\phi 22\text{mm}$ (0.87in)] to drive manual shaft oil seals into the transmission case until it is flush.

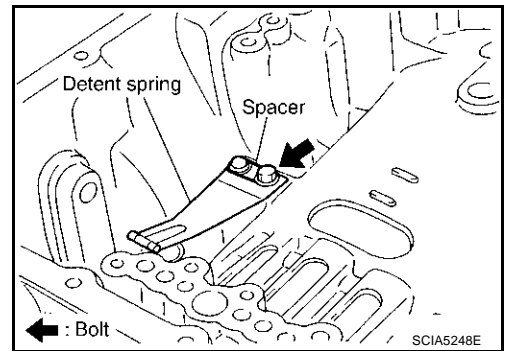
CAUTION:

- Apply ATF to manual shaft oil seals.
- Do not reuse manual shaft oil seals.



2. Install detent spring and spacer in transmission case.

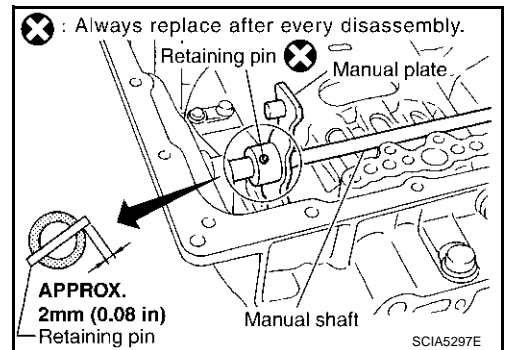
 : 7.9 N·m (0.81 kg·m, 70 in·lb)



3. Assemble manual shaft, manual plate, and parking rod after installing manual shaft to transmission case.
4. Install retaining pin into the manual plate and manual shaft.
 - a. Fit pinhole of the manual plate to pinhole of the manual shaft with a pin punch.
 - b. Use a hammer to tap the retaining pin into the manual plate.

CAUTION:

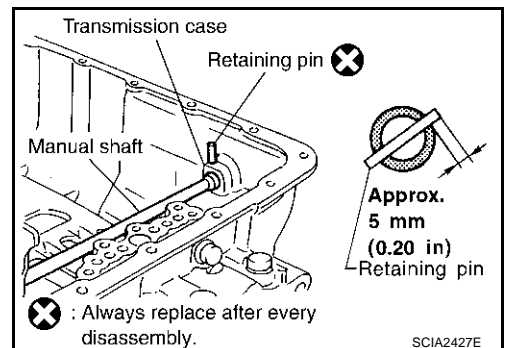
- Drive retaining pin to 2 & plusmn;0.5 mm over the manual plate.
- Do not reuse retaining pin.



5. Install retaining pin into the transmission case and manual shaft.
 - a. Fit pinhole of the transmission case to pinhole of the manual shaft with a pin punch.
 - b. Use a hammer to tap the retaining pin into the transmission case.

CAUTION:

- Drive retaining pin to 5 & plusmn;1 mm over the transmission case.
- Do not reuse retaining pin.



ASSEMBLY

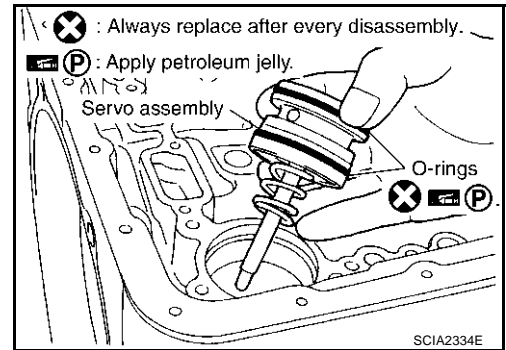
6. Install O-rings to servo assembly.

CAUTION:

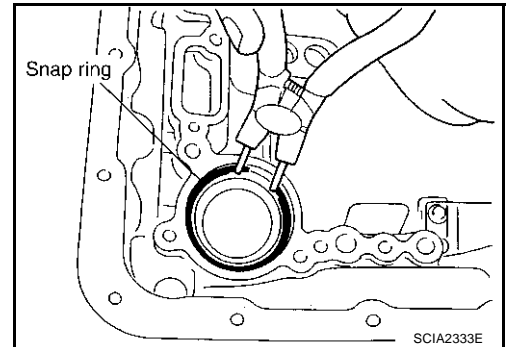
- Do not reuse O-rings.
- Apply petroleum jelly to O-rings.

7. Install return spring to servo assembly.

8. Install servo assembly in transmission case.



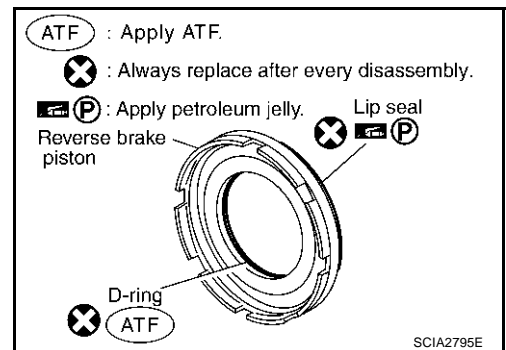
9. Using snap ring pliers, install snap ring to transmission case.



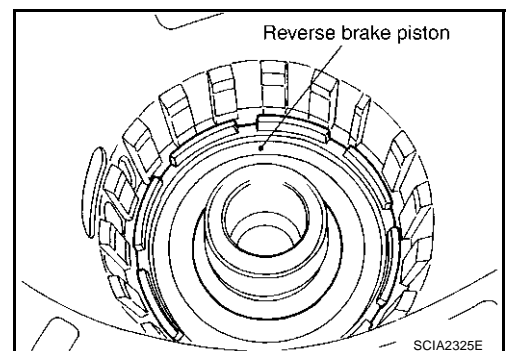
10. Install lip seal and D-ring in reverse brake piston.

CAUTION:

- Do not reuse lip seal and D-ring.
- Apply petroleum jelly to lip seal.
- Apply ATF to D-ring.



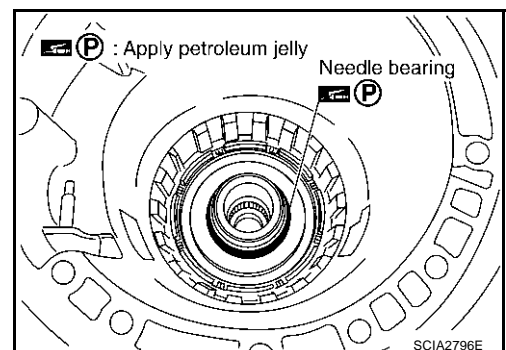
11. Install reverse brake piston in transmission case.



12. Install needle bearing to drum support edge surface.

CAUTION:

- Apply petroleum jelly to needle bearing.

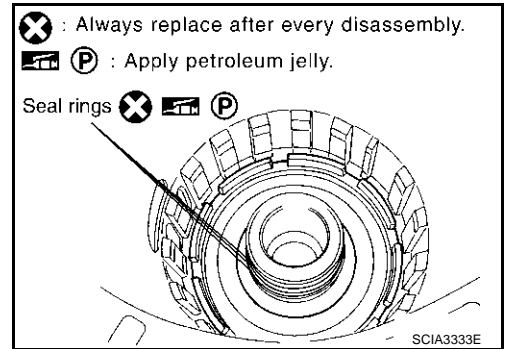


ASSEMBLY

13. Install seal rings to drum support.

CAUTION:

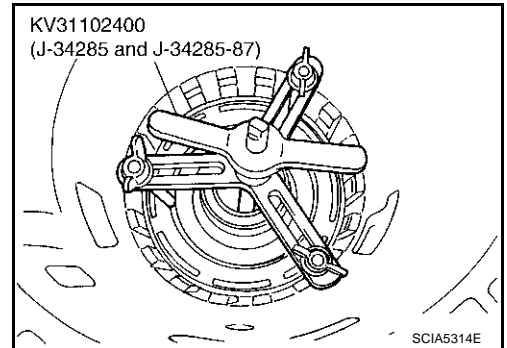
- Do not reuse seal rings.
- Apply petroleum jelly to seal rings.



14. After installing the return spring and spring retainer in transmission case, use a clutch spring compressor to install snap ring in transmission case.

CAUTION:

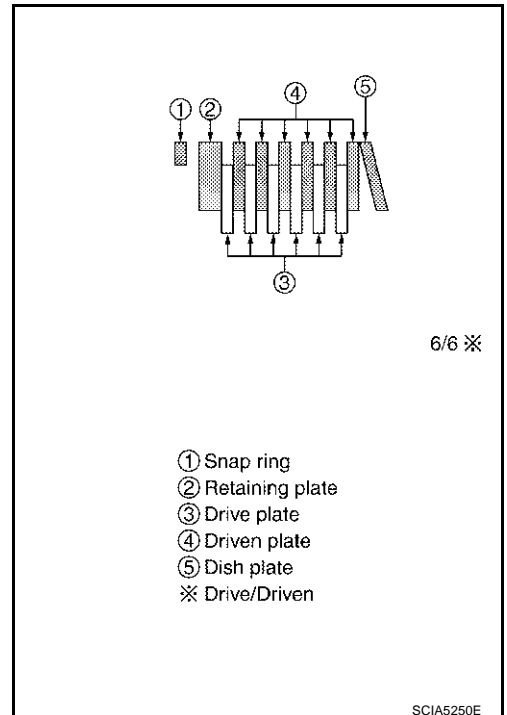
Securely assemble them using a flat-bladed screwdriver so that snap ring tension is slightly weak.



15. Install reverse brake retaining plate, drive plates, driven plates and dish plate in transmission case.

CAUTION:

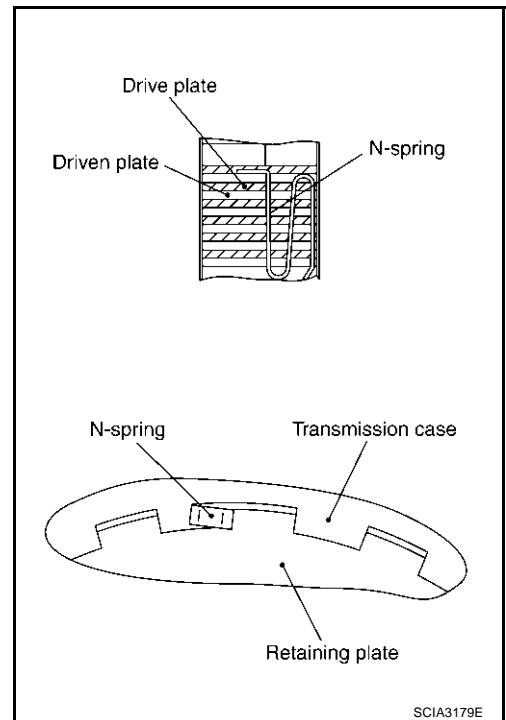
Take care with order of plates.



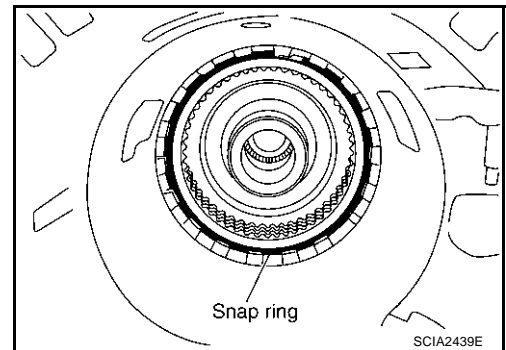
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ASSEMBLY

16. Assemble N-spring.



17. Install snap ring in transmission case.



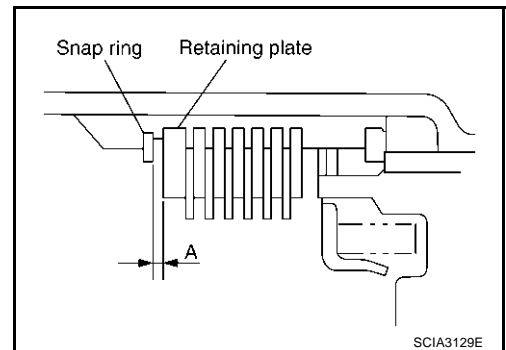
18. Measure clearance between retaining plate and snap ring. If not within specified clearance, select proper retaining plate.

Specified clearance "A":

Standard: 0.7 - 1.1mm (0.028 - 0.043 in)

Retaining plate:

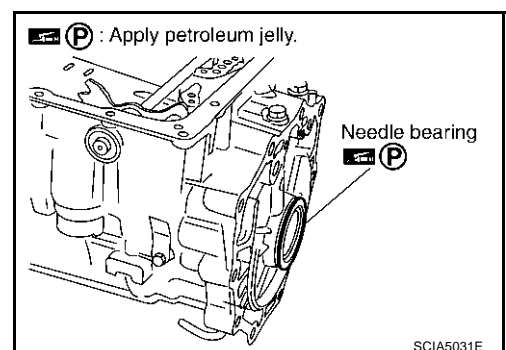
Refer to [AT-353, "Reverse Brake"](#) .



19. Install needle bearing to transmission case.

CAUTION:

Apply petroleum jelly to needle bearing.



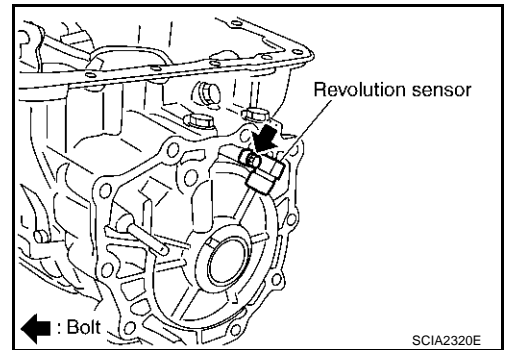
ASSEMBLY

20. Install revolution sensor to transmission case.

CAUTION:

- Do not subject it to impact by dropping or hitting it.
- Do not disassemble.
- Do not allow metal filings, etc., to get on the sensor's front edge magnetic area.
- Do not place in an area affected by magnetism.

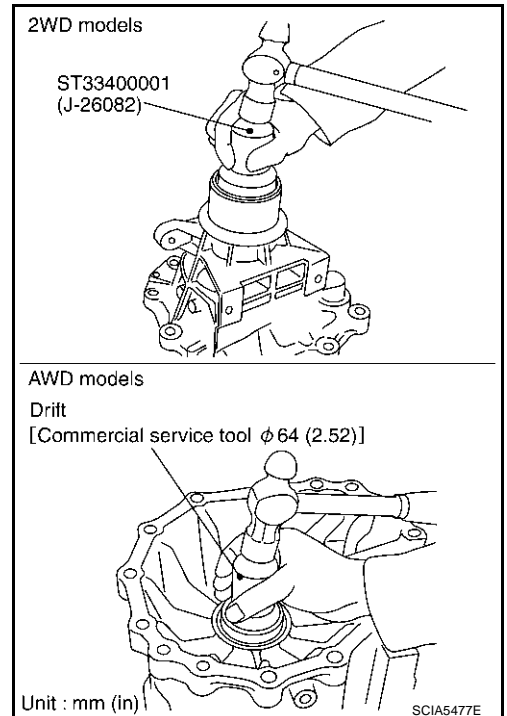
 : 5.8 N·m (0.59 kg·m, 51 in·lb)



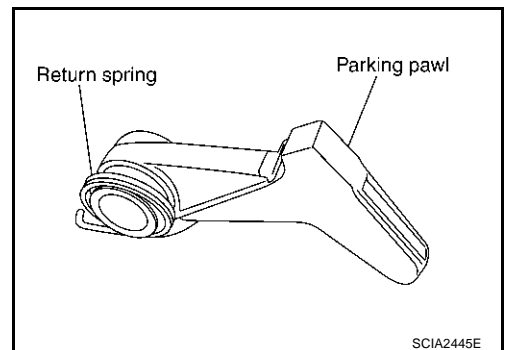
21. As shown in the right figure illustration, use the drift to drive rear oil seal into the rear extension (2WD models) or adapter case (AWD models) until it is flush.

CAUTION:

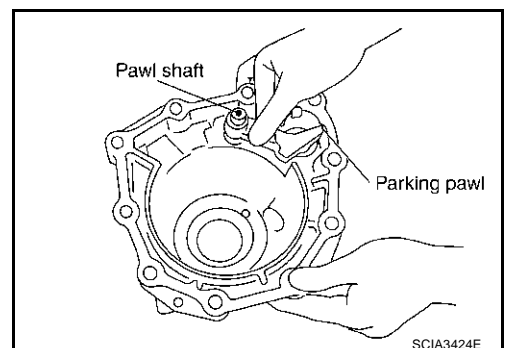
- Apply ATF to rear oil seal.
- Do not reuse rear oil seal.



22. Install return spring to parking pawl.



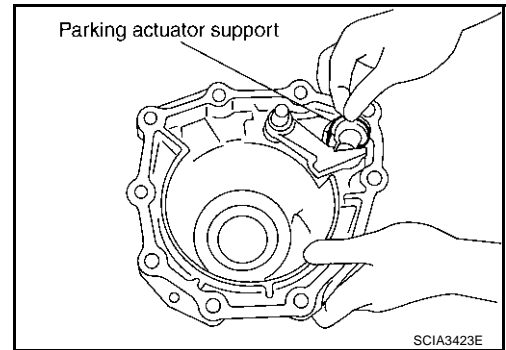
23. Install parking pawl (with return spring) and pawl shaft to rear extension (2WD models) or adapter case (AWD models).



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ASSEMBLY

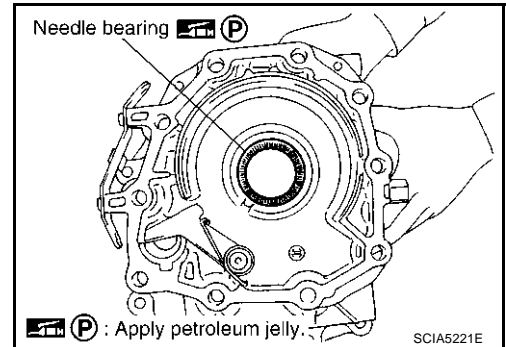
24. Install parking actuator support to rear extension (2WD models) or adapter case (AWD models).



25. Install needle bearing to rear extension (2WD models) or adapter case (AWD models).

CAUTION:

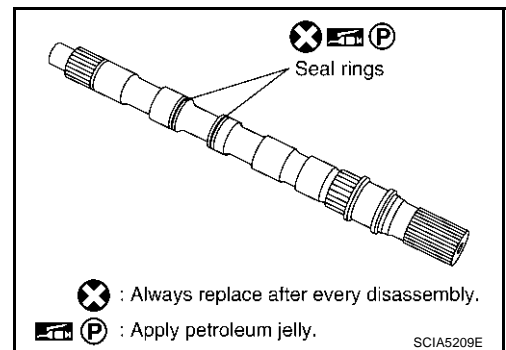
Apply petroleum jelly to needle bearing.



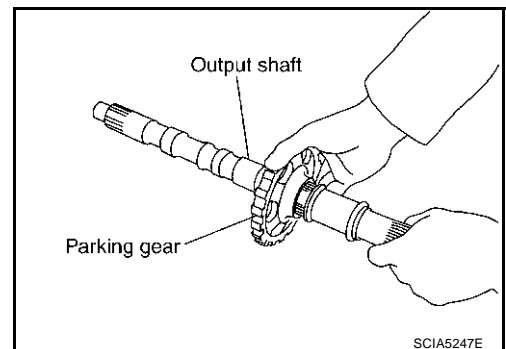
26. Install seal rings to output shaft.

CAUTION:

- Do not reuse seal rings.
- Apply petroleum jelly to seal rings.



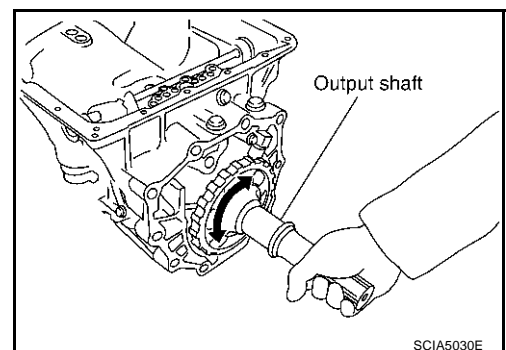
27. Install parking gear to output shaft.



28. Install output shaft in transmission case.

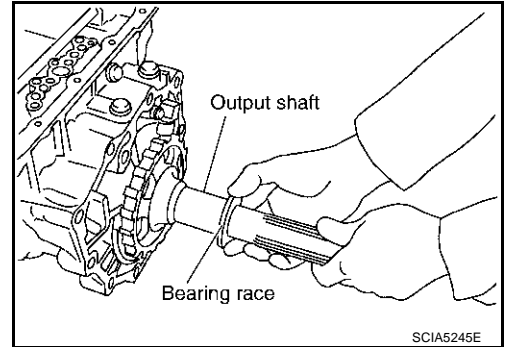
CAUTION:

Be careful not to mistake front for rear because both sides looks similar. (Thinner end is front side.)



ASSEMBLY

29. Install bearing race to output shaft.

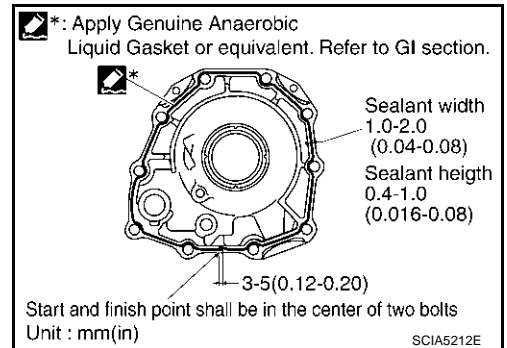


30. Install rear extension assembly (2WD models) or adapter case assembly (AWD models) according to the following procedures.

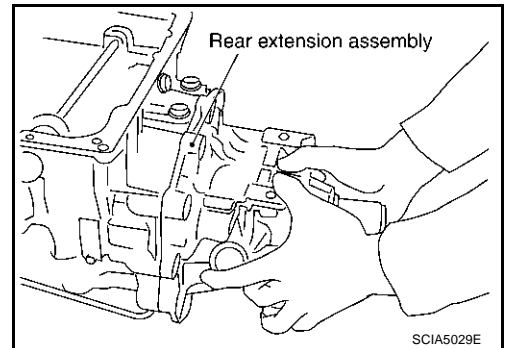
a. **2WD models**

i. Apply recommended sealant (Genuine Anaerobic Liquid Gasket or equivalent. Refer to [GI-48, "Recommended Chemical Products and Sealants"](#) .) to rear extension assembly as shown in illustration.

CAUTION:
Completely remove all moisture, oil and old sealant, etc. from the transmission case and rear extension assembly mounting surfaces.



ii. Install rear extension assembly to transmission case.



iii. Tighten rear extension assembly mounting bolts to specified torque.

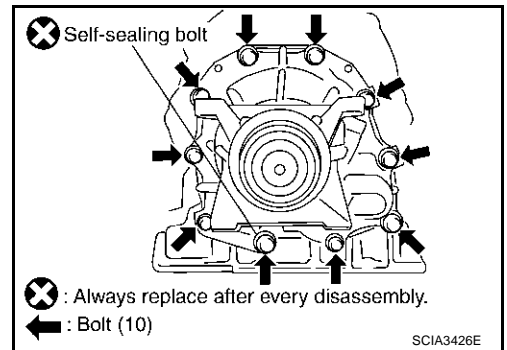
CAUTION:
Do not reuse self-sealing bolt.

Rear extension assembly mounting bolt:

: 52 N·m (5.3 kg·m, 38 ft·lb)

Self-sealing bolt:

: 61 N·m (6.2 kg·m, 45 ft·lb)



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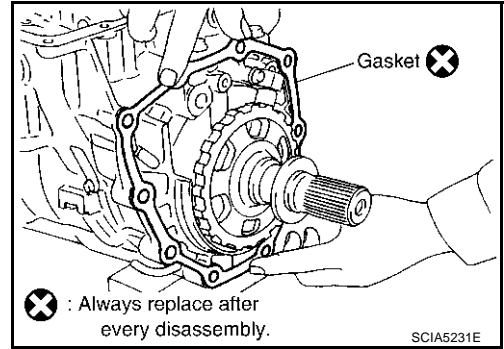
ASSEMBLY

b. **AWD models**

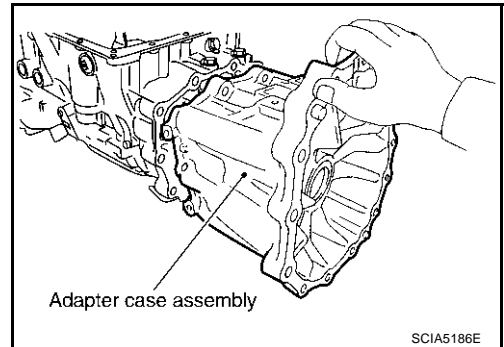
i. Install gasket onto transmission case.

CAUTION:

- Completely remove all moisture, oil and old gasket, etc. from the transmission case and adapter case assembly mounting surfaces.
- Do not reuse gasket.



ii. Install adapter case assembly to transmission case.



iii. Tighten adapter case assembly mounting bolts to specified torque. (With bracket.)

CAUTION:

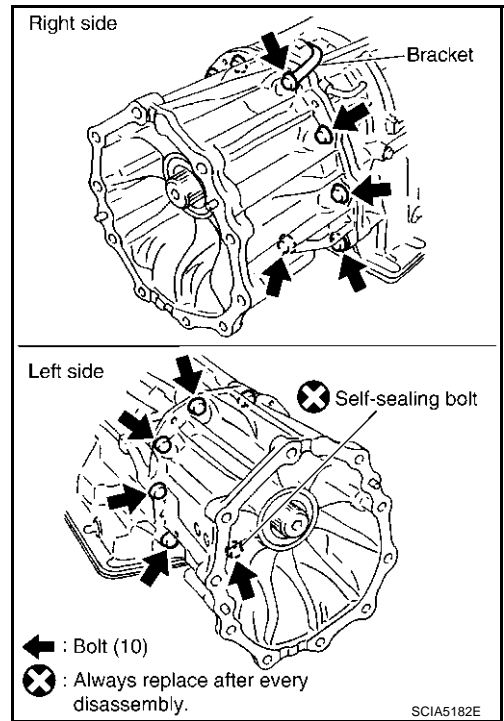
Do not reuse self-sealing bolt.

Adapter case assembly mounting bolt:

 : 52 N·m (5.3 kg-m, 38 ft-lb)

Self-sealing bolt:

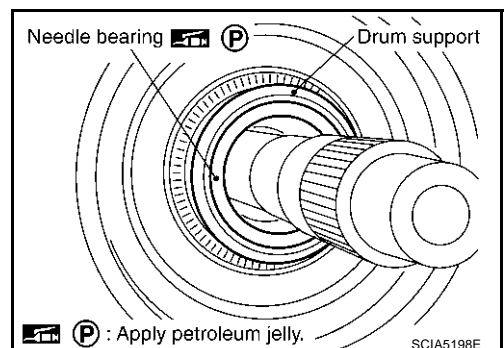
 : 61 N·m (6.2 kg-m, 45 ft-lb)



31. Install needle bearing in drum support.

CAUTION:

Apply petroleum jelly to needle bearing.

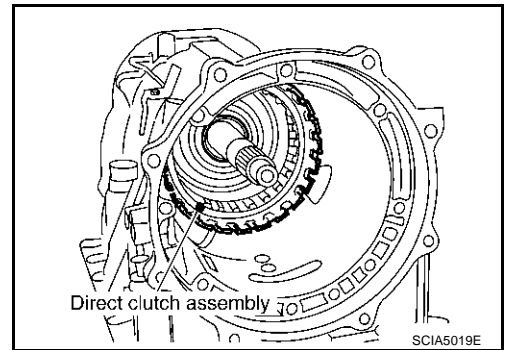


ASSEMBLY

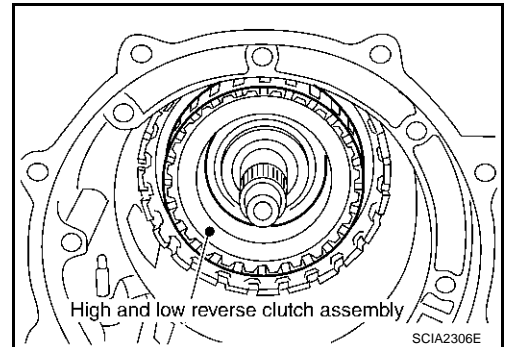
32. Install direct clutch assembly in reverse brake.

CAUTION:

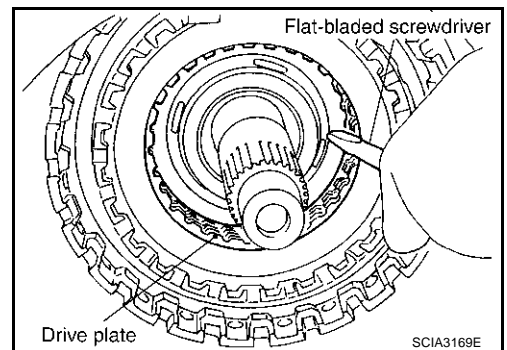
Make sure that drum support edge surface and direct clutch inner boss edge surface come to almost same place.



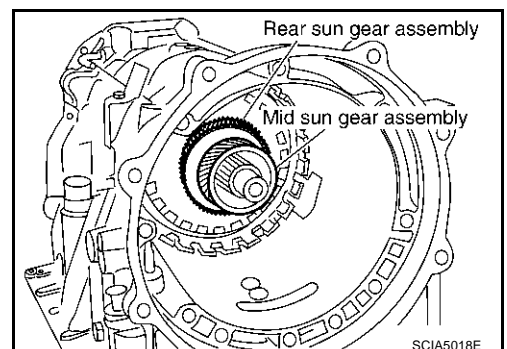
33. Install high and low reverse clutch assembly in direct clutch.



34. Using a flat-bladed screwdriver, adjust the drive plate.



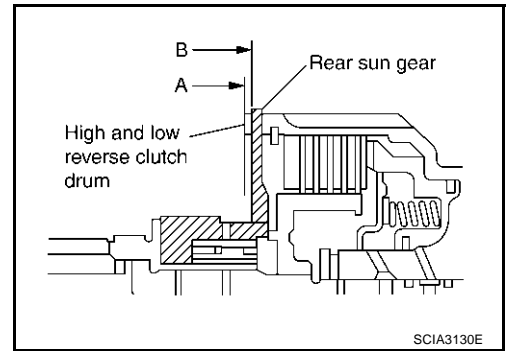
35. Install high and low reverse clutch hub, mid sun gear assembly and rear sun gear assembly as a unit.



ASSEMBLY

CAUTION:

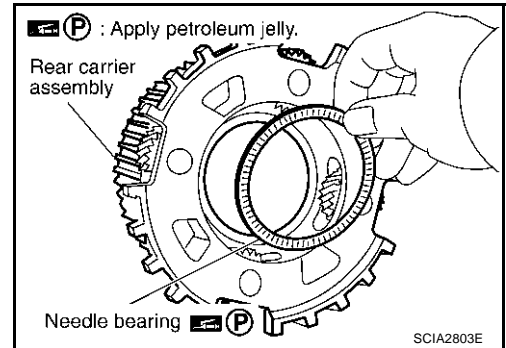
Check that portion "A" of high and low reverse clutch drum protrudes approximately 2 mm (0.08 in) beyond portion "B" of rear sun gear.



36. Install needle bearing in rear carrier assembly.

CAUTION:

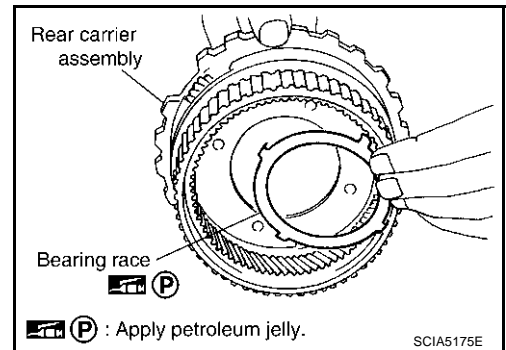
Apply petroleum jelly to needle bearing.



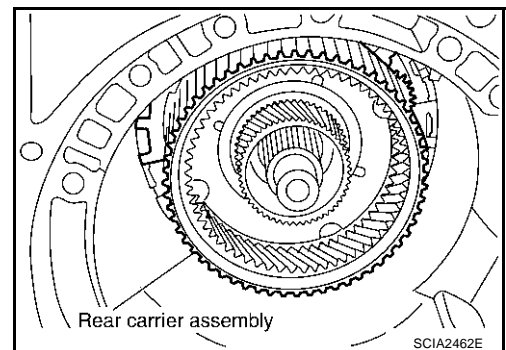
37. Install bearing race in rear carrier assembly.

CAUTION:

Apply petroleum jelly to bearing race.



38. Install rear carrier assembly in direct clutch drum.

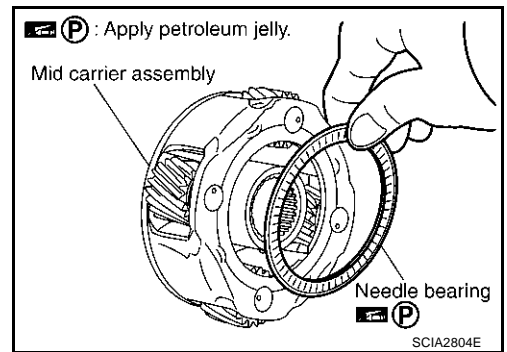


ASSEMBLY

39. Install needle bearing (rear side) to mid carrier assembly.

CAUTION:

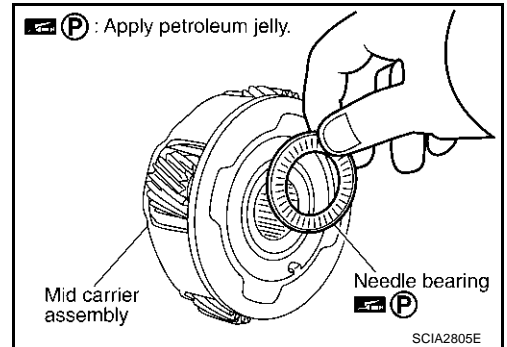
Apply petroleum jelly to needle bearing.



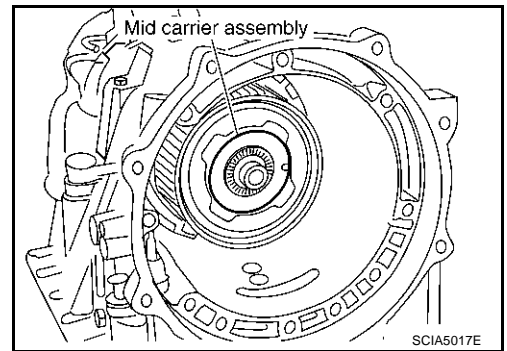
40. Install needle bearing (front side) to mid carrier assembly.

CAUTION:

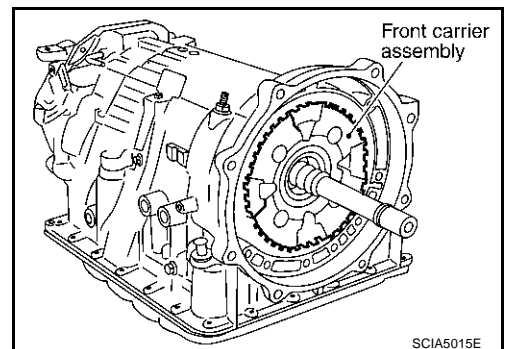
Apply petroleum jelly to needle bearing.



41. Install mid carrier assembly in rear carrier assembly.



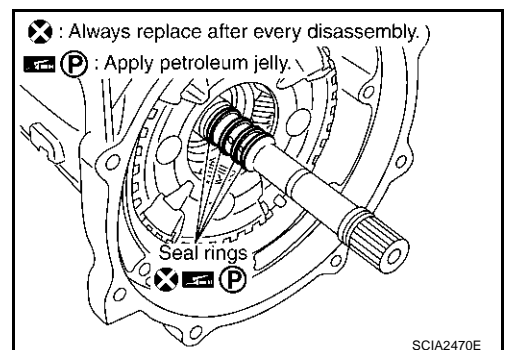
42. Install front carrier assembly, input clutch assembly and rear internal gear as a unit.



43. Install seal rings in input clutch assembly.

CAUTION:

- Do not reuse seal rings.
- Apply petroleum jelly to seal rings.



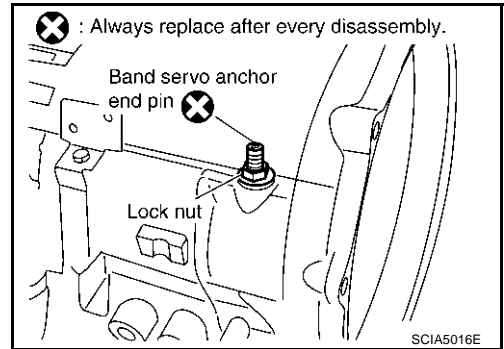
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ASSEMBLY

44. Install band servo anchor end pin and lock nut in transmission case.

CAUTION:

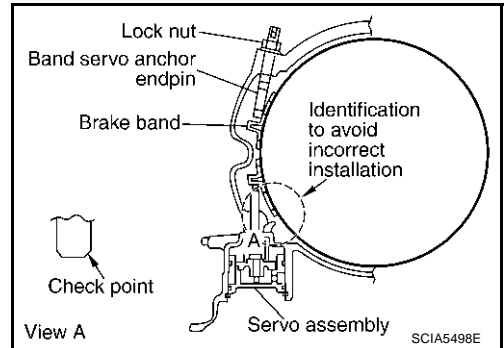
Do not reuse band servo anchor end pin.



45. Install brake band in transmission case.

CAUTION:

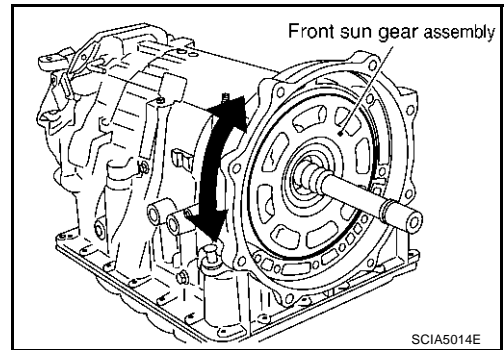
Assemble it so that identification to avoid incorrect installation faces servo side.



46. Install front sun gear to front carrier assembly.

CAUTION:

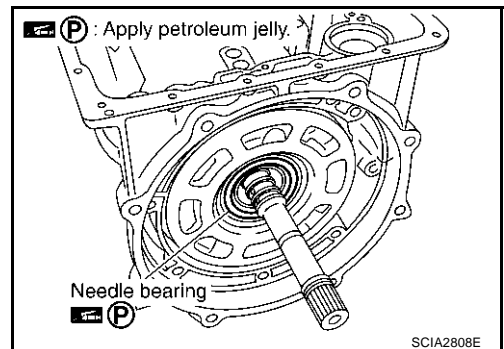
Apply ATF to front sun gear bearing and 3rd one-way clutch end bearing.



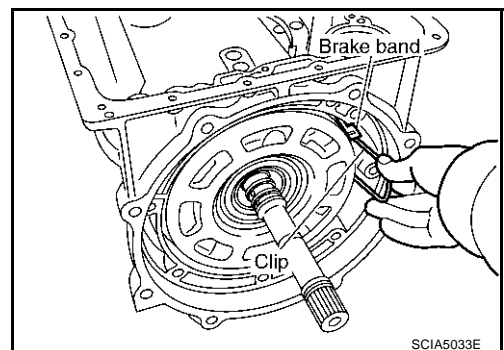
47. Install needle bearing to front sun gear.

CAUTION:

Apply petroleum jelly to needle bearing.



48. Adjust brake band tilting using clips so that brake band contacts front sun gear drum evenly.



ASSEMBLY

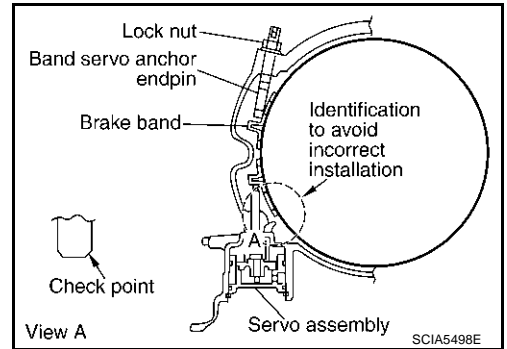
49. Adjust brake band.

- a. Loosen lock nut.
- b. Tighten band servo anchor end pin to specified torque.

 : 5.0 N·m (0.51 kg-m, 44 in-lb)

- c. Back of band servo anchor end pin three turns.
- d. Holding band servo anchor end pin, tighten lock nut to specified torque.

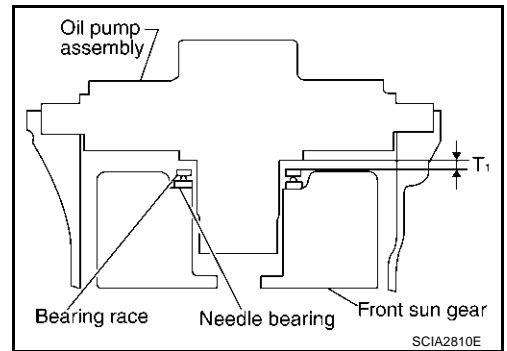
 : 46 N·m (4.7 kg-m, 34 ft-lb)



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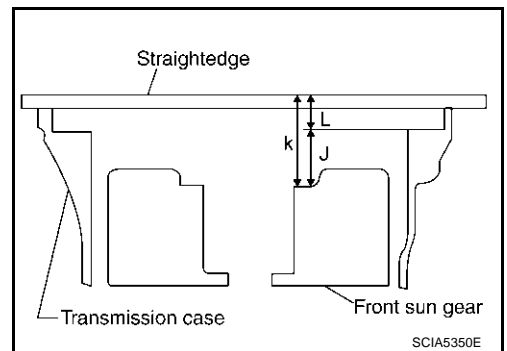
Adjustment TOTAL END PLAY

- Measure clearance between front sun gear and bearing race for oil pump cover.
- Select proper thickness of bearing race so that end play is within specifications.



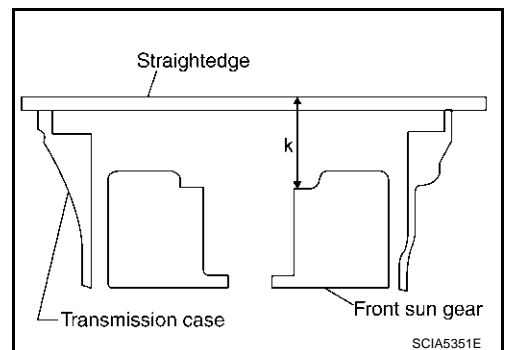
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1. Measure dimensions "K" and "L" and then calculate dimension "J".



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- a. Measure dimension "K".



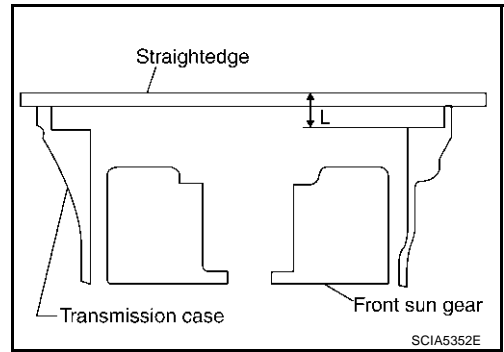
L
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ASSEMBLY

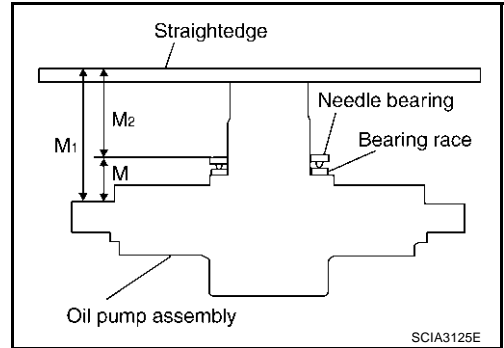
- b. Measure dimension "L".
- c. Calculate dimension "J".

"J": Distance between oil pump fitting surface of transmission case and needle bearing mating surface of front sun gear.

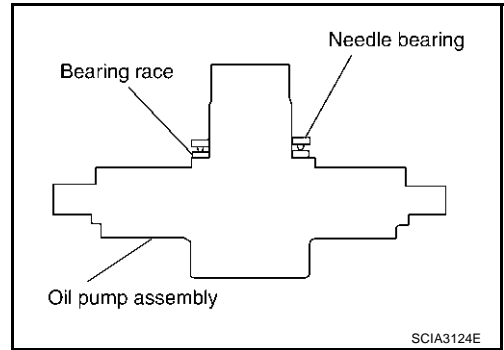
$$J = K - L$$



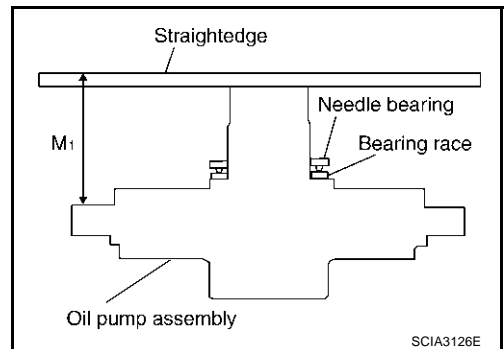
- 2. Measure dimensions "M1" and "M2" and then calculate dimension "M".



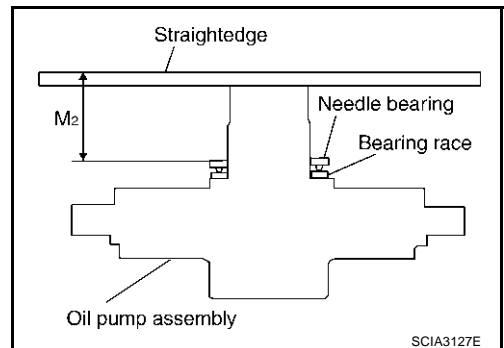
- a. Place bearing race and needle bearing on oil pump assembly.



- b. Measure dimension "M1".



- c. Measure dimension "M2".

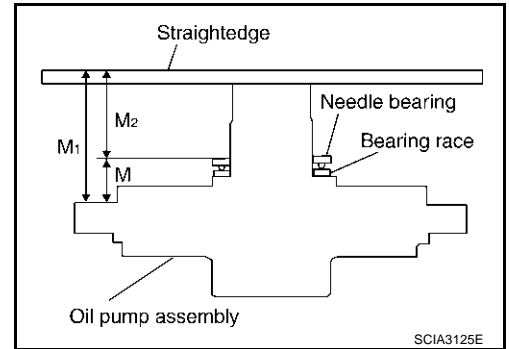


ASSEMBLY

d. Calculate dimension "M".

"M": Distance between transmission case fitting surface of oil pump and needle bearing on oil pump.

$$M = M_1 - M_2$$



3. Adjust total end play "T₁".

$$T_1 = J - M$$

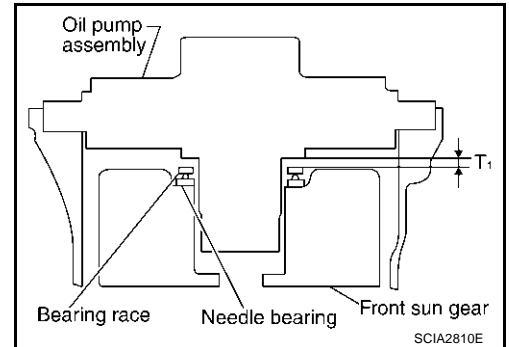
Total end play "T₁":

0.25 - 0.55 mm (0.0098 - 0.0217 in)

- Select proper thickness of bearing race so that total end play is within specifications.

Bearing races:

Refer to AT-354, "BEARING RACE FOR ADJUSTING TOTAL END PLAY".



Assembly (2)

1. Install O-ring to oil pump assembly.

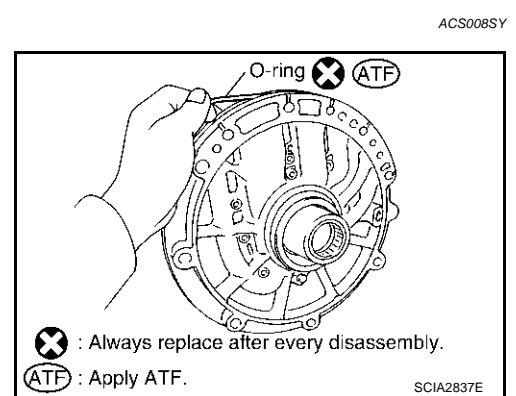
CAUTION:

- Do not reuse O-ring.
- Apply ATF to O-ring.

2. Install bearing race to oil pump assembly.

CAUTION:

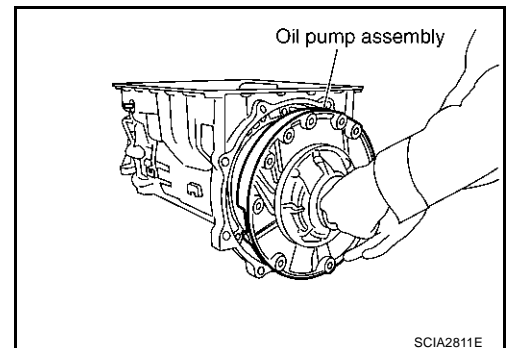
Apply petroleum jelly to bearing race.



3. Install oil pump assembly in transmission case.

CAUTION:

Apply ATF to oil pump bushing.

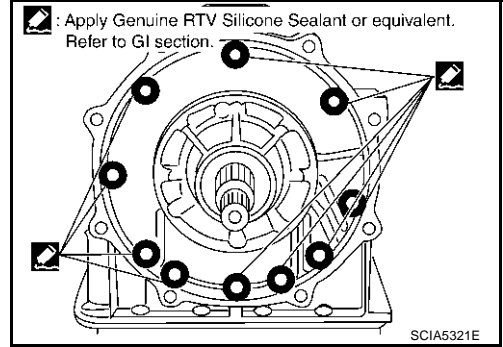


ASSEMBLY

4. Apply recommended sealant (Genuine RTV Silicone Sealant or equivalent. Refer to [GI-48, "Recommended Chemical Products and Sealants"](#) .) to oil pump assembly as shown in illustration.

CAUTION:

Completely remove all moisture, oil and old sealant, etc. From the oil pump mounting bolts and oil pump mounting bolt mounting surfaces.



5. Tighten oil pump mounting bolts to specified torque.

CAUTION:

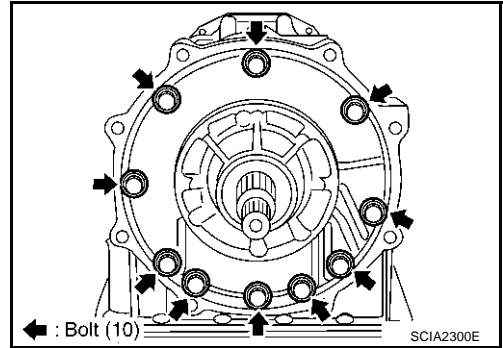
Apply ATF to oil pump bushing.

91X07, 91X08 and 91X09 models

: 58 N·m (5.9 kg·m, 43 ft·lb)

91X60, 91X61 and 91X62 models

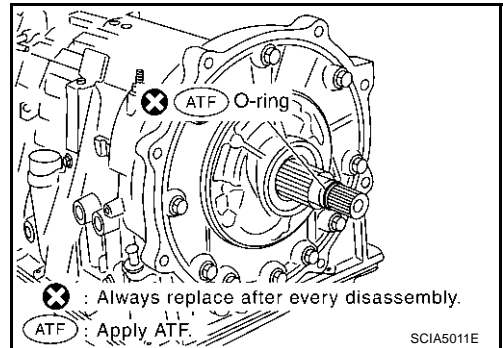
: 48 N·m (4.9 kg·m, 35 ft·lb)



6. Install O-ring to input clutch assembly.

CAUTION:

- Do not reuse O-ring.
- Apply ATF to O-ring.



7. Install converter housing to transmission case.

CAUTION:

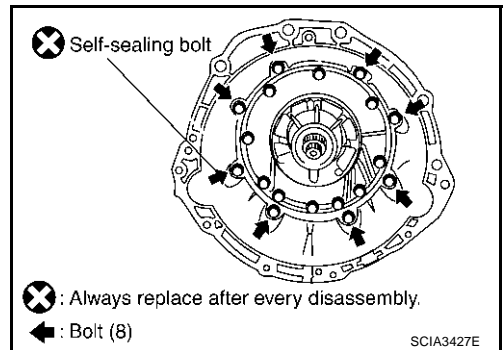
Do not reuse self-sealing bolt.

Converter housing mounting bolt:

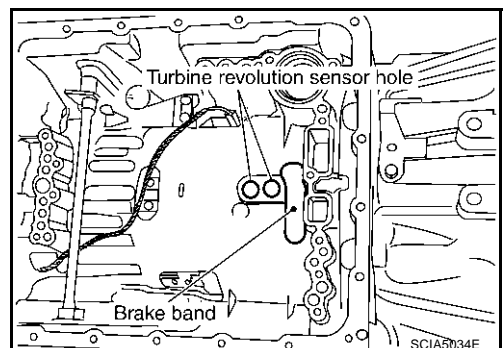
: 52 N·m (5.3 kg·m, 38 ft·lb)

Self-sealing bolt:

: 61 N·m (6.2 kg·m, 45 ft·lb)



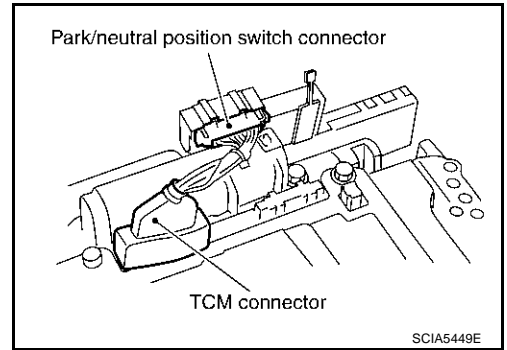
8. Make sure that brake band does not close turbine revolution sensor hole.



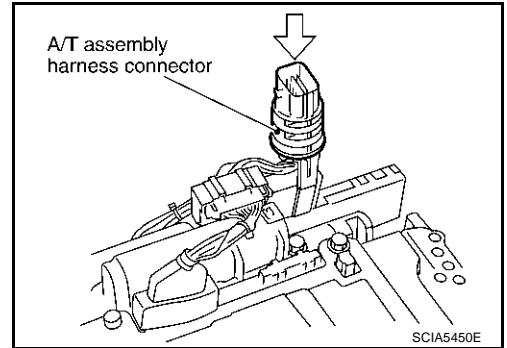
ASSEMBLY

9. Install control valve with TCM.

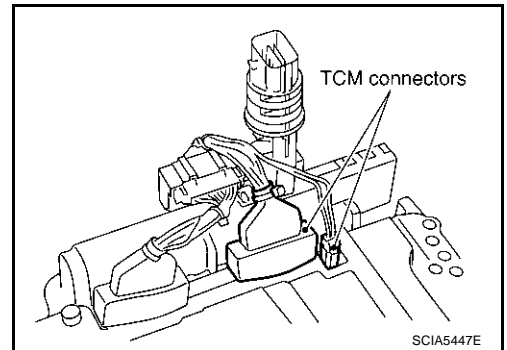
a. Connect TCM connector and park/neutral position switch connector.



b. Install A/T assembly harness connector from control valve with TCM.



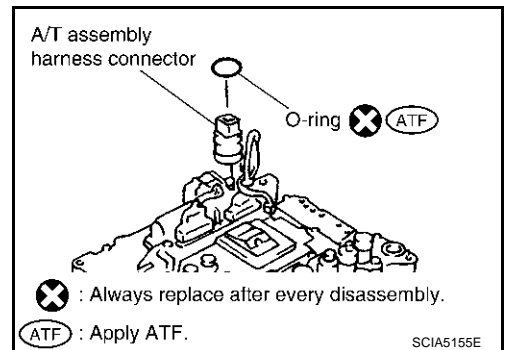
c. Connect TCM connectors.



d. Install O-ring to A/T assembly harness connector.

CAUTION:

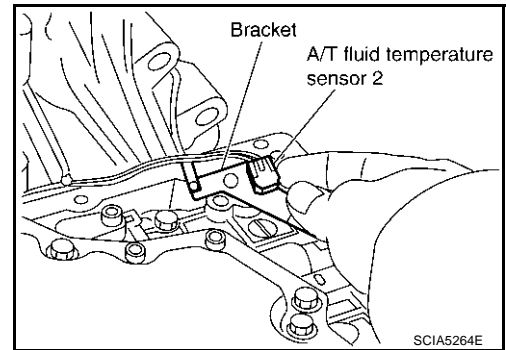
- Do not reuse O-ring.
- Apply ATF to O-ring.



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ASSEMBLY

- e. Install A/T fluid temperature sensor 2 to bracket.

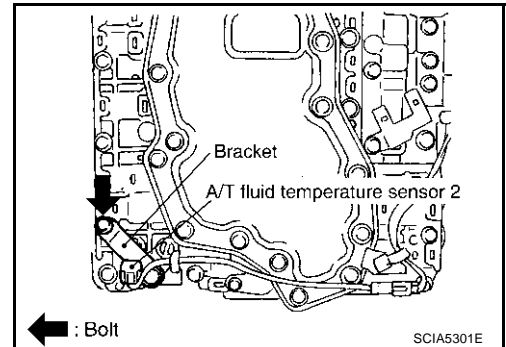


- f. Install A/T fluid temperature sensor 2 (with bracket) in control valve with TCM.

CAUTION:

Adjust bolt hole of bracket to bolt hole of control valve.

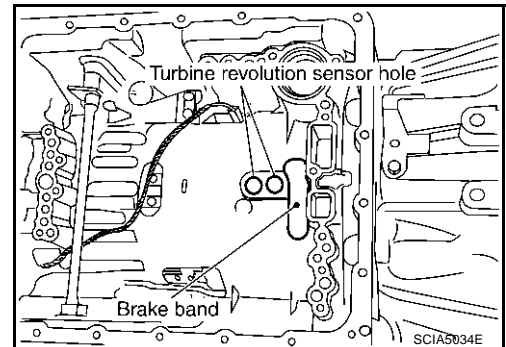
 : 7.9 N·m (0.81 kg·m, 70 in·lb)



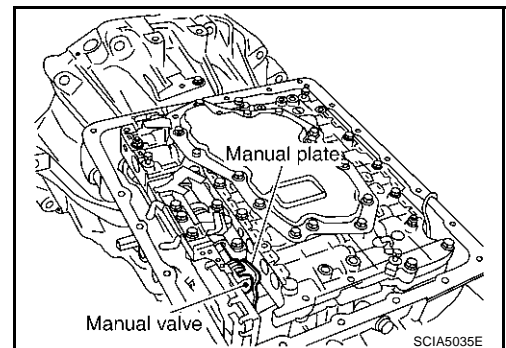
- g. Install control valve with TCM in transmission case.

CAUTION:

- Make sure that turbine revolution sensor securely installs turbine revolution sensor hole.
- Hang down revolution sensor harness toward outside so as not to disturb installation of control valve with TCM.
- Adjust A/T assembly harness connector of control valve with TCM to terminal hole of transmission case.



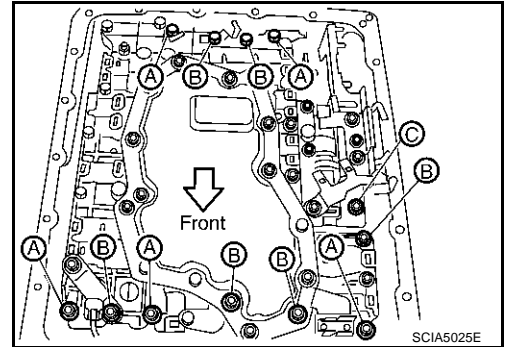
- Assemble it so that manual valve cutout is engaged with manual plate projection.



ASSEMBLY

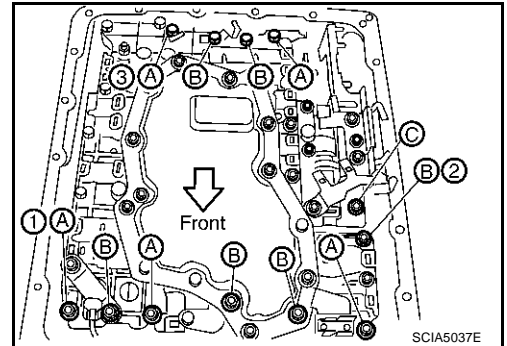
h. Install bolts A, B and C to control valve with TCM.

Bolt symbol	Length mm (in)	Number of bolts
A	42 (1.65)	5
B	55 (2.17)	6
C	40 (1.57)	1

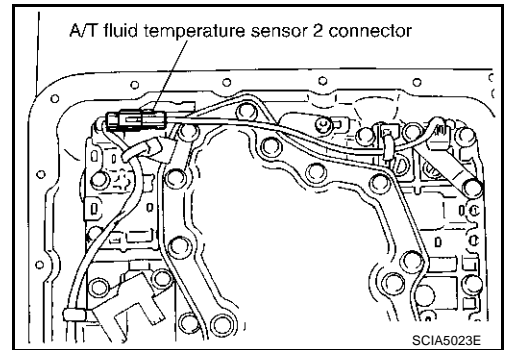


i. Tighten bolt 1, 2 and 3 temporarily to prevent dislocation. After that tighten them in order (1 → 2 → 3), and then tighten other bolts.

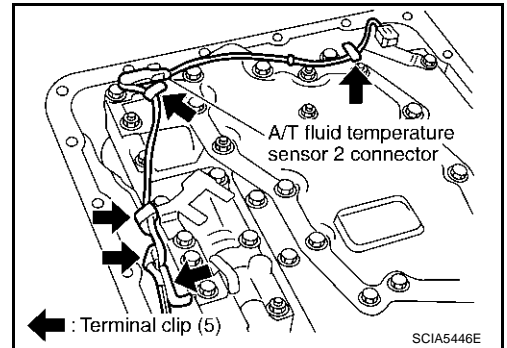
 : 7.9 N·m (0.81 kg·m, 70 in·lb)



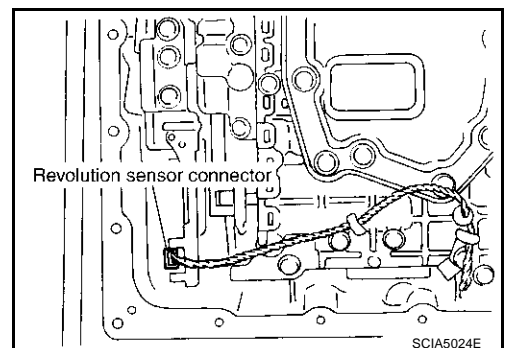
10. Connect A/T fluid temperature sensor 2 connector.



11. Securely fasten terminal cord assembly and A/T fluid temperature sensor 2 harness with terminal clips.



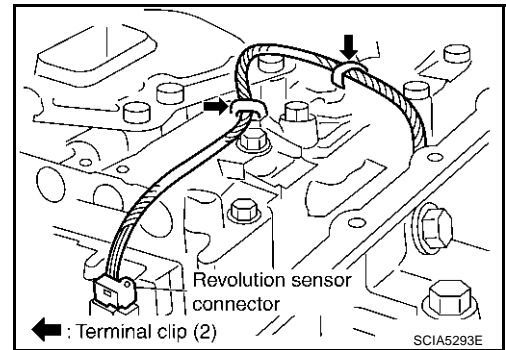
12. Connect revolution sensor connector.



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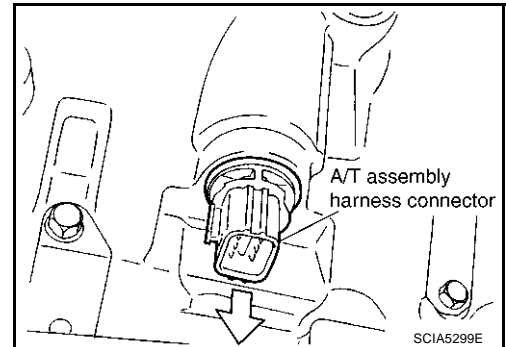
ASSEMBLY

13. Securely fasten revolution sensor 2 harness with terminal clips.

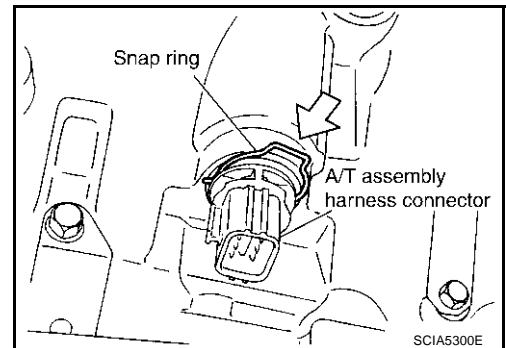


14. Pull down A/T assembly harness connector.

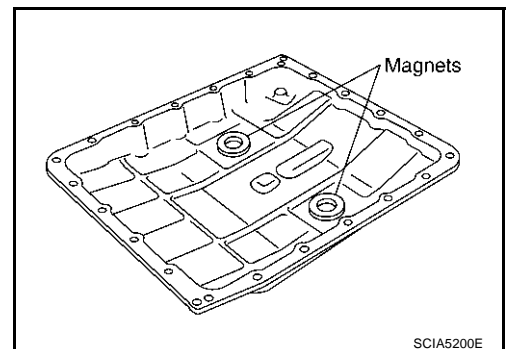
CAUTION:
Be careful not to damage connector.



15. Install snap ring to A/T assembly harness connector.



16. Install magnets in oil pan.



17. Install oil pan to transmission case.

a. Install oil pan gasket to oil pan.

CAUTION:

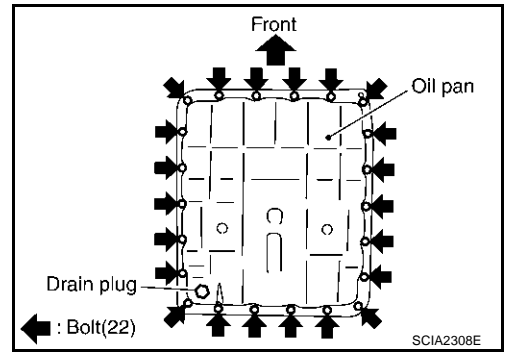
- Do not reuse oil pan gasket.
- Install it in the direction to align hole positions.
- Complete remove all moisture, oil and old gasket, etc. from oil pan gasket mounting surface.

ASSEMBLY

- b. Install oil pan (with oil pan gasket) to transmission case.

CAUTION:

- Install it so that drain plug comes to the position as shown in the figure.
- Be careful not to pinch harnesses.
- Complete remove all moisture, oil and old gasket, etc. from oil pan gasket mounting surface.



- c. Tighten oil pan mounting bolts to the specified torque in numerical order shown in the figure after temporarily tightening them.

CAUTION:

Do not reuse oil pan mounting bolts.

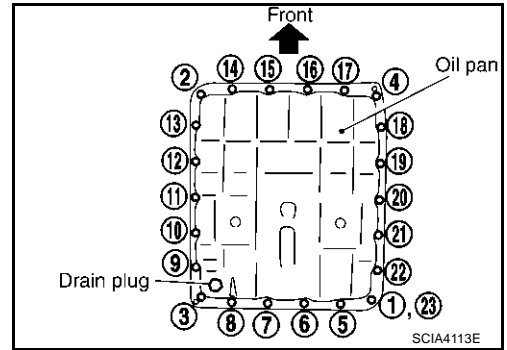
 : 7.9 N·m (0.81 kg-m, 70 in-lb)

18. Install drain plug to oil pan.

CAUTION:

Do not reuse drain plug gasket.

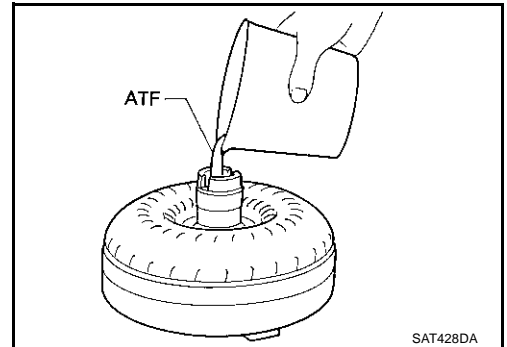
 : 34 N·m (3.5 kg-m, 25 ft-lb)



19. Install torque converter.

- a. Pour ATF into torque converter.

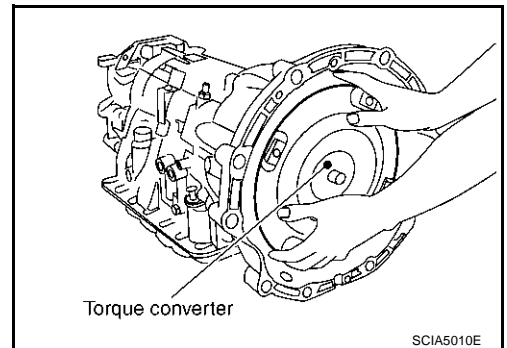
- Approximately 2 liter (2-1/8 US qt, 1-3/4 Imp qt) of fluid is required for a new torque converter.
- When reusing old torque converter, add the same amount of fluid as was drained.



- b. Install torque converter while aligning notches of torque converter with notches of oil pump.

CAUTION:

Install torque converter while rotating it.



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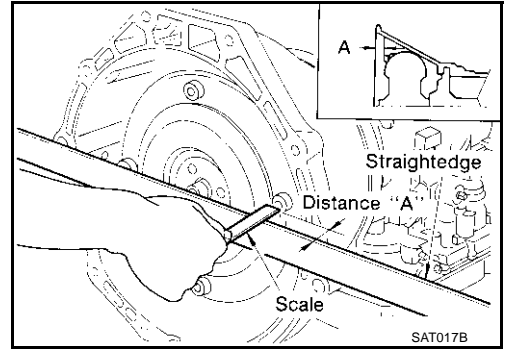
ASSEMBLY

- c. Measure distance "A" to check that torque converter is in proper position.

Distance "A"

VQ35DE models: 25.0 mm (0.98 in) or more

VK45DE models: 22.0 mm (0.87 in) or more



SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

PF0:00030

General Specifications

ACS002S2

Applied model		VQ35DE engine		VK45DE engine	
		2WD		AWD	
Automatic transmission model		RE5R05A			
Transmission model code number		91X07, 91X60		91X08, 91X61	
Stall torque ratio		2.0: 1			
Transmission gear ratio	1st	3.540			
	2nd	2.264			
	3rd	1.417			
	4th	1.000			
	5th	0.834			
	Reverse	2.370			
Recommended fluid		NISSAN Matic Fluid J*1			
Fluid capacity		10.3 liter (10-7/8 US qt, 9-1/8 Imp qt)			

CAUTION:

- Use only Genuine NISSAN ATF Matic Fluid J. Do not mix with other fluid.
- Using automatic transmission fluid other than Genuine NISSAN an ATF Matic Fluid J will deteriorate in driveability and automatic transmission durability, and may damage the automatic transmission, which is not covered by the warranty.

*1: Refer to [MA-12, "Fluids and Lubricants"](#).

Vehicle Speed When Shifting Gears 2WD MODELS

ACS002S3

Engine model	VQ35DE							
	Vehicle speed [km/h (MPH)]							
Throttle position	D1 →D2	D2 →D3	D3 →D4	D4 →D5	D5 →D4	D4 →D3	D3 →D2	D2 →D1
Full throttle	68 - 72 (42 - 45)	106 - 114 (66 - 71)	164 - 174 (102 - 108)	235 - 245 (146 - 152)	231 - 241 (144 - 150)	154 - 164 (96 - 102)	89 - 97 (55 - 60)	37 - 43 (23 - 27)
Half throttle	54 - 58 (34 - 36)	83 - 91 (52 - 57)	126 - 136 (78 - 85)	158 - 168 (98 - 104)	103 - 113 (64 - 70)	74 - 84 (46 - 52)	34 - 42 (21 - 26)	11 - 15 (7 - 9)

- At half throttle, the accelerator opening is 4/8 of the full opening.

AWD MODELS

Engine model	VQ35DE							
	Vehicle speed [km/h (MPH)]							
Throttle position	D1 →D2	D2 →D3	D3 →D4	D4 →D5	D5 →D4	D4 →D3	D3 →D2	D2 →D1
Full throttle	62 - 66 (39 - 41)	96 - 104 (60 - 65)	149 - 159 (93 - 99)	213 - 223 (132 - 139)	209 - 219 (130 - 136)	121 - 131 (75 - 81)	81 - 89 (50 - 55)	39 - 43 (24 - 27)
Half throttle	49 - 53 (30 - 33)	75 - 83 (47 - 52)	114 - 124 (71 - 77)	141 - 151 (88 - 94)	94 - 104 (58 - 65)	66 - 76 (41 - 47)	31 - 39 (19 - 24)	11 - 15 (7 - 9)

- At half throttle, the accelerator opening is 4/8 of the full opening.

Engine model	VK45DE							
	Vehicle speed [km/h (MPH)]							
Throttle position	D1 →D2	D2 →D3	D3 →D4	D4 →D5	D5 →D4	D4 →D3	D3 →D2	D2 →D1
Full throttle	64 - 68 (40 - 42)	98 - 106 (61 - 66)	152 - 162 (94 - 101)	219 - 229 (136 - 142)	215 - 225 (134 - 140)	136 - 146 (85 - 91)	85 - 93 (53 - 58)	41 - 45 (25 - 28)
Half throttle	31 - 35 (19 - 22)	59 - 67 (37 - 42)	100 - 110 (62 - 68)	166 - 176 (103 - 109)	107 - 117 (66 - 73)	65 - 75 (40 - 47)	38 - 46 (24 - 29)	12 - 16 (7 - 10)

- At half throttle, the accelerator opening is 4/8 of the full opening.

SERVICE DATA AND SPECIFICATIONS (SDS)

Vehicle Speed When Performing and Releasing Complete Lock-up

ACS002S4

2WD MODELS

Engine model	VQ35DE	
Throttle position	Vehicle speed [km/h (MPH)]	
	Lock-up "ON"	Lock-up "OFF"
Closed throttle	63 - 73 (39 - 45)	40 - 48 (25 - 30)
Half throttle	196 - 204 (122 - 127)	153 - 161 (95 - 100)

- At closed throttle, the accelerator opening is less than 1/8 condition.
- At half throttle, the accelerator opening is 4/8 of the full opening.

AWD MODELS

Engine model	VQ35DE	
Throttle position	Vehicle speed [km/h (MPH)]	
	Lock-up "ON"	Lock-up "OFF"
Closed throttle	59 - 67 (37 - 42)	56 - 64 (35 - 40)
Half throttle	178 - 186 (111 - 116)	139 - 147 (86 - 91)

- At closed throttle, the accelerator opening is less than 1/8 condition.
- At half throttle, the accelerator opening is 4/8 of the full opening.

Engine model	VK45DE	
Throttle position	Vehicle speed [km/h (MPH)]	
	Lock-up "ON"	Lock-up "OFF"
Closed throttle	66 - 74 (41 - 46)	53 - 61 (33 - 38)
Half throttle	191 - 199 (119 - 124)	136 - 144 (85 - 89)

- At closed throttle, the accelerator opening is less than 1/8 condition.
- At half throttle, the accelerator opening is 4/8 of the full opening.

Vehicle Speed When Performing and Releasing Slip Lock-up

ACS002S5

2WD MODELS

Engine model	VQ35DE		
Throttle position	Gear position	Vehicle speed [km/h (MPH)]	
		Slip lock-up "ON"	Slip lock-up "OFF"
Closed throttle	4th	43 - 51 (27 - 32)	40 - 48 (25 - 30)
	5th	51 - 59 (32 - 37)	48 - 56 (30 - 35)

- At closed throttle, the accelerator opening is less than 1/8 condition.

AWD MODELS

Engine model	VQ35DE		
Throttle position	Gear position	Vehicle speed [km/h (MPH)]	
		Slip lock-up "ON"	Slip lock-up "OFF"
Closed throttle	4th	40 - 48 (25 - 30)	36 - 44 (22 - 27)
	5th	48 - 56 (30 - 35)	45 - 53 (28 - 33)

- At closed throttle, the accelerator opening is less than 1/8 condition.

Engine model	VK45DE		
Throttle position	Gear position	Vehicle speed [km/h (MPH)]	
		Slip lock-up "ON"	Slip lock-up "OFF"
Closed throttle	4th	39 - 47 (24 - 29)	34 - 42 (21 - 26)
	5th	47 - 55 (29 - 34)	44 - 52 (27 - 32)

SERVICE DATA AND SPECIFICATIONS (SDS)

- At closed throttle, the accelerator opening is less than 1/8 condition.

Stall Speed

ACS002S6

Engine model	VQ35DE
Stall speed	2,650 - 2,950 rpm
Engine model	VK45DE
Stall speed	2,300 - 2,600 rpm

Line Pressure

ACS002S7

Engine speed	Line pressure [kPa (kg/cm ² , psi)]	
	R position	D, M positions
At idle speed	392 - 441 (4.0 - 4.5, 57 - 64)	373 - 422 (3.8 - 4.3, 54 - 61)
At stall speed	1,700 - 1,890 (17.3 - 19.3, 247 - 274)	1,310 - 1,500 (13.3 - 15.3, 190 - 218)

A/T Fluid Temperature Sensor

ACS008SZ

Name	Condition	CONSULT-II "DATA MONITOR" (Approx.) (V)	Resistance (Approx.) (kΩ)
A/T fluid temperature sensor 1	0°C (32°F)	2.2	15
	20°C (68°F)	1.8	6.5
	80°C (176°F)	0.6	0.9
A/T fluid temperature sensor 2	0°C (32°F)	2.2	10
	20°C (68°F)	1.7	4
	80°C (176°F)	0.45	0.5

Turbine Revolution Sensor

ACS008T0

Name	Condition	Data (Approx.)
Turbine revolution sensor 1	When running at 50 km/h (31 MPH) in 4th speed with the closed throttle position switch "OFF".	1.3 (kHz)
Turbine revolution sensor 2	When moving at 20 km/h (12 MPH) in 1st speed with the closed throttle position switch "OFF".	

Vehicle Speed Sensor A/T (Revolution Sensor)

ACS008T1

Name	Condition	Data (Approx.)
Revolution sensor	When moving at 20 km/h (12 MPH).	185 (Hz)

Reverse Brake

ACS008T2

Thickness of retaining plates	Thickness mm (in)	Part number*
	4.2 (0.165)	31667 90X14
4.4 (0.173)	31667 90X15	
4.6 (0.181)	31667 90X16	
4.8 (0.189)	31667 90X17	
5.0 (0.197)	31667 90X18	
5.2 (0.205)	31667 90X19	

*: Always check with the Parts Department for the latest parts information.

Total End Play

ACS008T3

Total end play mm (in)	0.25 - 0.55 (0.0098 - 0.0217)
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SERVICE DATA AND SPECIFICATIONS (SDS)

BEARING RACE FOR ADJUSTING TOTAL END PLAY

Thickness mm (in)	Part number*
1.2 (0.047)	31435 90X02
1.4 (0.055)	31435 90X03
1.6 (0.063)	31435 90X04
1.8 (0.071)	31435 90X05
2.0 (0.079)	31435 90X06

*: Always check with the Parts Department for the latest parts information.