

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

SECTION **AT**

AUTOMATIC TRANSAXLE

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 for A/T Assembly or TCM Replacement... 8</p> <p> Precautions 9</p> <p> Service Notice or Precautions 11</p> <p> Wiring Diagrams and Trouble Diagnosis 11</p> <p>PREPARATION 12</p> <p> Special Service Tools 12</p> <p> Commercial Service Tools 14</p> <p>A/T FLUID 15</p> <p> Changing A/T Fluid 15</p> <p> Checking A/T Fluid 15</p> <p>A/T CONTROL SYSTEM 16</p> <p> Cross-Sectional View 16</p> <p> Shift Mechanism 17</p> <p> TCM Function 34</p> <p> Input/Output Signal of TCM 35</p> <p> CAN Communication 35</p> <p> Line Pressure Control 36</p> <p> Shift Control 36</p> <p> Lock-Up Control 38</p> <p>ON BOARD DIAGNOSTIC (OBD) SYSTEM 40</p> <p> Introduction 40</p> <p> OBD-II Function for A/T System 40</p> <p> One or Two Trip Detection Logic of OBD-II 40</p> <p> OBD-II Diagnostic Trouble Code (DTC) 40</p> <p> Malfunction Indicator Lamp (MIL) 43</p> <p>TROUBLE DIAGNOSIS 44</p> <p> DTC Inspection Priority Chart 44</p> <p> Fail-Safe 44</p> <p> How To Perform Trouble Diagnosis For Quick and Accurate Repair 47</p> <p> A/T Electrical Parts Location 52</p> | <p> Circuit Diagram 53</p> <p> Inspections Before Trouble Diagnosis 54</p> <p> Check Before Engine is Started 58</p> <p> Check at Idle 58</p> <p> Cruise Test - Part 1 60</p> <p> Cruise Test - Part 2 61</p> <p> Cruise Test - Part 3 62</p> <p> Shift Schedule 63</p> <p> Symptom Chart 64</p> <p> TCM Input/Output Signal Reference Values 71</p> <p> CONSULT-II Function (TCM) 74</p> <p> Diagnostic Procedure Without CONSULT-II 80</p> <p>DTC U1000 CAN COMMUNICATION LINE 83</p> <p> Description 83</p> <p> On Board Diagnosis Logic 83</p> <p> Possible Cause 83</p> <p> DTC Confirmation Procedure 83</p> <p> Wiring Diagram — AT — CAN 84</p> <p> Diagnostic Procedure 85</p> <p>DTC P0500 VEHICLE SPEED SENSOR MTR 86</p> <p> Description 86</p> <p> On Board Diagnosis Logic 86</p> <p> Possible Cause 86</p> <p> DTC Confirmation Procedure 86</p> <p> Diagnostic Procedure 87</p> <p>DTC P0613 TCM PROCESSOR 88</p> <p> Description 88</p> <p> On Board Diagnosis Logic 88</p> <p> Possible Cause 88</p> <p> DTC Confirmation Procedure 88</p> <p> Diagnostic Procedure 89</p> <p>DTC P0705 PARK/NEUTRAL POSITION SWITCH.. 90</p> <p> Description 90</p> <p> On Board Diagnosis Logic 90</p> <p> Possible Cause 90</p> <p> DTC Confirmation Procedure 90</p> <p> Wiring Diagram — AT — PNP/SW 91</p> <p> Diagnostic Procedure 92</p> <p> Component Inspection 94</p> <p>DTC P0710 A/T FLUID TEMPERATURE SENSOR</p> |
|--|--|

| | | | |
|--|------------|--|------------|
| CIRCUIT | 95 | Possible Cause | 124 |
| Description | 95 | DTC Confirmation Procedure | 124 |
| On Board Diagnosis Logic | 95 | Wiring Diagram — AT — 3RDSIG | 126 |
| Possible Cause | 95 | Diagnostic Procedure | 128 |
| DTC Confirmation Procedure | 95 | DTC P0734 A/T 4TH GEAR FUNCTION | 130 |
| Wiring Diagram — AT — FTS | 96 | Description | 130 |
| Diagnostic Procedure | 97 | On Board Diagnosis Logic | 130 |
| Component Inspection | 99 | Possible Cause | 130 |
| DTC P0711 FLUID TEMPERATURE SENSOR PER- | | DTC Confirmation Procedure | 130 |
| FORMANCE | 100 | Wiring Diagram — AT — 4THSIG | 132 |
| Description | 100 | Diagnostic Procedure | 133 |
| On Board Diagnosis Logic | 100 | DTC P0735 A/T 5TH GEAR FUNCTION | 135 |
| Possible Cause | 100 | Description | 135 |
| DTC Confirmation Procedure | 100 | On Board Diagnosis Logic | 135 |
| Wiring Diagram — AT — FTSP | 101 | Possible Cause | 135 |
| Diagnostic Procedure | 102 | DTC Confirmation Procedure | 135 |
| Component Inspection | 104 | Wiring Diagram — AT — 5THSIG | 137 |
| DTC P0717 TURBINE REVOLUTION SENSOR CIR- | | Diagnostic Procedure | 139 |
| CUIT | 105 | DTC P0744 A/T TCC S/V FUNCTION (LOCK-UP) | 141 |
| Description | 105 | Description | 141 |
| On Board Diagnosis Logic | 105 | On Board Diagnosis Logic | 141 |
| Possible Cause | 105 | Possible Cause | 141 |
| DTC Confirmation Procedure | 105 | DTC Confirmation Procedure | 141 |
| Wiring Diagram — AT — TRSC | 106 | Wiring Diagram — AT — TCCSIG | 142 |
| Diagnostic Procedure | 107 | Diagnostic Procedure | 143 |
| Component Inspection | 108 | DTC P0745 PRESSURE CONTROL SOLENOID | |
| DTC P0722 VEHICLE SPEED SENSOR A/T (REV- | | VALVE A (LINE PRESSURE) | 144 |
| OLUTION SENSOR) CIRCUIT | 109 | Description | 144 |
| Description | 109 | On Board Diagnosis Logic | 144 |
| On Board Diagnosis Logic | 109 | Possible Cause | 144 |
| Possible Cause | 109 | DTC Confirmation Procedure | 144 |
| DTC Confirmation Procedure | 109 | Wiring Diagram — AT — PC/A | 145 |
| Wiring Diagram — AT — VSSATC | 110 | Diagnostic Procedure | 146 |
| Diagnostic Procedure | 111 | Component Inspection | 148 |
| Component Inspection | 112 | DTC P0750 SHIFT SOLENOID VALVE A | 149 |
| DTC P0726 ENGINE SPEED INPUT CIRCUIT PER- | | Description | 149 |
| FORMANCE | 113 | On Board Diagnosis Logic | 149 |
| Description | 113 | Possible Cause | 149 |
| On Board Diagnosis Logic | 113 | DTC Confirmation Procedure | 149 |
| Possible Cause | 113 | Wiring Diagram — AT — SSV/A | 150 |
| DTC Confirmation Procedure | 113 | Diagnostic Procedure | 151 |
| Diagnostic Procedure | 113 | Component Inspection | 153 |
| DTC P0731 A/T 1ST GEAR FUNCTION | 115 | DTC P0755 SHIFT SOLENOID VALVE B | 154 |
| Description | 115 | Description | 154 |
| On Board Diagnosis Logic | 115 | On Board Diagnosis Logic | 154 |
| Possible Cause | 115 | Possible Cause | 154 |
| DTC Confirmation Procedure | 115 | DTC Confirmation Procedure | 154 |
| Wiring Diagram — AT — 1STSIG | 116 | Wiring Diagram — AT — SSV/B | 155 |
| Diagnostic Procedure | 117 | Diagnostic Procedure | 156 |
| DTC P0732 A/T 2ND GEAR FUNCTION | 118 | Component Inspection | 158 |
| Description | 118 | DTC P0760 SHIFT SOLENOID VALVE C | 159 |
| On Board Diagnosis Logic | 118 | Description | 159 |
| Possible Cause | 118 | On Board Diagnosis Logic | 159 |
| DTC Confirmation Procedure | 118 | Possible Cause | 159 |
| Wiring Diagram — AT — 2NDSIG | 120 | DTC Confirmation Procedure | 159 |
| Diagnostic Procedure | 122 | Wiring Diagram — AT — SSV/C | 160 |
| DTC P0733 A/T 3RD GEAR FUNCTION | 124 | Diagnostic Procedure | 161 |
| Description | 124 | Component Inspection | 163 |
| On Board Diagnosis Logic | 124 | DTC P0762 SHIFT SOLENOID VALVE C STUCK ON | 164 |

| | | | | |
|---|------------|---|------------|----|
| Description | 164 | CONSULT-II Reference Value in Data Monitor Mode | 198 | A |
| On Board Diagnosis Logic | 164 | On Board Diagnosis Logic | 198 | |
| Possible Cause | 164 | Possible Cause | 198 | |
| DTC Confirmation Procedure | 164 | DTC Confirmation Procedure | 198 | B |
| Wiring Diagram — AT — SSV/CS | 165 | Wiring Diagram — AT — MMSW | 199 | |
| Diagnostic Procedure | 166 | Diagnostic Procedure | 201 | |
| Component Inspection | 168 | Component Inspection | 203 | |
| DTC P0765 SHIFT SOLENOID VALVE D | 169 | Position Indicator | 203 | AT |
| Description | 169 | DTC P0882 TCM POWER INPUT SIGNAL | 204 | |
| On Board Diagnosis Logic | 169 | Description | 204 | |
| Possible Cause | 169 | On Board Diagnosis Logic | 204 | D |
| DTC Confirmation Procedure | 169 | Possible Cause | 204 | |
| Wiring Diagram — AT — SSV/D | 170 | DTC Confirmation Procedure | 204 | |
| Diagnostic Procedure | 171 | Wiring Diagram — AT — PWR/IN | 205 | E |
| Component Inspection | 173 | Diagnostic Procedure | 207 | |
| DTC P0770 SHIFT SOLENOID VALVE E | 174 | Component Inspection | 208 | |
| Description | 174 | DTC P1726 ELECTRIC THROTTLE CONTROL SYSTEM | 209 | F |
| On Board Diagnosis Logic | 174 | Description | 209 | |
| Possible Cause | 174 | TROUBLE DIAGNOSIS FOR SYMPTOMS | 210 | G |
| DTC Confirmation Procedure | 174 | A/T CHECK Indicator Lamp does not come on ... | 210 | |
| Wiring Diagram — AT — SSV/E | 175 | Engine Cannot Be Started In “P” or “N” Position . | 212 | |
| Diagnostic Procedure | 176 | In “P” Position, Vehicle Moves When Pushed | 212 | |
| Component Inspection | 178 | In “N” Position, Vehicle Moves | 213 | H |
| DTC P0775 PRESSURE CONTROL SOLENOID VALVE B (SHIFT PRESSURE) | 179 | Large Shock (“N” to “D” Position) | 214 | |
| Description | 179 | Vehicle Does Not Creep Backward In “R” Position | 215 | |
| On Board Diagnosis Logic | 179 | Vehicle Does Not Creep Forward In “D” Position . | 216 | I |
| Possible Cause | 179 | Vehicle Cannot Be Started From D1 | 217 | |
| DTC Confirmation Procedure | 179 | A/T Does Not Shift: D1 → D2 | 217 | J |
| Wiring Diagram — AT — PC/B | 180 | A/T Does Not Shift: D2 → D3 | 218 | |
| Diagnostic Procedure | 181 | A/T Does Not Shift: D3 → D4 | 219 | |
| Component Inspection | 183 | A/T Does Not Shift: D4 → D5 | 220 | |
| DTC P0780 SHIFT | 184 | A/T Does Not Perform Lock-up | 221 | K |
| Description | 184 | A/T Does Not Hold Lock-up Condition | 222 | |
| On Board Diagnosis Logic | 184 | Lock-up Is Not Released | 223 | |
| Possible Cause | 184 | Cannot Be Changed to Manual Mode | 224 | L |
| DTC Confirmation Procedure | 184 | A/T Does Not Shift: 5th gear → 4th gear | 225 | |
| Wiring Diagram — AT — SFTFNC | 185 | A/T Does Not Shift: 4th gear → 3rd gear | 226 | |
| Diagnostic Procedure | 187 | A/T Does Not Shift: 3rd gear → 2nd gear | 226 | |
| DTC P0795 PRESSURE CONTROL SOLENOID VALVE C (TCC AND SHIFT PRESSURE) | 188 | A/T Does Not Shift: 2nd gear → 1st gear | 227 | M |
| Description | 188 | Vehicle Does Not Decelerate By Engine Brake ... | 228 | |
| On Board Diagnosis Logic | 188 | TCM Self-diagnosis Does Not Activate | 229 | |
| Possible Cause | 188 | SHIFT CONTROL SYSTEM | 231 | |
| DTC Confirmation Procedure | 188 | Control Device | 231 | |
| Wiring Diagram — AT — PC/C | 189 | Control Cable | 232 | |
| Diagnostic Procedure | 190 | A/T SHIFT LOCK SYSTEM | 233 | |
| Component Inspection | 192 | Description | 233 | |
| DTC P0797 PRESSURE CONTROL SOLENOID VALVE C STUCK ON | 193 | Shift Lock System Electrical Parts Location | 233 | |
| Description | 193 | Wiring Diagram — AT — SHIFT | 234 | |
| On Board Diagnosis Logic | 193 | Shift Lock Control Unit Reference Values | 235 | |
| Possible Cause | 193 | Component Inspection | 236 | |
| DTC Confirmation Procedure | 193 | ON-VEHICLE SERVICE | 238 | |
| Wiring Diagram — AT — PC/CS | 194 | Revolution Sensor Replacement | 238 | |
| Diagnostic Procedure | 195 | Turbine Revolution Sensor Replacement | 238 | |
| Component Inspection | 197 | Park/Neutral Position (PNP) Switch Adjustment . | 238 | |
| DTC P0826 MANUAL MODE SWITCH CIRCUIT . | 198 | ATF Cooler | 239 | |
| Description | 198 | ATF Cooler Valve | 239 | |
| | | Control Cable Adjustment | 240 | |

| | | | |
|---|------------|--|------------|
| Side cover | 241 | ASSEMBLY | 288 |
| Control Valve Assembly | 241 | Assembly (1) | 288 |
| Terminal cord assembly | 241 | Adjustment | 295 |
| TRANSAXLE ASSEMBLY | 243 | Assembly (2) | 296 |
| Removal and Installation | 243 | SERVICE DATA AND SPECIFICATIONS (SDS) ... | 312 |
| INSPECTION AFTER REMOVAL | 243 | General Specifications | 312 |
| OVERHAUL | 245 | Shift Schedule | 312 |
| Components | 245 | Stall Speed | 313 |
| Locations of Needle Bearings, Bearing Races and | | Line Pressure | 313 |
| Thrust Washers | 251 | Time Lag | 313 |
| DISASSEMBLY | 252 | Shift Solenoid Valves | 313 |
| Disassembly | 252 | Solenoid Valves | 314 |
| REPAIR FOR COMPONENT PARTS | 272 | Clutch and Brakes | 314 |
| Oil Pump, 2nd Coast Brake & 2nd Brake | 272 | Final Drive | 315 |
| One-Way Clutch Outer Race Sub Assembly & 2nd | | A/T Fluid Temperature Sensor | 316 |
| Coast Brake Hub & One-Way Clutch No.1 | 278 | Turbine Revolution Sensor | 316 |
| Transaxle Case Cover & B5 Brake | 280 | Revolution Sensor | 316 |
| Differential Gear Assembly | 285 | | |

INDEX FOR DTC

INDEX FOR DTC

PFP:00024

Alphabetical Index

ECS00A0H

NOTE:

If DTC U1000 is displayed with other DTCs, first perform the trouble diagnosis for DTC U1000. Refer to [AT-83](#).

| Items (CONSULT-II screen terms) | DTC | | Reference page |
|------------------------------------|---------------------|--|------------------------|
| | OBD-II | Except OBD-II | |
| | CONSULT-II GST*1 | CONSULT-II only "TRANSMIS- SION" | |
| A/T 1ST GR FNCTN | P0731 | P0731 | AT-115 |
| A/T 2ND GR FNCTN | P0732 | P0732 | AT-118 |
| A/T 3RD GR FNCTN | P0733 | P0733 | AT-124 |
| A/T 4TH GR FNCTN | P0734 | P0734 | AT-130 |
| A/T 5TH GR FNCTN | P0735 | P0735 | AT-135 |
| A/T TCC S/V FNCTN | P0744 | P0744 | AT-141 |
| ATF TEMP SEN/CIRC | P0710 | P0710 | AT-95 |
| CAN COMM CIRCUIT | U1000 | U1000 | AT-83 |
| ELEC TH CONTROL | — | P1726 | AT-209 |
| ENG SPD INP PERFOR | — | P0726 | AT-113 |
| FLUID TEMP SEN | P0711 | P0711 | AT-100 |
| MANUAL MODE SWITCH | — | P0826 | AT-198 |
| PC SOL A(L/PRESS) | P0745 | P0745 | AT-144 |
| PC SOL B(SFT/PRS) | P0775 | P0775 | AT-179 |
| PC SOL C(TCC&SFT) | P0795 | P0795 | AT-188 |
| PC SOL C STC ON | P0797 | P0797 | AT-193 |
| PNP SW/CIRC | P0705 | P0705 | AT-90 |
| SHIFT | P0780 | P0780 | AT-184 |
| SHIFT SOL A | P0750 | P0750 | AT-149 |
| SHIFT SOL B | P0755 | P0755 | AT-154 |
| SHIFT SOL C | P0760 | P0760 | AT-159 |
| SHIFT SOL D | P0765 | P0765 | AT-169 |
| SHIFT SOL E | P0770 | P0770 | AT-174 |
| SFT SOL C STUCK ON | P0762 | P0762 | AT-164 |
| TCM POWER INPT SIG | P0882 | P0882 | AT-204 |
| TCM PROCESSOR | — | P0613 | AT-88 |
| TURBINE SENSOR | P0717 | P0717 | AT-105 |
| VEH SPD SE/CIR-MTR | — | P0500 | AT-86 |
| VHCL SPEED SEN-A/T | P0722 | P0722 | AT-109 |

*1: These numbers are prescribed by SAE J2012.

INDEX FOR DTC

ECS00A01

DTC No. Index

NOTE:

If DTC U1000 is displayed with other DTCs, first perform the trouble diagnosis for DTC U1000. Refer to [AT-83](#).

| DTC | | Items (CONSULT-II screen terms) | Reference page |
|---------------------|--|------------------------------------|------------------------|
| OBD-II | Except OBD-II | | |
| CONSULT-II GST*1 | CONSULT-II only "TRANSMIS- SION" | | |
| — | P0500 | VEH SPD SE/CIR-MTR | AT-86 |
| — | P0613 | TCM PROCESSOR | AT-88 |
| P0705 | P0705 | PNP SW/CIRC | AT-90 |
| P0710 | P0710 | ATF TEMP SEN/CIRC | AT-95 |
| P0711 | P0711 | FLUID TEMP SEN | AT-100 |
| P0717 | P0717 | TURBINE SENSOR | AT-105 |
| P0722 | P0722 | VHCL SPEED SEN-A/T | AT-109 |
| — | P0726 | ENG SPD INP PERFOR | AT-113 |
| P0731 | P0731 | A/T 1ST GR FNCTN | AT-115 |
| P0732 | P0732 | A/T 2ND GR FNCTN | AT-118 |
| P0733 | P0733 | A/T 3RD GR FNCTN | AT-124 |
| P0734 | P0734 | A/T 4TH GR FNCTN | AT-130 |
| P0735 | P0735 | A/T 5TH GR FNCTN | AT-135 |
| P0744 | P0744 | A/T TCC S/V FNCTN | AT-141 |
| P0745 | P0745 | PC SOL A(L/PRESS) | AT-144 |
| P0750 | P0750 | SHIFT SOL A | AT-149 |
| P0755 | P0755 | SHIFT SOL B | AT-154 |
| P0760 | P0760 | SHIFT SOL C | AT-159 |
| P0762 | P0762 | SFT SOL C STUCK ON | AT-164 |
| P0765 | P0765 | SHIFT SOL D | AT-169 |
| P0770 | P0770 | SHIFT SOL E | AT-174 |
| P0775 | P0775 | PC SOL B(SFT/PRS) | AT-179 |
| P0780 | P0780 | SHIFT | AT-184 |
| P0795 | P0795 | PC SOL C(TCC&SFT) | AT-188 |
| P0797 | P0797 | PC SOL C STC ON | AT-193 |
| — | P0826 | MANUAL MODE SWITCH | AT-198 |
| P0882 | P0882 | TCM POWER INPT SIG | AT-204 |
| — | P1726 | ELEC TH CONTROL | AT-209 |
| U1000 | U1000 | CAN COMM CIRCUIT | AT-83 |

*1: These numbers are prescribed by SAE J2012.

PRECAUTIONS

PRECAUTIONS

PF0:00001

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

ECS00A0J

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

ECS00A0K

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

ECS00A0L

Precautions for A/T Assembly or TCM Replacement

- When replacing A/T assembly or TCM, refer to the pattern table below and initialize TCM if necessary.

TCM INITIALIZATION PATTERNS

| TCM | A/T assembly | Erasing EEPROM in TCM | Remarks |
|-----------------------|------------------------------|-----------------------|--|
| Replaced with new one | Not replaced | Not required | Not required because the EEPROM in TCM is in the default state. |
| | Replaced with new or old one | | |
| Not replaced | Replaced with new or old one | Required | Required because data cannot be conformed to previous data written in the EEPROM in TCM. |
| Replaced with old one | Not replaced | | |
| | Replaced with new or old one | | |

NOTE:

"Old one" is the TCM or A/T assembly that has been used on other vehicles.

METHOD FOR TCM INITIALIZATION

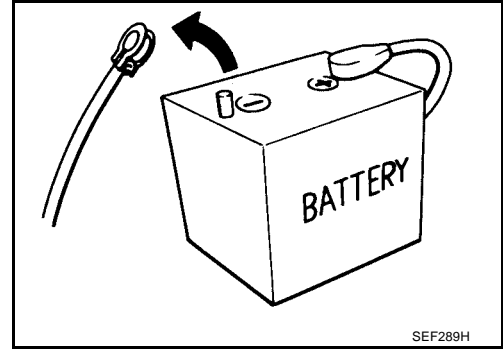
1. Perform "CONSULT-II SETTING PROCEDURE". Refer to [AT-75, "CONSULT-II SETTING PROCEDURE"](#).
2. Set the vehicle following the items listed below.
 - Ignition switch "ON".
 - Selector lever "P" or "N" position.
 - Engine not running.
 - Vehicle speed is 0 km/h (0 MPH).
 - Ignition voltage is more than 10.5V.
 - Malfunction was not detected.
3. Touch "WORK SUPPORT".
4. Touch "INITIALIZATION".
5. Initialize TCM following the direction in display.

PRECAUTIONS

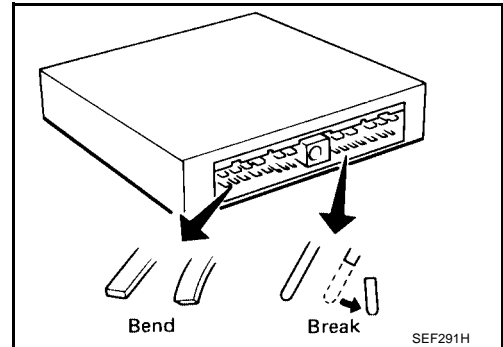
Precautions

ECS00A0M

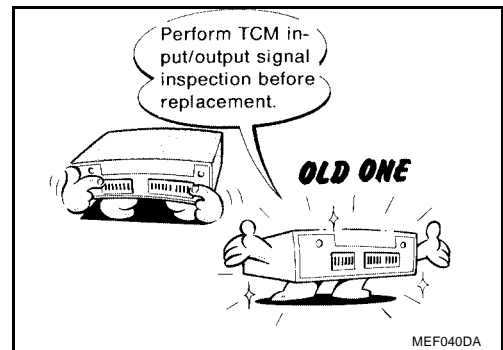
- Before connecting or disconnecting the TCM harness connector, turn ignition switch "OFF" and disconnect negative battery cable. Because battery voltage is applied to TCM even if ignition switch is turned "OFF".



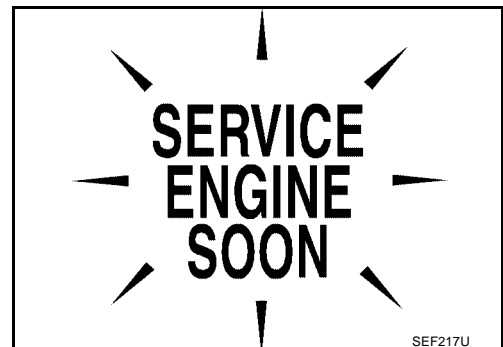
- When connecting or disconnecting pin connectors into or from TCM, take care not to damage pin terminals (bend or break). Make sure that there are not any bends or breaks on TCM pin terminal, when connecting pin connectors.



- Before replacing TCM, perform TCM input/output signal inspection and make sure whether TCM functions properly or not. [AT-72, "TCM INSPECTION TABLE"](#).



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



- Always use the specified brand of A/T fluid. Refer to [MA-9, "Fluids and Lubricants"](#).
- Use paper rags not cloth rags during work.
- After replacing the A/T fluid, dispose of the waste oil using the methods prescribed by law, ordinance, etc.
- Before proceeding with disassembly, thoroughly clean the outside of the transaxle. It is important to prevent the internal parts from becoming contaminated by dirt or other foreign matter.
- Disassembly should be done in a clean work area.

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

PRECAUTIONS

- Use lint-free cloth or towels for wiping parts clean. Common shop rags can leave fibers that could interfere with the operation of the transaxle.
- 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 transaxle 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 transaxle 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-15, "Changing A/T Fluid"](#) , [AT-15, "Checking A/T Fluid"](#) .

PRECAUTIONS

Service Notice or Precautions

ECS00A0N

ATF COOLER SERVICE

If A/T fluid contains frictional material (clutches, bands, etc.), or if an A/T is repaired, overhauled, or replaced, inspect and clean the A/T oil cooler mounted in the radiator or replace the radiator. Flush cooler lines using cleaning solvent and compressed air after repair. Check Service Bulletins for latest A/T oil cooler cleaning procedure. For radiator replacement, refer to [CO-12, "RADIATOR"](#) .

OBD-II SELF-DIAGNOSIS

- 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-75, "SELF-DIAG RESULT 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-41, "HOW TO ERASE DTC"](#) to complete the repair and avoid unnecessary blinking of the MIL.
- For details of OBD-II, refer to [EC-49, "ON BOARD DIAGNOSTIC \(OBD\) SYSTEM"](#) .
- **Certain systems and components, especially those related to OBD, may use the new style slide-locking type harness connector. For description and how to disconnect, refer to [PG-62, "HARNESS CONNECTOR"](#) .**

Wiring Diagrams and Trouble Diagnosis

ECS00A00

When you read wiring diagrams, refer to the following:

- [GI-13, "How to Read Wiring Diagrams"](#).
- [PG-4, "POWER SUPPLY ROUTING CIRCUIT"](#) for power distribution circuit.

When you perform trouble diagnosis, refer to the following:

- [GI-9, "How to Follow Trouble Diagnoses"](#).
- [GI-25, "How to Perform Efficient Diagnosis for an Electrical Incident"](#).

PREPARATION

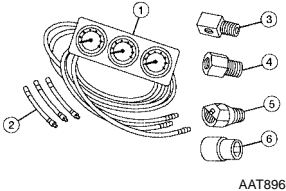
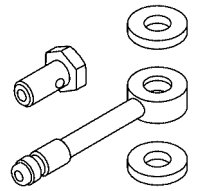
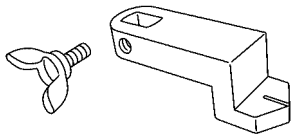
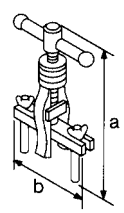
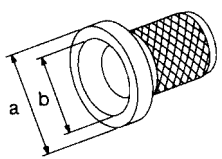
PFP:00002

ECS00A0P

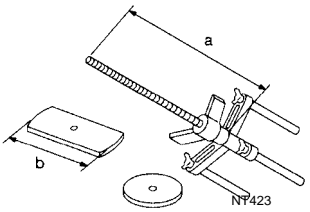
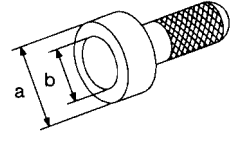
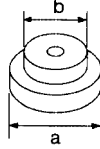
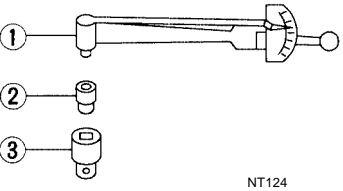
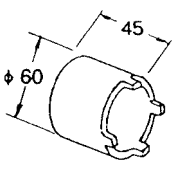
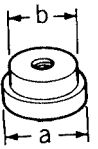
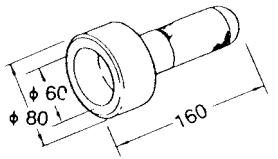
PREPARATION

Special Service Tools

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

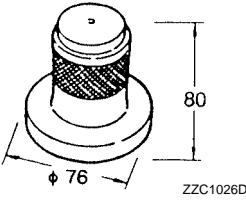
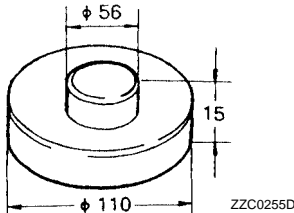
| Tool number (Kent-Moore No.) Tool name | Description |
|--|---|
| <p>— (J-34301-C) Oil pressure gauge set</p> <p>1 — (J-34301-1) Oil pressure gauge</p> <p>2 — (J-34301-2) Hoses</p> <p>3 — (J-34298) Adapter</p> <p>4 — (J-34282-2) Adapter</p> <p>5 — (790-301-1230-A) 60° Adapter</p> <p>6 — (J-34301-15) Square socket</p> |  <p style="text-align: right;">AAT896</p> <p>Measuring line pressure</p> |
| <p>KV311J0010 (J-45542) Adapter</p> |  <p style="text-align: right;">SCIA3019E</p> <p>Measuring line pressure</p> |
| <p>KV991J0060 (J-45404) Alignment tool</p> |  <p style="text-align: right;">SCIA3018E</p> <p>Adjusting park/neutral position (PNP) switch</p> |
| <p>ST33290001 (J-34286) Puller</p> |  <p style="text-align: right;">NT414</p> <ul style="list-style-type: none"> ● Removing oil pump assembly ● Removing thrust roller bearing <p>a: 250 mm (9.84 in) b: 160 mm (6.30 in)</p> |
| <p>ST33400001 (J-26082) Drift</p> |  <p style="text-align: right;">NT086</p> <p>Installing differential side oil seals</p> <p>a: 60 mm (2.36 in) dia. b: 74 mm (1.85 in) dia.</p> |

PREPARATION

| Tool number (Kent-Moore No.) Tool name | Description |
|--|--|
| KV31102400 (J-34285 and J-34285-87) Clutch spring compressor  | Removing and installing return springs a: 320 mm (12.60 in) b: 174 mm (6.85 in) |
| ST30720000 (J-25405) Drift  | <ul style="list-style-type: none"> ● Installing oil seal ● Installing tapered roller bearing a: 77 mm (3.03 in) dia. b: 55.5 mm (2.185 in) dia. |
| ST30612000 (J-25742-2) Drift  | Removing outer race and adjust shim a: 62 mm (2.44 in) dia. b: 40 mm (1.57 in) dia. |
| ST3127S000 (J-25765-A) Preload gauge 1 GG91030000 (J-25765-A) Torque wrench 2 HT62940000 (—) Socket adapter 3 HT62900000 (—) Socket adapter | Checking differential side bearing preload  |
| KV40102500 (J-28815) Drift  | |
| ST33061000 (J-8107-2) Drift  <p>a: ϕ 38.0mm b: ϕ 28.5mm</p> | <ul style="list-style-type: none"> ● Removing tapered roller bearing ● Removing manual valve oil seal |
| KV38100500 (—) Drift  | Installing tapered roller bearing |

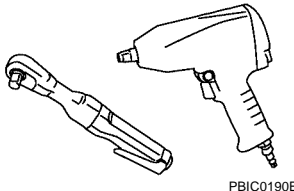
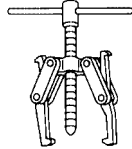
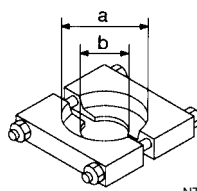
A
 B
 AT
 D
 E
 F
 G
 H
 I
 J
 K
 L
 M

PREPARATION

| Tool number (Kent-Moore No.) Tool name | Description |
|---|---|
| KV40100621 (J-25273) Drift | Installing outer race and adjust shim |
|  <p style="text-align: center;">ZCC1026D</p> | |
| ST30022000 (—) Drift |  <p style="text-align: center;">ZCC0255D</p> |

Commercial Service Tools

ECS00A0Q

| Tool name | Description |
|---|---|
| Power tool | Loosening bolts and nuts |
|  <p style="text-align: center;">PBIC0190E</p> | |
| Puller | Removing tapered roller bearing a: 60 mm (2.36 in) dia. b: 35 mm (1.38 in) dia. |
|  <p style="text-align: center;">NT077</p> | |
| Puller | |
|  <p style="text-align: center;">NT411</p> | |

A/T FLUID

A/T FLUID

PFK:KLE40

Changing A/T Fluid

A
ECS00A0R

Refer to [MA-22, "Changing A/T Fluid"](#) .

Checking A/T Fluid

B
ECS00A0S

Refer to [MA-21, "Checking A/T Fluid"](#) .

AT

D

E

F

G

H

I

J

K

L

M

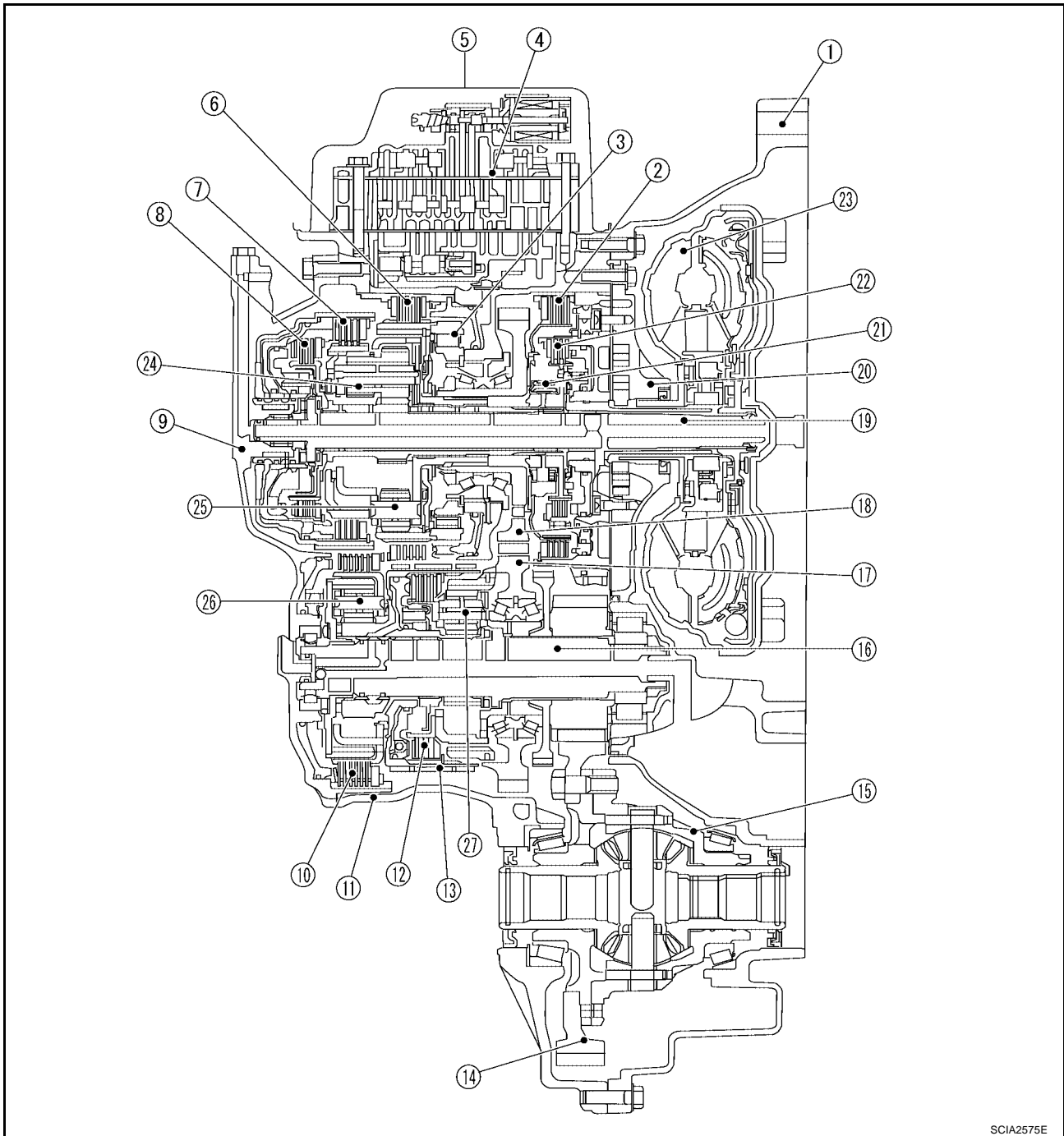
A/T CONTROL SYSTEM

A/T CONTROL SYSTEM

PFP:31036

Cross-Sectional View

ECS00A0T



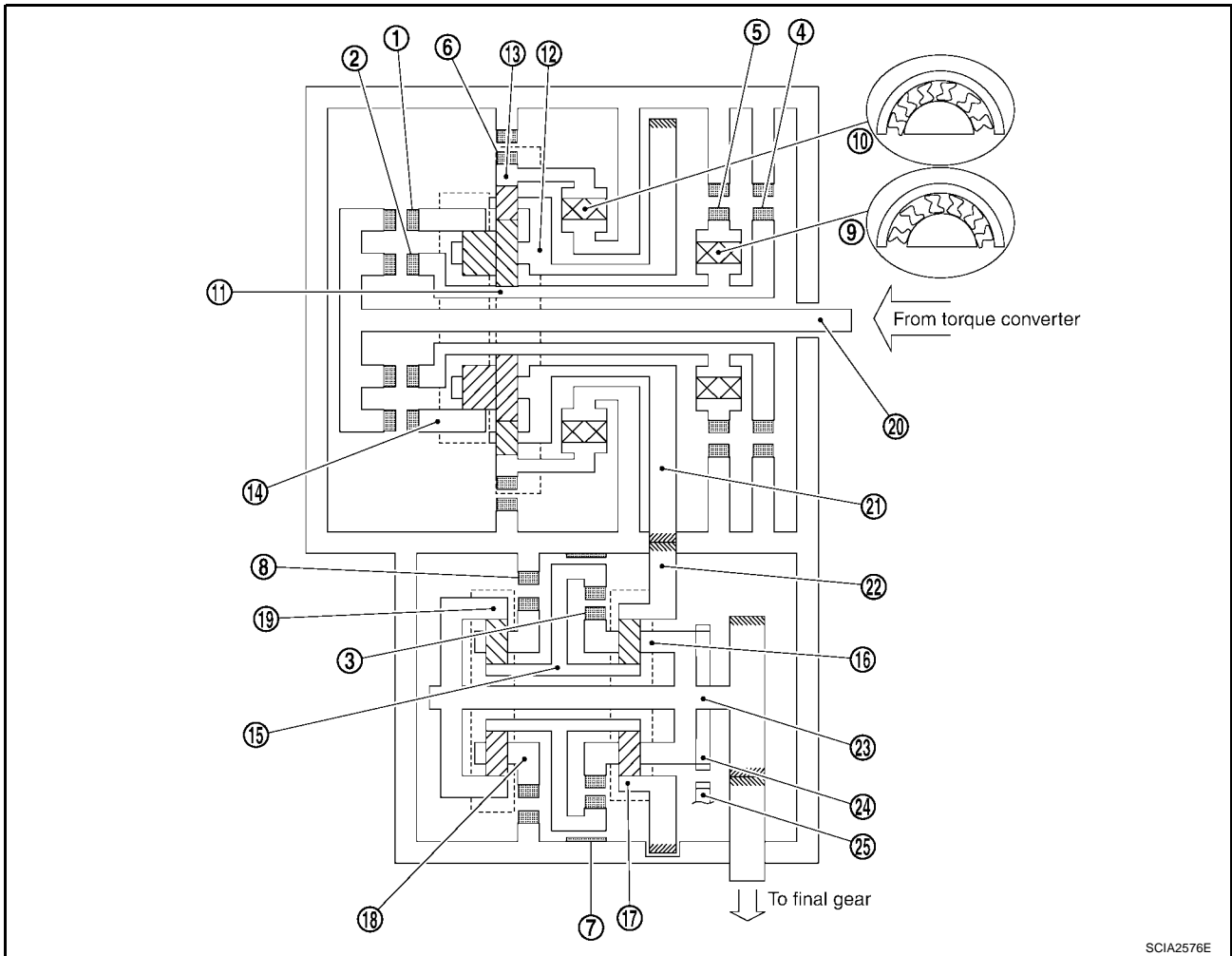
SCIA2575E

- | | | |
|-------------------------------|-----------------------------|------------------------------|
| 1. Converter housing | 2. 2nd brake | 3. One-way clutch No. 2 |
| 4. Control valve assembly | 5. Side cover | 6. 1st and reverse brake |
| 7. Forward clutch | 8. Direct clutch | 9. Transaxle case cover |
| 10. B5 brake | 11. Transaxle case | 12. U/D clutch |
| 13. U/D brake | 14. Final gear | 15. Differential case |
| 16. Output shaft | 17. Counter driven gear | 18. Counter drive gear |
| 19. Input shaft | 20. Oil pump | 21. One-way clutch No. 1 |
| 22. 2nd coast brake | 23. Torque converter | 24. Main rear planetary gear |
| 25. Main front planetary gear | 26. U/D rear planetary gear | 27. U/D front planetary gear |

A/T CONTROL SYSTEM

ECS00A0U

Shift Mechanism CONSTRUCTION



- | | | |
|---------------------------------|-----------------------------|--------------------------------|
| 1. Forward clutch | 2. Direct clutch | 3. U/D clutch |
| 4. 2nd coast brake | 5. 2nd brake | 6. 1st and reverse brake |
| 7. U/D brake | 8. B5 brake | 9. One-way clutch No. 1 |
| 10. One-way clutch No. 2 | 11. Main sun gear | 12. Main planetary carrier |
| 13. Main front internal gear | 14. Main rear internal gear | 15. U/D sun gear |
| 16. U/D front planetary carrier | 17. U/D front internal gear | 18. U/D rear planetary carrier |
| 19. U/D rear internal gear | 20. Input shaft | 21. Counter drive gear |
| 22. Counter driven gear | 23. Output shaft | 24. Parking gear |
| 25. Parking pawl | | |

SCIA2576E

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

A/T CONTROL SYSTEM

FUNCTION OF CLUTCH AND BRAKE

| Clutch and brake components | Abbr. | Function |
|--------------------------------|-----------|---|
| Forward clutch 1 | F/C | Connect input shaft 20 to main rear internal gear 10 . |
| Direct clutch 2 | D/C | Connect input shaft 20 to main sun gear 11 . |
| U/D clutch 3 | U/D.C | Connect U/D sun gear 15 to U/D front planetary carrier 16 . |
| 2nd coast brake 4 | 2nd C/B | Lock main sun gear 11 . |
| 2nd brake 5 | 2nd/B | Lock counterclockwise rotation of main sun gear 11 . |
| 1st and reverse brake 6 | 1st & R/B | Lock main front internal gear 13 . |
| U/D brake 7 | U/D.B | Lock U/D sun gear 15 . |
| B5 brake 8 | B5/B | Lock U/D rear planetary carrier 18 . |
| One-way clutch No. 1 9 | O.C1 | Lock counterclockwise rotation of main sun gear 11 , when 2nd brake 5 operations. |
| One-way clutch No. 2 10 | O.C2 | Lock counterclockwise rotation of main front internal gear 13 . |

CLUTCH AND BAND CHART

| Shift position | Clutch | | | Brake | | | | | One-way clutch | | Remarks |
|----------------|-----------------|-----------------|-------------------|-------------------------|-------------------|--------------------------|-------------------|------------------|------------------|-------------------|---|
| | F/C 1 | D/C 2 | U/D.C 3 | 2nd C/ B 4 | 2nd/B 5 | 1st & R/B 6 | U/D.B 7 | B5/B 8 | O.C1 9 | O.C2 10 | |
| P | | | | | | | | ○ | | | PARK POSITION |
| R | | ○ | | | | ○ | | ○ | | | REVERSE POSITION |
| N | | | | | | | | ○ | | | NEUTRAL POSITION |
| D | 1st | ○ | | | | | | ○ | | ○ | Automatic shift 1 ↔ 2 ↔ 3 ↔ 4 ↔ 5 |
| | 1 ↔ 2 | ○ | | △ | △ | | | ○ | △ | △ | |
| | 2nd | ○ | | ○ | ○ | | | ○ | ○ | | |
| | 2 ↔ 3 | ○ | | ○ | ○ | | △ | △ | ○ | | |
| | 3rd | ○ | | ○ | ○ | | ○ | | ○ | | |
| | 3 ↔ 4 | ○ | | △ | ○ | ○ | △ | | ○ | | |
| | 4th | ○ | | ○ | ○ | ○ | | | ○ | | |
| | 4 ↔ 5 | ○ | △ | ○ | △ | ○ | | | △ | | |
| M5 | 5th | ○ | ○ | ○ | | ○ | | | | | Locks in 5th gear* |
| M4 | 4th | ○ | | ○ | ○ | ○ | | | ○ | | Locks in 4th gear* |
| M3 | 3rd | ○ | | | ○ | ○ | ○ | | ○ | | Locks in 3rd gear* |
| M2 | 2nd | ○ | | | ○ | ○ | | | ○ | | Locks in 2nd gear* |
| M1 | 1st | ○ | | | | | ○ | | | ○ | Locks in 1st gear* |

○: Operates

△: In transition between applied and released.

*: Except when automated up/down shift control and up/down shift permission control are activated. Refer to [AT-37, "MANUAL MODE"](#) .

A/T CONTROL SYSTEM

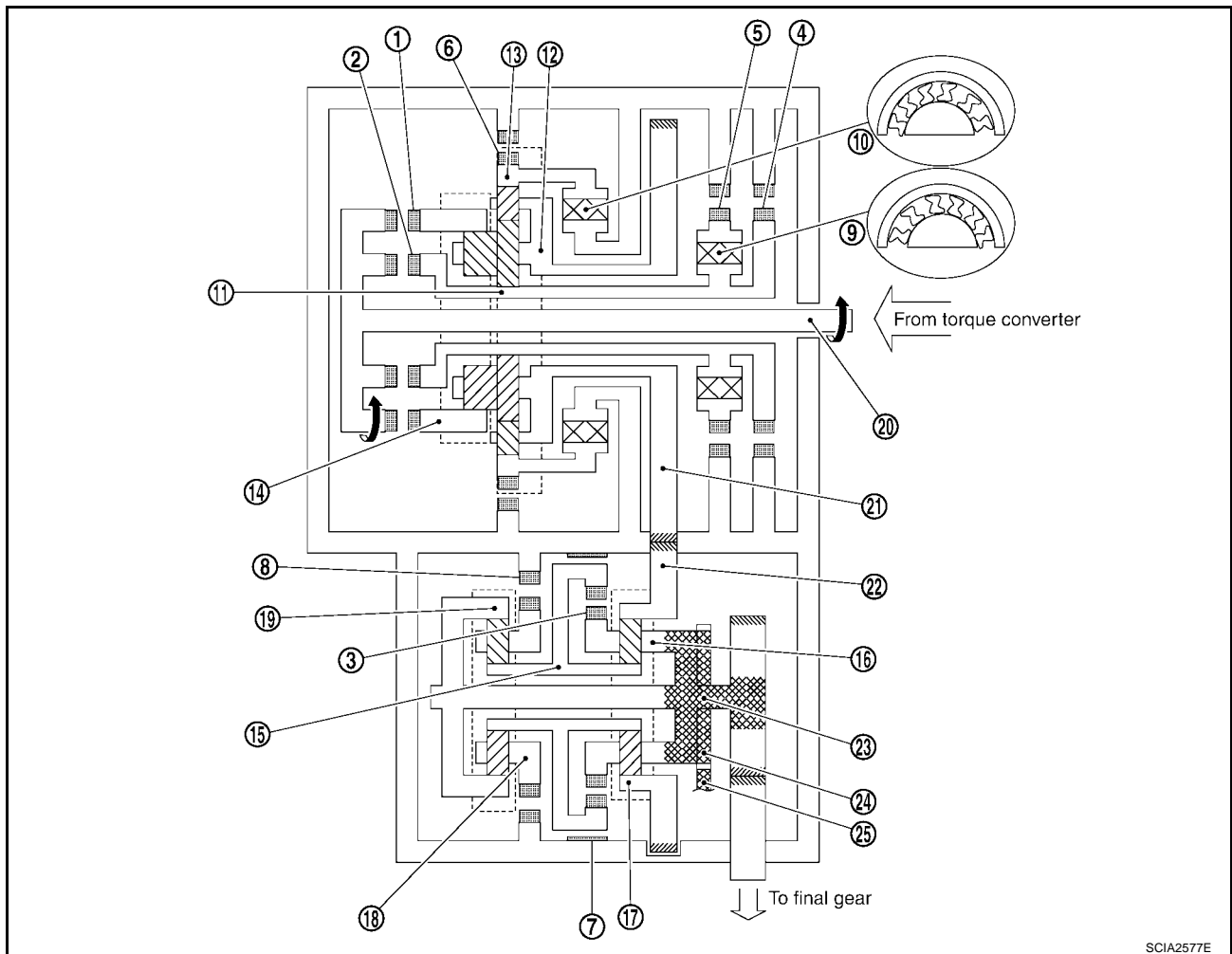
POWER TRANSMISSION

“N” position

Since both the forward clutch and the direct clutch 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 clutch and the direct clutch are released, so torque from the input shaft drive is not transmitted to the output shaft.
- The parking pole linked with the selector lever meshes with the parking gear and fastens the output shaft mechanically.



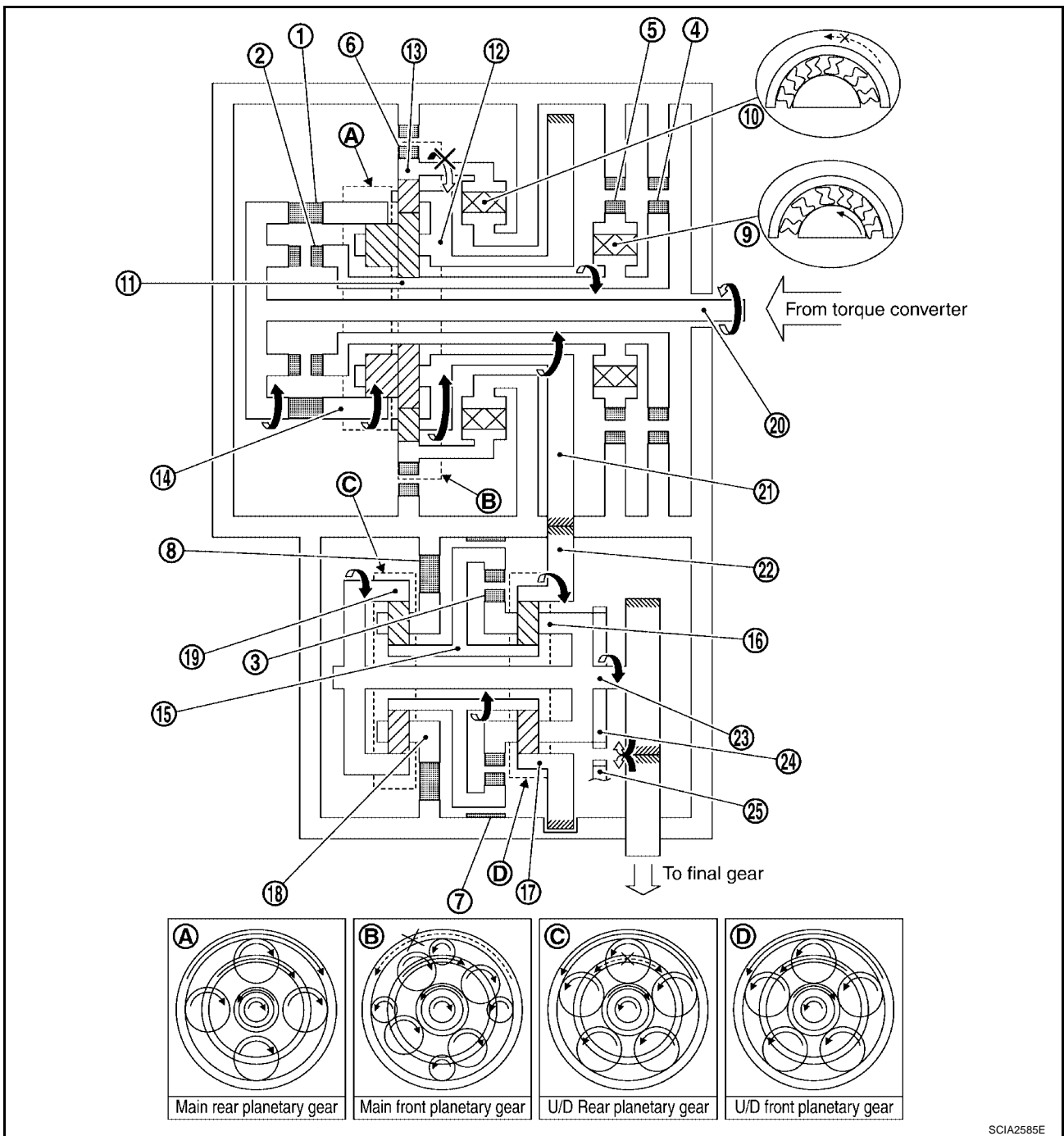
- | | | |
|---------------------------------|-----------------------------|--------------------------------|
| 1. Forward clutch | 2. Direct clutch | 3. U/D clutch |
| 4. 2nd coast brake | 5. 2nd brake | 6. 1st and reverse brake |
| 7. U/D brake | 8. B5 brake | 9. One-way clutch No. 1 |
| 10. One-way clutch No. 2 | 11. Main sun gear | 12. Main planetary carrier |
| 13. Main front internal gear | 14. Main rear internal gear | 15. U/D sun gear |
| 16. U/D front planetary carrier | 17. U/D front internal gear | 18. U/D rear planetary carrier |
| 19. U/D rear internal gear | 20. Input shaft | 21. Counter drive gear |
| 22. Counter driven gear | 23. Output shaft | 24. Parking gear |
| 25. Parking pawl | | |

A/T CONTROL SYSTEM

“D” position 1st gear

1. Input shaft rotates clockwise.
 2. Forward clutch operates. (Connect input shaft to main rear internal gear.)
 3. Main rear internal gear rotates clockwise.
 4. Main rear planetary pinion gear rotates itself clockwise.
 5. Main front large planetary pinion gear rotates itself clockwise for rear planetary pinion and one.
 6. Main front small planetary pinion gear rotates itself counterclockwise.
 7. Main front internal gear is going to rotates counterclockwise.
 8. One-way clutch No. 2 operates. (Lock counterclockwise rotation of main front internal gear.)
 9. Main planetary carrier revolves clockwise due to reaction force of front small planetary pinion gear.
 10. Counter drive gear rotates clockwise for main planetary carrier and one.
 11. Counter driven gear rotates counterclockwise.
 12. U/D front internal gear rotates counterclockwise for counter driven gear and one.
 13. U/D front planetary pinion gear rotates itself counterclockwise.
 14. U/D sun gear rotates clockwise.
 15. U/D rear planetary pinion gear rotates itself counterclockwise.
 16. B5 brake operate. (Lock rotation of U/D rear planetary carrier.)
 17. U/D rear internal gear rotates counterclockwise.
 18. U/D front planetary carrier and output shaft rotates counterclockwise for U/D rear internal gear and one.
 19. Final gear clockwise.
- During deceleration, main front internal gear clockwise due to rotation itself clockwise of main front small planetary pinion gear, but driving force loses due to free of one-way clutch No. 2. Therefore, engine brake does not operate.

A/T CONTROL SYSTEM



- | | | |
|---------------------------------|-----------------------------|--------------------------------|
| 1. Forward clutch | 2. Direct clutch | 3. U/D clutch |
| 4. 2nd coast brake | 5. 2nd brake | 6. 1st and reverse brake |
| 7. U/D brake | 8. B5 brake | 9. One-way clutch No. 1 |
| 10. One-way clutch No. 2 | 11. Main sun gear | 12. Main planetary carrier |
| 13. Main front internal gear | 14. Main rear internal gear | 15. U/D sun gear |
| 16. U/D front planetary carrier | 17. U/D front internal gear | 18. U/D rear planetary carrier |
| 19. U/D rear internal gear | 20. Input shaft | 21. Counter drive gear |
| 22. Counter driven gear | 23. Output shaft | 24. Parking gear |
| 25. Parking pawl | | |

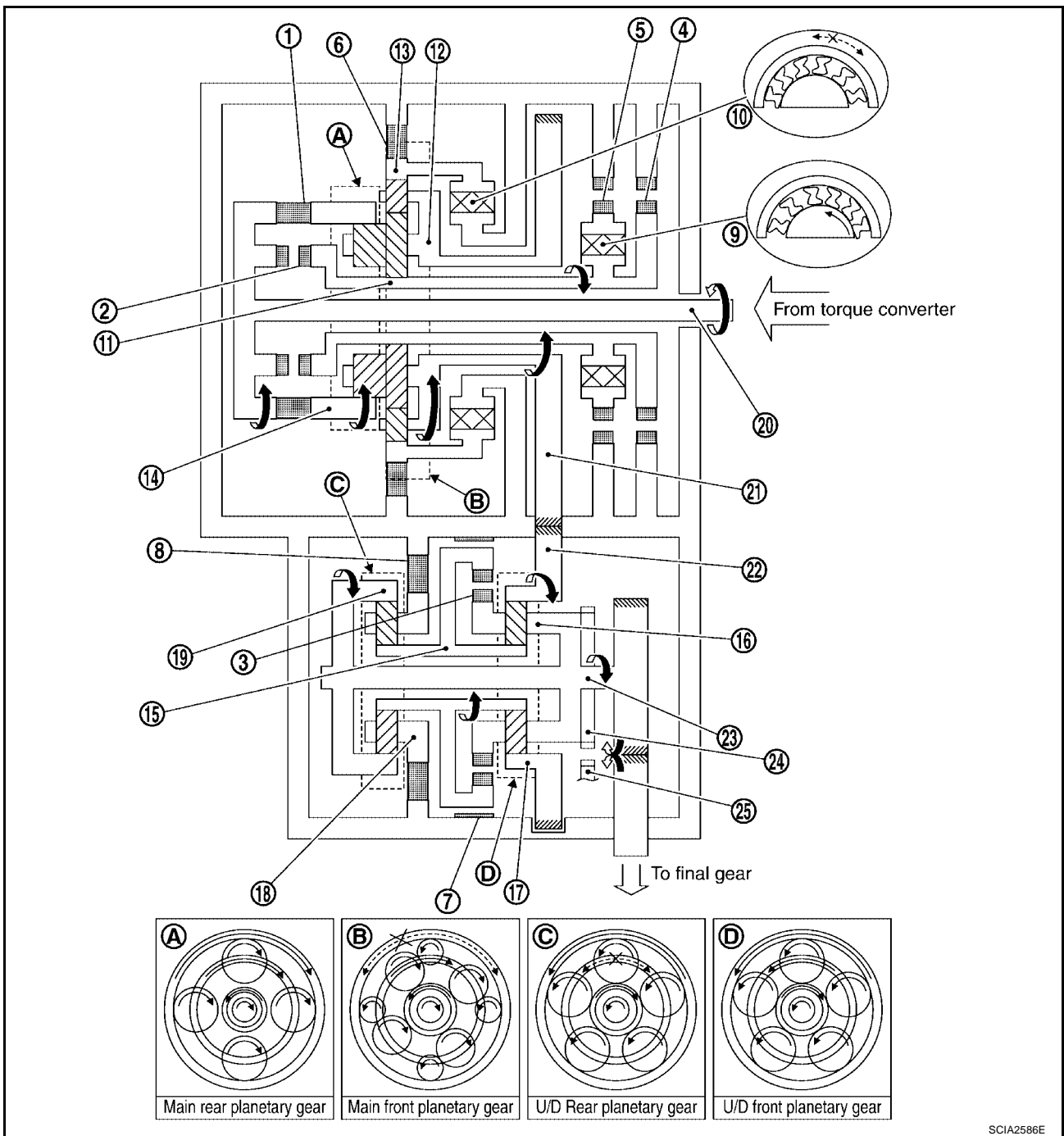
SCIA2585E

A/T CONTROL SYSTEM

“M1” position 1st gear

1. Input shaft rotates clockwise.
 2. Forward clutch operates. (Connect input shaft to main rear internal gear.)
 3. Main rear internal gear rotates clockwise.
 4. Main rear planetary pinion gear rotates itself clockwise.
 5. Main front large planetary pinion gear rotates itself clockwise for rear planetary pinion gear and one.
 6. Main front small planetary pinion gear rotates itself counterclockwise.
 7. Main front internal gear is going to rotates counterclockwise.
 8. 1st and reverse brake operates. (Lock rotation of main front internal gear.)
 9. Main planetary carrier revolves clockwise due to reaction force of front small planetary pinion gear.
 10. Counter drive gear rotates clockwise for main planetary carrier and one.
 11. Counter driven gear rotates counterclockwise.
 12. U/D front internal gear rotates counterclockwise for counter driven gear and one.
 13. U/D front planetary pinion gear rotates itself counterclockwise.
 14. U/D sun gear rotates clockwise.
 15. U/D rear planetary pinion gear rotates itself counterclockwise.
 16. B5 brake operate. (Lock rotation of U/D rear planetary carrier.)
 17. U/D rear internal gear rotates counterclockwise.
 18. U/D front planetary carrier and output shaft rotates counterclockwise for U/D rear internal gear and one.
 19. Final gear clockwise.
- During deceleration, driving force is connected to input shaft directly without one-way clutch. Therefore, engine brake operates.

A/T CONTROL SYSTEM



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

- | | | |
|---------------------------------|-----------------------------|--------------------------------|
| 1. Forward clutch | 2. Direct clutch | 3. U/D clutch |
| 4. 2nd coast brake | 5. 2nd brake | 6. 1st and reverse brake |
| 7. U/D brake | 8. B5 brake | 9. One-way clutch No. 1 |
| 10. One-way clutch No. 2 | 11. Main sun gear | 12. Main planetary carrier |
| 13. Main front internal gear | 14. Main rear internal gear | 15. U/D sun gear |
| 16. U/D front planetary carrier | 17. U/D front internal gear | 18. U/D rear planetary carrier |
| 19. U/D rear internal gear | 20. Input shaft | 21. Counter drive gear |
| 22. Counter driven gear | 23. Output shaft | 24. Parking gear |
| 25. Parking pawl | | |

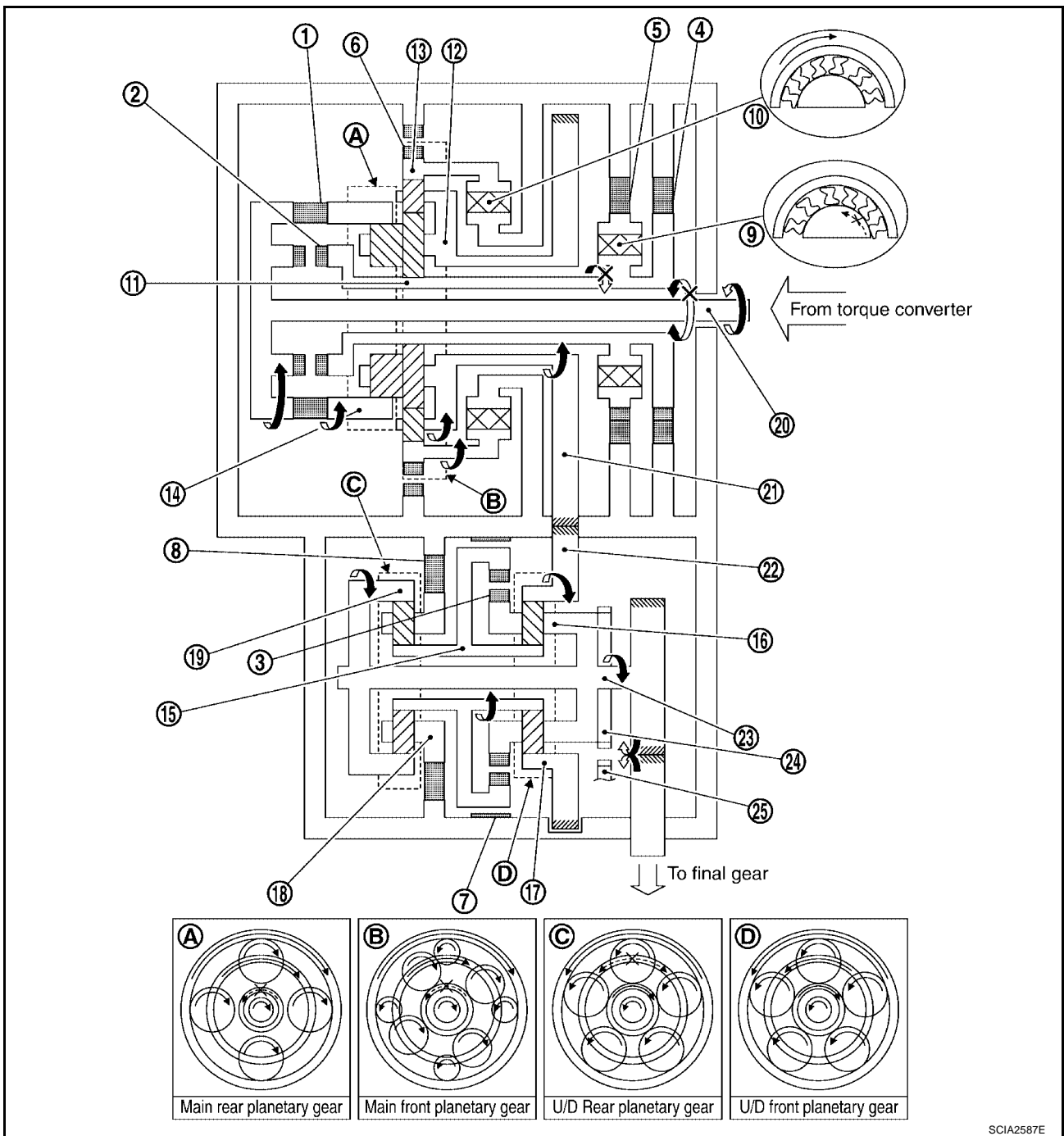
SCIA2586E

A/T CONTROL SYSTEM

“D”, “M2” positions 2nd gear

1. Input shaft rotates clockwise.
 2. Forward clutch operates. (Connect input shaft to main rear internal gear.)
 3. Main rear internal gear rotates clockwise.
 4. Main rear planetary pinion gear rotates itself clockwise.
 5. Main front large planetary pinion gear rotates itself clockwise for rear planetary pinion and one.
 6. 2nd brake and 2nd coast brake operates.
 7. One-way clutch No. 1 operates. (Lock rotation of main sun gear.)
 8. Main planetary carrier revolves clockwise due to reaction force of front large planetary pinion gear.
 9. Counter drive gear rotates clockwise for main planetary carrier and one.
 10. Counter driven gear rotates counterclockwise.
 11. U/D front internal gear rotates counterclockwise for counter driven gear and one.
 12. U/D front planetary pinion gear rotates itself counterclockwise.
 13. U/D sun gear rotates clockwise.
 14. U/D rear planetary pinion gear rotates itself counterclockwise.
 15. B5 brake operate. (Lock rotation of U/D rear planetary carrier.)
 16. U/D rear internal gear rotates counterclockwise.
 17. U/D front planetary carrier and output shaft rotates counterclockwise for U/D rear internal gear and one.
 18. Final gear clockwise.
- During deceleration, driving force is connected to input shaft directly without one-way clutch. Therefore, engine brake operates.

A/T CONTROL SYSTEM



- | | | |
|---------------------------------|-----------------------------|--------------------------------|
| 1. Forward clutch | 2. Direct clutch | 3. U/D clutch |
| 4. 2nd coast brake | 5. 2nd brake | 6. 1st and reverse brake |
| 7. U/D brake | 8. B5 brake | 9. One-way clutch No. 1 |
| 10. One-way clutch No. 2 | 11. Main sun gear | 12. Main planetary carrier |
| 13. Main front internal gear | 14. Main rear internal gear | 15. U/D sun gear |
| 16. U/D front planetary carrier | 17. U/D front internal gear | 18. U/D rear planetary carrier |
| 19. U/D rear internal gear | 20. Input shaft | 21. Counter drive gear |
| 22. Counter driven gear | 23. Output shaft | 24. Parking gear |
| 25. Parking pawl | | |

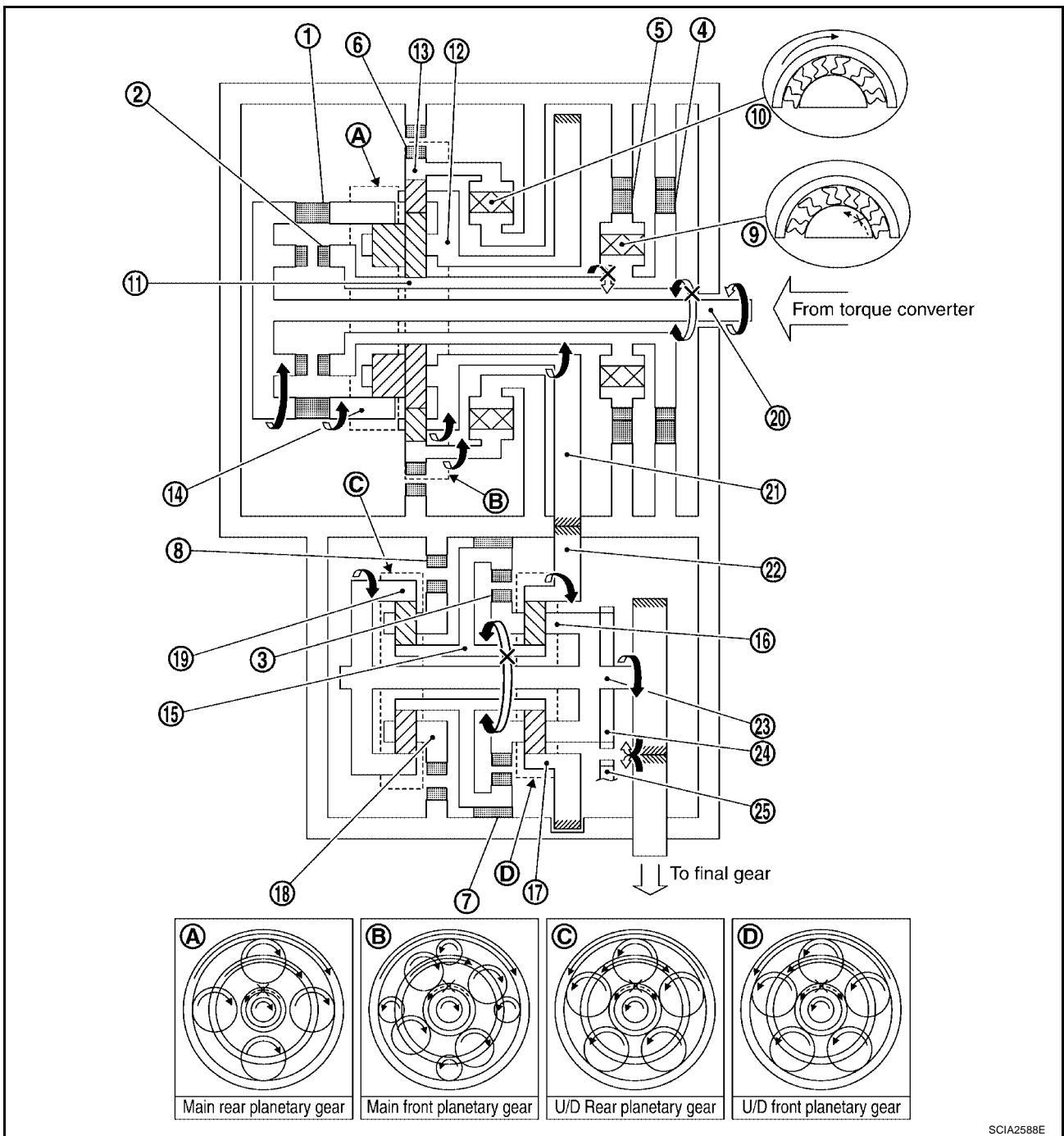
SCIA2587E

A/T CONTROL SYSTEM

“D”, “M3” positions 3rd gear

1. Input shaft rotates clockwise.
 2. Forward clutch operates. (Connect input shaft to main rear internal gear.)
 3. Main rear internal gear rotates clockwise.
 4. Main rear planetary pinion gear rotates itself clockwise.
 5. Main front large planetary pinion gear rotates itself clockwise for rear planetary pinion and one.
 6. 2nd brake and 2nd coast brake operates.
 7. One-way clutch No. 1 operates. (Lock rotation of main sun gear.)
 8. Main planetary carrier revolves clockwise due to reaction force of front large planetary pinion gear.
 9. Counter drive gear rotates clockwise for main planetary carrier and one.
 10. Counter driven gear rotates counterclockwise.
 11. U/D front internal gear rotates counterclockwise for counter driven gear and one.
 12. U/D front planetary pinion gear rotates itself counterclockwise.
 13. U/D brake operate. (Lock rotation of U/D sun gear.)
 14. U/D front planetary carrier revolves counterclockwise due to reaction force of U/D front planetary pinion gear.
 15. U/D rear internal gear and output shaft rotates counterclockwise for U/D front planetary carrier and one.
 16. Final gear clockwise.
- During deceleration, driving force is connected to input shaft directly without one-way clutch. Therefore, engine brake operates.

A/T CONTROL SYSTEM



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

- | | | |
|---------------------------------|-----------------------------|--------------------------------|
| 1. Forward clutch | 2. Direct clutch | 3. U/D clutch |
| 4. 2nd coast brake | 5. 2nd brake | 6. 1st and reverse brake |
| 7. U/D brake | 8. B5 brake | 9. One-way clutch No. 1 |
| 10. One-way clutch No. 2 | 11. Main sun gear | 12. Main planetary carrier |
| 13. Main front internal gear | 14. Main rear internal gear | 15. U/D sun gear |
| 16. U/D front planetary carrier | 17. U/D front internal gear | 18. U/D rear planetary carrier |
| 19. U/D rear internal gear | 20. Input shaft | 21. Counter drive gear |
| 22. Counter driven gear | 23. Output shaft | 24. Parking gear |
| 25. Parking pawl | | |

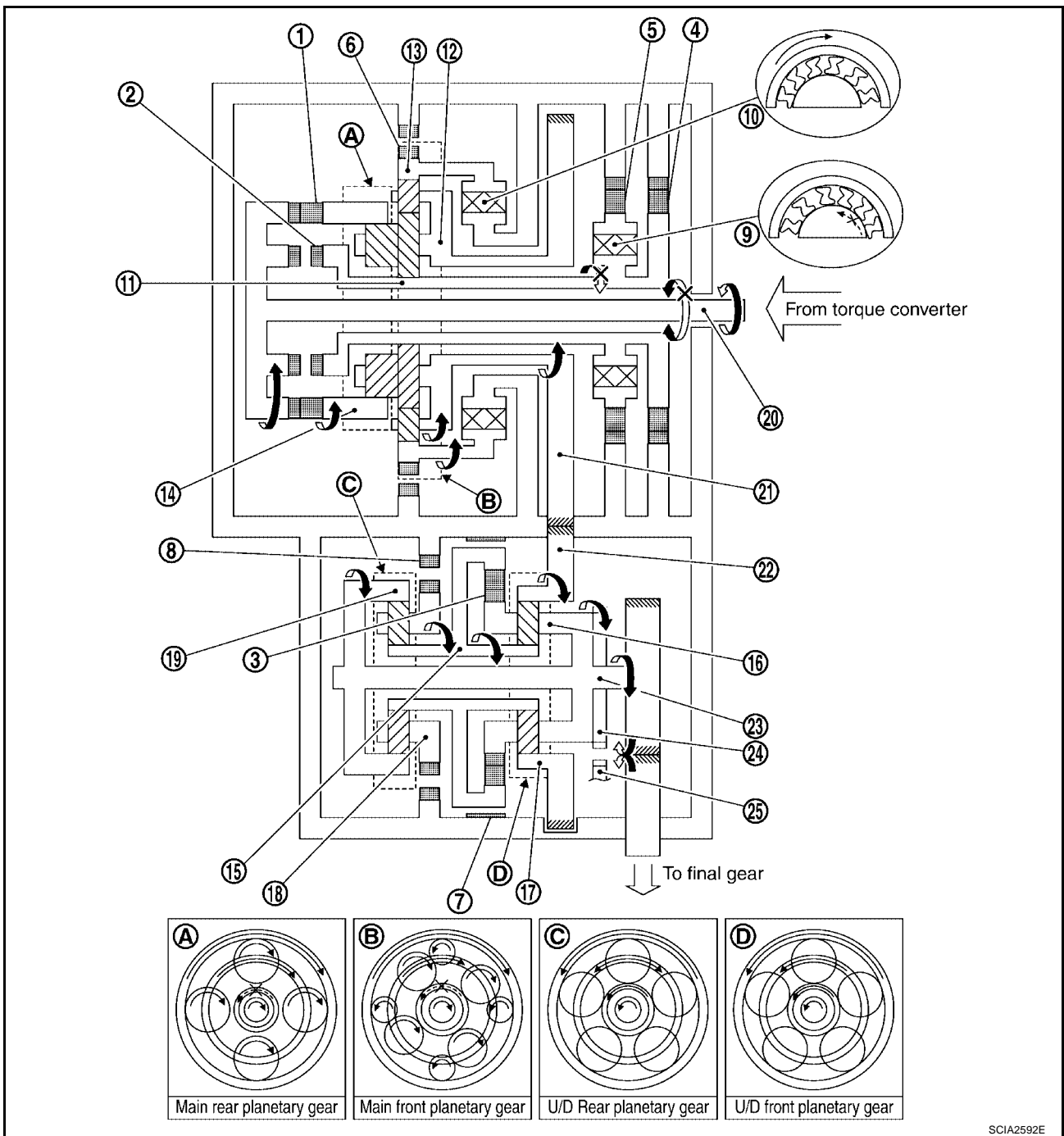
SCIA2588E

A/T CONTROL SYSTEM

“D”, “M4” positions 4th gear

1. Input shaft rotates clockwise.
 2. Forward clutch operates. (Connect input shaft to main rear internal gear.)
 3. Main rear internal gear rotates clockwise.
 4. Main rear planetary pinion gear rotates itself clockwise.
 5. Main front large planetary pinion gear rotates itself clockwise for rear planetary pinion and one.
 6. 2nd brake and 2nd coast brake operates.
 7. One-way clutch No. 1 operates. (Lock rotation of main sun gear.)
 8. Main planetary carrier revolves clockwise due to reaction force of front large planetary pinion gear.
 9. Counter drive gear rotates clockwise for main planetary carrier and one.
 10. Counter driven gear rotates counterclockwise.
 11. U/D front internal gear rotates counterclockwise for counter driven gear and one.
 12. U/D clutch operate. (Connect U/D sun gear to U/D front planetary carrier.)
 13. U/D front planetary pinion gear cannot rotate itself, and U/D unit rotates counterclockwise as one.
 14. Output shaft rotates counterclockwise for U/D unit and one.
 15. Final gear clockwise.
- During deceleration, driving force is connected to input shaft directly without one-way clutch. Therefore, engine brake operates.

A/T CONTROL SYSTEM



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

- | | | |
|---------------------------------|-----------------------------|--------------------------------|
| 1. Forward clutch | 2. Direct clutch | 3. U/D clutch |
| 4. 2nd coast brake | 5. 2nd brake | 6. 1st and reverse brake |
| 7. U/D brake | 8. B5 brake | 9. One-way clutch No. 1 |
| 10. One-way clutch No. 2 | 11. Main sun gear | 12. Main planetary carrier |
| 13. Main front internal gear | 14. Main rear internal gear | 15. U/D sun gear |
| 16. U/D front planetary carrier | 17. U/D front internal gear | 18. U/D rear planetary carrier |
| 19. U/D rear internal gear | 20. Input shaft | 21. Counter drive gear |
| 22. Counter driven gear | 23. Output shaft | 24. Parking gear |
| 25. Parking pawl | | |

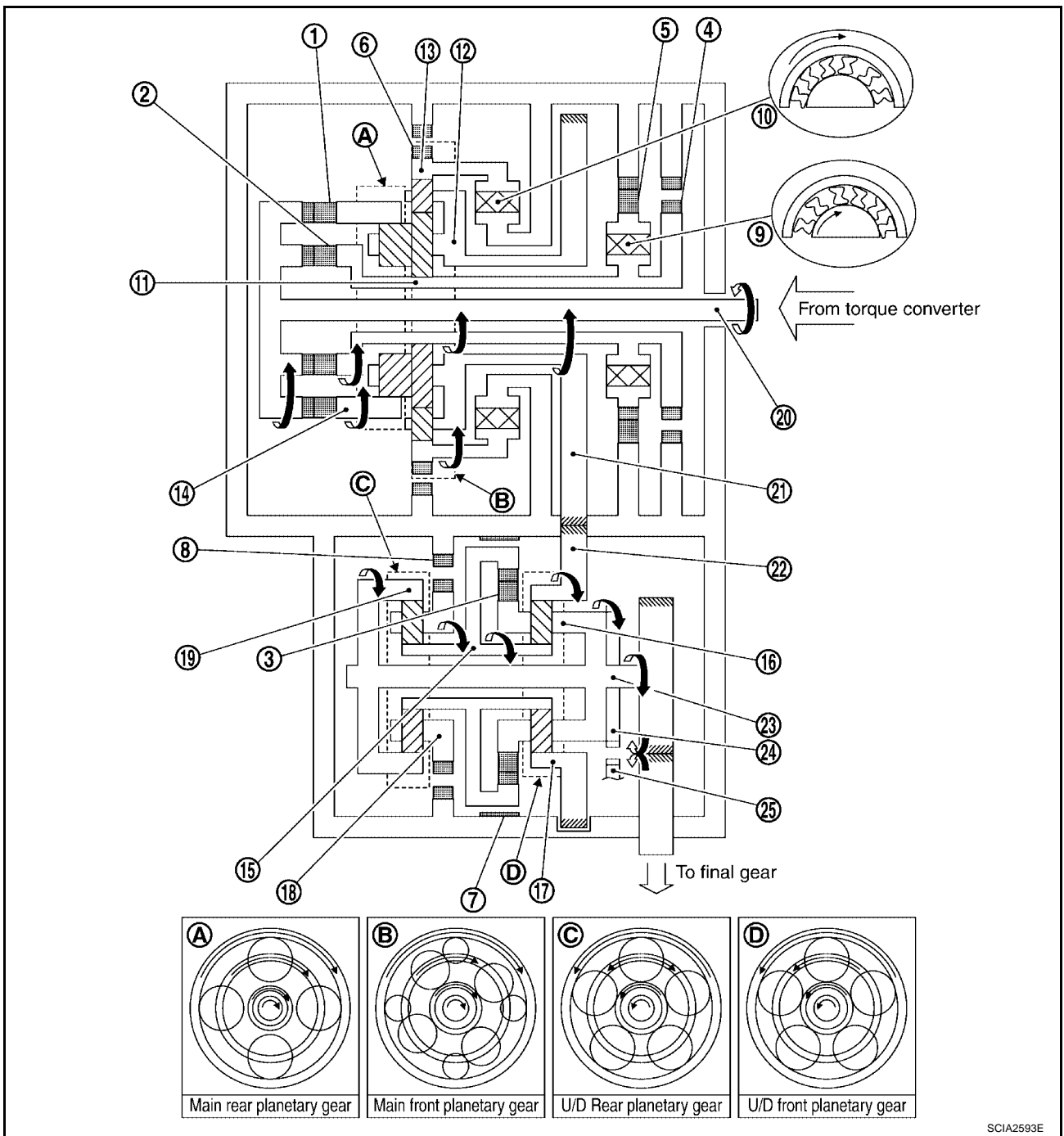
SCIA2592E

A/T CONTROL SYSTEM

“D”, “M5” positions 5th gear

1. Input shaft rotates clockwise.
 2. Forward clutch operates. (Connect input shaft to main rear internal gear.)
 3. Direct clutch operates. (Connect input shaft to main sun gear.)
 4. Main rear planetary pinion gear cannot rotate itself, and main rear planetary unit rotates clockwise as one.
 5. Main front large planetary pinion gear cannot rotate itself for main rear planetary pinion gear and one, and main front planetary unit rotates clockwise as one.
 6. Counter drive gear rotates clockwise for main front planetary unit and one.
 7. Counter driven gear rotates counterclockwise.
 8. U/D front internal gear rotates counterclockwise for counter driven gear and one.
 9. U/D clutch operate. (Connect U/D sun gear to U/D front planetary carrier.)
 10. U/D front planetary pinion gear cannot rotate itself, and U/D unit rotates counterclockwise as one.
 11. Output shaft rotates counterclockwise for U/D unit and one.
 12. Final gear clockwise.
- During deceleration, driving force is connected to input shaft directly without one-way clutch. Therefore, engine brake operates.

A/T CONTROL SYSTEM



- | | | |
|---------------------------------|-----------------------------|--------------------------------|
| 1. Forward clutch | 2. Direct clutch | 3. U/D clutch |
| 4. 2nd coast brake | 5. 2nd brake | 6. 1st and reverse brake |
| 7. U/D brake | 8. B5 brake | 9. One-way clutch No. 1 |
| 10. One-way clutch No. 2 | 11. Main sun gear | 12. Main planetary carrier |
| 13. Main front internal gear | 14. Main rear internal gear | 15. U/D sun gear |
| 16. U/D front planetary carrier | 17. U/D front internal gear | 18. U/D rear planetary carrier |
| 19. U/D rear internal gear | 20. Input shaft | 21. Counter drive gear |
| 22. Counter driven gear | 23. Output shaft | 24. Parking gear |
| 25. Parking pawl | | |

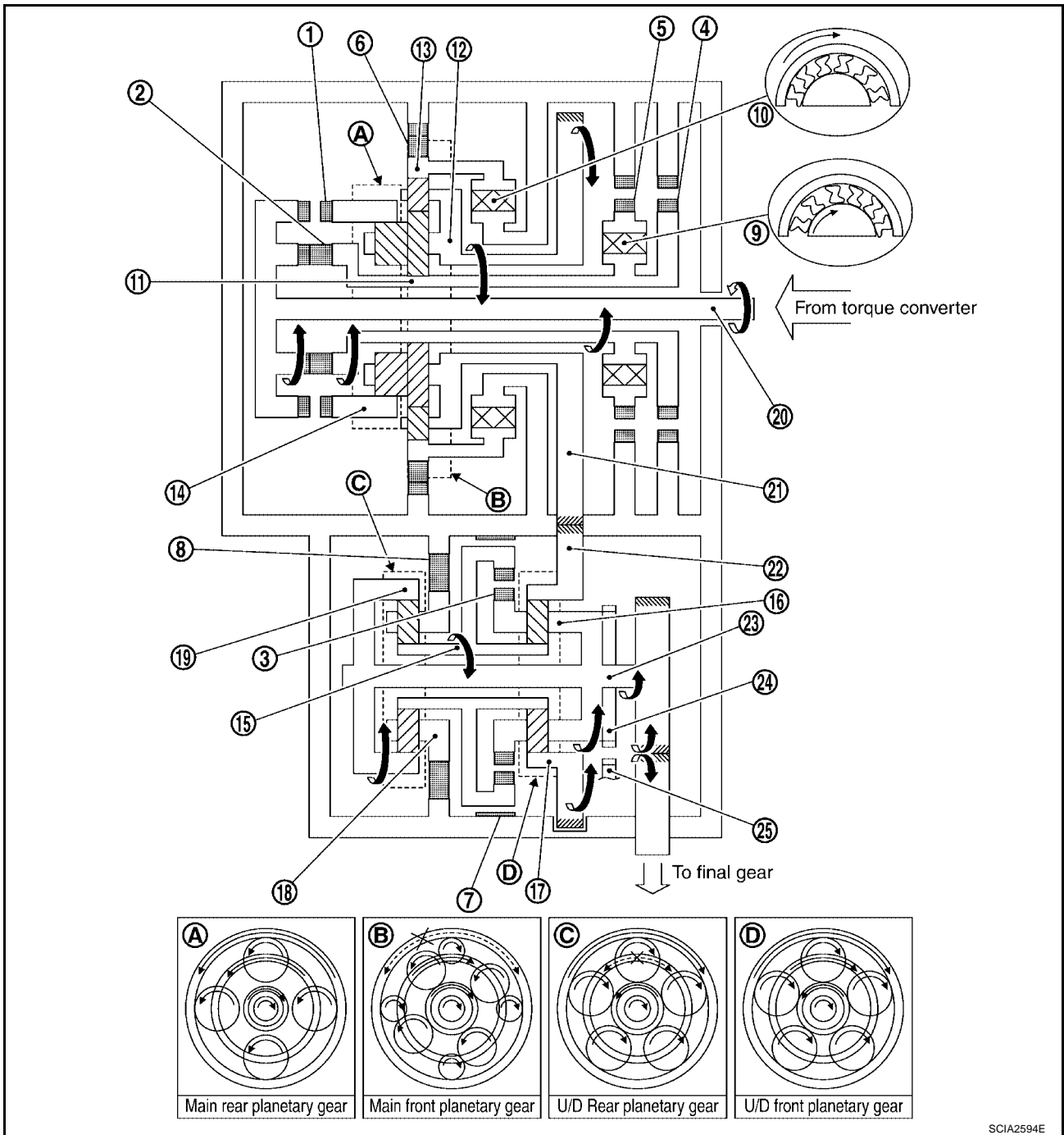
SCIA2593E

A/T CONTROL SYSTEM

“R” position

1. Input shaft rotates clockwise.
 2. Direct clutch operates. (Connect input shaft to main sun gear.)
 3. Main sun gear rotates clockwise.
 4. Main rear planetary pinion gear rotates itself clockwise.
 5. Main front large planetary pinion gear rotates itself counterclockwise for rear planetary pinion gear and one.
 6. Main front small planetary pinion gear rotates itself clockwise.
 7. 1st and reverse brake operates. (Lock rotation of main front internal gear.)
 8. Main planetary carrier revolves counterclockwise due to reaction force of front small planetary pinion gear.
 9. Counter drive gear rotates counterclockwise for main planetary carrier and one.
 10. Counter driven gear rotates clockwise.
 11. U/D front internal gear rotates clockwise for counter driven gear and one.
 12. U/D front planetary pinion gear rotates itself clockwise.
 13. U/D sun gear rotates counterclockwise.
 14. U/D rear planetary pinion gear rotates itself clockwise.
 15. B5 brake operate. (Lock rotation of U/D rear planetary carrier.)
 16. U/D rear internal gear rotates clockwise.
 17. U/D front planetary carrier and output shaft rotates clockwise for U/D rear internal gear and one.
 18. Final gear counterclockwise.
- During deceleration, driving force is connected to input shaft directly without one-way clutch. Therefore, engine brake operates.

A/T CONTROL SYSTEM



- | | | |
|---------------------------------|-----------------------------|--------------------------------|
| 1. Forward clutch | 2. Direct clutch | 3. U/D clutch |
| 4. 2nd coast brake | 5. 2nd brake | 6. 1st and reverse brake |
| 7. U/D brake | 8. B5 brake | 9. One-way clutch No. 1 |
| 10. One-way clutch No. 2 | 11. Main sun gear | 12. Main planetary carrier |
| 13. Main front internal gear | 14. Main rear internal gear | 15. U/D sun gear |
| 16. U/D front planetary carrier | 17. U/D front internal gear | 18. U/D rear planetary carrier |
| 19. U/D rear internal gear | 20. Input shaft | 21. Counter drive gear |
| 22. Counter driven gear | 23. Output shaft | 24. Parking gear |
| 25. Parking pawl | | |

SCIA2594E

A/T CONTROL SYSTEM

ECS00A0V

TCM Function

The function of the TCM is to:

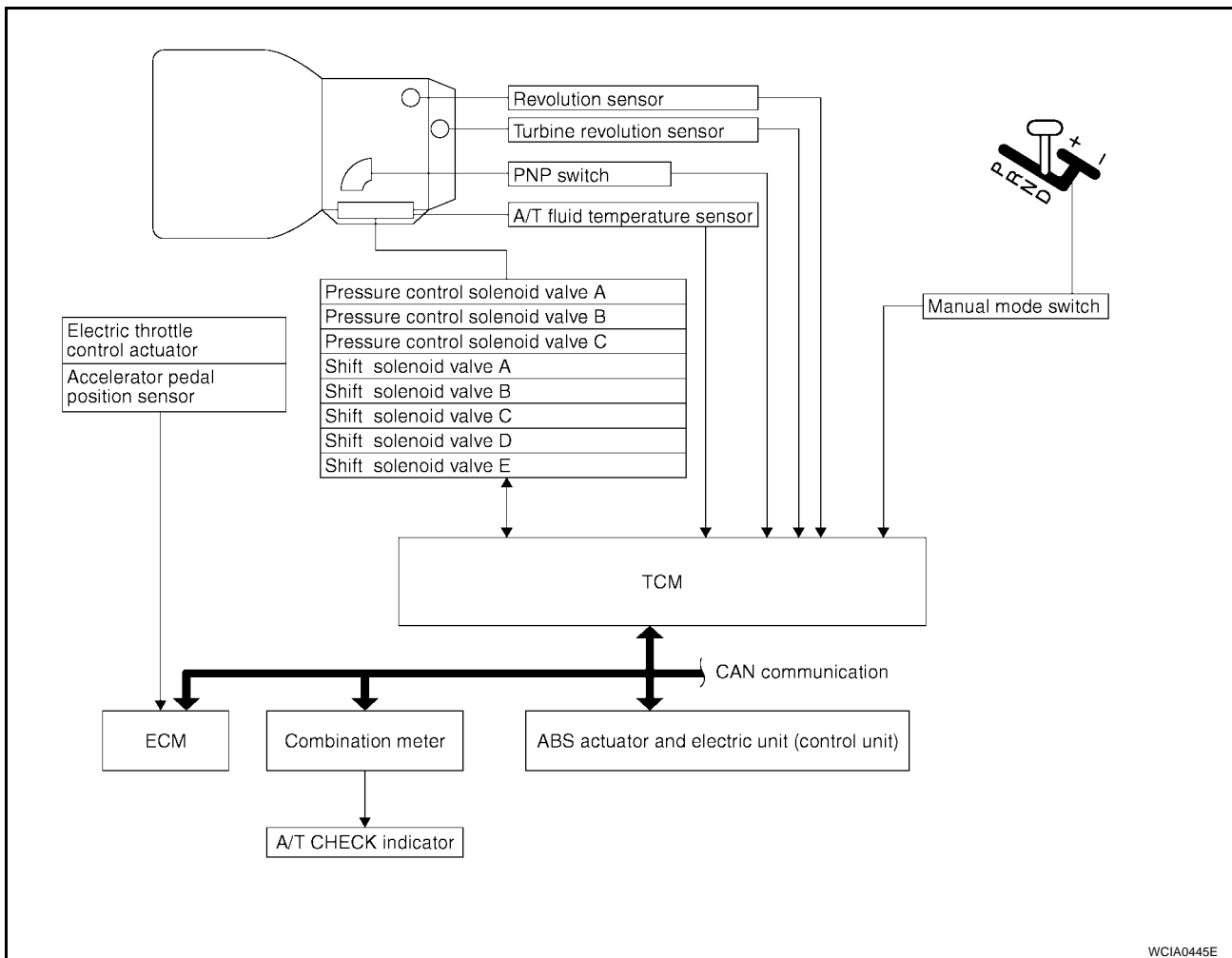
- Receive input signals sent from various switches and sensors.
- Determine required line pressure, shifting point, lock-up operation, and engine brake operation.
- Send required output signals to the respective solenoids.

CONTROL SYSTEM OUTLINE

The automatic transaxle 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 SIGNAL) | | TCM | | ACTUATORS |
|--|---|---|---|---|
| PNP switch Throttle angle signal Throttle position signal Engine speed signal Engine torque signal A/T fluid temperature sensor Revolution sensor Turbine revolution sensor Vehicle speed signal Manual mode switch signal Stop lamp switch signal | ⇒ | Shift control Line pressure control Lock-up control Engine brake control Timing control Fail-safe control Self-diagnosis CONSULT-II communication line CAN communication line On board diagnosis | ⇒ | Shift solenoid valve A Shift solenoid valve B Shift solenoid valve C Shift solenoid valve D Shift solenoid valve E Pressure control solenoid valve A Pressure control solenoid valve B Pressure control solenoid valve C A/T CHECK indicator lamp |

CONTROL SYSTEM DIAGRAM



WCIA0445E

A/T CONTROL SYSTEM

Input/Output Signal of TCM

ECS00A0W

| Control item | | Line pressure control | Vehicle speed control | Shift control | Lock-up control | Engine brake control | Fail-safe function (*3) | Self-diagnostics function | |
|--------------|--|---|-----------------------|---------------|-----------------|----------------------|-------------------------|---------------------------|--|
| Input | Throttle angle signal ^(*5) | X | X | X | X | X | X | X | |
| | Throttle position signal ^(*5) | X ^(*2) | X ^(*2) | | X | X ^(*2) | | X ^(*4) | |
| | Revolution sensor | X | X | X | X | X | X | X | |
| | Turbine revolution sensor | X | X | X | | X | X | X | |
| | Vehicle speed signal MTR ^(*1) ^(*5) | X | X | X | X | | X | X | |
| | Engine speed signals ^(*5) | | X | X | X | | X | X | |
| | Engine torque signals ^(*5) | X | X | X | X | X | | X | |
| | PNP switch | X | X | X | X | X | X | X ^(*4) | |
| | Manual mode switch | | X | X | | X | X | X | |
| | Stop lamp switch signal ^(*5) | | X | | X | X | | X ^(*4) | |
| | A/T fluid temperature sensor | | X | X | X | X | X | X | |
| | ASCD | Operation signal ^(*5) | | X | | X | X | | |
| | | Overdrive cancel signal ^(*5) | | X | | X | X | | |
| | TCM power supply voltage signal | X | X | X | X | X | X | X | |
| Output | Shift solenoid valve A/B/C/D/E | | X | X | | | X | X | |
| | Pressure control solenoid valve A | X | X | X | X | X | X | X | |
| | Pressure control solenoid valve B | | X | X | | X | X | X | |
| | Pressure control solenoid valve C | | | X | X | | X | X | |
| | Self-diagnostics table ^(*5) | | | | | | | X | |

*1: Spare for revolution sensor

*2: Spare for throttle angle 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.

CAN Communication SYSTEM DESCRIPTION

ECS00A0X

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

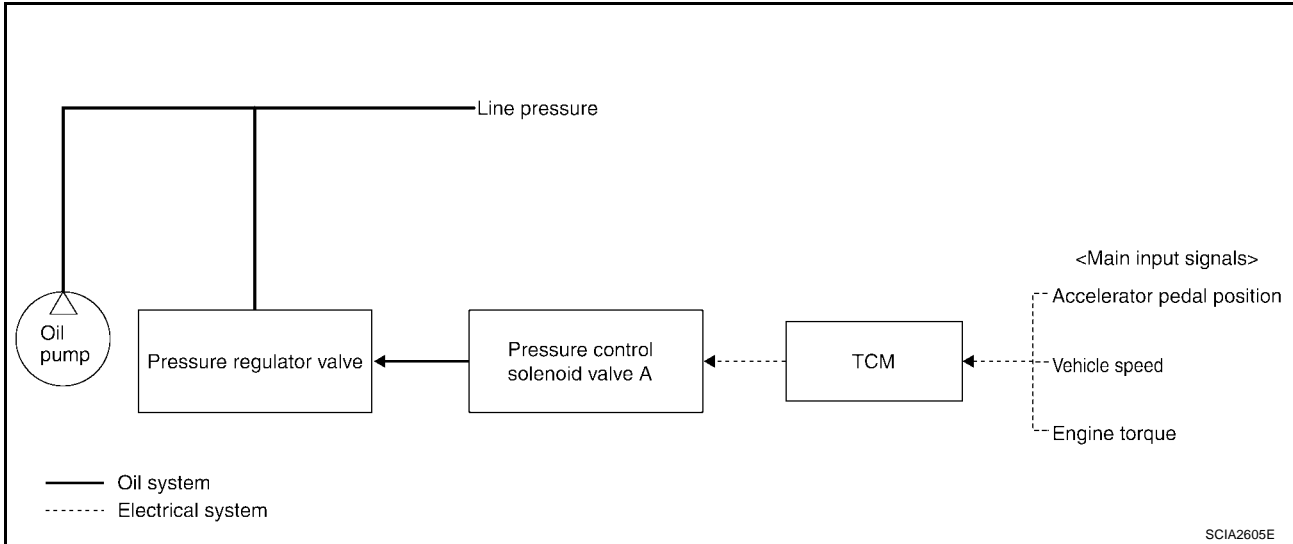
For details, refer to [LAN-7, "CAN COMMUNICATION"](#).

A/T CONTROL SYSTEM

Line Pressure Control

ECS00A0Y

- The pressure control solenoid valve A controls linear line pressure by control signal from TCM and line pressure for clutches and brakes to reduce shift shock.
- This pressure control solenoid valve A 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.



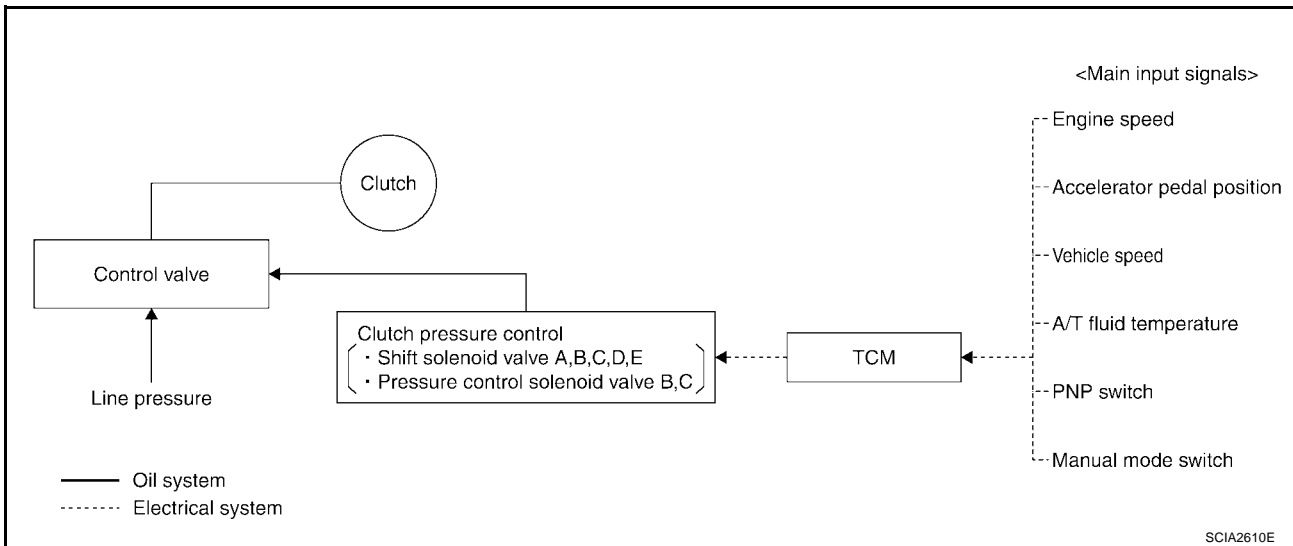
LINE PRESSURE CONTROL IS BASED ON THE TCM LINE PRESSURE CHARACTERISTIC PATTERN

In order to obtain the most appropriate line pressure characteristic to meet the current driving state, the TCM controls the pressure control solenoid valve A current and thus controls the line pressure.

Shift Control

ECS00A0Z

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.



Basically TCM programmed for economy mode, but TCM changes to several shift schedule automatically according to specified condition.

A/T CONTROL SYSTEM

SPECIAL SHIFT MODE

Upslope Mode

When TCM detects upslope from load of engine torque and decrease of acceleration, this mode changes shift points in high-speed side according to the upslope degree and avoids busy shift of A/T.

Downslope Mode

When TCM detects downslope from increase of acceleration with accelerator full close, this mode operates moderate engine brake by changing shift points in high-speed side.

Hot Mode Control

This control lowers ATF temperature by changing shift points when the temperature is extremely high.

MANUAL MODE

Driver oneself can select favorite gear and enjoy sports driving of manual transmission sense by shifting lever from D position to manual mode position and + (up shift) / - (down shift). But lock-up control is operated automatically. Shift control is operated again by shifting from manual gear position to D position. Following control is operated when manual mode.

Automated Up Shift Control

In order to avoid the over speed of the engine, up shift operate automatically, if it becomes over a constant vehicle speed.

Automated Down Shift Control

In order to avoid the stall of the engine, down shift operate automatically, if it becomes under a constant vehicle speed.

Up Shift Permission Control

In order to avoid the stall of the engine, up shift is done only at over a constant vehicle speed.

Down Shift Permission Control

In order to avoid the over speed of the engine, down shift is done only at under a constant vehicle speed.

UP/DOWN SHIFT LEARNING CONTROL

This control learns the pressure to each clutch or brake in order to reduce shifting shock at each shifting (Up, Down, Manual down, Coast down).

N-D SHIFT CONTROL

This control improves the N-D shift quality due to controlling line pressure solenoid valve according to forward clutch piston stroke learned in N-D shift learning control and applying best hydraulic pressure to forward clutch at N-D shift.

N-D SHIFT LEARNING CONTROL

This control learns the forward clutch hydraulic pressure due to monitoring a forward clutch engaging time and a rotation change rate.

N-R SHIFT CONTROL

This control improves the N-R shift quality due to controlling shift pressure solenoid valve according to direct clutch piston stroke learned in N-R shift learning control and applying best hydraulic pressure to direct clutch at N-R shift.

N-R SHIFT LEARNING CONTROL

This control learns the direct clutch hydraulic pressure due to monitoring a direct clutch engaging time and a rotation change rate.

TORQUE REDUCTION CONTROL

This control improves the shift quality due to sending torque reduction request signal from TCM to ECM and cutting engine torque increase of shift at N-D shift, N-R shift and 1 ⇔ 2 ⇔ 3 ⇔ 4 ⇔ 5.

If accelerator pedal is depressed rapidly, this control establishes the upper limit value of engine torque and avoids engine flare at 2 ⇔ 3, 3 ⇔ 4 and 4 ⇒ 2 of clutch to clutch shift.

A/T CONTROL SYSTEM

ECS00A10

Lock-Up Control

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

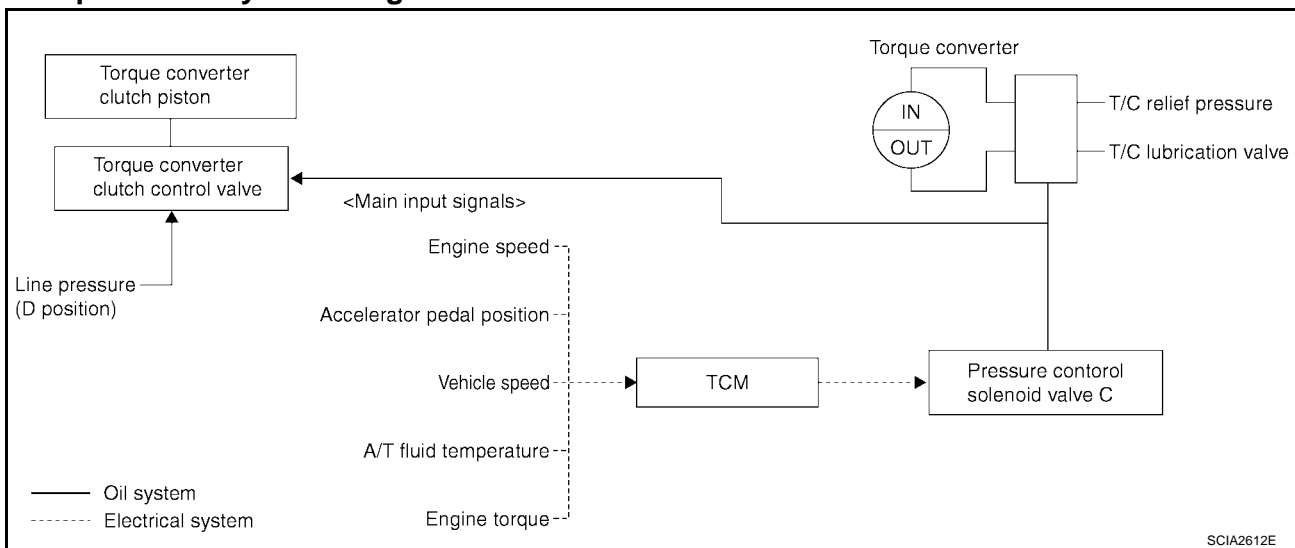
The torque converter clutch control valve operation is controlled by the pressure control solenoid valve C, which is controlled by a signal from TCM, and the torque converter clutch control valve engages or releases the torque converter clutch piston.

Lock-up Operation Condition Table

| Selector lever | D position | | M5 position | M4 position | M3 position |
|----------------|------------|---|-------------|-------------|-------------|
| Gear position | 5 | 4 | 5 | 4 | 3 |
| 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 pressure control solenoid valve C and the lock-up apply pressure is drained. In this way, the torque converter clutch piston is not coupled.

Lock-up Applied

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

A/T CONTROL SYSTEM

SMOOTH LOCK-UP CONTROL

When shifting from the lock-up released state to the lock-up applied state, the current output to the pressure control solenoid valve C 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 pressure control solenoid valve C is varied to steadily increase the pressure control solenoid valve C 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 pressure control solenoid valve C 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.

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

ON BOARD DIAGNOSTIC (OBD) SYSTEM

PFP:00028

Introduction

ECS00A11

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-75, "SELF-DIAG RESULT MODE"](#).

OBD-II Function for A/T System

ECS00A12

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 ONE TRIP DETECTION LOGIC

ECS00A13

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) HOW TO READ DTC AND 1ST TRIP DTC

ECS00A14

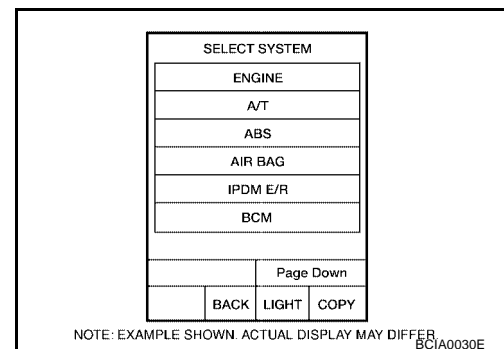
DTC and 1st trip DTC can be read by the following methods.

( with **CONSULT-II** or ( **GST**) CONSULT-II or GST (Generic Scan Tool) Examples: P0705, P0710 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 "1 t".

| 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-54, "FREEZE FRAME DATA AND 1ST TRIP FREEZE FRAME DATA"](#).

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-50, "EMISSION-RELATED DIAGNOSTIC INFORMATION ITEMS"](#).

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

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

ON BOARD DIAGNOSTIC (OBD) SYSTEM

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

| SELECT SYSTEM |
|---------------|
| ENGINE |
| TRANSMISSION |
| |
| |
| |
| |
| |
| |

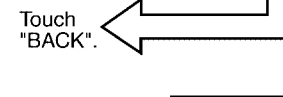
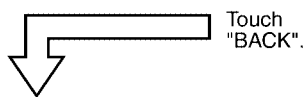
| SELECT DIAG MODE |
|-----------------------|
| WORK SUPPORT |
| SELF DIAG RESULTS |
| CAN DIAG SUPPORT MNTR |
| ACTIVE TEST |
| FUNCTION TEST |
| |
| |
| |

| SELF-DIAG RESULTS | |
|---------------------------|------|
| DTC RESULTS | TIME |
| ATF TEMP SEN/CIRC [P0710] | PAST |
| | |
| | |
| | |

2. Turn CONSULT-II "ON", and touch "TRANSMISSION".

3. Touch "SELF-DIAG RESULTS".

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



| SELECT SYSTEM |
|---------------|
| ENGINE |
| TRANSMISSION |
| |
| |
| |
| |
| |
| |

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

| SELF-DIAG RESULTS | |
|---------------------------|------|
| DTC RESULTS | TIME |
| ATF TEMP SEN/CIRC [P0710] | 0 |
| | |
| | |
| | |

5. Touch "ENGINE".

6. Touch "SELF-DIAG RESULTS".

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

WCIA0405E

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. Erase DTC with TCM. Refer to [AT-82, "Erase self-diagnosis"](#). (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-143, "Generic Scan Tool \(GST\) Function"](#).

HOW TO ERASE DTC (NO TOOLS)

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

ON BOARD DIAGNOSTIC (OBD) SYSTEM

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. Erase DTC with TCM. Refer to [AT-82, "Erase self-diagnosis"](#) . (The engine warm-up step can be skipped when performing the diagnosis only to erase the DTC.)
3. Erase DTC with ECM. Refer to [EC-62, "How to Erase DTC"](#) .

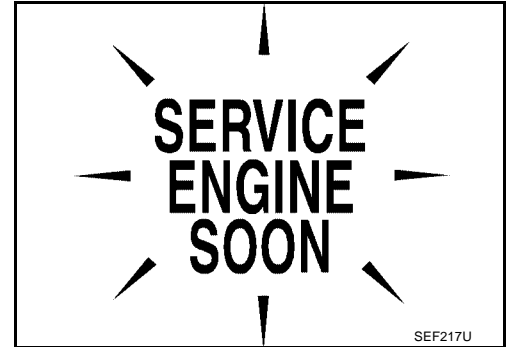
Malfunction Indicator Lamp (MIL)

ECS00A15

DESCRIPTION

The MIL is located on the instrument panel.

1. The MIL will light up when the ignition switch is turned "ON" without the engine running. This is a bulb check.
 - If the MIL does not light up, refer to [DI-41, "WARNING LAMPS"](#) , or see [EC-64, "Malfunction Indicator Lamp \(MIL\)"](#) .
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.



A

B

AT

D

E

F

G

H

I

J

K

L

M

TROUBLE DIAGNOSIS

TROUBLE DIAGNOSIS

PFP:00004

DTC Inspection Priority Chart

ECS00A16

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-83](#).

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

Fail-Safe

ECS00A17

The TCM has an electrical fail-safe mode. This mode makes it possible to operate even if there is a malfunction in a main electronic control input/output signal circuit.

In fail-safe mode, a driving condition is selected according to the malfunctioning location, and line pressure is set at the maximum. For this reason, the customer will be subjected to uncomfortable “slipping” or “poor acceleration” of the vehicle.

In that case, handle according to the “diagnostics flow” (Refer to [AT-48](#)).

FAIL-SAFE FUNCTION

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

NOTE:

Line pressure is set at the maximum in fail-safe mode. Although gear position differs depending on the type of fail-safe modes, CONSULT-II indicates “5th”.

| DTC | Malfunction items | Fail-safe* |
|-------|---|--|
| P0500 | Vehicle speed signal | No learning control. |
| P0613 | TCM processor | Fail-safe mode 4 |
| P0705 | PNP switch | Fail-safe mode 4 |
| P0710 | ATF temperature sensor circuit | Sets ATF temperature data at 111°C (232°F) after 15 minutes. Inhibits lock-up control. |
| P0711 | ATF temperature sensor function | Sets ATF temperature data at 111°C (232°F) after 15 minutes. Inhibits lock-up control. |
| P0717 | Turbine revolution sensor | Fail-safe mode 1 |
| P0722 | Revolution sensor | Uses vehicle speed signal from combination meter as a substitute. Inhibits learning control. |
| P0726 | Engine speed signal input circuit performance | Fail-safe mode 1 |
| P0731 | 1st gear function | No 1st gear, no control for N-D shift. |
| P0732 | 2nd gear function | Fail-safe mode 1. Also, ECM restricts engine torque to prevent clutch slipping. |
| P0733 | 3rd gear function | Fail-safe mode 1. Also, ECM restricts engine torque to prevent clutch slipping. |
| P0734 | 4th gear function | Fail-safe mode 1. Also, ECM restricts engine torque to prevent clutch slipping. |
| P0735 | 5th gear function | Fail-safe mode 1. Also, ECM restricts engine torque to prevent clutch slipping. |
| P0744 | Lock-up function | Fail-safe mode 1 |
| P0745 | Pressure control solenoid valve A | Fail-safe mode 1. Also, ECM restricts engine torque to prevent clutch slipping. |

TROUBLE DIAGNOSIS

| DTC | Malfunction items | Fail-safe* | |
|-------|--|--|--------|
| P0750 | Shift solenoid valve A | Any one of fail-safe modes ● Fail-safe mode 1 ● Fail-safe mode 7. Also, ECM restricts input torque to prevent clutch slipping. | A B |
| P0755 | Shift solenoid valve B | Any one of fail-safe modes ● Fail-safe mode 1 ● Fail-safe mode 8 | AT |
| P0760 | Shift solenoid valve C | Any one of fail-safe modes ● Fail-safe mode 2 ● Fail-safe mode 5 ● Fail-safe mode 9 | D |
| P0762 | Shift solenoid valve C stuck ON | Fail-safe mode 2. Also, ECM restricts engine torque to prevent clutch slipping. | E |
| P0765 | Shift solenoid valve D | Any one of fail-safe modes ● Fail-safe mode 1 ● Fail-safe mode 10. Also, ECM restricts input torque to prevent clutch slipping. | F |
| P0770 | Shift solenoid valve E | Any one of fail-safe modes ● Fail-safe mode 1. Also, ECM restricts engine torque to prevent clutch slipping. ● Fail-safe mode 6. Also, ECM restricts engine torque to prevent clutch slipping. | G H |
| P0775 | Pressure control solenoid valve B | Fail-safe mode 3 | I |
| P0780 | Shift function | Fail-safe mode 1. Also, ECM restricts input torque to prevent clutch slipping. | J |
| P0795 | Pressure control solenoid valve C | Fail-safe mode 1 | K |
| P0797 | Pressure control solenoid valve C stuck ON | Fail-safe mode 1 | L |
| P0826 | Manual mode switch | No manual mode control. | M |
| P0882 | TCM power input signal | Fail-safe mode 1 | |
| P1726 | Electric throttle control | ● The accelerator opening angle is controlled by ECM according to a pre-determined accelerator angle to make driving possible. ● No lock-up, no learning control. | |
| U1000 | CAN communication circuit | Any one of fail-safe modes ● Fail-safe mode 1 ● Fail-safe mode 1. Also, ECM restricts engine torque to prevent clutch slipping. ● No learning control. ● No lock-up, no learning control, no special shift mode control. | |

*: For fail-safe modes 1 to 10, refer to [AT-45, "Fail-safe mode list"](#).

Fail-safe mode list

| Fail-safe mode | Selector lever | Gear position*1 | Shift solenoid valve | | | | | Pressure control solenoid valve | | |
|------------------|-----------------------------|-----------------|----------------------|-----|-----|-----|-----|---------------------------------|-----|-----|
| | | | A | B | C | D | E | A | B | C |
| Fail-safe mode 1 | D position | 4th | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF |
| | Manual mode: + (up shift) | | OFF | OFF | ON | OFF | OFF | OFF | OFF | OFF |
| | Manual mode: - (down shift) | 2nd | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF |
| | R position | Reverse | OFF | OFF | OFF | OFF | ON | OFF | OFF | OFF |

TROUBLE DIAGNOSIS

| Fail-safe mode | Selector lever | Gear position*1 | Shift solenoid valve | | | | | Pressure control solenoid valve | | |
|--|-----------------------------|-----------------|----------------------|-----|-----|-----|-----|---------------------------------|-----|-----|
| | | | A | B | C | D | E | A | B | C |
| Fail-safe mode 2 (CONSULT-II displays "8") | D position | 3rd | OFF | OFF | ON | ON | OFF | OFF | OFF | OFF |
| | Manual mode: + (up shift) | | OFF | OFF | ON | OFF | OFF | OFF | OFF | OFF |
| | Manual mode: - (down shift) | 2nd | OFF | OFF | ON | OFF | OFF | OFF | OFF | OFF |
| | R position | Reverse | OFF | OFF | ON | OFF | ON | OFF | OFF | OFF |
| Fail-safe mode 3 | D position | 4th | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF |
| | Manual mode: + (up shift) | | OFF | OFF | ON | OFF | ON | OFF | OFF | OFF |
| | Manual mode: - (down shift) | 2nd | OFF | OFF | ON | OFF | ON | OFF | OFF | OFF |
| | R position | Reverse | OFF | OFF | OFF | OFF | ON | OFF | OFF | OFF |
| Fail-safe mode 4 | D position | 4th | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF |
| | Manual mode: + (up shift) | | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF |
| | Manual mode: - (down shift) | 4th | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF |
| | R position | Reverse | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF |
| Fail-safe mode 5 | D position | 4th | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF |
| | Manual mode: + (up shift) | | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF |
| | Manual mode: - (down shift) | 4th | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF |
| | R position | Reverse | OFF | OFF | OFF | OFF | ON | OFF | OFF | OFF |
| Fail-safe mode 6 | D position | 4th | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF |
| | Manual mode: + (up shift) | | OFF | OFF | ON | OFF | OFF | OFF | OFF | OFF |
| | Manual mode: - (down shift) | 2nd | OFF | OFF | ON | OFF | OFF | OFF | OFF | OFF |
| | R position | Reverse | OFF | OFF | ON | OFF | OFF | OFF | OFF | OFF |
| Fail-safe mode 7 | D position | 4th | ON | OFF | OFF | OFF | OFF | OFF | OFF | OFF |
| | Manual mode: + (up shift) | | ON | OFF | ON | OFF | OFF | OFF | OFF | OFF |
| | Manual mode: - (down shift) | 2nd | ON | OFF | ON | OFF | OFF | OFF | OFF | OFF |
| | R position | Reverse*2 | ON | OFF | ON | ON | OFF | OFF | OFF | OFF |
| Fail-safe mode 8 (CONSULT-II displays "1") | D position | 5th | OFF | ON | OFF | OFF | OFF | OFF | OFF | OFF |
| | Manual mode: + (up shift) | | OFF | ON | ON | OFF | OFF | OFF | OFF | OFF |
| | Manual mode: - (down shift) | (2nd)*3 | OFF | ON | ON | OFF | OFF | OFF | OFF | OFF |
| | R position | Reverse | OFF | ON | OFF | OFF | ON | OFF | OFF | OFF |
| Fail-safe mode 9 (CONSULT-II displays "8") | D position | 4th | OFF | OFF | OFF | ON | OFF | OFF | OFF | OFF |
| | Manual mode: + (up shift) | | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF |
| | Manual mode: - (down shift) | 4th | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF |
| | R position | Reverse | OFF | OFF | OFF | OFF | ON | OFF | OFF | OFF |
| Fail-safe mode 10 (CONSULT-II displays "6") | D position | 4th | OFF | OFF | OFF | ON | OFF | OFF | OFF | OFF |
| | Manual mode: + (up shift) | | OFF | OFF | ON | ON | OFF | OFF | OFF | OFF |
| | Manual mode: - (down shift) | 3rd | OFF | OFF | ON | ON | OFF | OFF | OFF | OFF |
| | R position | Reverse*2 | OFF | OFF | ON | ON | OFF | OFF | OFF | OFF |

*1: CONSULT-II indicates "5th".

*2: Reverse gear ratio difference (Gear ratio: 3.342)

*3: 3rd gear ratio difference (Gear ratio: 2.301)

TROUBLE DIAGNOSIS

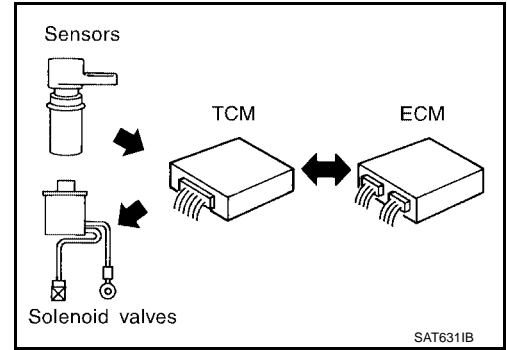
How To Perform Trouble Diagnosis For Quick and Accurate Repair INTRODUCTION

ECS00A18

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

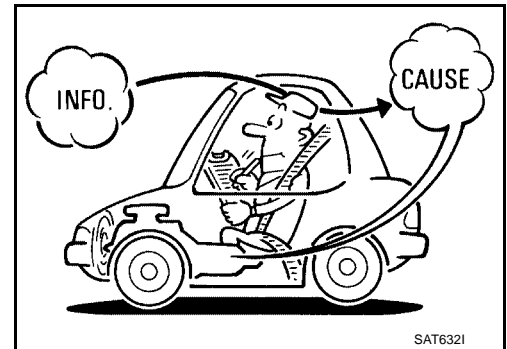
The TCM also communicates with the ECM by means of a signal sent from sensing elements used with the OBD-related parts of the A/T system for malfunction-diagnostic purposes. The TCM is capable of diagnosing malfunctioning parts while the ECM can store malfunctions in its memory.

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

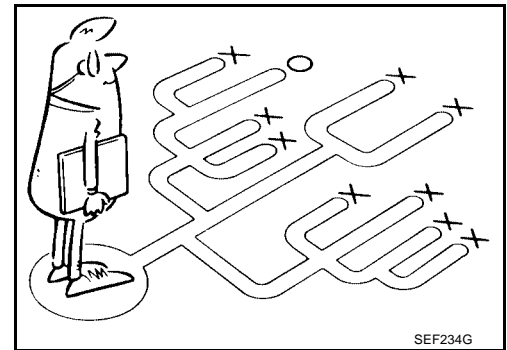
A visual check only may not find the cause of the errors. A road test with CONSULT-II (or GST) or a circuit tester connected should be performed. Follow the [AT-48, "WORK FLOW"](#).



Before undertaking actual checks, take a few minutes to talk with a customer who approaches with a driveability complaint. The customer can supply good information about such errors, especially intermittent ones. Find out what symptoms are present and under what conditions they occur. A "Diagnostic Worksheet" as shown on the example (Refer to [AT-49](#)) should be used.

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

Also check related Service bulletins.

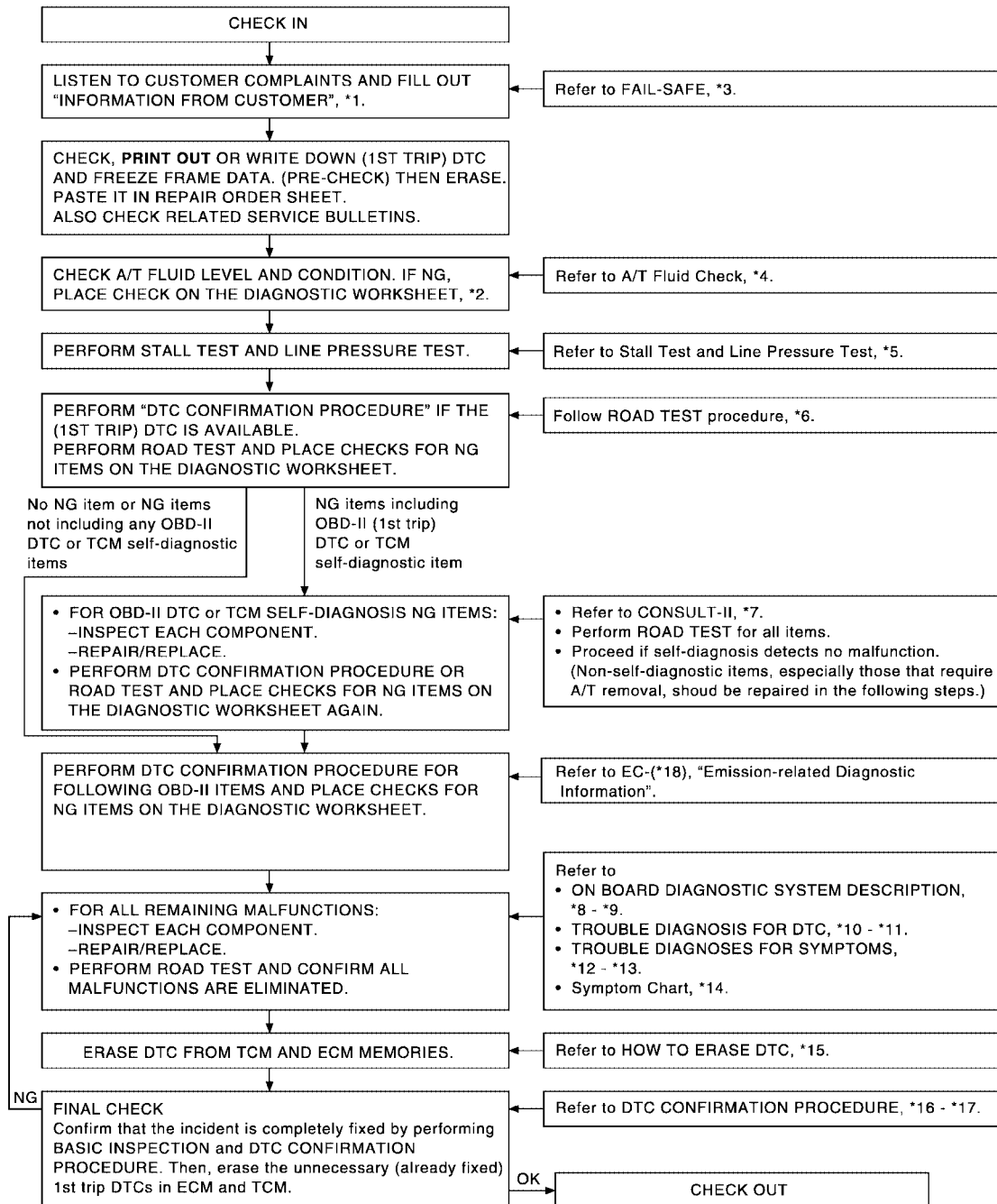


TROUBLE DIAGNOSIS

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-49](#)) and "Diagnostic Worksheet" (Refer to [AT-49](#)), to perform the best troubleshooting possible.

Work Flow Chart



*1. [AT-49](#)

*4. [AT-54](#)

*7. [AT-74](#)

*10. [AT-83](#)

*13. [AT-229](#)

*16. [AT-83](#)

*2. [AT-49](#)

*5. [AT-54](#), [AT-56](#)

*8. [AT-40](#)

*11. [AT-209](#)

*14. [AT-64](#)

*17. [AT-209](#)

*3. [AT-44](#)

*6. [AT-57](#)

*9. [AT-43](#)

*12. [AT-210](#)

*15. [AT-41](#)

*18. [EC-50](#)

SCIA0501E

TROUBLE DIAGNOSIS

DIAGNOSTIC WORKSHEET

Information From Customer

KEY POINTS

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

| | | | |
|--|--|----------------------------------|-----------------|
| Customer name | MR/MS | Model & Year | VIN |
| Trans. Model | | Engine | Mileage |
| Incident 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 | | | |
| <input type="checkbox"/> Others (_____) | | | |
| Malfunction indicator lamp (MIL) | <input type="checkbox"/> Continuously lit | <input type="checkbox"/> Not lit | |
| A/T Check indicator lamp | <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-44 | | | | |
| 2 | <input type="checkbox"/> A/T fluid inspection <input type="checkbox"/> Leak (Repair leak location.) <input type="checkbox"/> State <input type="checkbox"/> Amount | AT-54 | | | | |
| 3 | <input type="checkbox"/> Stall test, time lag test and line pressure test <div style="border: 1px solid black; padding: 5px; margin-top: 5px;"> <input type="checkbox"/> Stall test <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; border-right: 1px solid black; padding: 5px;"> <input type="checkbox"/> Engine <input type="checkbox"/> Torque converter one-way clutch <input type="checkbox"/> Line pressure is low <input type="checkbox"/> Forward clutch <input type="checkbox"/> Direct clutch <input type="checkbox"/> 1st and reverse brake </td> <td style="width: 50%; padding: 5px;"> <input type="checkbox"/> B5 brake <input type="checkbox"/> One-way clutch No. 2 <input type="checkbox"/> Oil pump <input type="checkbox"/> Oil strainer <input type="checkbox"/> Oil leak for each range circuit </td> </tr> </table></div> <div style="border: 1px solid black; padding: 5px; margin-top: 5px;"> <input type="checkbox"/> Time lag test <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; border-right: 1px solid black; padding: 5px;"> <input type="checkbox"/> Line pressure is low <input type="checkbox"/> Forward clutch <input type="checkbox"/> Direct clutch <input type="checkbox"/> 1st and reverse brake <input type="checkbox"/> One-way clutch No. 2 </td> <td style="width: 50%; padding: 5px;"> <input type="checkbox"/> Oil pump <input type="checkbox"/> Oil strainer <input type="checkbox"/> Oil leak for "D" position circuit <input type="checkbox"/> Oil leak for "R" position circuit </td> </tr> </table></div> <input type="checkbox"/> Line pressure inspection - Suspected part: | <input type="checkbox"/> Engine <input type="checkbox"/> Torque converter one-way clutch <input type="checkbox"/> Line pressure is low <input type="checkbox"/> Forward clutch <input type="checkbox"/> Direct clutch <input type="checkbox"/> 1st and reverse brake | <input type="checkbox"/> B5 brake <input type="checkbox"/> One-way clutch No. 2 <input type="checkbox"/> Oil pump <input type="checkbox"/> Oil strainer <input type="checkbox"/> Oil leak for each range circuit | <input type="checkbox"/> Line pressure is low <input type="checkbox"/> Forward clutch <input type="checkbox"/> Direct clutch <input type="checkbox"/> 1st and reverse brake <input type="checkbox"/> One-way clutch No. 2 | <input type="checkbox"/> Oil pump <input type="checkbox"/> Oil strainer <input type="checkbox"/> Oil leak for "D" position circuit <input type="checkbox"/> Oil leak for "R" position circuit | AT-54, AT-56 |
| <input type="checkbox"/> Engine <input type="checkbox"/> Torque converter one-way clutch <input type="checkbox"/> Line pressure is low <input type="checkbox"/> Forward clutch <input type="checkbox"/> Direct clutch <input type="checkbox"/> 1st and reverse brake | <input type="checkbox"/> B5 brake <input type="checkbox"/> One-way clutch No. 2 <input type="checkbox"/> Oil pump <input type="checkbox"/> Oil strainer <input type="checkbox"/> Oil leak for each range circuit | | | | | |
| <input type="checkbox"/> Line pressure is low <input type="checkbox"/> Forward clutch <input type="checkbox"/> Direct clutch <input type="checkbox"/> 1st and reverse brake <input type="checkbox"/> One-way clutch No. 2 | <input type="checkbox"/> Oil pump <input type="checkbox"/> Oil strainer <input type="checkbox"/> Oil leak for "D" position circuit <input type="checkbox"/> Oil leak for "R" position circuit | | | | | |

TROUBLE DIAGNOSIS

| | | |
|------|---|-----------------------|
| | <input type="checkbox"/> Perform all road tests and enter checks in required inspection items. | AT-57 |
| 4 | Check before engine is started | AT-58 |
| | <input type="checkbox"/> The A/T CHECK Indicator Lamp does come on. AT-210 . <input type="checkbox"/> Perform self-diagnostics. Enter checks for detected items. | AT-58 |
| | 4-1. <ul style="list-style-type: none"> <input type="checkbox"/> Vehicle speed sensor-MTR. AT-86 . <input type="checkbox"/> TCM processor. AT-88 . <input type="checkbox"/> PNP switch. AT-90 . <input type="checkbox"/> A/T fluid temperature sensor circuit. AT-95 . <input type="checkbox"/> A/T fluid temperature sensor performance. AT-100 . <input type="checkbox"/> Turbine revolution sensor circuit. AT-105 . <input type="checkbox"/> Vehicle speed sensor-A/T (revolution sensor) circuit. AT-109 . <input type="checkbox"/> Engine speed input circuit performance. AT-113 . <input type="checkbox"/> 1st gear function. AT-115 . <input type="checkbox"/> 2nd gear function. AT-118 . <input type="checkbox"/> 3rd gear function. AT-124 . <input type="checkbox"/> 4th gear function. AT-130 . <input type="checkbox"/> 5th gear function. AT-135 . <input type="checkbox"/> Lock-up function. AT-141 . <input type="checkbox"/> Shift function. AT-184 . <input type="checkbox"/> Pressure control solenoid valve A. AT-144 . <input type="checkbox"/> Pressure control solenoid valve B. AT-179 . <input type="checkbox"/> Pressure control solenoid valve C. AT-188 . <input type="checkbox"/> Shift solenoid valve A. AT-149 . <input type="checkbox"/> Shift solenoid valve B. AT-154 . <input type="checkbox"/> Shift solenoid valve C. AT-159 . <input type="checkbox"/> Shift solenoid valve D. AT-169 . <input type="checkbox"/> Shift solenoid valve E. AT-174 . <input type="checkbox"/> Pressure control solenoid valve C stuck ON. AT-193 . <input type="checkbox"/> Shift solenoid valve C stuck ON. AT-164 . <input type="checkbox"/> Manual mode switch circuit. AT-198 . <input type="checkbox"/> TCM power input signal. AT-204 . <input type="checkbox"/> Electric throttle control system. AT-209 . <input type="checkbox"/> CAN communication. AT-83 . <input type="checkbox"/> Battery <input type="checkbox"/> Other | |
| 4-2. | Idle inspection <ul style="list-style-type: none"> <input type="checkbox"/> Engine Cannot Be Started in "P" and "N" Position. AT-212 . <input type="checkbox"/> In " P" Position, Vehicle Moves When Pushed. AT-212 . <input type="checkbox"/> In "N" Position Vehicle Moves. AT-213 . <input type="checkbox"/> Large Shock "N" to "D" Position. AT-214 . <input type="checkbox"/> Vehicle Does Not Creep Backward In "R" Position. AT-215 . <input type="checkbox"/> Vehicle does Not Creep Forward In "D" Position. AT-216 . | AT-58 |
| 4-3. | Driving tests <ul style="list-style-type: none"> Part 1 <input type="checkbox"/> Vehicle Cannot Be Started From D1. AT-217 . <input type="checkbox"/> A/T Does Not Shift: D1 → D2. AT-217 . <input type="checkbox"/> A/T Does Not Shift: D2 → D3. AT-218 . <input type="checkbox"/> A/T Does Not Shift: D3 → D4. AT-219 . <input type="checkbox"/> A/T Does Not Shift: D4 → D5. AT-220 . <input type="checkbox"/> A/T Does Not Perform Lock-up. AT-221 <input type="checkbox"/> A/T Does Not Hold Lock-up Condition. AT-222 . <input type="checkbox"/> Lock-up Is Not Released. AT-223 . | AT-60 |

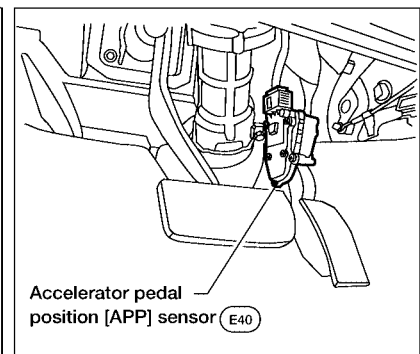
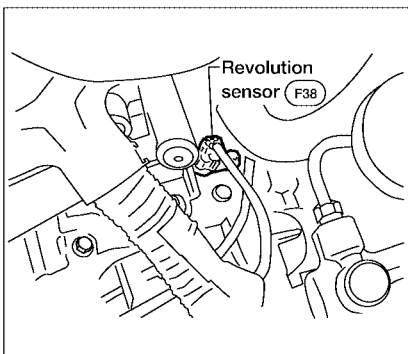
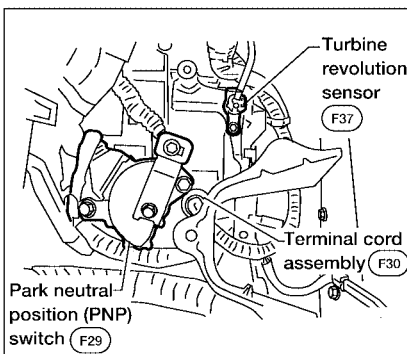
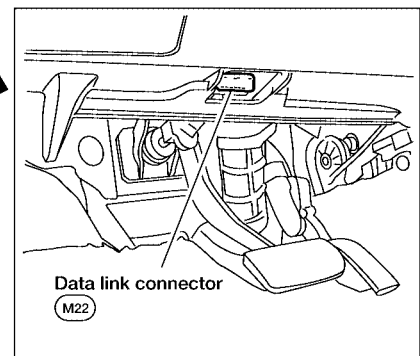
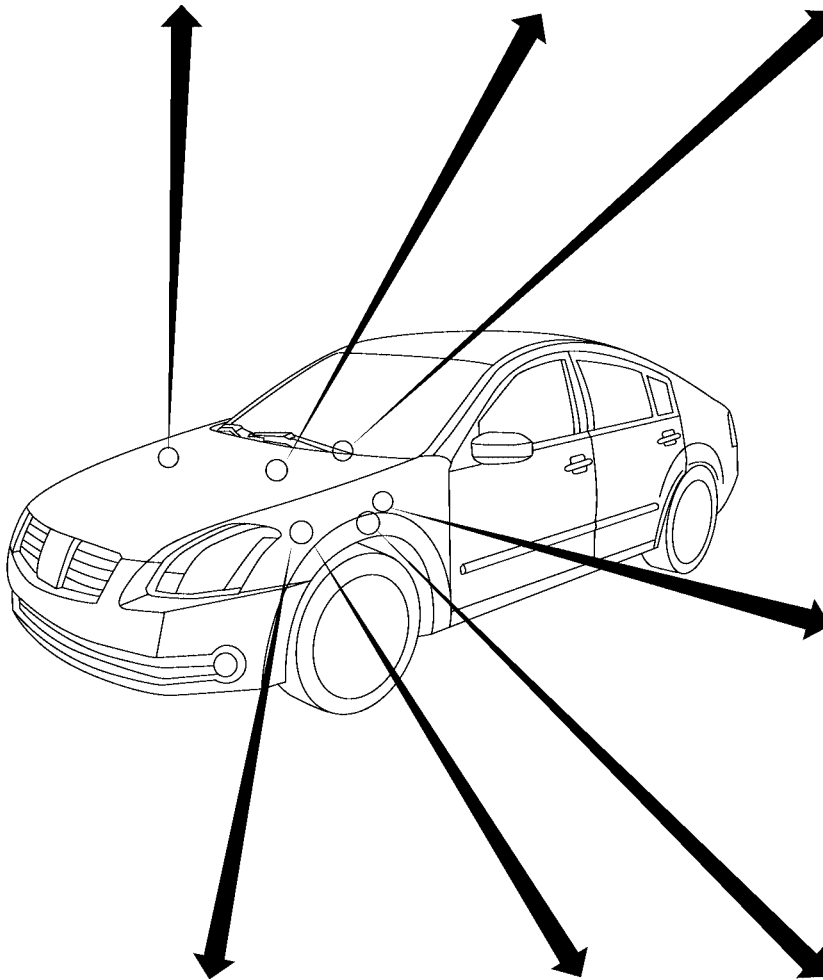
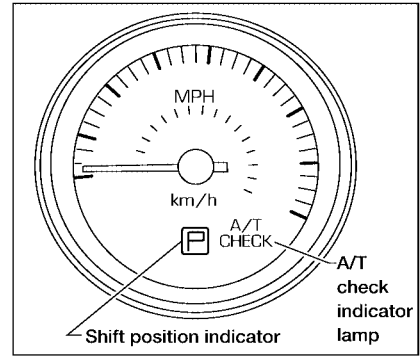
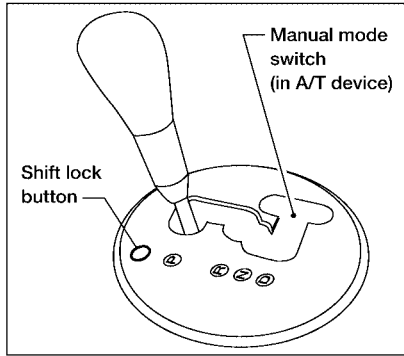
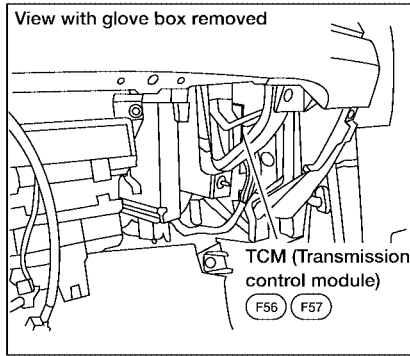
TROUBLE DIAGNOSIS

| | | | | |
|---|--|---|--------------------------------------|----|
| 4 | 4-3 | Part 2 | AT-61 | A |
| | | <input type="checkbox"/> Vehicle Cannot Be Started From D1. AT-217 . <input type="checkbox"/> A/T Does Not Shift: D1 → D2. AT-217 . <input type="checkbox"/> A/T Does Not Shift: D2 → D3. AT-218 . <input type="checkbox"/> A/T Does Not Shift: D3 → D4. AT-219 . | | B |
| | | Part 3 | AT-62 | AT |
| | | <input type="checkbox"/> Cannot Be Changed To Manual Mode. AT-224 . <input type="checkbox"/> A/T Does Not Shift: 5th gear → 4th gear. AT-225 . <input type="checkbox"/> A/T Does Not Shift: 4th gear → 3rd gear. AT-226 . <input type="checkbox"/> A/T Does Not Shift: 3rd gear → 2nd gear. AT-226 . <input type="checkbox"/> A/T Does Not Shift: 2nd gear → 1st gear. AT-227 . <input type="checkbox"/> Vehicle Does Not Decelerate By Engine Brake. AT-228 . <input type="checkbox"/> Perform self-diagnostics Enter checks for detected items. | | D |
| | <input type="checkbox"/> Vehicle speed sensor-MTR. AT-86 . <input type="checkbox"/> TCM processor. AT-88 . <input type="checkbox"/> PNP switch. AT-90 . <input type="checkbox"/> A/T fluid temperature sensor circuit. AT-95 . <input type="checkbox"/> A/T fluid temperature sensor performance. AT-100 . <input type="checkbox"/> Turbine revolution sensor circuit. AT-105 . <input type="checkbox"/> Vehicle speed sensor-A/T (revolution sensor) circuit. AT-109 . <input type="checkbox"/> Engine speed input circuit performance. AT-113 . <input type="checkbox"/> 1st gear function. AT-115 . <input type="checkbox"/> 2nd gear function. AT-118 . <input type="checkbox"/> 3rd gear function. AT-124 . <input type="checkbox"/> 4th gear function. AT-130 . <input type="checkbox"/> 5th gear function. AT-135 . <input type="checkbox"/> Lock-up function. AT-141 . <input type="checkbox"/> Shift function. AT-184 . <input type="checkbox"/> Pressure control solenoid valve A. AT-144 . <input type="checkbox"/> Pressure control solenoid valve B. AT-179 . <input type="checkbox"/> Pressure control solenoid valve C. AT-188 . <input type="checkbox"/> Shift solenoid valve A. AT-149 . <input type="checkbox"/> Shift solenoid valve B. AT-154 . <input type="checkbox"/> Shift solenoid valve C. AT-159 . <input type="checkbox"/> Shift solenoid valve D. AT-169 . <input type="checkbox"/> Shift solenoid valve E. AT-174 . <input type="checkbox"/> Pressure control solenoid valve C stuck ON. AT-193 . <input type="checkbox"/> Shift solenoid valve C stuck ON. AT-164 . <input type="checkbox"/> Manual mode switch circuit. AT-198 . <input type="checkbox"/> TCM power input signal. AT-204 . <input type="checkbox"/> Electric throttle control system. AT-209 . <input type="checkbox"/> CAN communication. AT-83 . <input type="checkbox"/> Battery <input type="checkbox"/> Other | | E F G H I J K L | |
| 5 | <input type="checkbox"/> Inspect each system for items found to be NG in the self-diagnostics and repair or replace the malfunction parts. | | M | |
| 6 | <input type="checkbox"/> Perform all road tests and enter the checks again for the required items. | AT-57 | | |
| 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-64 | | |
| 8 | <input type="checkbox"/> Erase the results of the self-diagnostics from the TCM. | AT-82 | | |

TROUBLE DIAGNOSIS

A/T Electrical Parts Location

ECS00A19



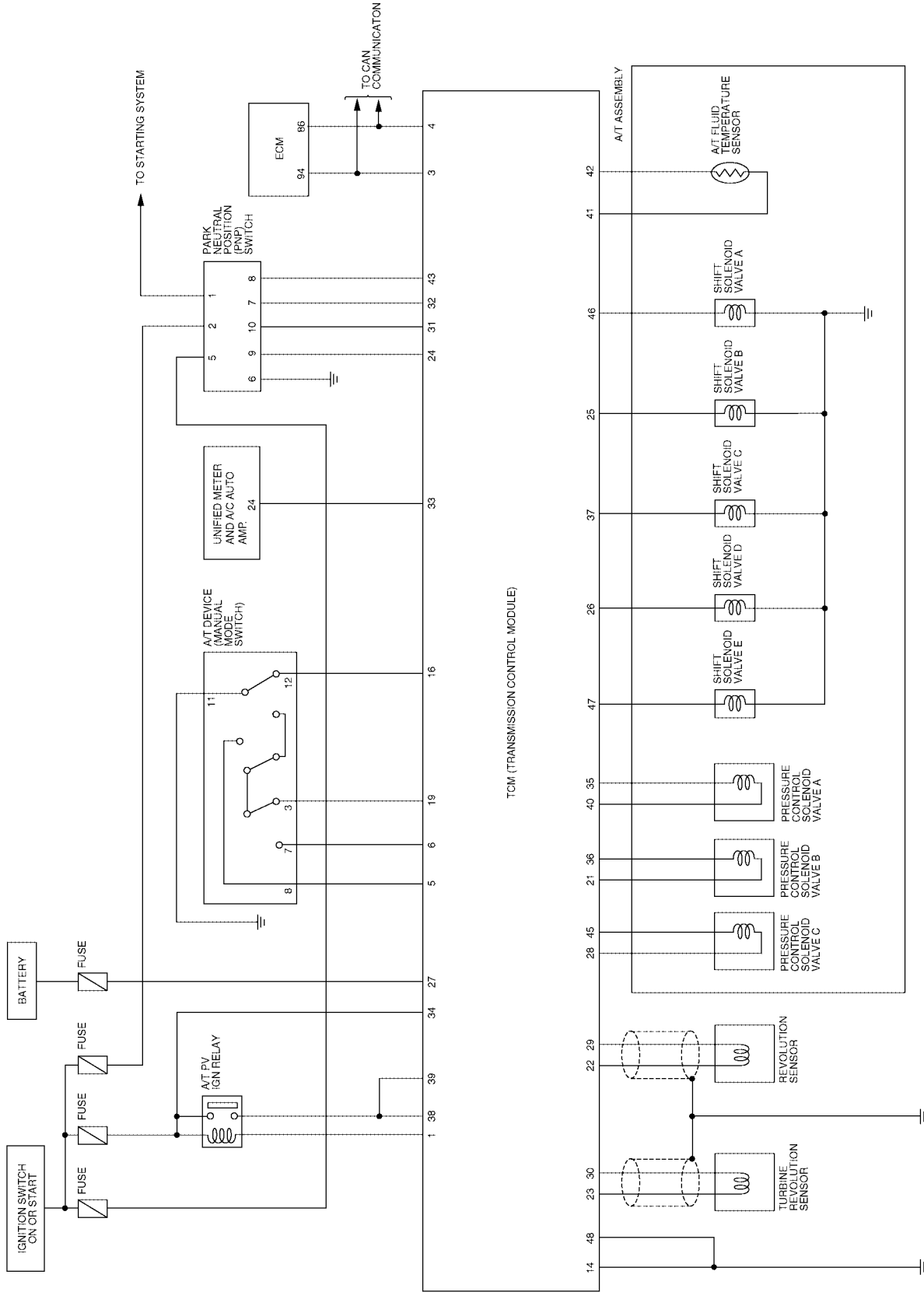
WCIA0446E

TROUBLE DIAGNOSIS

Circuit Diagram

ECS00A1A

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



BCWA0296E

TROUBLE DIAGNOSIS

ECS00A1B

Inspections Before Trouble Diagnosis

A/T FLUID CHECK

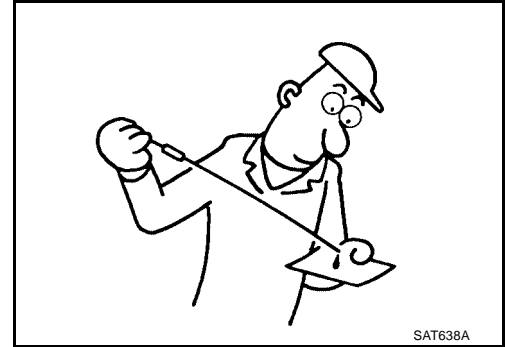
Fluid leakage and fluid level check

- Inspect for fluid leakage and check the fluid level. Refer to [MA-21, "Checking A/T Fluid"](#).

Fluid condition check

Inspect the fluid condition.

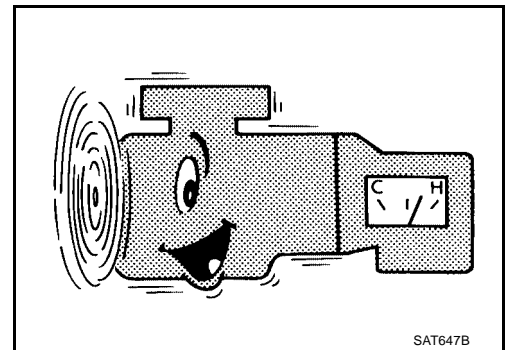
| Fluid status | Conceivable Cause | Required Operation |
|---------------------------------------|--|---|
| Varnished (viscous varnish state) | Clutch, brake scorched | Replace the A/T fluid and check the A/T main unit and the vehicle for malfunctions (wire harnesses, cooler pipes, etc.) |
| Milky white or cloudy | Water in the fluid | Replace the A/T fluid 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 A/T fluid and check for improper operation of the A/T. |



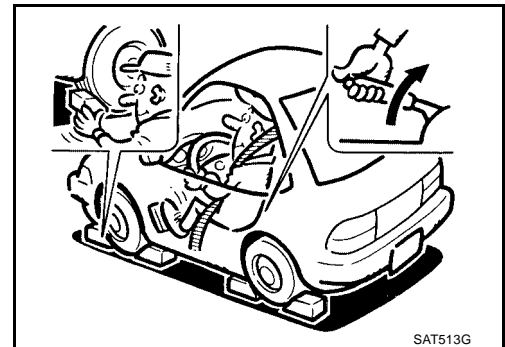
STALL TEST

Stall test procedure

1. Inspect the amount of engine oil. Replenish the engine oil if necessary.
2. Drive for about 10 minutes to warm up the vehicle so that the A/T fluid temperature is 50 to 80°C (122 to 176°F). Inspect the amount of A/T fluid. Replenish if necessary.
3. Switch of A/C and light etc. are off.



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

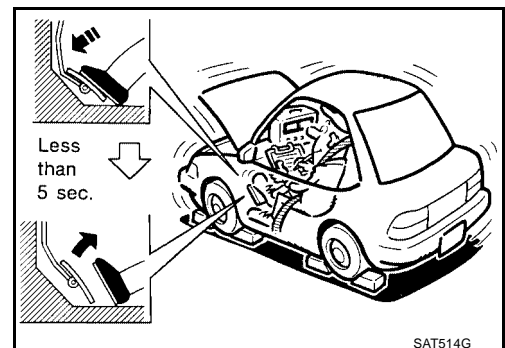


5. Engine start, apply foot brake, and place selector lever in "D" position.
6. While holding down the foot brake, gradually press down the accelerator pedal.
7. Quickly read off the stall speed, then quickly remove your foot from the accelerator pedal.

CAUTION:

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

8. Move the selector lever to the "N" position.
9. Cool down the A/T fluid.



TROUBLE DIAGNOSIS

CAUTION:

Run the engine at idle for at least one minute.

10. Repeat step 5 through 9 with selector lever in “manual mode” and “R” positions.

Stall speed: 2,430 - 2,730 rpm

Judgement stall test

| | Selector lever position | | Possible cause |
|----------------|-------------------------|---|--|
| | D, M | R | |
| Stall rotation | H | O | <ul style="list-style-type: none"> ● Line pressure is low (pressure control solenoid valve A malfunction, primary regulator valve malfunction) ● Forward clutch (slipping) ● One-way clutch No. 2 |
| | O | H | <ul style="list-style-type: none"> ● Line pressure is low (pressure control solenoid valve A malfunction, primary regulator valve malfunction) ● Direct clutch (slipping) ● 1st and reverse brake (slipping) |
| | L | L | <ul style="list-style-type: none"> ● Engine or torque converter one-way clutch |
| | H | H | <ul style="list-style-type: none"> ● Line pressure is low (pressure control solenoid valve A malfunction, primary regulator valve malfunction) ● B5 brake (slipping) ● Oil pump ● Oil strainer (clogging) ● Oil leak for each range circuit |

O: Stall speed within standard value position

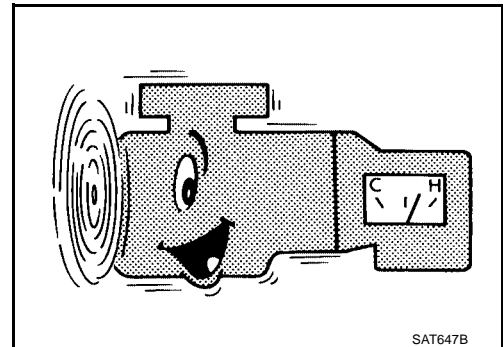
H: Stall speed higher than standard value

L: Stall speed lower than standard value

TIME LAG TEST

Time lag test procedure

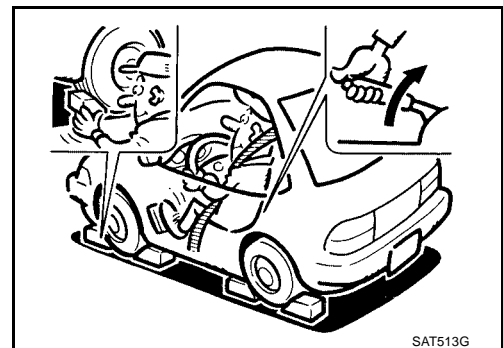
1. Inspect the amount of engine oil. Replenish the engine oil if necessary.
2. Drive for about 10 minutes to warm up the vehicle so that the A/T fluid temperature is 50 to 80°C (122 to 176°F). Check the amount of A/T fluid. Replenish if necessary.
3. Switch of A/C and light etc. are off.



4. Securely engage the parking brake so that the tires do not turn.
5. Engine start, apply foot brake.
6. Measure time lag by using stopwatch from moment when shift lever is shifted in “N” to “D” position and “N” to “R” position until moment slightly shock can be felt.

CAUTION:

- Make sure to take 3 measurement and take the average value.
- Make sure to keep interval for more than one minute between time lag tests.
(That purpose is to remove clutch/brake pressure was left unfinished.)



TROUBLE DIAGNOSIS

Time lag:

“N” to “D” position: **Less than 0.7 sec.**

“N” to “R” position: **Less than 1.2 sec.**

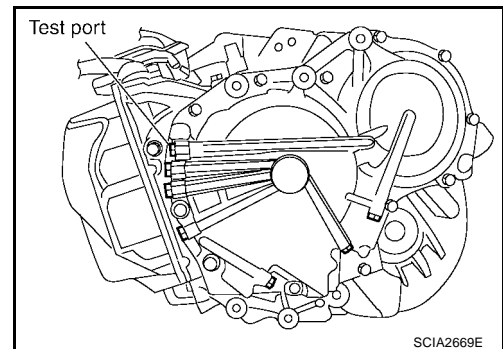
Judgement time lag test

| Result of time lag test | Possible cause |
|---|--|
| Longer than standards “N” to “D” position | <ul style="list-style-type: none"> ● Line pressure is low (pressure control solenoid valve A malfunction, primary regulator valve malfunction) ● Forward clutch (slipping) ● One-way clutch No. 2 ● Oil leak for “D” range circuit |
| Longer than standards “N” to “R” position | <ul style="list-style-type: none"> ● Line pressure is low ● Direct clutch (slipping) ● 1st and reverse brake (slipping) ● Oil leak for “R” range circuit ● Oil pump ● Oil strainer (clogging) |

LINE PRESSURE TEST

Line pressure test port

Location of line pressure test port is show in the figure.



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 A/T fluid reaches in range of 50 to 80°C (122 to 176°F), then inspect the amount of A/T fluid and replenish if necessary.

NOTE:

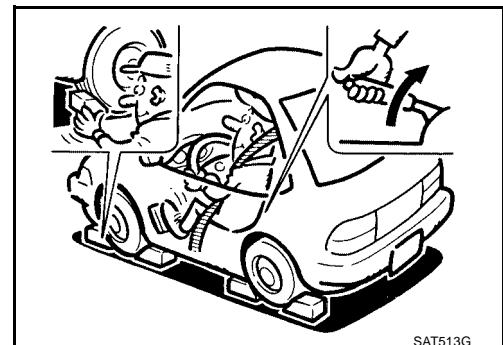
The automatic fluid temperature rises in range of 50 to 80°C (122 to 176°F) during 10 minutes of driving.

3. Switch of A/C and light etc. are off.
4. After warming up A/T, remove the oil pressure detection plug and install the oil pressure gauge [SST: (J34301-C)] and adapter [SST: (J45542)].

CAUTION:

Make sure to check no oil leak after installing oil pressure gage.

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




TROUBLE DIAGNOSIS

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

CAUTION:

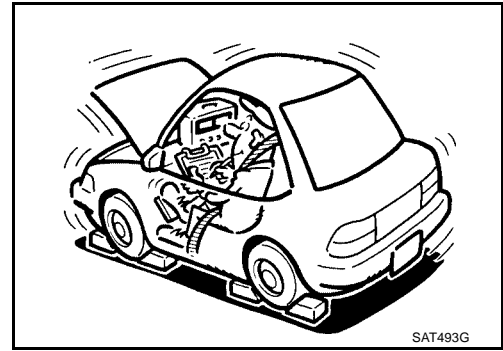
- Keep the brake pedal pressed all the way down during measurement.
- When measuring the line pressure at the stall speed, refer to [AT-54, "STALL TEST"](#) .

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

 :5.9 - 8.8 N·m (0.61 - 0.89 kg·m, 53 - 77 in·lb)

CAUTION:

Do not reuse O-ring.



Line pressure

| Engine speed | Line pressure kPa (kg/cm ² , psi) | |
|----------------|--|--|
| | D, M positions | R position |
| At idle speed | 333 - 392 (3.4 - 4.0, 48 - 57) | 500 - 608 (5.1 - 6.2, 73 - 88) |
| At stall speed | 1,285 - 1,393 (13.1 - 14.2, 186 - 202) | 1,706 - 1,981 (17.4 - 20.2, 247 - 287) |

Judgement of line pressure test

| Judgement | Possible cause |
|---|--|
| Higher than standards both "D", "M" and "R" positions | <ul style="list-style-type: none"> ● Pressure control solenoid valve A malfunction ● Primary regulator valve malfunction |
| Lower than standards both "D", "M" and "R" positions | <ul style="list-style-type: none"> ● Pressure control solenoid valve A malfunction ● Primary regulator valve malfunction ● Oil pump malfunction ● B5 bake malfunction ● Oil leak for each range circuit malfunction |
| Lower than standards only "D" position | <ul style="list-style-type: none"> ● Oil leak for "D" range circuit malfunction ● Forward clutch malfunction |
| Lower than standards only "R" position | <ul style="list-style-type: none"> ● Oil leak for "R" range circuit malfunction ● Direct clutch malfunction ● 1st and reverse brake malfunction |

ROAD TEST

Description

- The road test inspects overall performance of the A/T and analyzes possible malfunction causes.
 - The road test is perform in the following three stages.
1. Check before engine is started. Refer to [AT-58](#) .
 2. Check at idle. Refer to [AT-58](#) .
 3. Cruise test
 - Inspect all the items from Part 1 to Part 3. Refer to [AT-60](#) , [AT-61](#) , [AT-62](#) .

ROAD TEST PROCEDURE

1. Check before engine is started.



2. Check at idle.



3. Cruise test.

SAT786A

TROUBLE DIAGNOSIS

- 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.



Check Before Engine is Started

ECS00A1C

1. CHECK A/T CHECK INDICATOR LAMP

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

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

- Yes >> 1. Turn ignition switch "OFF".
2. Perform the self-diagnostics and record all NG items on the diagnostics worksheet. Refer to [AT-75](#) , [AT-80](#) .
3. Go to [AT-58, "Check at Idle"](#) .
- No >> Stop the road test and go to [AT-210, "A/T CHECK Indicator Lamp does not come on"](#) .

Check at Idle

ECS00A1D

1. CHECK STARTING THE ENGINE

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

Does the engine start?

- Yes >> GO TO 2.
No >> Stop the road test and go to [AT-212, "Engine Cannot Be Started In "P" or "N" Position"](#) .

2. CHECK STARTING THE ENGINE

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

Does the engine start in either position?

- Yes >> Stop the road test and go to [AT-212, "Engine Cannot Be Started In "P" or "N" Position"](#) .
No >> GO TO 3.

TROUBLE DIAGNOSIS

3. CHECK "P" POSITION FUNCTIONS

1. Move selector lever to "P" position.
2. Turn ignition switch "OFF".
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.

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 transaxle 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 transaxle is put into the "D" position.

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

- Yes >> Go to [AT-60, "Cruise Test - Part 1"](#) , [AT-61, "Cruise Test - Part 2"](#) , and [AT-62, "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.

TROUBLE DIAGNOSIS

ECS00A1E

Cruise Test - Part 1

1. CHECK STARTING OUT FROM D1

1. Drive the vehicle for about 10 minutes to warm up the engine oil and A/T fluid.
Appropriate temperature for the A/T fluid: 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.

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-63](#).

Ⓜ 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-63](#).

Ⓜ 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-63](#).

Ⓜ 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.

TROUBLE DIAGNOSIS

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-63](#).

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.

6. CHECK LOCK-UP

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

- Refer to [AT-63](#).

With CONSULT-II

Read the lock-up status.

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

Read the lock-up status.

Does lock-up cancel?

Yes >> 1. Stop the vehicle.

2. Go to Cruise test - Part 2 (Refer to [AT-61](#)).

No >> Enter a check mark at “Lock-up is not released” on the diagnostics worksheet, then continue the road test. Go to Cruise test - Part 2 (Refer to [AT-61](#)).

Cruise Test - Part 2

ECS00A1F

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 transaxle shifts up (D1 → D2) at the correct speed.

- Refer to [AT-63](#).

Ⓜ With CONSULT-II

Read the gear position, accelerator angle 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 transaxle shifts up (D2 → D3) at the correct speed.

- Refer to [AT-63](#).

Ⓜ With CONSULT-II

Read the gear position, accelerator angle 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 transaxle changes speed D2 → D3, return the accelerator pedal.

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

Yes >> 1. Stop the vehicle.

2. Go to Cruise test - Part 3 (Refer to [AT-62](#)).

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

ECS00A1G

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 check mark 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. Perform the self-diagnostics. Refer to [AT-75, "SELF-DIAG RESULT MODE"](#) , [AT-80, "Diagnostic Procedure Without CONSULT-II"](#) .

No >> Enter a check mark at "Vehicle does not decelerate by engine brake" on the diagnostics worksheet, then continue trouble diagnosis.

Shift Schedule

ECS00A1H

VEHICLE SPEED WHEN SHIFTING GEARS

| Accelerator angle | Vehicle speed km/h (MPH) (Approx.) | | | | | | | |
|-------------------|------------------------------------|------------|-------------|--------------|--------------|-------------|------------|------------|
| | D1 →D2 | D2 →D3 | D3 →D4 | D4 →D5 | D5 →D4 | D4 →D3 | D3 →D2 | D2 →D1 |
| 100 % | 59 (37) | 95 (59) | 147 (91) | 217 (135) | 207 (129) | 142 (88) | 83 (52) | 41 (25) |
| 90 % | 59 (37) | 95 (59) | 147 (91) | 217 (135) | 207 (129) | 142 (88) | 83 (52) | 41 (25) |
| 80 % | 59 (37) | 95 (59) | 147 (91) | 217 (135) | 207 (129) | 142 (88) | 83 (52) | 41 (25) |
| 70 % | 59 (37) | 95 (59) | 147 (91) | 217 (135) | 197 (122) | 141 (88) | 81 (50) | 41 (25) |
| 60 % | 59 (37) | 95 (59) | 147 (91) | 217 (135) | 190 (118) | 135 (84) | 76 (47) | 41 (25) |
| 50 % | 59 (37) | 90 (56) | 137 (85) | 202 (126) | 176 (109) | 123 (76) | 69 (43) | 41 (25) |
| 40 % | 50 (31) | 82 (51) | 117 (73) | 172 (107) | 148 (92) | 92 (57) | 54 (34) | 32 (20) |
| 30 % | 37 (23) | 62 (39) | 87 (54) | 127 (79) | 105 (65) | 59 (37) | 35 (22) | 19 (12) |
| 20 % | 27 (17) | 44 (27) | 59 (37) | 87 (54) | 60 (37) | 40 (25) | 22 (14) | 8 (5) |
| 10 % | 19 (12) | 27 (17) | 35 (22) | 55 (34) | 44 (27) | 32 (20) | 22 (14) | 8 (5) |

VEHICLE SPEED WHEN PERFORMING AND RELEASING COMPLETE LOCK-UP

| Accelerator angle | Vehicle speed km/h (MPH) (Approx.) | |
|-------------------|------------------------------------|---------------|
| | Lock-up "ON" | Lock-up "OFF" |
| 50 % | 217 (135) | 195 (121) |
| 15% | 108 (67) | 70 (43) |
| 0 - 8 % | 66 (41) | 63 (39) |

- Lock-up vehicle speed indicates the speed in D position.
- Perform lock-up inspection after warming up engine.
- Lock-up vehicle speed may vary depending on the driving conditions and circumstances.

VEHICLE SPEED WHEN PERFORMING AND RELEASING SLIP LOCK-UP

| Accelerator angle | Gear position | Vehicle speed km/h (MPH) (Approx.) | |
|-------------------|---------------|------------------------------------|--------------------|
| | | Slip lock-up "ON" | Slip lock-up "OFF" |
| 0 - 10 % | 4th | 41 (25) | 38 (24) |
| | 5th | 53 (33) | 50 (31) |

- Slip lock-up vehicle speed indicates the speed in D position.
- Perform slip lock-up inspection after warming up engine.

TROUBLE DIAGNOSIS

- Slip lock-up vehicle speed may vary depending on the driving conditions and circumstances.

Symptom Chart

ECS00A11

Numbers are arranged in order of inspection.
Perform inspections starting with number one and work up.

CAUTION:

Do not remove or disassemble any RE5F22A model transaxle parts unless specified to do so in AT section.

| Symptom | Condition | Diagnostic Item | Reference page |
|---|-------------|--|--------------------------------|
| With selector lever in D position, driving is not possible. | ON vehicle | 1. Fluid level and state | AT-54 |
| | | 2. Control cable and PNP switch adjustment | AT-240, AT-238 |
| | | 3. TCM | AT-71 |
| | | 4. Pressure control solenoid valve A | AT-144 |
| | | 5. Control valve assembly | AT-241 |
| | OFF vehicle | 6. Torque converter | AT-243 |
| | | 7. Forward and direct clutch assembly | AT-252 |
| | | 8. B5 brake | AT-280 |
| | | 9. One-way clutch No.2 | AT-252 |
| With selector lever in R position, driving is not possible. | ON vehicle | 1. Fluid level and state | AT-54 |
| | | 2. Control cable and PNP switch adjustment | AT-241, AT-238 |
| | | 3. TCM | AT-71 |
| | | 4. Shift solenoid valve A | AT-149 |
| | | 5. Shift solenoid valve B | AT-154 |
| | | 6. Pressure control solenoid valve A | AT-144 |
| | | 7. Control valve assembly | AT-241 |
| | OFF vehicle | 8. Torque converter | AT-252 |
| | | 9. Forward and direct clutch assembly | AT-252 |
| | | 10. 1st and reverse brake | AT-252 |
| | | 11. B5 brake | AT-280 |
| No shock at all or the clutch slips when vehicle changes speed. | ON vehicle | 1. Fluid level and state | AT-54 |
| | | 2. Control cable and PNP switch adjustment | AT-240, AT-238 |
| | | 3. TCM | AT-71 |
| | | 4. Shift solenoid valve A | AT-149 |
| | | 5. Shift solenoid valve B | AT-154 |
| | | 6. Shift solenoid valve E | AT-174 |
| | | 7. Pressure control solenoid valve A | AT-144 |
| | | 8. Pressure control solenoid valve C | AT-188 |
| | | 9. Control valve assembly | AT-241 |
| | OFF vehicle | 10. Accumulator | AT-252 |

TROUBLE DIAGNOSIS

| Symptom | Condition | Diagnostic Item | Reference page |
|---|-------------|--|--------------------------------|
| Time lag is large. ("N" → "D" position) | ON vehicle | 1. Fluid level and state | AT-54 |
| | | 2. Actual engine torque signal | AT-113 |
| | | 3. Turbine revolution sensor | AT-105 |
| | | 4. TCM | AT-71 |
| | | 5. Control valve assembly | AT-241 |
| | OFF vehicle | 6. Accumulator | AT-252 |
| | | 7. Forward and direct clutch assembly | AT-252 |
| Time lag is large. ("N" → "R" position) | ON vehicle | 1. Fluid level and state | AT-54 |
| | | 2. Actual engine torque signal | AT-113 |
| | | 3. Turbine revolution sensor | AT-105 |
| | | 4. TCM | AT-71 |
| | | 5. Shift solenoid valve E | AT-174 |
| | | 6. Control valve assembly | AT-241 |
| | OFF vehicle | 7. Forward and direct clutch assembly | AT-252 |
| | | 8. 1st and reverse brake | AT-252 |
| Engine does not start in "N", "P" position. | ON vehicle | 1. Ignition switch and starter | PG-4, SC-10 |
| | | 2. Control cable adjustment | AT-240 |
| | | 3. PNP switch | AT-90 |
| Engine starts in positions other than "N" or "P". | ON vehicle | 1. Ignition switch and starter | PG-4, SC-10 |
| | | 2. Control cable adjustment | AT-240 |
| | | 3. PNP switch | AT-90 |
| Engine stalls when selector lever shifted "N" → "D", "R". | ON vehicle | 1. Fluid level and state | AT-54 |
| | | 2. TCM | AT-71 |
| | | 3. Shift solenoid valve D | AT-169 |
| | | 4. Pressure control solenoid valve C | AT-188 |
| | | 5. Control valve assembly | AT-241 |
| Engine stall when vehicle slow down. | ON vehicle | 1. Fluid level and state | AT-54 |
| | | 2. TCM | AT-71 |
| | | 3. Shift solenoid valve D | AT-169 |
| | | 4. Shift solenoid valve E | AT-174 |
| | | 5. Pressure control solenoid valve C | AT-188 |
| | | 6. Control valve assembly | AT-241 |
| Acceleration is extremely poor. | ON vehicle | 1. Fluid level and state | AT-54 |
| | | 2. Control cable and PNP switch adjustment | AT-240, AT-238 |
| | | 3. Engine speed signal | AT-113 |
| | | 4. Electric throttle control signal | AT-209 |

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

TROUBLE DIAGNOSIS

| Symptom | Condition | Diagnostic Item | Reference page |
|---|-------------|---------------------------------------|--------------------------------|
| Gear does not change from D1 → D2 or from M1 → M2 . | ON vehicle | 1. Fluid level and state | AT-54 |
| | | 2. TCM | AT-71 |
| | | 3. Electric throttle control signal | AT-209 |
| | | 4. Shift solenoid valve A | AT-149 |
| | | 5. Shift solenoid valve B | AT-154 |
| | | 6. Shift solenoid valve C | AT-159 |
| | | 7. Shift solenoid valve D | AT-169 |
| | | 8. Control valve assembly | AT-241 |
| | OFF vehicle | 9. 2nd coast brake | AT-272, AT-278 |
| | | 10. 2nd brake | AT-272 |
| | | 11. One-way clutch No.1 | AT-278 |
| | | 12. One-way clutch No.2 | AT-252 |
| Gear does not change from D2 → D3 or from M2 → M3 . | ON vehicle | 1. Fluid level and state | AT-54 |
| | | 2. TCM | AT-71 |
| | | 3. Electric throttle control signal | AT-209 |
| | | 4. Shift solenoid valve B | AT-154 |
| | | 5. Shift solenoid valve C | AT-159 |
| | | 6. Shift solenoid valve D | AT-169 |
| | | 7. Pressure control solenoid valve A | AT-144 |
| | | 8. Control valve assembly | AT-241 |
| | OFF vehicle | 9. U/D brake | AT-252 |
| | | 10. B5 brake | AT-280 |
| Gear does not change from D3 → D4 or from M3 → M4 . | ON vehicle | 1. Fluid level and state | AT-54 |
| | | 2. TCM | AT-71 |
| | | 3. Electric throttle control signal | AT-209 |
| | | 4. Shift solenoid valve B | AT-154 |
| | | 5. Shift solenoid valve C | AT-159 |
| | | 6. Shift solenoid valve D | AT-169 |
| | | 7. Control valve assembly | AT-241 |
| | OFF vehicle | 8. U/D clutch | AT-252 |
| | | 9. U/D brake | AT-252 |
| Gear does not change from D4 → D5 or from M4 → M5 . | ON vehicle | 1. Fluid level and state | AT-54 |
| | | 2. TCM | AT-71 |
| | | 3. Electric throttle control signal | AT-209 |
| | | 4. Shift solenoid valve B | AT-154 |
| | | 5. Shift solenoid valve C | AT-159 |
| | | 6. Control valve assembly | AT-241 |
| | OFF vehicle | 7. Forward and direct clutch assembly | AT-252 |
| | | 8. 2nd coast brake | AT-272, AT-278 |
| | | 9. One-way clutch No.1 | AT-278 |

TROUBLE DIAGNOSIS

| Symptom | Condition | Diagnostic Item | Reference page | |
|--|-------------|---------------------------------------|--------------------------------|----|
| In D or M range, does not downshift to 1st gear. | ON vehicle | 1. Fluid level and state | AT-54 | A |
| | | 2. TCM | AT-71 | B |
| | | 3. Electric throttle control signal | AT-209 | B |
| | | 4. Shift solenoid valve A | AT-149 | AT |
| | | 5. Shift solenoid valve B | AT-154 | AT |
| | | 6. Shift solenoid valve C | AT-159 | AT |
| | | 7. Shift solenoid valve D | AT-169 | D |
| | | 8. Control valve assembly | AT-241 | D |
| | OFF vehicle | 9. 2nd coast brake | AT-272, AT-278 | E |
| | | 10. 2nd brake | AT-272 | E |
| | | 11. One-way clutch No.1 | AT-278 | F |
| | | 12. One-way clutch No.2 | AT-252 | F |
| In D or M range, does not downshift to 2nd gear. | ON vehicle | 1. Fluid level and state | AT-54 | G |
| | | 2. TCM | AT-71 | G |
| | | 3. Electric throttle control signal | AT-209 | G |
| | | 4. Shift solenoid valve B | AT-154 | H |
| | | 5. Shift solenoid valve C | AT-159 | H |
| | | 6. Shift solenoid valve D | AT-169 | I |
| | | 7. Pressure control solenoid valve A | AT-144 | I |
| | | 8. Control valve assembly | AT-241 | I |
| | OFF vehicle | 9. U/D brake | AT-252 | J |
| | | 10. B5 brake | AT-280 | J |
| In D or M range, does not downshift to 3rd gear. | ON vehicle | 1. Fluid level and state | AT-54 | K |
| | | 2. TCM | AT-71 | K |
| | | 3. Electric throttle control signal | AT-209 | K |
| | | 4. Shift solenoid valve B | AT-154 | L |
| | | 5. Shift solenoid valve C | AT-159 | L |
| | | 6. Shift solenoid valve D | AT-169 | L |
| | | 7. Control valve assembly | AT-241 | M |
| | OFF vehicle | 8. U/D clutch | AT-252 | M |
| | | 9. U/D brake | AT-252 | M |
| In D or M range, does not downshift to 4th gear. | ON vehicle | 1. Fluid level and state | AT-54 | |
| | | 2. TCM | AT-71 | |
| | | 3. Electric throttle control signal | AT-209 | |
| | | 4. Shift solenoid valve B | AT-154 | |
| | | 5. Shift solenoid valve C | AT-159 | |
| | | 6. Control valve assembly | AT-241 | |
| | OFF vehicle | 7. Forward and direct clutch assembly | AT-252 | |
| | | 8. 2nd coast brake | AT-272, AT-278 | |
| | | 9. One-way clutch No.1 | AT-278 | |

TROUBLE DIAGNOSIS

| Symptom | Condition | Diagnostic Item | Reference page |
|--|-------------|--|--------------------------------|
| Does not lock-up or lock-up is not released. | ON vehicle | 1. Fluid level and state | AT-54 |
| | | 2. Stop lamp switch signal | AT-229 |
| | | 3. ATF temperature sensor | AT-95 |
| | | 4. TCM | AT-71 |
| | | 5. Shift solenoid valve C | AT-159 |
| | | 6. Shift solenoid valve D | AT-169 |
| | | 7. Pressure control solenoid valve C | AT-188 |
| | | 8. Control valve assembly | AT-241 |
| | OFF vehicle | 9. Torque converter | AT-243 |
| Engine brake does not work. | ON vehicle | 1. Fluid level and state | AT-54 |
| | | 2. TCM | AT-71 |
| | | 3. Shift solenoid valve E | AT-174 |
| | | 4. Electric throttle control signal | AT-209 |
| | | 5. Control valve assembly | AT-241 |
| | OFF vehicle | 6. 2nd coast brake | AT-272, AT-278 |
| | | 7. U/D brake | AT-252 |
| | | 8. B5 brake | AT-280 |
| Shift point is high or low. | ON vehicle | 1. Pressure control solenoid valve A | AT-144 |
| | | 2. Engine speed signal | AT-113 |
| | | 3. Electric throttle control signal | AT-209 |
| | | 4. Revolution sensor | AT-109 |
| | | 5. TCM | AT-71 |
| | | 6. Control valve assembly | AT-241 |
| Large shock. ("N" → "D" position) | ON vehicle | 1. Fluid level and state | AT-54 |
| | | 2. Actual engine torque signal | AT-113 |
| | | 3. Turbine revolution sensor | AT-105 |
| | | 4. ATF temperature sensor | AT-95 |
| | | 5. Shift solenoid valve A | AT-149 |
| | | 6. Shift solenoid valve B | AT-154 |
| | | 7. Pressure control solenoid valve A | AT-144 |
| | | 8. TCM | AT-71 |
| | | 9. Control valve assembly | AT-241 |
| | OFF vehicle | 10. Accumulator | AT-252 |
| | | 11. Forward and direct clutch assembly | AT-252 |

TROUBLE DIAGNOSIS

| Symptom | Condition | Diagnostic Item | Reference page |
|------------------------------------|-------------|---------------------------------------|------------------------|
| Large shock. ("N" → "R" position) | ON vehicle | 1. Fluid level and state | AT-54 |
| | | 2. Actual engine torque signal | AT-113 |
| | | 3. Turbine revolution sensor | AT-105 |
| | | 4. ATF temperature sensor | AT-95 |
| | | 5. Shift solenoid valve E | AT-174 |
| | | 6. Pressure control solenoid valve B | AT-179 |
| | | 7. TCM | AT-71 |
| | | 8. Control valve assembly | AT-241 |
| | OFF vehicle | 9. Forward and direct clutch assembly | AT-252 |
| | | 10. 1st and reverse brake | AT-252 |
| Shock is too large when shift up. | ON vehicle | 1. Fluid level and state | AT-54 |
| | | 2. Actual engine torque signal | AT-113 |
| | | 3. Turbine revolution sensor | AT-105 |
| | | 4. ATF temperature sensor | AT-95 |
| | | 5. TCM power input signal | AT-204 |
| | | 6. Shift solenoid valve A | AT-149 |
| | | 7. Shift solenoid valve B | AT-154 |
| | | 8. Shift solenoid valve C | AT-159 |
| | | 9. Shift solenoid valve D | AT-169 |
| | | 10. Shift solenoid valve E | AT-174 |
| | | 11. Pressure control solenoid valve A | AT-144 |
| | | 12. Pressure control solenoid valve B | AT-179 |
| | | 13. Pressure control solenoid valve C | AT-188 |
| | | 14. TCM | AT-71 |
| | | 15. Control valve assembly | AT-241 |
| Shock is too large for coast down. | ON vehicle | 1. Fluid level and state | AT-54 |
| | | 2. Actual engine torque signal | AT-113 |
| | | 3. Turbine revolution sensor | AT-105 |
| | | 4. ATF temperature sensor | AT-95 |
| | | 5. TCM power input signal | AT-204 |
| | | 6. Shift solenoid valve A | AT-149 |
| | | 7. Shift solenoid valve B | AT-154 |
| | | 8. Shift solenoid valve C | AT-159 |
| | | 9. Shift solenoid valve D | AT-169 |
| | | 10. Shift solenoid valve E | AT-174 |
| | | 11. Pressure control solenoid valve A | AT-144 |
| | | 12. Pressure control solenoid valve B | AT-179 |
| | | 13. Pressure control solenoid valve C | AT-188 |
| | | 14. TCM | AT-71 |
| | | 15. Control valve assembly | AT-241 |

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

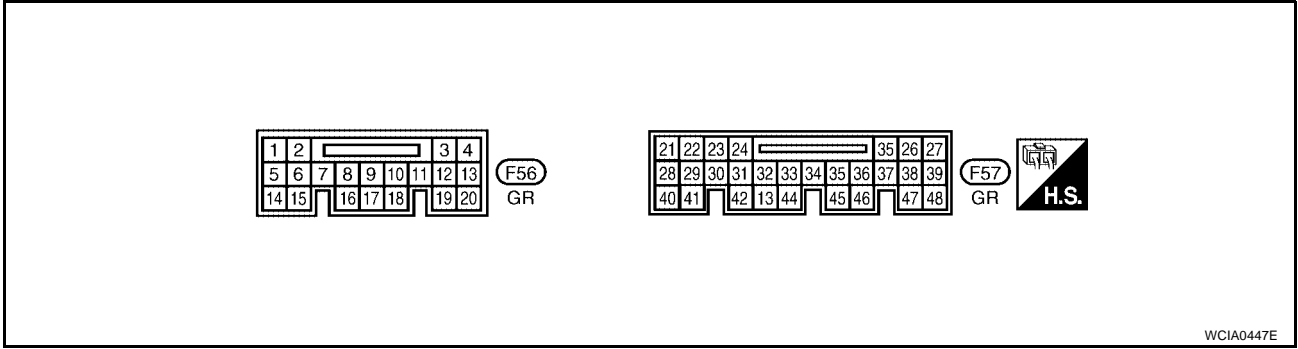
TROUBLE DIAGNOSIS

| Symptom | Condition | Diagnostic Item | Reference page |
|--|-------------|--|--------------------------------|
| Shock is too large for kick down. | ON vehicle | 1. Fluid level and state | AT-54 |
| | | 2. Actual engine torque signal | AT-113 |
| | | 3. Turbine revolution sensor | AT-105 |
| | | 4. ATF temperature sensor | AT-95 |
| | | 5. TCM power input signal | AT-204 |
| | | 6. Shift solenoid valve A | AT-149 |
| | | 7. Shift solenoid valve B | AT-154 |
| | | 8. Shift solenoid valve C | AT-159 |
| | | 9. Shift solenoid valve D | AT-169 |
| | | 10. Shift solenoid valve E | AT-174 |
| | | 11. Pressure control solenoid valve A | AT-144 |
| | | 12. Pressure control solenoid valve B | AT-179 |
| | | 13. Pressure control solenoid valve C | AT-188 |
| | | 14. TCM | AT-71 |
| | | 15. Control valve assembly | AT-241 |
| Strange noise in "R", "N" or "D" position. | ON vehicle | 1. Fluid level and state | AT-54 |
| | | 2. Control valve assembly | AT-241 |
| | OFF vehicle | 3. Torque converter | AT-252 |
| | | 4. Parking component | AT-272 |
| | | 5. Gear system | AT-252 |
| With selector lever in P position, vehicle does not enter parking condition or, with selector lever in another position, parking condition is not cancelled. | ON vehicle | 1. PNP switch | AT-90 |
| | | 2. Control cable adjustment | AT-240 |
| | | 3. Control valve assembly | AT-241 |
| | OFF vehicle | 4. Parking component | AT-272 |
| Vehicle runs with transaxle in "P" position. | ON vehicle | 1. Fluid level and state | AT-54 |
| | | 2. PNP switch | AT-90 |
| | | 3. Control cable and PNP switch adjustment | AT-240, AT-238 |
| | | 4. Line pressure test | AT-56 |
| Vehicle runs with transaxle in "N" position. | ON vehicle | 1. Fluid level and state | AT-54 |
| | | 2. PNP switch | AT-90 |
| | | 3. Control cable and PNP switch adjustment | AT-240, AT-238 |
| | | 4. Line pressure test | AT-56 |

TROUBLE DIAGNOSIS

TCM Input/Output Signal Reference Values TCM TERMINAL CONNECTOR LAYOUT

ECS00A1J














WCIA0447E

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















TROUBLE DIAGNOSIS

TCM INSPECTION TABLE

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





| Terminal | Wire color | Item | Condition | | Data (Approx.) |
|----------|------------|--|---|--|-----------------|
| 1 | L/B | A/T PV IGN relay |  | When turning ignition switch ON. | 0 - 1.5V |
| | | |  | When turning ignition switch OFF. | 0V |
| 3 | L | CAN-H | - | | - |
| 4 | P | CAN-L | - | | - |
| 5 | R/G | Manual mode switch UP (+) |  | Selector lever: + side | 0V |
| | | | | Other than the above | Battery voltage |
| 6 | L/R | Manual mode switch DOWN (-) | | Selector lever: - side | 0V |
| | | | | Other than the above | Battery voltage |
| 14 | B | Ground | Always | | 0V |
| 16 | SB | Manual mode switch AUTO |  | Selector lever: "P", "R", "N" or "D" position | 0V |
| | | | | Selector lever: Manual shift gate position | Battery voltage |
| 19 | V/R | Manual mode switch MANUAL | | Selector lever: Manual shift gate position (neutral) | 0V |
| | | | | Other than the above | Battery voltage |
| 21 | G/B | Pressure control solenoid valve B ground |  | When engine is running with idle speed and setting selector lever to "P" position. | 0V |
| 22 | L | Revolution sensor power supply |  | When turning ignition switch ON. | Battery voltage |
| | | |  | When turning ignition switch OFF. | 0V |
| 23 | G | Turbine revolution sensor power supply |  | When turning ignition switch ON. | Battery voltage |
| | | |  | When turning ignition switch OFF. | 0V |
| 24 | O/L | PNP switch A |  | Selector lever: "P" and "R" position | 0V |
| | | | | Other than the above | Battery voltage |
| 25 | G/R | Shift solenoid valve B |  | When shift solenoid valve B operates. (When driving in 1st or 5th gear.) | Battery voltage |
| | | | | When shift solenoid valve B does not operate. | 0V |
| 26 | V/W | Shift solenoid valve D | | When shift solenoid valve D operates. (When driving in 3rd, 4th or 5th gear.) | Battery voltage |
| | | | | When shift solenoid valve D does not operate. | 0V |
| 27 | Y/R | Power supply (Memory back-up) | Always | | Battery voltage |

TROUBLE DIAGNOSIS

| Terminal | Wire color | Item | Condition | Data (Approx.) |
|----------|------------|--|---|---|
| 28 | W | Pressure control solenoid valve C ground |  | When engine is running with idle speed and setting selector lever to "P" position. 0V |
| 29 | B/W | Revolution sensor |  | When moving at 20 km/h (12 MPH) in 1st gear. 119Hz |
| 30 | R | Turbine revolution sensor | | When moving at 20 km/h (12 MPH) in 1st gear. 371Hz |
| 31 | BR | PNP switch B |  | Selector lever: "R", "N", "D" and manual mode position 0V |
| | | | | Other than the above Battery voltage |
| 32 | P/B | PNP switch C |  | Selector lever: "D" and manual mode position 0V |
| | | | | Other than the above Battery voltage |
| 33 | LG | PNP switch PN |  | Selector lever: "P" and "N" position Battery voltage |
| | | | | Other than the above 0V |
| 34 | Y | Power supply |  | When turning ignition switch ON. Battery voltage |
| | | |  | When turning ignition switch OFF. 0V |
| 35 | L/Y | Pressure control solenoid valve A |  | When engine is running with idle speed and setting selector lever to "P" position. 300Hz |
| 36 | O/B | Pressure control solenoid valve B | | When engine is running with idle speed and setting selector lever to "P" position. 300Hz |
| 37 | R/B | Shift solenoid valve C |  | When shift solenoid valve C operates. (When driving in 1st, 2nd, 3rd or reverse gear.) Battery voltage |
| | | | | When shift solenoid valve C does not operate. 0V |
| 38 | R/Y | Power supply (A/T PV IGN relay) |  | When turning ignition switch ON. Battery voltage |
| | | |  | Measure 3 seconds after switching "OFF" the ignition switch. 0V |
| 39 | R/Y | Power supply (A/T PV IGN relay) |  | When turning ignition switch ON. Battery voltage |
| | | |  | Measure 3 seconds after switching "OFF" the ignition switch. 0V |
| 40 | L/G | Pressure control solenoid valve A ground |  | When engine is running with idle speed and setting selector lever to "P" position. 0V |

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

TROUBLE DIAGNOSIS

| Terminal | Wire color | Item | Condition | Data (Approx.) | | |
|----------|------------|-----------------------------------|---|--|-----------------|---------|
| | | | | | | |
| 41 | R/Y | Fluid temperature sensor |  | When ATF temperature 0°C (32°F) | 4.0V | 9.8 kΩ |
| | | | | When ATF temperature 20°C (68°F) | 3.0V | 4.2 kΩ |
| | | | | When ATF temperature 80°C (176°F) | 0.8V | 0.54 kΩ |
| | | | | When ATF temperature 100°C (212°F) | 0.5V | 0.31 kΩ |
| 42 | LG | Fluid temperature sensor ground | Always | | 0V | |
| 43 | V/W | PNP switch PA |  | Selector lever: "P" and "N" position | 0V | |
| | | | | Other than the above | Battery voltage | |
| 45 | O | Pressure control solenoid valve C |  | When engine is running with idle speed and setting selector lever to "P" position. | 300Hz | |
| 46 | W/G | Shift solenoid valve A |  | When shift solenoid valve A operates. (When driving in 1st gear.) | Battery voltage | |
| | | | | When shift solenoid valve A does not operate. | 0V | |
| 47 | BR/Y | Shift solenoid valve E | | When shift solenoid valve E operates. (When driving in reverse gear.) | Battery voltage | |
| | | | | When shift solenoid valve E does not operate. | 0V | |
| 48 | B | Ground | Always | | 0V | |

CONSULT-II Function (TCM)

ECS00A1K

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

| TCM diagnostic mode | Description |
|-----------------------|--|
| WORK SUPPORT | Supports inspections and adjustments. Commands are transmitted to the TCM for setting the status suitable for required operation, input/output signals are received from the TCM and received data is displayed. |
| SELF-DIAG RESULTS | Displays TCM self-diagnosis results. |
| DATA MONITOR | Displays TCM input/output data in real time. |
| CAN DIAG SUPPORT MNTR | The result of transmit/receive diagnosis of CAN communication can be read. |
| ACTIVE TEST | Operation of electrical loads can be checked by sending drive signal to them. |
| FUNCTION TEST | Conducted by CONSULT-II instead of a technician to determine whether each system is "OK" or "NG". |
| ECU PART NUMBER | TCM part number can be read. |

After performing "SELF-DIAGNOSTIC PROCEDURE (WITH CONSULT-II)" (Refer to [AT-75](#)), place check marks for results on the [AT-49, "DIAGNOSTIC WORKSHEET"](#). Reference pages are provided following the items.

NOTICE:

- 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.
- 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.
- 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).

TROUBLE DIAGNOSIS

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

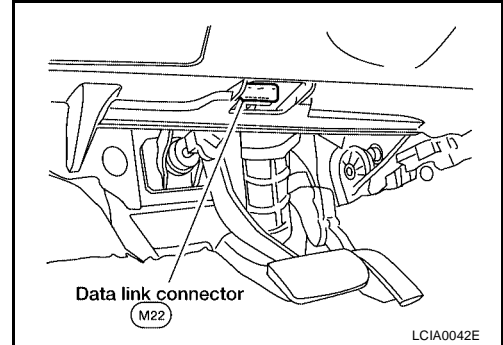
CONSULT-II SETTING PROCEDURE

CAUTION:

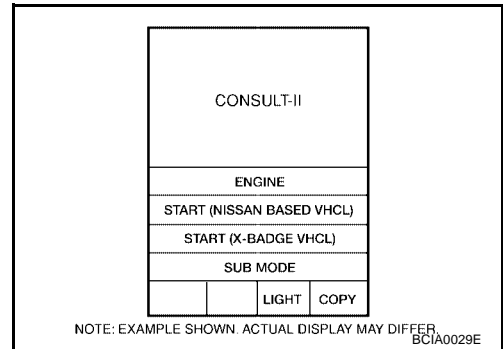
If CONSULT-II is used with no connection of CONSULT-II CONVERTER, malfunctions might be detected in self-diagnosis depending on control unit which carry out CAN communication.

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

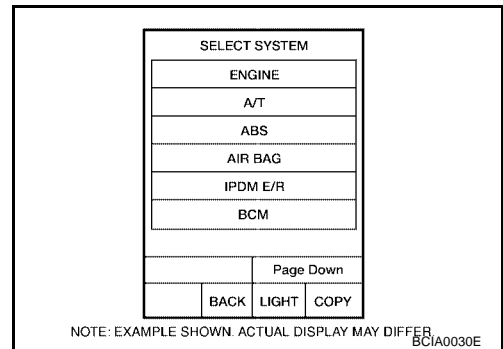
- Turn ignition switch "OFF".
- Connect CONSULT-II and CONSULT-II CONVERTER to data link connector, which is located in driver instrument panel (lower).
- Turn ignition switch "ON". (Do not start engine.)



- Touch "START (NISSAN BASED VHCL)".



- Touch "A/T".
If "A/T" is not indicated, go to [GI-37, "CONSULT-II Data Link Connector \(DLC\) Circuit"](#).
- Perform each diagnostic test mode according to each service procedure.



WORK SUPPORT MODE

Work item

| Work item | Condition | Usage |
|----------------|--|---|
| INITIALIZATION | Under the following conditions. <ul style="list-style-type: none"> Ignition switch "ON". Selector lever "P" or "N" position. Engine not running. Vehicle speed is 0 km/h (0 MPH). Ignition voltage is more than 10.5V. Malfunction was not detected. | Use to initialize TCM in a case of replacing transaxle or TCM. Refer to AT-8, "Precautions for A/T Assembly or TCM Replacement" . |

SELF-DIAG RESULT MODE

Operation procedure

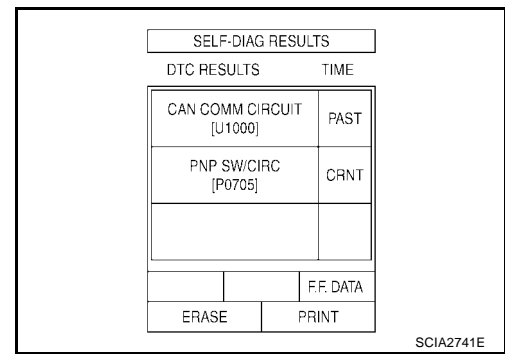
- Perform "CONSULT-II SETTING PROCEDURE". Refer to [AT-75, "CONSULT-II SETTING PROCEDURE"](#)

TROUBLE DIAGNOSIS

2. Touch "SELF-DIAG RESULTS".
Display shows malfunction experienced since the last erasing operation.

NOTE:

- The details for "TIME" are as follow:
 - "CRNT": Error currently detected with TCM.
 - "PAST": Error detected in the past and memorized with TCM.
- Touch "F.F.DATA" on "SELF-DIAG RESULTS" screen to display freeze frame data. Freeze frame data shows driving condition when malfunction is detected.
For freeze frame data items, refer to [AT-76, "Display item list"](#) .



Display item list

X: Applicable —: Not applicable

| Items (CONSULT-II screen terms) | Malfunction is detected when... | TCM self-diagnosis | | OBD-II (DTC) |
|---------------------------------|---|--|--------------------------------|--|
| | | A/T CHECK indicator lamp ^{*3} | "TRANSMISSION" with CONSULT-II | MIL indicator lamp ^{*1} , "ENGINE" with CONSULT-II or GST |
| CAN COMM CIRCUIT | ● When a malfunction is detected in CAN communications | X | U1000 ^{*4} | U1000 ^{*4} |
| VEH SPD SE/CIR-MTR | ● ECM detects a malfunction in vehicle speed sensor signal, after that TCM inputs the result by CAN communication. | X | P0500 | P0500 |
| TCM PROCESSOR | ● TCM processor is malfunctioning. | — | P0613 | — |
| PNP SW/CIRC | ● PNP switch signals input with impossible pattern | X | P0705 | P0705 |
| ATF TEMP SEN/CIRC | ● Normal voltage is not applied to ATF temperature sensor due to open, short, and so on. ● During running, the ATF temperature sensor signal voltage is excessively high or low. | X | P0710 | P0710 |
| FLUID TEMP SEN | ● ATF temperature signal does not change. | — | P0711 | P0711 ^{*2} |
| TURBINE SENSOR | ● Signal from turbine revolution sensor does not input due to open, short, and so on. ● Unexpected signal input during running. | X | P0717 | P0717 |
| VHCL SPEED SEN-A/T | ● Signal from revolution sensor does not input due to open, short, and so on. ● Unexpected signal input during running. | X | P0722 | P0722 |
| ENG SPD INP PERFOR | ● Malfunction is detected in engine speed signal, actual engine torque signal or torque reduction signal that is output from ECM through CAN communication. | X | P0726 | P0726 |
| A/T 1ST GR FNCTN | ● A/T cannot be shifted to the 1st gear position even if electrical circuit is good. | X | P0731 | P0731 ^{*2} |
| A/T 2ND GR FNCTN | ● A/T cannot be shifted to the 2nd gear position even if electrical circuit is good. | X | P0732 | P0732 ^{*2} |
| A/T 3RD GR FNCTN | ● A/T cannot be shifted to the 3rd gear position even if electrical circuit is good. | X | P0733 | P0733 ^{*2} |
| A/T 4TH GR FNCTN | ● A/T cannot be shifted to the 4th gear position even if electrical circuit is good. | X | P0734 | P0734 ^{*2} |
| A/T 5TH GR FNCTN | ● A/T cannot be shifted to the 5th gear position even if electrical circuit is good. | X | P0735 | P0735 ^{*2} |
| A/T TCC S/V FNCTN | ● A/T cannot perform lock-up even if electrical circuit is good. | 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 ^{*3} | "TRANSMISSION" with CONSULT-II | MIL indicator lamp ^{*1} , "ENGINE" with CONSULT-II or GST | |
| PC SOL A(L/PRESS) | <ul style="list-style-type: none"> ● Normal voltage is not applied to solenoid due to open, short, and so on. ● TCM detects as irregular by comparing target value with monitor value. | X | P0745 | P0745 | AT |
| SHIFT SOL A | | X | P0750 | P0750 | |
| SHIFT SOL B | | X | P0755 | P0755 | |
| SHIFT SOL C | | X | P0760 | P0760 | |
| SFT SOL C STUCK ON | <ul style="list-style-type: none"> ● Condition of shift solenoid valve C is different from monitor value, and relation between gear position and actual gear ratio is irregular. | X | P0762 | P0762 ^{*2} | |
| SHIFT SOL D | <ul style="list-style-type: none"> ● Normal voltage is not applied to solenoid due to open, short, and so on. ● TCM detects as irregular by comparing target value with monitor value. | X | P0765 | P0765 | |
| SHIFT SOL E | | X | P0770 | P0770 | |
| PC SOL B(SFT/PRS) | | X | P0775 | P0775 | |
| SHIFT | <ul style="list-style-type: none"> ● No rotation change occurs between input (turbine revolution sensor) and output (revolution sensor) and shifting time is long. ● Shifting ends immediately. ● Condition in malfunction engine revs up usually shifting. | X | P0780 | P0780 ^{*2} | |
| PC SOL C(TCC&SFT) | <ul style="list-style-type: none"> ● Normal voltage is not applied to solenoid due to open, short, and so on. ● TCM detects as irregular by comparing target value with monitor value. | X | P0795 | P0795 | |
| PC SOL C STC ON | <ul style="list-style-type: none"> ● Condition of pressure control solenoid valve C is different from monitor value, and relation between gear position and actual gear ratio or lock-up status is irregular. | X | P0797 | P0797 ^{*2} | |
| MANUAL MODE SWITCH | <ul style="list-style-type: none"> ● Manual mode switch signal is incorrectly input due to open, short, and so on. | — | P0826 | — | |
| TCM POWER INPT SIG | <ul style="list-style-type: none"> ● Voltage supplied to TCM is too low. | — | P0882 | P0882 | |
| ELEC TH CONTROL | <ul style="list-style-type: none"> ● The electric throttle control system for ECM is in a malfunction, after that TCM inputs the result by CAN communication. | X | P1726 | P1726 | |
| 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-43, "Malfunction Indicator Lamp \(MIL\)"](#) .

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

*3: Indicate it when performing TCM SELF-DIAGNOSTIC PROCEDURE (NO TOOLS). Refer to [AT-80, "TCM SELF-DIAGNOSTIC PROCEDURE \(NO TOOLS\)"](#) .

*4: If DTC U1000 is displayed with other DTCs, first perform the trouble diagnosis for DTC U1000. Refer to [AT-83](#) .

DATA MONITOR MODE

Operation procedure

1. Perform "CONSULT-II SETTING PROCEDURE". Refer to [AT-75, "CONSULT-II SETTING PROCEDURE"](#) .
2. Touch "DATA MONITOR".

NOTE:

When malfunction is detected, CONSULT-II performs REAL-TIME DIAGNOSIS.

Also, any malfunction detected while in this mode will be displayed at real time.

TROUBLE DIAGNOSIS

Display item list

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 | Vehicle speed recognized by the TCM. |
| VHCL/S SE-MTR* (km/h) | X | — | X | |
| FLUID TEMP SE* (V) | X | — | X | |
| FLUID TEMP* (°C) | — | — | X | |
| COOLAN TEMP* (°C) | — | — | X | Displays status of engine coolant temperature. Signal input with CAN communication line. |
| BATTERY VOLT* (V) | X | — | X | |
| ENGINE SPEED* (rpm) | X | X | X | Signal input with CAN communication line. |
| TURBINE REV* (rpm) | X | — | X | Turbine revolution computed from signal of turbine revolution sensor is displayed. |
| OUTPUT REV* (rpm) | — | — | X | Output revolution computed from signal of revolution sensor is displayed. |
| PNP SW A* (ON/OFF) | X | — | X | |
| PNP SW B* (ON/OFF) | X | — | X | |
| PNP SW C* (ON/OFF) | X | — | X | |
| PNP SW PA* (ON/OFF) | X | — | X | |
| PNP SW PN (ON/OFF) | X | — | X | |
| MANU MODE SW* (ON/OFF) | X | — | X | |
| NON M-MODE SW* (ON/OFF) | X | — | X | |
| UP SW* (ON/OFF) | X | — | X | |
| DOWN SW* (ON/OFF) | X | — | X | |
| RANGE SLCT SW (ON/OFF) | X | — | X | Not mounted but displayed. |
| BRAKE SW* (ON/OFF) | X | — | X | This means stop lamp switch signal via CAN communication line. |
| CLSO THL POS (ON/OFF) | X | — | X | Signal input with CAN communication line. |
| ASCD SIGNAL (ON/OFF) | X | — | X | |
| ASCD OD OFF (ON/OFF) | X | — | X | |
| ABS SIGNAL (ON/OFF) | X | — | X | |
| TCS SIGNAL (ON/OFF) | X | — | X | |
| TCS GEAR HOLD (ON/OFF) | X | — | X | |
| TCS SFT CNG (ON/OFF) | — | — | X | Requests TCM for shift schedule change. |
| LOCK-UP* (ON/OFF) | — | — | X | Always "ON" during lock-up, regardless of types. |
| SLCT LVR POSI* | — | — | X | Displays "##" in manual mode or when unknown. |
| MANU GR POSI | — | — | X | Displays "##" in non-manual mode or when unknown. |

TROUBLE DIAGNOSIS

| Monitored item (Unit) | Monitor item selection | | | Remarks |
|--------------------------|------------------------|--------------|---------------------|---|
| | ECU INPUT SIGNALS | MAIN SIGNALS | SELECTION FROM MENU | |
| GEAR* | — | — | X | Indicates current gear position. Also when setting in P or N position, indicate by shift solenoid valves. Displays “##” in R position or when unknown. |
| NEXT GR POSI | — | — | X | Displays “##” in R position or when unknown. |
| REDCT DEM SIG (ON/OFF) | — | — | X | Displays status of engine torque reduction demand signal. |
| TC SLIP RATIO | — | — | X | |
| SLIP REV (rpm) | — | — | X | Difference between engine speed and torque converter input shaft speed. |
| ACCELE ANGLE* (%) | X | X | X | Degree of opening for accelerator recognized by the TCM. For fail-safe operation, the specific value used for control is displayed. |
| PC SOL A OUT* (A) | — | — | X | |
| PC SOL A MON* (A) | — | X | X | |
| PC SOL B OU*T (A) | — | — | X | |
| PC SOL B MON* (A) | — | X | X | |
| PC SOL C OUT* (A) | — | — | X | |
| PC SOL C MON* (A) | — | X | X | |
| SFT SOL A OUT* (ON/OFF) | — | — | X | |
| SFT SOL B OUT* (ON/OFF) | — | — | X | |
| SFT SOL C OUT* (ON/OFF) | — | — | X | |
| SFT SOL D OUT* (ON/OFF) | — | — | X | |
| SFT SOL E OUT* (ON/OFF) | — | — | X | |
| SFT SOL A MON* (ON/OFF) | — | X | X | |
| SFT SOL B MON* (ON/OFF) | — | X | X | |
| SFT SOL C MON* (ON/OFF) | — | X | X | |
| SFT SOL D MON* (ON/OFF) | — | X | X | |
| SFT SOL E MON* (ON/OFF) | — | X | X | |
| G-RATE (G) | — | — | X | |
| F-SAFE MODE (OK/1 to 10) | — | X | X | Numbers indicate types of fail-safe modes. Refer to AT-45, "Fail-safe mode list" . |
| VDC SIGNAL (ON/OFF) | X | — | X | Signal input with CAN communication line. |
| SHIFT SCHEDULE | — | — | X | The details for data of shift schedule are as follow: NOR: Normal mode UP1: Upslope 1 mode UP2: Upslope 2 mode (steeper than “UP1”) DOWN: Downslope mode HOT1: Hot 1 mode HOT2: Hot 2 mode (higher temperature than “HOT1”) |

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

TROUBLE DIAGNOSIS

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

*: Also, the items appear on CONSULT-II screen in freeze frame data mode of self-diagnostic results only if DTC is detected. For details, refer to [AT-75, "SELF-DIAG RESULT MODE"](#) .

ACTIVE TEST MODE

Test item

| Test item | Condition | Description |
|------------------------|--|--|
| SHIFT SOLENOID A | Under the following conditions. <ul style="list-style-type: none"> ● Ignition switch "ON" ● Selector lever "P" or "N" position ● Engine not running ● Vehicle speed is 0 km/h (0 MPH). | Each shift solenoid operate ON/OFF by receiving the drive signal. |
| SHIFT SOLENOID B | | |
| SHIFT SOLENOID C | | |
| SHIFT SOLENOID D | | |
| SHIFT SOLENOID E | | |
| PRESSURE CONTROL SOL A | <ul style="list-style-type: none"> ● Ignition voltage is more than 10.5V. ● Malfunction was not detected.* | Each pressure control solenoid is activated by receiving the drive signal. |
| PRESSURE CONTROL SOL B | | |
| PRESSURE CONTROL SOL C | | |

*: Except when P0711, P0731, P0732, P0733, P0734, P0735, P0744, P0762, P0780 or P0797 is detected.

NOTE:

Approximately 10 seconds after the operation is begun, "TEST IS STOPPED" will be displayed.

Diagnostic Procedure Without CONSULT-II

ECS00A1L

OBD-II SELF-DIAGNOSTIC PROCEDURE (WITH GST)

Refer to [EC-143, "Generic Scan Tool \(GST\) Function"](#) .

OBD-II SELF-DIAGNOSTIC PROCEDURE (NO TOOLS)

Refer to [EC-64, "Malfunction Indicator Lamp \(MIL\)"](#) .

TCM SELF-DIAGNOSTIC PROCEDURE (NO TOOLS)

Description

As a method for locating the suspect system, 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.

TROUBLE DIAGNOSIS

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 "ON". (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-210, "A/T CHECK Indicator Lamp does not come on"](#) .

2. JUDGEMENT PROCEDURE

NOTE:

After turning ignition switch "ON" (at step 6), perform within 2 seconds (while A/T CHECK indicator lamp come on.).

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". (Do not start engine.)
7. Move the selector lever to the "N" position and release brake pedal. (Stop lamp switch signal "OFF".)
8. Move the selector lever to "D" position and depress brake pedal. (Stop lamp switch signal "ON".)
9. Release brake pedal. (Stop lamp switch signal "OFF".)
10. Depress accelerator pedal fully and release it.

>> GO TO 3.

3. CHECK SELF-DIAGNOSIS CODE

Check A/T CHECK indicator lamp. Refer to [AT-82, "Judgement self-diagnosis code"](#) .

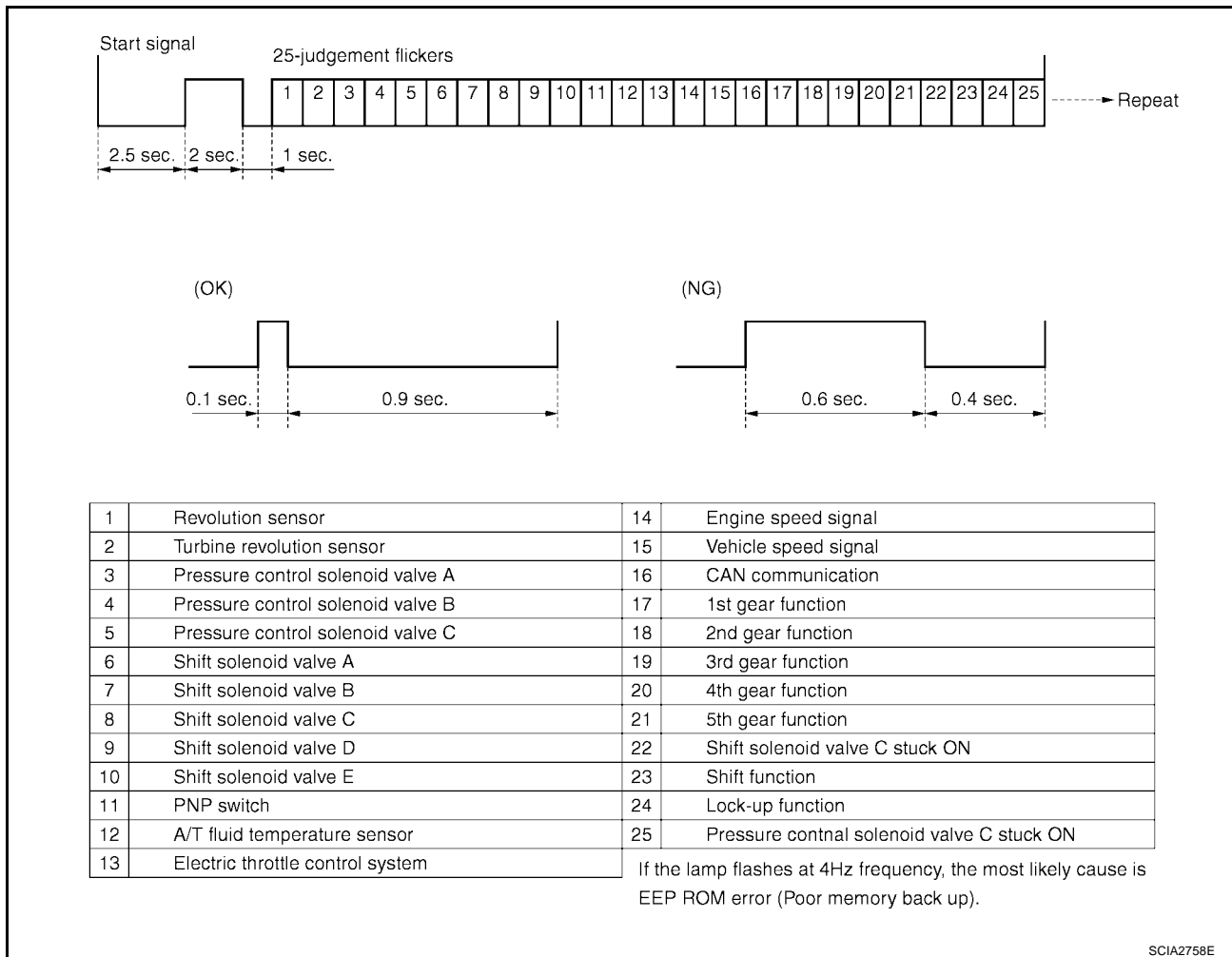
If the system does not go into self-diagnostics, refer to [AT-229, "TCM Self-diagnosis Does Not Activate"](#) .

>> **DIAGNOSIS END**

TROUBLE DIAGNOSIS

Judgement self-diagnosis code

When a malfunction is detected, the malfunction route is indicated by longer illumination of the indicator lamp.



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 executing self-diagnostics or by erasing the memory using the CONSULT-II.

DTC U1000 CAN COMMUNICATION LINE

DTC U1000 CAN COMMUNICATION LINE

PFP:23710

Description

ECS00A1M

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

ECS00A1N

- 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

ECS00A1O

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

DTC Confirmation Procedure

ECS00A1P

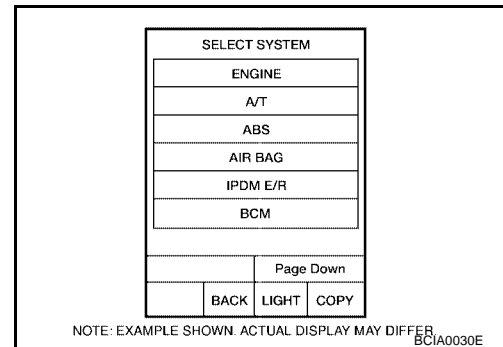
NOTE:

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 "A/T" with "DATA MONITOR" mode in CONSULT-II.
3. Start engine.
4. Drive vehicle and maintain the following condition for at least 6 seconds.
SLCT LVR POSI: "D" position
5. If DTC is detected, go to [AT-85, "Diagnostic Procedure"](#).



WITH GST




Follow the procedure "WITH CONSULT-II".

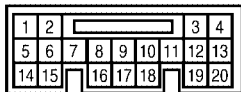
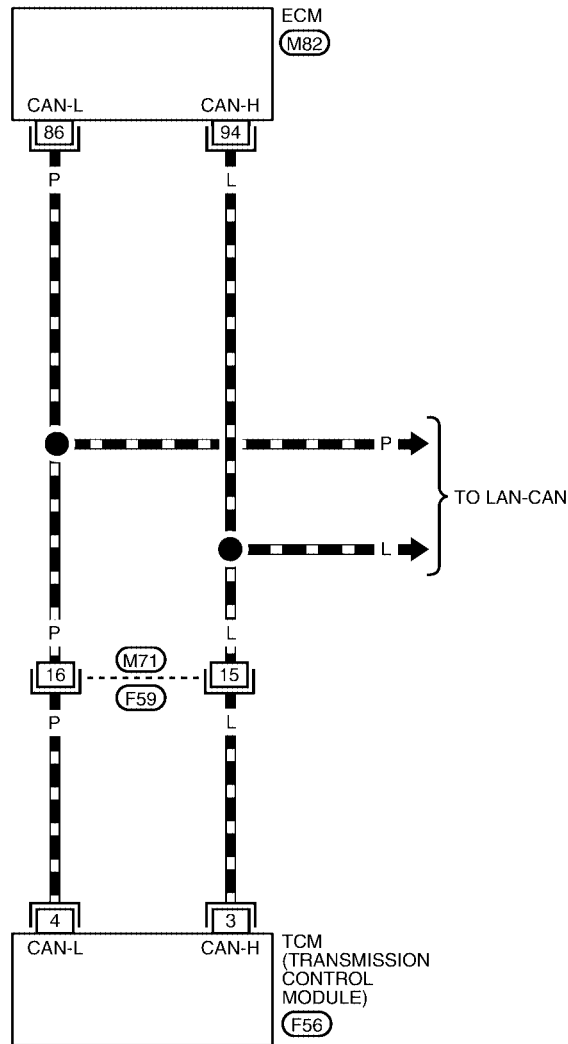
DTC U1000 CAN COMMUNICATION LINE

Wiring Diagram — AT — CAN

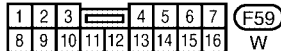
ECS00A1Q

AT-CAN-01

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



F56
GR



F59
W

REFER TO THE FOLLOWING.
M82 - ELECTRICAL UNITS

BCWA0478E

DTC U1000 CAN COMMUNICATION LINE

TCM terminals and data are reference value.

| Terminal | Wire color | Item | Condition | Data (Approx.) |
|----------|------------|-------|-----------|----------------|
| 3 | L | CAN H | - | - |
| 4 | P | CAN L | - | - |

Diagnostic Procedure

ECS00A1R

1. CHECK CAN COMMUNICATION CIRCUIT

With CONSULT-II

- Turn ignition switch "ON" and start engine.
- 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-7, "CAN COMMUNICATION"](#) .
- No >> **INSPECTION END**

| SELF-DIAG RESULTS | |
|--------------------------|-----------|
| DTC RESULTS | TIME |
| CAN COMM CIRCUIT (U1000) | CRNT |
| | |
| | |
| | F.F. DATA |
| ERASE | PRINT |

SCIA2818E

DTC P0500 VEHICLE SPEED SENSOR MTR

PFP:24814

Description

ECS00A1S

The vehicle speed sensor-MTR signal is transmitted from unified meter and A/C amp. 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.

On Board Diagnosis Logic

ECS00A1T

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code "VEH SPD SE/CIR-MTR" with CONSULT-II or 15th judgement flicker without CONSULT-II is detected when TCM does not receive the proper vehicle speed sensor MTR signal (input by CAN communication) from unified meter and A/C amp.

Possible Cause

ECS00A1U

- Harness or connectors
(The signal circuit is open or shorted.)
- Unified meter and A/C amp.
- ABS actuator and electric unit (control unit)
- Wheel sensor

DTC Confirmation Procedure

ECS00A1V

CAUTION:

Always drive vehicle at a safe speed.

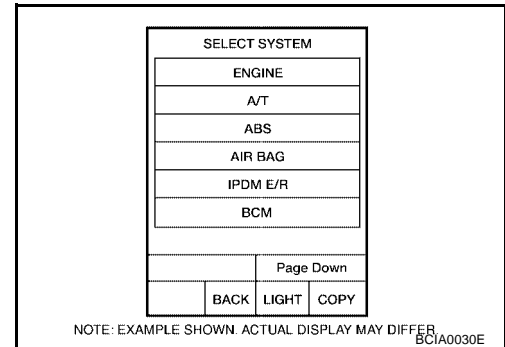
NOTE:

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.
3. Drive vehicle and maintain the following conditions for at least 5 consecutive seconds.
VHCL/S SE-A/T: 30 km/h (17 MPH) or more
ACCELE ANGLE: 10 % or less
4. If DTC is detected, go to [AT-87, "Diagnostic Procedure"](#).



DTC P0500 VEHICLE SPEED SENSOR MTR

ECS00A1W

Diagnostic Procedure

1. CHECK INPUT SIGNALS

With CONSULT-II

1. Start engine.
2. Select "A/T" with "DATA MONITOR" mode in CONSULT-II.
3. Drive vehicle, and then make sure that the values of "VHCL/S SE-A/T" and "VHCL/S SE-MTR" are same.

OK or NG

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

| DATA MONITOR | |
|-----------------|----------|
| MONITOR | NO DTC |
| VHCL/S SE · A/T | xxx km/h |
| VHCL/S SE · MTR | xxx km/h |

SCIA2922E

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

Refer to [BRC-12, "TROUBLE DIAGNOSIS"](#) (with ABS), [BRC-53, "TROUBLE DIAGNOSIS"](#) (with TCS/ABS) or [BRC-96, "TROUBLE DIAGNOSIS"](#) (with VDC/TCS/ABS).

OK or NG

- OK >> GO TO 3.
NG >> If NG, recheck pin terminals for damage or loose connection with harness connector.

3. CHECK DTC WITH UNIFIED METER AND A/C AMP.

Refer to [DI-5, "COMBINATION METERS"](#).

OK or NG

- OK >> GO TO 4.
NG >> If NG, recheck pin terminals for damage or loose connection with harness connector.

4. CHECK DTC

Perform "DTC Confirmation Procedure". Refer to [AT-86, "DTC Confirmation Procedure"](#).

OK or NG

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

5. CHECK TCM

1. Check TCM input/output signal. Refer to [AT-71, "TCM Input/Output Signal Reference Values"](#).
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

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

DTC P0613 TCM PROCESSOR

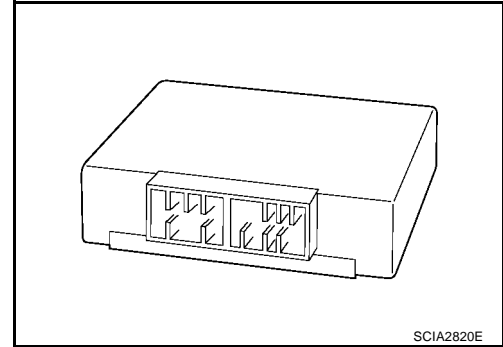
DTC P0613 TCM PROCESSOR

PFP:31036

Description

ECS00A1X

The TCM consists of a microcomputer and connectors for signal input and output and for power supply. The TCM controls the A/T.



SCIA2820E

On Board Diagnosis Logic

ECS00A1Y

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

Possible Cause

ECS00A1Z

TCM

DTC Confirmation Procedure

ECS00A20

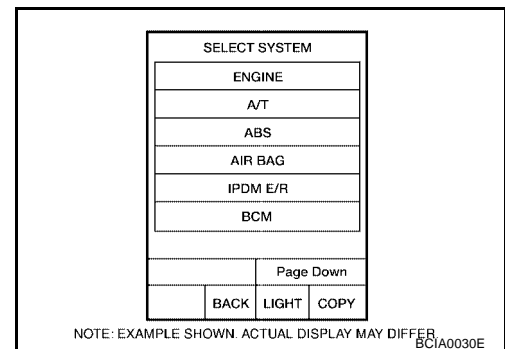
NOTE:

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 "A/T" with "DATA MONITOR" mode in 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-89, "Diagnostic Procedure"](#).



NOTE: EXAMPLE SHOWN. ACTUAL DISPLAY MAY DIFFER
BCIA0030E

DTC P0613 TCM PROCESSOR

Diagnostic Procedure

ECS00A21

1. CHECK DTC

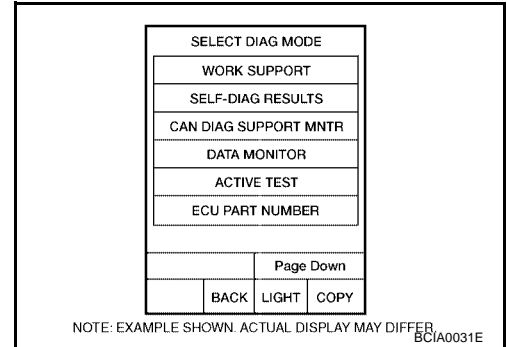
With CONSULT-II

1. Turn ignition switch "ON". (Do not start engine.)
2. Select "A/T" with "SELF-DIAG RESULTS" mode in CONSULT-II.
3. Touch "ERASE".
4. Turn ignition switch "OFF" and wait at least 10 seconds.
5. Perform DTC confirmation procedure, [AT-88, "DTC Confirmation Procedure"](#).

Is the "TCM PROCESSOR" displayed again?

YES >> Replace TCM.

NO >> **INSPECTION END**



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

DTC P0705 PARK/NEUTRAL POSITION SWITCH

DTC P0705 PARK/NEUTRAL POSITION SWITCH

PF3:32006

Description

ECS00A22

- 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.
- TCM judges the selector lever position by the park/neutral position (PNP) switch signal.

| Selector lever | PNP switch A | PNP switch B | PNP switch C | PNP switch PA | PNP switch PN |
|----------------|--------------|--------------|--------------|---------------|---------------|
| P | ON | OFF | OFF | ON | ON |
| R | ON | ON | OFF | OFF | OFF |
| N | OFF | ON | OFF | ON | ON |
| D | OFF | ON | ON | OFF | OFF |

On Board Diagnosis Logic

ECS00A23

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “PNP SW/CIRC” with CONSULT-II or P0705 without CONSULT-II is detected when PNP switch signals input with impossible pattern.

Possible Cause

ECS00A24

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

DTC Confirmation Procedure

ECS00A25

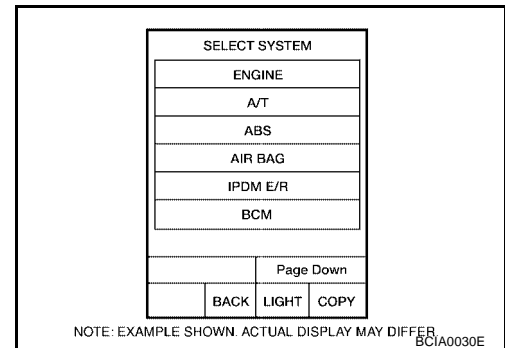
NOTE:

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 “A/T” with “DATA MONITOR” mode in CONSULT-II.
3. Move selector lever to each position.
SLCT LVR POSI: “P”, “R”, “N” or “D” position
4. Wait for at least 5 consecutive seconds at each position.
5. If DTC is detected, go to [AT-92, "Diagnostic Procedure"](#).



WITH GST

Follow the procedure “With CONSULT-II”.

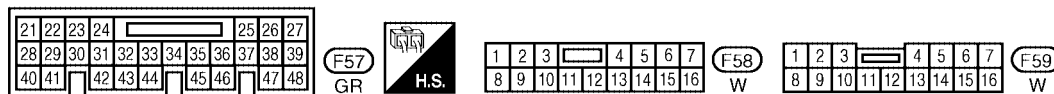
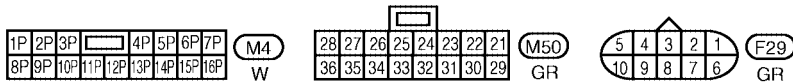
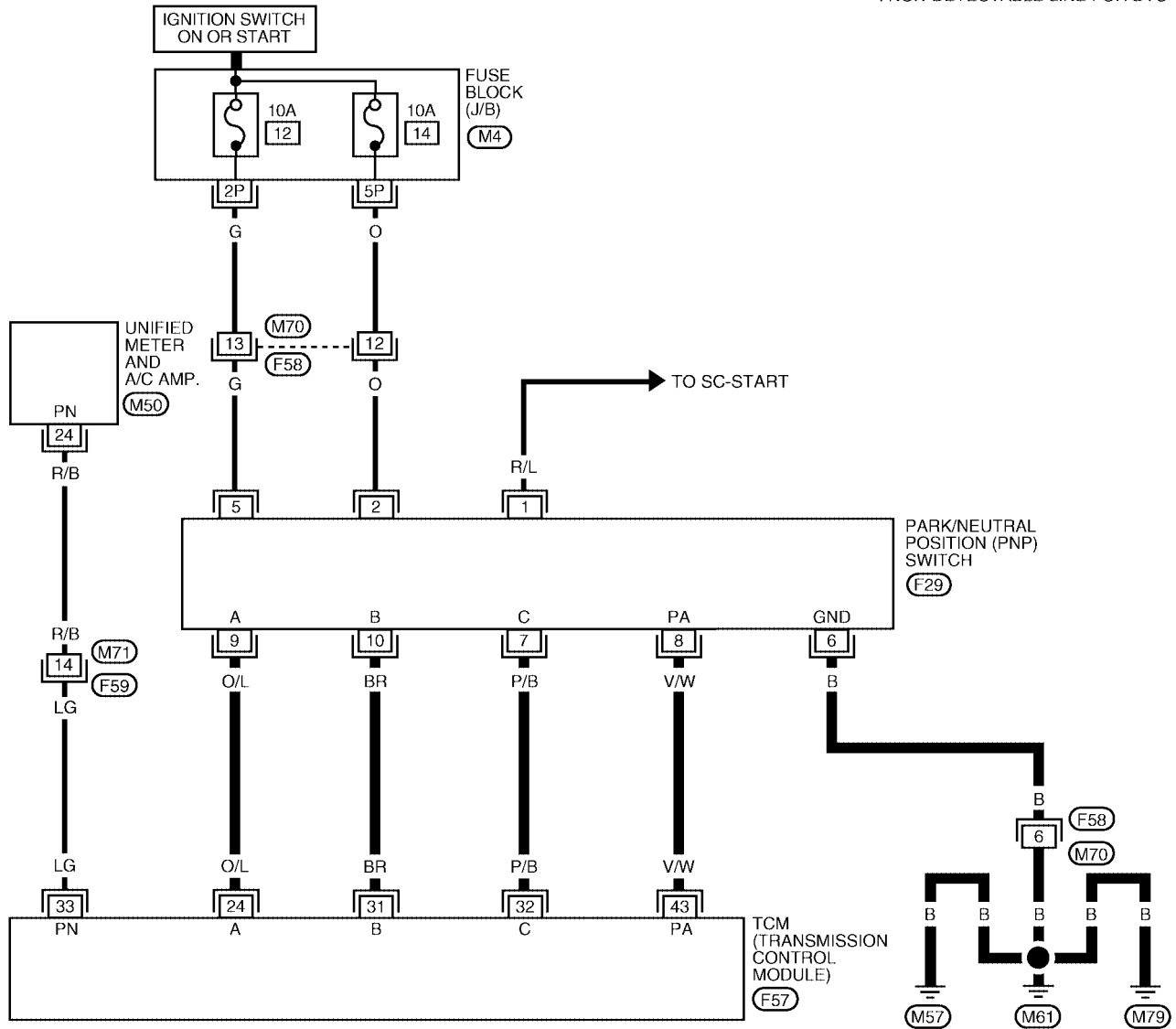
DTC P0705 PARK/NEUTRAL POSITION SWITCH

ECS00A26

Wiring Diagram — AT — PNP/SW

AT-PNP/SW-01

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



BCWA0266E

DTC P0705 PARK/NEUTRAL POSITION SWITCH

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

| Terminal | Wire color | Item | Condition | Data (Approx.) |
|----------|------------|---------------|--|-----------------|
| 24 | O/L | PNP switch A | Selector lever: "P" and "R" position | 0V |
| | | | Other than the above | Battery voltage |
| 31 | BR | PNP switch B | Selector lever: "R", "N", "D" and manual mode position | 0V |
| | | | Other than the above | Battery voltage |
| 32 | P/B | PNP switch C | Selector lever: "D" and manual mode position | 0V |
| | | | Other than the above | Battery voltage |
| 33 | LG | PNP switch PN | Selector lever: "P" and "N" position | Battery voltage |
| | | | Other than the above | 0V |
| 43 | V/W | PNP switch PA | Selector lever: "P" and "N" position | 0V |
| | | | Other than the above | Battery voltage |



Diagnostic Procedure

ECS00A27

1. CHECK PNP SWITCH CIRCUIT

With CONSULT-II

- Turn ignition switch "ON". (Do not start engine.)
- Select "DATA MONITOR" mode for "A/T" with CONSULT-II.
- Move selector lever to "P", "N", "R" and "D" position and check the value of "PNP SW A", "PNP SW B", "PNP SW C", "PNP SW PA" and "PNP SW PN".

| Selector lever | "PNP SW A" | "PNP SW B" | "PNP SW C" | "PNP SW PA" | "PNP SW PN" |
|----------------|------------|------------|------------|-------------|-------------|
| P | ON | OFF | OFF | ON | ON |
| R | ON | ON | OFF | OFF | OFF |
| N | OFF | ON | OFF | ON | ON |
| D | OFF | ON | ON | OFF | OFF |

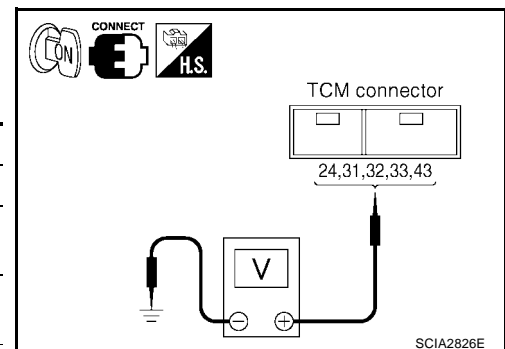
| DATA MONITOR | |
|--------------|--------|
| MONITOR | NO DTC |
| PNP SW A | OFF |
| PNP SW B | ON |
| PNP SW C | ON |
| PNP SW PA | OFF |
| PNP SW PN | OFF |

SCIA2823E

Without CONSULT-II

- Turn ignition switch "ON". (Do not start engine.)
- Move selector lever to "P", "R", "N", or "D" position and check voltage between the TCM connector terminals and ground.

| Selector lever | Connector No. | | F57 | | | |
|----------------|-----------------------|------------------|-------------------|------------------|-------------------|--|
| | Terminal (Wire color) | | | | | |
| | 24 (O/L) - Ground | 31 (BR) - Ground | 32 (P/B) - Ground | 33 (LG) - Ground | 43 (V/W) - Ground | |
| P | 0V | Battery voltage | Battery voltage | Battery voltage | 0V | |
| R | 0V | 0V | Battery voltage | 0V | Battery voltage | |
| N | Battery voltage | 0V | Battery voltage | Battery voltage | 0V | |
| D | Battery voltage | 0V | 0V | 0V | Battery voltage | |



OK or NG

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

DTC P0705 PARK/NEUTRAL POSITION SWITCH

2. CHECK PNP SWITCH POWER SOURCE CIRCUIT

1. Turn ignition switch "OFF".
2. Disconnect the PNP switch connector.
3. Turn ignition switch "ON". (Do not start engine.)
4. Check voltage between PNP switch connector terminals 2, 5 and ground.

| Connector | Terminal (Wire color) | Voltage |
|-----------|-----------------------|-----------------|
| F29 | 2 (O) - Ground | Battery voltage |
| | 5 (G) - Ground | |

5. Turn ignition switch "OFF".
6. Check voltage between PNP switch connector terminals 2, 5 and ground.

| Connector | Terminal (Wire color) | Voltage |
|-----------|-----------------------|---------|
| F29 | 2 (O) - Ground | 0V |
| | 5 (G) - Ground | |

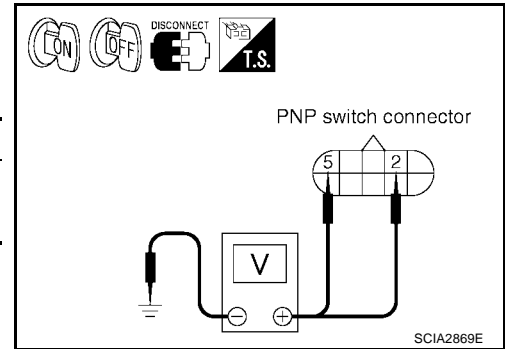
7. If OK, check harness for short-circuit to ground or power source.

OK or NG

OK >> GO TO 3.

NG >> Check the following. If any items are damaged, repair or replace damaged parts.

- Harness for short or open between ignition switch and PNP switch
- Ignition switch and fuse
Refer to [PG-4, "POWER SUPPLY ROUTING CIRCUIT"](#) .



3. CHECK HARNESS BETWEEN TCM AND PNP SWITCH

1. Turn ignition switch "OFF".
2. Disconnect the TCM connector and PNP switch connector.
3. Check continuity between TCM connector terminals 24, 31, 32, 43 and ground.

| Connector | Terminal (Wire color) | Condition | Continuity |
|-------------------|--------------------------------------|--|------------|
| F57 | 24 (O/L) - Ground | Selector lever: "P" and "R" position | Yes |
| | | Other than the above | No |
| | 31 (BR) - Ground | Selector lever: "R", "N", "D" and manual mode position | Yes |
| | | Other than the above | No |
| | 32 (P/B) - Ground | Selector lever: "D" and manual mode position | Yes |
| | | Other than the above | No |
| 43 (V/W) - Ground | Selector lever: "P" and "N" position | Yes | |
| | Other than the above | No | |

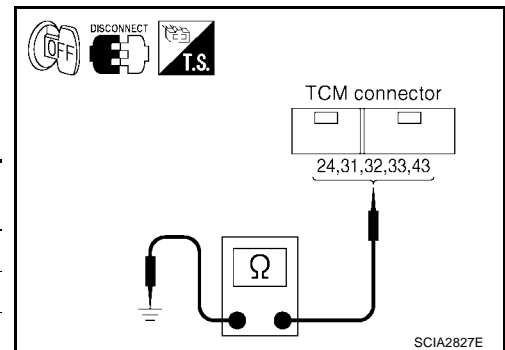
4. If OK, check the following.

- Harness for short-circuit to ground or power source.
- Open or short-circuit in the harness between unified meter and A/C auto amp. and TCM.

OK or NG

OK >> GO TO 5.

NG >> GO TO 4.



DTC P0705 PARK/NEUTRAL POSITION SWITCH

4. DETECT MALFUNCTIONING ITEM

Check the following.

- Open or short-circuit in the harness between TCM and PNP switch A, B, C, PA.
- Open or short-circuit in the harness for ground of PNP switch.
- PNP switch. Refer to [AT-94, "Component Inspection"](#).

OK or NG

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

5. CHECK DTC

Perform "DTC Confirmation Procedure". Refer to [AT-90, "DTC Confirmation Procedure"](#).

OK or NG

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

6. CHECK TCM

1. Check TCM input/output signal. Refer to [AT-71, "TCM Input/Output Signal Reference Values"](#).
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

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

Component Inspection PNP SWITCH

ECS00A28

1. Check continuity between PNP switch terminals while moving selector lever. Refer to the following table.

| Circuit | Starter | | Reverse | | Position | | | | |
|----------------|---------|---|---------|-----|----------|-----|-----|---|-----|
| | + | - | + | - | - | A | B | C | PA |
| Terminal No. | 5 | 1 | 2 | 4 | 6 | 9 | 10 | 7 | 8 |
| Lever position | | | | | | | | | |
| P | ○—○ | | | | ○—○ | ○—○ | | | ○—○ |
| R | | | ○—○ | ○—○ | ○—○ | ○—○ | | | |
| N | ○—○ | | | | ○—○ | | ○—○ | | ○—○ |
| D | | | | | ○—○ | | ○—○ | | ○—○ |

○—○ : Continuity

SCIA2825E

2. If NG, check again with control cable disconnected. (Refer to Step 1 above.)
3. If OK on step 2, adjust control cable. Refer to [AT-240, "Control Cable Adjustment"](#).
4. If NG on step 2, remove park/neutral position (PNP) switch from A/T and check continuity of park/neutral position (PNP) switch terminals. (Refer to step 1 above.)
5. If OK on step 4, adjust park/neutral position (PNP) switch. Refer to [AT-238, "Park/Neutral Position \(PNP\) Switch Adjustment"](#).
6. If NG on step 4, replace park/neutral position (PNP) switch.

DTC P0710 A/T FLUID TEMPERATURE SENSOR CIRCUIT

DTC P0710 A/T FLUID TEMPERATURE SENSOR CIRCUIT

PF3:31940

Description

ECS00A29

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

On Board Diagnosis Logic

ECS00A2A

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “ATF TEMP SEN/CIRC” with CONSULT-II or P0710 without CONSULT-II is detected under the following conditions.
 - When normal voltage not applied to ATF temperature sensor due to open, short, and so on.
 - When during running, the ATF temperature sensor signal voltage is excessively high or low.

Possible Cause

ECS00A2B

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

DTC Confirmation Procedure

ECS00A2C

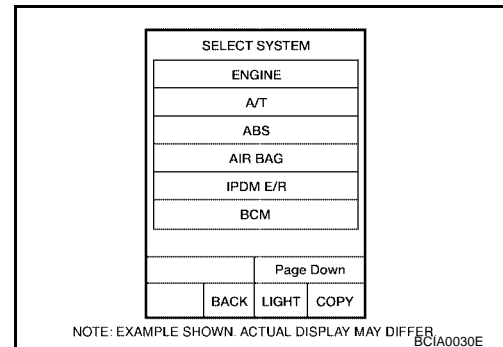
NOTE:

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 “A/T” with “DATA MONITOR” mode in CONSULT-II.
3. Start engine.
4. Warm up engine so that engine coolant temperature is more than 50°C (122°F).
COOLAN TEMP: More than 50°C (122°F)
5. Maintain the following conditions for at least 16 minutes (Total).
(It is not necessary to drive vehicle.)
COOLAN TEMP: More than 50°C (122°F)
SLCT LVR POSI: “D” position
6. If DTC is detected, go to [AT-97. "Diagnostic Procedure"](#).



Ⓞ WITH GST

Follow the procedure “With CONSULT-II”.

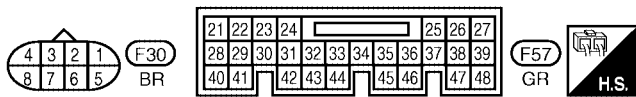
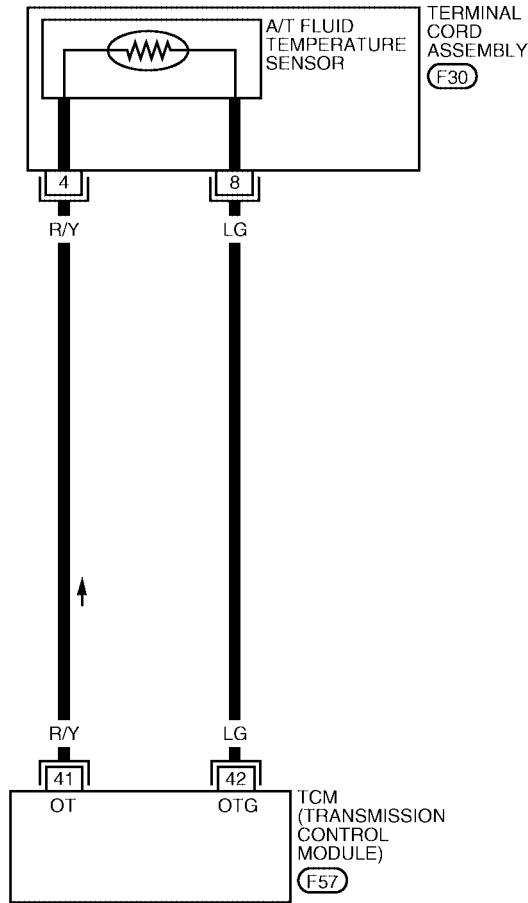
DTC P0710 A/T FLUID TEMPERATURE SENSOR CIRCUIT

Wiring Diagram — AT — FTS

ECS00A2D

AT-FTS-01


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



BCWA0267E

DTC P0710 A/T FLUID TEMPERATURE SENSOR CIRCUIT

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

| Terminal | Wire color | Item | Condition | Data (Approx.) | | |
|----------|------------|---------------------------------|---|------------------------------------|------|--------|
| | | | | | | |
| 41 | R/Y | Fluid temperature sensor |  | When ATF temperature 0°C (32°F) | 4.0V | 9.8 kΩ |
| | | | | When ATF temperature 20°C (68°F) | 3.0V | 4.2 kΩ |
| | | | | When ATF temperature 80°C (176°F) | 0.8V | .54 kΩ |
| | | | | When ATF temperature 100°C (212°F) | 0.5V | .31 kΩ |
| 42 | LG | Fluid temperature sensor ground | Always | 0V | | |

Diagnostic Procedure

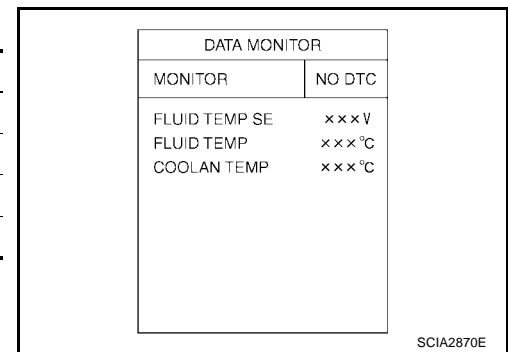
ECS00A2E

1. CHECK FLUID TEMPERATURE SENSOR SIGNAL

With CONSULT-II

1. Start engine.
2. Select "A/T" with "DATA MONITOR" mode in CONSULT-II.
3. Read out the value of "FLUID TEMP SE".

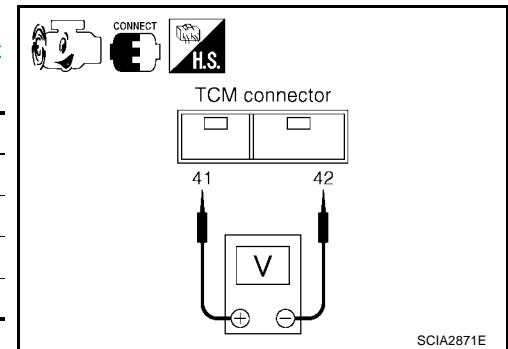
| Item name | Condition | Display value (Approx.) |
|--------------------------|---------------|-------------------------|
| Fluid temperature sensor | 0°C (32°F) | 4.0V |
| | 20°C (68°F) | 3.0V |
| | 80°C (176°F) | 0.8V |
| | 100°C (212°F) | 0.5V |



Without CONSULT-II

1. Start engine.
2. Check voltage between TCM connector terminals 41 and 42 while warming up A/T. Refer to [AT-96, "Wiring Diagram — AT — FTS"](#).

| Connector | Terminal (Wire color) | Temperature | Voltage (Approx.) |
|-----------|-----------------------------|---------------|-------------------|
| F57 | 41 (R/Y) - 42 (LG) (ground) | 0°C (32°F) | 4.0V |
| | | 20°C (68°F) | 3.0V |
| | | 80°C (176°F) | 0.8V |
| | | 100°C (212°F) | 0.5V |



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

OK or NG

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

DTC P0710 A/T FLUID TEMPERATURE SENSOR CIRCUIT

2. CHECK FLUID TEMPERATURE SENSOR CIRCUIT

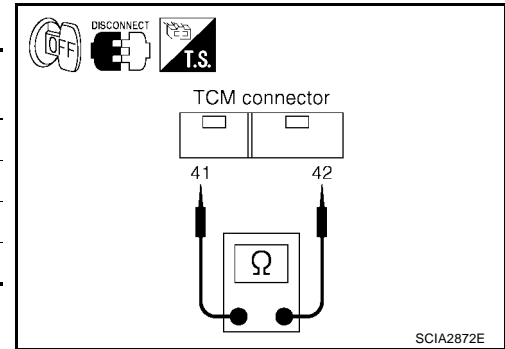
1. Turn ignition switch "OFF".
2. Disconnect the TCM connector.
3. Check resistance between terminals 41 and 42.

| Connector | Terminal (Wire color) | Temperature | Resistance (Approx.) |
|-----------|-----------------------------|---------------|----------------------|
| F57 | 41 (R/Y) - 42 (LG) (ground) | 0°C (32°F) | 9.8 kΩ |
| | | 20°C (68°F) | 4.2 kΩ |
| | | 80°C (176°F) | 0.54 kΩ |
| | | 100°C (212°F) | 0.31 kΩ |

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

OK or NG

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



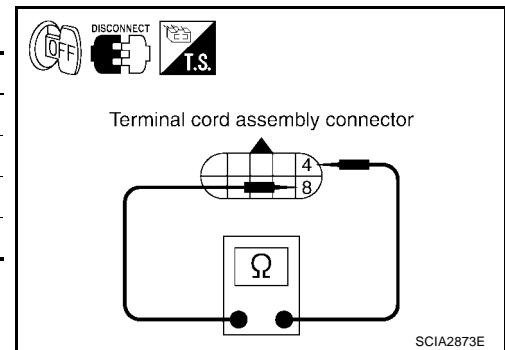
3. CHECK TERMINAL CORD ASSEMBLY WITH A/T FLUID TEMPERATURE SENSOR

1. Turn ignition switch "OFF".
2. Disconnect terminal cord assembly harness connector.
3. Check resistance between terminals 4 and 8.

| Connector | Terminal | Temperature | Resistance (Approx.) |
|-----------|----------|---------------|----------------------|
| F30 | 4 - 8 | 0°C (32°F) | 9.8 kΩ |
| | | 20°C (68°F) | 4.2 kΩ |
| | | 80°C (176°F) | 0.54 kΩ |
| | | 100°C (212°F) | 0.31 kΩ |

OK or NG

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



4. CHECK HARNESS BETWEEN TCM AND TERMINAL CORD ASSEMBLY

Check the following.

- Open or short-circuit in the harness between TCM and terminal cord assembly.

OK or NG

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

DTC P0710 A/T FLUID TEMPERATURE SENSOR CIRCUIT

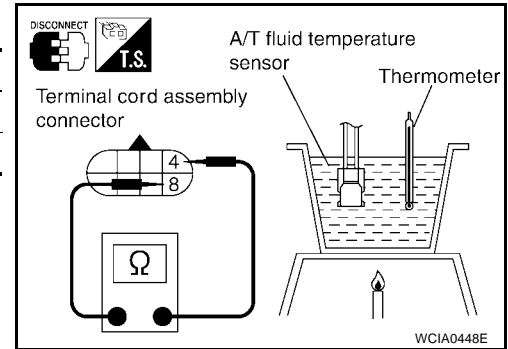
5. CHECK A/T FLUID TEMPERATURE SENSOR

1. Remove side cover. Refer to [AT-241, "Side cover"](#) .
2. Disconnect A/T fluid temperature sensor.
3. Check resistance between terminals 4 and 8.

| Connector | Terminal | Temperature | Resistance |
|-----------|----------|---------------|---------------|
| F30 | 4 - 8 | 10°C (50°F) | 5.80 - 7.09kΩ |
| | | 110°C (230°F) | 0.23 - 0.26kΩ |

OK or NG

- OK >> GO TO 6.
 NG >> Repair or replace transmission wire. Refer to [AT-241, "Terminal cord assembly"](#) .



6. CHECK DTC

Perform "DTC Confirmation Procedure". Refer to [AT-95, "DTC Confirmation Procedure"](#) .

OK or NG

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

7. CHECK TCM

1. Check TCM input/output signal. Refer to [AT-71, "TCM Input/Output Signal Reference Values"](#) .
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

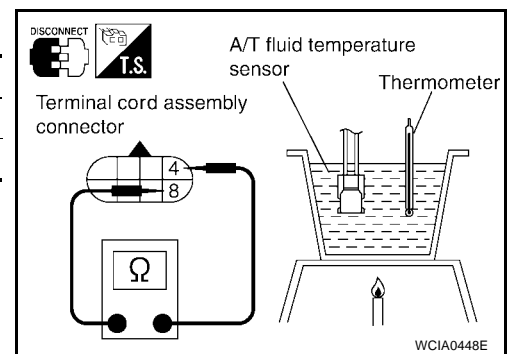
- OK >> **INSPECTION END**
 NG >> Repair or replace damaged parts.

Component Inspection A/T FLUID TEMPERATURE SENSOR

1. Remove side cover. Refer to [AT-241, "Side cover"](#) .
2. Disconnect A/T fluid temperature sensor.
3. Check resistance between terminals 4 and 8.

| Connector | Terminal | Temperature | Resistance |
|-----------|----------|---------------|---------------|
| F30 | 4 - 8 | 10°C (50°F) | 5.80 - 7.09kΩ |
| | | 110°C (230°F) | 0.23 - 0.26kΩ |

4. If NG, repair and replace transmission wire. Refer to [AT-241, "Terminal cord assembly"](#) .



DTC P0711 FLUID TEMPERATURE SENSOR PERFORMANCE

DTC P0711 FLUID TEMPERATURE SENSOR PERFORMANCE

PF:31940

Description

ECS00A2G

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

On Board Diagnosis Logic

ECS00A2H

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "FLUID TEMP SEN" with CONSULT-II or P0711 without CONSULT-II is detected when ATF temperature signal does not change.

Possible Cause

ECS00A2I

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

DTC Confirmation Procedure

ECS00A2J

CAUTION:

Always drive vehicle at a safe speed.

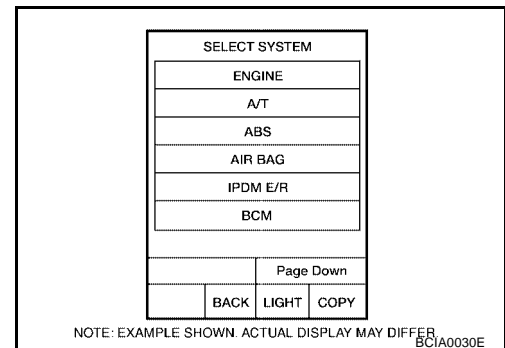
NOTE:

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 "A/T" with "DATA MONITOR" mode in CONSULT-II.
3. Start engine.
4. Drive vehicle and maintain the following conditions for at least 15 minutes (Total). (It is not necessary to maintain continuously.)
VHCL SPEED SE-A/T: 40 km/h (25 MPH) or more
SLCT LVR POSI: "D" position
5. If DTC is detected, go to [AT-102, "Diagnostic Procedure"](#).



WITH GST

Follow the procedure "With CONSULT-II".

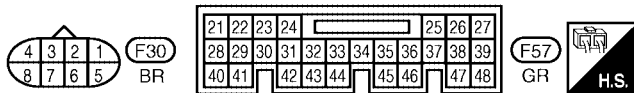
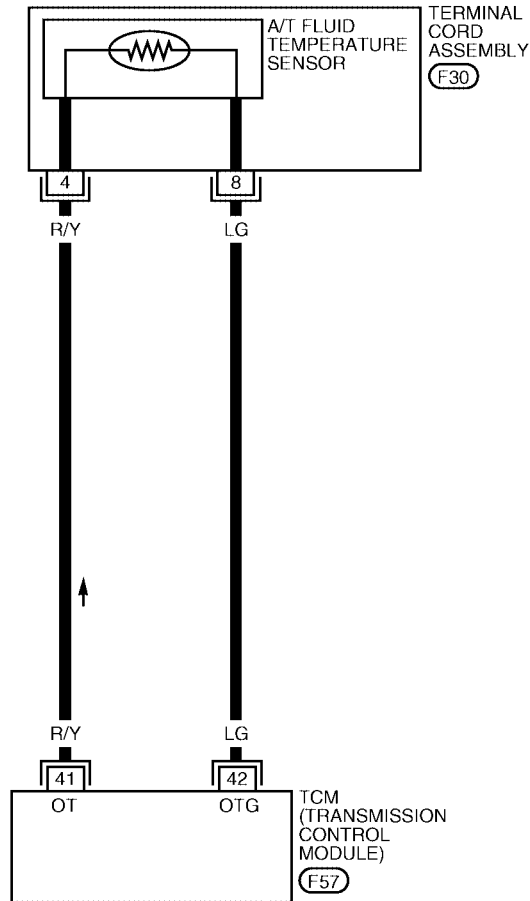
DTC P0711 FLUID TEMPERATURE SENSOR PERFORMANCE

Wiring Diagram — AT — FTSP

ECS00A2K

AT-FTSP-01


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



BCWA0268E

DTC P0711 FLUID TEMPERATURE SENSOR PERFORMANCE

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

| Terminal | Wire color | Item | Condition | Data (Approx.) | |
|----------|------------|---------------------------------|---|------------------------------------|-------------|
| 41 | R/Y | Fluid temperature sensor |  | When ATF temperature 0°C (32°F) | 4.0V 9.8 kΩ |
| | | | | When ATF temperature 20°C (68°F) | 3.0V 4.2 kΩ |
| | | | | When ATF temperature 80°C (176°F) | 0.8V .54 kΩ |
| | | | | When ATF temperature 100°C (212°F) | 0.5V .31 kΩ |
| 42 | LG | Fluid temperature sensor ground | Always | 0V | |

Diagnostic Procedure

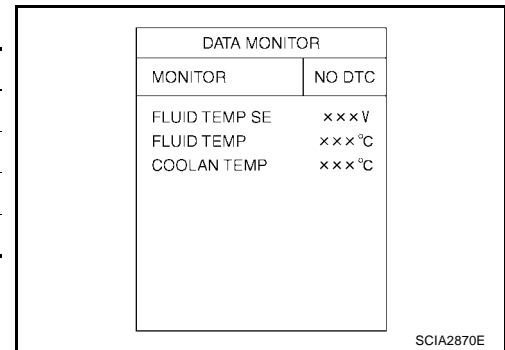
ECS00A2L

1. CHECK FLUID TEMPERATURE SENSOR SIGNAL

Ⓟ With CONSULT-II

1. Start engine.
2. Select "A/T" with "DATA MONITOR" mode in CONSULT-II.
3. Read out the value of "FLUID TEMP SE".

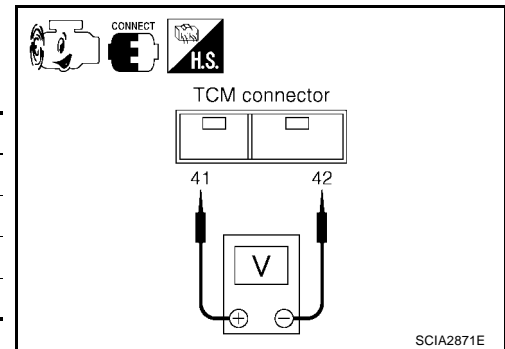
| Item name | Condition | Display value (Approx.) |
|--------------------------|---------------|-------------------------|
| Fluid temperature sensor | 0°C (32°F) | 4.0V |
| | 20°C (68°F) | 3.0V |
| | 80°C (176°F) | 0.8V |
| | 100°C (212°F) | 0.5V |



ⓧ Without CONSULT-II

1. Start engine.
2. Check voltage between TCM connector terminals 41 and 42 while warming up A/T. Refer to [AT-101, "Wiring Diagram — AT — FTSP"](#).

| Connector | Terminal (Wire color) | Temperature | Voltage (Approx.) |
|-----------|-----------------------------|---------------|-------------------|
| F57 | 41 (R/Y) - 42 (LG) (ground) | 0°C (32°F) | 4.0V |
| | | 20°C (68°F) | 3.0V |
| | | 80°C (176°F) | 0.8V |
| | | 100°C (212°F) | 0.5V |



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

OK or NG

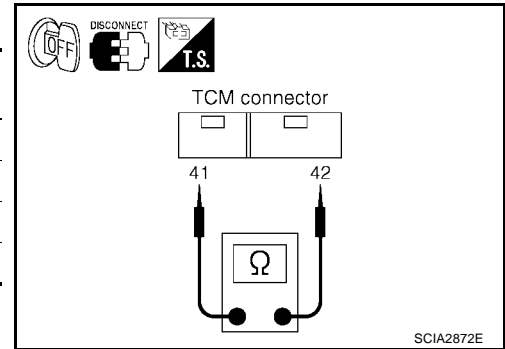
- OK >> GO TO 6.
 NG >> GO TO 2.

DTC P0711 FLUID TEMPERATURE SENSOR PERFORMANCE

2. CHECK FLUID TEMPERATURE SENSOR CIRCUIT

1. Turn ignition switch "OFF".
2. Disconnect the TCM connector.
3. Check resistance between terminals 41 and 42.

| Connector | Terminal (Wire color) | Temperature | Resistance (Approx.) |
|-----------|-----------------------------|---------------|----------------------|
| F57 | 41 (R/Y) - 42 (LG) (ground) | 0°C (32°F) | 9.8 kΩ |
| | | 20°C (68°F) | 4.2 kΩ |
| | | 80°C (176°F) | 0.54 kΩ |
| | | 100°C (212°F) | 0.31 kΩ |



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

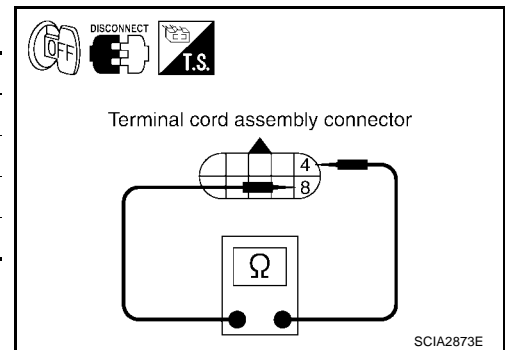
OK or NG

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

3. CHECK TERMINAL CORD ASSEMBLY WITH A/T FLUID TEMPERATURE SENSOR

1. Turn ignition switch "OFF".
2. Disconnect terminal cord assembly harness connector.
3. Check resistance between terminals 4 and 8.

| Connector | Terminal | Temperature | Resistance (Approx.) |
|-----------|----------|---------------|----------------------|
| F30 | 4 - 8 | 0°C (32°F) | 9.8 kΩ |
| | | 20°C (68°F) | 4.2 kΩ |
| | | 80°C (176°F) | 0.54 kΩ |
| | | 100°C (212°F) | 0.31 kΩ |



4. Reinstall any part removed.

OK or NG

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

4. CHECK HARNESS BETWEEN TCM AND TERMINAL CORD ASSEMBLY

Check the following.

- Open or short-circuit in the harness between TCM and terminal cord assembly.

OK or NG

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

DTC P0711 FLUID TEMPERATURE SENSOR PERFORMANCE

5. CHECK A/T FLUID TEMPERATURE SENSOR

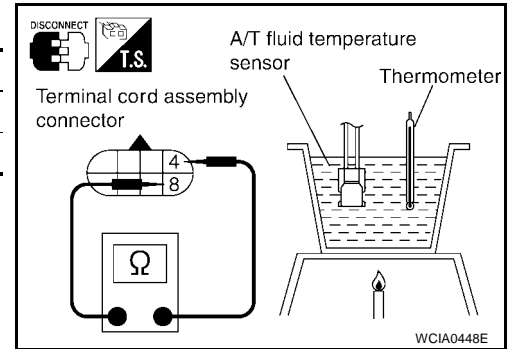
1. Remove side cover. Refer to [AT-241, "Side cover"](#) .
2. Disconnect A/T fluid temperature sensor.
3. Check resistance between terminals 4 and 8.

| Connector | Terminal) | Temperature | Resistance |
|-----------|-----------|---------------|---------------|
| F30 | 4 - 8 | 10°C (50°F) | 5.80 - 7.09kΩ |
| | | 110°C (230°F) | 0.23 - 0.26kΩ |

OK or NG

OK >> GO TO 6.

NG >> Repair or replace transmission wire. Refer to [AT-241, "Terminal cord assembly"](#) .



6. CHECK DTC

Perform "DTC Confirmation Procedure". Refer to [AT-100, "DTC Confirmation Procedure"](#) .

OK or NG

OK >> **INSPECTION END**

NG >> GO TO 7.

7. CHECK TCM

1. Check TCM input/output signal. Refer to [AT-71, "TCM Input/Output Signal Reference Values"](#) .
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

OK >> **INSPECTION END**

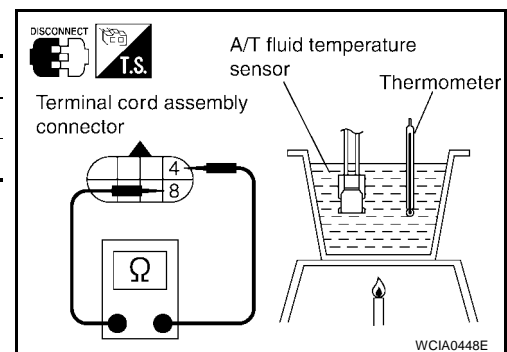
NG >> Repair or replace damaged parts.

Component Inspection A/T FLUID TEMPERATURE SENSOR

1. Remove side cover. Refer to [AT-241, "Side cover"](#) .
2. Disconnect A/T fluid temperature sensor.
3. Check resistance between terminals 4 and 8.

| Connector | Terminal) | Temperature | Resistance |
|-----------|-----------|---------------|---------------|
| F30 | 4 - 8 | 10°C (50°F) | 5.80 - 7.09kΩ |
| | | 110°C (230°F) | 0.23 - 0.26kΩ |

4. If NG, repair or replace transmission wire. Refer to [AT-241, "Terminal cord assembly"](#) .



DTC P0717 TURBINE REVOLUTION SENSOR CIRCUIT

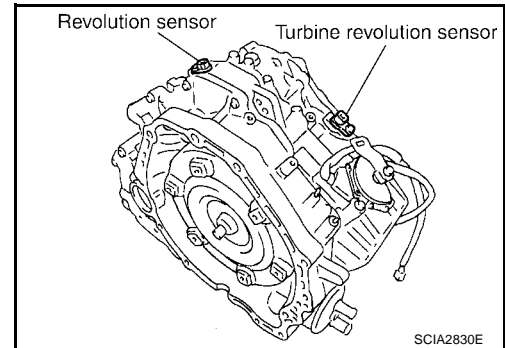
PF3:31935

DTC P0717 TURBINE REVOLUTION SENSOR CIRCUIT

ECS00A2N

Description

- The turbine revolution sensor detects forward clutch drum rpm (revolutions per minute). It is located on the input side of the automatic transaxle. The revolution sensor is located on the output side of the automatic transaxle. With the two sensors, input and output rpms are accurately detected. The result is optimal shift timing during deceleration and improved shifting.
- Hall IC is installed in turbine revolution sensor, it itself handles in pulse of rectangular wave signal and transmits it to TCM due to hall effect. TCM recognizes the pulse with input rpm speed. Size of output doesn't depend on a rotation number and is fixed.



ECS00A2O

On Board Diagnosis Logic

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "TURBINE SENSOR" with CONSULT-II or P0717 without CONSULT-II is detected under the following conditions.
 - When signal from turbine revolution sensor does not input due to open, short, and so on.
 - When unexpected signal input during running.

Possible Cause

ECS00A2P

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

DTC Confirmation Procedure

ECS00A2Q

CAUTION:

Always drive vehicle at a safe speed.

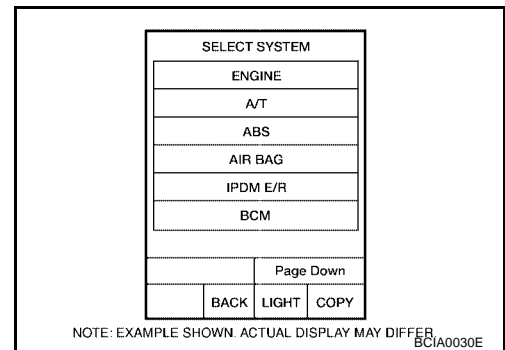
NOTE:

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 1 consecutive minute.
FLUID TEMP: More than 20°C (68°F)
VHCL/S SE-A/T: 70 km/h (43 MPH) or more
SLCT LVR POSI: "D" position
GEAR: Except 1st position
5. If DTC is detected, go to [AT-107, "Diagnostic Procedure"](#).



WITH GST

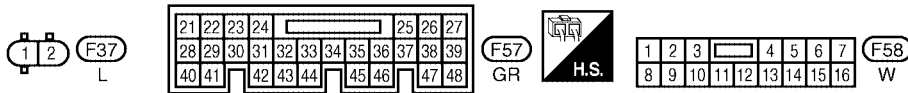
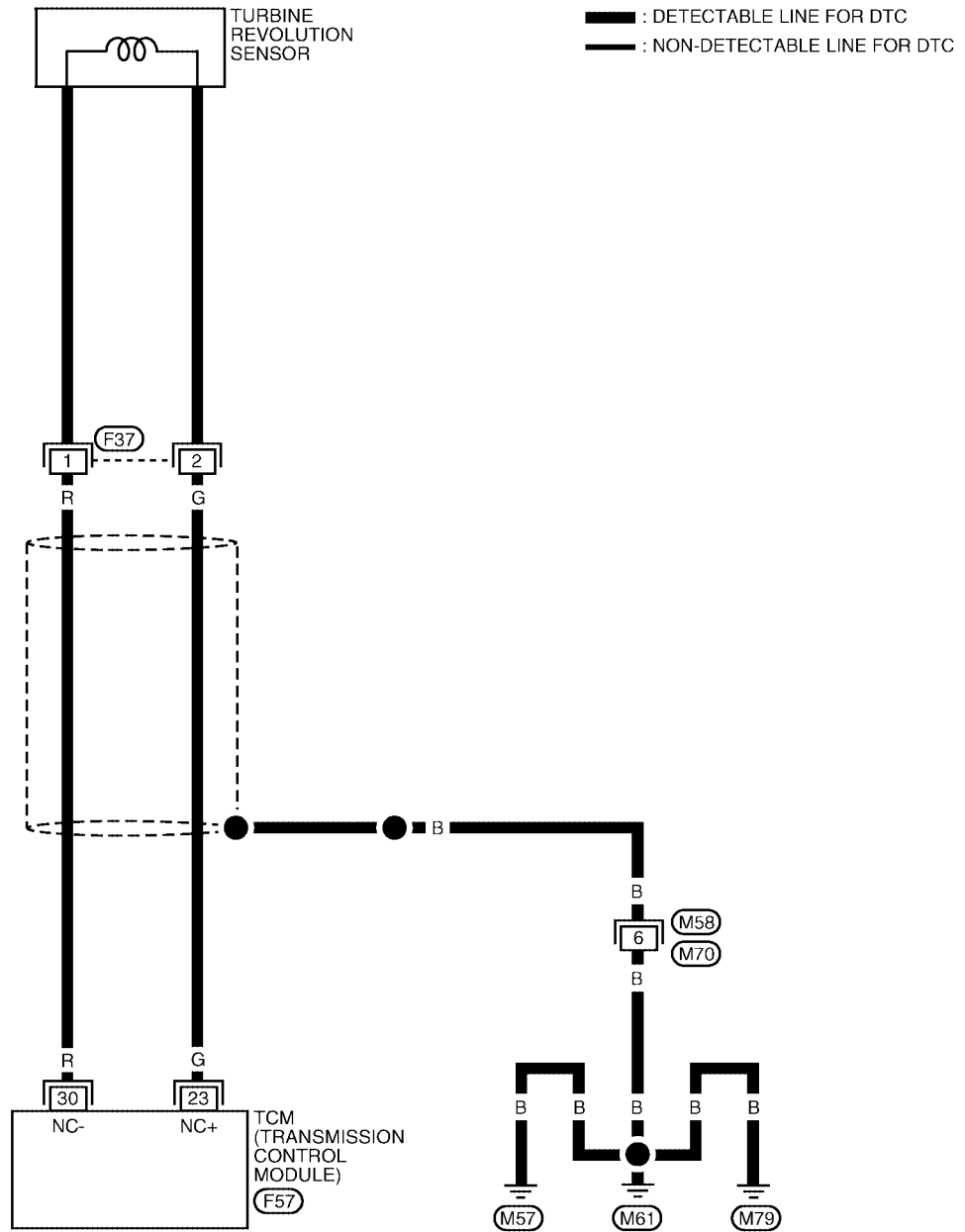
Follow the procedure "With CONSULT-II".

DTC P0717 TURBINE REVOLUTION SENSOR CIRCUIT

Wiring Diagram — AT — TRSC

ECS00A2R




AT-TRSC-01



BCWA0269E

DTC P0717 TURBINE REVOLUTION SENSOR CIRCUIT

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

| Terminal | Wire color | Item | Condition | Data (Approx.) | |
|----------|------------|--|---|--|-----------------|
| 23 | G | Turbine revolution sensor power supply |  | When turning ignition switch ON. | Battery voltage |
| | | |  | When turning ignition switch OFF. | 0V |
| 30 | R | Turbine revolution sensor |  | When moving at 20 km/h (12 MPH) in 1st gear. | 371Hz |

Diagnostic Procedure

ECS00A2S

1. CHECK TURBINE REVOLUTION SENSOR CIRCUIT

With CONSULT-II

- Start engine.
- Select "A/T" with "DATA MONITOR" mode in CONSULT-II.
- Drive vehicle and read out the value of "TURBINE REV".

| Monitor item | Condition | Specification |
|--------------|-----------------------------|---|
| TURBINE REV | During driving (lock-up ON) | Approximately matches the engine speed. |

| DATA MONITOR | |
|--------------|---------|
| MONITOR | NO DTC |
| ENGINE SPEED | xxx rpm |
| TURBINE REV | xxx rpm |
| LOCK-UP | ON |

SCIA2924E

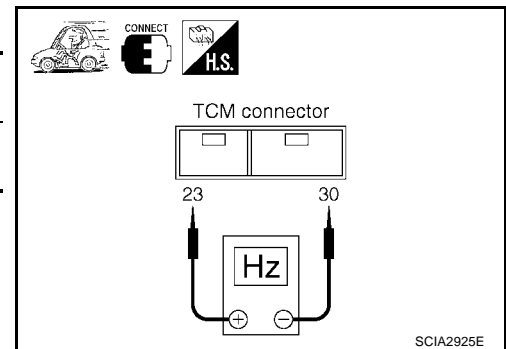
Without CONSULT-II

- Start the engine.
- Check pulse between TCM connector terminals 23 and 30.

| Connector | Terminal (Wire color) | Condition | Data (Approx.) |
|-----------|--------------------------|--|----------------|
| F57 | 23 (G) - 30 (R) (ground) | When moving at 20 km/h (12 MPH) in 1st gear. | 371 Hz |

OK or NG

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



2. DETECT MALFUNCTIONING ITEM

Check the following.

- Open or short-circuit in the harness between TCM and turbine revolution sensor.
- Turbine revolution sensor. Refer to [AT-108, "Component Inspection"](#).

OK or NG

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

DTC P0717 TURBINE REVOLUTION SENSOR CIRCUIT

3. CHECK DTC

Perform "DTC Confirmation Procedure". Refer to [AT-105, "DTC Confirmation Procedure"](#) .

OK or NG

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

4. CHECK TCM

1. Check TCM input/output signal. Refer to [AT-71, "TCM Input/Output Signal Reference Values"](#) .
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

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

Component Inspection TURBINE REVOLUTION SENSOR

ECS00A2T

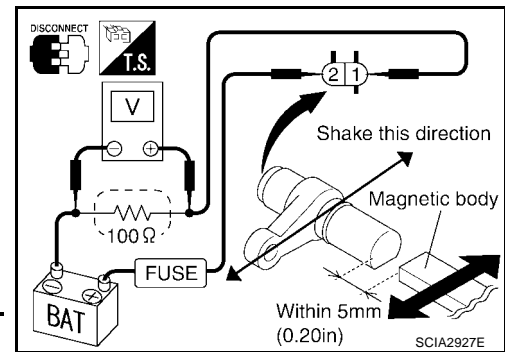
1. Remove turbine revolution sensor.
2. Connect 12V power supply and 100 Ω resistance to the terminal. (Do not mistake polarity)
3. Inspect the voltage of HIGH and LOW signal by shaking magnetic body from side to side at turbine revolution sensor tip [gap is within 5 mm (0.20 in)].

CAUTION:

Make sure to shake direction from bolt hole to sensor-self when shaking magnetic body. If not, voltage value cannot change.

| Signal | Voltage (Approx.) |
|--------|-------------------|
| HIGH | 1.2 - 1.6V |
| LOW | 0.4 - 0.8V |

4. If NG, replace turbine revolution sensor.



DTC P0722 VEHICLE SPEED SENSOR A/T (REVOLUTION SENSOR) CIRCUIT

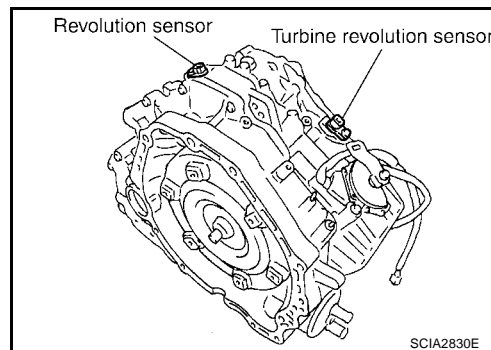
DTC P0722 VEHICLE SPEED SENSOR A/T (REVOLUTION SENSOR) CIRCUIT

PFP:31935

ECS00A2U

Description

- 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.
- Hall IC is installed in revolution sensor, it itself handles in pulse of rectangular wave signal and transmits it to TCM due to hall effect. TCM recognizes the pulse with vehicle speed. Size of output doesn't depend on a rotation number and is fixed.



On Board Diagnosis Logic

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "VHCL SPEED SEN-A/T" with CONSULT-II or P0722 without CONSULT-II is detected under the following conditions.
 - When signal from revolution sensor does not input due to open, short, and so on.
 - When unexpected signal input during running.

Possible Cause

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

DTC Confirmation Procedure

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. Start engine.
4. 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-111, "Diagnostic Procedure"](#).
If the check result is OK, go to following step.

5. Maintain the following conditions for at least 2 consecutive minutes.

FLUID TEMP: More than 20°C (68°F)

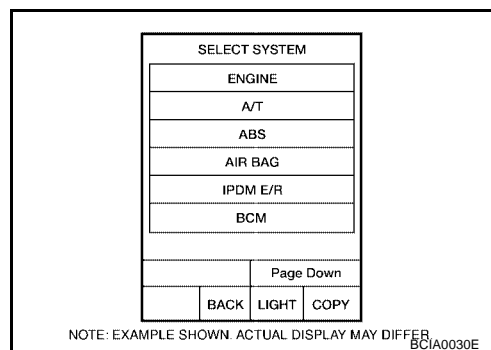
VHCL/S SE-A/T: 70 km/h (43 MPH) or more

SLCT LVR POSI: "D" position

If the check result is NG, go to [AT-111, "Diagnostic Procedure"](#).

WITH GST

Follow the procedure "With CONSULT-II".

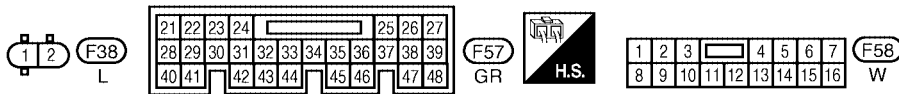
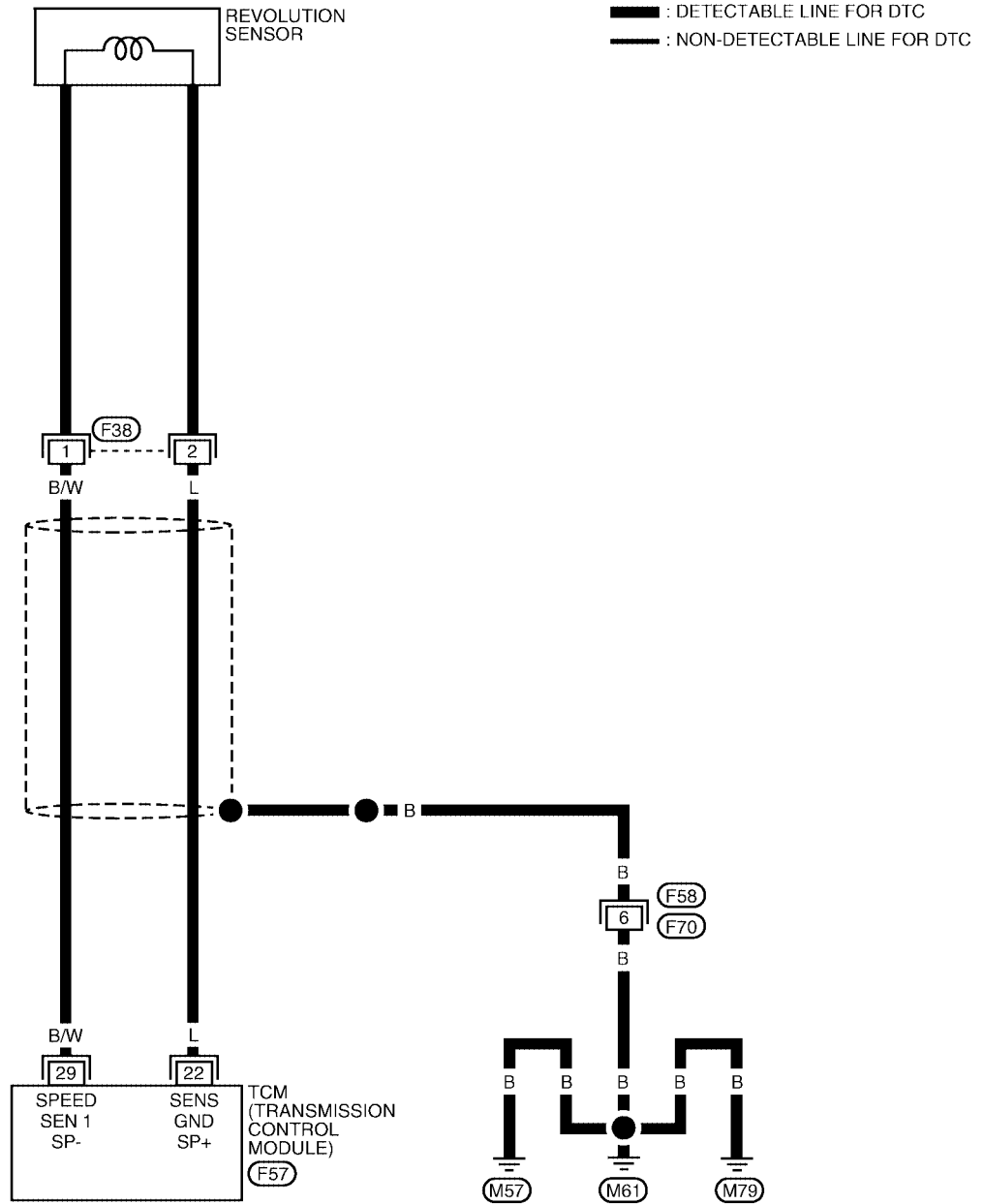


DTC P0722 VEHICLE SPEED SENSOR A/T (REVOLUTION SENSOR) CIRCUIT

Wiring Diagram — AT — VSSATC

ECS00A2Y




AT-VSSATC-01



BCWA0270E

DTC P0722 VEHICLE SPEED SENSOR A/T (REVOLUTION SENSOR) CIRCUIT

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

| Terminal | Wire color | Item | Condition | Data (Approx.) | |
|----------|------------|--------------------------------|---|--|-----------------|
| 22 | L | Revolution sensor power supply |  | When turning ignition switch ON. | Battery voltage |
| | | |  | When turning ignition switch OFF. | 0V |
| 29 | B/W | Revolution sensor |  | When moving at 20 km/h (12 MPH) in 1st gear. | 119Hz |

Diagnostic Procedure

ECS00A2Z

1. CHECK REVOLUTION SENSOR CIRCUIT

With CONSULT-II

- Start engine.
- Select "A/T" with "DATA MONITOR" mode in CONSULT-II.
- Drive vehicle and read out the value of "VHCL/S SE-AT".

| Monitor item | Condition | Specification |
|--------------|----------------|--|
| VHCL/S SE-AT | During driving | Approximately matches the speedometer reading. |

| DATA MONITOR | |
|-----------------|----------|
| MONITOR | NO DTC |
| VHCL/S SE · A/T | xxx km/h |
| VHCL/S SE · MTR | xxx km/h |

SCIA2922E

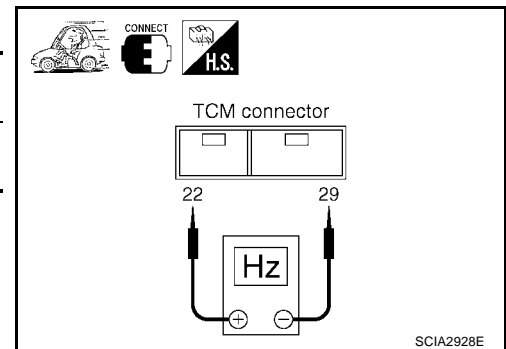
Without CONSULT-II

- Start the engine.
- Check pulse between TCM connector terminals 22 and 29.

| Connector | Terminal (Wire color) | Condition | Data (Approx.) |
|-----------|----------------------------|--|----------------|
| F57 | 22 (L) - 29 (B/W) (ground) | When moving at 20 km/h (12 MPH) in 1st gear. | 119 Hz |

OK or NG

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



2. DETECT MALFUNCTIONING ITEM

Check the following.

- Open or short-circuit in the harness between TCM and revolution sensor.
- Revolution sensor. Refer to [AT-112, "Component Inspection"](#).

OK or NG

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

DTC P0722 VEHICLE SPEED SENSOR A/T (REVOLUTION SENSOR) CIRCUIT

3. CHECK DTC

Perform "DTC Confirmation Procedure". Refer to [AT-109, "DTC Confirmation Procedure"](#) .

OK or NG

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

4. CHECK TCM

1. Check TCM input/output signal. Refer to [AT-71, "TCM Input/Output Signal Reference Values"](#) .
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

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

Component Inspection REVOLUTION SENSOR

ECS00A30

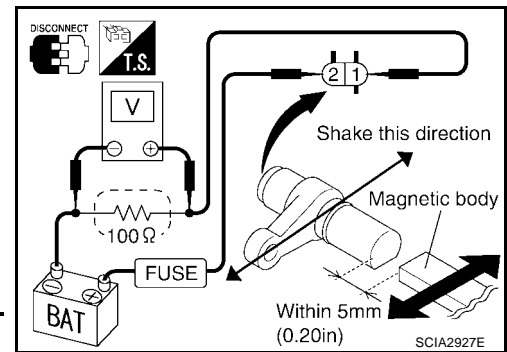
1. Remove revolution sensor.
2. Connect 12V power supply and 100 Ω resistance to the terminal. (Do not mistake polarity)
3. Inspect the voltage of HIGH and LOW signal by shaking magnetic body from side to side at revolution sensor tip [gap is within 5mm (0.20 in)].

CAUTION:

Make sure to shake direction from bolt hole to sensor-self when shaking magnetic body. If not, voltage value cannot change.

| Signal | Voltage (Approx.) |
|--------|-------------------|
| HIGH | 1.2 - 1.6V |
| LOW | 0.4 - 0.8V |

4. If NG, replace revolution sensor.



DTC P0726 ENGINE SPEED INPUT CIRCUIT PERFORMANCE

DTC P0726 ENGINE SPEED INPUT CIRCUIT PERFORMANCE

PF3:31036

Description

ECS00A31

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

On Board Diagnosis Logic

ECS00A32

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code “ENG SPD INP PERFOR” with CONSULT-II or 14th judgement flicker without CONSULT-II is detected when malfunction is detected in engine speed signal, actual engine torque signal or torque reduction signal that is output from ECM through CAN communication.

Possible Cause

ECS00A33

- Harness or connectors
(The signal circuit is open or shorted.)
- ECM

DTC Confirmation Procedure

ECS00A34

CAUTION:

Always drive vehicle at a safe speed.

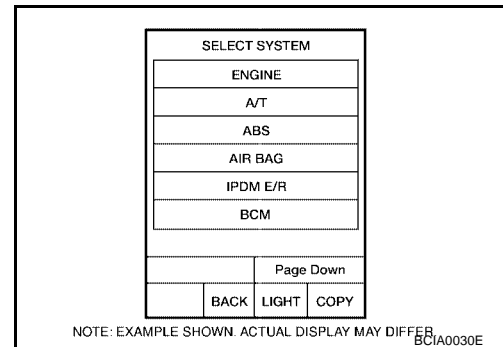
NOTE:

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 “A/T” with “DATA MONITOR” mode in CONSULT-II.
2. Start engine.
3. Drive vehicle and maintain the following conditions for at least 10 consecutive seconds.
VHCL/S SE-A/T: 10 km/h (6 MPH) or more
ACCELE ANGLE: More than 10 %
SLCT LVR POSI: “D” position
4. If DTC is detected, go to [AT-113, "Diagnostic Procedure"](#).



Diagnostic Procedure

1. CHECK DTC WITH ECM

ECS00A35

With CONSULT-II

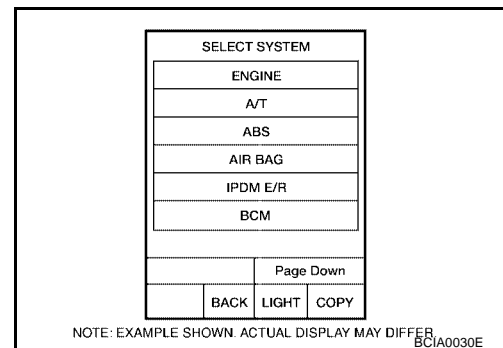
1. Turn ignition switch “ON”. (Do not start engine.)
2. Select “ENGINE” with “SELF-DIAG RESULTS” mode in CONSULT-II. Refer to [AT-74, "CONSULT-II Function \(TCM\)"](#).

OK or NG

OK >> GO TO 2.

NG >> Check the DTC detected item, go to [AT-5, "INDEX FOR DTC"](#).

- If CAN communication line is detected, go to [AT-83, "DTC U1000 CAN COMMUNICATION LINE"](#).



DTC P0726 ENGINE SPEED INPUT CIRCUIT PERFORMANCE

2. CHECK DTC WITH TCM

With CONSULT-II

1. Start engine.
2. Select "A/T" with "DATA MONITOR" mode in CONSULT-II.
3. While monitoring "ENGINE SPEED", check for engine speed change corresponding to "ACCELE ANGLE".

OK or NG

- OK >> GO TO 3.
NG >> Check the ignition signal circuit.
- Refer to [EC-666, "IGNITION SIGNAL"](#) .

| DATA MONITOR | |
|--------------|---------|
| MONITOR | NO DTC |
| ENGINE SPEED | xxx rpm |
| ACCELE ANGLE | xxx % |

SCIA2929E

3. CHECK DTC

Perform "DTC Confirmation Procedure". Refer to [AT-113, "DTC Confirmation Procedure"](#) .

OK or NG

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

4. CHECK TCM

1. Check TCM input/output signal. Refer to [AT-71, "TCM Input/Output Signal Reference Values"](#) .
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

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

DTC P0731 A/T 1ST GEAR FUNCTION

DTC P0731 A/T 1ST GEAR FUNCTION

PF3:31940

Description

ECS00A36

- This malfunction will not be detected while the A/T CHECK indicator lamp is indicating another self-diagnosis malfunction.
- This malfunction is detected when the A/T does not shift into first gear position as instructed by the TCM. This is not caused by electrical malfunction (circuits open or shorted) but by mechanical malfunction such as control valve sticking, improper solenoid valve operation, etc.

| Gear position | | Shift solenoid valve | | | | |
|---------------|----|----------------------|-----------|-----------|------------|--------------|
| | | A | B | C | D | E |
| 1st | D | ON (Closed) | ON (Open) | ON (Open) | OFF (Open) | OFF (Closed) |
| | M1 | ON (Closed) | ON (Open) | ON (Open) | OFF (Open) | ON (Open) |

On Board Diagnosis Logic

ECS00A37

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "A/T 1ST GR FNCTN" with CONSULT-II or P0731 without CONSULT-II is detected when A/T cannot be shifted to the 1st gear position even if electrical circuit is good.

Possible Cause

ECS00A38

- Shift solenoid valve A (Off stick.)
- 2nd brake
- 2nd coast brake
- One-way clutch No.1
- One-way clutch No.2
- Hydraulic control circuit

DTC Confirmation Procedure

ECS00A39

CAUTION:

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

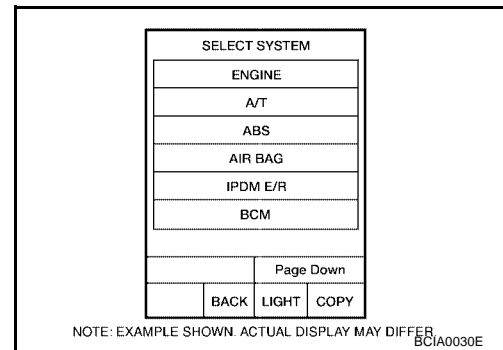
NOTE:

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. Start engine and select "A/T" with "DATA MONITOR" mode in CONSULT-II.
2. Make sure that ATF temperature is within the range below.
FLUID TEMP: More than 20°C (68°F)
If out of range, drive the vehicle to warm up the fluid.
3. Accelerate vehicle to maintain the following conditions for at least 12 consecutive seconds.
SLCT LVR POSI: "D" position
GEAR: 1st position
[Vehicle speed and accelerator angle: 1st gear position retainable condition. (Refer to AT-312, "VEHICLE SPEED WHEN SHIFTING GEARS" .)]
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-117, "Diagnostic Procedure"](#) .



WITH GST

Follow the procedure "With CONSULT-II".

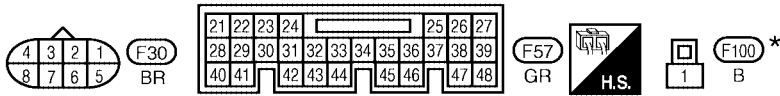
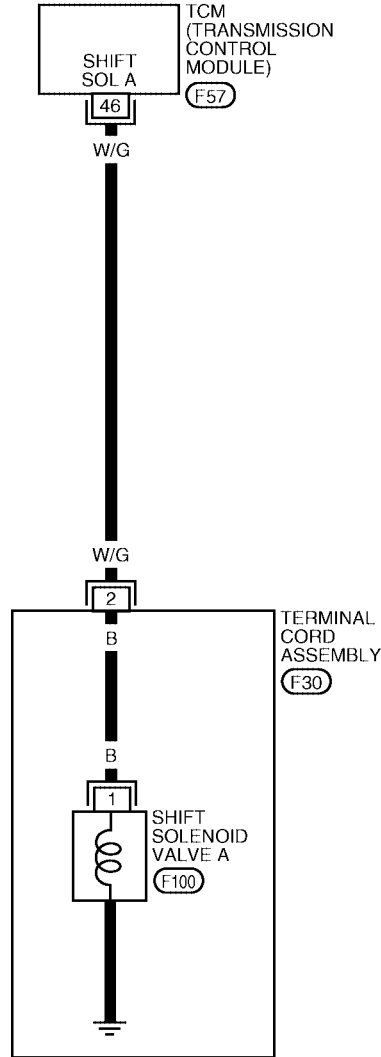
DTC P0731 A/T 1ST GEAR FUNCTION

Wiring Diagram — AT — 1STSIG

ECS00A3A

AT-1STSIG-01

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




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

BCWA0271E

DTC P0731 A/T 1ST GEAR FUNCTION

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

| Terminal | Wire color | Item | Condition | Data (Approx.) |
|----------|------------|------------------------|---|-----------------|
| 46 | W/G | Shift solenoid valve A |  When shift solenoid valve A operates. (When driving in 1st gear.) | Battery voltage |
| | | | When shift solenoid valve A does not operate. | 0V |

Diagnostic Procedure

ECS00A3B

1. CHECK SHIFT SOLENOID VALVE A CIRCUIT

Perform "Diagnostic Procedure" for DTC P0750. Refer to [AT-151, "Diagnostic Procedure"](#).

OK or NG

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

2. CHECK MALFUNCTIONING ITEM

1. Control valve assembly. Refer to [AT-241, "Control Valve Assembly"](#).
2. Disassembly A/T. Refer to [AT-252, "DISASSEMBLY"](#).
3. Check the following item:
 - 2nd brake. Refer to [AT-272, "Oil Pump, 2nd Coast Brake & 2nd Brake"](#).
 - 2nd coast brake. Refer to [AT-272, "Oil Pump, 2nd Coast Brake & 2nd Brake"](#), [AT-278, "One-Way Clutch Outer Race Sub Assembly & 2nd Coast Brake Hub & One-Way Clutch No.1"](#).
 - One-way clutch No.1. Refer to [AT-278, "One-Way Clutch Outer Race Sub Assembly & 2nd Coast Brake Hub & One-Way Clutch No.1"](#).
 - One-way clutch No.2. Refer to [AT-252, "DISASSEMBLY"](#).

OK or NG

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

3. CHECK DTC

Perform "DTC Confirmation Procedure". Refer to [AT-115, "DTC Confirmation Procedure"](#).

OK or NG

- OK >> **INSPECTION END**
- NG >> Replace control valve assembly. Refer to [AT-241, "Control Valve Assembly"](#).

DTC P0732 A/T 2ND GEAR FUNCTION

DTC P0732 A/T 2ND GEAR FUNCTION

PF3:31940

Description

ECS00A3C

- This malfunction will not be detected while the A/T CHECK indicator lamp is indicating another self-diagnosis malfunction.
- This malfunction is detected when the A/T does not shift into second gear position as instructed by the TCM. This is not caused by electrical malfunction (circuits open or shorted) but by mechanical malfunction such as control valve sticking, improper solenoid valve operation, etc.

| Gear position | | Shift solenoid valve | | | | |
|---------------|----|----------------------|--------------|-----------|------------|--------------|
| | | A | B | C | D | E |
| 2nd | D | OFF (Open) | OFF (Closed) | ON (Open) | OFF (Open) | OFF (Closed) |
| | M2 | OFF (Open) | OFF (Closed) | ON (Open) | OFF (Open) | OFF (Closed) |

On Board Diagnosis Logic

ECS00A3D

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "A/T 2ND GR FNCTN" with CONSULT-II or P0732 without CONSULT-II is detected when A/T cannot be shifted to the 2nd gear position even if electrical circuit is good.

Possible Cause

ECS00A3E

- Shift solenoid valve A (On stick.)
- Shift solenoid valve B (On stick.)
- Shift solenoid valve C (Off stick.)
- Shift solenoid valve D (On stick.)
- Pressure control solenoid valve A (On stick.)
- Pressure control solenoid valve C (On stick.)
- U/D brake
- 2nd coast brake
- 2nd brake
- One-way clutch No.1
- One-way clutch No.2
- B5 brake
- Hydraulic control circuit

DTC Confirmation Procedure

ECS00A3F

CAUTION:

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

NOTE:

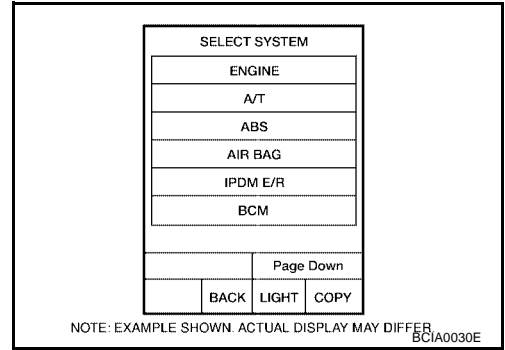
If "DTC Confirmation Procedure" has been previously performed, always turn ignition switch "OFF" and wait at least 10 seconds before performing the next test.

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

DTC P0732 A/T 2ND GEAR FUNCTION

WITH CONSULT-II

1. Start engine and select "A/T" with "DATA MONITOR" mode in CONSULT-II.
2. Make sure that ATF temperature is within the range below.
FLUID TEMP: More than 20°C (68°F)
If out of range, drive the vehicle to warm up the fluid.
3. Accelerate vehicle to maintain the following conditions for at least 12 consecutive seconds.
SLCT LVR POSI: "D" position
GEAR: 2nd position
[Vehicle speed and accelerator angle: 2nd gear position retainable condition. (Refer to [AT-312, "VEHICLE SPEED WHEN SHIFTING GEARS"](#) .)]
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-122, "Diagnostic Procedure"](#) .



WITH GST

Follow the procedure "With CONSULT-II".

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

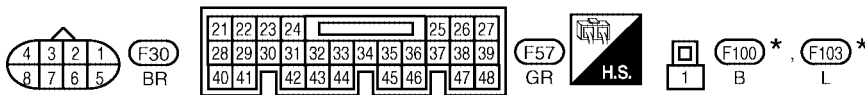
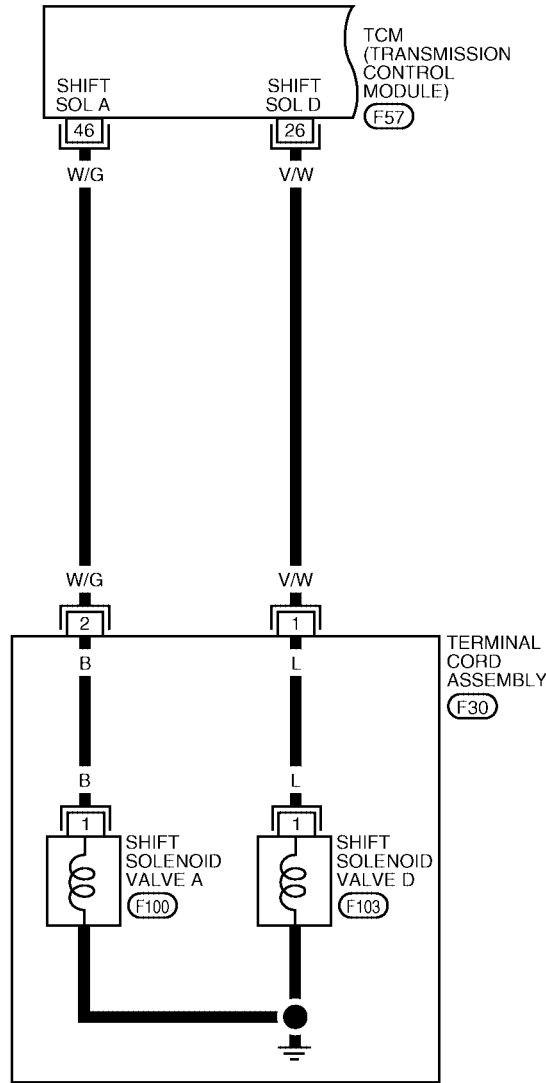
DTC P0732 A/T 2ND GEAR FUNCTION

Wiring Diagram — AT — 2NDSIG

ECS00A3G

AT-2NDSIG-01

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



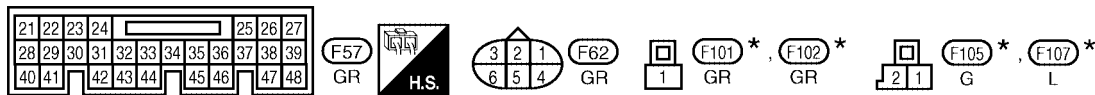
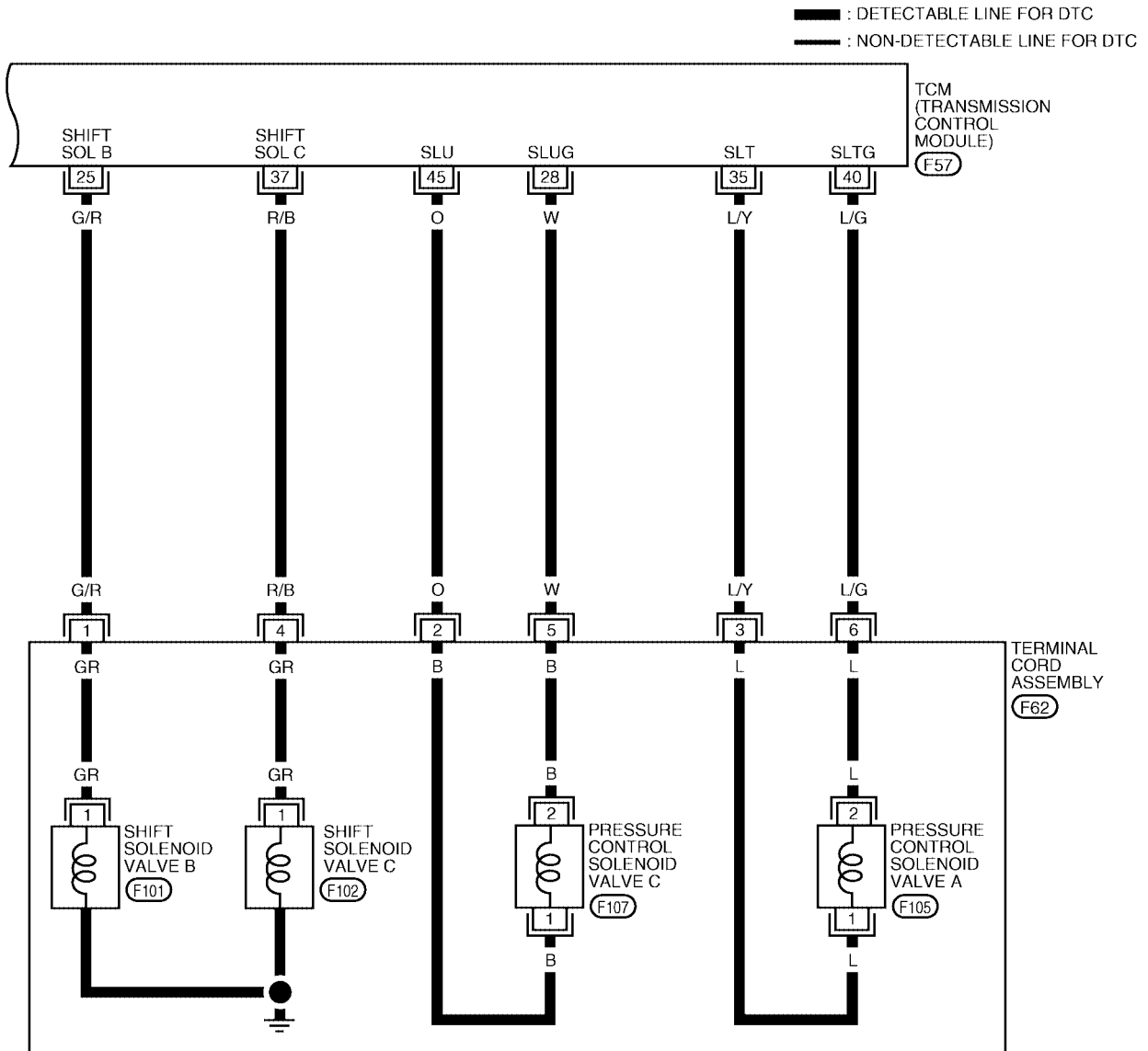
* : THIS CONNECTOR IS NOT SHOWN IN "HARNESS LAYOUT" OF PG SECTION.

BCWA0272E

DTC P0732 A/T 2ND GEAR FUNCTION

AT-2NDSIG-02

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









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

BCWA0273E

DTC P0732 A/T 2ND GEAR FUNCTION

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

| Terminal | Wire color | Item | | Condition | Data (Approx.) |
|----------|------------|--|--|--|-----------------|
| 25 | G/R | Shift solenoid valve B |  | When shift solenoid valve B operates. (When driving in 1st or 5th gear.) | Battery voltage |
| | | | | When shift solenoid valve B does not operate. | 0V |
| 26 | V/W | Shift solenoid valve D |  | When shift solenoid valve D operates. (When driving in 3rd, 4th or 5th gear.) | Battery voltage |
| | | | | When shift solenoid valve D does not operate. | 0V |
| 28 | W | Pressure control solenoid valve C ground |  | When engine is running with idle speed and setting selector lever to "P" position. | 0V |
| 35 | L/Y | Pressure control solenoid valve A | | When engine is running with idle speed and setting selector lever to "P" position. | 300Hz |
| 37 | R/B | Shift solenoid valve C |  | When shift solenoid valve C operates. (When driving in 1st, 2nd, 3rd or reverse gear.) | Battery voltage |
| | | | | When shift solenoid valve C does not operate. | 0V |
| 40 | L/G | Pressure control solenoid valve A ground |  | When engine is running with idle speed and setting selector lever to "P" position. | 0V |
| 45 | O | Pressure control solenoid valve C | | When engine is running with idle speed and setting selector lever to "P" position. | 300Hz |
| 46 | W/G | Shift solenoid valve A |  | When shift solenoid valve A operates. (When driving in 1st gear.) | Battery voltage |
| | | | | When shift solenoid valve A does not operate. | 0V |

Diagnostic Procedure

ECS00A3H

1. CHECK EACH SHIFT SOLENOID VALVE CIRCUIT

Perform "Diagnostic Procedure" for the following DTCs.

- "DTC P0750 SHIFT SOLENOID VALVE A" (Refer to [AT-151, "Diagnostic Procedure"](#) .)
- "DTC P0755 SHIFT SOLENOID VALVE B" (Refer to [AT-156, "Diagnostic Procedure"](#) .)
- "DTC P0760 SHIFT SOLENOID VALVE C" (Refer to [AT-161, "Diagnostic Procedure"](#) .)
- "DTC P0765 SHIFT SOLENOID VALVE D" (Refer to [AT-171, "Diagnostic Procedure"](#) .)

OK or NG

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

2. CHECK EACH PRESSURE CONTROL SOLENOID VALVE CIRCUIT

Perform "Diagnostic Procedure" for the following DTCs.

- "DTC P0745 PRESSURE CONTROL SOLENOID VALVE A" (Refer to [AT-146, "Diagnostic Procedure"](#) .)
- "DTC P0795 PRESSURE CONTROL SOLENOID VALVE C" (Refer to [AT-190, "Diagnostic Procedure"](#) .)

OK or NG

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

DTC P0732 A/T 2ND GEAR FUNCTION

3. CHECK MALFUNCTIONING ITEM

- 1. Control valve assembly. Refer to [AT-241, "Control Valve Assembly"](#) .
- 2. Disassembly A/T. Refer to [AT-252, "DISASSEMBLY"](#) .
- 3. Check the following item:
 - U/D brake. Refer to [AT-252, "DISASSEMBLY"](#) .
 - 2nd coast brake. Refer to [AT-272, "Oil Pump, 2nd Coast Brake & 2nd Brake"](#) , [AT-278, "One-Way Clutch Outer Race Sub Assembly & 2nd Coast Brake Hub & One-Way Clutch No.1"](#) .
 - 2nd brake. Refer to [AT-272, "Oil Pump, 2nd Coast Brake & 2nd Brake"](#) .
 - One-way clutch No.1. Refer to [AT-278, "One-Way Clutch Outer Race Sub Assembly & 2nd Coast Brake Hub & One-Way Clutch No.1"](#) .
 - One-way clutch No.2. Refer to [AT-252, "DISASSEMBLY"](#) .
 - B5 brake. Refer to [AT-280, "Transaxle Case Cover & B5 Brake"](#) .

OK or NG

OK >> GO TO 4.

NG >> Repair or replace damaged parts.

4. CHECK DTC

Perform "DTC Confirmation Procedure". Refer to [AT-118, "DTC Confirmation Procedure"](#) .

OK or NG

OK >> **INSPECTION END**

NG >> Replace control valve assembly. Refer to [AT-241, "Control Valve Assembly"](#) .

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

DTC P0733 A/T 3RD GEAR FUNCTION

DTC P0733 A/T 3RD GEAR FUNCTION

PF3:31940

Description

ECS00A3I

- This malfunction will not be detected while the A/T CHECK indicator lamp is indicating another self-diagnosis malfunction.
- This malfunction is detected when the A/T does not shift into third gear position as instructed by the TCM. This is not caused by electrical malfunction (circuits open or shorted) but by mechanical malfunction such as control valve sticking, improper solenoid valve operation, etc.

| Gear position | | Shift solenoid valve | | | | |
|---------------|----|----------------------|--------------|-----------|-------------|--------------|
| | | A | B | C | D | E |
| 3rd | D | OFF (Open) | OFF (Closed) | ON (Open) | ON (Closed) | OFF (Closed) |
| | M3 | OFF (Open) | OFF (Closed) | ON (Open) | ON (Closed) | OFF (Closed) |

On Board Diagnosis Logic

ECS00A3J

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "A/T 3RD GR FNCTN" with CONSULT-II or P0733 without CONSULT-II is detected when A/T cannot be shifted to the 3rd gear position even if electrical circuit is good.

Possible Cause

ECS00A3K

- Shift solenoid valve A (On stick.)
- Shift solenoid valve B (On stick.)
- Shift solenoid valve C (Off stick.)
- Shift solenoid valve D (Off stick.)
- Pressure control solenoid valve A (On stick.)
- B5 brake
- U/D clutch
- U/D brake
- Hydraulic control circuit

DTC Confirmation Procedure

ECS00A3L

CAUTION:

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

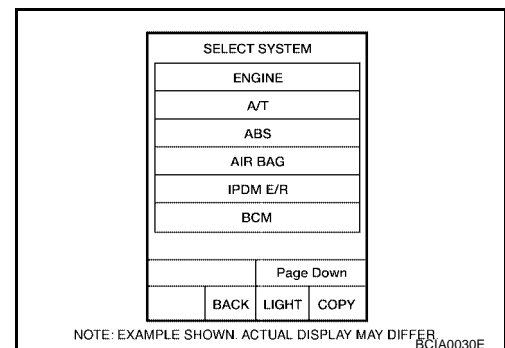
NOTE:

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. Start engine and select "A/T" with "DATA MONITOR" mode in CONSULT-II.
2. Make sure that ATF temperature is within the range below.
FLUID TEMP: More than 20°C (68°F)
If out of range, drive the vehicle to warm up the fluid.
3. Accelerate vehicle to maintain the following conditions for at least 10 consecutive seconds.
SLCT LVR POSI: "D" position
GEAR: 3rd position



DTC P0733 A/T 3RD GEAR FUNCTION

[Vehicle speed and accelerator angle: 3rd gear position retainable condition. (Refer to [AT-312, "VEHICLE SPEED WHEN SHIFTING GEARS" .](#))]

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-128, "Diagnostic Procedure" .](#)

 **WITH GST**

Follow the procedure "With CONSULT-II".

A

B

AT

D

E

F

G

H

I

J

K

L

M

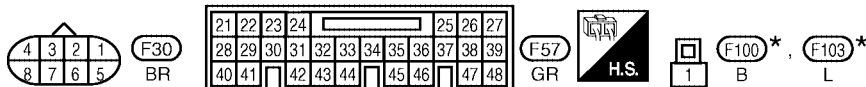
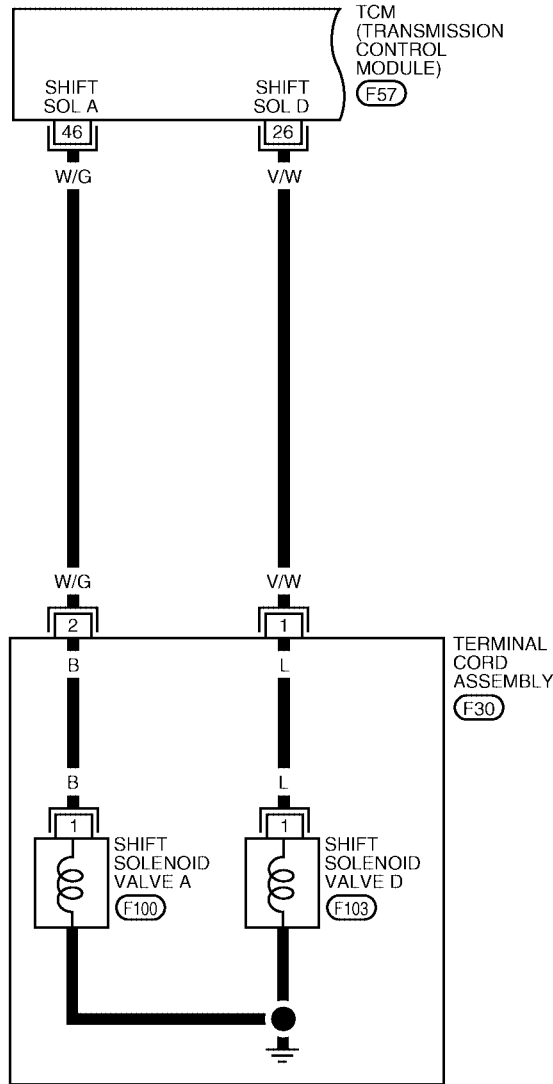
DTC P0733 A/T 3RD GEAR FUNCTION

Wiring Diagram — AT — 3RDSIG

ECS00A3M

AT-3RDSIG-01

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



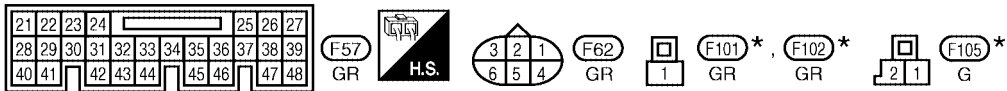
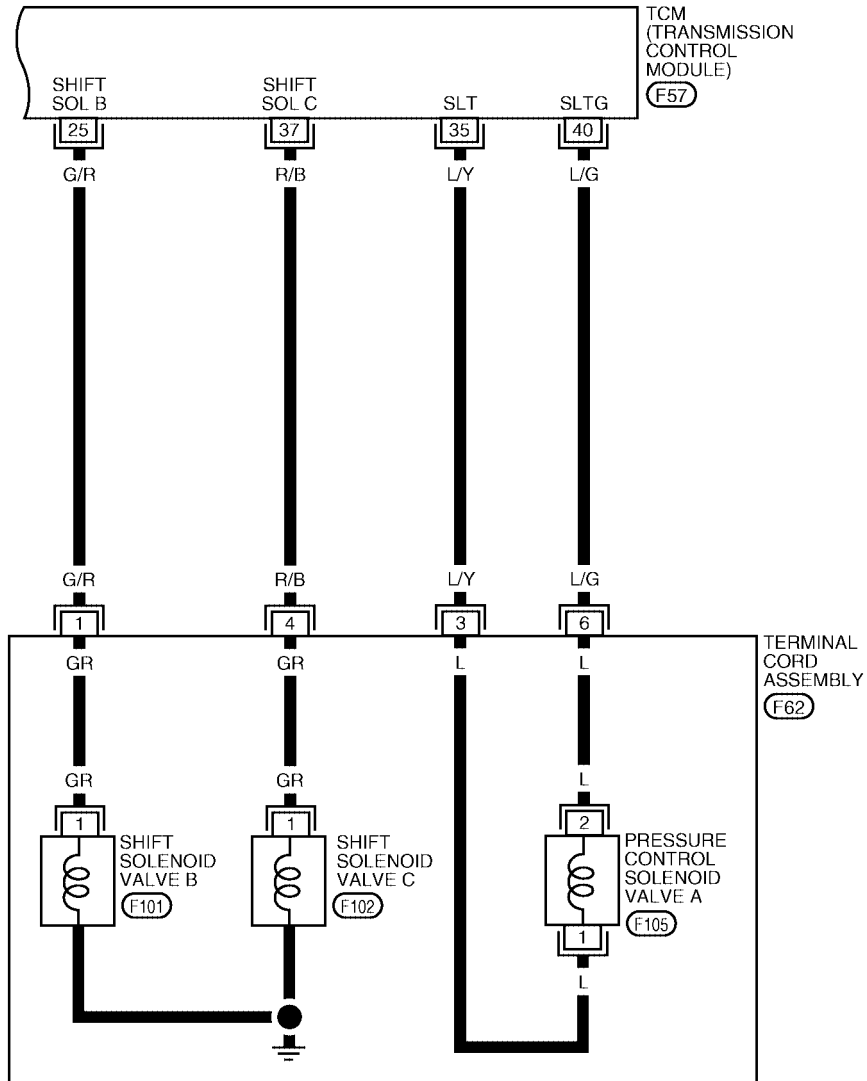
* : THIS CONNECTOR IS NOT SHOWN IN "HARNESS LAYOUT" OF PG SECTION.

BCWA0274E

DTC P0733 A/T 3RD GEAR FUNCTION

AT-3RDSIG-02

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









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

BCWA0275E

DTC P0733 A/T 3RD GEAR FUNCTION

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

| Terminal | Wire color | Item | | Condition | Data (Approx.) |
|----------|------------|--|--|--|-----------------|
| 25 | G/R | Shift solenoid valve B |  | When shift solenoid valve B operates. (When driving in 1st or 5th gear.) | Battery voltage |
| | | | | When shift solenoid valve B does not operate. | 0V |
| 26 | V/W | Shift solenoid valve D |  | When shift solenoid valve D operates. (When driving in 3rd, 4th or 5th gear.) | Battery voltage |
| | | | | When shift solenoid valve D does not operate. | 0V |
| 35 | L/Y | Pressure control solenoid valve A |  | When engine is running with idle speed and setting selector lever to "P" position. | 300Hz |
| 37 | R/B | Shift solenoid valve C |  | When shift solenoid valve C operates. (When driving in 1st, 2nd, 3rd or reverse gear.) | Battery voltage |
| | | | | When shift solenoid valve C does not operate. | 0V |
| 40 | L/G | Pressure control solenoid valve A ground |  | When engine is running with idle speed and setting selector lever to "P" position. | 0V |
| 46 | W/G | Shift solenoid valve A |  | When shift solenoid valve A operates. (When driving in 1st gear.) | Battery voltage |
| | | | | When shift solenoid valve A does not operate. | 0V |

Diagnostic Procedure

ECS00A3N

1. CHECK EACH SHIFT SOLENOID VALVE CIRCUIT

Perform "Diagnostic Procedure" for the following DTCs.

- "DTC P0750 SHIFT SOLENOID VALVE A" (Refer to [AT-151, "Diagnostic Procedure"](#) .)
- "DTC P0755 SHIFT SOLENOID VALVE B" (Refer to [AT-156, "Diagnostic Procedure"](#) .)
- "DTC P0760 SHIFT SOLENOID VALVE C" (Refer to [AT-161, "Diagnostic Procedure"](#) .)
- "DTC P0765 SHIFT SOLENOID VALVE D" (Refer to [AT-171, "Diagnostic Procedure"](#) .)

OK or NG

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

2. CHECK PRESSURE CONTROL SOLENOID VALVE A CIRCUIT

Perform "Diagnostic Procedure" for DTC P0745. Refer to [AT-146, "Diagnostic Procedure"](#) .

OK or NG

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

DTC P0733 A/T 3RD GEAR FUNCTION

3. CHECK MALFUNCTIONING ITEM

1. Control valve assembly. Refer to [AT-241, "Control Valve Assembly"](#) .
2. Disassembly A/T. Refer to [AT-252, "DISASSEMBLY"](#) .
3. Check the following item:
 - B5 brake. Refer to [AT-280, "Transaxle Case Cover & B5 Brake"](#) .
 - U/D clutch. Refer to [AT-252, "DISASSEMBLY"](#) .
 - U/D brake. Refer to [AT-252, "DISASSEMBLY"](#) .

OK or NG

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

4. CHECK DTC

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

OK or NG

- OK >> **INSPECTION END**
NG >> Replace the control valve assembly. Refer to [AT-241, "Control Valve Assembly"](#) .

A

B

AT

D

E

F

G

H

I

J

K

L

M

DTC P0734 A/T 4TH GEAR FUNCTION

DTC P0734 A/T 4TH GEAR FUNCTION

PF3:31940

Description

ECS00A30

- This malfunction will not be detected while the A/T CHECK indicator lamp is indicating another self-diagnosis malfunction.
- This malfunction is detected when the A/T does not shift into fourth gear position as instructed by the TCM. This is not caused by electrical malfunction (circuits open or shorted) but by mechanical malfunction such as control valve sticking, improper solenoid valve operation, etc.

| Gear position | | Shift solenoid valve | | | | |
|---------------|----|----------------------|--------------|--------------|-------------|--------------|
| | | A | B | C | D | E |
| 4th | D | OFF (Open) | OFF (Closed) | OFF (Closed) | ON (Closed) | OFF (Closed) |
| | M4 | OFF (Open) | OFF (Closed) | OFF (Closed) | ON (Closed) | OFF (Closed) |

On Board Diagnosis Logic

ECS00A3P

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "A/T 4TH GR FNCTN" with CONSULT-II or P0734 without CONSULT-II is detected when A/T cannot be shifted to the 4th gear position even if electrical circuit is good.

Possible Cause

ECS00A3Q

- Shift solenoid valve A (On stick.)
- Shift solenoid valve B (On stick.)
- Shift solenoid valve C (On stick.)
- Pressure control solenoid valve A (On stick.)
- Forward and direct clutch assembly
- U/D clutch
- U/D brake
- 2nd coast brake
- One-way clutch No.1
- Hydraulic control circuit

DTC Confirmation Procedure

ECS00A3R

CAUTION:

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

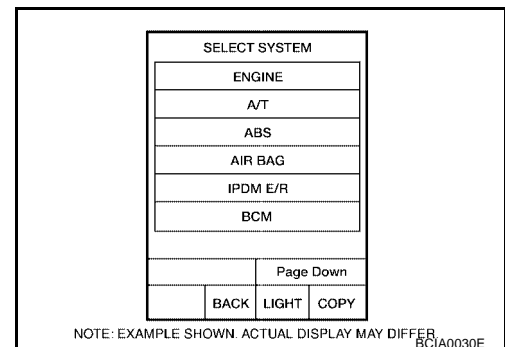
NOTE:

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. Start engine and select "A/T" with "DATA MONITOR" mode in CONSULT-II.
2. Make sure that ATF temperature is within the range below.
FLUID TEMP: More than 20°C (68°F)
If out of range, drive the vehicle to warm up the fluid.
3. Accelerate vehicle to maintain the following conditions for at least 10 consecutive seconds.
SLCT LVR POSI: "D" position
GEAR: 4th position



DTC P0734 A/T 4TH GEAR FUNCTION

[Vehicle speed and accelerator angle: 4th gear position retainable condition. (Refer to [AT-312, "VEHICLE SPEED WHEN SHIFTING GEARS" .](#))]

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-133, "Diagnostic Procedure" .](#)

WITH GST

Follow the procedure "With CONSULT-II".

A

B

AT

D

E

F

G

H

I

J

K

L

M

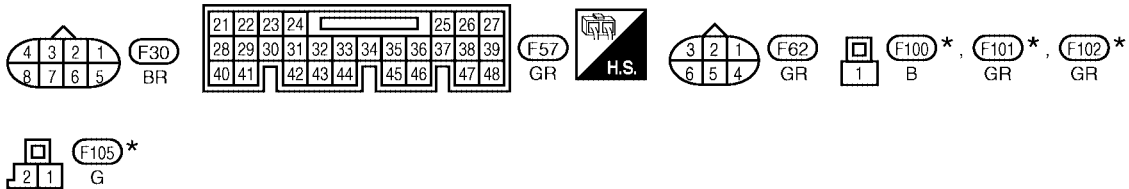
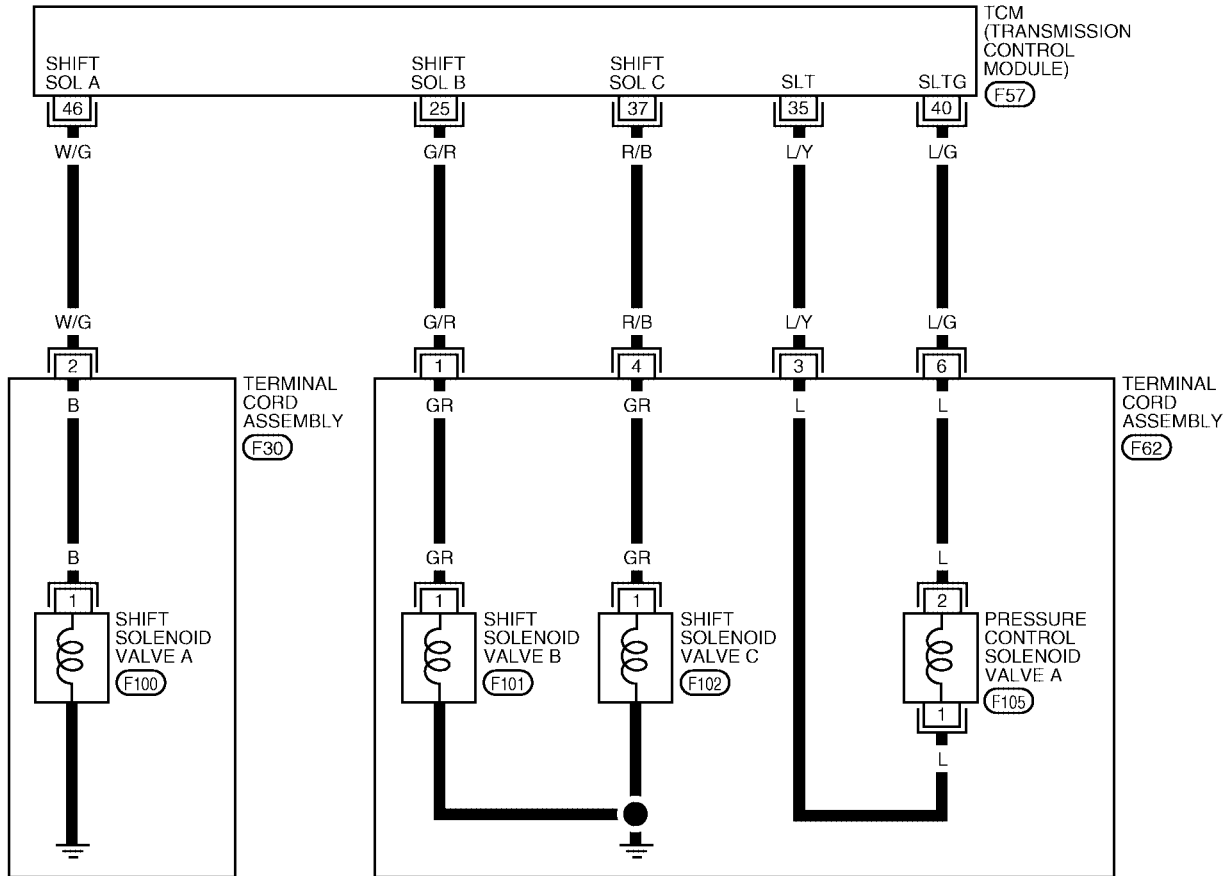
DTC P0734 A/T 4TH GEAR FUNCTION

Wiring Diagram — AT — 4THSIG

ECS00A3S

AT-4THSIG-01

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








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

BCWA0276E

DTC P0734 A/T 4TH GEAR FUNCTION

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

| Terminal | Wire color | Item | Condition | Data (Approx.) |
|----------|------------|---|---|-----------------|
| 25 | G/R | Shift solenoid valve B  | When shift solenoid valve B operates. (When driving in 1st or 5th gear.) | Battery voltage |
| | | | When shift solenoid valve B does not operate. | 0V |
| 35 | L/Y | Pressure control solenoid valve A  | When engine is running with idle speed and setting selector lever to "P" position. | 300Hz |
| 37 | R/B | Shift solenoid valve C  | When shift solenoid valve C operates. (When driving in 1st, 2nd, 3rd or reverse gear.) | Battery voltage |
| | | | When shift solenoid valve C does not operate. | 0V |
| 40 | L/G | Pressure control solenoid valve A ground  | When engine is running with idle speed and setting selector lever to "P" position. | 0V |
| 46 | W/G | Shift solenoid valve A  | When shift solenoid valve A operates. (When driving in 1st gear.) | Battery voltage |
| | | | When shift solenoid valve A does not operate. | 0V |

Diagnostic Procedure

ECS00A3T

1. CHECK EACH SHIFT SOLENOID VALVE CIRCUIT

Perform "Diagnostic Procedure" for the following DTCs.

- "DTC P0750 SHIFT SOLENOID VALVE A" (Refer to [AT-151, "Diagnostic Procedure"](#) .)
- "DTC P0755 SHIFT SOLENOID VALVE B" (Refer to [AT-156, "Diagnostic Procedure"](#) .)
- "DTC P0760 SHIFT SOLENOID VALVE C" (Refer to [AT-161, "Diagnostic Procedure"](#) .)

OK or NG

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

2. CHECK PRESSURE CONTROL SOLENOID VALVE A CIRCUIT

Perform "Diagnostic Procedure" for DTC P0745. Refer to [AT-146, "Diagnostic Procedure"](#) .

OK or NG

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

DTC P0734 A/T 4TH GEAR FUNCTION

3. CHECK MALFUNCTIONING ITEM

1. Control valve assembly. Refer to [AT-241, "Control Valve Assembly"](#) .
2. Disassembly A/T. Refer to [AT-252, "DISASSEMBLY"](#) .
3. Check the following item:
 - Forward and direct clutch assembly. Refer to [AT-252, "DISASSEMBLY"](#) .
 - 2nd coast brake. Refer to [AT-272, "Oil Pump, 2nd Coast Brake & 2nd Brake"](#) , [AT-278, "One-Way Clutch Outer Race Sub Assembly & 2nd Coast Brake Hub & One-Way Clutch No.1"](#) .
 - U/D brake. Refer to [AT-252, "DISASSEMBLY"](#) .
 - U/D clutch. Refer to [AT-252, "DISASSEMBLY"](#) .
 - One-way clutch No.1. Refer to [AT-278, "One-Way Clutch Outer Race Sub Assembly & 2nd Coast Brake Hub & One-Way Clutch No.1"](#) .

OK or NG

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

4. CHECK DTC

Perform "DTC Confirmation Procedure". Refer to [AT-130, "DTC Confirmation Procedure"](#) .

OK or NG

- OK >> **INSPECTION END**
NG >> Replace the control valve assembly. Refer to [AT-241, "Control Valve Assembly"](#) .

DTC P0735 A/T 5TH GEAR FUNCTION

DTC P0735 A/T 5TH GEAR FUNCTION

PDF:31940

Description

ECS00A3U

- This malfunction will not be detected while the A/T CHECK indicator lamp is indicating another self-diagnosis malfunction.
- This malfunction is detected when the A/T does not shift into fifth gear position as instructed by the TCM. This is not caused by electrical malfunction (circuits open or shorted) but by mechanical malfunction such as control valve sticking, improper solenoid valve operation, etc.

| Gear position | | Shift solenoid valve | | | | |
|---------------|----|----------------------|-----------|--------------|-------------|--------------|
| | | A | B | C | D | E |
| 5th | D | OFF (Open) | ON (Open) | OFF (Closed) | ON (Closed) | OFF (Closed) |
| | M5 | OFF (Open) | ON (Open) | OFF (Closed) | ON (Closed) | OFF (Closed) |

On Board Diagnosis Logic

ECS00A3V

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "A/T 5TH GR FNCTN" with CONSULT-II or P0735 without CONSULT-II is detected when A/T cannot be shifted to the 5th gear position even if electrical circuit is good.

Possible Cause

ECS00A3W

- Shift solenoid valve B (Off stick.)
- Shift solenoid valve C (On stick.)
- Shift solenoid valve E (On stick.)
- Pressure control solenoid valve A (On stick.)
- Pressure control solenoid valve B (On stick.)
- Forward and direct clutch assembly
- Direct clutch
- 2nd coast brake
- One-way clutch No.1
- Hydraulic control circuit

DTC Confirmation Procedure

ECS00A3X

CAUTION:

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

NOTE:

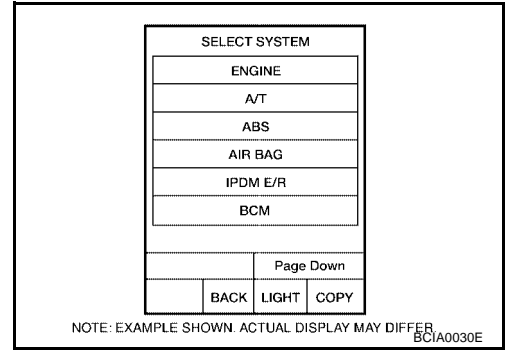
If "DTC Confirmation Procedure" has been previously performed, always turn ignition switch "OFF" and wait at least 10 seconds before performing the next test.

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

DTC P0735 A/T 5TH GEAR FUNCTION

④ WITH CONSULT-II

1. Start engine and select "DATA MONITOR" mode for "A/T" with CONSULT-II.
2. Make sure that ATF temperature is within the range below.
FLUID TEMP: More than 20°C (68°F)
If out of range, drive the vehicle to warm up the fluid.
3. Accelerate vehicle to maintain the following conditions for at least 12 consecutive seconds.
SLCT LVR POSI: "D" position
GEAR: 5th position
[Vehicle speed and accelerator angle: 5th gear position retainable condition. (Refer to [AT-312, "VEHICLE SPEED WHEN SHIFTING GEARS"](#) .)]
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-139, "Diagnostic Procedure"](#) .



④ WITH GST

Follow the procedure "With CONSULT-II".

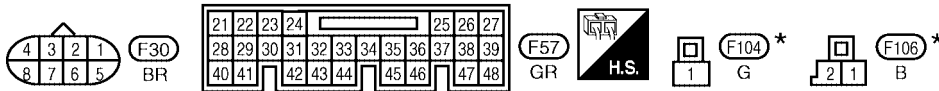
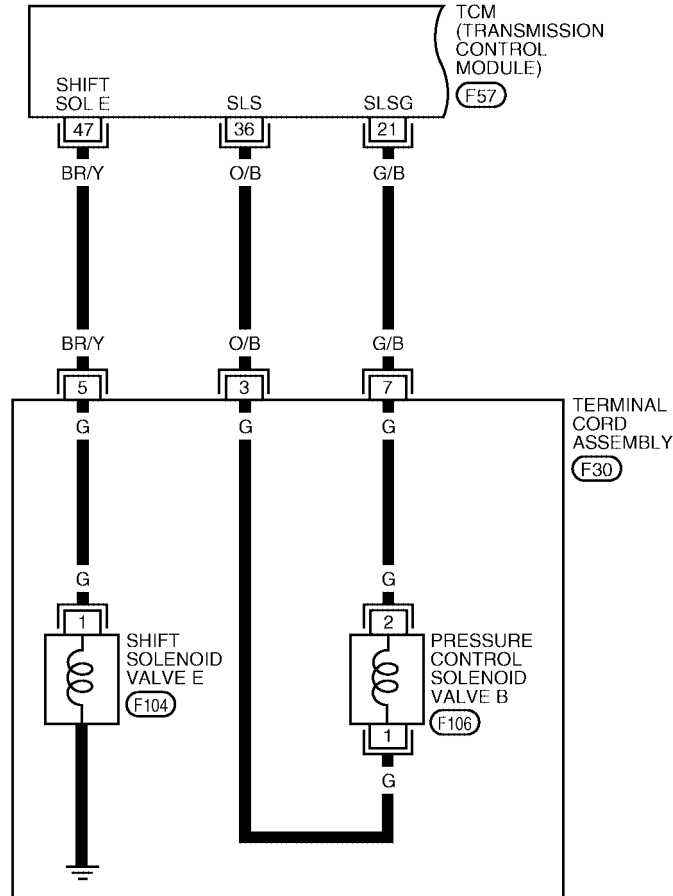
DTC P0735 A/T 5TH GEAR FUNCTION

Wiring Diagram — AT — 5THSIG

ECS00A3Y

AT-5THSIG-01

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





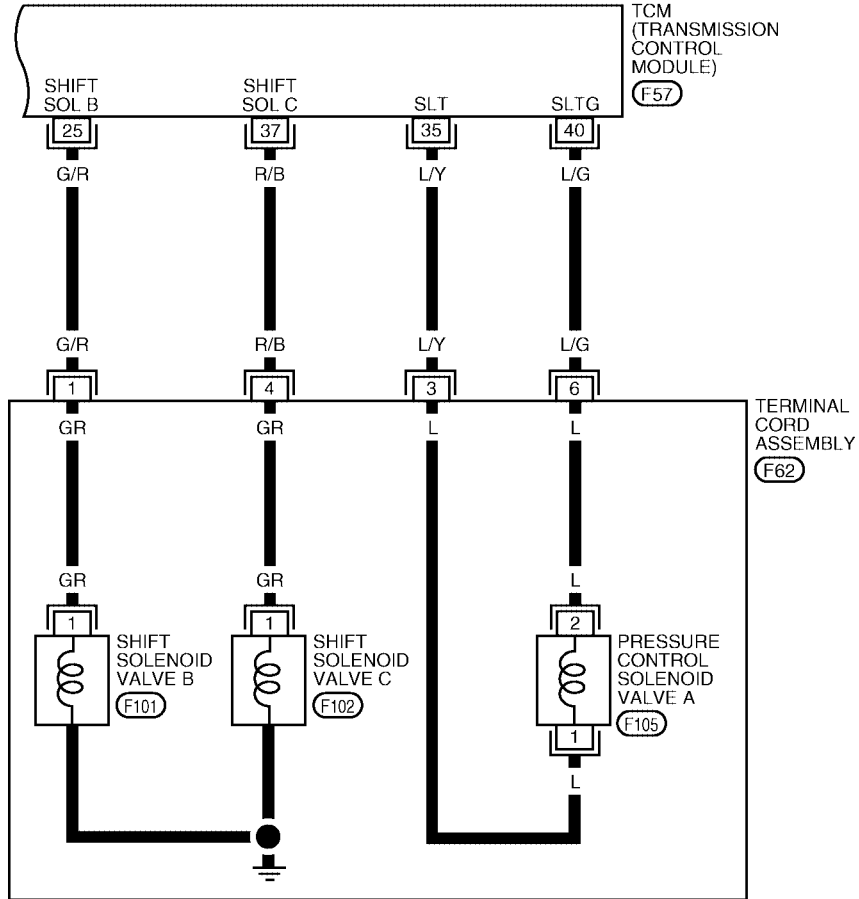
*: THIS CONNECTOR IS NOT SHOWN IN "HARNESS LAYOUT" OF PG SECTION.

BCWA0277E

DTC P0735 A/T 5TH GEAR FUNCTION

AT-5THSIG-02

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



| | | | | | | |
|----|----|----|----|----|----|----|
| 21 | 22 | 23 | 24 | 25 | 26 | 27 |
| 28 | 29 | 30 | 31 | 32 | 33 | 34 |
| 35 | 36 | 37 | 38 | 39 | 40 | 41 |
| 42 | 43 | 44 | 45 | 46 | 47 | 48 |

(F57) GR



(F62) GR

(F101)*

(F102)*

(F105)*







G

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

BCWA0278E

DTC P0735 A/T 5TH GEAR FUNCTION

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

| Terminal | Wire color | Item | Condition | Data (Approx.) |
|----------|------------|--|--|-----------------|
| 21 | G/B | Pressure control solenoid valve B ground |  When engine is running with idle speed and setting selector lever to "P" position. | 0V |
| 25 | G/R | Shift solenoid valve B |  When shift solenoid valve B operates. (When driving in 1st or 5th gear.) | Battery voltage |
| | | | When shift solenoid valve B does not operate. | 0V |
| 35 | L/Y | Pressure control solenoid valve A |  When engine is running with idle speed and setting selector lever to "P" position. | 300Hz |
| 36 | O/B | Pressure control solenoid valve B | | 300Hz |
| 37 | R/B | Shift solenoid valve C |  When shift solenoid valve C operates. (When driving in 1st, 2nd, 3rd or reverse gear.) | Battery voltage |
| | | | When shift solenoid valve C does not operate. | 0V |
| 40 | L/G | Pressure control solenoid valve A ground |  When engine is running with idle speed and setting selector lever to "P" position. | 0V |
| 47 | BR/Y | Shift solenoid valve E |  When shift solenoid valve E operates. (When driving in reverse gear.) | Battery voltage |
| | | | When shift solenoid valve E does not operate. | 0V |

Diagnostic Procedure

ECS00A3Z

1. CHECK EACH SHIFT SOLENOID VALVE CIRCUIT

Perform "Diagnostic Procedure" for the following DTCs.

- "DTC P0755 SHIFT SOLENOID VALVE B" (Refer to [AT-156, "Diagnostic Procedure"](#) .)
- "DTC P0760 SHIFT SOLENOID VALVE C" (Refer to [AT-161, "Diagnostic Procedure"](#) .)
- "DTC P0770 SHIFT SOLENOID VALVE E" (Refer to [AT-176, "Diagnostic Procedure"](#) .)

OK or NG

OK >> GO TO 2.

NG >> Repair or replace damaged parts.

2. CHECK EACH PRESSURE CONTROL SOLENOID VALVE CIRCUIT

Perform "Diagnostic Procedure" for the following DTCs.

- "DTC P0745 PRESSURE CONTROL SOLENOID VALVE A" (Refer to [AT-146, "Diagnostic Procedure"](#) .)
- "DTC P0775 PRESSURE CONTROL SOLENOID VALVE B" (Refer to [AT-181, "Diagnostic Procedure"](#) .)

OK or NG

OK >> GO TO 3.

NG >> Repair or replace damaged parts.

DTC P0735 A/T 5TH GEAR FUNCTION

3. CHECK MALFUNCTIONING ITEM

1. Control valve assembly. Refer to [AT-241, "Control Valve Assembly"](#) .
2. Disassembly A/T. Refer to [AT-252, "DISASSEMBLY"](#) .
3. Check the following item:
 - Forward and direct clutch assembly. Refer to [AT-252, "DISASSEMBLY"](#) .
 - 2nd brake. Refer to [AT-272, "Oil Pump, 2nd Coast Brake & 2nd Brake"](#) .
 - One-way clutch No.1. Refer to [AT-278, "One-Way Clutch Outer Race Sub Assembly & 2nd Coast Brake Hub & One-Way Clutch No.1"](#) .

OK or NG

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

4. CHECK DTC

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

OK or NG

- OK >> **INSPECTION END**
NG >> Replace the control valve assembly. Refer to [AT-241, "Control Valve Assembly"](#) .

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

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

PFP:31940

Description

ECS00A40

- This malfunction will not be detected while the A/T CHECK indicator lamp is indicating another self-diagnosis malfunction.
- This malfunction is detected when the torque converter clutch does not lock up as instructed by the TCM. This is not caused by electrical malfunction (circuits open or shorted) but by mechanical malfunction such as control valve sticking, improper solenoid valve operation, malfunctioning oil pump or torque converter clutch, etc.

On Board Diagnosis Logic

ECS00A41

- 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 when A/T cannot perform lock-up even if electrical circuit is good.

Possible Cause

ECS00A42

- Shift solenoid valve D
(Off stick.)
- Pressure control solenoid valve C
(Off stick.)
- Torque converter clutch
- Hydraulic control circuit

DTC Confirmation Procedure

ECS00A43

CAUTION:

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

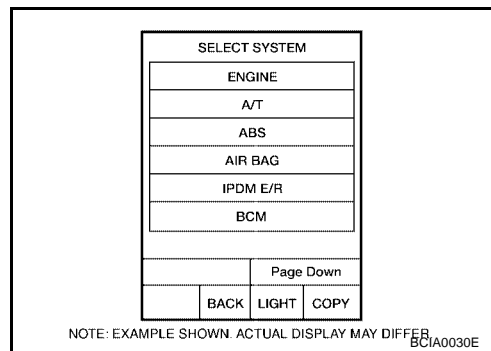
NOTE:

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. Start engine and select "DATA MONITOR" mode for "A/T" with CONSULT-II.
2. Make sure that ATF temperature is within the range below.
FLUID TEMP: More than 20°C (68°F)
If out of range, drive the vehicle to warm up the fluid.
3. Accelerate vehicle to more than 100 km/h (62 MPH) and maintain the following conditions for at least 12 consecutive seconds.
SLCT LVR POSI: "D" position
GEAR: 5th position
SLIP REV: Less than 100 rpm
ACCELE ANGLE: More than 5 %
LOCK-UP: ON (Refer to [AT-313](#), "VEHICLE SPEED WHEN PERFORMING AND RELEASING COMPLETE LOCK-UP" .)
[Vehicle speed: Constant speed of more than 100 km/h (62 MPH).]
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-143](#), "Diagnostic Procedure" .



WITH GST

Follow the procedure "With CONSULT-II".

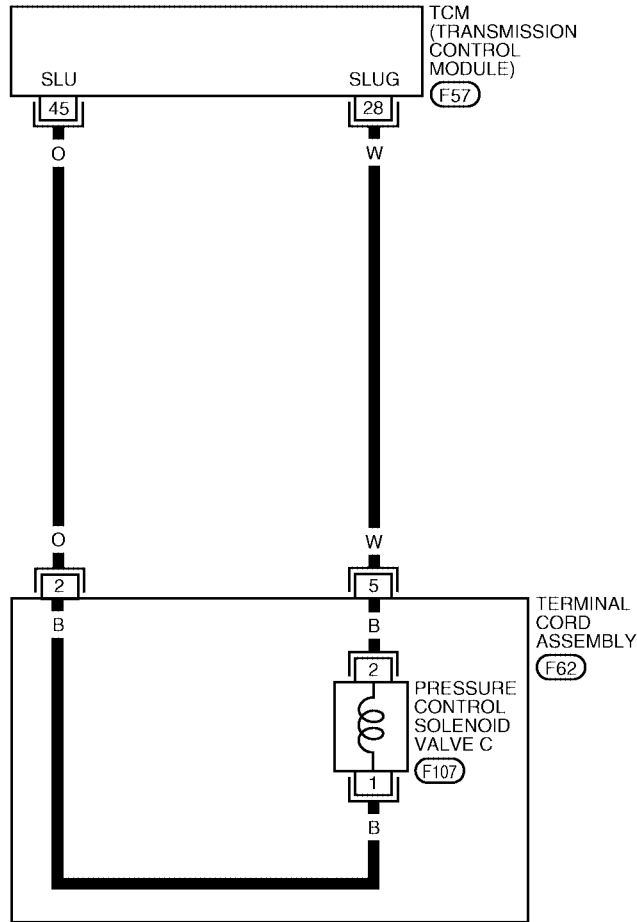
DTC P0744 A/T TCC S/V FUNCTION (LOCK-UP)

Wiring Diagram — AT — TCCSIG

ECS00A44

AT-TCCSIG-01

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




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

BCWA0279E

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

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

| Terminal | Wire color | Item | Condition | Data (Approx.) |
|----------|------------|--|---|---|
| 28 | W | Pressure control solenoid valve C ground |  | When engine is running with idle speed and setting selector lever to "P" position. 0V |
| 45 | O | Pressure control solenoid valve C | | When engine is running with idle speed and setting selector lever to "P" position. 300Hz |

Diagnostic Procedure

ECS00A45

1. CHECK SHIFT SOLENOID VALVE D CIRCUIT

Perform "Diagnostic Procedure" for DTC P0765. Refer to [AT-171, "Diagnostic Procedure"](#).

OK or NG

OK >> GO TO 2.

NG >> Repair or replace damaged parts.

2. CHECK PRESSURE CONTROL SOLENOID VALVE C CIRCUIT

Perform "Diagnostic Procedure" for DTC P0795. Refer to [AT-190, "Diagnostic Procedure"](#).

OK or NG

OK >> GO TO 3.

NG >> Repair or replace damaged parts.

3. CHECK MALFUNCTIONING ITEM

1. Control valve assembly. Refer to [AT-241, "Control Valve Assembly"](#).

2. Disassembly A/T. Refer to [AT-252, "DISASSEMBLY"](#).

3. Check the following item:

- Torque converter clutch. Refer to [AT-252, "DISASSEMBLY"](#).

OK or NG

OK >> GO TO 4.

NG >> Repair or replace damaged parts.

4. CHECK DTC

Perform "DTC Confirmation Procedure". Refer to [AT-141, "DTC Confirmation Procedure"](#).

OK or NG

OK >> **INSPECTION END**

NG >> Replace the control valve assembly. Refer to [AT-241, "Control Valve Assembly"](#).

DTC P0745 PRESSURE CONTROL SOLENOID VALVE A (LINE PRESSURE)

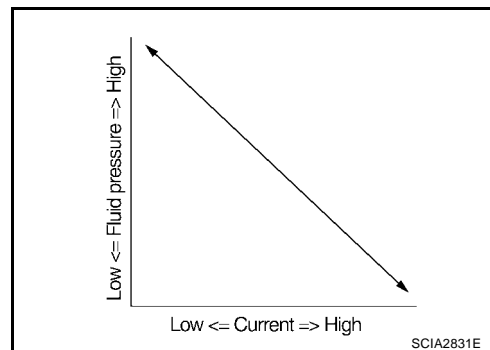
DTC P0745 PRESSURE CONTROL SOLENOID VALVE A (LINE PRESSURE)

PFP:31940

Description

ECS00A46

- The pressure control solenoid valve A is normally high, 3-port linear pressure control solenoid.
- The pressure control solenoid valve A regulates the oil pump discharge pressure to suit the driving condition in response to a signal sent from the TCM.



On Board Diagnosis Logic

ECS00A47

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code “PC SOL A(L/PRESS)” with CONSULT-II or P0745 without CONSULT-II is detected under the following conditions.
 - When normal voltage is not applied to solenoid due to open, short, and so on.
 - When TCM detects as irregular by comparing target value with monitor value.

Possible Cause

ECS00A48

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

DTC Confirmation Procedure

ECS00A49

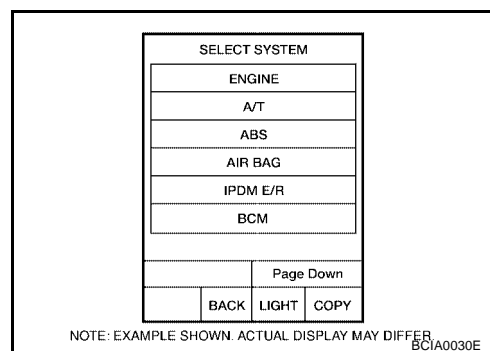
NOTE:

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 “A/T” with “DATA MONITOR” mode in CONSULT-II.
3. Start engine.
4. Run engine for at least 13 consecutive seconds at idle speed.
5. If DTC is detected, go to [AT-146, "Diagnostic Procedure"](#) .



WITH GST

Follow the procedure “With CONSULT-II”.

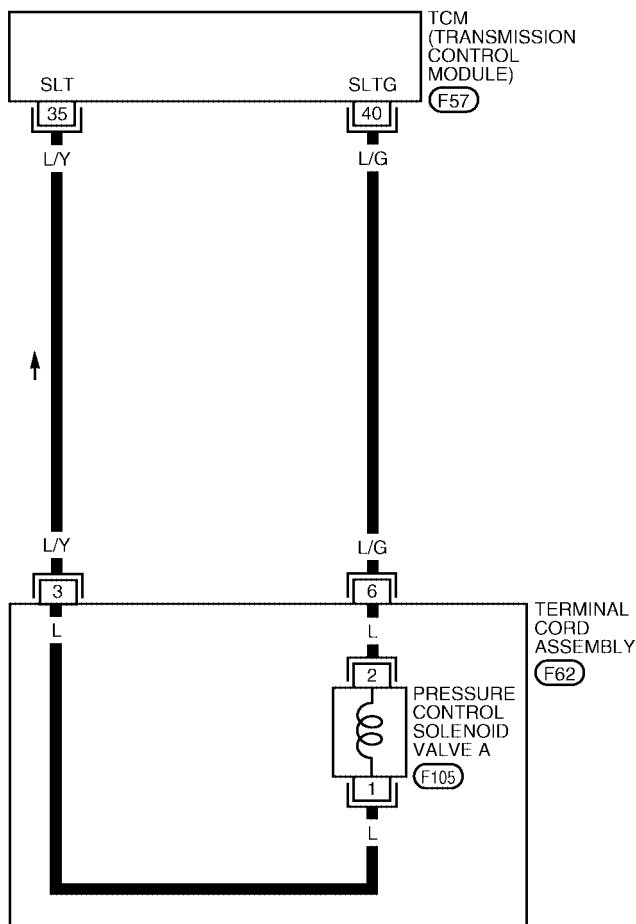
DTC P0745 PRESSURE CONTROL SOLENOID VALVE A (LINE PRESSURE)

Wiring Diagram — AT — PC/A

ECS00A4A

AT-PC/A-01

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




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

BCWA0280E

DTC P0745 PRESSURE CONTROL SOLENOID VALVE A (LINE PRESSURE)

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

| Terminal | Wire color | Item | Condition | Data (Approx.) | |
|----------|------------|--|---|--|-------|
| 35 | L/Y | Pressure control solenoid valve A |  | When engine is running with idle speed and setting selector lever to "P" position. | 300Hz |
| 40 | L/G | Pressure control solenoid valve A ground | | When engine is running with idle speed and setting selector lever to "P" position. | 0V |

Diagnostic Procedure

ECS00A4B

1. CHECK PRESSURE CONTROL SOLENOID VALVE A SIGNAL

With CONSULT-II

- After warming up the engine and transaxle, turn ignition switch "OFF".
- Turn ignition switch "ON". (Do not start engine.)
- Select "DATA MONITOR" mode for "A/T" with CONSULT-II.
- Read out the value of "PC SOL A OUT" and "PC SOL A MON".

| Monitor item | Condition | Display value (Approx.) |
|----------------|---|-------------------------|
| ● PC SOL A OUT | When releasing accelerator pedal with setting selector lever to "P" position. | 1.00 A |
| ● PC SOL A MON | When depressing accelerator pedal fully setting selector lever to "P" position. | 0.32 A |

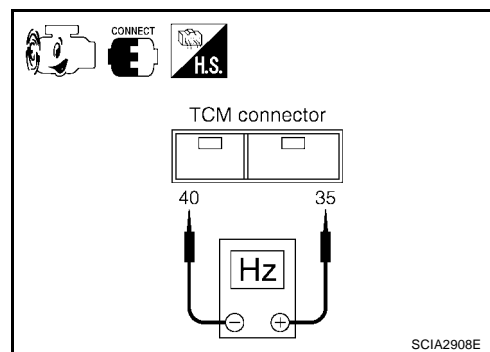
| DATA MONITOR | |
|--------------|--------|
| MONITOR | NO DTC |
| PC SOL A OUT | xxx A |
| PC SOL A MON | xxx A |
| PC SOL B OUT | xxx A |
| PC SOL B MON | xxx A |
| PC SOL C OUT | xxx A |
| PC SOL C MON | xxx A |

SCIA2907E

Without CONSULT-II

- Start the engine.
- Check pulse between TCM connector terminals 35 and 40.

| Connector | Terminal (Wire color) | Condition | Data (Approx.) |
|-----------|-----------------------|--|----------------|
| F57 | 35 (L/Y) - 40 (L/G) | When engine is running with idle speed and setting selector lever to "P" position. | 300 Hz |



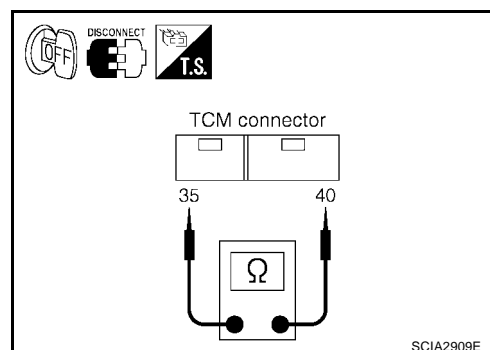
OK or NG

- OK >> GO TO 7.
 NG >> GO TO 2.

2. CHECK PRESSURE CONTROL SOLENOID VALVE A CIRCUIT

- Turn ignition switch "OFF".
- Disconnect the TCM connector.
- Check resistance between TCM connector terminals 35 and 40.

| Connector | Terminal (Wire color) | Condition | Resistance (Approx.) |
|-----------|-----------------------|--------------------------|----------------------|
| F57 | 35 (L/Y) - 40 (L/G) | Temperature: 20°C (68°F) | 5.0 - 5.6 Ω |



OK or NG

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

DTC P0745 PRESSURE CONTROL SOLENOID VALVE A (LINE PRESSURE)

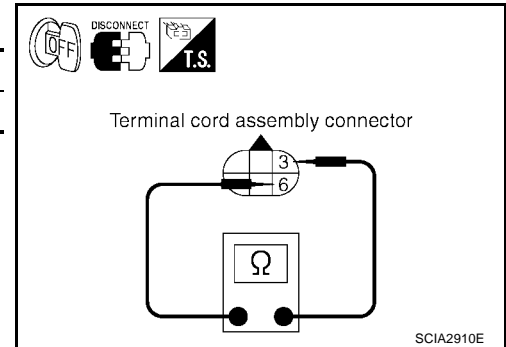
3. CHECK TERMINAL CORD ASSEMBLY WITH PRESSURE CONTROL SOLENOID VALVE A

1. Turn ignition switch "OFF".
2. Disconnect terminal cord assembly harness connector.
3. Check resistance between terminals 3 and 6.

| Connector | Terminal | Condition | Resistance (Approx.) |
|-----------|----------|--------------------------|----------------------|
| F62 | 3 - 6 | Temperature: 20°C (68°F) | 5.0 - 5.6 Ω |

OK or NG

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



4. CHECK HARNESS BETWEEN TCM AND TERMINAL CORD ASSEMBLY

Check the following.

- Open or short-circuit in the harness between TCM and terminal cord assembly.

OK or NG

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

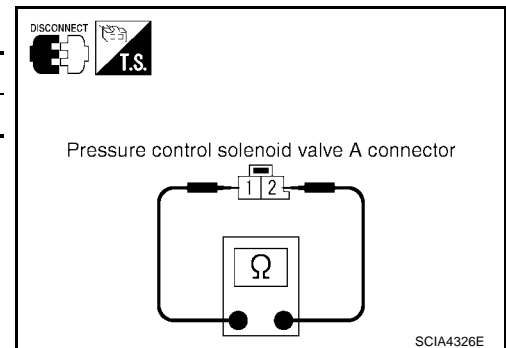
5. CHECK PRESSURE CONTROL SOLENOID VALVE A

1. Remove side cover. Refer to [AT-241, "Side cover"](#).
2. Disconnect pressure control solenoid valve A harness connector.
3. Check resistance between terminals 1 and 2.

| Connector | Terminal | Condition | Resistance (Approx.) |
|-----------|----------|--------------------------|----------------------|
| F105 | 1 - 2 | Temperature: 20°C (68°F) | 5.0 - 5.6 Ω |

OK or NG

- OK >> GO TO 6.
- NG >> Replace the control valve assembly. Refer to [AT-241, "Control Valve Assembly"](#).



6. CHECK HARNESS BETWEEN TERMINAL CORD ASSEMBLY AND PRESSURE CONTROL SOLENOID VALVE A

Check the following.

- Open or short-circuit in the harness between terminal cord assembly and pressure control solenoid valve A.

OK or NG

- OK >> GO TO 7.
- NG >> Repair or replace transmission wire. Refer to [AT-241, "Terminal cord assembly"](#).

7. CHECK DTC

Perform "DTC Confirmation Procedure". Refer to [AT-144, "DTC Confirmation Procedure"](#).

OK or NG

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

DTC P0745 PRESSURE CONTROL SOLENOID VALVE A (LINE PRESSURE)

8. CHECK TCM

1. Check TCM input/output signal. Refer to [AT-71, "TCM Input/Output Signal Reference Values"](#) .
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

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

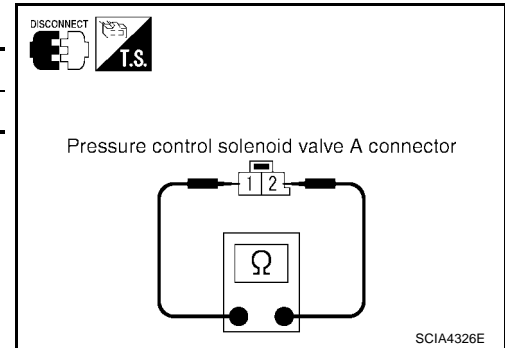
Component Inspection PRESSURE CONTROL SOLENOID VALVE A

ECS00A4C

1. Remove side cover. Refer to [AT-241, "Side cover"](#) .
2. Disconnect pressure control solenoid valve A harness connector.
3. Check resistance between terminals 1 and 2.

| Connector | Terminal | Condition | Resistance (Approx.) |
|-----------|----------|--------------------------|----------------------|
| F105 | 1 - 2 | Temperature: 20°C (68°F) | 5.0 - 5.6 Ω |

4. If NG, replace the control valve assembly. Refer to [AT-241, "Control Valve Assembly"](#) .



DTC P0750 SHIFT SOLENOID VALVE A

DTC P0750 SHIFT SOLENOID VALVE A

PDF:31940

Description

ECS00A4D

- Shift solenoid valves are installed directly in control valve body. The shift solenoid valves operates of ON and OFF by the control signal from TCM. Combinations of 5 shift solenoid valves, A, B, C, D and E, shifts gear positions.
- The shift solenoid valve A is a normally open, ON-OFF type solenoid.

| Gear position | D1 , M1 | D2 , M2 | D3 , M3 | D4 , M4 | D5 , M5 | Reverse |
|------------------------|-------------|------------|------------|------------|------------|------------|
| Shift solenoid valve A | ON (Closed) | OFF (Open) | OFF (Open) | OFF (Open) | OFF (Open) | OFF (Open) |

On Board Diagnosis Logic

ECS00A4E

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "SHIFT SOL A" with CONSULT-II or P0750 without CONSULT-II is detected under the following conditions.
 - When normal voltage is not applied to solenoid due to open, short, and so on.
 - When TCM detects as irregular by comparing target value with monitor value.

Possible Cause

ECS00A4F

- Harness or connectors
(The solenoid circuit is open or shorted.)
- Shift solenoid valve A

DTC Confirmation Procedure

ECS00A4G

CAUTION:

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

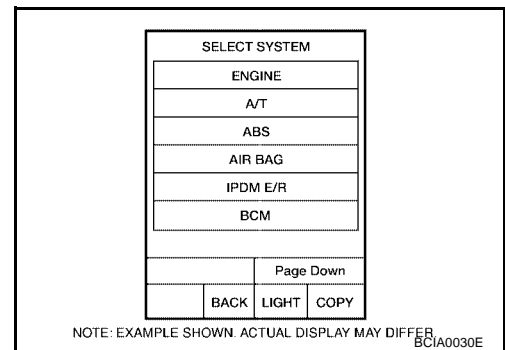
NOTE:

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 "A/T" with "DATA MONITOR" mode in CONSULT-II.
3. Start engine.
4. Drive vehicle and allow the following conditions.
SLCT LVR POSI: "D" position
GEAR: 1st ⇒ 2nd position
5. If DTC is detected, go to [AT-151, "Diagnostic Procedure"](#).



WITH GST

Follow the procedure "With CONSULT-II".

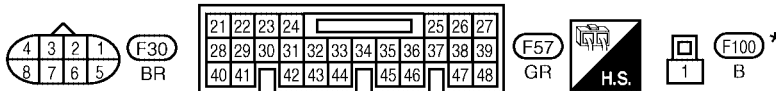
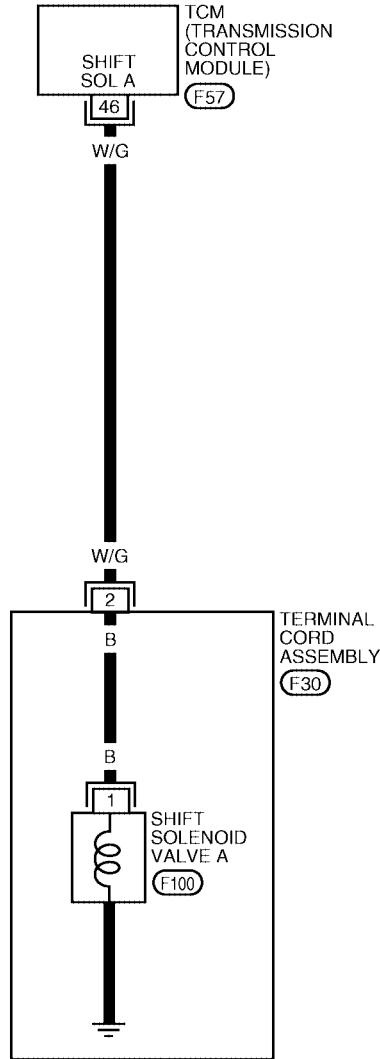
DTC P0750 SHIFT SOLENOID VALVE A

Wiring Diagram — AT — SSV/A

ECS00A4H

AT-SSV/A-01

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



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

BCWA0281E

DTC P0750 SHIFT SOLENOID VALVE A

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

| Terminal | Wire color | Item | Condition | Data (Approx.) |
|----------|------------|------------------------|--|-----------------|
| 46 | W/G | Shift solenoid valve A | When shift solenoid valve A operates. (When driving in 1st gear.) | Battery voltage |
| | | | When shift solenoid valve A does not operate. | 0V |

Diagnostic Procedure

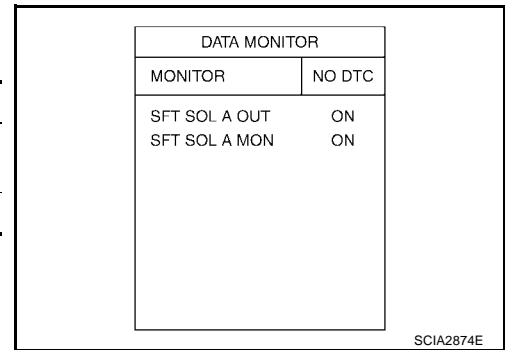
ECS00A4I

1. CHECK SHIFT SOLENOID VALVE A SIGNAL

With CONSULT-II

- Start engine.
- Select "A/T" with "DATA MONITOR" mode in CONSULT-II.
- Drive vehicle and read out the value of "SFT SOL A OUT" and "SFT SOL A MON".

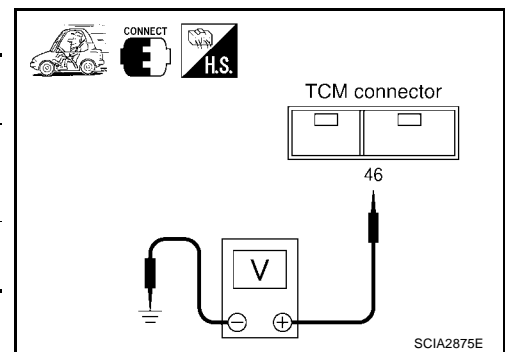
| Monitor item | Condition | Indication |
|--|--|------------|
| <ul style="list-style-type: none"> SFT SOL A OUT SFT SOL A MON | When shift solenoid valve A operates. (When driving in 1st gear.) | ON |
| | When shift solenoid valve A does not operate. | OFF |



Without CONSULT-II

- Drive vehicle.
- Check voltage between TCM connector terminal and ground.

| Connector | Terminal (Wire color) | Condition | Voltage (Approx.) |
|-----------|-----------------------|--|-------------------|
| F57 | 46 (W/G) - Ground | When shift solenoid valve A operates. (When driving in 1st gear.) | Battery voltage |
| | | When shift solenoid valve A does not operate. | 0V |



OK or NG

- OK >> GO TO 7.
- NG >> GO TO 2.

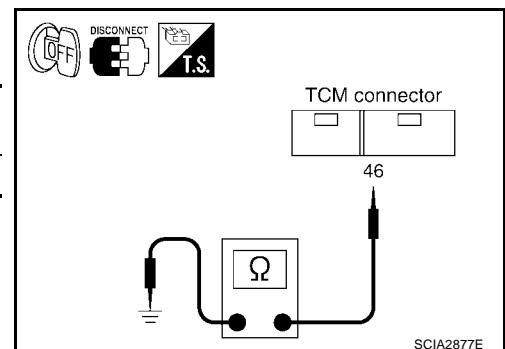
2. CHECK SHIFT SOLENOID VALVE A CIRCUIT

- Turn ignition switch "OFF".
- Disconnect the TCM connector.
- Check resistance between TCM connector terminal 46 and ground.

| Connector | Terminal (Wire color) | Condition | Resistance (Approx.) |
|-----------|-----------------------|--------------------------|----------------------|
| F57 | 46 (W/G) - Ground | Temperature: 20°C (68°F) | 11 - 16 Ω |

OK or NG

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



DTC P0750 SHIFT SOLENOID VALVE A

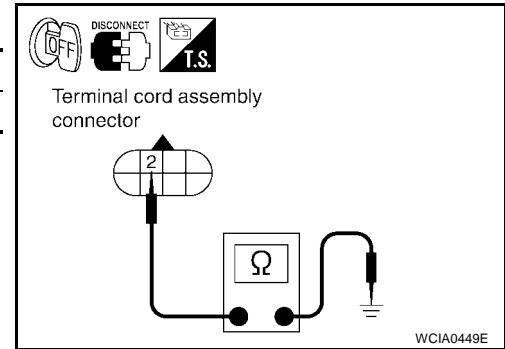
3. CHECK TERMINAL CORD ASSEMBLY WITH SHIFT SOLENOID VALVE A

1. Turn ignition switch "OFF".
2. Disconnect terminal cord assembly harness connector.
3. Check resistance between terminal 2 and ground.

| Connector | Terminal | Condition | Resistance (Approx.) |
|-----------|------------|--------------------------|----------------------|
| F30 | 2 - Ground | Temperature: 20°C (68°F) | 11 - 16 Ω |

OK or NG

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



4. CHECK HARNESS BETWEEN TCM AND TERMINAL CORD ASSEMBLY

Check the following.

- Open or short-circuit in the harness between TCM and terminal cord assembly.

OK or NG

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

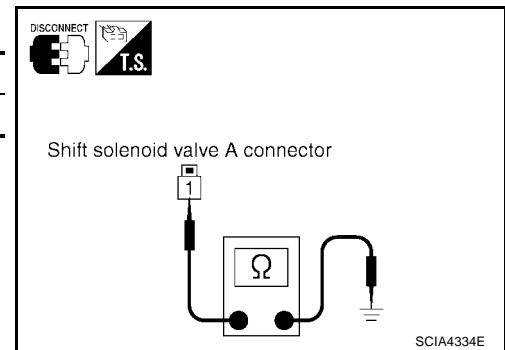
5. CHECK SHIFT SOLENOID VALVE A

1. Remove side cover. Refer to [AT-241, "Side cover"](#) .
2. Disconnect shift solenoid valve A harness connector.
3. Check resistance between terminal 1 and ground.

| Connector | Terminal | Condition | Resistance (Approx.) |
|-----------|------------|--------------------------|----------------------|
| F100 | 1 - Ground | Temperature: 20°C (68°F) | 11 - 16 Ω |

OK or NG

- OK >> GO TO 6.
- NG >> Replace the control valve assembly. Refer to [AT-241, "Control Valve Assembly"](#) .



6. CHECK HARNESS BETWEEN TERMINAL CORD ASSEMBLY AND SHIFT SOLENOID VALVE A

Check the following.

- Open or short-circuit in the harness between terminal cord assembly and shift solenoid valve A.

OK or NG

- OK >> GO TO 7.
- NG >> Repair or replace transmission wire. Refer to [AT-241, "Terminal cord assembly"](#) .

7. CHECK DTC

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

OK or NG

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

DTC P0750 SHIFT SOLENOID VALVE A

8. CHECK TCM

1. Check TCM input/output signal. Refer to [AT-71, "TCM Input/Output Signal Reference Values"](#).
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

OK >> **INSPECTION END**

NG >> Repair or replace damaged parts.

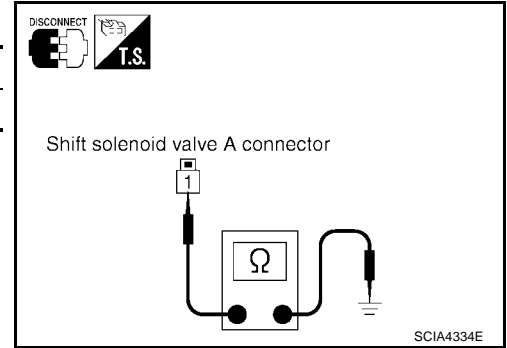
Component Inspection SHIFT SOLENOID VALVE A

ECS00A4J

1. Remove side cover. Refer to [AT-241, "Side cover"](#).
2. Disconnect shift solenoid valve A harness connector.
3. Check resistance between terminal 1 and ground.

| Connector | Terminal | Condition | Resistance (Approx.) |
|-----------|------------|--------------------------|----------------------|
| F100 | 1 - Ground | Temperature: 20°C (68°F) | 11 - 16 Ω |

4. If NG, replace the control valve assembly. Refer to [AT-241, "Control Valve Assembly"](#).



DTC P0755 SHIFT SOLENOID VALVE B

DTC P0755 SHIFT SOLENOID VALVE B

PF3:31940

Description

ECS00A4K

- Shift solenoid valves are installed directly in control valve body. The shift solenoid valves operates of ON and OFF by the control signal from TCM. Combinations of 5 shift solenoid valves, A, B, C, D and E, shifts gear positions.
- The shift solenoid valve B is a normally closed, ON-OFF type solenoid.

| Gear position | D1 , M1 | D2 , M2 | D3 , M3 | D4 , M4 | D5 , M5 | Reverse |
|------------------------|-----------|--------------|--------------|--------------|-----------|--------------|
| Shift solenoid valve B | ON (Open) | OFF (Closed) | OFF (Closed) | OFF (Closed) | ON (Open) | OFF (Closed) |

On Board Diagnosis Logic

ECS00A4L

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "SHIFT SOL B" with CONSULT-II or P0755 without CONSULT-II is detected under the following conditions.
 - When normal voltage is not applied to solenoid due to open, short, and so on.
 - When TCM detects as irregular by comparing target value with monitor value.

Possible Cause

ECS00A4M

- Harness or connectors
(The solenoid circuit is open or shorted.)
- Shift solenoid valve B

DTC Confirmation Procedure

ECS00A4N

CAUTION:

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

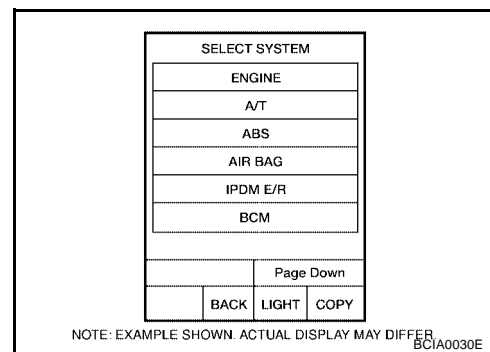
NOTE:

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 "A/T" with "DATA MONITOR" mode in CONSULT-II.
3. Start engine.
4. Drive vehicle and allow the following conditions.
SLCT LVR POSI: "D" position
GEAR: 1st ⇒ 2nd and 4th ⇒ 5th position
5. If DTC is detected, go to [AT-156, "Diagnostic Procedure"](#).



Ⓞ WITH GST

Follow the procedure "With CONSULT-II".

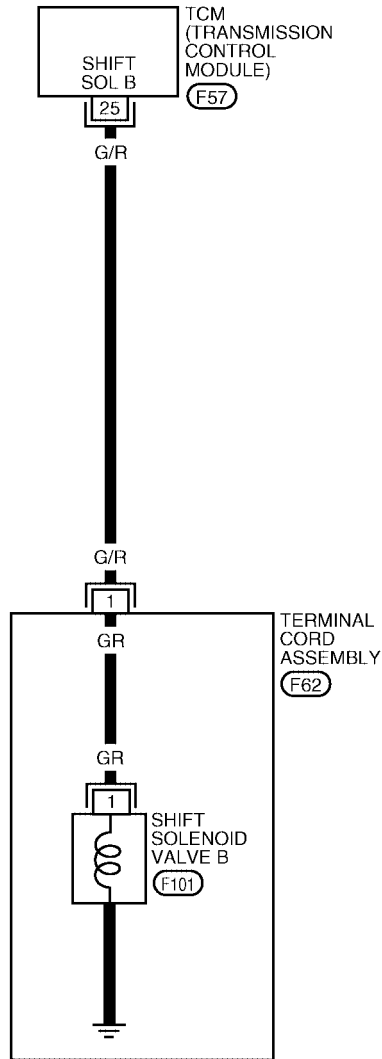
DTC P0755 SHIFT SOLENOID VALVE B

Wiring Diagram — AT — SSV/B

ECS00A40

AT-SSV/B-01

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




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

BCWA0282E

DTC P0755 SHIFT SOLENOID VALVE B

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

| Terminal | Wire color | Item | Condition | Data (Approx.) |
|----------|------------|------------------------|---|-----------------|
| 25 | G/R | Shift solenoid valve B |  When shift solenoid valve B operates. (When driving in 1st or 5th gear.) | Battery voltage |
| | | | When shift solenoid valve B does not operate. | 0V |

Diagnostic Procedure

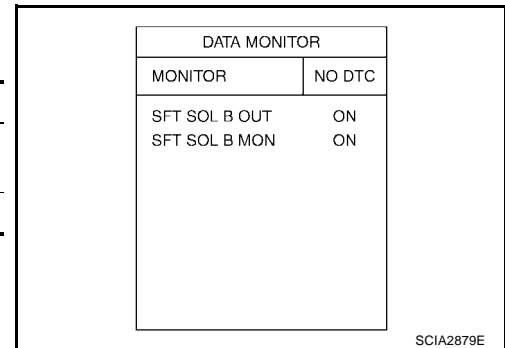
ECS00A4P

1. CHECK SHIFT SOLENOID VALVE B SIGNAL

④ With CONSULT-II

- Start engine.
- Select "A/T" with "DATA MONITOR" mode in CONSULT-II.
- Drive vehicle and read out the value of "SFT SOL B OUT" and "SFT SOL B MON".

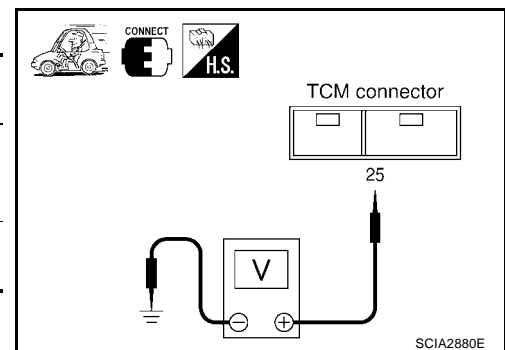
| Monitor item | Condition | Indication |
|--|---|------------|
| <ul style="list-style-type: none"> SFT SOL B OUT SFT SOL B MON | When shift solenoid valve B operates. (When driving in 1st or 5th gear.) | ON |
| | When shift solenoid valve B does not operate. | OFF |



⊗ Without CONSULT-II

- Drive vehicle.
- Check voltage between TCM connector terminal and ground.

| Connector | Terminal (Wire color) | Condition | Voltage (Approx.) |
|-----------|-----------------------|---|-------------------|
| F57 | 25 (G/R) - Ground | When shift solenoid valve B operates. (When driving in 1st or 5th gear.) | Battery voltage |
| | | When shift solenoid valve B does not operate. | 0V |



OK or NG

- OK >> GO TO 7.
NG >> GO TO 2.

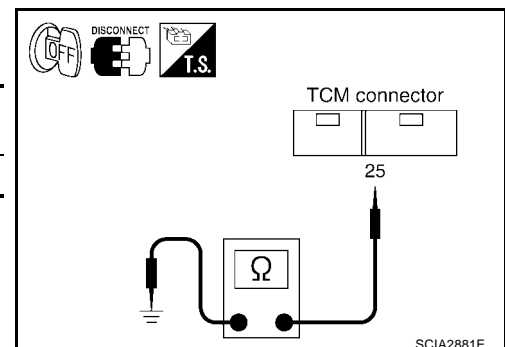
2. CHECK SHIFT SOLENOID VALVE B CIRCUIT

- Turn ignition switch "OFF".
- Disconnect the TCM connector.
- Check resistance between TCM connector terminal 25 and ground.

| Connector | Terminal (Wire color) | Condition | Resistance (Approx.) |
|-----------|-----------------------|--------------------------|----------------------|
| F57 | 25 (G/R) - Ground | Temperature: 20°C (68°F) | 11 - 16 Ω |

OK or NG

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



DTC P0755 SHIFT SOLENOID VALVE B

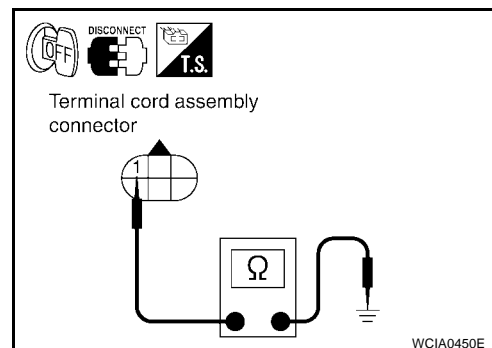
3. CHECK TERMINAL CORD ASSEMBLY WITH SHIFT SOLENOID VALVE B

1. Turn ignition switch "OFF".
2. Disconnect terminal cord assembly harness connector.
3. Check resistance between terminal 1 and ground.

| Connector | Terminal | Condition | Resistance (Approx.) |
|-----------|------------|--------------------------|----------------------|
| F62 | 1 - Ground | Temperature: 20°C (68°F) | 11 - 16 Ω |

OK or NG

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



4. CHECK HARNESS BETWEEN TCM AND TERMINAL CORD ASSEMBLY

Check the following.

- Open or short-circuit in the harness between TCM and terminal cord assembly.

OK or NG

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

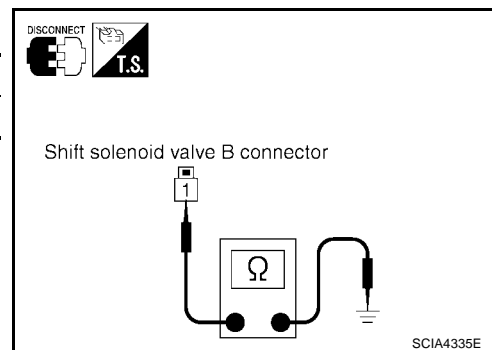
5. CHECK SHIFT SOLENOID VALVE B

1. Remove side cover. Refer to [AT-241, "Side cover"](#).
2. Disconnect shift solenoid valve B harness connector.
3. Check resistance between terminal 1 and ground.

| Connector | Terminal | Condition | Resistance (Approx.) |
|-----------|------------|--------------------------|----------------------|
| F101 | 1 - Ground | Temperature: 20°C (68°F) | 11 - 16 Ω |

OK or NG

- OK >> GO TO 6.
- NG >> Replace the control valve assembly. Refer to [AT-241, "Control Valve Assembly"](#).



6. CHECK HARNESS BETWEEN TERMINAL CORD ASSEMBLY AND SHIFT SOLENOID VALVE B

Check the following.

- Open or short-circuit in the harness between terminal cord assembly and shift solenoid valve B.

OK or NG

- OK >> GO TO 7.
- NG >> Repair or replace transmission wire. Refer to [AT-241, "Terminal cord assembly"](#).

7. CHECK DTC

Perform "DTC Confirmation Procedure". Refer to [AT-154, "DTC Confirmation Procedure"](#).

OK or NG

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

DTC P0755 SHIFT SOLENOID VALVE B

8. CHECK TCM

1. Check TCM input/output signal. Refer to [AT-71, "TCM Input/Output Signal Reference Values"](#) .
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

OK >> **INSPECTION END**

NG >> Repair or replace damaged parts.

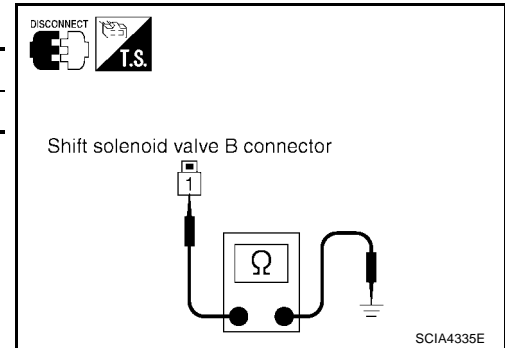
Component Inspection SHIFT SOLENOID VALVE B

ECS00A4Q

1. Remove side cover. Refer to [AT-241, "Side cover"](#) .
2. Disconnect shift solenoid valve B harness connector.
3. Check resistance between terminal 1 and ground.

| Connector | Terminal | Condition | Resistance (Approx.) |
|-----------|------------|--------------------------|----------------------|
| F101 | 1 - Ground | Temperature: 20°C (68°F) | 11 - 16 Ω |

4. If NG, replace the control valve assembly. Refer to [AT-241, "Control Valve Assembly"](#) .



DTC P0760 SHIFT SOLENOID VALVE C

DTC P0760 SHIFT SOLENOID VALVE C

PDF:31940

Description

ECS00A4R

- Shift solenoid valves are installed directly in control valve body. The shift solenoid valves operates of ON and OFF by the control signal from TCM. Combinations of 5 shift solenoid valves, A, B, C, D and E, shifts gear positions.
- The shift solenoid valve C is a normally closed, ON-OFF type solenoid.

| Gear position | D1 , M1 | D2 , M2 | D3 , M3 | D4 , M4 | D5 , M5 | Reverse |
|------------------------|-----------|-----------|-----------|--------------|--------------|-----------|
| Shift solenoid valve C | ON (Open) | ON (Open) | ON (Open) | OFF (Closed) | OFF (Closed) | ON (Open) |

On Board Diagnosis Logic

ECS00A4S

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "SHIFT SOL C" with CONSULT-II or P0760 without CONSULT-II is detected under the following conditions.
 - When normal voltage is not applied to solenoid due to open, short, and so on.
 - When TCM detects as irregular by comparing target value with monitor value.

Possible Cause

ECS00A4T

- Harness or connectors
(The solenoid circuit is open or shorted.)
- Shift solenoid valve C

DTC Confirmation Procedure

ECS00A4U

CAUTION:

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

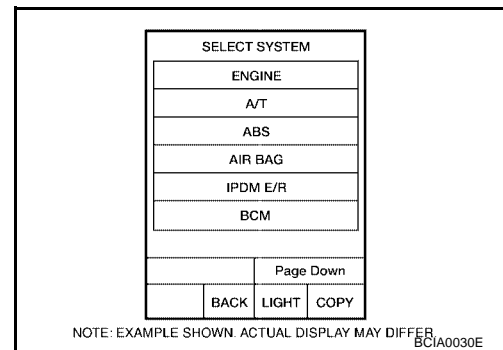
NOTE:

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 "A/T" with "DATA MONITOR" mode in CONSULT-II.
3. Start engine.
4. Drive vehicle and allow the following conditions.
SLCT LVR POSI: "D" position
GEAR: 3rd ⇒ 4th position
5. If DTC is detected, go to [AT-161, "Diagnostic Procedure"](#).



Ⓟ WITH GST

Follow the procedure "With CONSULT-II".

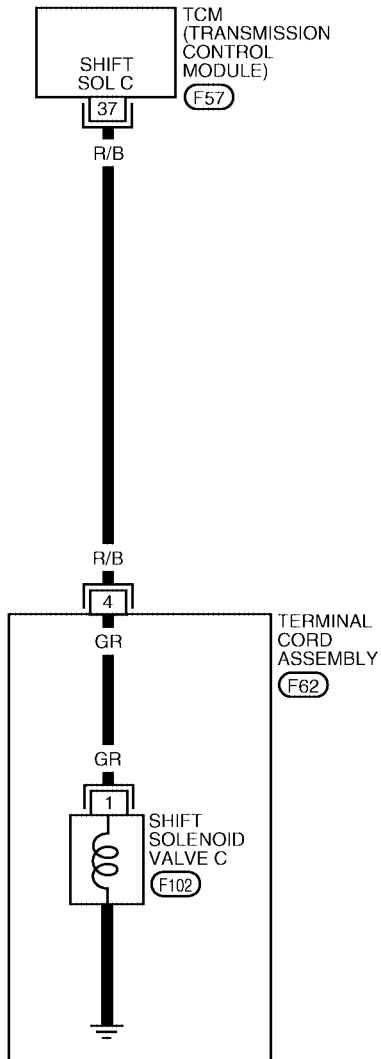
DTC P0760 SHIFT SOLENOID VALVE C

Wiring Diagram — AT — SSV/C

ECS00A4V

AT-SSV/C-01

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



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

BCWA0283E

DTC P0760 SHIFT SOLENOID VALVE C

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

| Terminal | Wire color | Item | Condition | Data (Approx.) |
|----------|------------|------------------------|---|-----------------|
| 37 | R/B | Shift solenoid valve C | When shift solenoid valve C operates. (When driving in 1st, 2nd, 3rd or reverse gear.) | Battery voltage |
| | | | When shift solenoid valve C does not operate. | 0V |



Diagnostic Procedure

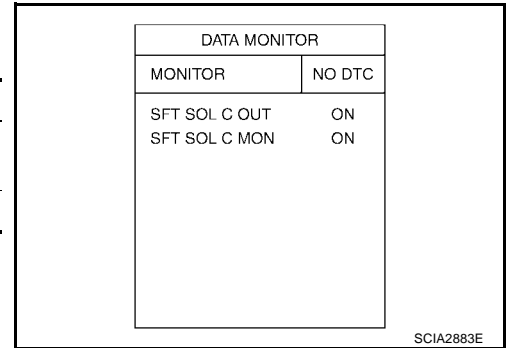
1. CHECK SHIFT SOLENOID VALVE C SIGNAL

ECS00A4W

Ⓜ With CONSULT-II

- Start engine.
- Select "A/T" with "DATA MONITOR" mode in CONSULT-II.
- Drive vehicle and read out the value of "SFT SOL C OUT" and "SFT SOL C MON".

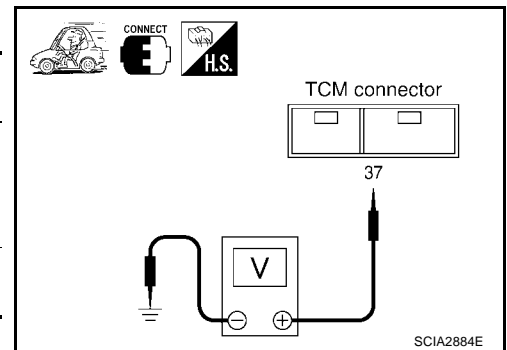
| Monitor item | Condition | Indication |
|--|---|------------|
| <ul style="list-style-type: none"> SFT SOL C OUT SFT SOL C MON | When shift solenoid valve C operates. (When driving in 1st, 2nd, 3rd or reverse gear.) | ON |
| | When shift solenoid valve C does not operate. | OFF |



⊗ Without CONSULT-II

- Drive vehicle.
- Check voltage between TCM connector terminal and ground.

| Connector | Terminal (Wire color) | Condition | Voltage (Approx.) |
|-----------|-----------------------|---|-------------------|
| F57 | 37 (R/B) - Ground | When shift solenoid valve C operates. (When driving in 1st, 2nd, 3rd or reverse gear.) | Battery voltage |
| | | When shift solenoid valve C does not operate. | 0V |



OK or NG

- OK >> GO TO 7.
NG >> GO TO 2.

DTC P0760 SHIFT SOLENOID VALVE C

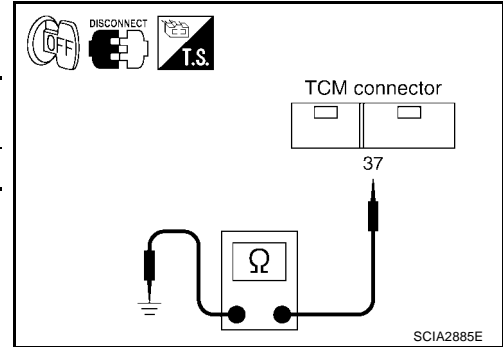
2. CHECK SHIFT SOLENOID VALVE C CIRCUIT

1. Turn ignition switch "OFF".
2. Disconnect the TCM connector.
3. Check resistance between TCM connector terminal 37 and ground.

| Connector | Terminal (Wire color) | Condition | Resistance (Approx.) |
|-----------|-----------------------|--------------------------|----------------------|
| F57 | 37 (R/B) - Ground | Temperature: 20°C (68°F) | 11 - 16 Ω |

OK or NG

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



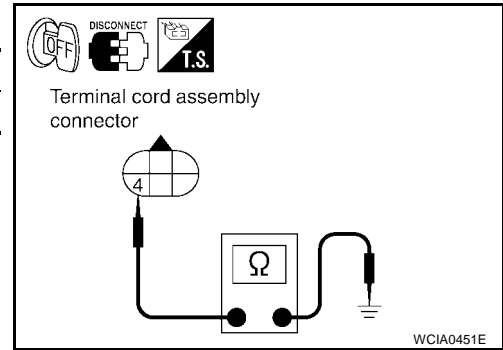
3. CHECK TERMINAL CORD ASSEMBLY WITH SHIFT SOLENOID VALVE C

1. Turn ignition switch "OFF".
2. Disconnect terminal cord assembly harness connector.
3. Check resistance between terminal 4 and ground.

| Connector | Terminal | Condition | Resistance (Approx.) |
|-----------|------------|--------------------------|----------------------|
| F62 | 4 - Ground | Temperature: 20°C (68°F) | 11 - 16 Ω |

OK or NG

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



4. CHECK HARNESS BETWEEN TCM AND TERMINAL CORD ASSEMBLY

Check the following.

- Open or short-circuit in the harness between TCM and terminal cord assembly.

OK or NG

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

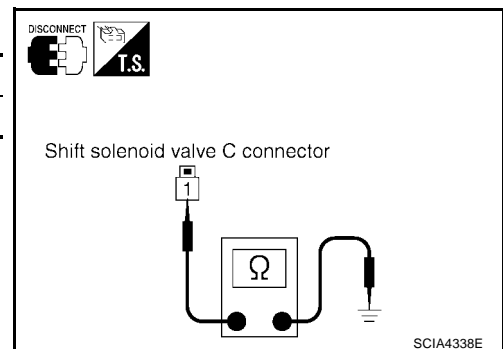
5. CHECK SHIFT SOLENOID VALVE C

1. Remove side cover. Refer to [AT-241, "Side cover"](#) .
2. Disconnect shift solenoid valve C harness connector.
3. Check resistance between terminal 1 and ground.

| Connector | Terminal | Condition | Resistance (Approx.) |
|-----------|------------|--------------------------|----------------------|
| F102 | 1 - Ground | Temperature: 20°C (68°F) | 11 - 16 Ω |

OK or NG

- OK >> GO TO 6.
 NG >> Replace the control valve assembly. Refer to [AT-241, "Control Valve Assembly"](#) .



DTC P0760 SHIFT SOLENOID VALVE C

6. CHECK HARNESS BETWEEN TERMINAL CORD ASSEMBLY AND SHIFT SOLENOID VALVE C

Check the following.

- Open or short-circuit in the harness between terminal cord assembly and shift solenoid valve C.

OK or NG

OK >> GO TO 7.

NG >> Repair or replace transmission wire.

7. CHECK DTC

Perform "DTC Confirmation Procedure". Refer to [AT-159, "DTC Confirmation Procedure"](#).

OK or NG

OK >> **INSPECTION END**

NG >> GO TO 8.

8. CHECK TCM

1. Check TCM input/output signal. Refer to [AT-71, "TCM Input/Output Signal Reference Values"](#).

2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

OK >> **INSPECTION END**

NG >> Repair or replace damaged parts.

Component Inspection SHIFT SOLENOID VALVE C

ECS00A4X

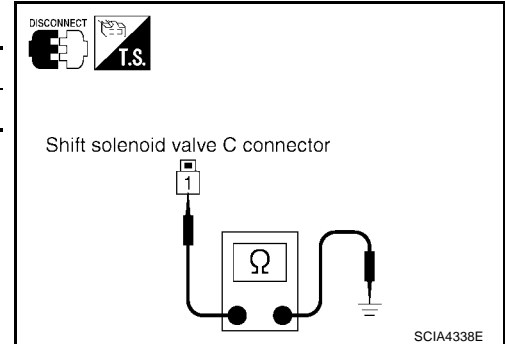
1. Remove side cover. Refer to [AT-241, "Side cover"](#).

2. Disconnect shift solenoid valve C harness connector.

3. Check resistance between terminal 1 and ground.

| Connector | Terminal | Condition | Resistance (Approx.) |
|-----------|------------|--------------------------|----------------------|
| F102 | 1 - Ground | Temperature: 20°C (68°F) | 11 - 16 Ω |

4. If NG, replace the control valve assembly. Refer to [AT-241, "Control Valve Assembly"](#).



DTC P0762 SHIFT SOLENOID VALVE C STUCK ON

DTC P0762 SHIFT SOLENOID VALVE C STUCK ON

PF3:31940

Description

ECS00A4Y

- This malfunction will not be detected while the A/T CHECK indicator lamp is indicating another self-diagnosis malfunction.
- This is not caused by electrical malfunction (circuits open or shorted) but by mechanical malfunction such as control valve sticking, improper solenoid valve operation, etc.
- Shift solenoid valves are installed directly in control valve body. The shift solenoid valves operates of ON and OFF by the control signal from TCM. Combinations of 5 shift solenoid valves, A, B, C, D and E, shifts gear positions.
- The shift solenoid valve C is a normally closed, ON-OFF type solenoid.

| Gear position | D1 , M1 | D2 , M2 | D3 , M3 | D4 , M4 | D5 , M5 | Reverse |
|------------------------|-----------|-----------|-----------|--------------|--------------|-----------|
| Shift solenoid valve C | ON (Open) | ON (Open) | ON (Open) | OFF (Closed) | OFF (Closed) | ON (Open) |

On Board Diagnosis Logic

ECS00A4Z

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "SFT SOL C STUCK ON" with CONSULT-II or P0762 without CONSULT-II is detected when condition of shift solenoid valve C is different from monitor value, and relation between gear position and actual gear ratio is irregular.

Possible Cause

ECS00A50

- Shift solenoid valve C
(On stick.)
- Hydraulic control circuit

DTC Confirmation Procedure

ECS00A51

CAUTION:

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

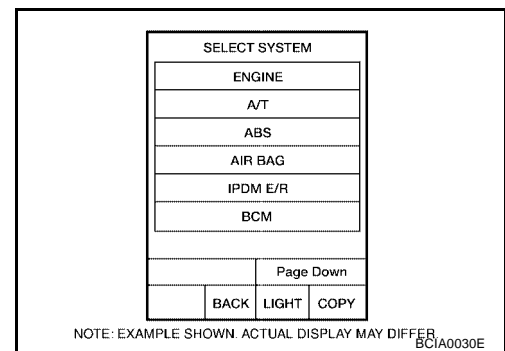
NOTE:

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 "A/T" with "DATA MONITOR" mode in CONSULT-II.
3. Start engine.
4. Drive vehicle and allow the following conditions.
SLCT LVR POSI: "D" position
GEAR: 3rd ⇒ 4th position
ACCELE ANGLE: More than 10 %
5. If DTC is detected, go to [AT-166, "Diagnostic Procedure"](#).



WITH GST

Follow the procedure "With CONSULT-II".

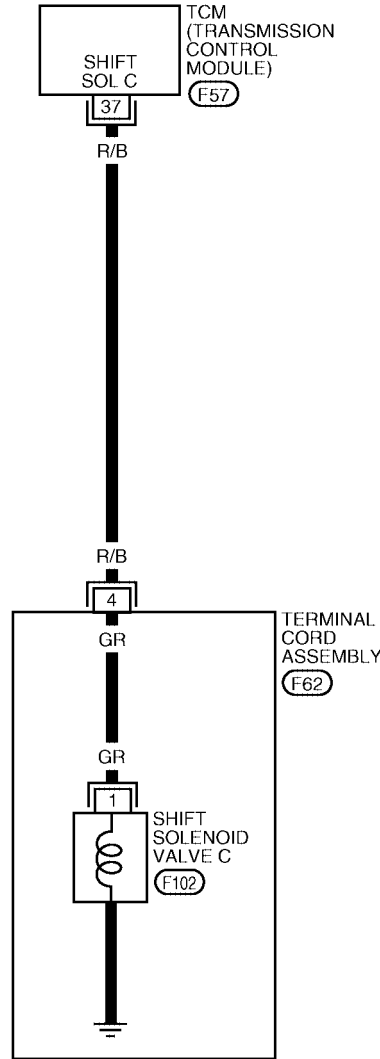
DTC P0762 SHIFT SOLENOID VALVE C STUCK ON

Wiring Diagram — AT — SSV/CS

ECS00A52

AT-SSV/CS-01

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




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

BCWA0284E

DTC P0762 SHIFT SOLENOID VALVE C STUCK ON

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

| Terminal | Wire color | Item | Condition | Data (Approx.) |
|----------|------------|------------------------|---|-----------------|
| 37 | R/B | Shift solenoid valve C |  When shift solenoid valve C operates. (When driving in 1st, 2nd, 3rd or reverse gear.) | Battery voltage |
| | | | When shift solenoid valve C does not operate. | 0V |

Diagnostic Procedure

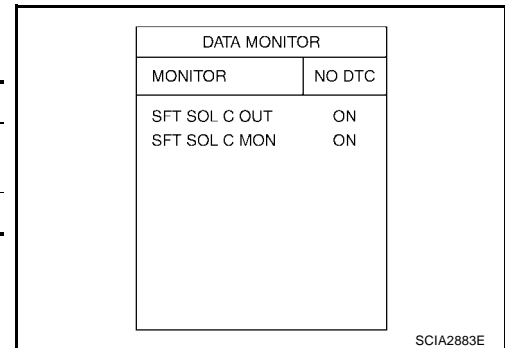
ECS00A53

1. CHECK SHIFT SOLENOID VALVE C SIGNAL

Ⓟ With CONSULT-II

- Start engine.
- Select "A/T" with "DATA MONITOR" mode in CONSULT-II.
- Drive vehicle and read out the value of "SFT SOL C OUT" and "SFT SOL C MON".

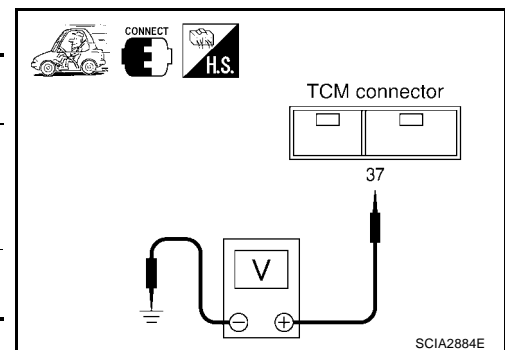
| Monitor item | Condition | Indication |
|--|---|------------|
| <ul style="list-style-type: none"> ● SFT SOL C OUT ● SFT SOL C MON | When shift solenoid valve C operates. (When driving in 1st, 2nd, 3rd or reverse gear.) | ON |
| | When shift solenoid valve C does not operate. | OFF |



ⓧ Without CONSULT-II

- Drive vehicle.
- Check voltage between TCM connector terminal and ground.

| Connector | Terminal (Wire color) | Condition | Voltage (Approx.) |
|-----------|-----------------------|---|-------------------|
| F57 | 37 (R/B) - Ground | When shift solenoid valve C operates. (When driving in 1st, 2nd, 3rd or reverse gear.) | Battery voltage |
| | | When shift solenoid valve C does not operate. | 0V |



OK or NG

- OK >> GO TO 7.
NG >> GO TO 2.

DTC P0762 SHIFT SOLENOID VALVE C STUCK ON

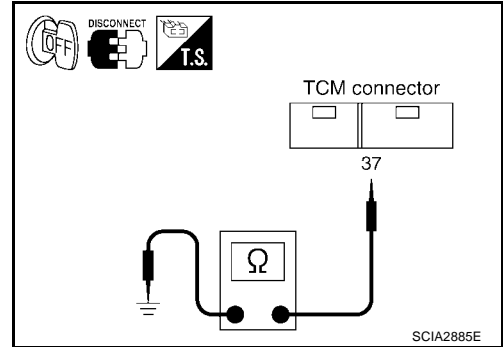
2. CHECK SHIFT SOLENOID VALVE C CIRCUIT

1. Turn ignition switch "OFF".
2. Disconnect the TCM connector.
3. Check resistance between TCM connector terminal 37 and ground.

| Connector | Terminal (Wire color) | Condition | Resistance (Approx.) |
|-----------|-----------------------|--------------------------|----------------------|
| F57 | 37 (R/B) - Ground | Temperature: 20°C (68°F) | 11 - 16 Ω |

OK or NG

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



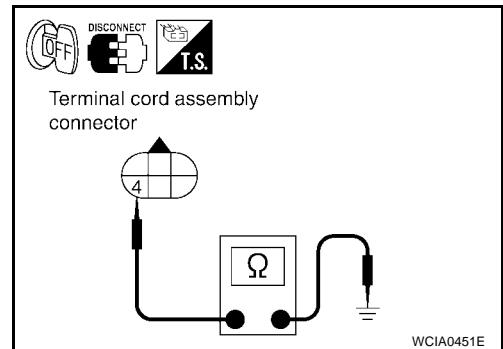
3. CHECK TERMINAL CORD ASSEMBLY WITH SHIFT SOLENOID VALVE C

1. Turn ignition switch "OFF".
2. Disconnect terminal cord assembly harness connector.
3. Check resistance between terminal 4 and ground.

| Connector | Terminal | Condition | Resistance (Approx.) |
|-----------|------------|--------------------------|----------------------|
| F62 | 4 - Ground | Temperature: 20°C (68°F) | 11 - 16 Ω |

OK or NG

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



4. CHECK HARNESS BETWEEN TCM AND TERMINAL CORD ASSEMBLY

Check the following.

- Open or short-circuit in the harness between TCM and terminal cord assembly.

OK or NG

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

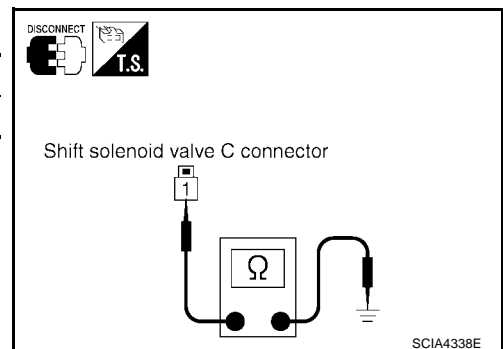
5. CHECK SHIFT SOLENOID VALVE C

1. Remove side cover. Refer to [AT-241, "Side cover"](#).
2. Disconnect shift solenoid valve C harness connector.
3. Check resistance between terminal 1 and ground.

| Connector | Terminal | Condition | Resistance (Approx.) |
|-----------|------------|--------------------------|----------------------|
| F102 | 1 - Ground | Temperature: 20°C (68°F) | 11 - 16 Ω |

OK or NG

- OK >> GO TO 6.
 NG >> Replace the control valve assembly. Refer to [AT-241, "Control Valve Assembly"](#).



DTC P0762 SHIFT SOLENOID VALVE C STUCK ON

6. CHECK HARNESS BETWEEN TERMINAL CORD ASSEMBLY AND SHIFT SOLENOID VALVE C

Check the following.

- Open or short-circuit in the harness between terminal cord assembly and shift solenoid valve C.

OK or NG

OK >> GO TO 7.

NG >> Repair or replace transmission wire. Refer to [AT-241, "Terminal cord assembly"](#) .

7. CHECK TCM

1. Check TCM input/output signal. Refer to [AT-71, "TCM Input/Output Signal Reference Values"](#) .
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

OK >> GO TO 8.

NG >> Repair or replace damaged parts.

8. CHECK DTC

Perform "DTC Confirmation Procedure". Refer to [AT-164, "DTC Confirmation Procedure"](#) .

OK or NG

OK >> **INSPECTION END**

NG >> Replace the control valve assembly. Refer to [AT-241, "Control Valve Assembly"](#) .

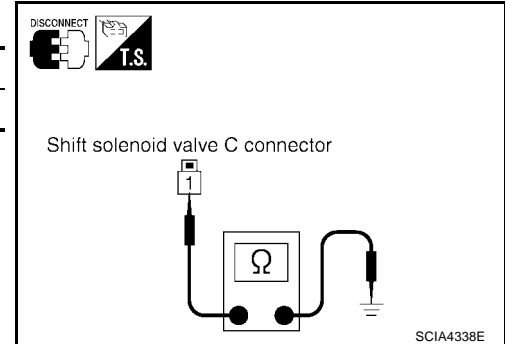
Component Inspection SHIFT SOLENOID VALVE C

ECS00A54

1. Remove side cover. Refer to [AT-241, "Side cover"](#) .
2. Disconnect shift solenoid valve C harness connector.
3. Check resistance between terminal 1 and ground.

| Connector | Terminal | Condition | Resistance (Approx.) |
|-----------|------------|--------------------------|----------------------|
| F102 | 1 - Ground | Temperature: 20°C (68°F) | 11 - 16 Ω |

4. If NG, replace the control valve assembly. Refer to [AT-241, "Control Valve Assembly"](#) .



DTC P0765 SHIFT SOLENOID VALVE D

DTC P0765 SHIFT SOLENOID VALVE D

PDF:31940

Description

ECS00A55

- Shift solenoid valves are installed directly in control valve body. The shift solenoid valves operates of ON and OFF by the control signal from TCM. Combinations of 5 shift solenoid valves, A, B, C, D and E, shifts gear positions.
- The shift solenoid valve D is a normally open, ON-OFF type solenoid.

| Gear position | D1 , M1 | D2 , M2 | D3 , M3 | D4 , M4 | D5 , M5 | Reverse |
|------------------------|------------|------------|-------------|-------------|-------------|------------|
| Shift solenoid valve D | OFF (Open) | OFF (Open) | ON (Closed) | ON (Closed) | ON (Closed) | OFF (Open) |

On Board Diagnosis Logic

ECS00A56

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "SHIFT SOL D" with CONSULT-II or P0765 without CONSULT-II is detected under the following conditions.
 - When normal voltage is not applied to solenoid due to open, short, and so on.
 - When TCM detects as irregular by comparing target value with monitor value.

Possible Cause

ECS00A57

- Harness or connectors
(The solenoid circuit is open or shorted.)
- Shift solenoid valve D

DTC Confirmation Procedure

ECS00A58

CAUTION:

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

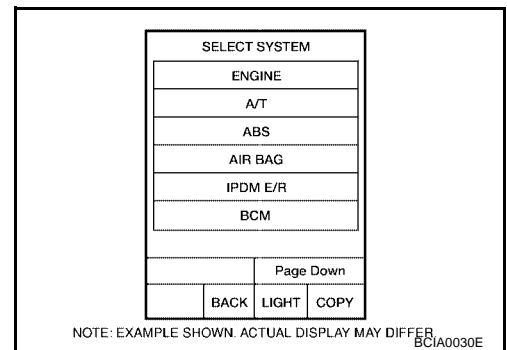
NOTE:

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

- Turn ignition switch "ON". (Do not start engine.)
- Select "A/T" with "DATA MONITOR" mode in CONSULT-II.
- Start engine.
- Drive vehicle and allow the following conditions.
SLCT LVR POSI: "D" position
GEAR: 2nd ⇒ 3rd position
- If DTC is detected, go to [AT-171, "Diagnostic Procedure"](#).



WITH GST

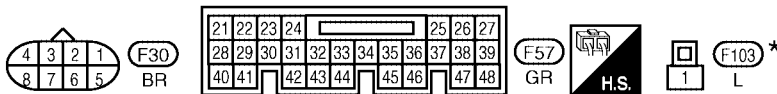
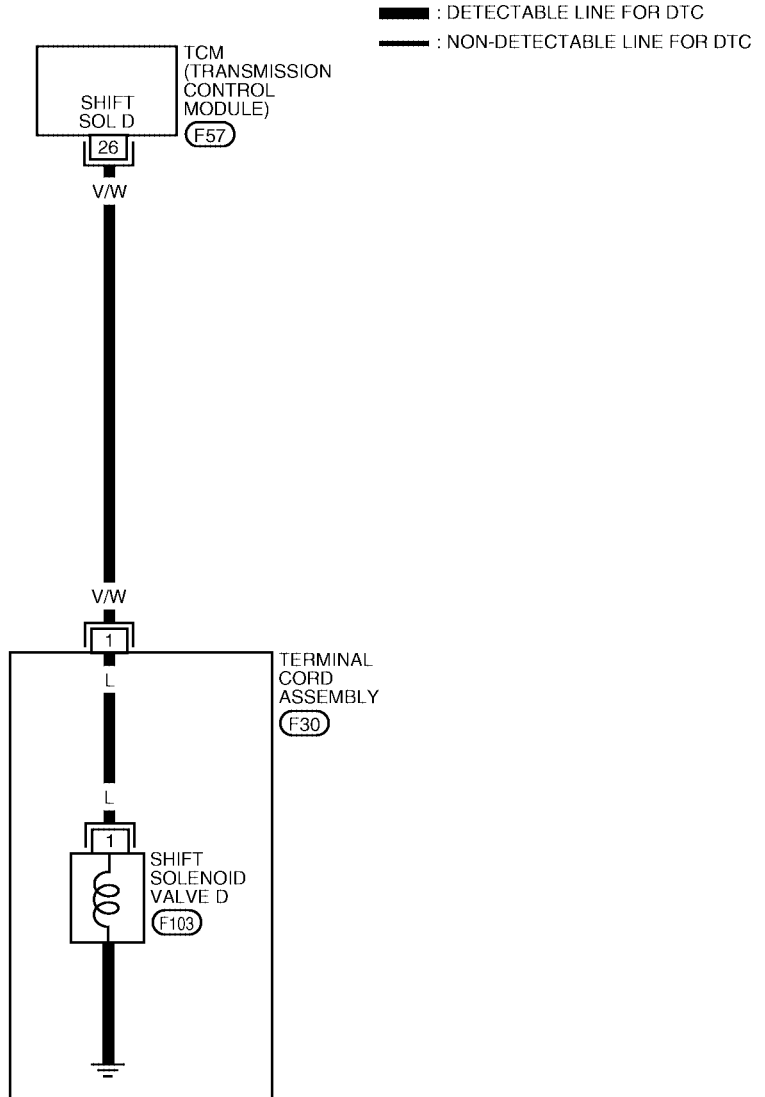
Follow the procedure "With CONSULT-II".

DTC P0765 SHIFT SOLENOID VALVE D

Wiring Diagram — AT — SSV/D

ECS00A59

AT-SSV/D-01



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

BCWA0285E

DTC P0765 SHIFT SOLENOID VALVE D

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

| Terminal | Wire color | Item | Condition | Data (Approx.) |
|----------|------------|------------------------|--|-----------------|
| 26 | V/W | Shift solenoid valve D | When shift solenoid valve D operates. (When driving in 3rd, 4th or 5th gear.) | Battery voltage |
| | | | When shift solenoid valve D does not operate. | 0V |



Diagnostic Procedure

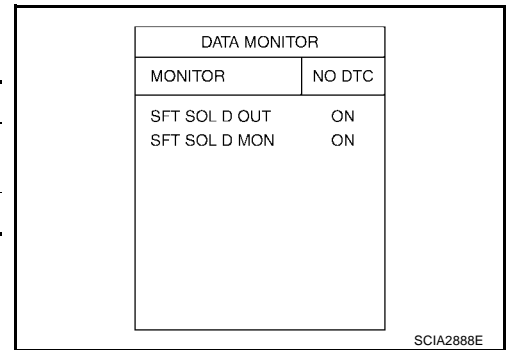
ECS00A5A

1. CHECK SHIFT SOLENOID VALVE D SIGNAL

Ⓜ With CONSULT-II

- Start engine.
- Select "A/T" with "DATA MONITOR" mode in CONSULT-II.
- Drive vehicle and read out the value of "SFT SOL D OUT" and "SFT SOL D MON".

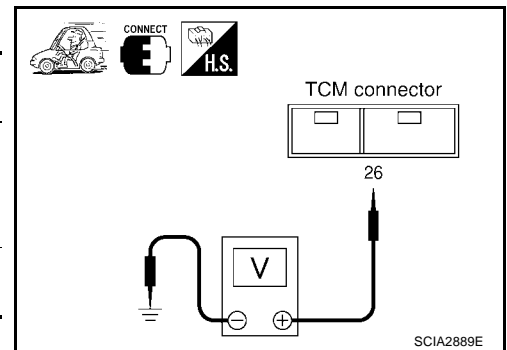
| Monitor item | Condition | Indication |
|--|--|------------|
| <ul style="list-style-type: none"> SFT SOL D OUT SFT SOL D MON | When shift solenoid valve D operates. (When driving in 3rd, 4th or 5th gear.) | ON |
| | When shift solenoid valve D does not operate. | OFF |



⊗ Without CONSULT-II

- Drive vehicle.
- Check voltage between TCM connector terminal and ground.

| Connector | Terminal (Wire color) | Condition | Voltage (Approx.) |
|-----------|-----------------------|--|-------------------|
| F57 | 26 (V/W) - Ground | When shift solenoid valve D operates. (When driving in 3rd, 4th or 5th gear.) | Battery voltage |
| | | When shift solenoid valve D does not operate. | 0V |



OK or NG

- OK >> GO TO 7.
 NG >> GO TO 2.

DTC P0765 SHIFT SOLENOID VALVE D

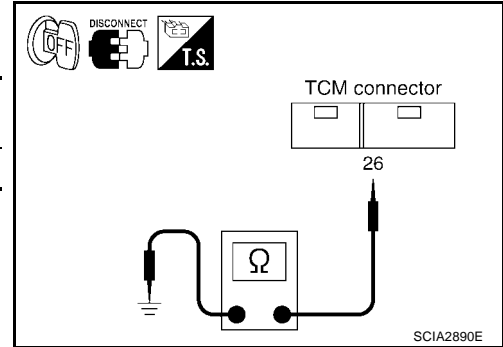
2. CHECK SHIFT SOLENOID VALVE D CIRCUIT

1. Turn ignition switch "OFF".
2. Disconnect the TCM connector.
3. Check resistance between TCM connector terminal 26 and ground.

| Connector | Terminal (Wire color) | Condition | Resistance (Approx.) |
|-----------|-----------------------|--------------------------|----------------------|
| F57 | 26 (V/W) - Ground | Temperature: 20°C (68°F) | 11 - 16 Ω |

OK or NG

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



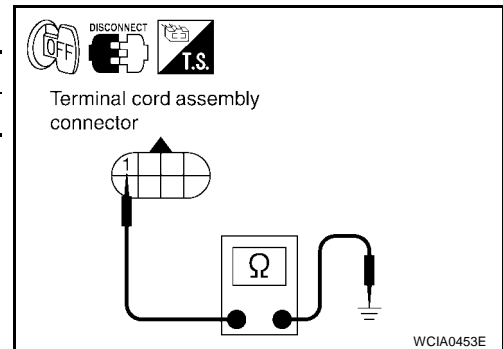
3. CHECK TERMINAL CORD ASSEMBLY WITH SHIFT SOLENOID VALVE D

1. Turn ignition switch "OFF".
2. Disconnect terminal cord assembly harness connector.
3. Check resistance between terminal 1 and ground.

| Connector | Terminal | Condition | Resistance (Approx.) |
|-----------|------------|--------------------------|----------------------|
| F30 | 1 - Ground | Temperature: 20°C (68°F) | 11 - 16 Ω |

OK or NG

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



4. CHECK HARNESS BETWEEN TCM AND TERMINAL CORD ASSEMBLY

Check the following.

- Open or short-circuit in the harness between TCM and terminal cord assembly.

OK or NG

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

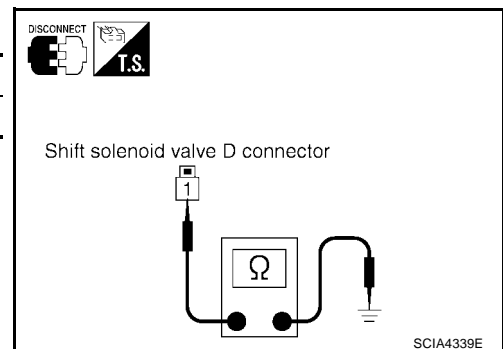
5. CHECK SHIFT SOLENOID VALVE D

1. Remove side cover. Refer to [AT-241, "Side cover"](#) .
2. Disconnect shift solenoid valve D harness connector.
3. Check resistance between terminal 1 and ground.

| Connector | Terminal | Condition | Resistance (Approx.) |
|-----------|------------|--------------------------|----------------------|
| F103 | 1 - Ground | Temperature: 20°C (68°F) | 11 - 16 Ω |

OK or NG

- OK >> GO TO 6.
 NG >> Replace the control valve assembly. Refer to [AT-241, "Control Valve Assembly"](#) .



DTC P0765 SHIFT SOLENOID VALVE D

6. CHECK HARNESS BETWEEN TERMINAL CORD ASSEMBLY AND SHIFT SOLENOID VALVE D

Check the following.

- Open or short-circuit in the harness between terminal cord assembly and shift solenoid valve D.

OK or NG

OK >> GO TO 7.

NG >> Repair or replace transmission wire. Refer to [AT-241, "Terminal cord assembly"](#).

7. CHECK DTC

Perform "DTC Confirmation Procedure". Refer to [AT-169, "DTC Confirmation Procedure"](#).

OK or NG

OK >> **INSPECTION END**

NG >> GO TO 8.

8. CHECK TCM

1. Check TCM input/output signal. Refer to [AT-71, "TCM Input/Output Signal Reference Values"](#).

2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

OK >> **INSPECTION END**

NG >> Repair or replace damaged parts.

Component Inspection SHIFT SOLENOID VALVE D

ECS00A5B

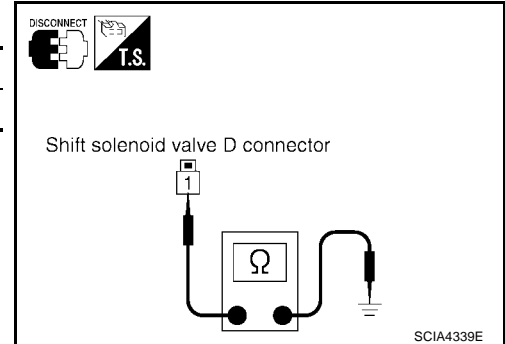
1. Remove side cover. Refer to [AT-241, "Side cover"](#).

2. Disconnect shift solenoid valve D harness connector.

3. Check resistance between terminal 1 and ground.

| Connector | Terminal | Condition | Resistance (Approx.) |
|-----------|------------|--------------------------|----------------------|
| F103 | 1 - Ground | Temperature: 20°C (68°F) | 11 - 16 Ω |

4. If NG, replace the control valve assembly. Refer to [AT-241, "Control Valve Assembly"](#).



DTC P0770 SHIFT SOLENOID VALVE E

DTC P0770 SHIFT SOLENOID VALVE E

PF:31940

Description

ECS00A5C

- Shift solenoid valves are installed directly in control valve body. The shift solenoid valves operates of ON and OFF by the control signal from TCM. Combinations of 5 shift solenoid valves, A, B, C, D and E, shifts gear positions.
- The shift solenoid valve E is a normally closed, ON-OFF type solenoid.

| Gear position | D1 | M1 | D 2 , M2 | D3 , M3 | D4 , M4 | D5 , M5 | Reverse |
|------------------------|-----------------|-----------|-----------------|-----------------|-----------------|-----------------|-----------|
| Shift solenoid valve E | OFF (Closed) | ON (Open) | OFF (Closed) | OFF (Closed) | OFF (Closed) | OFF (Closed) | ON (Open) |

NOTE:

The condition of shift solenoid valve E is ON (Open) with shifting D2 ⇔ D3 and D3 ⇔ D4 .

On Board Diagnosis Logic

ECS00A5D

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "SHIFT SOL E" with CONSULT-II or P0770 without CONSULT-II is detected under the following conditions.
 - When normal voltage is not applied to solenoid due to open, short, and so on.
 - When TCM detects as irregular by comparing target value with monitor value.

Possible Cause

ECS00A5E

- Harness or connectors
(The solenoid circuit is open or shorted.)
- Shift solenoid valve E

DTC Confirmation Procedure

ECS00A5F

CAUTION:

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

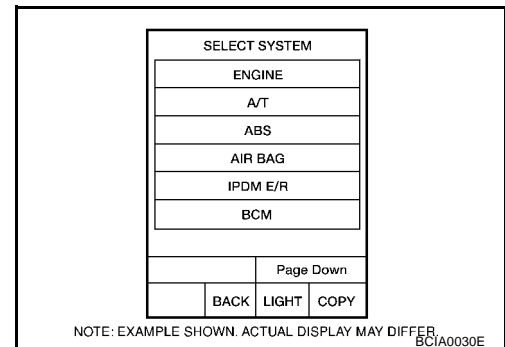
NOTE:

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.

④ WITH CONSULT-II

1. Turn ignition switch "ON". (Do not start engine.)
2. Select "A/T" with "DATA MONITOR" mode in CONSULT-II.
3. Start engine.
4. Move selector lever between "N" and "R".
SLCT LVR POSI: "N" ⇔ "R" position
5. If DTC is detected, go to [AT-176. "Diagnostic Procedure"](#) .



④ WITH GST

Follow the procedure "With CONSULT-II".

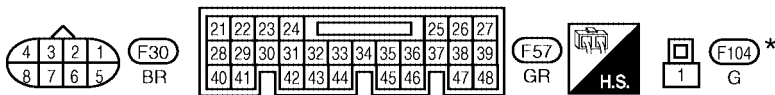
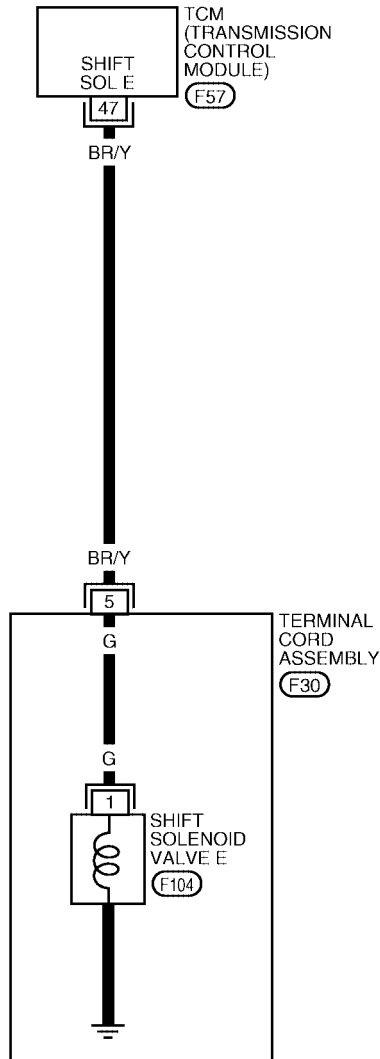
DTC P0770 SHIFT SOLENOID VALVE E

Wiring Diagram — AT — SSV/E

ECS00A5G

AT-SSV/E-01

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




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

BCWA0286E

DTC P0770 SHIFT SOLENOID VALVE E

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

| Terminal | Wire color | Item | Condition | Data (Approx.) |
|----------|------------|------------------------|---|-----------------|
| 47 | BR/Y | Shift solenoid valve E |  When shift solenoid valve E operates. (When driving in reverse gear.) | Battery voltage |
| | | | When shift solenoid valve E does not operate. | 0V |

Diagnostic Procedure

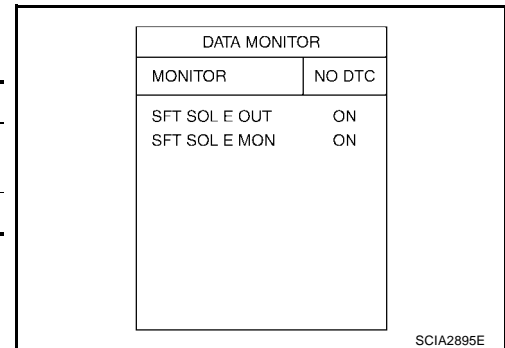
ECS00A5H

1. CHECK SHIFT SOLENOID VALVE E SIGNAL

④ With CONSULT-II

- Start engine.
- Select "A/T" with "DATA MONITOR" mode in CONSULT-II.
- Drive vehicle and read out the value of "SFT SOL E OUT" and "SFT SOL E MON".

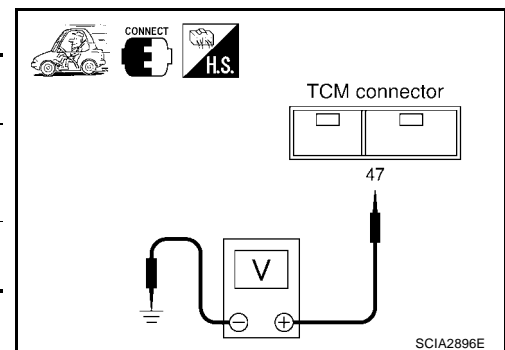
| Monitor item | Condition | Indication |
|--|---|------------|
| <ul style="list-style-type: none"> SFT SOL E OUT SFT SOL E MON | When shift solenoid valve E operates. (When driving in reverse gear.) | ON |
| | When shift solenoid valve E does not operate. | OFF |



⊗ Without CONSULT-II

- Drive vehicle.
- Check voltage between TCM connector terminal and ground.

| Connector | Terminal (Wire color) | Condition | Voltage (Approx.) |
|-----------|-----------------------|---|-------------------|
| F57 | 47 (BR/Y) - Ground | When shift solenoid valve E operates. (When driving in reverse gear.) | Battery voltage |
| | | When shift solenoid valve E does not operate. | 0V |



OK or NG

- OK >> GO TO 7.
NG >> GO TO 2.

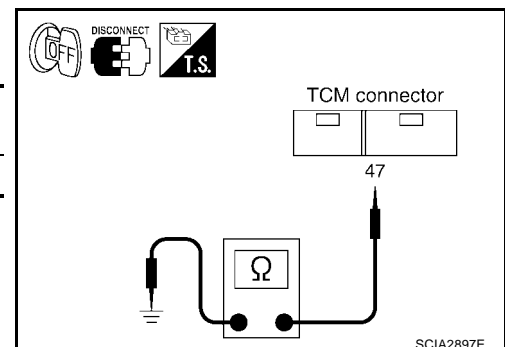
2. CHECK SHIFT SOLENOID VALVE E CIRCUIT

- Turn ignition switch "OFF".
- Disconnect the TCM connector.
- Check resistance between TCM connector terminal 47 and ground.

| Connector | Terminal (Wire color) | Condition | Resistance (Approx.) |
|-----------|-----------------------|--------------------------|----------------------|
| F57 | 47 (BR/Y) - Ground | Temperature: 20°C (68°F) | 11 - 16 Ω |

OK or NG

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



DTC P0770 SHIFT SOLENOID VALVE E

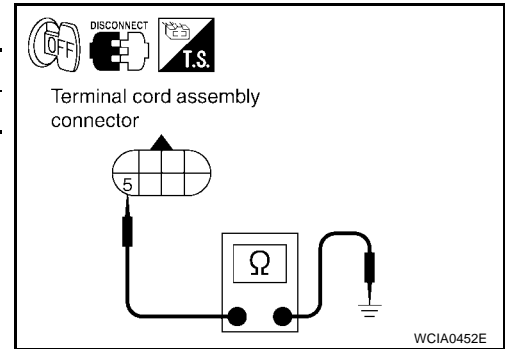
3. CHECK TERMINAL CORD ASSEMBLY WITH SHIFT SOLENOID VALVE E

1. Turn ignition switch "OFF".
2. Disconnect terminal cord assembly harness connector.
3. Check resistance between terminal 5 and ground.

| Connector | Terminal | Condition | Resistance (Approx.) |
|-----------|------------|--------------------------|----------------------|
| F30 | 5 - Ground | Temperature: 20°C (68°F) | 11 - 16 Ω |

OK or NG

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



4. CHECK HARNESS BETWEEN TCM AND TERMINAL CORD ASSEMBLY

Check the following.

- Open or short-circuit in the harness between TCM and terminal cord assembly.

OK or NG

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

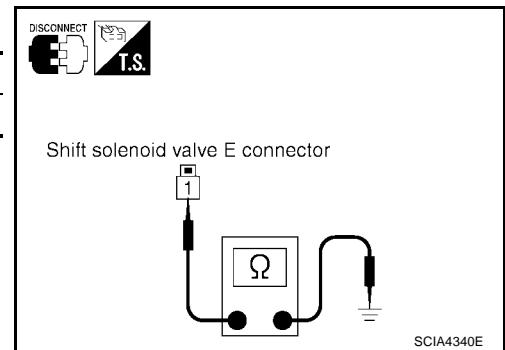
5. CHECK SHIFT SOLENOID VALVE E

1. Remove side cover. Refer to [AT-241, "Side cover"](#).
2. Disconnect shift solenoid valve E harness connector.
3. Check resistance between terminal 1 and ground.

| Connector | Terminal | Condition | Resistance (Approx.) |
|-----------|------------|--------------------------|----------------------|
| F104 | 1 - Ground | Temperature: 20°C (68°F) | 11 - 16 Ω |

OK or NG

- OK >> GO TO 6.
- NG >> Replace the control valve assembly. Refer to [AT-241, "Control Valve Assembly"](#).



6. CHECK HARNESS BETWEEN TERMINAL CORD ASSEMBLY AND SHIFT SOLENOID VALVE E

Check the following.

- Open or short-circuit in the harness between terminal cord assembly and shift solenoid valve E.

OK or NG

- OK >> GO TO 7.
- NG >> Repair or replace transmission wire. Refer to [AT-241, "Terminal cord assembly"](#).

7. CHECK DTC

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

OK or NG

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

DTC P0770 SHIFT SOLENOID VALVE E

8. CHECK TCM

1. Check TCM input/output signal. Refer to [AT-71, "TCM Input/Output Signal Reference Values"](#) .
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

OK >> **INSPECTION END**

NG >> Repair or replace damaged parts.

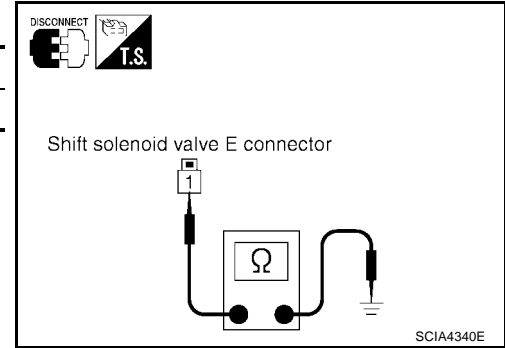
Component Inspection SHIFT SOLENOID VALVE E

ECS00A5I

1. Remove side cover. Refer to [AT-241, "Side cover"](#) .
2. Disconnect shift solenoid valve E harness connector.
3. Check resistance between terminal 1 and ground.

| Connector | Terminal | Condition | Resistance (Approx.) |
|-----------|------------|--------------------------|----------------------|
| F104 | 1 - Ground | Temperature: 20°C (68°F) | 11 - 16 Ω |

4. If NG, replace the control valve assembly. Refer to [AT-241, "Control Valve Assembly"](#) .



DTC P0775 PRESSURE CONTROL SOLENOID VALVE B (SHIFT PRESSURE)

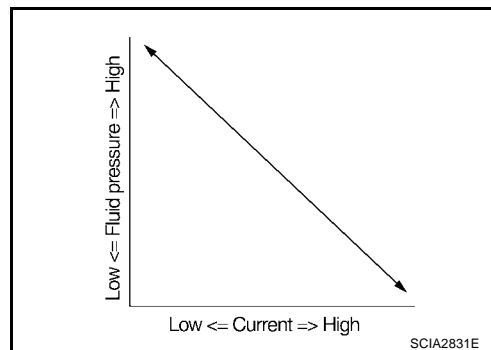
DTC P0775 PRESSURE CONTROL SOLENOID VALVE B (SHIFT PRESSURE)

PFP:31940

Description

ECS00A5J

- The pressure control solenoid valve B is normally high, 3-port linear pressure control solenoid.
- The pressure control solenoid valve B controls linear shift pressure by control signal from TCM and controls 2nd coast brake directly under 2nd, 3rd, 4th and direct clutch directly under 5th and reverse.



On Board Diagnosis Logic

ECS00A5K

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "PC SOL B(SFT/PRS)" with CONSULT-II or P0775 without CONSULT-II is detected under the following conditions.
 - When normal voltage is not applied to solenoid due to open, short, and so on.
 - When TCM detects as irregular by comparing target value with monitor value.

Possible Cause

ECS00A5L

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

DTC Confirmation Procedure

ECS00A5M

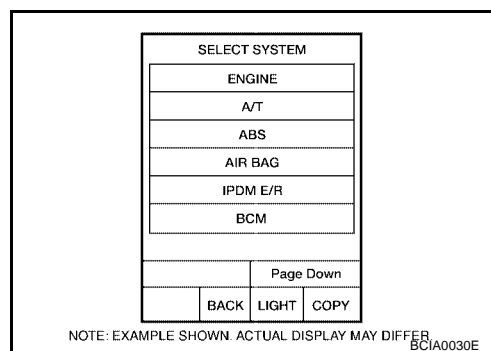
NOTE:

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 "A/T" with "DATA MONITOR" mode in CONSULT-II.
3. Start engine.
4. Run engine for at least 13 consecutive seconds at idle speed.
5. If DTC is detected, go to [AT-181, "Diagnostic Procedure"](#).



WITH GST

Follow the procedure "With CONSULT-II".

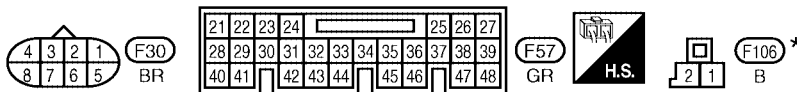
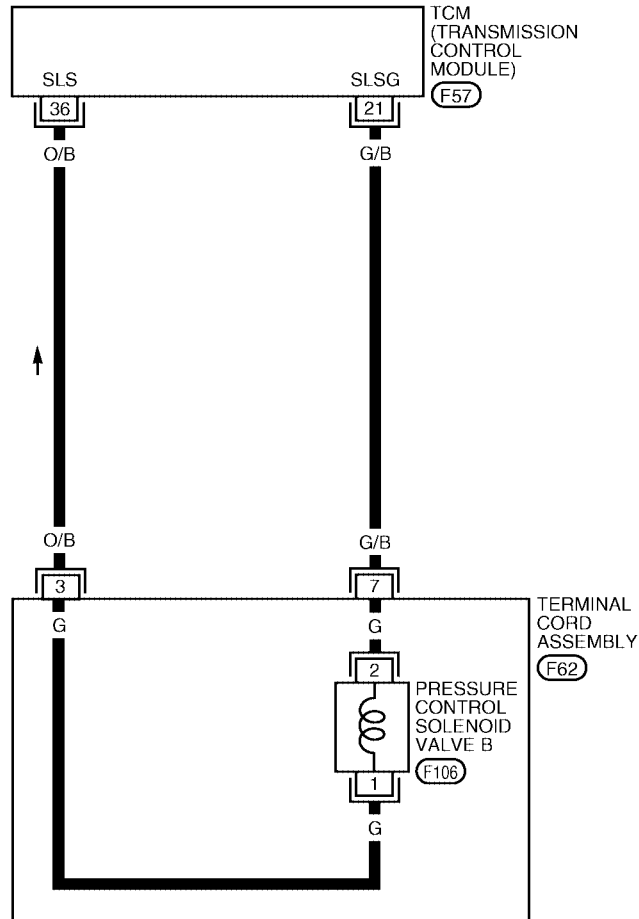
DTC P0775 PRESSURE CONTROL SOLENOID VALVE B (SHIFT PRESSURE)

Wiring Diagram — AT — PC/B

ECS00A5N

AT-PC/B-01

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




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

BCWA0287E

DTC P0775 PRESSURE CONTROL SOLENOID VALVE B (SHIFT PRESSURE)

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

| Terminal | Wire color | Item | Condition | Data (Approx.) |
|----------|------------|--|--|-----------------------------------|
| 21 | G/B |  Pressure control solenoid valve B ground | When engine is running with idle speed and setting selector lever to "P" position. | 0V |
| 36 | O/B | | | Pressure control solenoid valve B |

Diagnostic Procedure

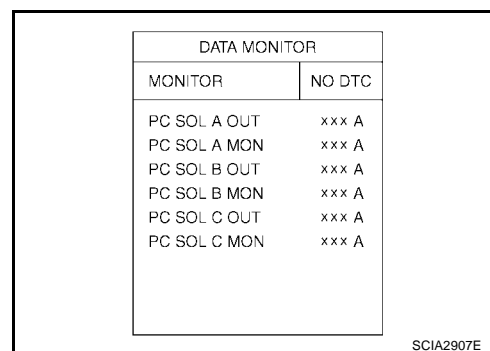
ECS00A50

1. CHECK PRESSURE CONTROL SOLENOID VALVE B SIGNAL

With CONSULT-II

- After warming up the engine and transaxle, turn ignition switch "OFF".
- Turn ignition switch "ON". (Do not start engine.)
- Select "DATA MONITOR" mode for "A/T" with CONSULT-II.
- Read out the value of "PC SOL B OUT" and "PC SOL B MON".

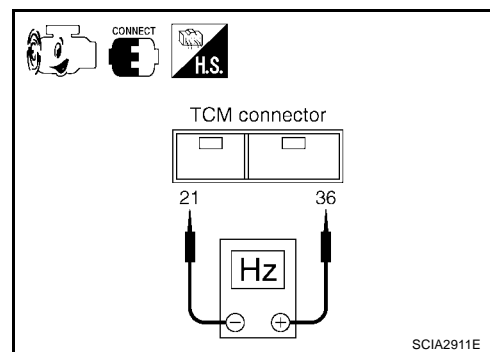
| Monitor item | Condition | Display value (Approx.) |
|----------------|--|-------------------------|
| ● PC SOL B OUT | Selector lever: Manual shift gate position | 1.00 A |
| ● PC SOL B MON | Other than the above. | 0.30 A |



Without CONSULT-II

- Start the engine.
- Check pulse between TCM connector terminals 21 and 36.

| Connector | Terminal (Wire color) | Condition | Data (Approx.) |
|-----------|---------------------------------|--|----------------|
| F57 | 36 (O/B) - 21 (G/B) (Ground) | When engine is running with idle speed and setting selector lever to "P" position. | 300 Hz |



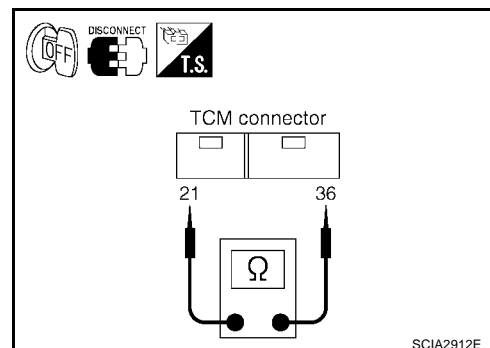
OK or NG

- OK >> GO TO 7.
NG >> GO TO 2.

2. CHECK PRESSURE CONTROL SOLENOID VALVE B CIRCUIT

- Turn ignition switch "OFF".
- Disconnect the TCM connector.
- Check resistance between TCM connector terminals 21 and 36.

| Connector | Terminal (Wire color) | Condition | Resistance (Approx.) |
|-----------|---------------------------------|--------------------------|----------------------|
| F57 | 36 (O/B) - 21 (G/B) (Ground) | Temperature: 20°C (68°F) | 5.0 - 5.6 Ω |



OK or NG

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

DTC P0775 PRESSURE CONTROL SOLENOID VALVE B (SHIFT PRESSURE)

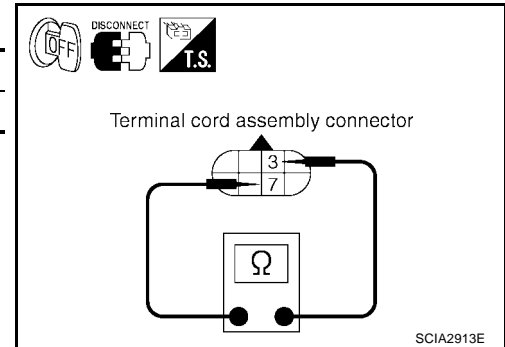
3. CHECK TERMINAL CORD ASSEMBLY WITH PRESSURE CONTROL SOLENOID VALVE B

1. Turn ignition switch "OFF".
2. Disconnect terminal cord assembly harness connector.
3. Check resistance between terminals 3 and 7.

| Connector | Terminal | Condition | Resistance (Approx.) |
|-----------|----------|--------------------------|----------------------|
| F62 | 3 - 7 | Temperature: 20°C (68°F) | 5.0 - 5.6 Ω |

OK or NG

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



4. CHECK HARNESS BETWEEN TCM AND TERMINAL CORD ASSEMBLY

Check the following.

- Open or short-circuit in the harness between TCM and terminal cord assembly.

OK or NG

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

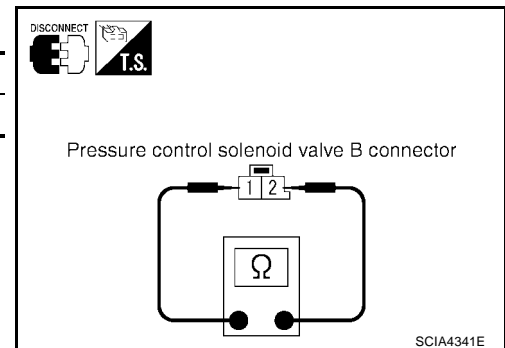
5. CHECK PRESSURE CONTROL SOLENOID VALVE B

1. Remove side cover. Refer to [AT-241, "Side cover"](#) .
2. Disconnect pressure control solenoid valve B harness connector.
3. Check resistance between terminals 1 and 2.

| Connector | Terminal | Condition | Resistance (Approx.) |
|-----------|----------|--------------------------|----------------------|
| F106 | 1 - 2 | Temperature: 20°C (68°F) | 5.0 - 5.6 Ω |

OK or NG

- OK >> GO TO 6.
- NG >> Replace the control valve assembly. Refer to [AT-241, "Control Valve Assembly"](#) .



6. CHECK HARNESS BETWEEN TERMINAL CORD ASSEMBLY AND PRESSURE CONTROL SOLENOID VALVE B

Check the following.

- Open or short-circuit in the harness between terminal cord assembly and pressure control solenoid valve B.

OK or NG

- OK >> GO TO 7.
- NG >> Repair or replace transmission wire. Refer to [AT-241, "Terminal cord assembly"](#) .

7. CHECK DTC

Perform "DTC Confirmation Procedure". Refer to [AT-179, "DTC Confirmation Procedure"](#) .

OK or NG

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

DTC P0775 PRESSURE CONTROL SOLENOID VALVE B (SHIFT PRESSURE)

8. CHECK TCM

1. Check TCM input/output signal. Refer to [AT-71, "TCM Input/Output Signal Reference Values"](#).
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

OK >> **INSPECTION END**

NG >> Repair or replace damaged parts.

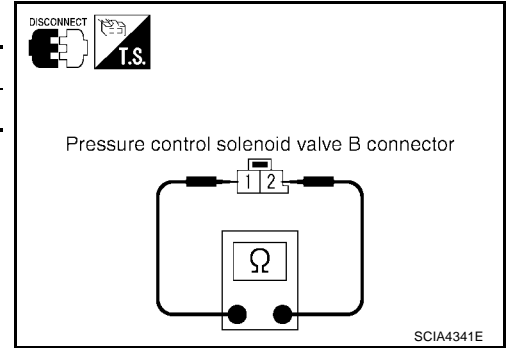
Component Inspection PRESSURE CONTROL SOLENOID VALVE B

ECS00A5P

1. Remove side cover. Refer to [AT-241, "Side cover"](#).
2. Disconnect pressure control solenoid valve B harness connector.
3. Check resistance between terminals 1 and 2.

| Connector | Terminal | Condition | Resistance (Approx.) |
|-----------|----------|--------------------------|----------------------|
| F106 | 1 - 2 | Temperature: 20°C (68°F) | 5.0 - 5.6 Ω |

4. If NG, replace the control valve assembly. Refer to [AT-241, "Control Valve Assembly"](#).



DTC P0780 SHIFT

DTC P0780 SHIFT

PF3:31940

Description

ECS00A5Q

- This malfunction will not be detected while the A/T CHECK indicator lamp is indicating another self-diagnosis malfunction.
- This malfunction is detected when the A/T does not shift as instructed by the TCM. This is not caused by electrical malfunction (circuits open or shorted) but by mechanical malfunction such as control valve sticking, improper solenoid valve operation, etc.

On Board Diagnosis Logic

ECS00A5R

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "SHIFT" with CONSULT-II or P0780 without CONSULT-II is detected under the following conditions.
 - When no rotation change occurs between input (turbine revolution sensor) and output (revolution sensor) and shifting time is long.
 - When shifting ends immediately.
 - When engine revs up unusually during shifting.

Possible Cause

ECS00A5S

- Shift solenoid valve D (Off error.)
- Shift solenoid valve E (Off error.)
- Pressure control solenoid valve A (On/Off error.)
- Pressure control solenoid valve B (On/Off error.)
- Pressure control solenoid valve C (On/Off error.)
- Hydraulic control circuit

DTC Confirmation Procedure

ECS00A5T

CAUTION:

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

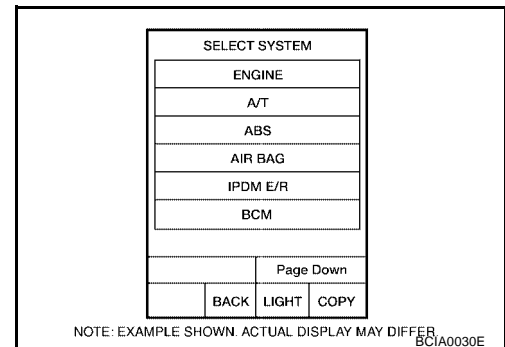
NOTE:

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. Start engine and select "A/T" with "DATA MONITOR" mode in CONSULT-II.
2. Make sure that ATF temperature is within the range below.
FLUID TEMP: More than 60°C (140°F)
If out of range, drive the vehicle to warm up the fluid.
3. Drive vehicle and allow the following conditions.
SLCT LVR POSI: "D" position
GEAR: 1st ⇒ 2nd ⇒ 3rd ⇒ 4th ⇒ 5th position
(Vehicle speed: Refer to AT-312, "VEHICLE SPEED WHEN SHIFTING GEARS" .)
4. If DTC is detected, go to [AT-187, "Diagnostic Procedure"](#) .



WITH GST

Follow the procedure "With CONSULT-II".

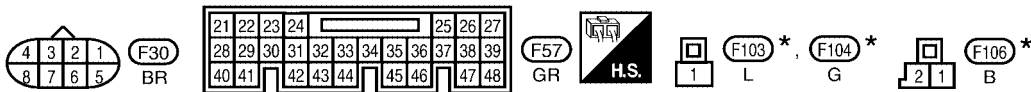
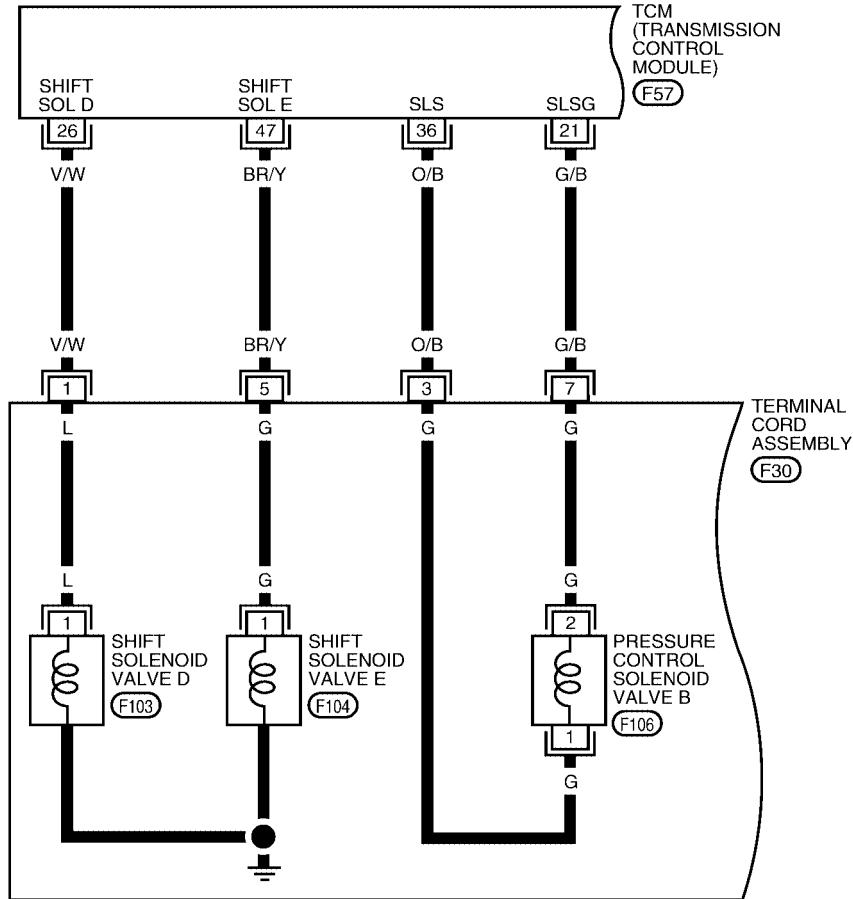
DTC P0780 SHIFT

Wiring Diagram — AT — SFTFNC

ECS00A5U

AT-SFTFNC-01

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



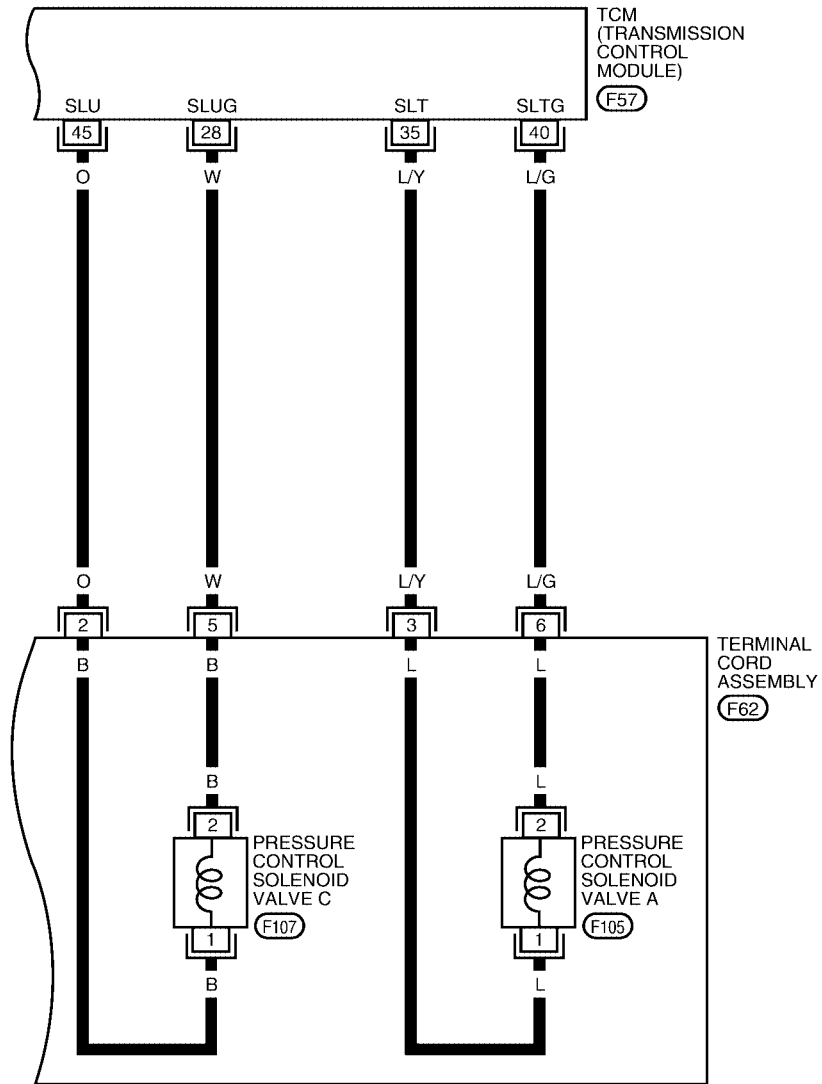
* : THIS CONNECTOR IS NOT SHOWN IN "HARNESS LAYOUT" OF PG SECTION.

BCWA0288E

DTC P0780 SHIFT

AT-SFTFNC-02

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



| | | | | | | | | | | | |
|----|----|----|----|----|----|----|----|----|----|----|----|
| 21 | 22 | 23 | 24 | 25 | 26 | 27 | | | | | |
| 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 |
| 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | | | |

F57 GR



| | | |
|---|---|---|
| 3 | 2 | 1 |
| 6 | 5 | 4 |

 F62 GR

| | |
|---|---|
| 2 | 1 |
|---|---|

 F105 G

F105* G





F107* L

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

BCWA0289E

DTC P0780 SHIFT

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

| Terminal | Wire color | Item | Condition | Data (Approx.) |
|----------|------------|--|--|---|
| 21 | G/B | Pressure control solenoid valve B ground |  | When engine is running with idle speed and setting selector lever to "P" position. 0V |
| 26 | V/W | Shift solenoid valve D |  | When shift solenoid valve D operates. (When driving in 3rd, 4th or 5th gear.) Battery voltage |
| | | | | When shift solenoid valve D does not operate. 0V |
| 28 | W | Pressure control solenoid valve C ground |  | When engine is running with idle speed and setting selector lever to "P" position. 0V |
| 35 | L/Y | Pressure control solenoid valve A | | When engine is running with idle speed and setting selector lever to "P" position. 300Hz |
| 36 | O/B | Pressure control solenoid valve B | | When engine is running with idle speed and setting selector lever to "P" position. 300Hz |
| 40 | L/G | Pressure control solenoid valve A ground | | When engine is running with idle speed and setting selector lever to "P" position. 0V |
| 45 | O | Pressure control solenoid valve C | | When engine is running with idle speed and setting selector lever to "P" position. 300Hz |
| 47 | BR/Y | Shift solenoid valve E |  | When shift solenoid valve E operates. (When driving in reverse gear.) Battery voltage |
| | | | | When shift solenoid valve E does not operate. 0V |

Diagnostic Procedure

ECS00A5V

1. CHECK EACH SHIFT SOLENOID VALVE CIRCUIT

Perform "Diagnostic Procedure" for the following DTCs.

- "DTC P0765 SHIFT SOLENOID VALVE D" (Refer to [AT-171, "Diagnostic Procedure"](#) .)
- "DTC P0770 SHIFT SOLENOID VALVE E" (Refer to [AT-176, "Diagnostic Procedure"](#) .)

OK or NG

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

2. CHECK EACH PRESSURE CONTROL SOLENOID VALVE CIRCUIT

Perform "Diagnostic Procedure" for the following DTCs.

- "DTC P0745 PRESSURE CONTROL SOLENOID VALVE A" (Refer to [AT-146, "Diagnostic Procedure"](#) .)
- "DTC P0775 PRESSURE CONTROL SOLENOID VALVE B" (Refer to [AT-181, "Diagnostic Procedure"](#) .)
- "DTC P0795 PRESSURE CONTROL SOLENOID VALVE C" (Refer to [AT-190, "Diagnostic Procedure"](#) .)

OK or NG

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

3. CHECK DTC

Perform "DTC Confirmation Procedure". Refer to [AT-184, "DTC Confirmation Procedure"](#) .

OK or NG

- OK >> **INSPECTION END**
- NG >> Replace the control valve assembly. Refer to [AT-241, "Control Valve Assembly"](#) .

DTC P0795 PRESSURE CONTROL SOLENOID VALVE C (TCC AND SHIFT PRESSURE)

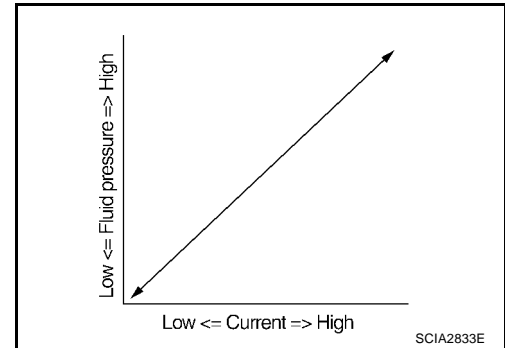
DTC P0795 PRESSURE CONTROL SOLENOID VALVE C (TCC AND SHIFT PRESSURE)

PF3:31940

Description

ECS00A5W

- The pressure control solenoid valve C is normally low, 3-port linear pressure control solenoid.
- The pressure control solenoid valve C is activated to control the apply and release of the 2nd brake and 1st and reverse brake, and torque converter clutch.
- 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.



On Board Diagnosis Logic

ECS00A5X

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "PC SOL C(TCC&SFT)" with CONSULT-II or P0795 without CONSULT-II is detected under the following conditions.
 - When normal voltage is not applied to solenoid due to open, short, and so on.
 - When TCM detects as irregular by comparing target value with monitor value.

Possible Cause

ECS00A5Y

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

DTC Confirmation Procedure

ECS00A5Z

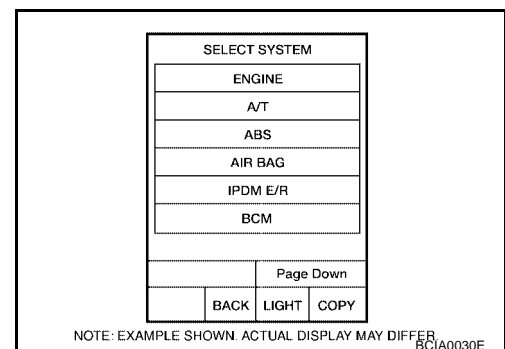
NOTE:

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 "A/T" with "DATA MONITOR" mode in CONSULT-II.
3. Start engine.
4. Run engine for at least 13 consecutive seconds at idle speed.
5. If DTC is detected, go to [AT-190, "Diagnostic Procedure"](#).



WITH GST

Follow the procedure "With CONSULT-II".

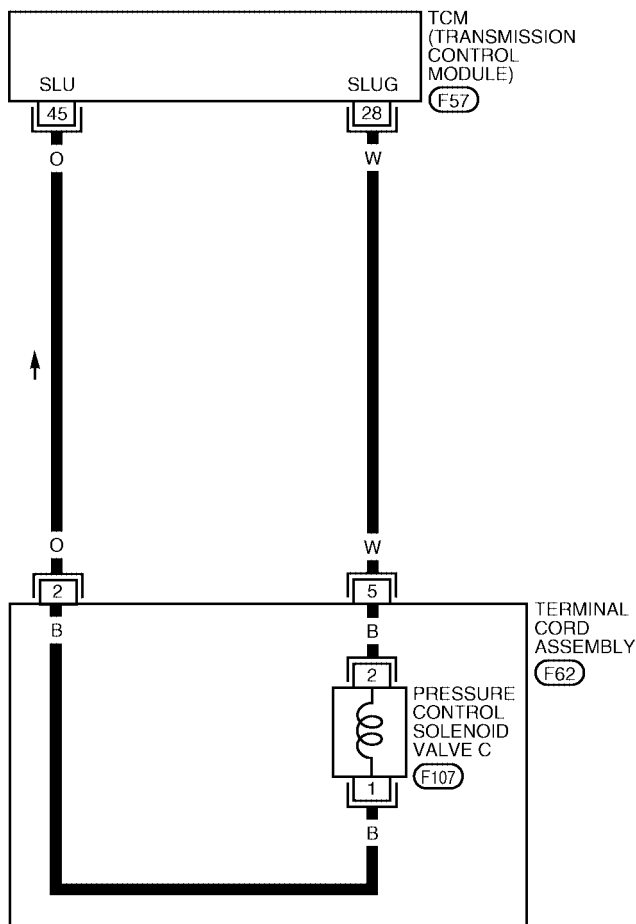
DTC P0795 PRESSURE CONTROL SOLENOID VALVE C (TCC AND SHIFT PRESSURE)

Wiring Diagram — AT — PC/C

ECS00A60

AT-PC/C-01

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




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

BCWA0290E

DTC P0795 PRESSURE CONTROL SOLENOID VALVE C (TCC AND SHIFT PRESSURE)

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

| Terminal | Wire color | Item | Condition | Data (Approx.) |
|----------|------------|--|---|--|
| 28 | W | Pressure control solenoid valve C ground |  | When engine is running with idle speed and setting selector lever to "P" position. |
| 45 | O | Pressure control solenoid valve C | | When engine is running with idle speed and setting selector lever to "P" position. |

Diagnostic Procedure

ECS00A61

1. CHECK PRESSURE CONTROL SOLENOID VALVE C SIGNAL

With CONSULT-II

- After warming up the engine and transaxle, turn ignition switch "OFF".
- Turn ignition switch "ON". (Do not start engine.)
- Select "A/T" with "DATA MONITOR" mode in CONSULT-II.
- Read out the value of "PC SOL C OUT" and "PC SOL C MON".

| Monitor item | Condition | Display value (Approx.) |
|----------------|--|-------------------------|
| ● PC SOL C OUT | Selector lever: Manual shift gate position | 1.00 A |
| ● PC SOL C MON | Other than the above. | 0.20 A |

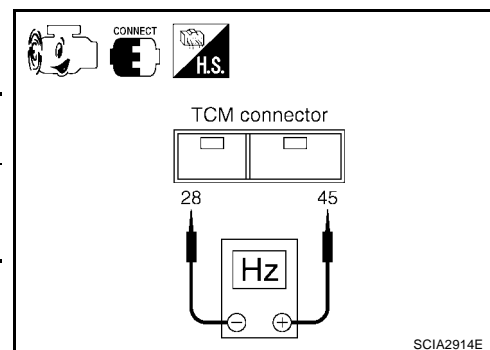
| DATA MONITOR | |
|--------------|--------|
| MONITOR | NO DTC |
| PC SOL A OUT | xxx A |
| PC SOL A MON | xxx A |
| PC SOL B OUT | xxx A |
| PC SOL B MON | xxx A |
| PC SOL C OUT | xxx A |
| PC SOL C MON | xxx A |

SCIA2907E

Without CONSULT-II

- Start the engine.
- Check pulse between TCM connector terminals 28 and 45.

| Connector | Terminal (Wire color) | Condition | Data (Approx.) |
|-----------|-----------------------------|--|----------------|
| F57 | 45 (O) - 28 (W) (Ground) | When engine is running with idle speed and setting selector lever to "P" position. | 300 Hz |



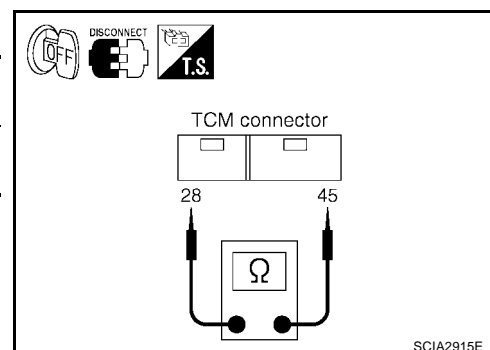
OK or NG

- OK >> GO TO 7.
NG >> GO TO 2.

2. CHECK PRESSURE CONTROL SOLENOID VALVE C CIRCUIT

- Turn ignition switch "OFF".
- Disconnect the TCM connector.
- Check resistance between TCM connector terminals 28 and 45.

| Connector | Terminal (Wire color) | Condition | Resistance (Approx.) |
|-----------|-----------------------------|--------------------------|----------------------|
| F57 | 45 (O) - 28 (W) (Ground) | Temperature: 20°C (68°F) | 5.0 - 5.6 Ω |



OK or NG

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

DTC P0795 PRESSURE CONTROL SOLENOID VALVE C (TCC AND SHIFT PRESSURE)

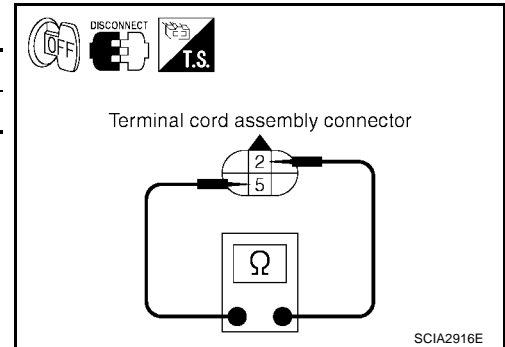
3. CHECK TERMINAL CORD ASSEMBLY WITH PRESSURE CONTROL SOLENOID VALVE C

1. Turn ignition switch "OFF".
2. Disconnect terminal cord assembly harness connector.
3. Check resistance between terminals 2 and 5.

| Connector | Terminal | Condition | Resistance (Approx.) |
|-----------|----------|--------------------------|----------------------|
| F62 | 2 - 5 | Temperature: 20°C (68°F) | 5.0 - 5.6 Ω |

OK or NG

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



4. CHECK HARNESS BETWEEN TCM AND TERMINAL CORD ASSEMBLY

Check the following.

- Open or short-circuit in the harness between TCM and terminal cord assembly.

OK or NG

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

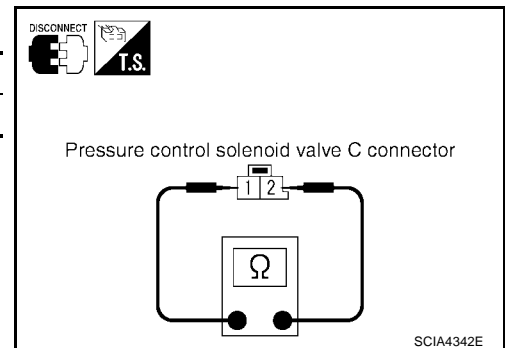
5. CHECK PRESSURE CONTROL SOLENOID VALVE C

1. Remove side cover. Refer to [AT-241, "Side cover"](#).
2. Disconnect pressure control solenoid valve C harness connector.
3. Check resistance between terminals 1 and 2.

| Connector | Terminal | Condition | Resistance (Approx.) |
|-----------|----------|--------------------------|----------------------|
| F107 | 1 - 2 | Temperature: 20°C (68°F) | 5.0 - 5.6 Ω |

OK or NG

- OK >> GO TO 6.
- NG >> Replace the control valve assembly. Refer to [AT-241, "Control Valve Assembly"](#).



6. CHECK HARNESS BETWEEN TERMINAL CORD ASSEMBLY AND PRESSURE CONTROL SOLENOID VALVE C

Check the following.

- Open or short-circuit in the harness between terminal cord assembly and pressure control solenoid valve C.

OK or NG

- OK >> GO TO 7.
- NG >> Repair or replace transmission wire. Refer to [AT-241, "Terminal cord assembly"](#).

7. CHECK DTC

Perform "DTC Confirmation Procedure". Refer to [AT-188, "DTC Confirmation Procedure"](#).

OK or NG

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

DTC P0795 PRESSURE CONTROL SOLENOID VALVE C (TCC AND SHIFT PRESSURE)

8. CHECK TCM

1. Check TCM input/output signal. Refer to [AT-71, "TCM Input/Output Signal Reference Values"](#) .
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

OK >> **INSPECTION END**

NG >> Repair or replace damaged parts.

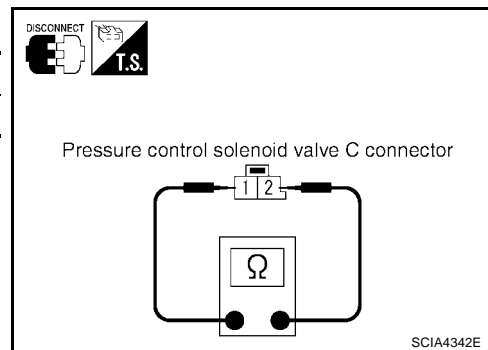
Component Inspection PRESSURE CONTROL SOLENOID VALVE C

ECS00A62

1. Remove side cover. Refer to [AT-241, "Side cover"](#) .
2. Disconnect pressure control solenoid valve C harness connector.
3. Check resistance between terminals 1 and 2.

| Connector | Terminal | Condition | Resistance (Approx.) |
|-----------|----------|--------------------------|----------------------|
| F107 | 1 - 2 | Temperature: 20°C (68°F) | 5.0 - 5.6 Ω |

4. If NG, replace the control valve assembly. Refer to [AT-241, "Control Valve Assembly"](#) .



DTC P0797 PRESSURE CONTROL SOLENOID VALVE C STUCK ON

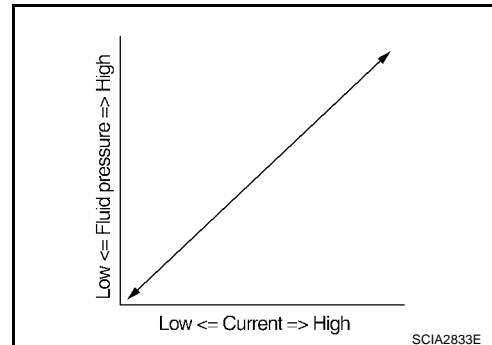
DTC P0797 PRESSURE CONTROL SOLENOID VALVE C STUCK ON

PF31940

Description

ECS00A63

- This malfunction will not be detected while the A/T CHECK indicator lamp is indicating another self-diagnosis malfunction.
- This is not caused by electrical malfunction (circuits open or shorted) but by mechanical malfunction such as control valve sticking, improper solenoid valve operation, etc.
- The pressure control solenoid valve C is normally low, 3-port linear pressure control solenoid.
- The pressure control solenoid valve C is activated to control the apply and release of the 2nd brake and 1st and reverse brake, and torque converter clutch.
- 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.



On Board Diagnosis Logic

ECS00A64

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "PC SOL C STC ON" with CONSULT-II or P0797 without CONSULT-II is detected when condition of pressure control solenoid valve C is different from monitor value, and relation between gear position and actual gear ratio or lock-up status is irregular.

Possible Cause

ECS00A65

- Pressure control solenoid valve C (On stick.)
- Hydraulic control circuit

DTC Confirmation Procedure

ECS00A66

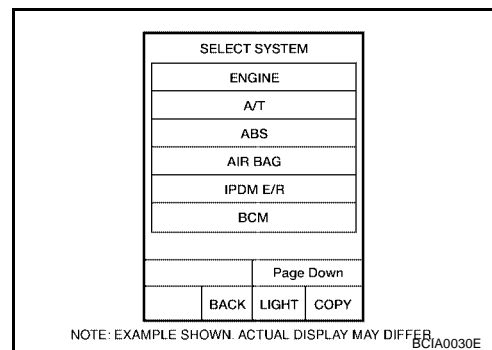
NOTE:

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 "A/T" with "DATA MONITOR" mode in CONSULT-II.
3. Start engine.
4. Run engine for at least 4 consecutive minutes at idle speed.
5. If DTC is detected, go to [AT-195, "Diagnostic Procedure"](#).



WITH GST

Follow the procedure "With CONSULT-II".

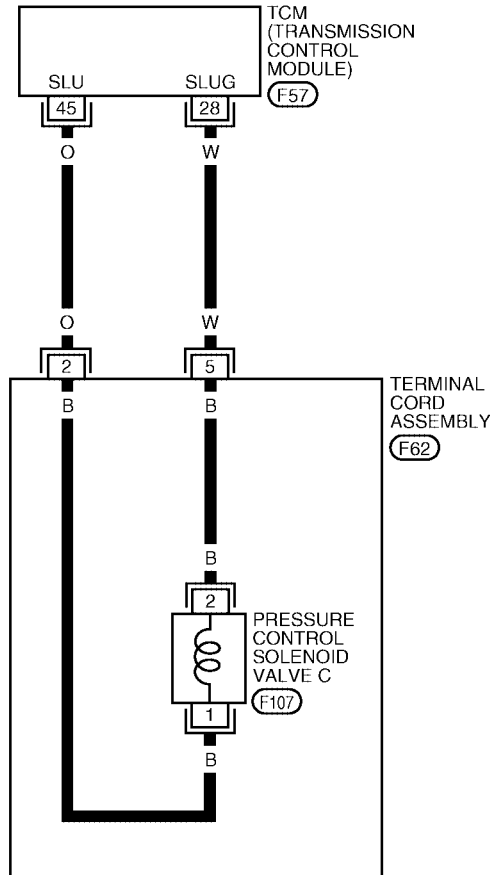
DTC P0797 PRESSURE CONTROL SOLENOID VALVE C STUCK ON

Wiring Diagram — AT — PC/CS

ECS00A67

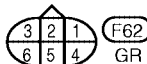
AT-PC/CS-01

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



| | | | | | | | | | | | |
|----|----|----|----|----|----|----|----|----|----|----|----|
| 21 | 22 | 23 | 24 | 25 | 26 | 27 | | | | | |
| 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 |
| 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | | | |

(F57)
GR



(F62)
GR




(F107)*
L

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

BCWA0291E

DTC P0797 PRESSURE CONTROL SOLENOID VALVE C STUCK ON

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

| Terminal | Wire color | Item | Condition | Data (Approx.) | |
|----------|------------|--|---|--|-------|
| 28 | W | Pressure control solenoid valve C ground |  | When engine is running with idle speed and setting selector lever to "P" position. | 0V |
| 45 | O | Pressure control solenoid valve C | | When engine is running with idle speed and setting selector lever to "P" position. | 300Hz |

Diagnostic Procedure

EC500A68

1. CHECK PRESSURE CONTROL SOLENOID VALVE C SIGNAL

With CONSULT-II

- After warming up the engine and transaxle, turn ignition switch "OFF".
- Turn ignition switch "ON". (Do not start engine.)
- Select "A/T" with "DATA MONITOR" mode in CONSULT-II.
- Read out the value of "PC SOL C OUT" and "PC SOL C MON".

| Monitor item | Condition | Display value (Approx.) |
|----------------|--|-------------------------|
| ● PC SOL C OUT | Selector lever: Manual shift gate position | 1.00 A |
| ● PC SOL C MON | Other than the above. | 0.20 A |

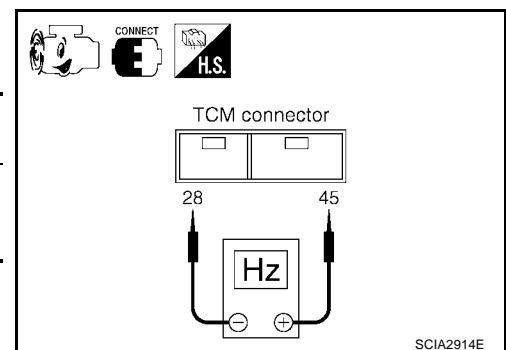
| DATA MONITOR | |
|--------------|--------|
| MONITOR | NO DTC |
| PC SOL A OUT | xxx A |
| PC SOL A MON | xxx A |
| PC SOL B OUT | xxx A |
| PC SOL B MON | xxx A |
| PC SOL C OUT | xxx A |
| PC SOL C MON | xxx A |

SCIA2907E

Without CONSULT-II

- Start the engine.
- Check pulse between TCM connector terminals 28 and 45.

| Connector | Terminal (Wire color) | Condition | Data (Approx.) |
|-----------|-----------------------------|--|----------------|
| F57 | 45 (O) - 28 (W) (Ground) | When engine is running with idle speed and setting selector lever to "P" position. | 300 Hz |



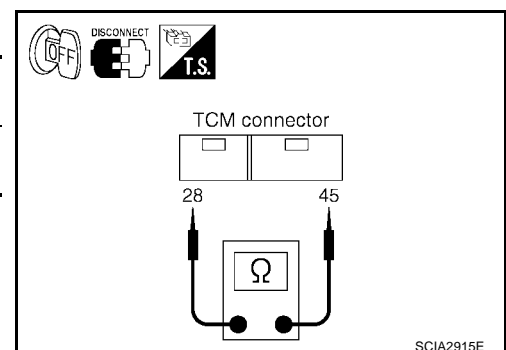
OK or NG

- OK >> GO TO 7.
NG >> GO TO 2.

2. CHECK PRESSURE CONTROL SOLENOID VALVE C CIRCUIT

- Turn ignition switch "OFF".
- Disconnect the TCM connector.
- Check resistance between TCM connector terminals 28 and 45.

| Connector | Terminal (Wire color) | Condition | Resistance (Approx.) |
|-----------|-----------------------------|--------------------------|----------------------|
| F57 | 45 (O) - 28 (W) (Ground) | Temperature: 20°C (68°F) | 5.0 - 5.6 Ω |



OK or NG

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

DTC P0797 PRESSURE CONTROL SOLENOID VALVE C STUCK ON

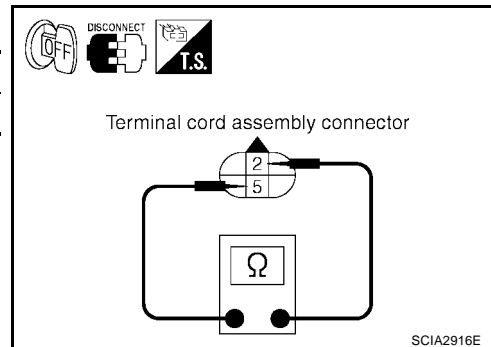
3. CHECK TERMINAL CORD ASSEMBLY WITH PRESSURE CONTROL SOLENOID VALVE C

1. Turn ignition switch "OFF".
2. Disconnect terminal cord assembly harness connector.
3. Check resistance between terminals 2 and 5.

| Connector | Terminal | Condition | Resistance (Approx.) |
|-----------|----------|--------------------------|----------------------|
| F62 | 2 - 5 | Temperature: 20°C (68°F) | 5.0 - 5.6 Ω |

OK or NG

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



4. CHECK HARNESS BETWEEN TCM AND TERMINAL CORD ASSEMBLY

Check the following.

- Open or short-circuit in the harness between TCM and terminal cord assembly.

OK or NG

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

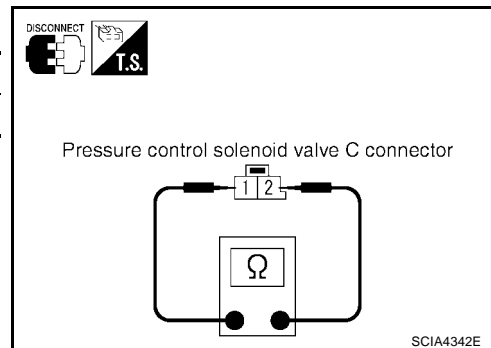
5. CHECK PRESSURE CONTROL SOLENOID VALVE C

1. Remove side cover. Refer to [AT-241, "Side cover"](#) .
2. Disconnect pressure control solenoid valve C harness connector.
3. Check resistance between terminals 1 and 2.

| Connector | Terminal | Condition | Resistance (Approx.) |
|-----------|----------|--------------------------|----------------------|
| F107 | 1 - 2 | Temperature: 20°C (68°F) | 5.0 - 5.6 Ω |

OK or NG

- OK >> GO TO 6.
- NG >> Replace the control valve assembly. Refer to [AT-241, "Control Valve Assembly"](#) .



6. CHECK HARNESS BETWEEN TERMINAL CORD ASSEMBLY AND PRESSURE CONTROL SOLENOID VALVE C

Check the following.

- Open or short-circuit in the harness between terminal cord assembly and pressure control solenoid valve C.

OK or NG

- OK >> GO TO 7.
- NG >> Repair or replace transmission wire. Refer to [AT-241, "Terminal cord assembly"](#) .

7. CHECK TCM

1. Check TCM input/output signal. Refer to [AT-71, "TCM Input/Output Signal Reference Values"](#) .
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

- OK >> GO TO 8.
- NG >> Repair or replace damaged parts.

DTC P0797 PRESSURE CONTROL SOLENOID VALVE C STUCK ON

8. CHECK DTC

Perform "DTC Confirmation Procedure". Refer to [AT-193, "DTC Confirmation Procedure"](#) .

OK or NG

OK >> **INSPECTION END**

NG >> Replace the control valve assembly. Refer to [AT-241, "Control Valve Assembly"](#) .

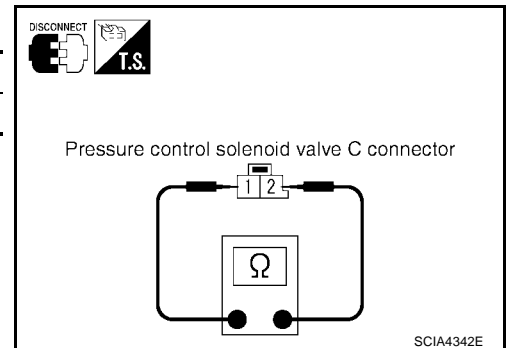
Component Inspection PRESSURE CONTROL SOLENOID VALVE C

ECS00A69

1. Remove side cover. Refer to [AT-241, "Side cover"](#) .
2. Disconnect pressure control solenoid valve C harness connector.
3. Check resistance between terminals 1 and 2.

| Connector | Terminal | Condition | Resistance (Approx.) |
|-----------|----------|--------------------------|----------------------|
| F107 | 1 - 2 | Temperature: 20°C (68°F) | 5.0 - 5.6 Ω |

4. If NG, replace the control valve assembly. Refer to [AT-241, "Control Valve Assembly"](#) .



DTC P0826 MANUAL MODE SWITCH CIRCUIT

DTC P0826 MANUAL MODE SWITCH CIRCUIT

PF:34901

Description

ECS00A6A

Manual mode switch is installed in A/T device. It sends manual mode switch, shift up and shift down switch signals to TCM.

TCM sends the switch signals to unified meter and A/C amp. by CAN communication line. Then manual mode switch position is indicated on the A/T indicator. For inspection, refer to [AT-203, "Position Indicator"](#).

CONSULT-II Reference Value in Data Monitor Mode

ECS00A6B

| 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 (ON/OFF) | Selector lever: + side | ON |
| | Other than the above | OFF |
| DOWN SW (ON/OFF) | Selector lever: - side | ON |
| | Other than the above | OFF |

On Board Diagnosis Logic

ECS00A6C

- This is not an OBD-II self-diagnostic item.
- Diagnostic trouble code "MANUAL MODE SWITCH" with CONSULT-II is detected when TCM monitors manual mode, non manual mode, up or down switch signals, and judges as irregular when impossible input pattern occurs.

Possible Cause

ECS00A6D

- Harness or connectors
(These switches circuit is open or shorted.)
- Manual mode switch (built into A/T device)

DTC Confirmation Procedure

ECS00A6E

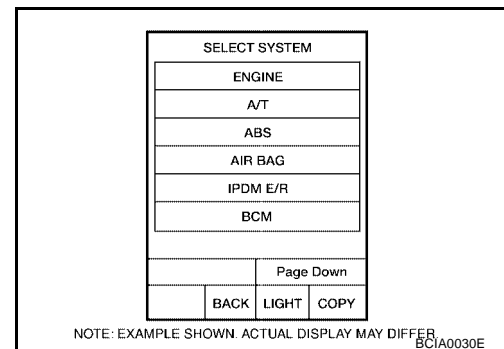
NOTE:

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 "A/T" with "DATA MONITOR" mode in CONSULT-II.
3. Move selector lever to "M" position (manual shift gate position).
4. Shift selector lever into "+ side" and "- side".
5. Wait for at least 30 consecutive seconds.
6. If DTC is detected, go to [AT-201, "Diagnostic Procedure"](#).



DTC P0826 MANUAL MODE SWITCH CIRCUIT

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

| Terminal | Wire color | Item | Condition | Data (Approx.) |
|----------|------------|-----------------------------|--|-----------------|
| 5 | R/G | Manual mode switch UP (+) | Selector lever: + side | 0V |
| | | | Other than the above | Battery voltage |
| 6 | L/R | Manual mode switch DOWN (-) | Selector lever: - side | 0V |
| | | | Other than the above | Battery voltage |
| 16 | SB | Manual mode switch AUTO | Selector lever: "P", "R", "N" or "D" position | 0V |
| | | | Selector lever: Manual shift gate position | Battery voltage |
| 19 | V/R | Manual mode switch MANUAL | Selector lever: Manual shift gate position (neutral) | 0V |
| | | | Other than the above | Battery voltage |



DTC P0826 MANUAL MODE SWITCH CIRCUIT

ECS00A6G

Diagnostic Procedure

1. CHECK MANUAL MODE SWITCH CIRCUIT

With CONSULT-II

1. Turn ignition switch "ON". (Do not start engine.)
2. Select "A/T" with "DATA MONITOR" mode in CONSULT-II.
3. Read out ON/OFF switching action of the "MANU MODE SW", "NON M-MODE SW", "UP SW", "DOWN SW".

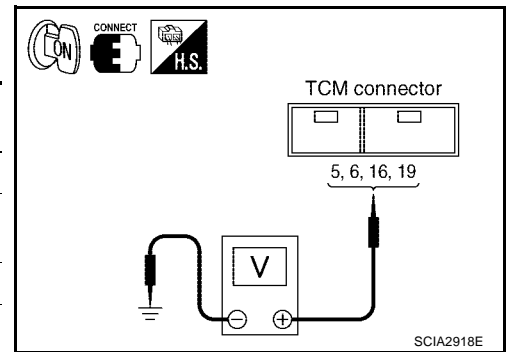
| DATA MONITOR | |
|---------------|--------|
| MONITOR | NO DTC |
| MANU MODE SW | ON |
| NON M-MODE SW | OFF |
| UP SW | OFF |
| DOWN SW | OFF |

SCIA2917E

Without CONSULT-II

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

| Connector No. | Terminal (Wire color) | Condition | Voltage (Approx.) |
|-------------------|--|---|-------------------|
| F56 | 5 (R/G) - Ground | Selector lever: + side | 0V |
| | | Other than the above | Battery voltage |
| | 6 (L/R) - Ground | Selector lever: - side | 0V |
| | | Other than the above | Battery voltage |
| | 16 (SB) - Ground | Selector lever: "P", "R", "N" or "D" position | 0V |
| | | Selector lever: Manual shift gate position | Battery voltage |
| 19 (V/R) - Ground | Selector lever: Manual shift gate position (neutral) | 0V | |
| | Other than the above | Battery voltage | |



OK or NG

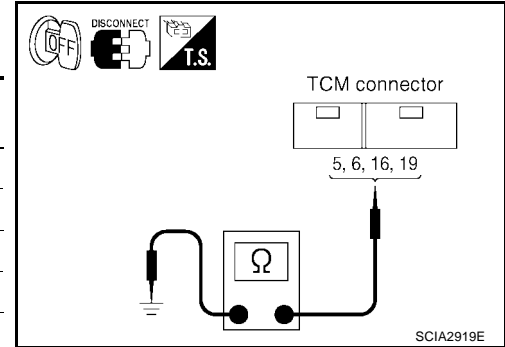
- OK >> GO TO 4.
 NG >> GO TO 2.

DTC P0826 MANUAL MODE SWITCH CIRCUIT

2. CHECK HARNESS BETWEEN TCM AND A/T DEVICE (MANUAL MODE SWITCH)

1. Turn ignition switch "OFF".
2. Disconnect the TCM connector.
3. Check the continuity between TCM connector terminals 5, 6, 16, 19 and ground.

| Connector No. | Terminal (Wire color) | Condition | Continuity |
|---------------|-----------------------|--|------------|
| F56 | 5 (R/G) - Ground | Selector lever: + side | Yes |
| | | Other than the above | No |
| | 6 (L/R) - Ground | Selector lever: - side | Yes |
| | | Other than the above | No |
| | 16 (SB) - Ground | Selector lever: "P", "R", "N" or "D" position | Yes |
| | | Selector lever: Manual shift gate position | No |
| | 19 (V/R) - Ground | Selector lever: Manual shift gate position (neutral) | Yes |
| | | Other than the above | No |



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

OK or NG

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

3. DETECT MALFUNCTIONING ITEM

Check the following.

- Open or short-circuit in the harness between TCM and A/T device (manual mode switch).
- Open or short-circuit in the harness for ground of manual mode switch.
- Manual mode switch. Refer to [AT-203, "Component Inspection"](#).

OK or NG

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

4. CHECK DTC

Perform "DTC Confirmation Procedure". Refer to [AT-198, "DTC Confirmation Procedure"](#).

OK or NG

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

5. CHECK TCM

1. Check TCM input/output signal. Refer to [AT-71, "TCM Input/Output Signal Reference Values"](#).
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

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

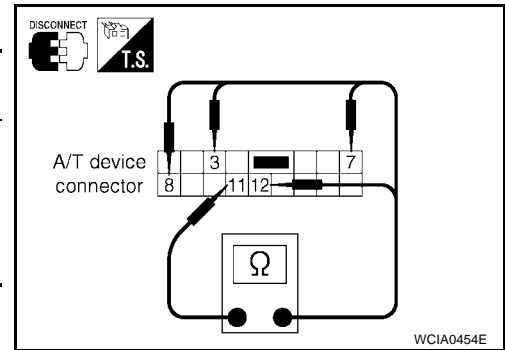
DTC P0826 MANUAL MODE SWITCH CIRCUIT

Component Inspection MANUAL MODE SWITCH

ECS00A6H

Check continuity between terminals.

| Item | Position | Connector | Terminal (Unit side) | Continuity |
|--------------------------------|----------|-----------|-------------------------|------------|
| Manual mode (select) switch | Auto | M34 | 11 - 12 | Yes |
| | Manual | | 3 - 11 | |
| UP switch | UP | | 8 - 11 | |
| DOWN switch | DOWN | | 7 - 11 | |



Position Indicator DIAGNOSTIC PROCEDURE

ECS00A6I

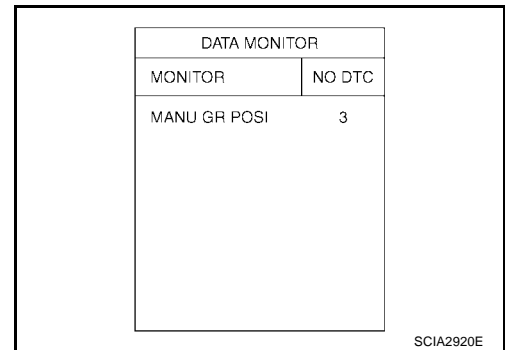
1. CHECK INPUT SIGNALS (WITH CONSULT-II)

With CONSULT-II

- Start engine.
- Select "A/T" with "DATA MONITOR" mode in CONSULT-II and read out the value of "MANU GR POSI".
- Drive vehicle in the manual mode, and make sure 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 >> **INSPECTION END**
 NG >> GO TO 2.



2. CHECK DTC WITH TCM

Perform self-diagnosis of TCM. Refer to [AT-75, "SELF-DIAG RESULT MODE"](#) .

OK or NG

- OK >> Check combination meter. Refer to [DI-50, "A/T INDICATOR"](#) .
 NG >> Check the malfunctioning system.

DTC P0882 TCM POWER INPUT SIGNAL

DTC P0882 TCM POWER INPUT SIGNAL

PF3:31036

Description

ECS00A6J

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

ECS00A6K

- This is an OBD-II self-diagnostic item.
- Diagnostic trouble code "TCM POWER INPT SIG" with CONSULT-II or P0882 without CONSULT-II is detected when voltage supplied to TCM is too low.

Possible Cause

ECS00A6L

- Harness or connectors
(Battery or ignition switch and TCM circuit is open or shorted.)
- A/T PV IGN relay

DTC Confirmation Procedure

ECS00A6M

CAUTION:

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

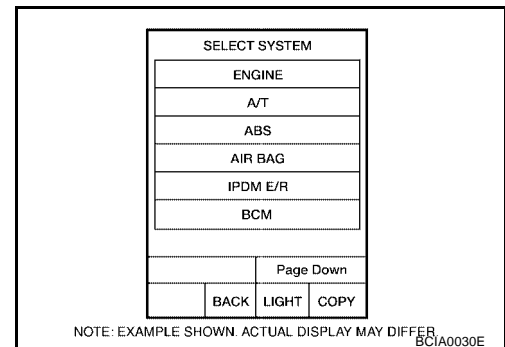
NOTE:

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 "A/T" with "DATA MONITOR" mode in CONSULT-II.
3. Start engine.
4. Depress accelerator pedal or drive vehicle and maintain the following condition for at least 20 consecutive seconds.
TURBINE REV: More than 800 rpm
5. If DTC is detected, go to [AT-207, "Diagnostic Procedure"](#).



DTC P0882 TCM POWER INPUT SIGNAL

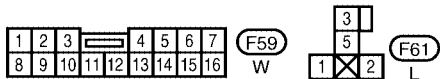
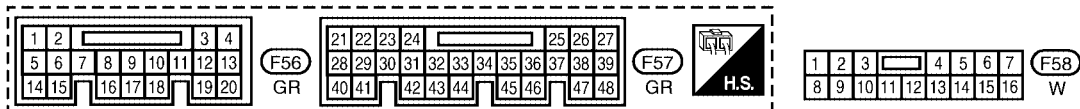
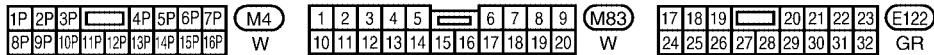
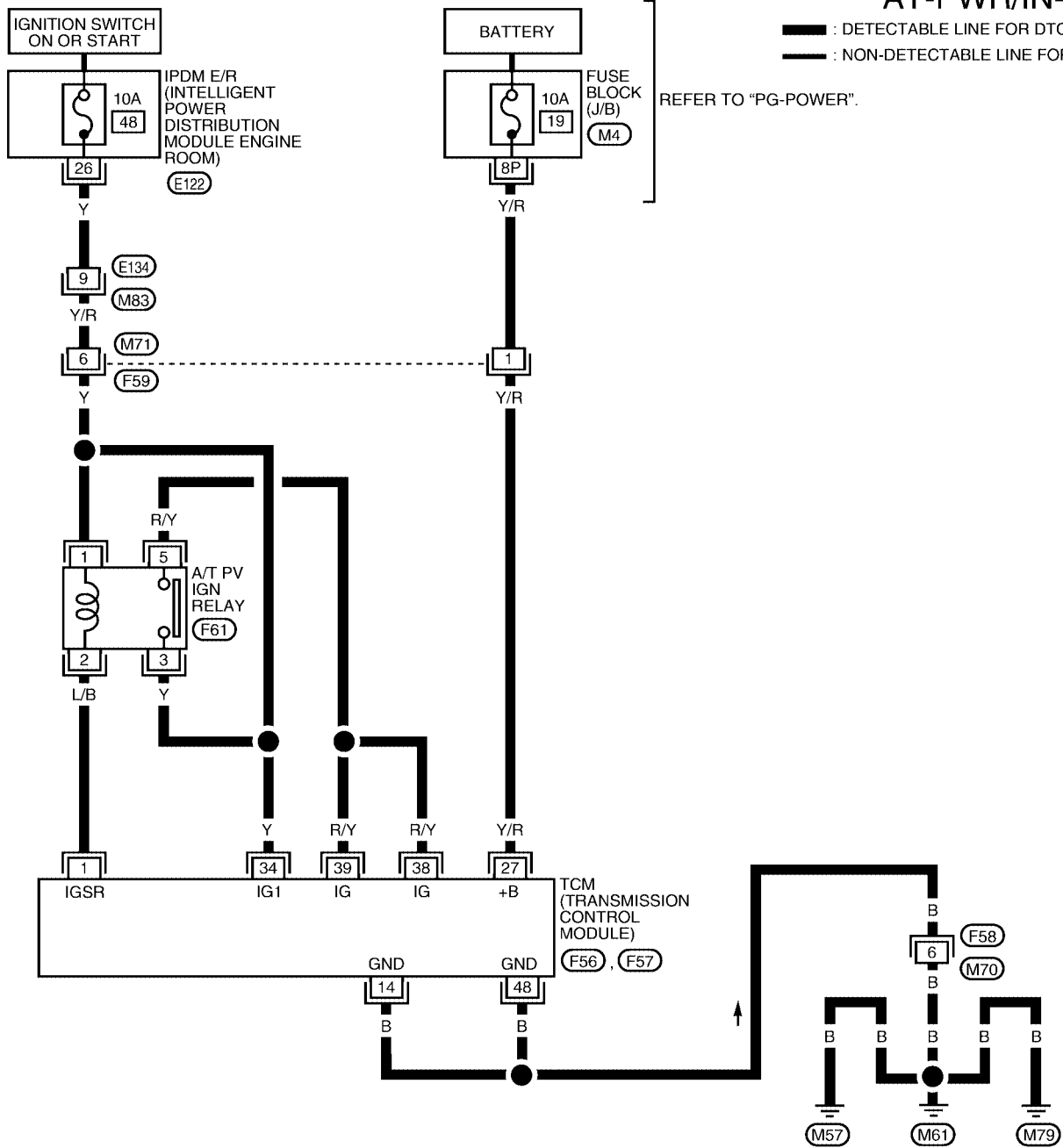
ECS00A6N

Wiring Diagram — AT — PWR/IN

AT-PWR/IN-01

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











REFER TO "PG-POWER".



BCWA0466E

DTC P0882 TCM POWER INPUT SIGNAL

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

| Terminal | Wire color | Item | Condition | | Data (Approx.) |
|----------|------------|------------------------------------|---|--|-----------------|
| 1 | L/B | A/T PV IGN relay |  | When turning ignition switch ON. | 0 - 1.5V |
| | | |  | When turning ignition switch OFF. | 0V |
| 14 | B | Ground | Always | | 0V |
| 27 | Y/R | Power supply (Memory back-up) |  | When turning ignition switch ON. | Battery voltage |
| | | |  | When turning ignition switch OFF. | Battery voltage |
| 34 | Y | Power supply |  | When turning ignition switch ON. | Battery voltage |
| | | |  | When turning ignition switch OFF. | 0V |
| 38 | R/Y | Power supply (A/T PV IGN relay) |  | When turning ignition switch ON. | Battery voltage |
| | | |  | Measure 3 seconds after switching "OFF" the ignition switch. | 0V |
| 39 | R/Y | Power supply (A/T PV IGN relay) |  | When turning ignition switch ON. | Battery voltage |
| | | |  | Measure 3 seconds after switching "OFF" the ignition switch. | 0V |
| 48 | B | Ground | Always | | 0V |

DTC P0882 TCM POWER INPUT SIGNAL

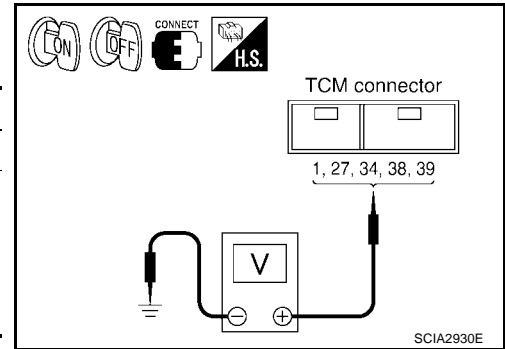
ECS00A60

Diagnostic Procedure

1. CHECK TCM POWER SOURCE CIRCUIT

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

| Connector | Terminal (Wire color) | Voltage (Approx.) |
|-----------|-----------------------|-------------------|
| F56 | 1 (L/B) - Ground | 0 - 1.5V |
| F57 | 27 (Y/R) - Ground | Battery voltage |
| | 34 (Y) - Ground | |
| | 38 (R/Y) - Ground | |
| | 39 (R/Y) - Ground | |



3. Turn ignition switch "OFF".
4. Check voltage between TCM terminals and ground.

| Connector | Terminal (Wire color) | Voltage (Approx.) |
|-----------|-----------------------|-------------------|
| F56 | 1 (L/B) - Ground | 0V |
| F57 | 27 (Y/R) - Ground | Battery voltage |
| | 34 (Y) - Ground | 0V |
| | 38 (R/Y) - Ground | 0V |
| | 39 (R/Y) - Ground | 0V |

OK or NG

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

2. DETECT MALFUNCTIONING ITEM

Check the following:

- Harness for short or open between battery and TCM terminal 27
- Harness for short or open between ignition switch and TCM terminals 1, 34, 38 and 39
- 10A fuse [No. 19, located in the fuse block (J/B) or No. 48, located in the IPDM E/R]
- Ignition switch. Refer to [PG-4, "POWER SUPPLY ROUTING CIRCUIT"](#)
- A/T PV IGN relay. Refer to [AT-208, "Component Inspection"](#)

OK or NG

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

3. CHECK TCM GROUND CIRCUIT

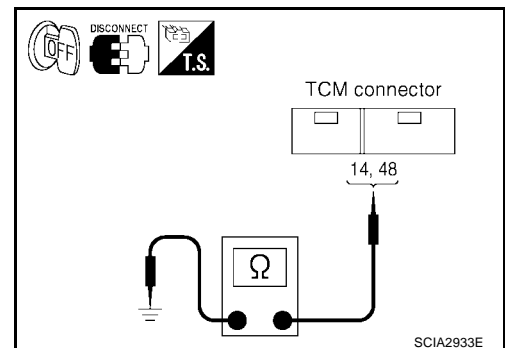
1. Turn ignition switch "OFF".
2. Disconnect TCM harness connector.
3. Check continuity between TCM terminals 14 (B), 48 (B) and ground.

Continuity should exist.

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

OK or NG

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



DTC P0882 TCM POWER INPUT SIGNAL

4. CHECK DTC

Check again. Refer to [AT-204, "DTC Confirmation Procedure"](#) .

OK or NG

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

5. CHECK TCM

1. Check TCM input/output signal. Refer to [AT-71, "TCM Input/Output Signal Reference Values"](#) .
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

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

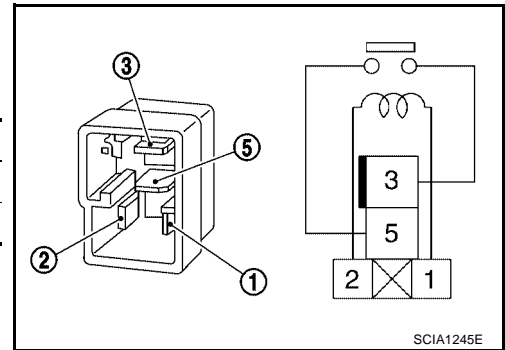
Component Inspection A/T PV IGN RELAY

ECS00A6P

1. Apply 12V direct current between A/T PV IGN relay terminals 1 and 2.
2. Check continuity between relay terminals 3 and 5.

| Condition | Continuity |
|---|------------|
| 12V direct current supply between terminals 1 and 2 | Yes |
| OFF | No |

3. If NG, replace A/T PV IGN relay.



DTC P1726 ELECTRIC THROTTLE CONTROL SYSTEM

DTC P1726 ELECTRIC THROTTLE CONTROL SYSTEM

PF:23710

Description

ECS00A6Q

This DTC is displayed with other DTCs regarding ECM. Perform the trouble diagnosis for other DTCs displayed. Refer to [AT-44, "TROUBLE DIAGNOSIS"](#).

When this DTC is detected, lock-up operation and learning control are canceled.

A

B

AT

D

E

F

G

H

I

J

K

L

M

TROUBLE DIAGNOSIS FOR SYMPTOMS

PF0:0007

ECS00A6R

TROUBLE DIAGNOSIS FOR SYMPTOMS

A/T CHECK Indicator Lamp does not come on SYMPTOM:

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

YES or NO

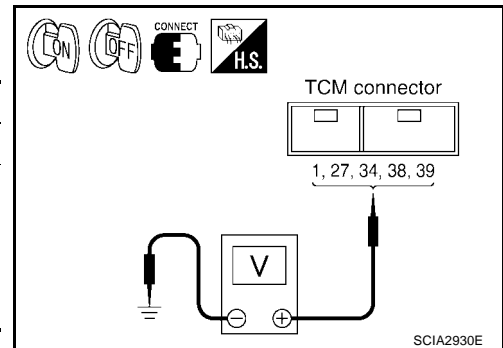
YES >> Check the CAN communication line. Refer to [AT-83, "DTC U1000 CAN COMMUNICATION LINE"](#)

NO >> GO TO 2.

2. CHECK TCM POWER SOURCE CIRCUIT

1. Turn ignition switch "ON". (Do not start engine.)
2. Check voltage between TCM connector terminals and ground.
Refer to [AT-205, "Wiring Diagram — AT — PWR/IN"](#) .

| Connector | Terminal (Wire color) | Voltage (Approx.) |
|-----------|-----------------------|-------------------|
| F56 | 1 (L/B) - Ground | 0 - 1.5V |
| F57 | 27 (Y/R) - Ground | Battery voltage |
| | 34 (Y) - Ground | |
| | 38 (R/Y) - Ground | |
| | 39 (R/Y) - Ground | |



3. Turn ignition switch "OFF".
4. Check voltage between TCM connector terminals and ground. Refer to [AT-205, "Wiring Diagram — AT — PWR/IN"](#) .

| Connector | Terminal (Wire color) | Voltage (Approx.) |
|-----------|-----------------------|-------------------|
| F56 | 1 (L/B) - Ground | 0V |
| F57 | 27 (Y/R) - Ground | Battery voltage |
| | 34 (Y) - Ground | 0V |
| | 38 (R/Y) - Ground | 0V |
| | 39 (R/Y) - Ground | 0V |

OK or NG

OK >> GO TO 4.

NG >> GO TO 3.

3. DETECT MALFUNCTIONING ITEM

Check the following:

- Harness for short or open between battery and TCM terminal 27
- Harness for short or open between ignition switch and TCM terminals 1, 34, 38 and 39
- 10A fuse [No. 19, located in the fuse block (J/B) or No. 48, located in the IPDM E/R]
- Ignition switch. Refer to [PG-4, "POWER SUPPLY ROUTING CIRCUIT"](#) .
- A/T PV IGN relay. Refer to [AT-208, "Component Inspection"](#) .

OK or NG

OK >> GO TO 4.

NG >> Repair or replace damaged parts.

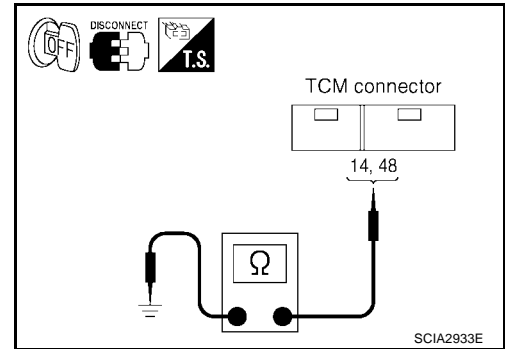
TROUBLE DIAGNOSIS FOR SYMPTOMS

4. CHECK TCM GROUND CIRCUIT

1. Turn ignition switch "OFF".
2. Disconnect the TCM harness connector.
3. Check continuity between TCM terminals 14 (B), 48 (B) and ground. Refer to [AT-205, "Wiring Diagram — AT — PWR/IN"](#).
4. If OK, check harness for short-circuit to ground or the power source.

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 A/T CHECK INDICATOR LAMP CIRCUIT

1. Turn ignition switch "OFF".
2. Check the combination meter. Refer to [DI-5, "COMBINATION METERS"](#).

OK or NG

- OK >> GO TO 6.
NG >> Replace the combination meter. Refer to [DI-29, "Removal and Installation of Combination Meter"](#).

6. SYMPTOM CHECK

Check again.

OK or NG

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

7. CHECK TCM

1. Check TCM input/output signal. Refer to [AT-71, "TCM Input/Output Signal Reference Values"](#).
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

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

TROUBLE DIAGNOSIS FOR SYMPTOMS

Engine Cannot Be Started In “P” or “N” Position

ECS00A6S

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 STARTING SYSTEM

Check starting system. Refer to [SC-10, "STARTING SYSTEM"](#) .

OK or NG

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

2. CHECK CONTROL CABLE

Check the control cable.

- Refer to [AT-240, "Control Cable Adjustment"](#) .

OK or NG

- OK >> GO TO 3.
- NG >> Adjust control cable. Refer to [AT-240, "Control Cable Adjustment"](#) .

3. CHECK PNP SWITCH CIRCUIT

Perform self-diagnosis.

Do the self-diagnostic results indicate PNP switch?

- YES >> Check the malfunctioning system. Refer to [AT-90, "DTC P0705 PARK/NEUTRAL POSITION SWITCH"](#) .
- NO >> **INSPECTION END**

In “P” Position, Vehicle Moves When Pushed

ECS00A6T

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.

Do the self-diagnostic results indicate PNP switch?

- YES >> Check the malfunctioning system. Refer to [AT-90, "DTC P0705 PARK/NEUTRAL POSITION SWITCH"](#) .
- NO >> GO TO 2.

2. CHECK CONTROL CABLE

Check the control cable.

- Refer to [AT-240, "Control Cable Adjustment"](#) .

OK or NG

- OK >> GO TO 3.
- NG >> Adjust control cable. Refer to [AT-240, "Control Cable Adjustment"](#) .

3. SYMPTOM CHECK

Check again.

OK or NG

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

TROUBLE DIAGNOSIS FOR SYMPTOMS

ECS00A6U

In "N" Position, Vehicle Moves

SYMPTOM:

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

DIAGNOSTIC PROCEDURE

1. CHECK A/T FLUID LEVEL

Check the A/T fluid level. Refer to [AT-54, "A/T FLUID CHECK"](#) .

OK or NG

- OK >> GO TO 2.
- NG >> Refill ATF.

2. CHECK PNP SWITCH CIRCUIT

Perform self-diagnosis.

Do the self-diagnostic results indicate PNP switch?

- YES >> Check the malfunctioning system. Refer to [AT-90, "DTC P0705 PARK/NEUTRAL POSITION SWITCH"](#) .
- NO >> GO TO 3.

3. CHECK CONTROL CABLE

Check the control cable.

- Refer to [AT-240, "Control Cable Adjustment"](#) .

OK or NG

- OK >> GO TO 3.
- NG >> Adjust control cable. Refer to [AT-240, "Control Cable Adjustment"](#) .

4. CHECK SYMPTOM

Check again.

OK or NG

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

5. CHECK TCM

1. Check TCM input/output signal. Refer to [AT-71, "TCM Input/Output Signal Reference Values"](#) .
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

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

TROUBLE DIAGNOSIS FOR SYMPTOMS

ECS00A6V

Large Shock (“N” to “D” Position)

SYMPTOM:

A noticeable shock occurs when the selector lever is shifted from the “N” to “D” position.

DIAGNOSTIC PROCEDURE

1. CHECK A/T FLUID LEVEL

Check the A/T fluid level. Refer to [AT-54, "A/T FLUID CHECK"](#) .

OK or NG

- OK >> GO TO 2.
- NG >> Refill ATF.

2. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis.

Is any malfunction detected by self-diagnostic?

- YES >> Check the malfunctioning system.
- NO >> GO TO 3.

3. DETECT MALFUNCTIONING ITEM

1. Control valve assembly. Refer to [AT-241, "Control Valve Assembly"](#) .
2. Disassemble A/T. Refer to [AT-252, "DISASSEMBLY"](#) .
3. Check the following items:
 - Accumulator. Refer to [AT-252, "DISASSEMBLY"](#) .
 - Forward and direct clutch assembly. Refer to [AT-252, "DISASSEMBLY"](#) .

OK or NG

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

4. CHECK TCM

1. Check TCM input/output signal. Refer to [AT-71, "TCM Input/Output Signal Reference Values"](#) .
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

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

5. CHECK SYMPTOM

Check again.

OK or NG

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

TROUBLE DIAGNOSIS FOR SYMPTOMS

ECS00A6W

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 A/T FLUID LEVEL

Check the A/T fluid level. Refer to [AT-54, "A/T FLUID CHECK"](#) .

OK or NG

- OK >> GO TO 2.
- NG >> Refill ATF.

2. CHECK CONTROL CABLE AND PNP SWITCH POSITION

Check the control cable and PNP switch position.

- Refer to [AT-240, "Control Cable Adjustment"](#) .

OK or NG

- OK >> GO TO 3.
- NG >> Adjust control cable and PNP switch position. Refer to [AT-240, "Control Cable Adjustment"](#) or [AT-238, "Park/Neutral Position \(PNP\) Switch Adjustment"](#) .

3. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis.

Is any malfunction detected by self-diagnostic?

- YES >> Check the malfunctioning system.
- NO >> GO TO 4.

4. DETECT MALFUNCTIONING ITEM

1. Control valve assembly. Refer to [AT-241, "Control Valve Assembly"](#) .
2. Disassemble A/T. Refer to [AT-252, "DISASSEMBLY"](#) .
3. Check the following items:
 - Forward and direct clutch assembly. Refer to [AT-252, "DISASSEMBLY"](#) .
 - 1st and reverse brake. Refer to [AT-252, "DISASSEMBLY"](#) .
 - B5 brake. Refer to [AT-280, "Transaxle Case Cover & B5 Brake"](#) .
 - Torque convertor. Refer to [AT-252, "DISASSEMBLY"](#) .

OK or NG

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

5. CHECK TCM

1. Check TCM input/output signal. Refer to [AT-71, "TCM Input/Output Signal Reference Values"](#) .
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

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

6. CHECK SYMPTOM

Check again.

OK or NG

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

TROUBLE DIAGNOSIS FOR SYMPTOMS

ECS00A6X

Vehicle Does Not Creep Forward In “D” Position

SYMPTOM:

Vehicle does not creep forward when selecting “D” position.

DIAGNOSTIC PROCEDURE

1. CHECK A/T FLUID LEVEL

Check the A/T fluid level. Refer to [AT-54, "A/T FLUID CHECK"](#) .

OK or NG

- OK >> GO TO 2.
- NG >> Refill ATF.

2. CHECK CONTROL CABLE AND PNP SWITCH POSITION

Check the control cable and PNP switch position.

- Refer to [AT-240, "Control Cable Adjustment"](#) .

OK or NG

- OK >> GO TO 3.
- NG >> Adjust control cable and PNP switch position. Refer to [AT-240, "Control Cable Adjustment"](#) or [AT-238, "Park/Neutral Position \(PNP\) Switch Adjustment"](#) .

3. CHECK PRESSURE CONTROL SOLENOID VALVE A CIRCUIT

Perform self-diagnosis.

Do the self-diagnostic results indicate pressure control solenoid valve A?

- YES >> Check the malfunctioning system. Refer to [AT-144, "DTC P0745 PRESSURE CONTROL SOLENOID VALVE A \(LINE PRESSURE\)"](#) .
- NO >> GO TO 4.

4. DETECT MALFUNCTIONING ITEM

1. Control valve assembly. Refer to [AT-241, "Control Valve Assembly"](#) .
2. Disassemble A/T. Refer to [AT-252, "DISASSEMBLY"](#) .
3. Check the following items:
 - Forward and direct clutch assembly. Refer to [AT-252, "DISASSEMBLY"](#) .
 - One-way clutch No.2. Refer to [AT-252, "DISASSEMBLY"](#) .
 - B5 brake. Refer to [AT-280, "Transaxle Case Cover & B5 Brake"](#) .
 - Torque convertor. Refer to [AT-252, "DISASSEMBLY"](#) .

OK or NG

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

5. CHECK TCM

1. Check TCM input/output signal. Refer to [AT-71, "TCM Input/Output Signal Reference Values"](#) .
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

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

6. CHECK SYMPTOM

Check again.

OK or NG

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

TROUBLE DIAGNOSIS FOR SYMPTOMS

Vehicle Cannot Be Started From D1

ECS00A6Y

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-215, "Vehicle Does Not Creep Backward In "R" Position"](#) .

2. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis.

Is any malfunction detected by self-diagnostic?

YES >> Check the malfunctioning system.

NO >> GO TO 3.

3. CHECK LINE PRESSURE

Check the line pressure at the engine stall point. Refer to [AT-56, "LINE PRESSURE TEST"](#) .

OK or NG

OK >> GO TO 4.

NG >> Check the malfunctioning item. Refer to [AT-57, "Judgement of line pressure test"](#) .

4. DETECT MALFUNCTIONING ITEM

1. Control valve assembly. Refer to [AT-241, "Control Valve Assembly"](#) .

2. Disassemble A/T. Refer to [AT-252, "DISASSEMBLY"](#) .

3. Check the following items:

- Forward and direct clutch assembly. Refer to [AT-252, "DISASSEMBLY"](#) .

- One-way clutch No.2. Refer to [AT-252, "DISASSEMBLY"](#) .

- B5 brake. Refer to [AT-280, "Transaxle Case Cover & B5 Brake"](#) .

OK or NG

OK >> GO TO 5.

NG >> Repair or replace damaged parts.

5. CHECK TCM

1. Check TCM input/output signal. Refer to [AT-71, "TCM Input/Output Signal Reference Values"](#) .

2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

OK >> GO TO 6.

NG >> Repair or replace damaged parts.

6. CHECK SYMPTOM

Check again.

OK or NG

OK >> **INSPECTION END**

NG >> Repair or replace damaged parts.

A/T Does Not Shift: D1 → D2

ECS00A6Z

SYMPTOM:

The vehicle does not shift-up from the D1 to D2 gear at the specified speed.

TROUBLE DIAGNOSIS FOR SYMPTOMS

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-216, "Vehicle Does Not Creep Forward In "D" Position"](#) , [AT-217, "Vehicle Cannot Be Started From D1"](#) .

2. CHECK A/T FLUID LEVEL

Check the A/T fluid level. Refer to [AT-54, "A/T FLUID CHECK"](#) .

OK or NG

OK >> GO TO 3.

NG >> Refill ATF.

3. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis.

Is any malfunction detected by self-diagnostic?

YES >> Check the malfunctioning system.

NO >> GO TO 4.

4. DETECT MALFUNCTIONING ITEM

1. Control valve assembly. Refer to [AT-241, "Control Valve Assembly"](#) .

2. Disassemble A/T. Refer to [AT-252, "DISASSEMBLY"](#) .

3. Check the following items:

- One-way clutch No.1. Refer to [AT-278, "One-Way Clutch Outer Race Sub Assembly & 2nd Coast Brake Hub & One-Way Clutch No.1"](#) .

- One-way clutch No.2. Refer to [AT-252, "DISASSEMBLY"](#) .

- 2nd coast brake. Refer to [AT-272, "Oil Pump, 2nd Coast Brake & 2nd Brake"](#) , [AT-278, "One-Way Clutch Outer Race Sub Assembly & 2nd Coast Brake Hub & One-Way Clutch No.1"](#) .

- 2nd brake. Refer to [AT-272, "Oil Pump, 2nd Coast Brake & 2nd Brake"](#) .

OK or NG

OK >> GO TO 5.

NG >> Repair or replace damaged parts.

5. CHECK TCM

1. Check TCM input/output signal. Refer to [AT-71, "TCM Input/Output Signal Reference Values"](#) .

2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

OK >> GO TO 6.

NG >> Repair or replace damaged parts.

6. CHECK SYMPTOM

Check again.

OK or NG

OK >> **INSPECTION END**

NG >> Repair or replace damaged parts.

A/T Does Not Shift: D2 → D3

SYMPTOM:

The vehicle does not shift-up from D2 to D3 gear at the specified speed.

ECS00A70

TROUBLE DIAGNOSIS FOR SYMPTOMS

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-216, "Vehicle Does Not Creep Forward In "D" Position"](#) ,[AT-217, "Vehicle Cannot Be Started From D1"](#) .

2. CHECK A/T FLUID LEVEL

Check the A/T fluid level. Refer to [AT-54, "A/T FLUID CHECK"](#) .

OK or NG

OK >> GO TO 3.

NG >> Refill ATF.

3. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis.

Is any malfunction detected by self-diagnostic?

YES >> Check the malfunctioning system.

NO >> GO TO 4.

4. DETECT MALFUNCTIONING ITEM

1. Control valve assembly. Refer to [AT-241, "Control Valve Assembly"](#) .

2. Disassemble A/T. Refer to [AT-252, "DISASSEMBLY"](#) .

3. Check the following items:

- U/D brake. Refer to [AT-252, "DISASSEMBLY"](#) .

- B5 brake. Refer to [AT-280, "Transaxle Case Cover & B5 Brake"](#) .

OK or NG

OK >> GO TO 5.

NG >> Repair or replace damaged parts.

5. CHECK TCM

1. Check TCM input/output signal. Refer to [AT-71, "TCM Input/Output Signal Reference Values"](#) .

2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

OK >> GO TO 6.

NG >> Repair or replace damaged parts.

6. CHECK SYMPTOM

Check again.

OK or NG

OK >> **INSPECTION END**

NG >> Repair or replace damaged parts.

A/T Does Not Shift: D3 → D4

SYMPTOM:

- The vehicle does not shift-up from the D3 to D4 gear at the specified speed.

ECS00A71

TROUBLE DIAGNOSIS FOR SYMPTOMS

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-216, "Vehicle Does Not Creep Forward In "D" Position"](#) , [AT-217, "Vehicle Cannot Be Started From D1"](#) .

2. CHECK A/T FLUID LEVEL

Check the A/T fluid level. Refer to [AT-54, "A/T FLUID CHECK"](#) .

OK or NG

OK >> GO TO 3.

NG >> Refill ATF.

3. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis.

Is any malfunction detected by self-diagnostic?

YES >> Check the malfunctioning system.

NO >> GO TO 4.

4. DETECT MALFUNCTIONING ITEM

1. Control valve assembly. Refer to [AT-241, "Control Valve Assembly"](#) .

2. Disassemble A/T. Refer to [AT-252, "DISASSEMBLY"](#) .

3. Check the following items:

- U/D brake. Refer to [AT-252, "DISASSEMBLY"](#) .

- U/D clutch. Refer to [AT-252, "DISASSEMBLY"](#) .

OK or NG

OK >> GO TO 6.

NG >> Repair or replace damaged parts.

5. CHECK TCM

1. Check TCM input/output signal. Refer to [AT-71, "TCM Input/Output Signal Reference Values"](#) .

2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

OK >> GO TO 5.

NG >> Repair or replace damaged parts.

6. CHECK SYMPTOM

Check again.

OK or NG

OK >> **INSPECTION END**

NG >> Repair or replace damaged parts.

A/T Does Not Shift: D4 → D5

SYMPTOM:

- The vehicle does not shift-up from the D4 to D5 gear at the specified speed.

ECS00A7Z

TROUBLE DIAGNOSIS FOR SYMPTOMS

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-216, "Vehicle Does Not Creep Forward In "D" Position"](#) ,[AT-217, "Vehicle Cannot Be Started From D1"](#) .

2. CHECK A/T FLUID LEVEL

Check the A/T fluid level. Refer to [AT-54, "A/T FLUID CHECK"](#) .

OK or NG

OK >> GO TO 3.

NG >> Refill ATF.

3. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis.

Is any malfunction detected by self-diagnostic?

YES >> Check the malfunctioning system.

NO >> GO TO 4.

4. DETECT MALFUNCTIONING ITEM

1. Control valve assembly. Refer to [AT-241, "Control Valve Assembly"](#) .

2. Disassemble A/T. Refer to [AT-252, "DISASSEMBLY"](#) .

3. Check the following items:

- Forward and direct clutch assembly. Refer to [AT-252, "DISASSEMBLY"](#) .

- 2nd coast brake. Refer to [AT-272, "Oil Pump, 2nd Coast Brake & 2nd Brake"](#) , [AT-278, "One-Way Clutch Outer Race Sub Assembly & 2nd Coast Brake Hub & One-Way Clutch No.1"](#) .

- One-way clutch No.1. Refer to [AT-278, "One-Way Clutch Outer Race Sub Assembly & 2nd Coast Brake Hub & One-Way Clutch No.1"](#) .

OK or NG

OK >> GO TO 5.

NG >> Repair or replace damaged parts.

5. CHECK TCM

1. Check TCM input/output signal. Refer to [AT-71, "TCM Input/Output Signal Reference Values"](#) .

2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

OK >> GO TO 6.

NG >> Repair or replace damaged parts.

6. CHECK SYMPTOM

Check again.

OK or NG

OK >> **INSPECTION END**

NG >> Repair or replace damaged parts.

A/T Does Not Perform Lock-up SYMPTOM:

A/T does not perform lock-up at the specified speed.

ECS00A73

TROUBLE DIAGNOSIS FOR SYMPTOMS

DIAGNOSTIC PROCEDURE

1. CHECK A/T FLUID LEVEL

Check the A/T fluid level. Refer to [AT-54, "A/T FLUID CHECK"](#) .

OK or NG

- OK >> GO TO 2.
- NG >> Refill ATF.

2. CHECK STOP LAMP SWITCH CIRCUIT

Check the stop lamp switch circuit. Refer to [BRC-12, "TROUBLE DIAGNOSIS"](#) (with ABS), [BRC-53, "TROUBLE DIAGNOSIS"](#) (with TCS/ABS) or [BRC-96, "TROUBLE DIAGNOSIS"](#) (with VDC/TCS/ABS).

OK or NG

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

3. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis.

Is any malfunction detected by self-diagnostic?

- YES >> Check the malfunctioning system.
- NO >> GO TO 4.

4. DETECT MALFUNCTIONING ITEM

1. Control valve assembly. Refer to [AT-241, "Control Valve Assembly"](#) .
2. Disassemble A/T. Refer to [AT-252, "DISASSEMBLY"](#) .
3. Check the following items:
 - Torque converter. Refer to [AT-252, "DISASSEMBLY"](#) .

OK or NG

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

5. CHECK TCM

1. Check TCM input/output signal. Refer to [AT-71, "TCM Input/Output Signal Reference Values"](#) .
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

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

6. CHECK SYMPTOM

Check again.

OK or NG

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

A/T Does Not Hold Lock-up Condition

SYMPTOM:

ECS00A74

The lock-up condition cannot be maintained for more than 30 seconds.

TROUBLE DIAGNOSIS FOR SYMPTOMS

DIAGNOSTIC PROCEDURE

1. CHECK A/T FLUID LEVEL

Check the A/T fluid level. Refer to [AT-54, "A/T FLUID CHECK"](#) .

OK or NG

- OK >> GO TO 2.
- NG >> Refill ATF.

2. CHECK STOP LAMP SWITCH CIRCUIT

Check the stop lamp switch circuit. Refer to [BRC-12, "TROUBLE DIAGNOSIS"](#) (with ABS), [BRC-53, "TROUBLE DIAGNOSIS"](#) (with TCS/ABS) or [BRC-96, "TROUBLE DIAGNOSIS"](#) (with VDC/TCS/ABS).

OK or NG

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

3. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis.

Is any malfunction detected by self-diagnostic?

- YES >> Check the malfunctioning system.
- NO >> GO TO 4.

4. DETECT MALFUNCTIONING ITEM

1. Control valve assembly. Refer to [AT-241, "Control Valve Assembly"](#) .
2. Disassemble A/T. Refer to [AT-252, "DISASSEMBLY"](#) .
3. Check the following items:
 - Torque converter. Refer to [AT-252, "DISASSEMBLY"](#) .

OK or NG

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

5. CHECK TCM

1. Check TCM input/output signal. Refer to [AT-71, "TCM Input/Output Signal Reference Values"](#) .
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

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

6. CHECK SYMPTOM

Check again.

OK or NG

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

Lock-up Is Not Released SYMPTOM:

ECS00A75

The lock-up condition cannot be cancelled even after releasing the accelerator pedal.

TROUBLE DIAGNOSIS FOR SYMPTOMS

DIAGNOSTIC PROCEDURE

1. CHECK A/T FLUID LEVEL

Check the A/T fluid level. Refer to [AT-54, "A/T FLUID CHECK"](#) .

OK or NG

- OK >> GO TO 2.
- NG >> Refill ATF.

2. CHECK STOP LAMP SWITCH CIRCUIT

Check the stop lamp switch circuit. Refer to [BRC-12, "TROUBLE DIAGNOSIS"](#) (with ABS), [BRC-53, "TROUBLE DIAGNOSIS"](#) (with TCS/ABS) or [BRC-96, "TROUBLE DIAGNOSIS"](#) (with VDC/TCS/ABS).

OK or NG

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

3. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis.

Is any malfunction detected by self-diagnostic?

- YES >> Check the malfunctioning system.
- NO >> GO TO 4.

4. DETECT MALFUNCTIONING ITEM

1. Control valve assembly. Refer to [AT-241, "Control Valve Assembly"](#) .
2. Disassemble A/T. Refer to [AT-252, "DISASSEMBLY"](#) .
3. Check the following items:
 - Torque converter. Refer to [AT-252, "DISASSEMBLY"](#) .

OK or NG

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

5. CHECK TCM

1. Check TCM input/output signal. Refer to [AT-71, "TCM Input/Output Signal Reference Values"](#) .
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

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

6. CHECK SYMPTOM

Check again.

OK or NG

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

Cannot Be Changed to Manual Mode
SYMPTOM:

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

ECS00A76

TROUBLE DIAGNOSIS FOR SYMPTOMS

DIAGNOSTIC PROCEDURE

1. CHECK MANUAL MODE SWITCH CIRCUIT

Check the manual mode switch circuit. Refer to [AT-198, "DTC P0826 MANUAL MODE SWITCH CIRCUIT"](#) .

OK or NG

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

2. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis.

Is any malfunction detected by self-diagnostic?

- YES >> Check the malfunctioning system.
- NO >> **INSPECTION END**

A/T Does Not Shift: 5th gear → 4th gear **SYMPTOM:**

ECS00A77

When shifted from 5M to 4M position in manual mode, does not downshift from 5th to 4th gear.

DIAGNOSTIC PROCEDURE

1. CHECK A/T FLUID LEVEL

Check the A/T fluid level. Refer to [AT-54, "A/T FLUID CHECK"](#) .

OK or NG

- OK >> GO TO 2.
- NG >> Refill ATF.

2. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis.

Is any malfunction detected by self-diagnostic?

- YES >> Check the malfunctioning system.
- NO >> GO TO 3.

3. DETECT MALFUNCTIONING ITEM

1. Control valve assembly. Refer to [AT-241, "Control Valve Assembly"](#) .
2. Disassemble A/T. Refer to [AT-252, "DISASSEMBLY"](#) .
3. Check the following items:
 - Forward and direct clutch assembly. Refer to [AT-252, "DISASSEMBLY"](#) .
 - 2nd coast brake. Refer to [AT-272, "Oil Pump, 2nd Coast Brake & 2nd Brake"](#) , [AT-278, "One-Way Clutch Outer Race Sub Assembly & 2nd Coast Brake Hub & One-Way Clutch No.1"](#) .
 - One-way clutch No.1. Refer to [AT-278, "One-Way Clutch Outer Race Sub Assembly & 2nd Coast Brake Hub & One-Way Clutch No.1"](#) .

OK or NG

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

4. CHECK TCM

1. Check TCM input/output signal. Refer to [AT-71, "TCM Input/Output Signal Reference Values"](#) .
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

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

TROUBLE DIAGNOSIS FOR SYMPTOMS

5. CHECK SYMPTOM

Check again.

OK or NG

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

A/T Does Not Shift: 4th gear → 3rd gear

ECS00A78

SYMPTOM:

When shifted from 4M to 3M position in manual mode, does not downshift from 4th to 3rd gear.

DIAGNOSTIC PROCEDURE

1. CHECK A/T FLUID LEVEL

Check the A/T fluid level. Refer to [AT-54, "A/T FLUID CHECK"](#) .

OK or NG

- OK >> GO TO 2.
- NG >> Refill ATF.

2. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis.

Is any malfunction detected by self-diagnostic?

- YES >> Check the malfunctioning system.
- NO >> GO TO 3.

3. DETECT MALFUNCTIONING ITEM

1. Control valve assembly. Refer to [AT-241, "Control Valve Assembly"](#) .
2. Disassemble A/T. Refer to [AT-252, "DISASSEMBLY"](#) .
3. Check the following items:
 - U/D clutch. Refer to [AT-252, "DISASSEMBLY"](#) .
 - U/D brake. Refer to [AT-252, "DISASSEMBLY"](#) .

OK or NG

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

4. CHECK TCM

1. Check TCM input/output signal. Refer to [AT-71, "TCM Input/Output Signal Reference Values"](#) .
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

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

5. CHECK SYMPTOM

Check again.

OK or NG

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

A/T Does Not Shift: 3rd gear → 2nd gear

ECS00A79

SYMPTOM:

When shifted from 3M to 2M position in manual mode, does not downshift from 3rd to 2nd gear.

TROUBLE DIAGNOSIS FOR SYMPTOMS

DIAGNOSTIC PROCEDURE

1. CHECK A/T FLUID LEVEL

Check the A/T fluid level. Refer to [AT-54, "A/T FLUID CHECK"](#) .

OK or NG

- OK >> GO TO 2.
- NG >> Refill ATF.

2. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis.

Is any malfunction detected by self-diagnostic?

- YES >> Check the malfunctioning system.
- NO >> GO TO 3.

3. DETECT MALFUNCTIONING ITEM

1. Control valve assembly. Refer to [AT-241, "Control Valve Assembly"](#) .
2. Disassemble A/T. Refer to [AT-252, "DISASSEMBLY"](#) .
3. Check the following items:
 - U/D brake. Refer to [AT-252, "DISASSEMBLY"](#) .
 - B5 brake. Refer to [AT-280, "Transaxle Case Cover & B5 Brake"](#) .

OK or NG

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

4. CHECK TCM

1. Check TCM input/output signal. Refer to [AT-71, "TCM Input/Output Signal Reference Values"](#) .
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

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

5. CHECK SYMPTOM

Check again.

OK or NG

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

A/T Does Not Shift: 2nd gear → 1st gear **SYMPTOM:**

ECS00A7A

When shifted from 2M to 1M position in manual mode, does not downshift from 2nd to 1st gear.

DIAGNOSTIC PROCEDURE

1. CHECK A/T FLUID LEVEL

Check the A/T fluid level. Refer to [AT-54, "A/T FLUID CHECK"](#) .

OK or NG

- OK >> GO TO 2.
- NG >> Refill ATF.

TROUBLE DIAGNOSIS FOR SYMPTOMS

2. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis.

Is any malfunction detected by self-diagnostic?

- YES >> Check the malfunctioning system.
- NO >> GO TO 3.

3. DETECT MALFUNCTIONING ITEM

1. Control valve assembly. Refer to [AT-241, "Control Valve Assembly"](#) .
2. Disassemble A/T. Refer to [AT-252, "DISASSEMBLY"](#) .
3. Check the following items:
 - 2nd coast brake. Refer to [AT-272, "Oil Pump, 2nd Coast Brake & 2nd Brake"](#) , [AT-278, "One-Way Clutch Outer Race Sub Assembly & 2nd Coast Brake Hub & One-Way Clutch No.1"](#) .
 - 2nd brake. Refer to [AT-272, "Oil Pump, 2nd Coast Brake & 2nd Brake"](#) .
 - One-way clutch No.1. Refer to [AT-278, "One-Way Clutch Outer Race Sub Assembly & 2nd Coast Brake Hub & One-Way Clutch No.1"](#) .
 - One-way clutch No.2. Refer to [AT-252, "DISASSEMBLY"](#) .

OK or NG

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

4. CHECK TCM

1. Check TCM input/output signal. Refer to [AT-71, "TCM Input/Output Signal Reference Values"](#) .
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

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

5. CHECK SYMPTOM

Check again.

OK or NG

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

Vehicle Does Not Decelerate By Engine Brake SYMPTOM:

ECS00A7B

No engine brake is applied when the gear is shifted from the 2nd to 1st gear.

DIAGNOSTIC PROCEDURE

1. CHECK A/T FLUID LEVEL

Check the A/T fluid level. Refer to [AT-54, "A/T FLUID CHECK"](#) .

OK or NG

- OK >> GO TO 2.
- NG >> Refill ATF.

2. CHECK SELF-DIAGNOSTIC RESULTS

Perform self-diagnosis.

Do the self-diagnostic results indicate shift solenoid valve E, electric throttle control system?

- YES >> Check the malfunctioning system. Refer to [AT-174, "DTC P0770 SHIFT SOLENOID VALVE E"](#) , [AT-209, "DTC P1726 ELECTRIC THROTTLE CONTROL SYSTEM"](#) .
- NO >> GO TO 3.

TROUBLE DIAGNOSIS FOR SYMPTOMS

3. DETECT MALFUNCTIONING ITEM

1. Control valve assembly. Refer to [AT-241, "Control Valve Assembly"](#) .
2. Disassemble A/T. Refer to [AT-252, "DISASSEMBLY"](#) .
3. Check the following items:
 - 2nd coast brake. Refer to [AT-272, "Oil Pump, 2nd Coast Brake & 2nd Brake"](#) , [AT-278, "One-Way Clutch Outer Race Sub Assembly & 2nd Coast Brake Hub & One-Way Clutch No.1"](#) .
 - U/D brake. Refer to [AT-252, "DISASSEMBLY"](#) .
 - B5 brake. Refer to [AT-280, "Transaxle Case Cover & B5 Brake"](#) .

OK or NG

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

4. CHECK TCM

1. Check TCM input/output signal. Refer to [AT-71, "TCM Input/Output Signal Reference Values"](#) .
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

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

5. CHECK SYMPTOM

Check again.

OK or NG

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

TCM Self-diagnosis Does Not Activate

ECS00A7C

SYMPTOM:

A/T CHECK indicator lamp does not come on in TCM self-diagnostic procedure even if the lamp circuit is good.

DESCRIPTION

- **Park/neutral position (PNP) switch**
The park/neutral (PNP) switch assembly includes a transmission range switch. The transmission range switch detects the selector lever position and sends a signal to the TCM.
- **Stop lamp switch signal**
Detects the brake pedal state (stop lamp switch is ON or OFF) and sends a signal via CAN communication line to the TCM.
- **Closed throttle position signal**
ECM judges throttle opening based on a signal from accelerator pedal position sensor, and sends the signal via CAN communication line to TCM.

DIAGNOSTIC PROCEDURE

1. CHECK PARK/ NEUTRAL POSITION (PNP) SWITCH CIRCUIT

Check the park/neutral position (PNP) switch circuit. Refer to [AT-90, "DTC P0705 PARK/NEUTRAL POSITION SWITCH"](#) .

OK or NG

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

TROUBLE DIAGNOSIS FOR SYMPTOMS

2. CHECK STOP LAMP SWITCH CIRCUIT

Perform self-diagnosis for ABS actuator and electric unit (control unit). Refer to [BRC-12, "TROUBLE DIAGNOSIS"](#) (with ABS), [BRC-53, "TROUBLE DIAGNOSIS"](#) (with TCS/ABS) or [BRC-96, "TROUBLE DIAGNOSIS"](#) (with VDC/TCS/ABS).

OK or NG

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

3. CHECK CLOSED THROTTLE POSITION SIGNAL CIRCUIT

Perform self-diagnosis for ECM. Refer to [EC-50, "Emission-related Diagnostic Information"](#).

OK or NG

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

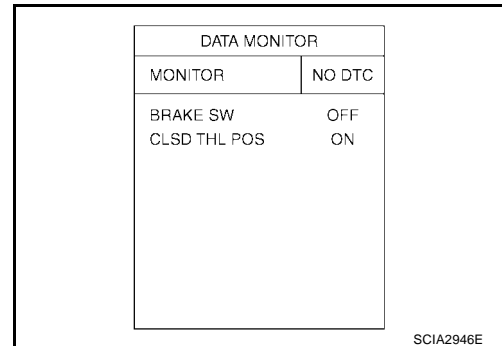
4. CHECK DATA MONITOR (WITH CONSULT-II)

 **With CONSULT-II**

1. Turn ignition switch "ON". (Do not start engine.)
2. Select "A/T" with "DATA MONITOR" mode in CONSULT-II.
3. Depress or release accelerator pedal and read out ON/OFF signaling action of the "CLSD THL POS".
4. Depress or release brake pedal and read out ON/OFF signaling action of the "BRAKE SW".

OK or NG

- OK >> GO TO 7.
- NG >> GO TO 5.



| DATA MONITOR | |
|--------------|--------|
| MONITOR | NO DTC |
| BRAKE SW | OFF |
| CLSD THL POS | ON |

SCIA2946E

5. CHECK TCM

1. Check TCM input/output signal. Refer to [AT-71, "TCM Input/Output Signal Reference Values"](#).
2. If NG, recheck TCM pin terminals for damage or loose connection with harness connector.

OK or NG

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

6. CHECK CAN COMMUNICATION LINE

Check the CAN communication line. Refer to [AT-83, "DTC U1000 CAN COMMUNICATION LINE"](#).

OK or NG

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

7. CHECK SYMPTOM

Check again.

OK or NG

- OK >> **INSPECTION END**
- NG >> Replace the TCM.

SHIFT CONTROL SYSTEM

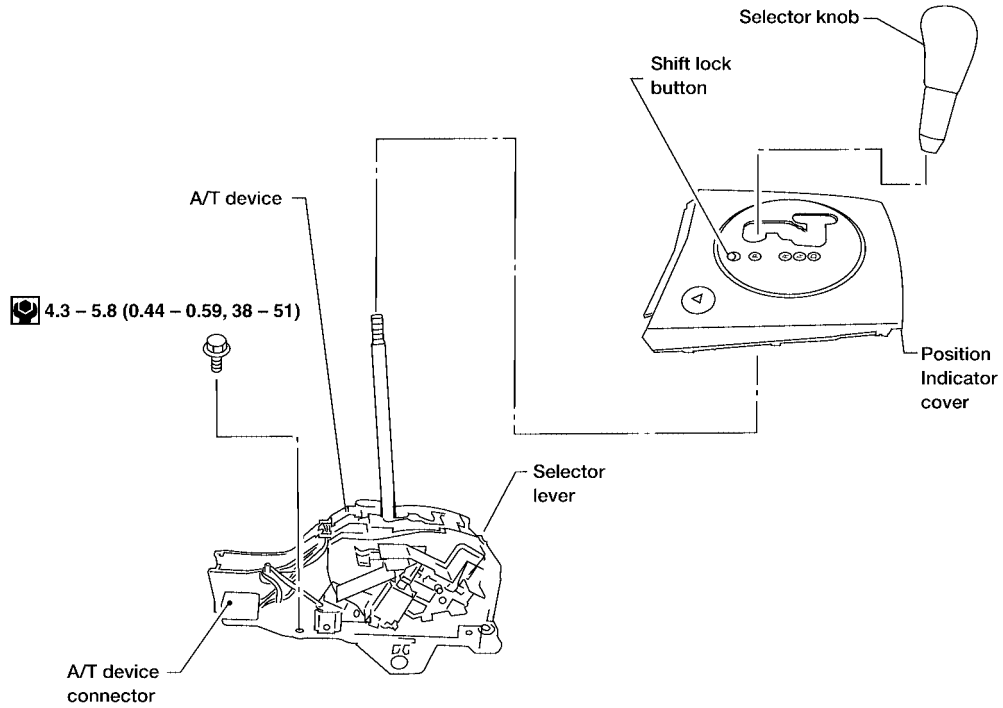
SHIFT CONTROL SYSTEM

PFP:34901

Control Device

ECS00A7D

SEC.349



N·m (kg-m, in-lb)

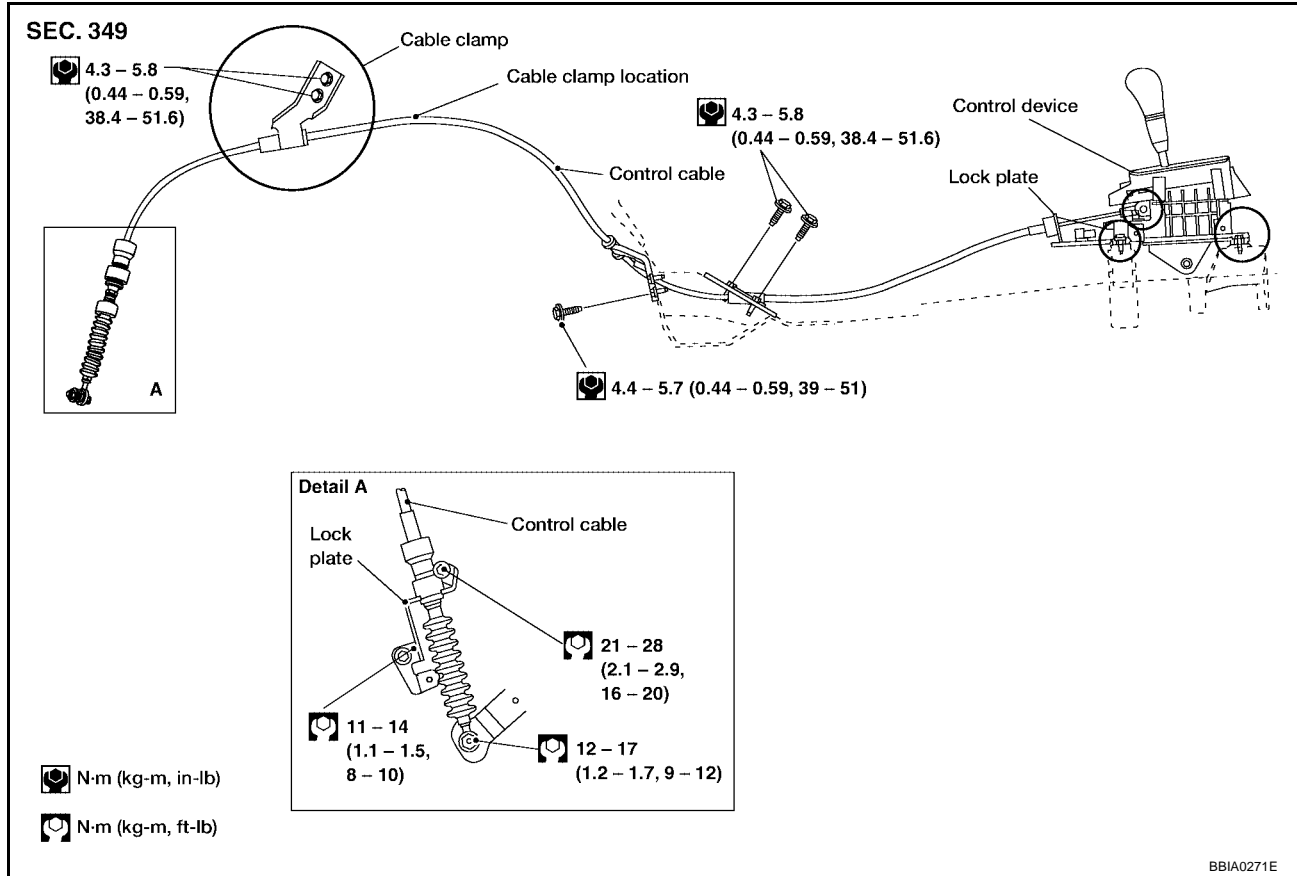
WCIA0435E

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

SHIFT CONTROL SYSTEM

Control Cable

ECS00A7E



A/T SHIFT LOCK SYSTEM

PFP:34950

A/T SHIFT LOCK SYSTEM

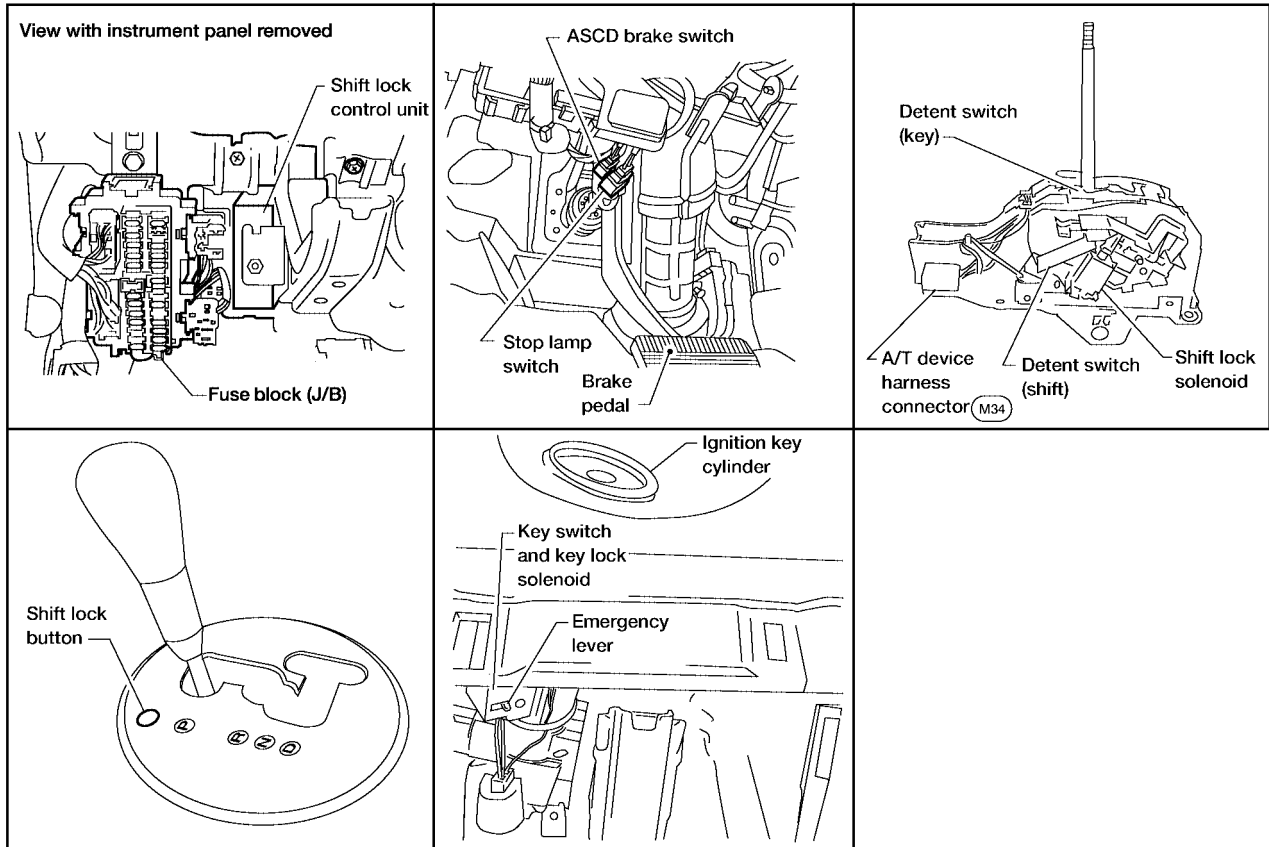
ECS00A7F

Description

- The electrical key interlock mechanism also operates as a shift lock:
With the key 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

ECS00A7G

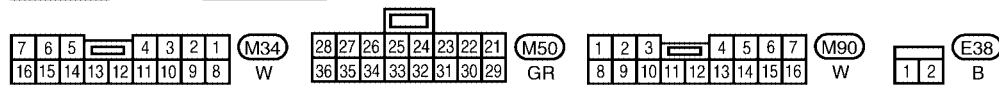
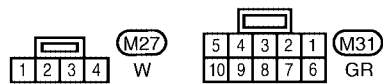
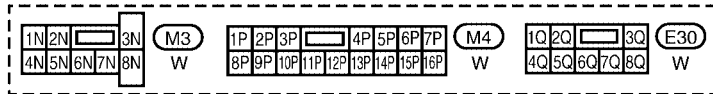
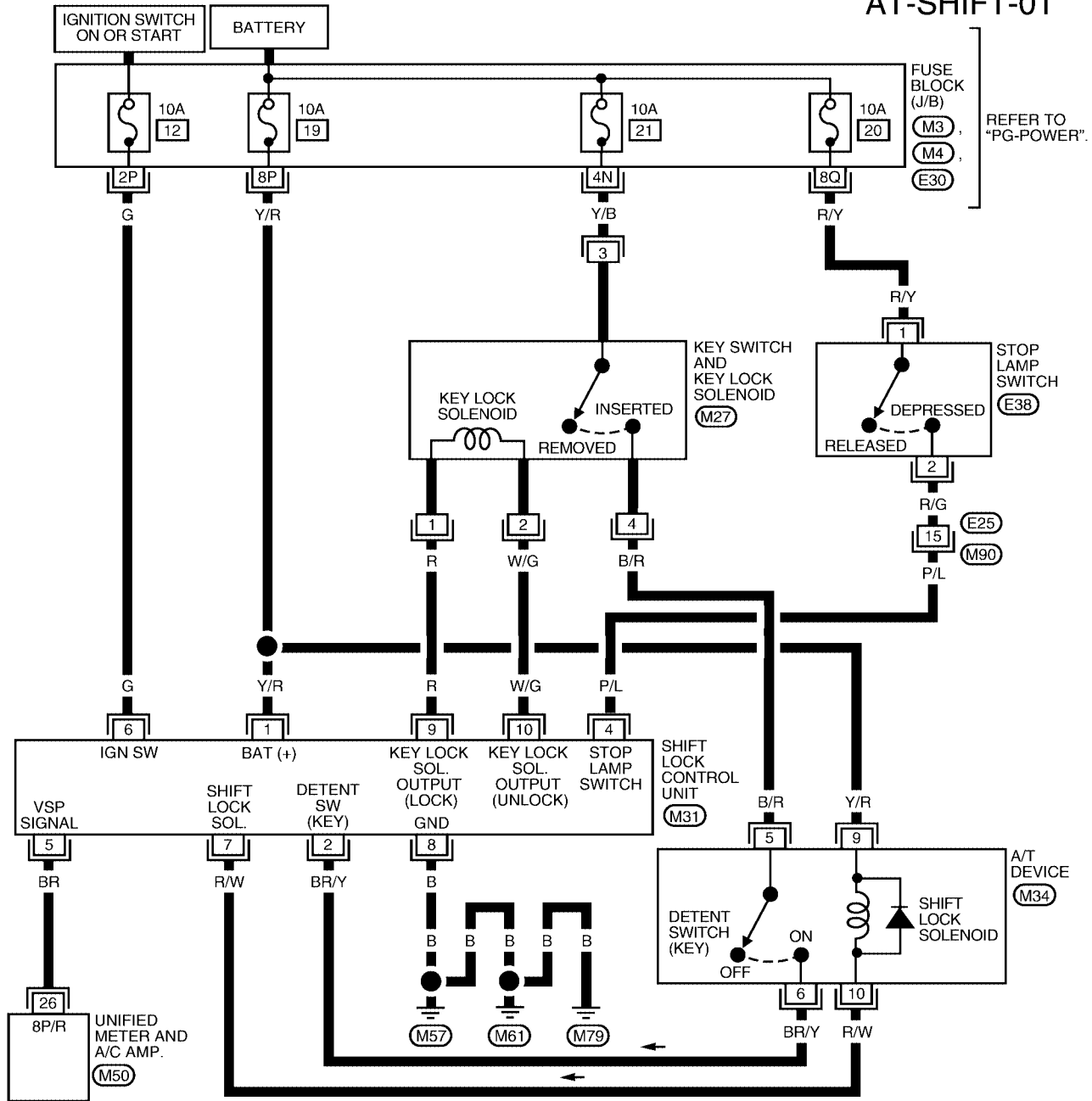


BBA0268E

A/T SHIFT LOCK SYSTEM

Wiring Diagram — AT — SHIFT

ECS00A7H

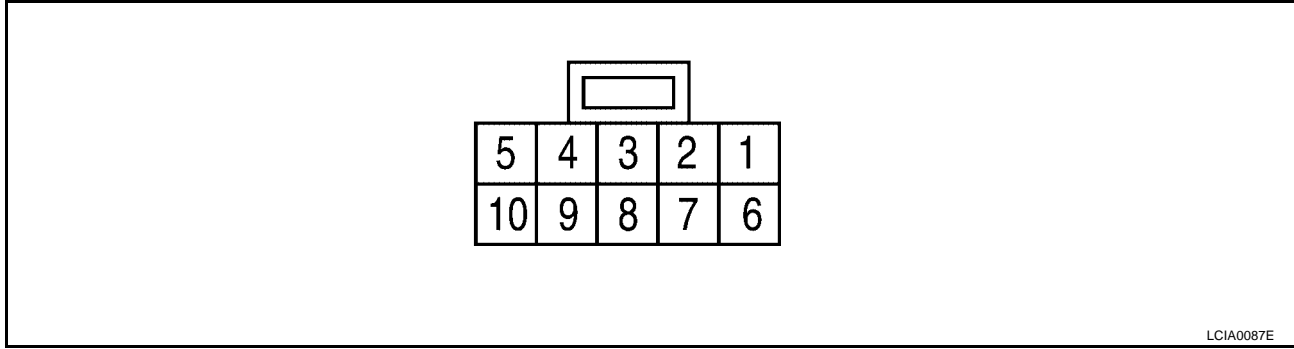


BCWA0294E

A/T SHIFT LOCK SYSTEM

ECS00A71

Shift Lock Control Unit Reference Values SHIFT LOCK HARNESS CONNECTOR TERMINAL LAYOUT



LCIA0087E

SHIFT LOCK CONTROL UNIT INSPECTION TABLE

Data are reference values.

| Terminal No. (Wire color) | | Item | Condition | Judgement standard |
|------------------------------|-------|----------------------|---|---|
| (+) | (-) | | | |
| 1 (Y/R) | 8 (B) | Power source | Always | Battery voltage |
| 2 (BR/Y) | 8 (B) | Detent switch (key) | The position when the key is inserted and the selector lever is set to a position other than the "P" position, or when it is shifted from the "R" to the "P" position | Battery voltage |
| | | | Except the above | Approx. 0V |
| 4 (P/L) | 8 (B) | Stop lamp switch | When brake pedal is depressed | Battery voltage |
| | | | When brake pedal is released | Approx. 0V |
| 5 (BR) | 8 (B) | Vehicle speed signal | — | — |
| 6 (G) | 8 (B) | Ignition signal | Ignition switch: "ON" | Battery voltage |
| | | | Ignition switch: "OFF" | Approx. 0V |
| 7 (R/W) | 8 (B) | Shift lock solenoid | When the brake pedal is depressed | Battery voltage |
| | | | Ignition switch: "ON" and vehicle speed is less than 8 km/h (5 MPH) | Approx. 0V |
| 8 (B) | — | Ground | Always | Approx. 0V |
| 9 (R) | 8 (B) | Key lock signal | When the selector lever is set to a position other than the "P" position | Battery voltage for approx. 0.1 sec. (Note) |
| | | | Except the above | Approx. 0V |
| 10 (W/G) | 8 (B) | Key unlock signal | When the selector lever is set to the "P" position | Battery voltage for approx. 0.1 sec. (Note) |
| | | | Except the above | Approx. 0V |

NOTE:

Make sure that the pointer swings only momentarily because the output time is so short. If the inspection is done with an oscilloscope, it should be observed that the power source voltage lasts for 3.5 to 10 ms.

A/T SHIFT LOCK SYSTEM

ECS00A7J

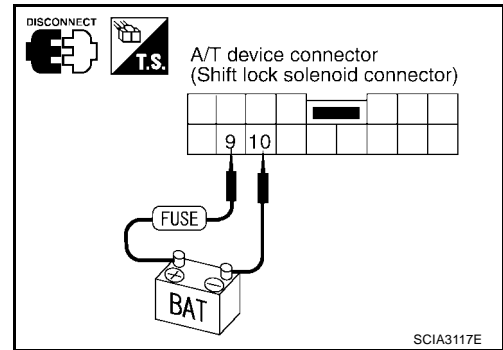
Component Inspection SHIFT LOCK SOLENOID

- Check operation by applying battery voltage to A/T device connector.

CAUTION:

Be sure to apply the voltage of the correct polarity to the respective terminals. Otherwise, the part may be damaged.

| Connector | Terminal |
|-----------|-----------------------------------|
| M34 | 9 (Battery voltage) - 10 (Ground) |

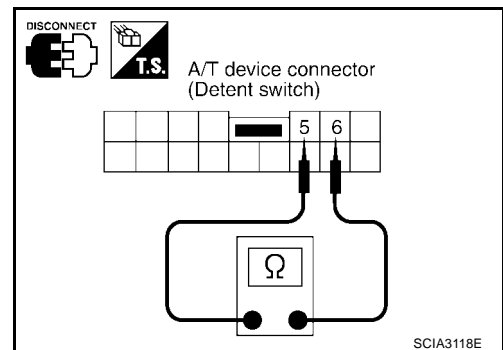


DETENT SWITCH

For Key:

- Check continuity between terminals of the A/T device connector.

| Condition | Connector | Terminal | Continuity |
|---|-----------|----------|------------|
| The position when the selector lever is set to a position other than the "P" position, or when it is shifted from the "R" to the "P" position | M34 | 5 - 6 | Yes |
| Except the above | | | No |



KEY LOCK SOLENOID

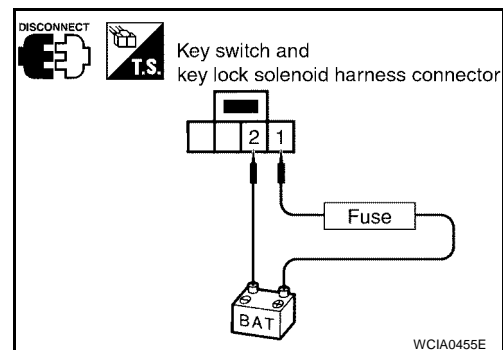
Key Lock

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

CAUTION:

Be careful not to cause burnout of the harness.

| Connector | Terminal |
|-----------|----------------------------------|
| M26 | 1 (Battery voltage) - 2 (Ground) |



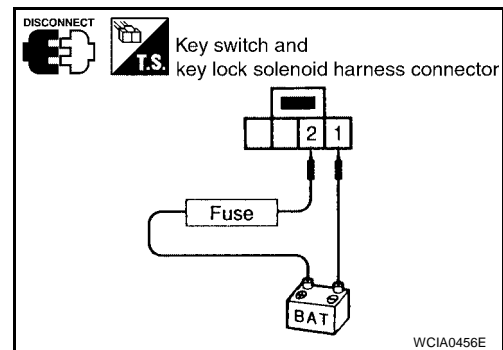
Key Unlock

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

CAUTION:

Be careful not to cause burnout of the harness.

| Connector | Terminal |
|-----------|----------------------------------|
| M26 | 2 (Battery voltage) - 1 (Ground) |

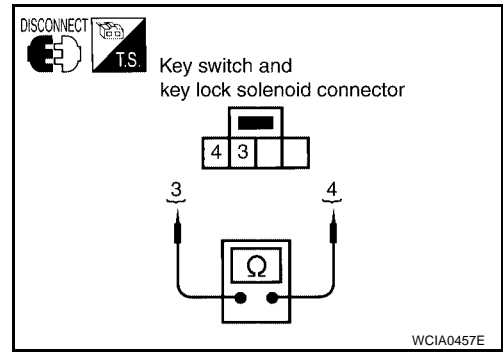


A/T SHIFT LOCK SYSTEM

KEY SWITCH

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

| Condition | Connector | Terminal | Continuity |
|--------------|-----------|----------|------------|
| Key inserted | M27 | 3 - 4 | Yes |
| Key removed | | | No |

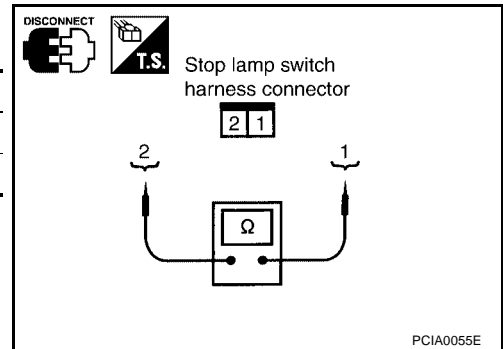


STOP LAMP SWITCH

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

| Condition | Connector | Terminal | Continuity |
|-------------------------------|-----------|----------|------------|
| When brake pedal is depressed | E38 | 1 - 2 | Yes |
| When brake pedal is released | | | No |

Check stop lamp switch after adjusting brake pedal. Refer to [BR-6](#), "[Inspection and Adjustment](#)".



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

ON-VEHICLE SERVICE

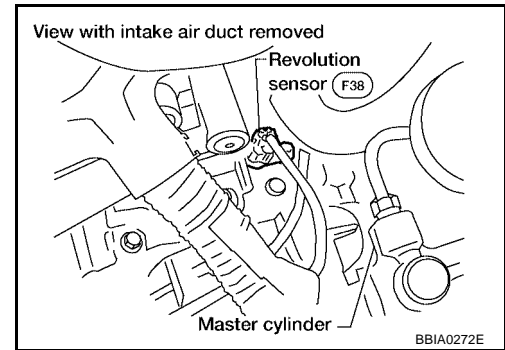
Revolution Sensor Replacement

ECS00BTV

1. Remove intake air duct. Refer to [EM-16, "REMOVAL"](#) .
2. Disconnect electrical connector.
3. Remove revolution sensor from A/T.
4. Reinstall any part removed.
 - Tighten the revolution sensor bolt to the specified torque. Refer to [AT-245, "OVERHAUL"](#) .

NOTE:

- Apply clean ATF to the revolution sensor O-ring before installation.
- Do not reuse seal bolt.



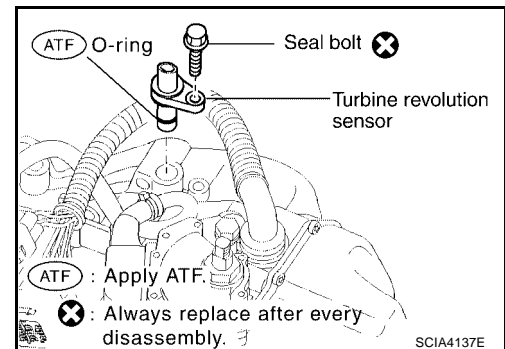
Turbine Revolution Sensor Replacement

ECS00BTW

1. Remove battery and bracket. Refer to [SC-9, "REMOVAL"](#) .
2. Disconnect electrical connector.
3. Remove bolt, and turbine revolution sensor from A/T.
4. Reinstall any part removed.
 - Tighten the turbine revolution sensor bolt to the specified torque. Refer to [AT-245, "OVERHAUL"](#) .

NOTE:

- Apply clean ATF to the turbine revolution sensor O-ring before installation.
- Do not reuse seal bolt.



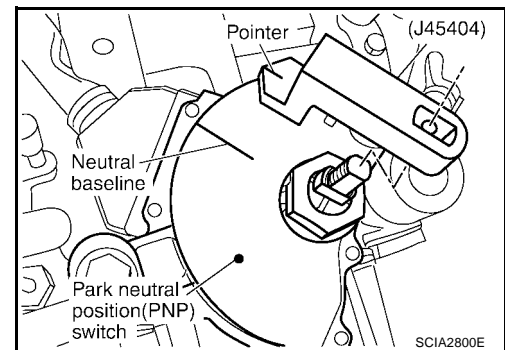
Park/Neutral Position (PNP) Switch Adjustment

ECS00BTX

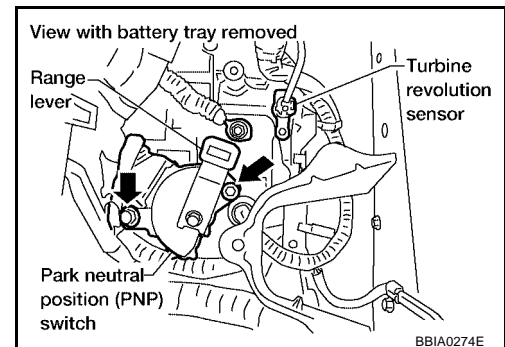
1. Remove battery and bracket. Refer to [SC-9, "REMOVAL"](#) .
2. Remove cable from range lever.
3. Set range lever in neutral position.
4. Remove range lever and install Tool.

Tool number : KV991J0060 (J-45404)

5. Loosen park/neutral position (PNP) switch bolts.
6. Adjust PNP switch so that Tool pointer aligns with neutral base line on PNP switch body.



7. Tighten PNP switch bolts. Refer to [AT-245, "OVERHAUL"](#) .
8. Reinstall range lever and cable.
9. Adjust control cable. Refer to [AT-240, "Control Cable Adjustment"](#) .
10. Reinstall battery and bracket. Refer to [SC-9, "INSTALLATION"](#) .
11. Check continuity of PNP switch. Refer to [AT-94, "Component Inspection"](#) .



ON-VEHICLE SERVICE

ECS00BTY

ATF Cooler REMOVAL

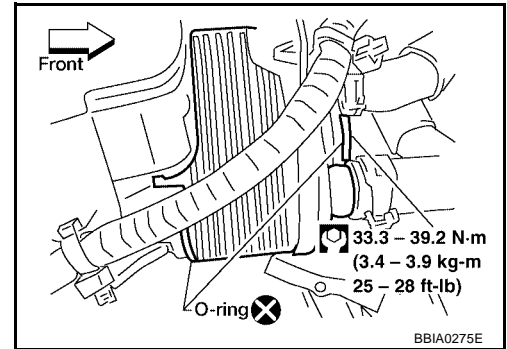
1. Drain ATF. Refer to [MA-22, "Changing A/T Fluid"](#) .
2. Drain engine coolant. Refer to [MA-14, "Changing Engine Coolant"](#) .
3. Remove hose clamps and hoses from ATF cooler.
4. Remove bolt from ATF cooler and remove ATF cooler.

INSTALLATION

Installation is the reverse order of removal.

NOTE:

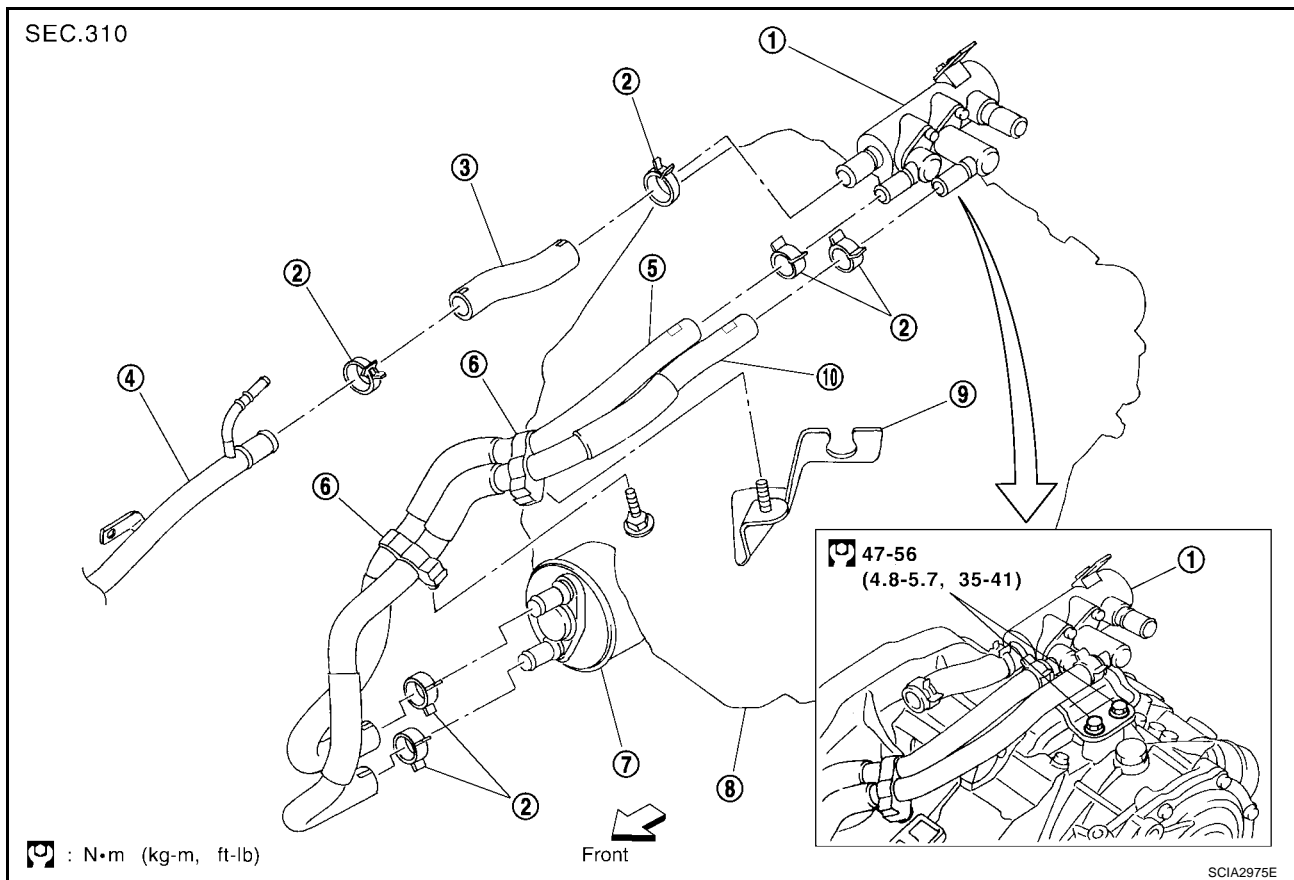
- Do not reuse sealing parts.



ATF Cooler Valve

ECS00BTZ

Refer to the figure for ATF cooler valve and hoses removal and installation information.



- | | | |
|------------------------------|-----------------------|--------------------------|
| 1. ATF cooler valve assembly | 2. Hose clamp | 3. Heater hose |
| 4. Heater pipe | 5. Outlet water hose | 6. Hose clip |
| 7. ATF cooler assembly | 8. Transaxle assembly | 9. Control cable bracket |
| 10. Inlet water hose | | |

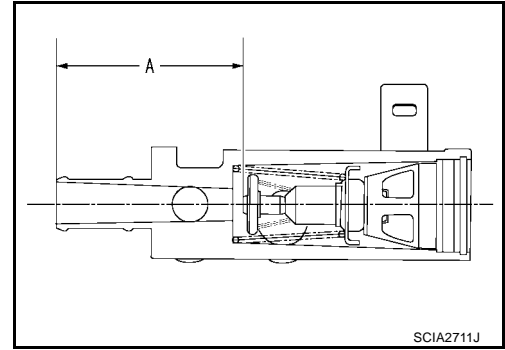
ON-VEHICLE SERVICE

COMPONENT INSPECTION

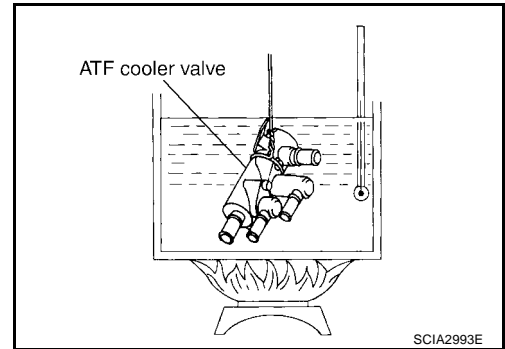
1. Make sure that ATF cooler valve is fully opened at room temperature.

Dimension "A": More than 72.0 mm (2.835 in)

A: Distance between ATF cooler valve port end face and valve shaft end face.



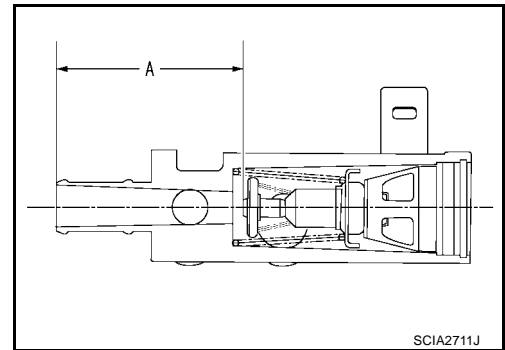
2. Submerge ATF cooler valve in a water-filled container, and then heat it up with temperature of over 82°C (180°F) for 10 minutes more.



3. Make sure that ATF cooler valve is fully closed.

Dimension "A": Less than 66.5 mm (2.618 in)

A: Distance between ATF cooler valve port end face and valve shaft end face.



Control Cable Adjustment

Move selector lever from the P position to the D position. You should be able to feel the detent in each position. If the detent cannot be felt or the pointer indicating the position is improperly aligned, the control cable needs adjustment.

1. Place selector lever in the P position.

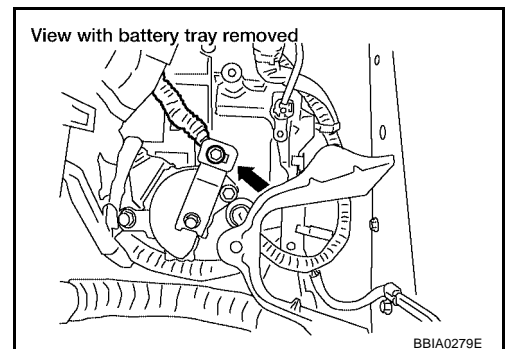
CAUTION:

Turn wheels more than 1/4 turn and apply the parking brake.

2. Loosen control cable lock nut.
3. Using the specified force, push control cable in the direction of the arrow shown.

Specified force : 9.8 N (1.0 kg, 2.2 lb)

4. Tighten control cable lock nut.
5. Move selector lever from P to D position. Make sure that selector lever moves smoothly.
 - Make sure that the starter operates when the selector lever is placed in the N or P position.
 - Make sure that the transmission is locked properly when the selector lever is placed in the P position.



ON-VEHICLE SERVICE

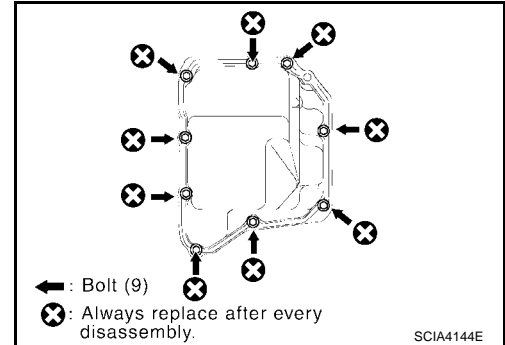
Side cover REMOVAL

ECS00BU1

1. Remove engine under cover using power tools.
2. Drain ATF. Refer to [MA-22, "Changing A/T Fluid"](#).
3. Remove side cover bolts and side cover.

NOTE:

- Do not reuse side cover bolts



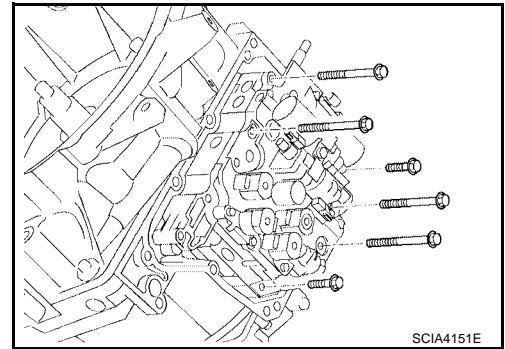
INSTALLATION

Installation is the reverse order of removal. Refer to [AT-245, "Components"](#).

Control Valve Assembly REMOVAL

ECS00BU2

1. Remove side cover. Refer to [AT-241, "Side cover"](#).
2. Disconnect solenoid valve connectors.
3. Disconnect control valve assembly bolts and remove control valve assembly.

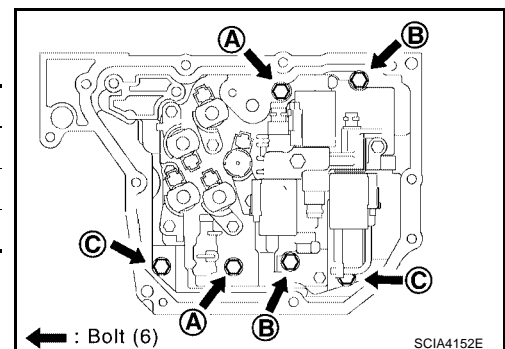


INSTALLATION

Installation is the reverse order of removal.

- Install bolts in sequence as shown. Refer to [AT-245, "Components"](#) for specified torque.

| Bolt symbol | Length mm (in) | Number of bolts |
|-------------|----------------|-----------------|
| A | 55 (2.17) | 2 |
| B | 50 (1.97) | 2 |
| C | 16 (0.63) | 2 |



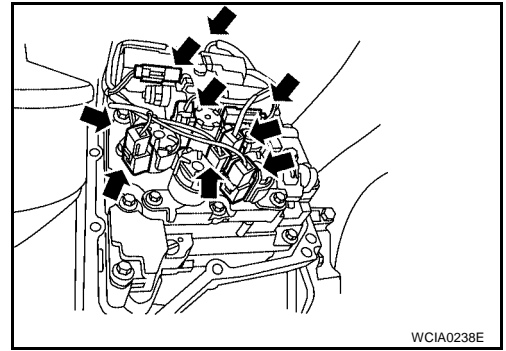
Terminal cord assembly REMOVAL

ECS00BU3

1. Remove PNP switch. Refer to [AT-245, "Components"](#).
2. Remove side cover. Refer to [AT-241, "REMOVAL"](#).

ON-VEHICLE SERVICE

3. Disconnect solenoid valve connectors.
4. Remove terminal cord assembly.



INSTALLATION

Installation is in the reverse order of removal.

TRANSAXLE ASSEMBLY

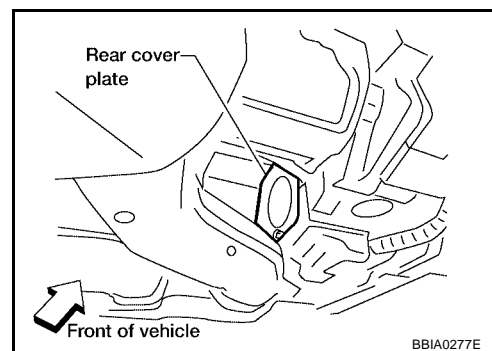
PFP:32020

Removal and Installation REMOVAL

ECS00BUS

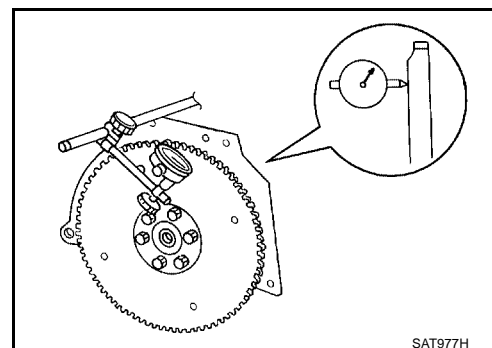
CAUTION:

- When removing the transaxle assembly from engine, first remove the crankshaft position sensor from the assembly.
 - Be careful not to damage sensor edge.
1. Drain engine coolant. Refer to [MA-14, "Changing Engine Coolant"](#) .
 2. Remove battery and bracket. Refer to [SC-9, "REMOVAL"](#) .
 3. Remove air cleaner assembly. Refer to [EM-16, "Removal and Installation"](#) .
 4. Disconnect terminal cord assembly harness connector and park/neutral position (PNP) switch harness connectors.
 5. Disconnect harness connectors of revolution sensor, ground, mass air flow sensor, and turbine revolution sensor.
 6. Remove ATF cooler valve assembly bracket bolts.
 7. Disconnect ATF cooler hose clips.
 8. Disconnect ATF cooler hoses from ATF cooler valve assembly.
 9. Disconnect control cable at transaxle side.
 10. Drain ATF. Refer to [MA-22, "Changing A/T Fluid"](#) .
 11. Remove engine undercover.
 12. Remove upper transaxle to engine bolts.
 13. Support engine. Refer to [EM-117, "ENGINE ASSEMBLY"](#) .
 14. Remove drive shafts. Refer to [FAX-11, "Removal and Installation"](#) .
 15. Remove crankshaft position sensor from transaxle.
 16. Support transaxle with a jack.
 17. Remove starter motor from transaxle. Refer to [SC-17, "Removal and Installation"](#) .
 18. Remove front suspension member. Refer to [FSU-15, "Removal and Installation"](#) .
 19. Remove rear cover plate and bolts securing torque converter to drive plate.
 - Rotate crankshaft for access to securing bolts.
 20. Remove lower transaxle to engine bolts.
 21. Lower transaxle while supporting it with a jack.
 22. If replacing the transaxle as a unit, remove the LH transaxle mount from the transaxle case.



INSPECTION AFTER REMOVAL

- Drive plate runout
 - CAUTION:**
Do not allow any magnetic materials to contact the ring gear teeth.
 - Maximum allowable runout:
Refer to [EM-148, "DRIVE PLATE RUNOUT \(A/T\)"](#) .
- If this runout is out of allowance, replace drive plate and ring gear.



TRANSAXLE ASSEMBLY

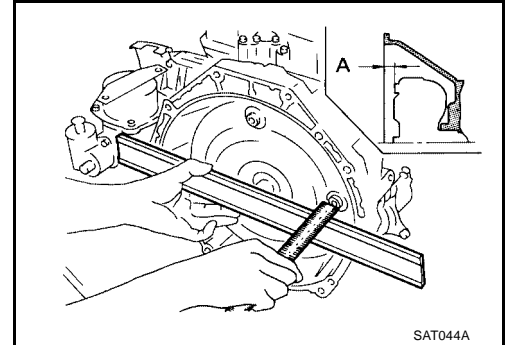
INSTALLATION

CAUTION:

- When replacing an engine or transmission you must make sure the dowels are installed correctly during re-assembly.
- Improper alignment caused by missing dowels may cause vibration, oil leaks or breakage of drive train components.

1. When connecting torque converter to transaxle, measure distance "A" to be certain that they are correctly assembled.

Distance "A" : 14.0 mm (0.551 in) or more

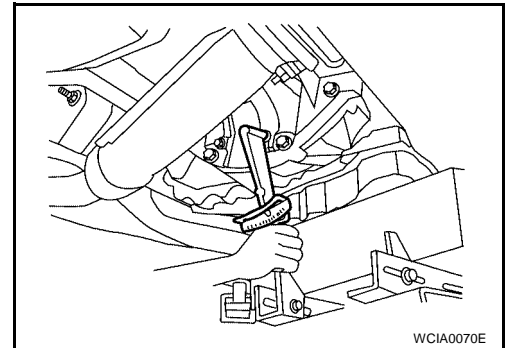


2. Install converter bolts to drive plate.

Converter bolt : 49 - 58 N·m (5.0 - 5.9 kg·m, 37 - 42 ft·lb)

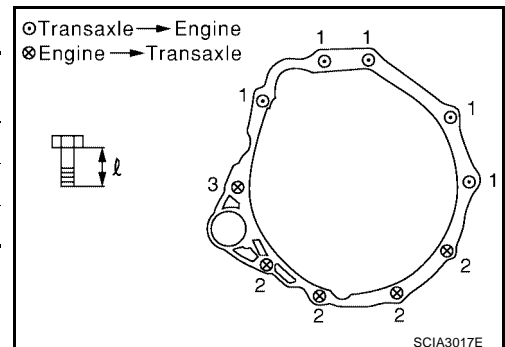
NOTE:

With converter installed, rotate crankshaft several turns to check that transaxle rotates freely without binding.



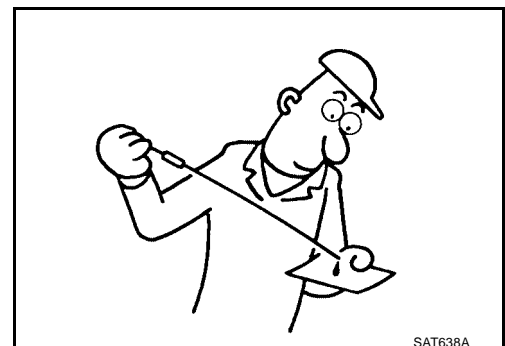
3. Tighten bolts securing transaxle.

| Bolt No. | Tightening torque N·m (kg·m, ft·lb) | ℓ mm (in) |
|----------|--|-----------|
| 1 | 70 - 79 (7.2 - 8.0, 52 - 58) | 55 (2.17) |
| 2 | 41.2 - 52.0 (4.2 - 5.3, 31 - 38) | 40 (1.57) |
| 3 | 70 - 79 (7.2 - 8.0, 52 - 58) | 55 (2.17) |



4. Tighten LH mounting bracket bolts to the specified torque. Refer to [EM-117, "Removal and Installation"](#).
5. Tighten front suspension member bolts to the specified torque. Refer to [FSU-15, "Removal and Installation"](#).
6. Tighten rear plate cover bolts to the specified torque. Refer to [EM-31, "Removal and Installation"](#).
7. Installation of the remaining components is in the reverse order of removal.

- Check fluid level in transaxle.
- Move selector lever through all positions to be sure that transaxle operates correctly.
- With parking brake applied, rotate engine at idling. Move selector lever through N to D and to R position. A slight shock should be felt by hand gripping selector each time transaxle is shifted.
- When replacing the A/T assembly, initialize TCM. Refer to [AT-8, "Precautions for A/T Assembly or TCM Replacement"](#).
- Perform road test. Refer to [AT-57, "ROAD TEST"](#).



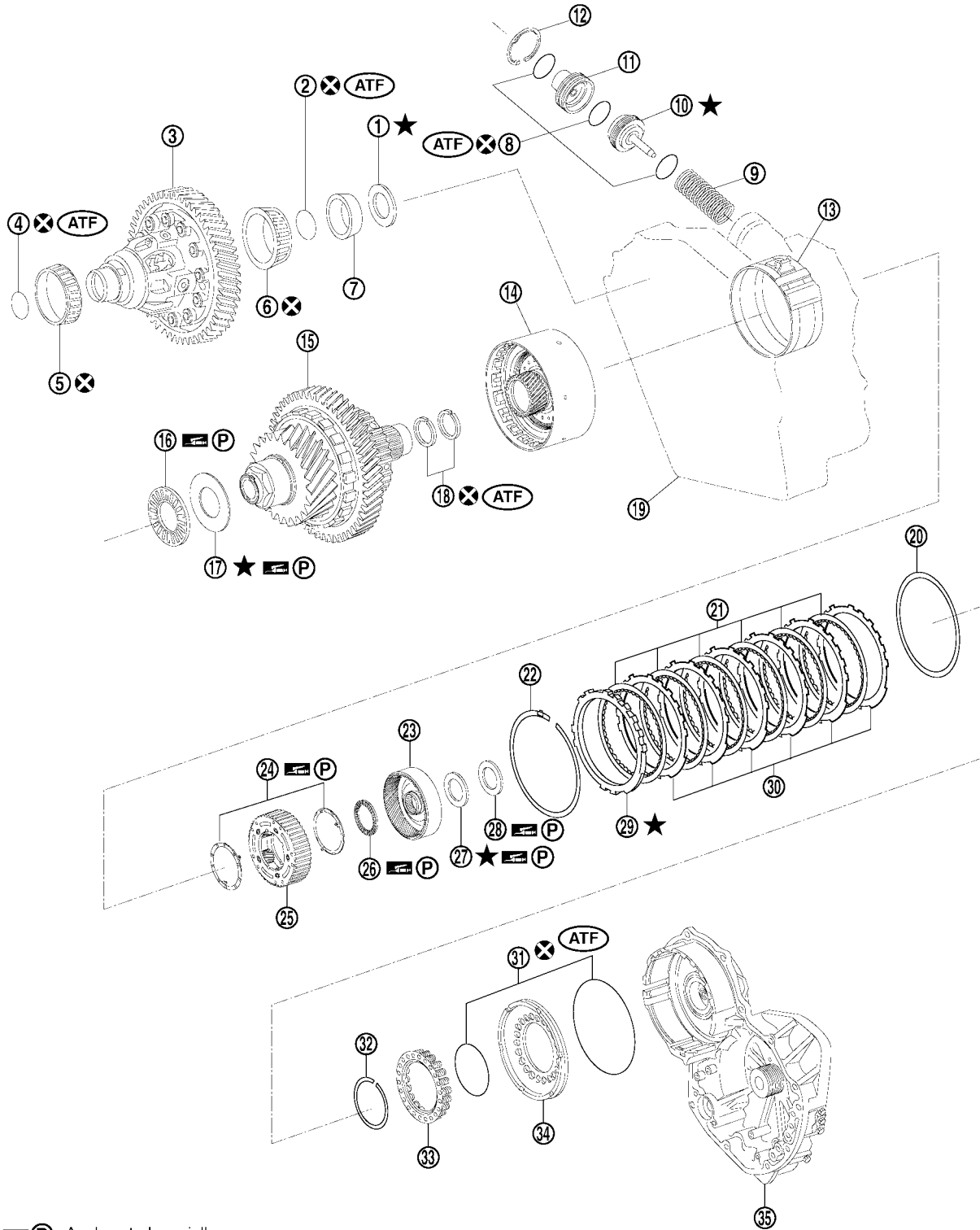
OVERHAUL

OVERHAUL Components

PFP:00000

ECS00BU6

SEC.313 · 314 · 315 · 316



(P) : Apply petroleum jelly.

(ATF) : Apply ATF.

★ : Select with proper thickness.

⊗ : Always replace after every disassembly

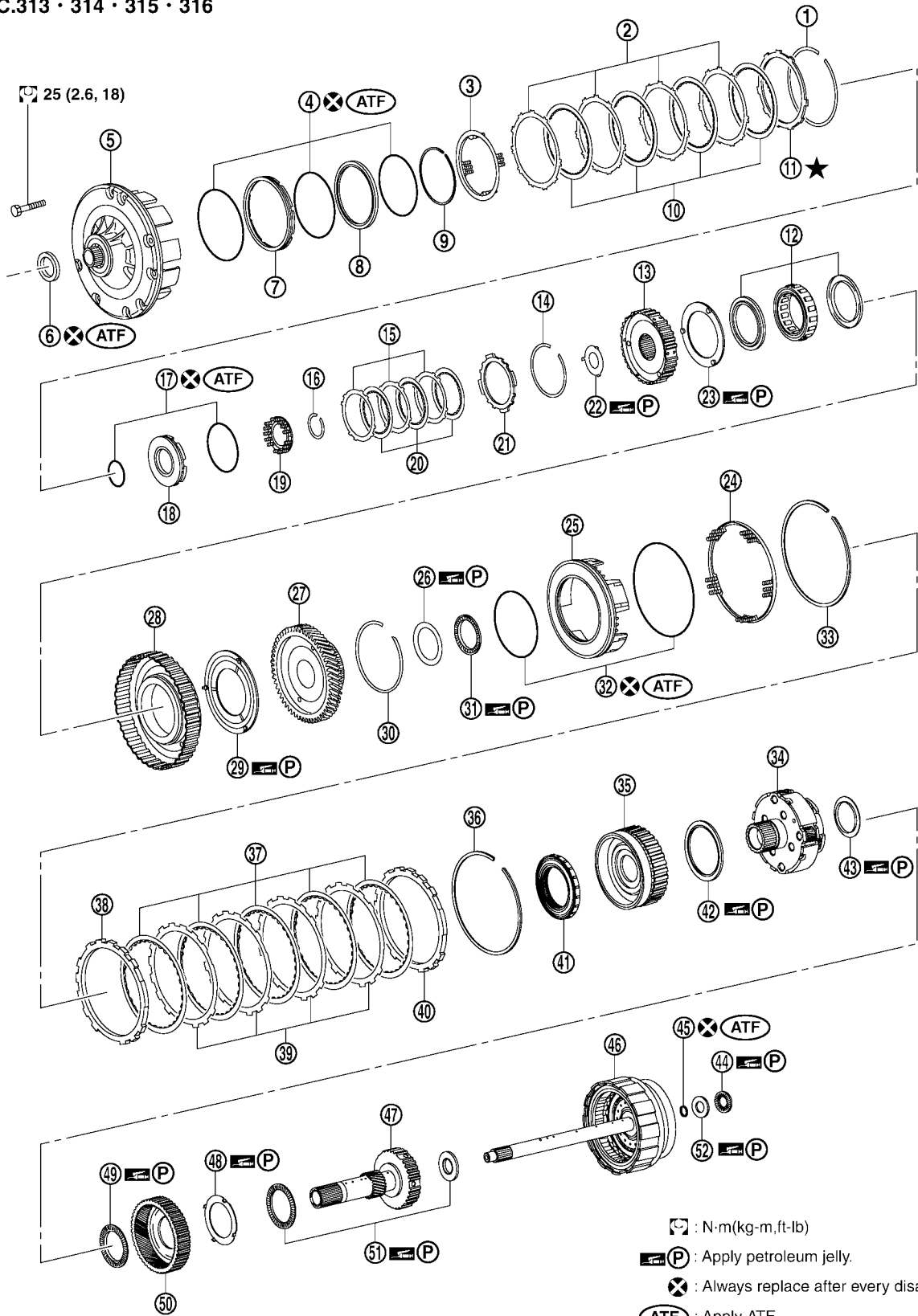
WCIA0334E

OVERHAUL

- | | | |
|---------------------------------------|---|-------------------------------|
| 1. Adjust shim | 2. O-ring | 3. Differential gear assembly |
| 4. O-ring | 5. Tapered roller bearing | 6. Tapered roller bearing |
| 7. Outer race | 8. O-ring | 9. Compression spring |
| 10. U/D brake piston assembly | 11. U/D brake damper assembly | 12. Snap ring |
| 13. U/D brake band assembly | 14. U/D clutch assembly | 15. U/D gear assembly |
| 16. Thrust needle roller bearing | 17. Thrust bearing race | 18. Seal ring |
| 19. Transaxle case | 20. B5 brake cushion plate | 21. B5 brake disc |
| 22. Snap ring | 23. U/D RR planetary ring gear sub assembly | 24. Thrust bearing race |
| 25. U/D RR planetary carrier assembly | 26. Thrust needle roller bearing | 27. Thrust bearing race |
| 28. B5 brake flange | 29. B5 brake plate | 30. O-ring |
| 31. Snap ring | 32. Return spring | 33. B5 brake piston |
| 34. Transaxle case cover | | |

OVERHAUL

SEC.313 · 314 · 315 · 316



- : N·m(kg-m,ft-lb)
- (P) : Apply petroleum jelly.
- (X) : Always replace after every disassembly.
- (ATF) : Apply ATF.
- (★) : Select with proper thickness.

- 1. Snap ring
- 4. O-ring
- 7. 2nd brake piston

- 2. 2nd brake plate
- 5. Oil pump assembly
- 8. 2nd brake sleeve

- 3. Return spring
- 6. Oil seal
- 9. Snap ring

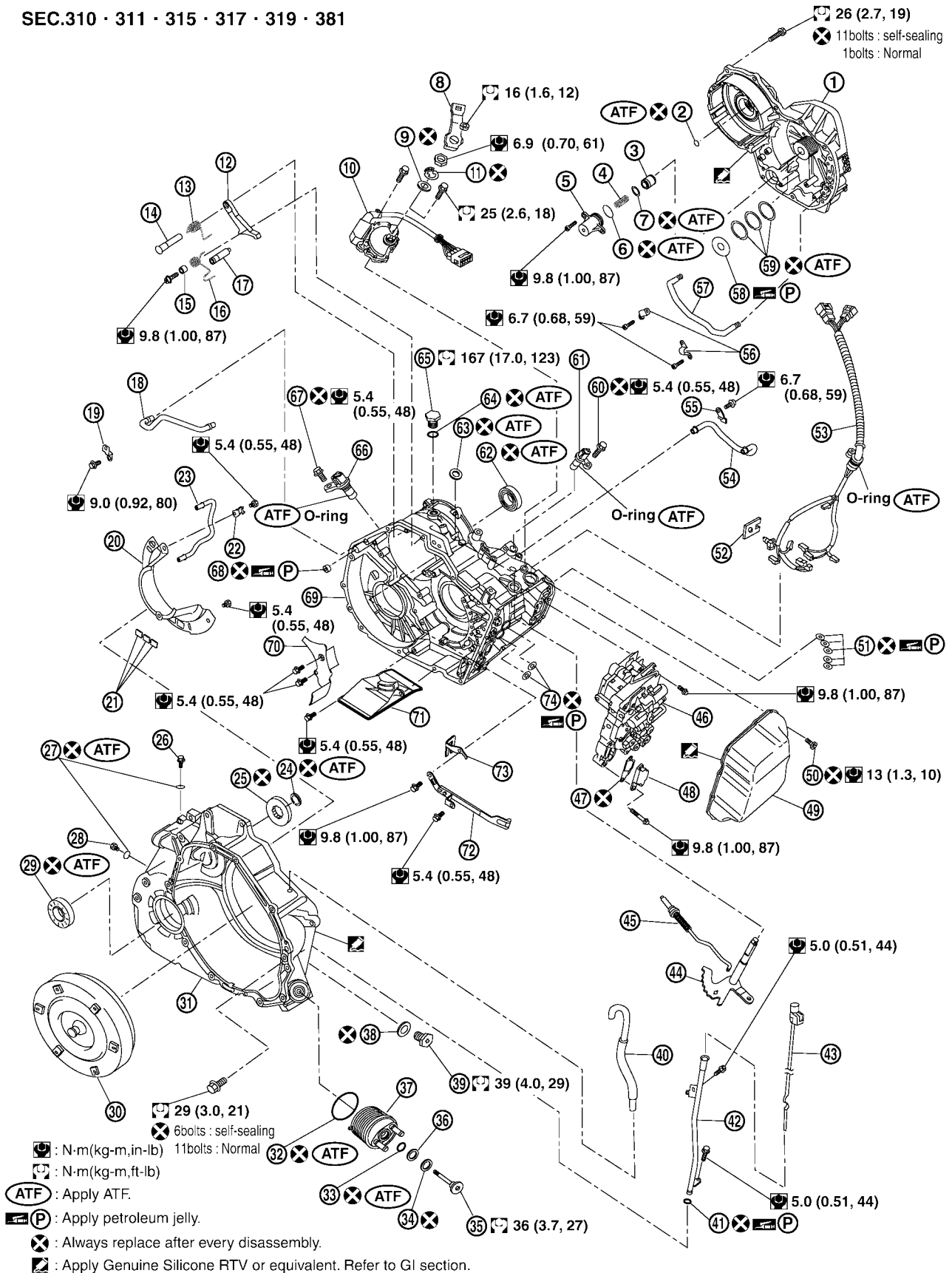
A
B
AT
D
E
F
G
H
I
J
K
L
M

OVERHAUL

- | | | |
|--|-------------------------------------|-------------------------------------|
| 10. 2nd brake disc | 11. 2nd brake flange | 12. One-way clutch No.1 |
| 13. 2nd coast brake hub | 14. Snap ring | 15. 2nd coast brake plate |
| 16. Snap ring | 17. O-ring | 18. 2nd coast brake piston |
| 19. Return spring | 20. 2nd coast brake disc | 21. 2nd coast brake flange |
| 22. Thrust washer | 23. Thrust washer | 24. Return spring |
| 25. 1st and reverse brake piston | 26. Thrust bearing race | 27. Counter drive gear sub assembly |
| 28. One-way clutch outer race sub assembly | 29. Thrust washer | 30. Snap ring |
| 31. Thrust bearing | 32. O-ring | 33. Snap ring |
| 34. Planetary gear assembly | 35. FR planetary ring gear assembly | 36. Snap ring |
| 37. 1st and reverse brake disc | 38. 1st and reverse brake flange | 39. 1st and reverse brake plate |
| 40. 1st and reverse brake flange | 41. One-way clutch No.2 | 42. Thrust bearing |
| 43. Thrust bearing race | 44. Thrust needle roller bearing | 45. Seal ring |
| 46. Forward and direct clutch assembly | 47. Planetary sun gear sub assembly | 48. Thrust bearing race |
| 49. Thrust needle roller bearing | 50. RR planetary ring gear assembly | 51. Thrust needle roller bearing |
| 52. Thrust bearing race | | |

OVERHAUL

SEC.310 · 311 · 315 · 317 · 319 · 381



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

- 1. Transaxle case cover
- 4. Compression spring
- 7. Seal ring

- 2. Seal ring
- 5. Accumulator cover
- 8. Range lever

- 3. Forward clutch accumulator piston
- 6. O-ring
- 9. Washer plate

OVERHAUL

- | | | |
|-------------------------------|---------------------------------------|--|
| 10. PNP switch | 11. Lock washer | 12. Parking lock pawl |
| 13. Torsion spring No.1 | 14. Parking lock pawl shaft | 15. Spring guide sleeve |
| 16. Torsion spring No.2 | 17. Parking lockpin sub assembly | 18. U/D brake apply tube sub assembly |
| 19. Tube clamp | 20. Oil reservoir plate | 21. Oil cleaner magnet |
| 22. Tube clamp | 23. Differential gear lube apply tube | 24. Seal ring |
| 25. Thrust roller bearing | 26. Straight screw plug | 27. O-ring |
| 28. Straight screw plug | 29. Differential side oil seal | 30. Torque converter |
| 31. Transaxle housing | 32. O-ring | 33. O-ring |
| 34. Spring washer | 35. Hexagon bolt | 36. Washer |
| 37. ATF cooler assembly | 38. gasket | 39. Drain plug |
| 40. Breather hose | 41. O-ring | 42. A/T fluid charging pipe |
| 43. A/T fluid level gauge | 44. Manual valve lever sub assembly | 45. Parking lock rod sub assembly |
| 46. Control valve assembly | 47. Suction cover gasket | 48. Suction cover |
| 49. Side cover | 50. Seal bolt | 51. Governor apply gasket |
| 52. Sensor clamp | 53. Transmission wire | 54. Transaxle lube apply tube |
| 55. Tube clamp | 56. Tube clamp | 57. U/D clutch apply tube sub assembly |
| 58. Bearing race | 59. Seal ring | 60. Seal bolt |
| 61. Turbine revolution sensor | 62. Differential side oil seal | 63. Manual valve oil seal |
| 64. O-ring | 65. Anchor bolt | 66. Revolution sensor |
| 67. Seal bolt | 68. Governor apply gasket | 69. Transaxle case |
| 70. Oil reserver plate | 71. Oil strainer sub assembly | 72. Manual detent spring sub assembly |
| 73. Parking lock pawl bracket | 74. Governor apply gasket | |

OVERHAUL

ECS00BU7

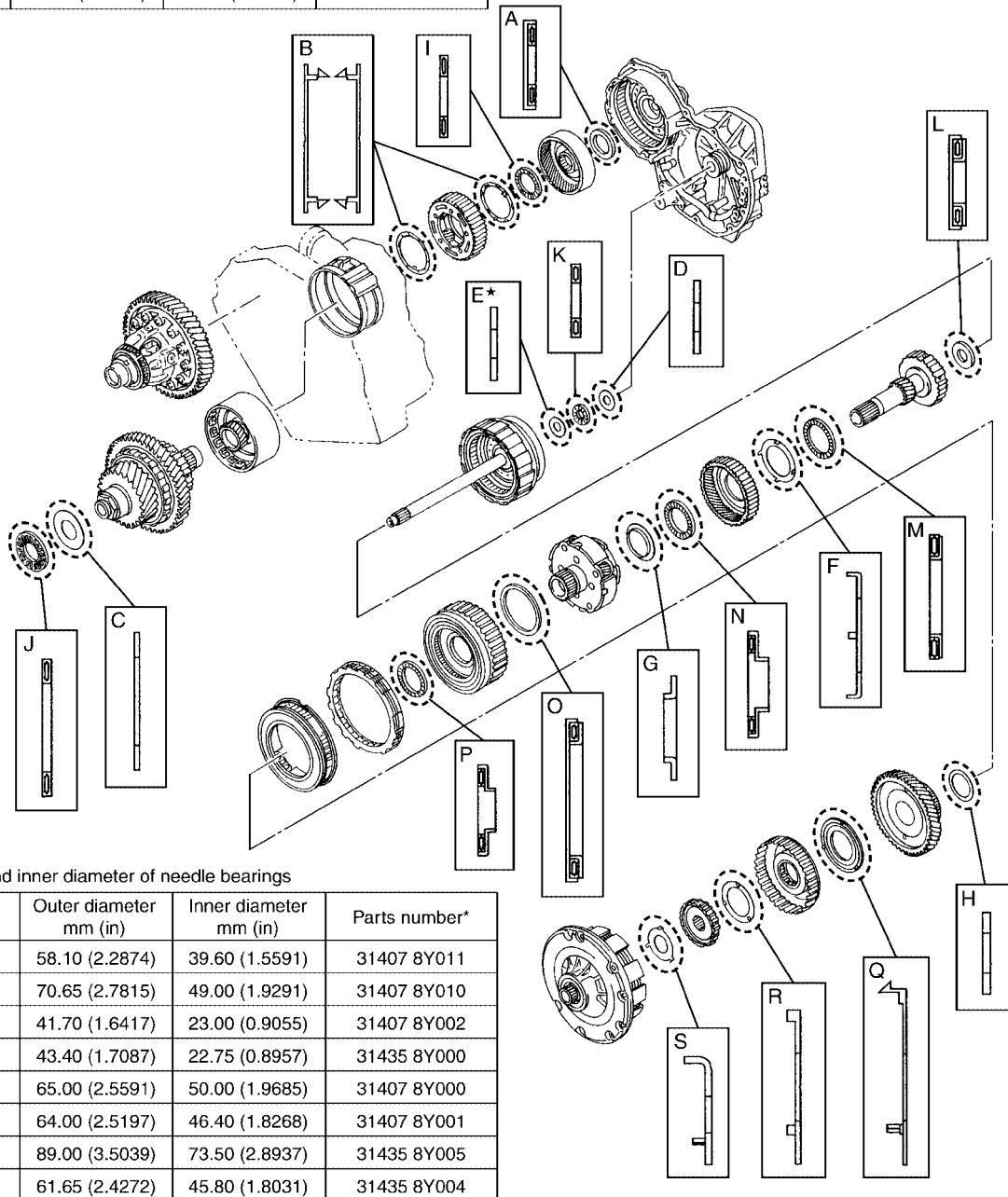
Locations of Needle Bearings, Bearing Races and Thrust Washers

Outer and inner diameter of bearing races

| Item number | Outer diameter mm (in) | Inner diameter mm (in) | Parts number* |
|-------------|------------------------|------------------------|---------------|
| A | 57.70 (2.2716) | 37.00 (1.4567) | 31435 8Y020 |
| B | 77.60 (3.0551) | 66.80 (2.6299) | 31508 8Y010 |
| C | 71.00 (2.7953) | 49.10 (1.9331) | 31435 8Y021 |
| D | 41.00 (1.6142) | 22.00 (0.8661) | 31435 8Y010 |
| E* | 41.00 (1.6142) | 13.50 (0.5315) | 31435 8Y012 |
| F | 74.00 (2.9134) | 53.00 (2.0866) | 31435 8Y001 |
| G | 61.00 (2.4016) | 43.20 (1.7008) | 31435 8Y002 |
| H | 58.00 (2.2835) | 43.80 (1.7244) | 31435 8Y022 |

Outer and inner diameter of thrust washers

| Item number | Outer diameter mm (in) | Inner diameter mm (in) | Parts number* |
|-------------|------------------------|------------------------|---------------|
| Q | 99.30 (3.9094) | 56.50 (2.2244) | 31508 8Y000 |
| R | 77.30 (3.0433) | 56.50 (2.2244) | 31508 8Y001 |
| S | 74.30 (2.9252) | 47.00 (1.8504) | 31508 8Y002 |



Outer and inner diameter of needle bearings

| Item number | Outer diameter mm (in) | Inner diameter mm (in) | Parts number* |
|-------------|------------------------|------------------------|---------------|
| I | 58.10 (2.2874) | 39.60 (1.5591) | 31407 8Y011 |
| J | 70.65 (2.7815) | 49.00 (1.9291) | 31407 8Y010 |
| K | 41.70 (1.6417) | 23.00 (0.9055) | 31407 8Y002 |
| L | 43.40 (1.7087) | 22.75 (0.8957) | 31435 8Y000 |
| M | 65.00 (2.5591) | 50.00 (1.9685) | 31407 8Y000 |
| N | 64.00 (2.5197) | 46.40 (1.8268) | 31407 8Y001 |
| O | 89.00 (3.5039) | 73.50 (2.8937) | 31435 8Y005 |
| P | 61.65 (2.4272) | 45.80 (1.8031) | 31435 8Y004 |

★ : Select with proper thickness.

* : Always check with the Parts Department for the latest parts information.

SCIA4478E

DISASSEMBLY

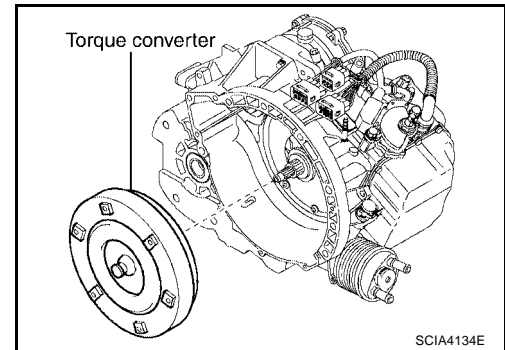
PFP:31020

ECS00BU8

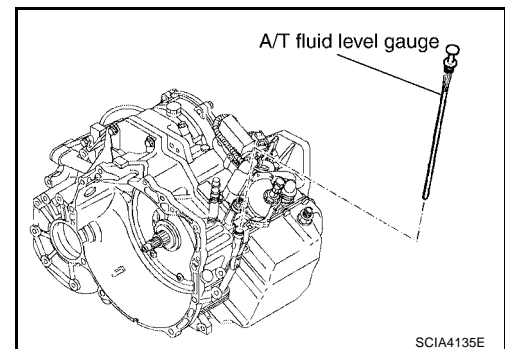
DISASSEMBLY

Disassembly

1. Drain ATF through drain plug.
2. Remove torque converter by transaxle case it firmly and turning while pulling straight out.



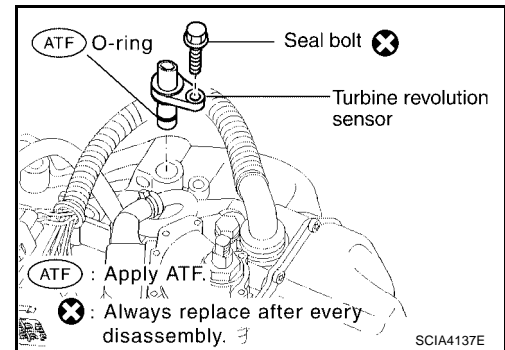
3. Remove A/T fluid level gauge.
4. Remove A/T fluid charging pipe.
5. Remove O-ring from A/T fluid charging pipe.
6. Remove air breather hose.
7. Remove A/T fluid cooler tube.



8. Remove turbine revolution sensor.

CAUTION:

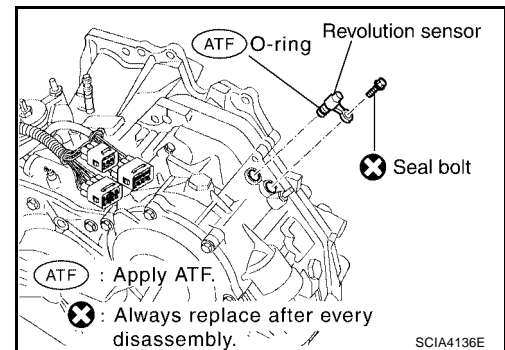
Be careful not to damage the turbine revolution sensor and transaxle case.



9. Remove revolution sensor.

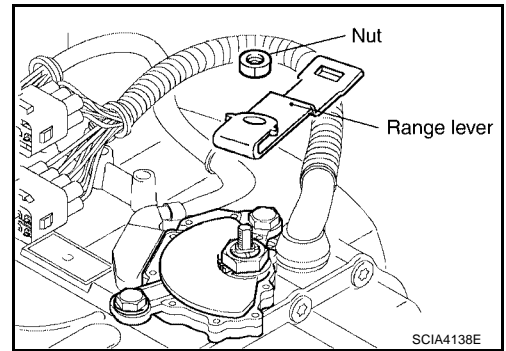
CAUTION:

Be careful not to damage the revolution sensor and transaxle case.

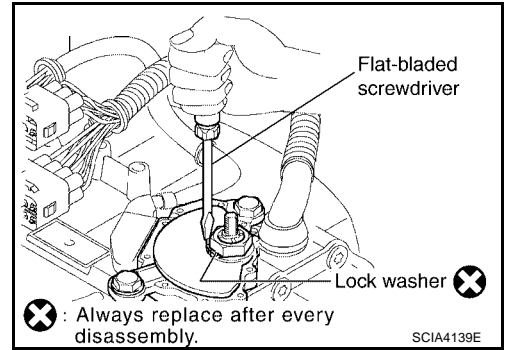


DISASSEMBLY

10. Remove nut and range lever.

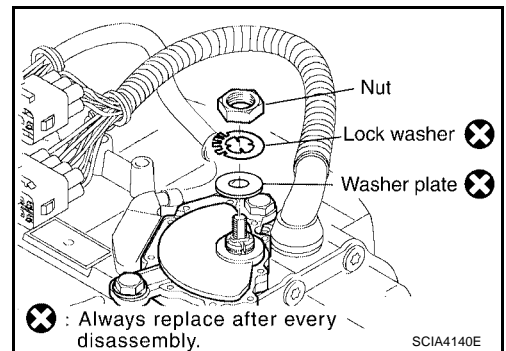


11. Using a flat-bladed screwdriver, pry off the lock washer.



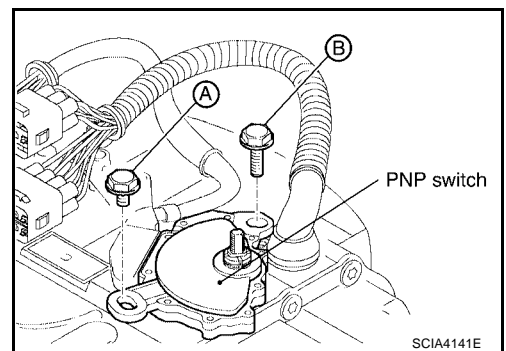
12. Loosen nut and remove lock washer.

13. Remove washer plate.



14. Remove PNP switch from transaxle case.

| Bolt symbol | Length mm (in) | Number of bolts |
|-------------|----------------|-----------------|
| A | 20 (0.79) | 1 |
| B | 33 (1.30) | 1 |



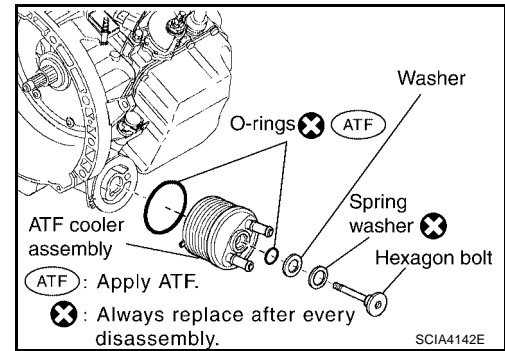
A
B
AT
D
E
F
G
H
I
J
K
L
M

DISASSEMBLY

15. Remove hexagon bolt.
16. Remove ATF cooler assembly, washer and spring washer.
17. Remove O-rings from the ATF cooler assembly.

NOTE:

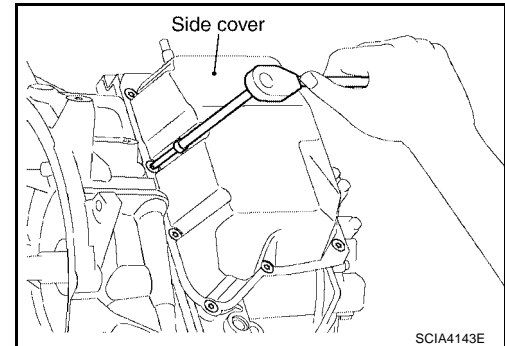
Do not reuse spring washer or O-rings.



18. Remove side cover.

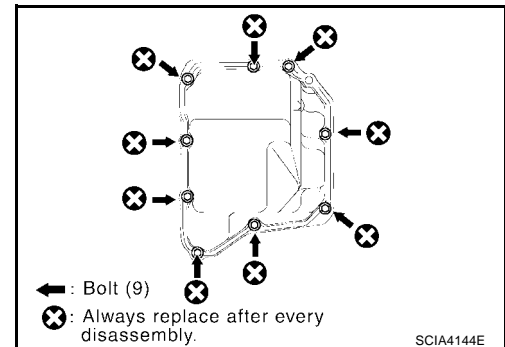
CAUTION:

Be careful not to damage side cover and transaxle case.



NOTE:

Do not reuse seal bolts

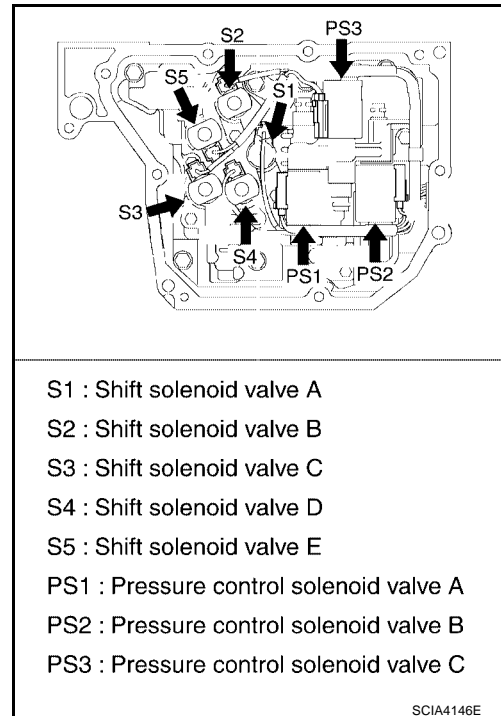


DISASSEMBLY

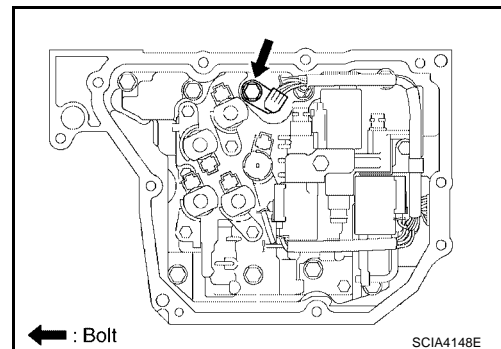
19. Disconnect solenoid connectors.

CAUTION:

Be careful not to damage connector.



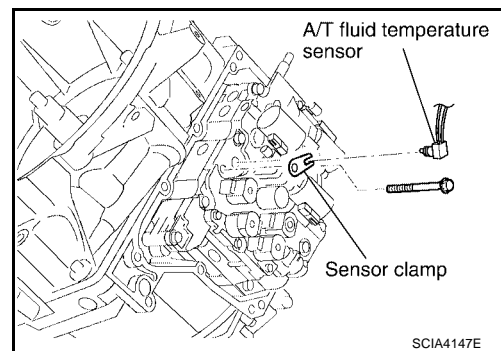
20. Remove sensor clamp bolt.



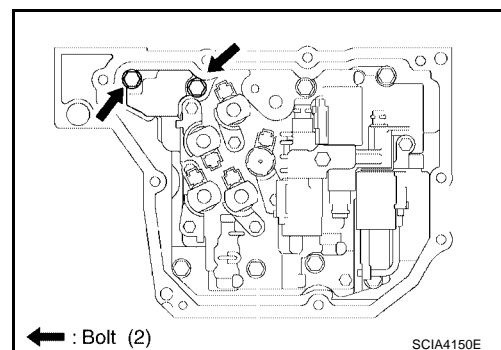
21. Remove sensor clamp and A/T fluid temperature sensor.

CAUTION:

Be careful not to damage A/T fluid temperature sensor.

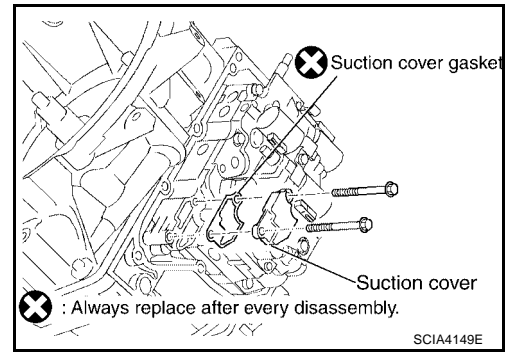


22. Remove suction cover bolts.



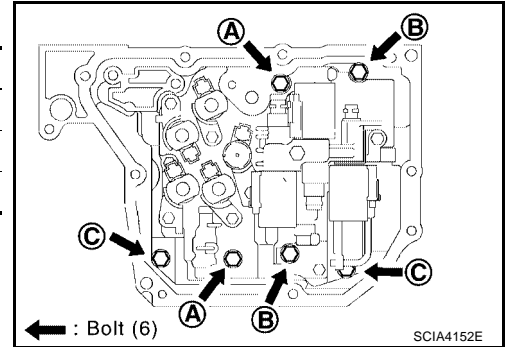
DISASSEMBLY

23. Remove suction cover and suction cover gasket.



24. Remove control valve assembly bolts from transaxle case.

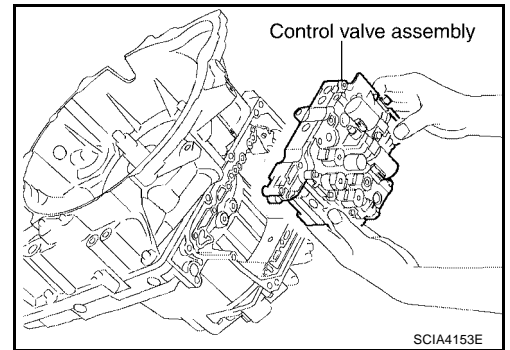
| Bolt symbol | Length mm (in) | Number of bolts |
|-------------|----------------|-----------------|
| A | 55 (2.17) | 2 |
| B | 50 (1.97) | 2 |
| C | 16 (0.63) | 2 |



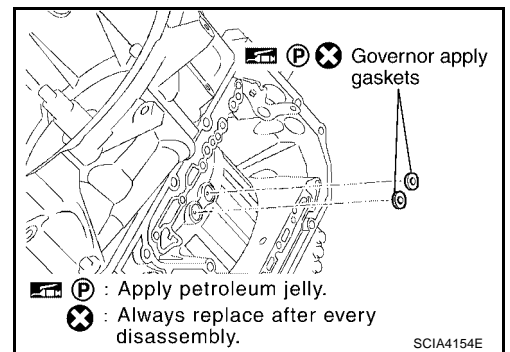
25. While holding control valve assembly, disconnect parking lock rod sub assembly from manual valve lever sub assembly and remove control valve assembly.

NOTE:

Shift position is "N".



26. Remove governor apply gaskets.

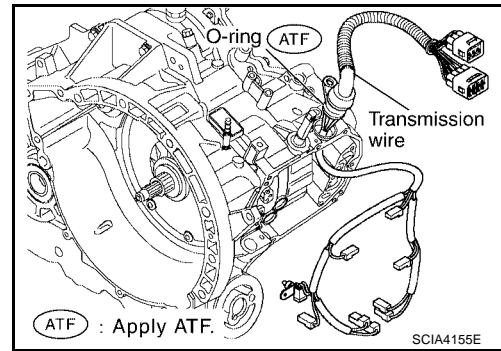


DISASSEMBLY

27. Remove terminal cord assembly.

CAUTION:

Be careful not to damage solenoid connectors and A/T fluid temperature sensor.

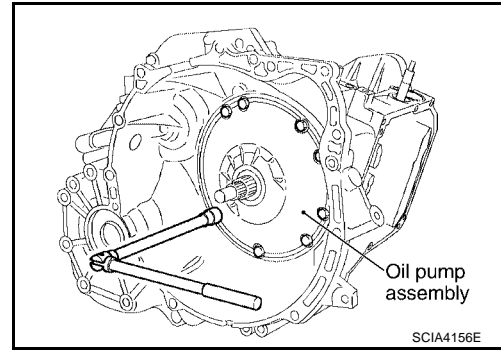


A

B

AT

28. Remove oil pump assembly bolts from transaxle case.

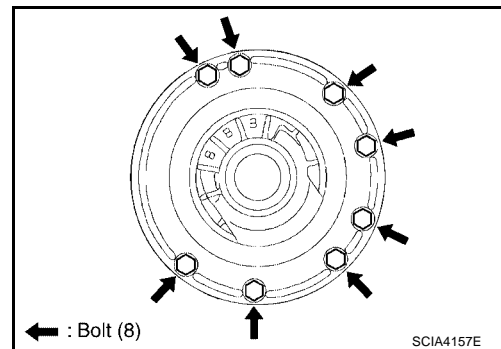


D

E

F

G



H

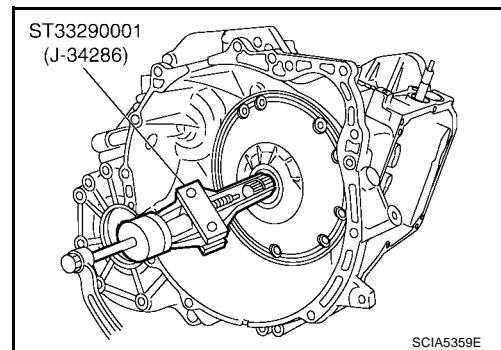
I

J

K

29. Remove oil pump assembly using Tool.

Tool number ST33290001 (J-34286)



L

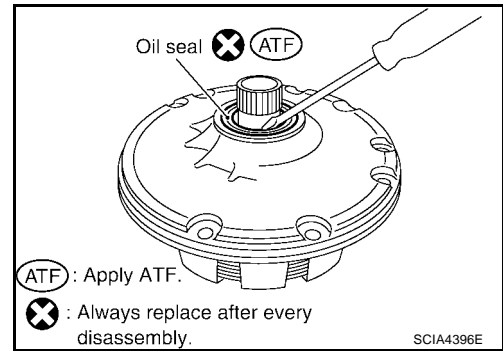
M

DISASSEMBLY

30. Remove oil seal from oil pump assembly using suitable tool.

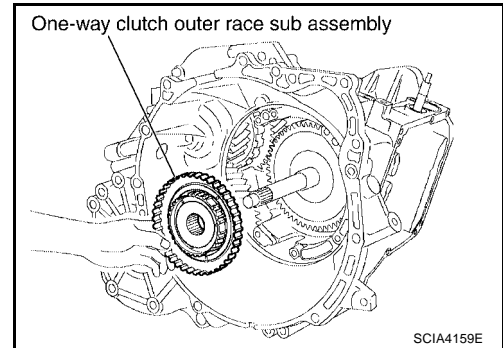
CAUTION:

Be careful not to scratch oil pump assembly.



31. Remove one-way clutch outer race sub assembly.

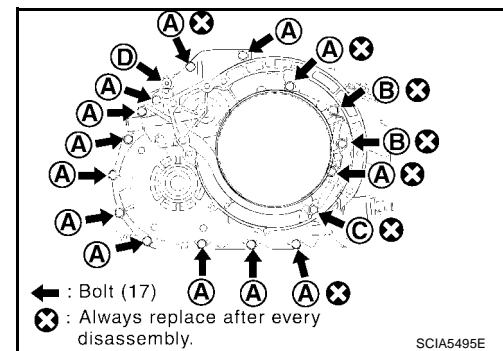
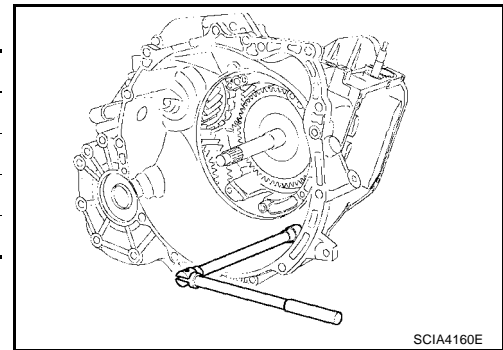
32. Remove thrust washer.



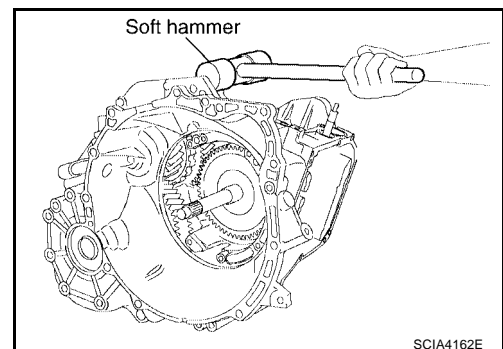
33. Remove transaxle housing bolts from transaxle case.

| Bolt symbol | Length mm (in) | Number of bolts |
|-------------|----------------|-----------------|
| A | 30 (1.18) | 13 |
| B | 35 (1.38) | 2 |
| C | 45 (1.77) | 1 |
| D* | — | 1 |

*:Torx bolt

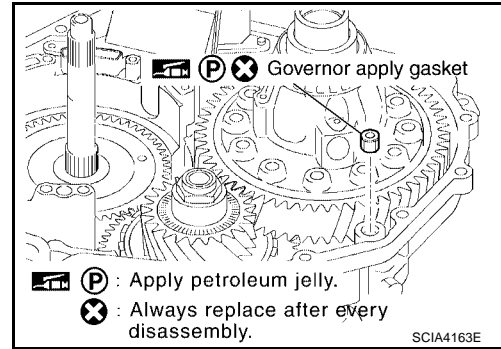


34. Remove transaxle housing with a soft hammer.

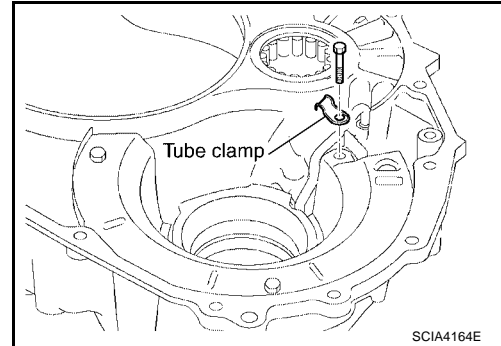


DISASSEMBLY

- 35. Remove governor apply gasket.
- 36. Remove seal ring.

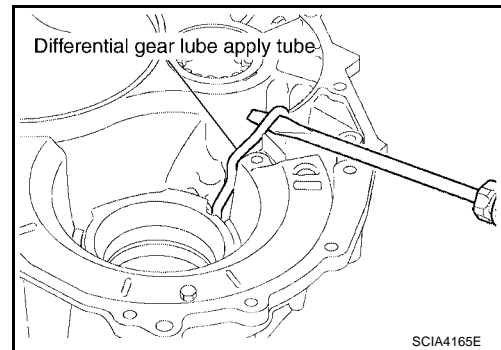


- 37. Remove tube clamp bolt and clamp.

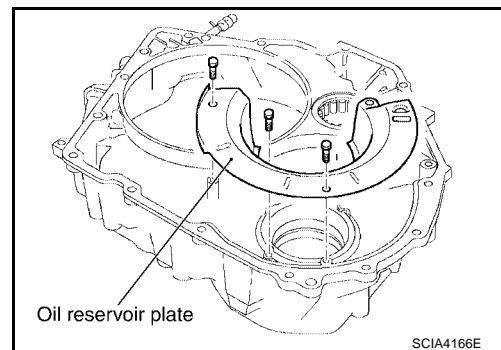


- 38. Remove differential gear lube apply tube using a suitable tool.

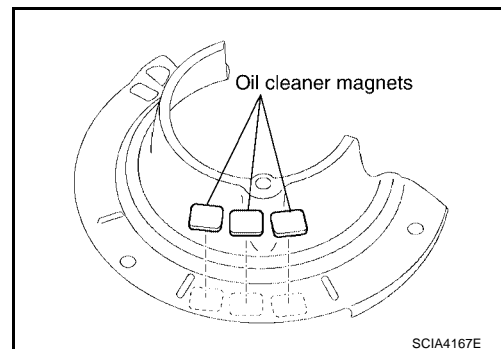
CAUTION:
Be careful not to bend or damage differential gear lube apply tube.
Be careful not to damage transaxle housing.



- 39. Remove oil reservoir plate.



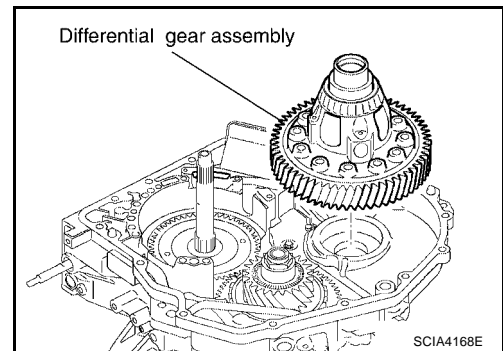
- 40. Remove oil cleaner magnets from oil reservoir plate.



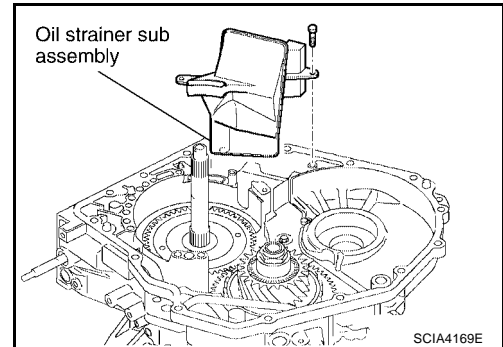
A
B
AT
D
E
F
G
H
I
J
K
L
M

DISASSEMBLY

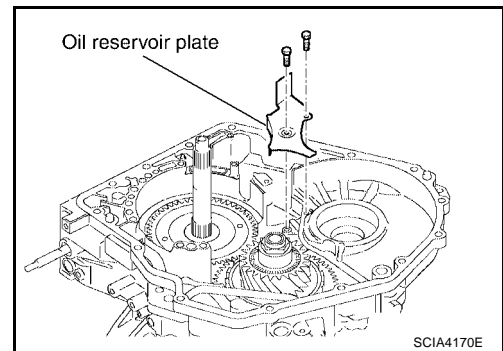
41. Remove differential gear assembly.



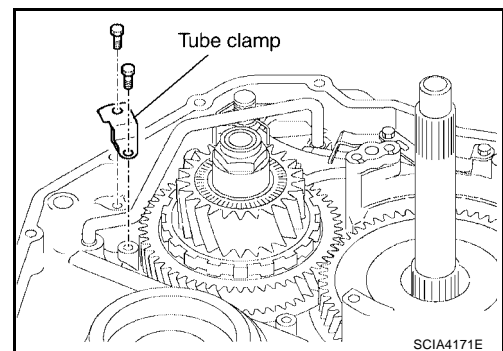
42. Remove oil strainer sub assembly.



43. Remove oil reservoir plate.

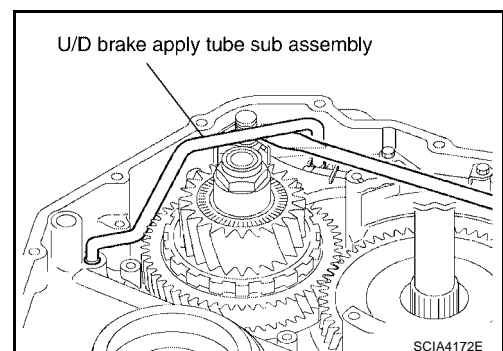


44. Remove tube clamp.



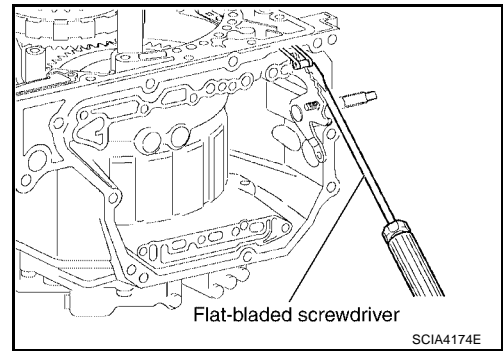
45. Remove U/D brake apply tube sub assembly using suitable tool.

CAUTION:
Be careful not to bend or damage U/D brake apply tube sub assembly.
Be careful not to damage transaxle case.

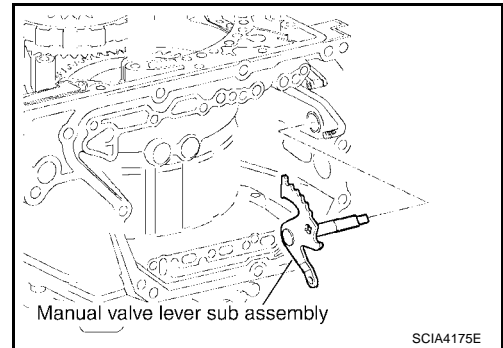


DISASSEMBLY

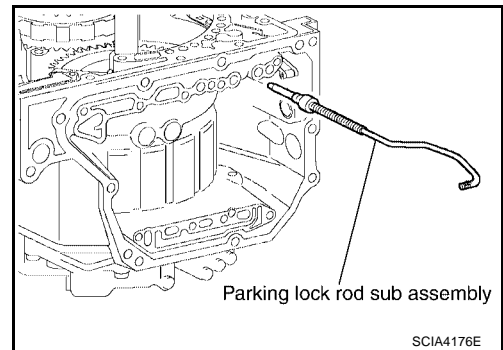
46. Disconnect manual detent spring sub assembly from manual valve lever sub assembly using a flat-bladed screwdriver or suitable tool.



47. Remove manual valve lever sub assembly from parking lock rod sub assembly.

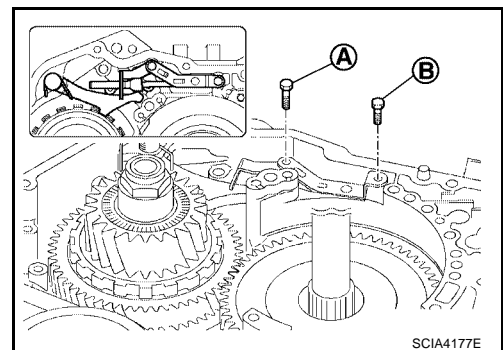


48. Remove parking lock rod sub assembly.

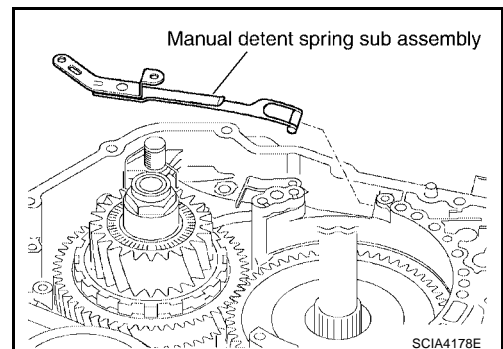


49. Remove bolts for manual detent spring sub assembly.

| Bolt symbol | Length mm (in) | Number of bolts |
|-------------|----------------|-----------------|
| A | 16.7 (0.657) | 1 |
| B | 14.0 (0.551) | 1 |



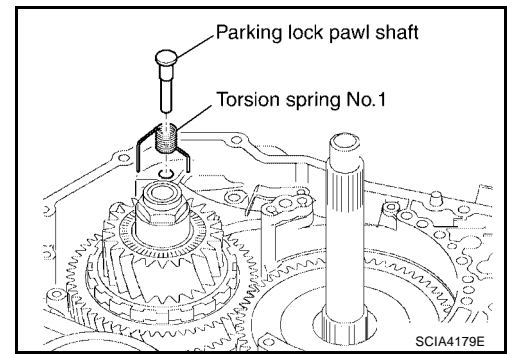
50. Remove manual detent spring sub assembly.



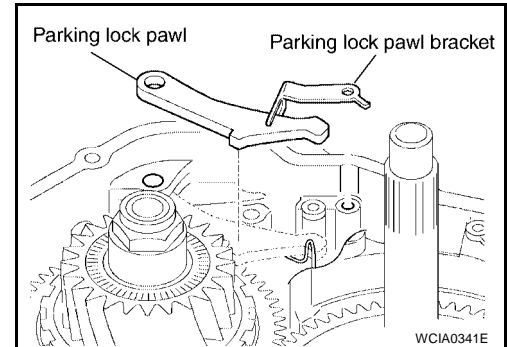
A
B
AT
D
E
F
G
H
I
J
K
L
M

DISASSEMBLY

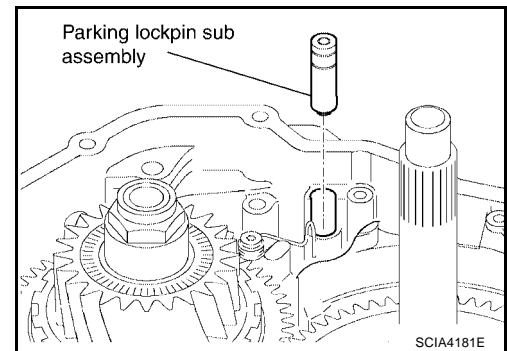
51. Remove parking lock pawl shaft and torsion spring No.1.



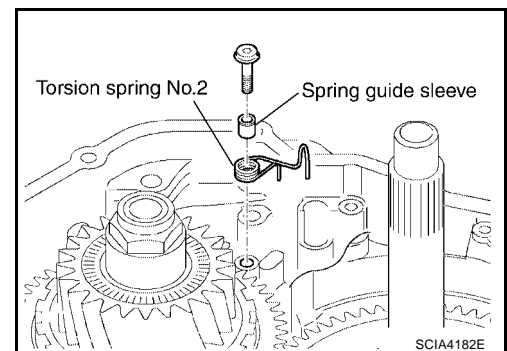
52. Remove parking lock pawl bracket and parking lock pawl.



53. Remove parking lockpin sub assembly.

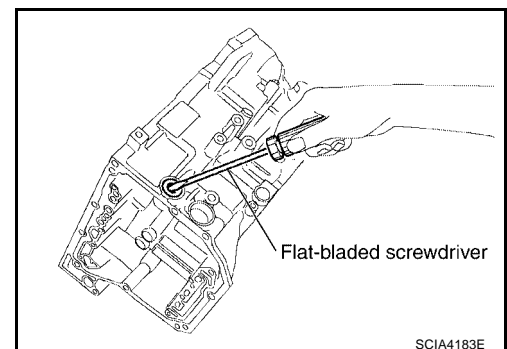


54. Remove spring guide sleeve and torsion spring No.2.



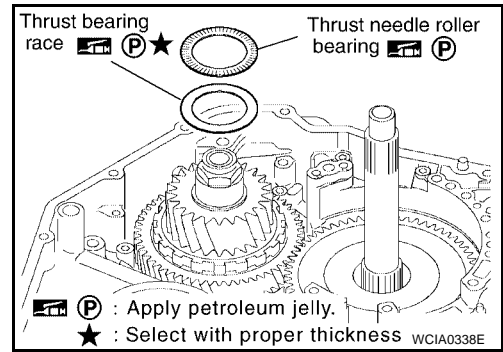
55. Remove manual valve oil seal using a flat-bladed screwdriver.

CAUTION:
Be careful not to damage transaxle case.



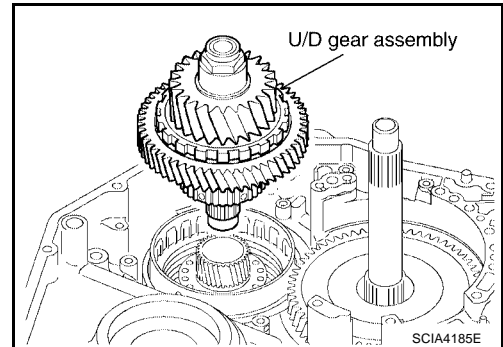
DISASSEMBLY

56. Remove thrust needle roller bearing and thrust bearing race from U/D gear assembly.

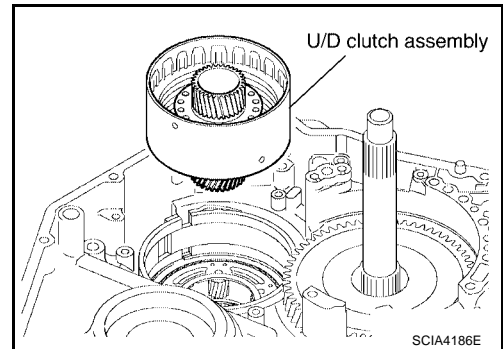


57. Remove U/D gear assembly.

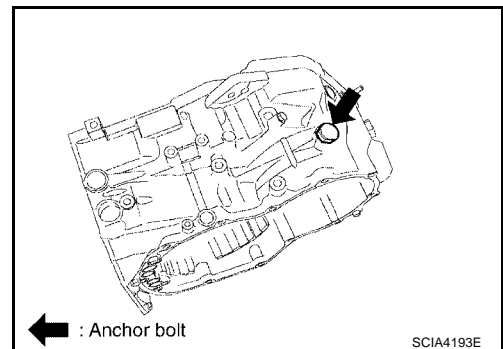
58. Remove seal rings from U/D gear assembly.



59. Remove U/D clutch assembly.

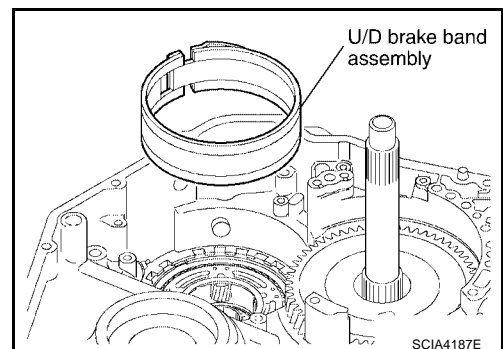


60. Remove anchor bolt.



61. Remove U/D brake band assembly.

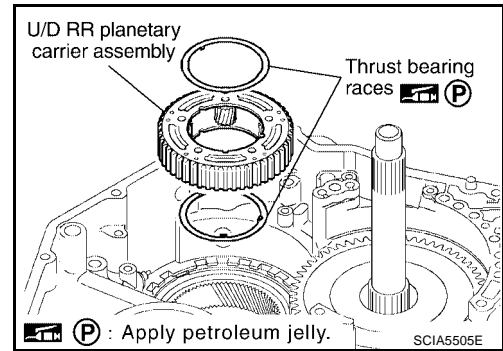
CAUTION:
Be careful not to damage transaxle case.



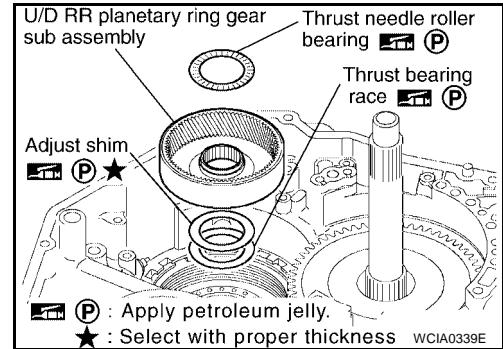
A
B
AT
D
E
F
G
H
I
J
K
L
M

DISASSEMBLY

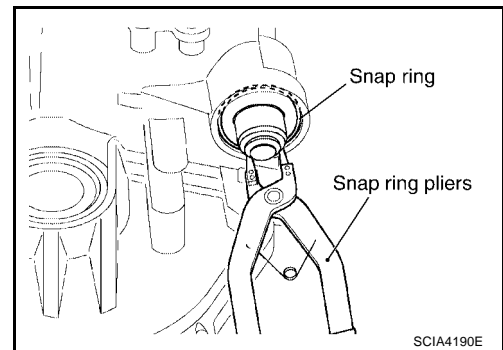
62. Remove U/D RR planetary carrier assembly and thrust bearing races.



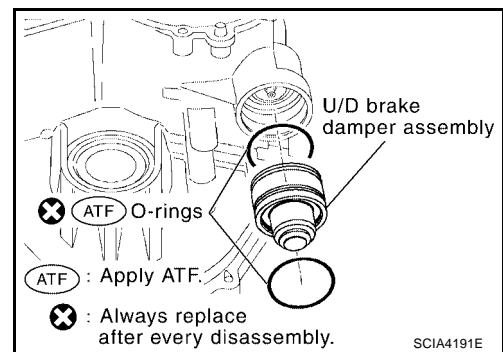
63. Remove U/D RR planetary ring gear sub assembly.
 64. Remove thrust needle roller bearing adjusting shim and thrust bearing race from U/D RR planetary ring gear sub assembly.



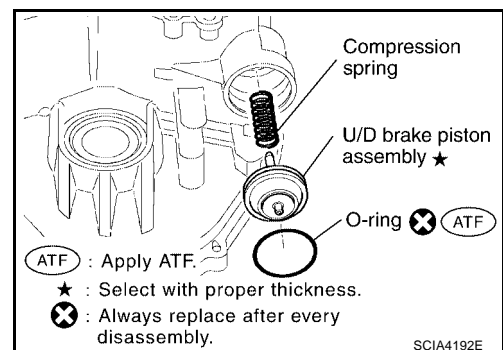
65. Remove snap ring using a snap ring pliers



66. Remove U/D brake damper assembly.
 67. Remove O-rings from U/D brake damper assembly.



68. Remove U/D brake piston assembly and compression spring.
 69. Remove O-ring from U/D brake piston assembly.

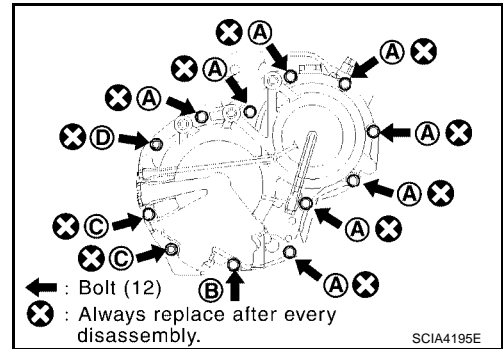
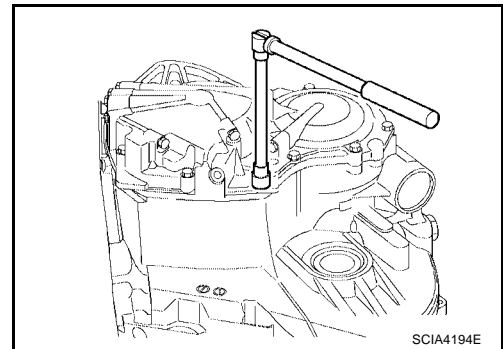


DISASSEMBLY

70. Remove transaxle case cover bolts from transaxle case.

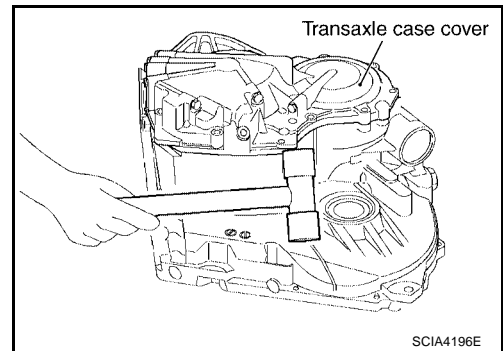
| Bolt symbol | Length mm (in) | Number of bolts |
|-------------|----------------|-----------------|
| A | 30 (1.18) | 8 |
| B | 45 (1.77) | 2 |
| C | 48 (1.89) | 2 |
| D* | — | 1 |

*:Stud bolt

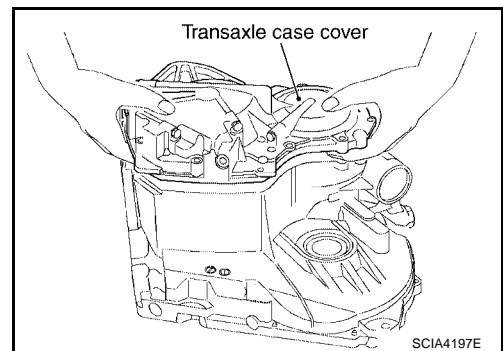


71. Tap transaxle case cover with a soft hammer.

CAUTION:
Be careful not to damage transaxle case cover.

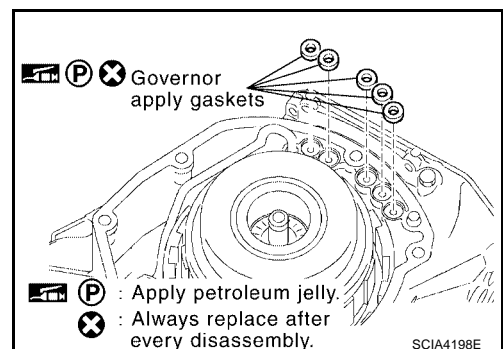


72. Remove transaxle case cover.



73. Remove governor apply gaskets from transaxle case.

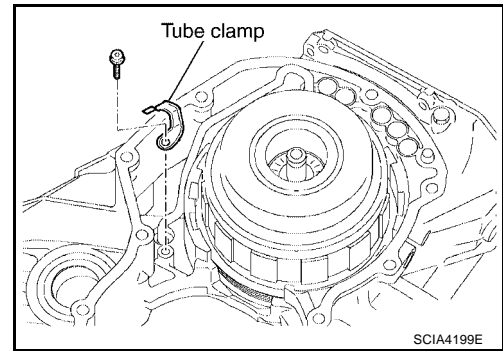
NOTE:
Do not reuse gaskets



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

DISASSEMBLY

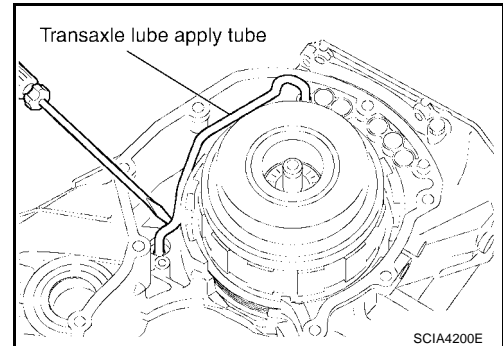
74. Remove tube clamp bolt.



75. Remove transaxle lube apply tube, using a flat-bladed screwdriver.

CAUTION:

Be careful not to bend or damage transaxle lube apply tube. Be careful not to damage transaxle case.

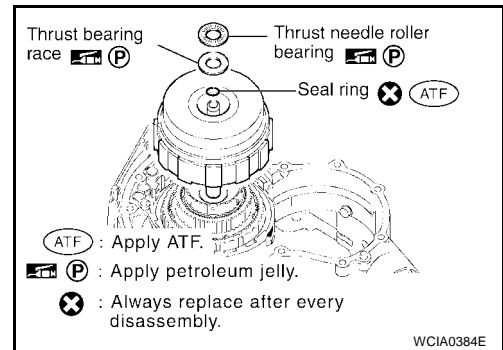


76. Remove forward and direct clutch assembly.

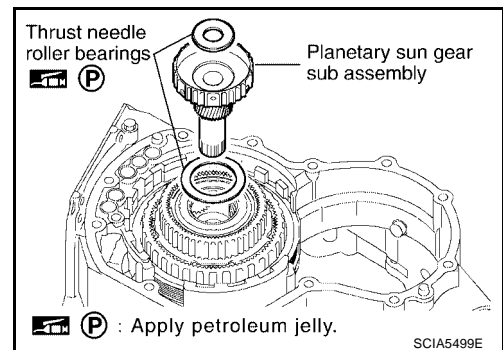
77. Remove thrust bearing race, thrust needle roller bearing and seal ring from forward and direct clutch assembly.

NOTE:

Do not reuse seal ring.



78. Remove planetary sun gear sub assembly and thrust needle roller bearings.

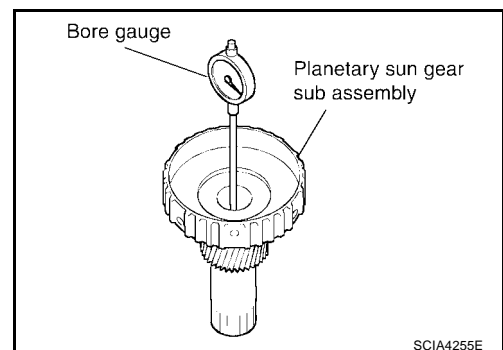


79. Measure the inner diameter of planetary sun gear sub assembly bushing, using suitable bore gauge.

CAUTION:

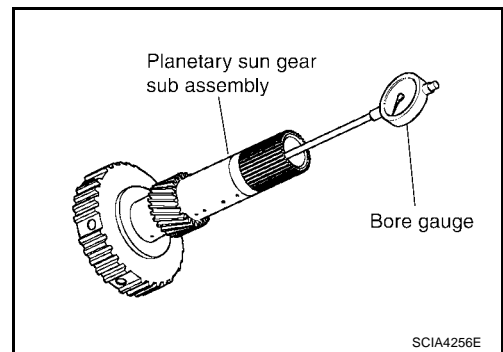
Measure at different places and take an average. If it is greater than the maximum, replace it with a new planetary sun gear sub assembly.

Standard :22.200 - 22.226mm (0.8740 - 0.8750in)
Allowable limit :22.276 (0.8770in)

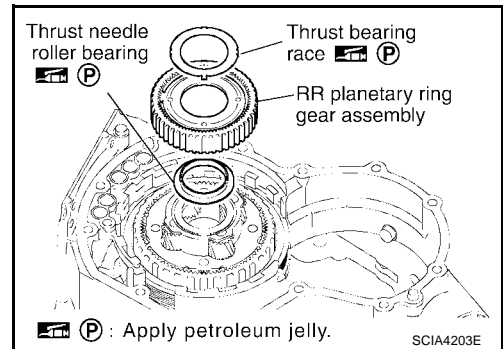


DISASSEMBLY

- 80. Remove RR planetary ring gear assembly.
- 81. Remove thrust needle roller bearing and thrust bearing race from RR planetary ring gear assembly.



- 82. Remove planetary gear assembly.
- 83. Remove thrust bearing race from planetary gear assembly.



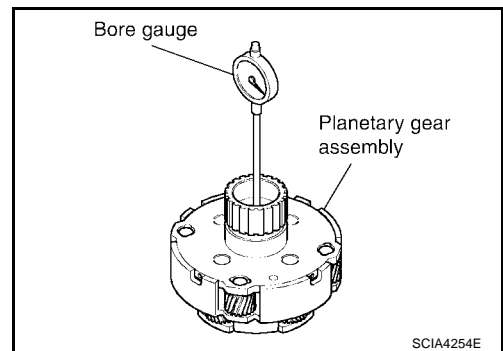
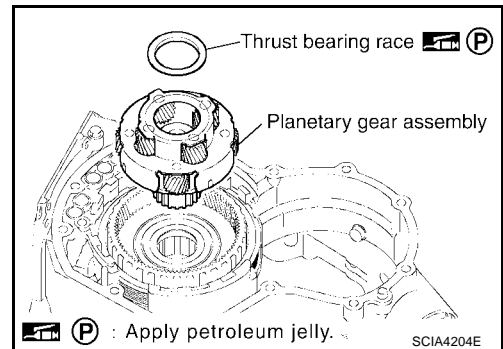
- 84. Measure the inner diameter of planetary gear assembly bushing, using suitable bore gauge.

CAUTION:

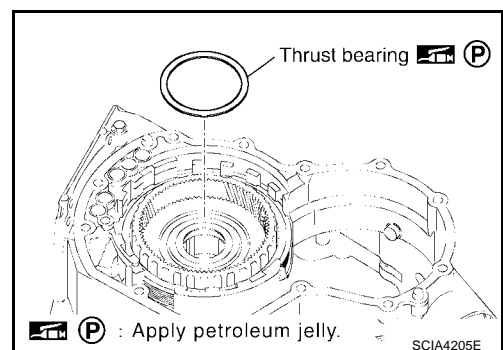
Measure at different places and take an average. If it is greater than the maximum, replace it with a new planetary gear assembly.

Standard :30.056 - 30.082mm (1.1833 - 1.1843in)

Allowable limit :30.132 (1.1863in)



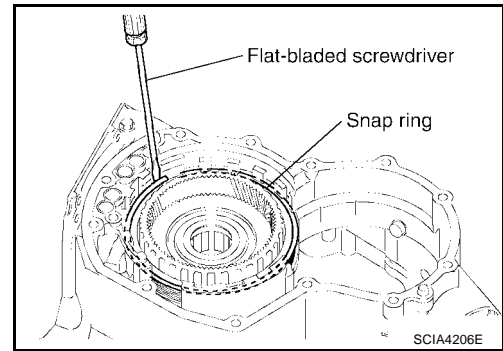
- 85. Remove thrust bearing.



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

DISASSEMBLY

86. Remove snap ring using a flat-bladed screwdriver.



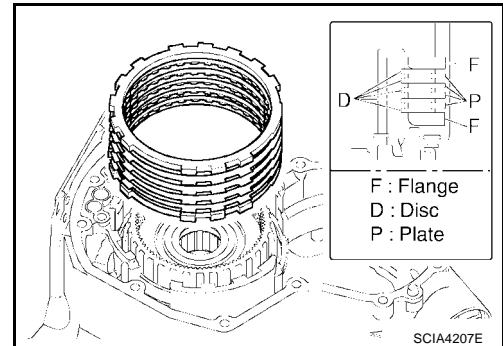
87. Remove 1st and reverse brake flanges, 1st and reverse brake discs and 1st and reverse brake plates.

- INSPECTION

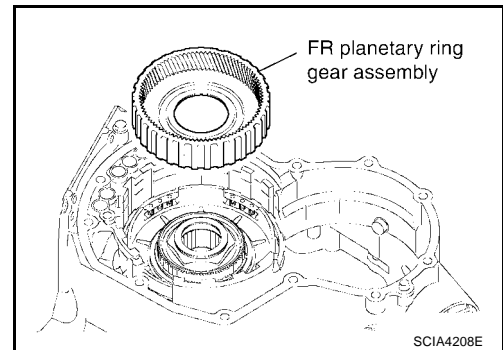
- Check that the sliding surface of discs are not worn and burnt. If necessary, replace them.

CAUTION:

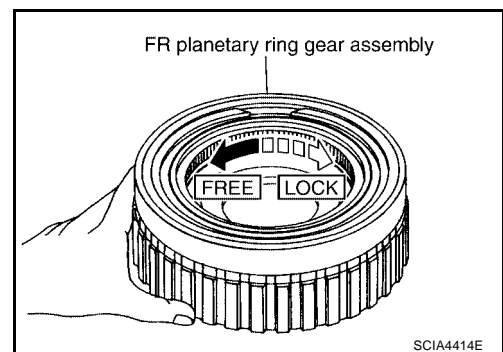
Replace new discs by soaking them at least 2 hours in A/T fluid.



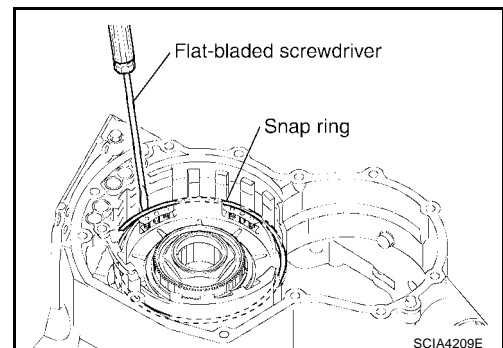
88. Remove FR planetary ring gear assembly with one-way clutch No.2.



89. Make sure that the FR planetary ring gear assembly should turn freely counterclockwise and should lock clockwise.

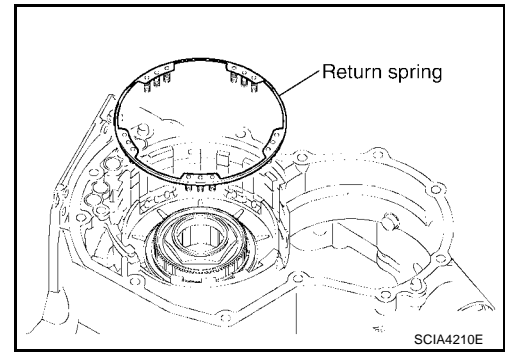


90. Remove snap ring using a flat-bladed screwdriver.

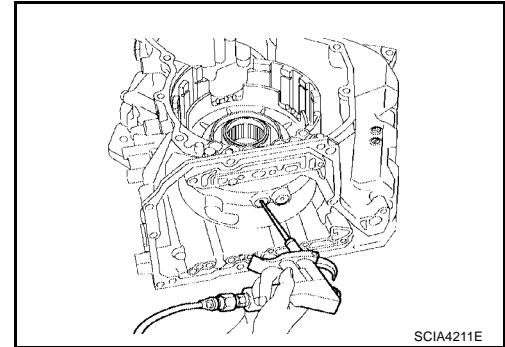


DISASSEMBLY

91. Remove return spring.



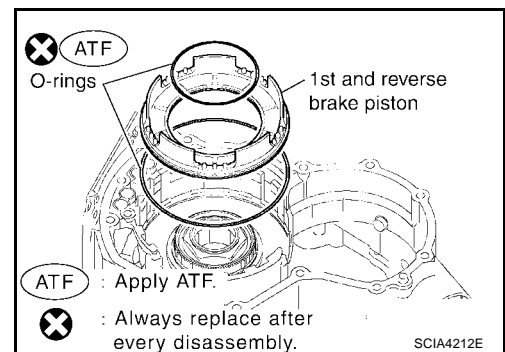
92. While pushing the piston by hand, apply compressed air (4Kg/cm²) into the oil passage of transaxle case as shown in the figure and remove 1st and reverse brake piston.



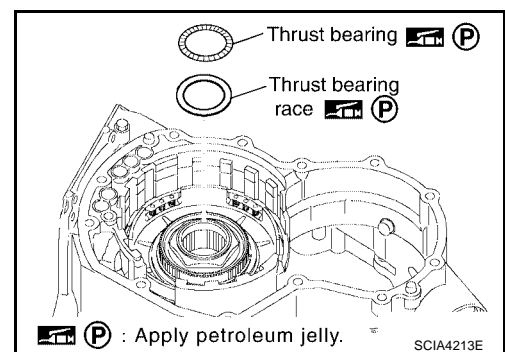
93. Remove O-rings from 1st and reverse brake piston.

NOTE:

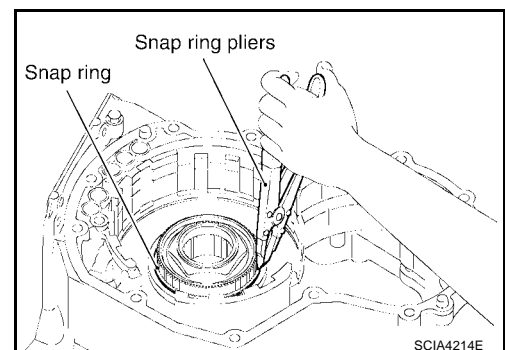
Do not reuse O-Rings.



94. Remove thrust bearing and thrust bearing race from counter drive gear sub assembly.



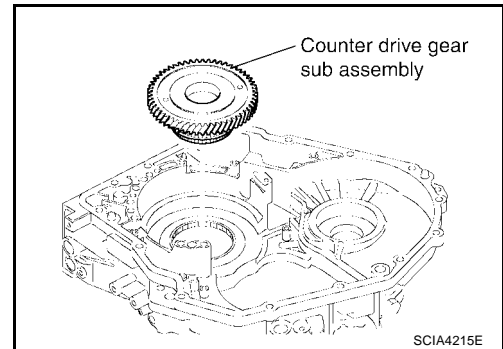
95. Remove snap ring using a suitable snap ring pliers.



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

DISASSEMBLY

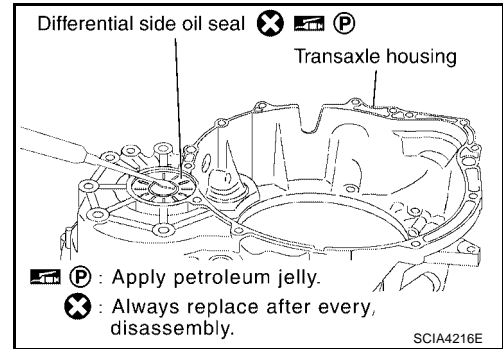
96. Remove counter drive gear sub assembly.



97. Remove differential side oil seal from transaxle case and transaxle housing using suitable tool.

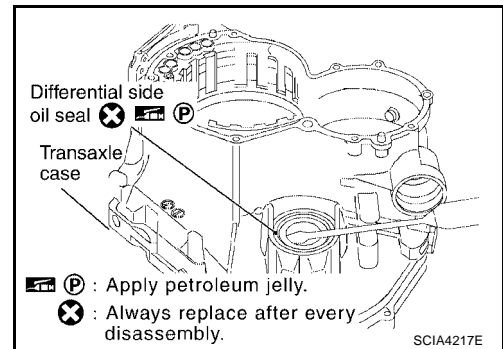
CAUTION:

Be careful not to scratch transaxle case and transaxle housing.



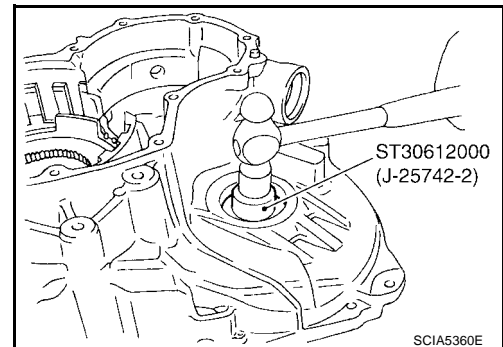
NOTE:

Do not reuse oil seals



98. Remove outer race and adjust shim from transaxle case, using Tool

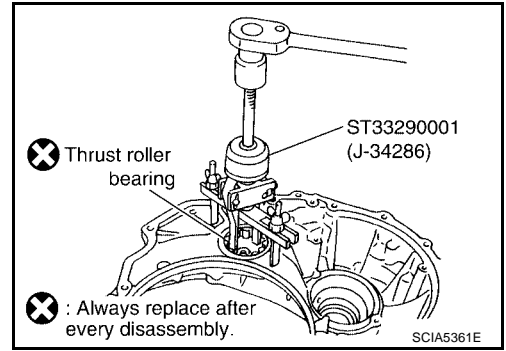
Tool number : ST30612000 (J-25745-2)



DISASSEMBLY

99. Remove thrust roller bearing from transaxle housing, using Tool.

Tool number : ST333290001 (J-34286)



A

B

AT

D

E

F

G

H

I

J

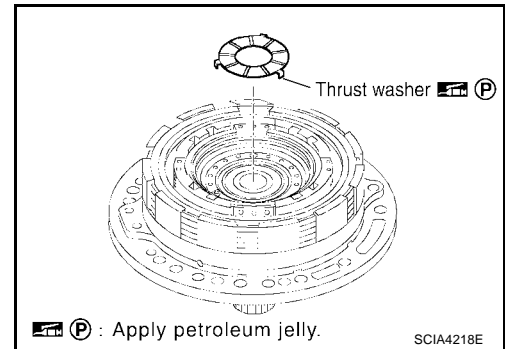
K

L

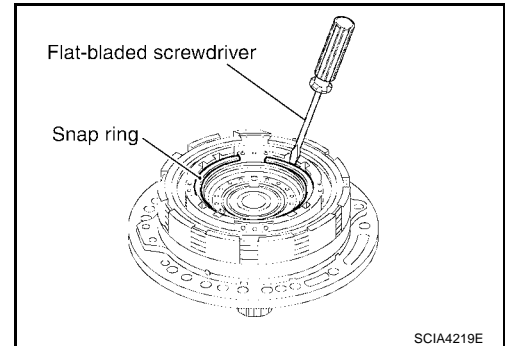
M

REPAIR FOR COMPONENT PARTS

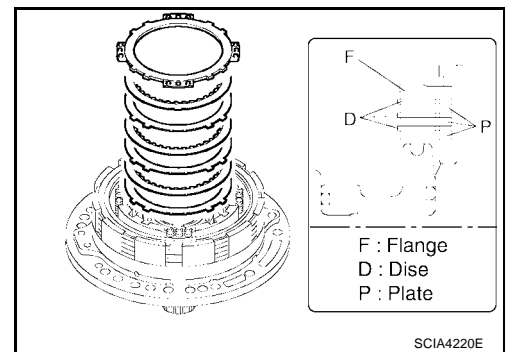
2. Remove thrust washer from oil pump assembly.



3. Remove snap ring, using a flat-bladed screwdriver.



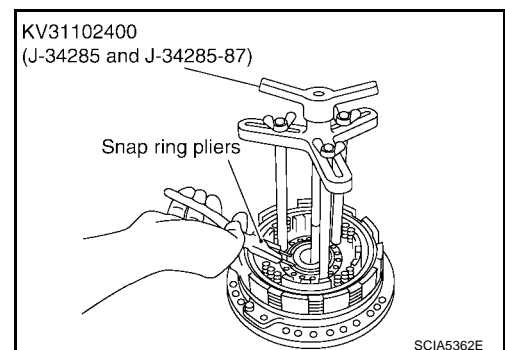
4. Remove 2nd coast brake flange, 2nd coast brake disc and 2nd coast brake plate.



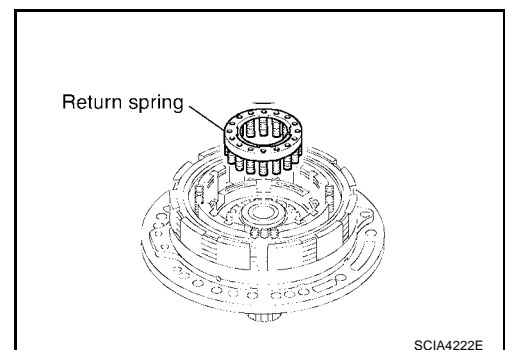
5. Compress return spring with a press, using Tool.

Tool number : KV31102400 (J-34285 and J-34285-87)

6. Remove snap ring, using suitable snap ring pliers.



7. Remove return spring.



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

REPAIR FOR COMPONENT PARTS

8. While pushing the 2nd coast brake piston by hand, apply compressed air (4kg/cm²) into the oil passage as shown and remove 2nd coast brake piston.

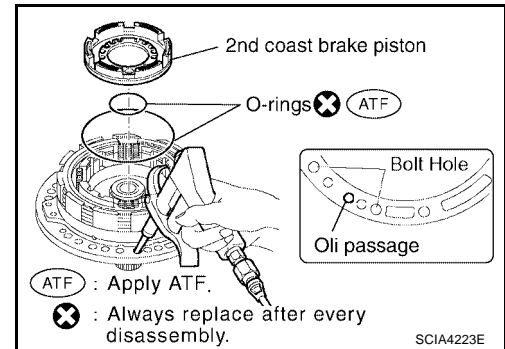
CAUTION:

Be careful not to damage the O-ring and 2nd coast brake piston.

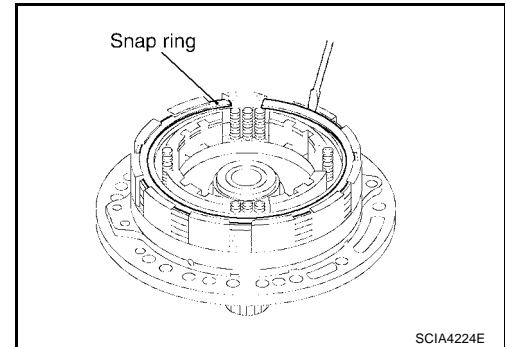
9. Remove O-rings from 2nd coast brake piston.

NOTE:

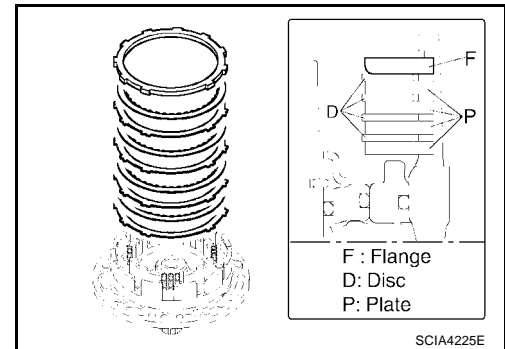
Do not reuse O-rings.



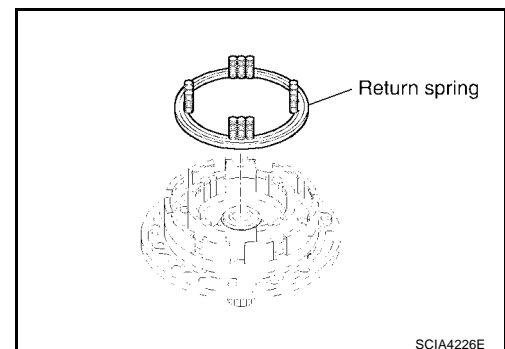
10. Remove snap ring, using suitable tool.



11. Remove 2nd brake flange, 2nd brake discs and 2nd brake plates.



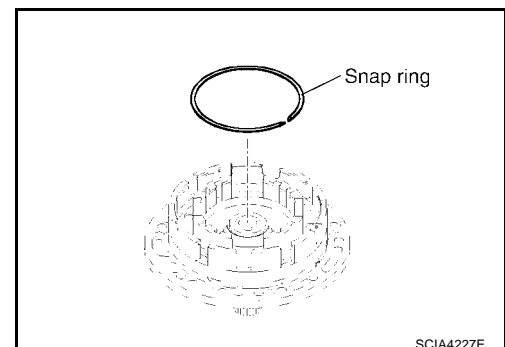
12. Remove return spring.



13. Remove snap ring, using suitable tool.

CAUTION:

Be careful not to damage oil pump assembly and 2nd brake piston.



REPAIR FOR COMPONENT PARTS

14. While pushing the 2nd brake piston by hand, apply compressed air (4kg/cm²) into the oil passage as shown and remove 2nd brake piston (With 2nd brake sleeve).

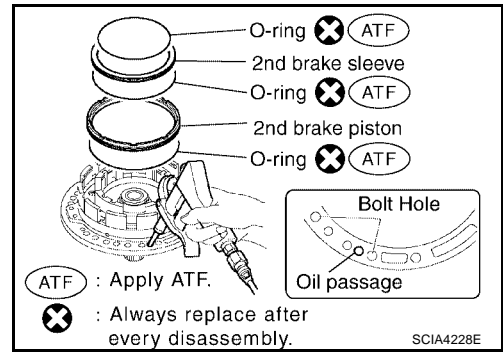
CAUTION:

Be careful not to damage 2nd brake piston and 2nd brake sleeve.

15. Remove O-rings from 2nd brake piston and 2nd brake sleeve.

NOTE:

Do not reuse O-rings.



INSPECTION

- Check that the sliding surface of disc and plate is not worn or burnt. If the disc or plate is worn or burnt, replace it

NOTE:

Replace new clutch discs by soaking them at least 2 hours in ATF.

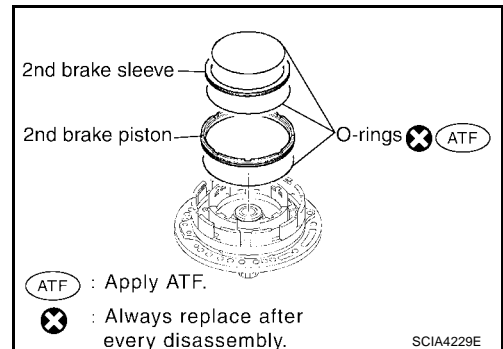
ASSEMBLY

1. Install new O-rings in 2nd brake sleeve and 2nd brake piston.

NOTE:

- Do not reuse O-ring.
- Apply ATF to O-ring.

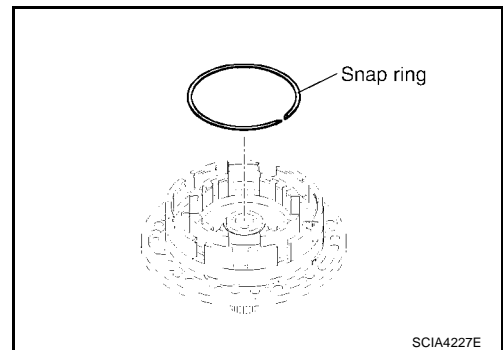
2. Coat the inner surfaces of oil pump assembly with ATF.
 3. Press 2nd brake piston and 2nd brake sleeve into oil pump assembly.



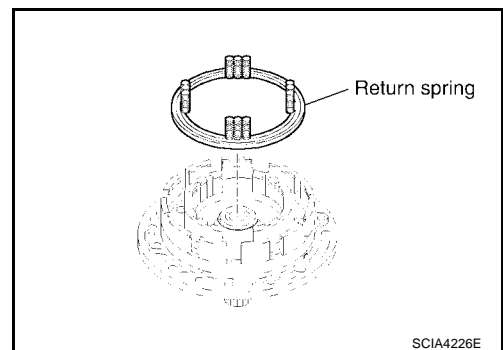
4. Install snap ring, using suitable tool.

CAUTION:

Be careful not to damage oil pump assembly.

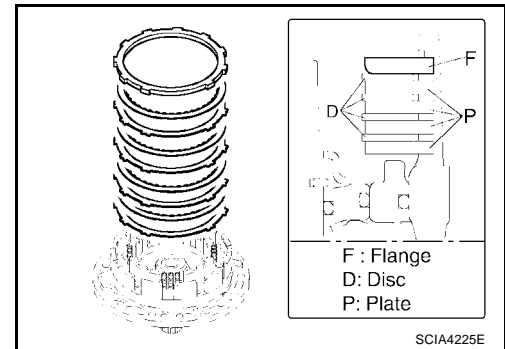


5. Place return spring on 2nd brake piston with the spring side up.

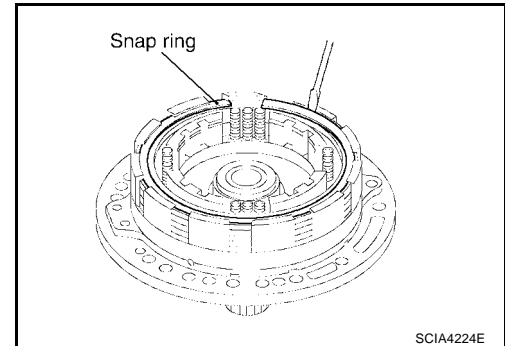


REPAIR FOR COMPONENT PARTS

6. Install 2nd brake flange, 2nd brake discs and 2nd brake plates.



7. Install snap ring, using suitable tool.

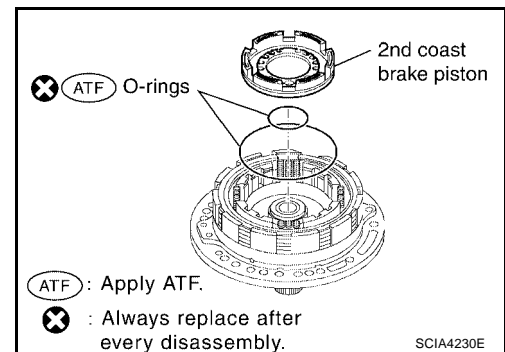


8. Install new O-rings in 2nd coast brake piston.

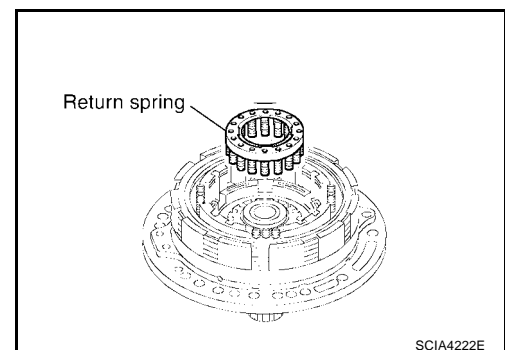
NOTE:

- Do not reuse O-rings.
- Apply ATF to O-rings.

9. Coat the inner surfaces of oil pump assembly with ATF.
10. Press 2nd coast brake piston into oil pump assembly.



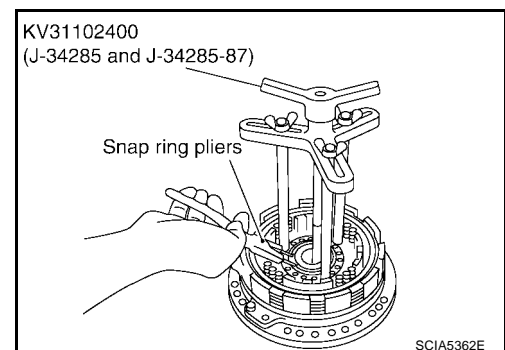
11. Install return spring.



12. Compress return spring, using Tool.

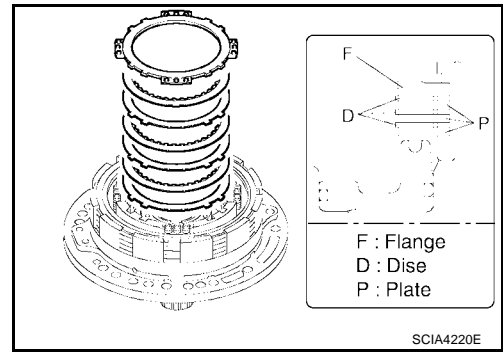
Tool number : KV31102400 (J-34285 and J-34285-87)

13. Install snap ring, using suitable snap ring pliers.



REPAIR FOR COMPONENT PARTS

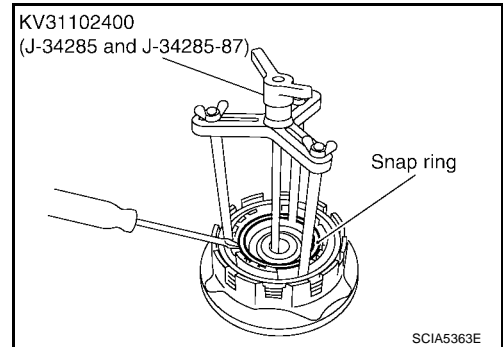
14. Install 2nd coast brake flange, 2nd coast brake disc and 2nd coast brake plate.



15. Compress return spring with a press, using Tool.

Tool number : KV31102400 (J-34285 and J-34285-87)

16. Install snap ring, using suitable tool.

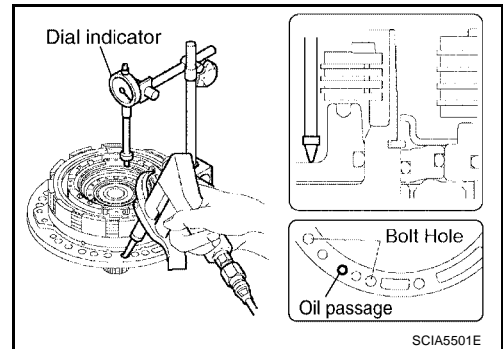


17. Set a dial indicator as shown.

18. When applying compressed air (4Kg/cm^2) into the oil passage as shown, measure 2nd brake piston stroke and check 2nd brake piston moves smoothly.

Piston stroke : 1.10 - 1.50mm (0.0433 - 0.0591in)

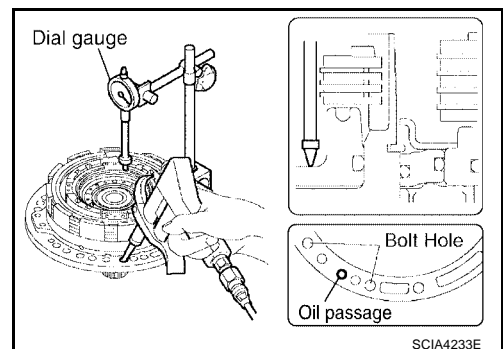
If 2nd brake piston stroke is out standards, select another flange. Refer to [AT-314, "2ND BRAKE"](#).



19. Set a dial indicator as shown.

20. When applying compressed air (4Kg/cm^2) into the oil passage as shown, measure 2nd coast brake piston stroke and check 2nd coast brake piston moves smoothly.

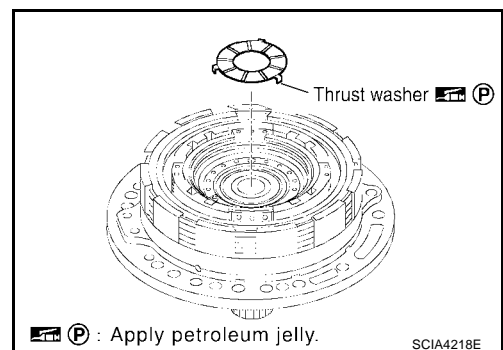
Piston stroke : 0.76 - 1.44mm (0.0299 - 0.0567in)



21. Install thrust washer facing the flat surface up.

NOTE:

Apply petroleum jelly to thrust washer.



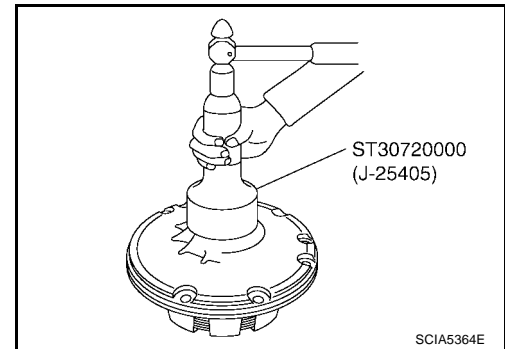
REPAIR FOR COMPONENT PARTS

22. Install new oil seal into oil pump assembly until it is flush with the oil pump face, using Tool.

Tool number : ST30720000 (J-25405)

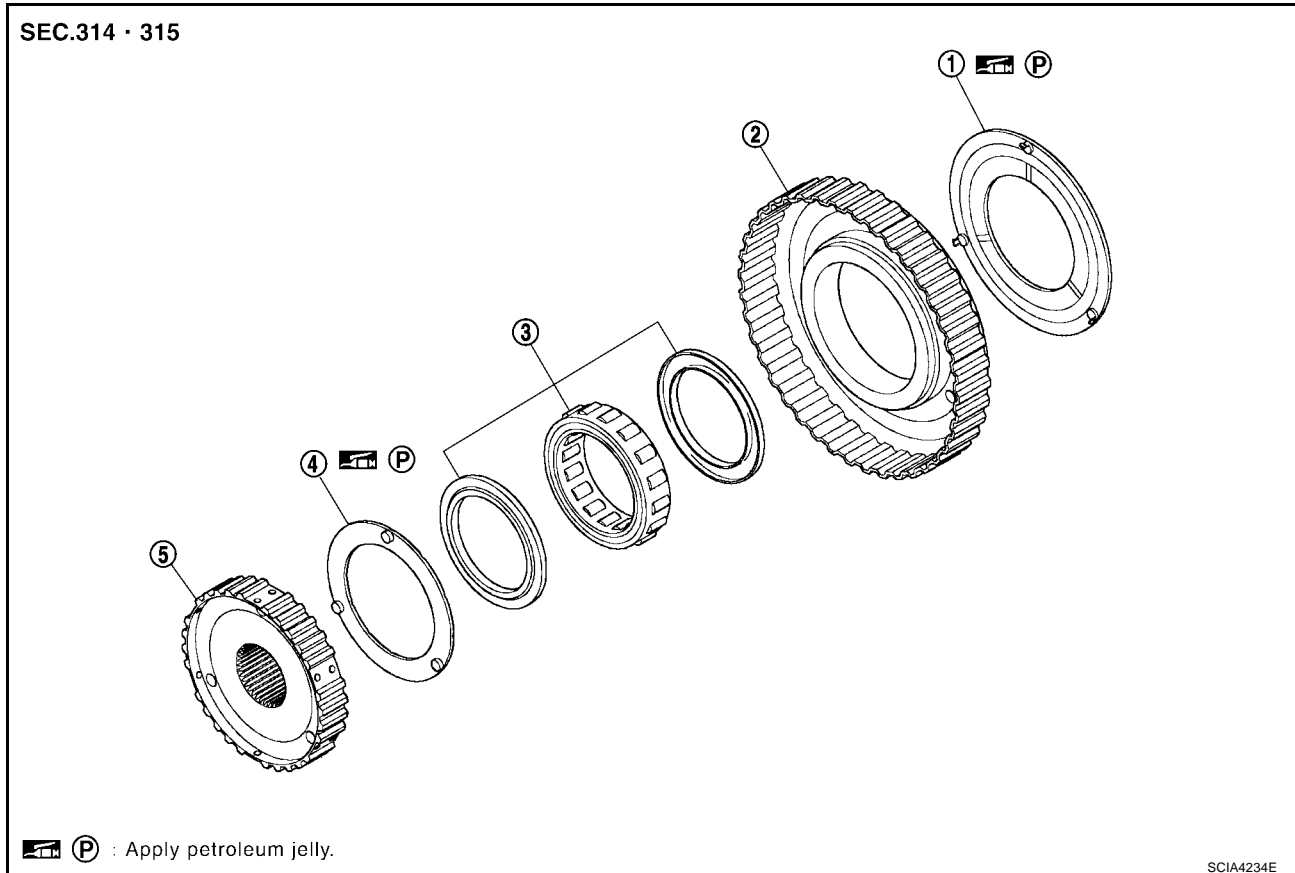
NOTE:

- Do not reuse oil seal.
- Apply ATF to oil seal.



One-Way Clutch Outer Race Sub Assembly & 2nd Coast Brake Hub & One-Way Clutch No.1 COMPONENTS

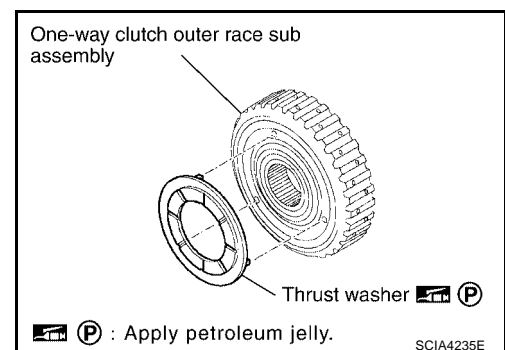
ECS00BUV



- | | | |
|------------------|---|------------------------|
| 1. Thrust washer | 2. One-way clutch outer race sub assembly | 3. One-way clutch No.1 |
| 4. Thrust washer | 5. 2nd coast brake hub | |

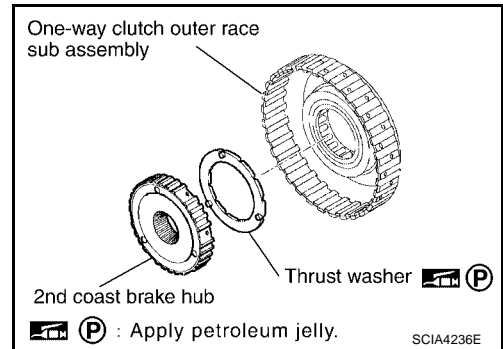
DISASSEMBLY

1. Remove thrust washer from one-way clutch outer race sub assembly.

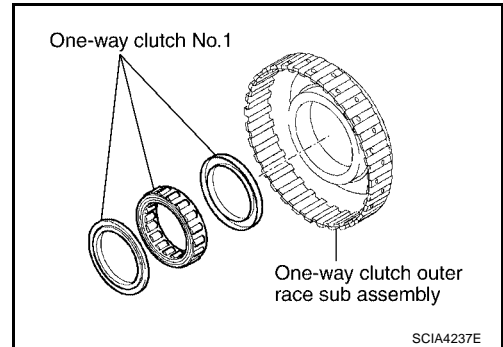


REPAIR FOR COMPONENT PARTS

2. Remove 2nd coast brake hub from one-way clutch outer race sub assembly.
3. Remove thrust washer from 2nd coast brake hub.



4. Remove one-way clutch No.1 from one-way clutch outer race sub assembly.

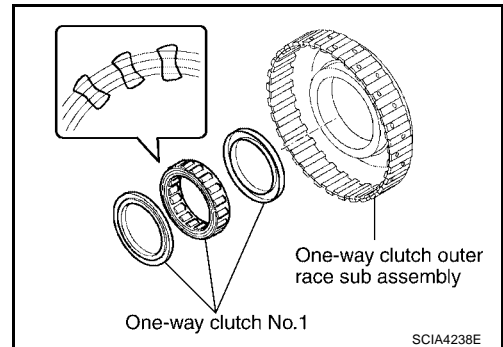


ASSEMBLY

1. Install one-way clutch No.1 into the one-way clutch outer race sub assembly.

CAUTION:

Do not mistake the direction of one-way clutch No.1.



2. Install thrust washer into 2nd coast brake hub.

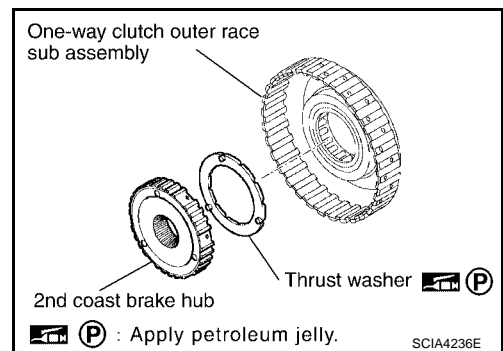
NOTE:

- Coat the thrust washer with grease.
- Align the tab of the washer with the hollow of the 2nd coast brake hub.

3. Install 2nd coast brake hub into one-way clutch outer race sub assembly.

NOTE:

While turning the 2nd coast brake hub, slide it into one-way clutch outer race sub assembly.



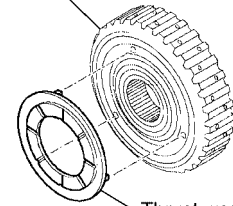
REPAIR FOR COMPONENT PARTS

- Coat the thrust washer with petroleum jelly. Align the tab of the washer with the hollow of the one-way clutch outer race sub assembly.

NOTE:

Apply petroleum jelly to thrust washer.

One-way clutch outer race sub assembly



Thrust washer

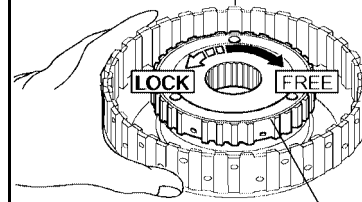
(P) : Apply petroleum jelly.

SCIA4235E

INSPECTION

- Hold one-way clutch outer race sub assembly, and check that 2nd coast brake hub should turn freely clockwise and should lock counterclockwise.

One-way clutch outer race sub assembly



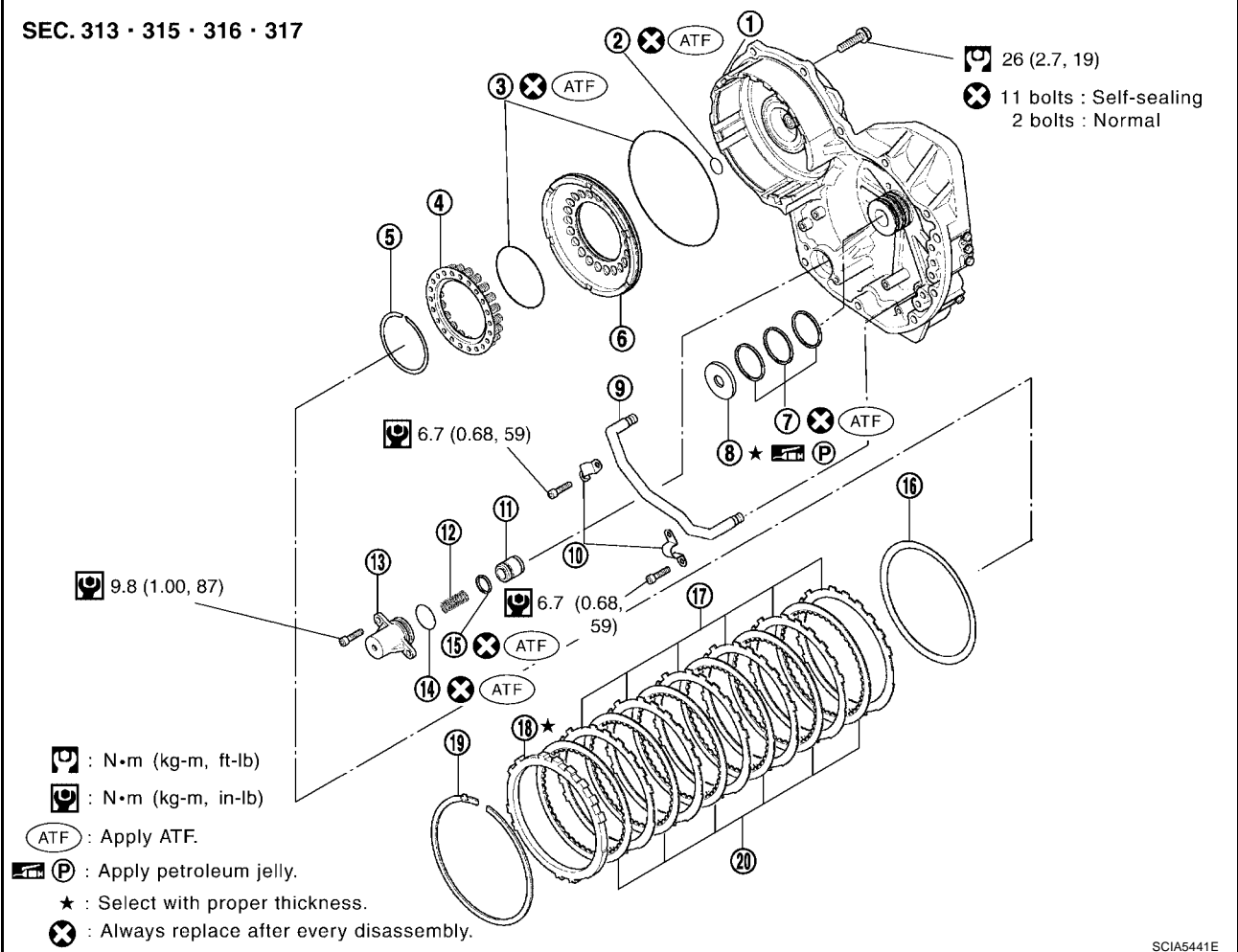
2nd coast brak hab

SCIA4239E

Transaxle Case Cover & B5 Brake COMPONENTS

ECS00BUW

SEC. 313 · 315 · 316 · 317



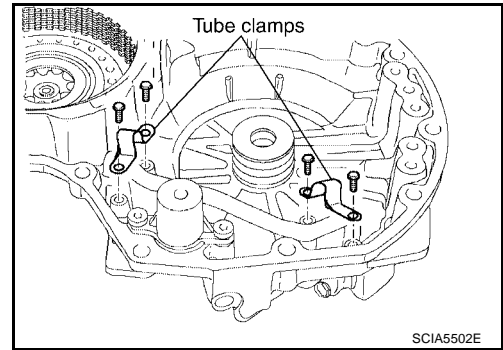
SCIA5441E

REPAIR FOR COMPONENT PARTS

- | | | |
|----------------------------|---------------------------------------|---------------------------------------|
| 1. Transaxle case cover | 2. Seal ring | 3. O-ring |
| 4. Return spring | 5. Snap ring | 6. B5 brake piston |
| 7. Seal ring | 8. Bearing race | 9. U/D clutch apply tube sub assembly |
| 10. Tube clamp | 11. Forward clutch accumulator piston | 12. Compression spring |
| 13. Accumulator cover | 14. O-ring | 15. Seal ring |
| 16. B5 brake cushion plate | 17. B5 brake plate | 18. B5 brake flange |
| 19. Snap ring | 20. B5 brake disc | |

DISASSEMBLY

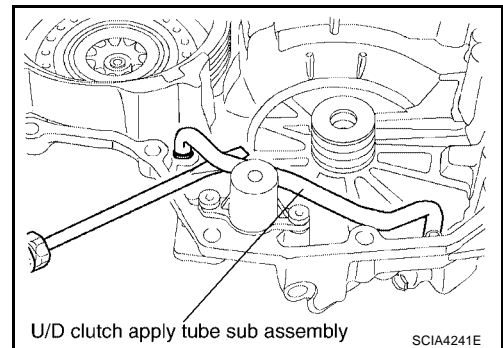
1. Remove tube clamps.



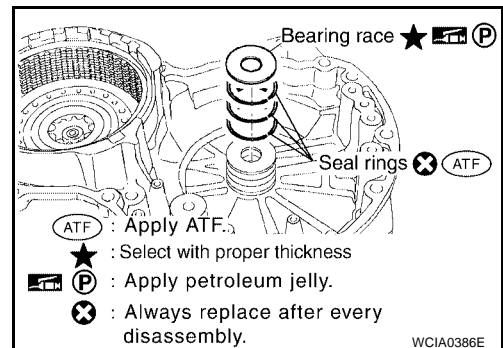
2. Remove U/D clutch apply tube sub assembly, using suitable tool.

CAUTION:

Be careful not to damage the U/D clutch apply tube sub assembly and transaxle case cover.



3. Remove bearing race and seal rings from transaxle case cover.



4. Remove accumulator cover, compression spring and forward clutch accumulator piston.

5. Remove O-ring from the accumulator cover.

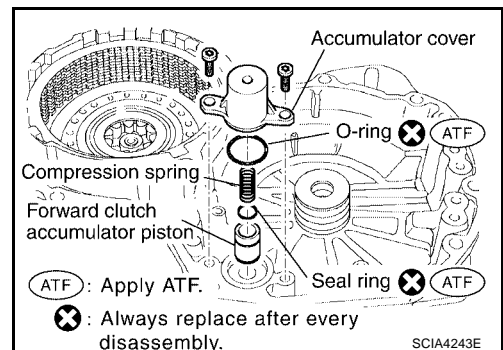
NOTE:

Do not reuse O-rings.

6. Remove seal ring from the forward clutch accumulator piston.

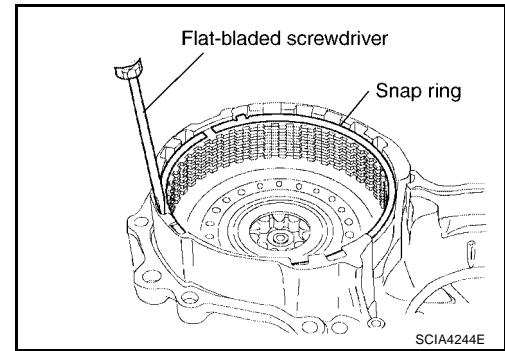
NOTE:

Do not reuse seal ring.

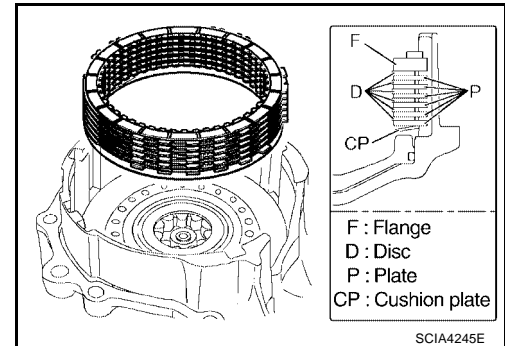


REPAIR FOR COMPONENT PARTS

7. Remove snap ring, using suitable flat blade screwdriver.



8. Remove B5 brake flange, B5 brake discs, B5 brake plates and B5 brake cushion plate.



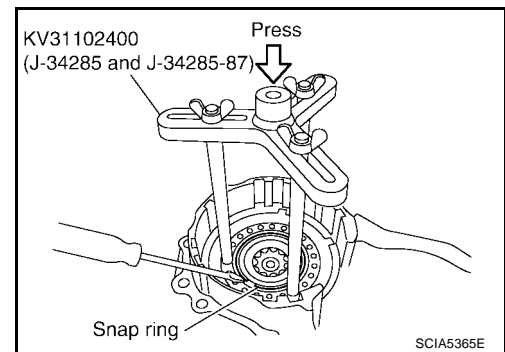
9. Compress return spring, using Tool.

Tool number : KV31102400 (J-34285 and J-34285-87)

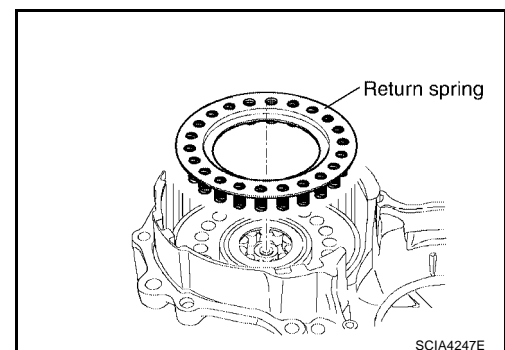
CAUTION:

Do not press return spring too much to avoid deformation.

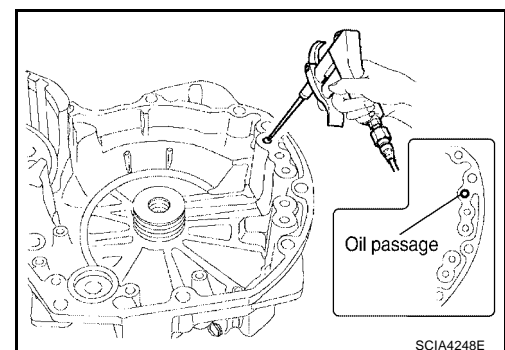
10. Remove snap ring, using suitable tool.



11. Remove return spring.



12. While pushing B5 brake piston by hand, apply compressed air (4Kg/cm²) into the oil passage as shown and remove B5 brake piston.



REPAIR FOR COMPONENT PARTS

13. Remove O-rings from B5 brake piston.

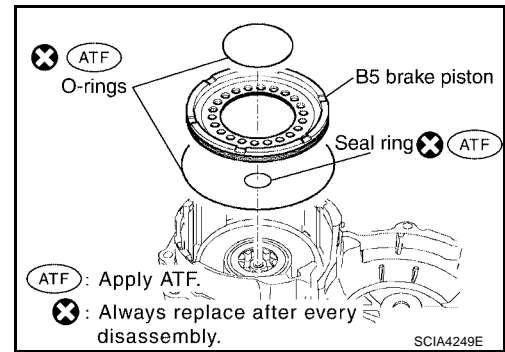
NOTE:

Do not reuse O-rings.

14. Remove seal ring from transaxle case cover.

NOTE:

Do not reuse seal ring.



INSPECTION

- Check that the sliding surface of disc and plate is not worn or burnt. If the disc or plate is worn or burnt, replace it

NOTE:

Replace new clutch discs by soaking them at least 2 hours in ATF.

ASSEMBLY

1. Install new seal ring in transaxle case cover.

NOTE:

- Do not reuse seal ring.
- Apply ATF to seal ring.

2. Install new O-rings in B5 brake piston.

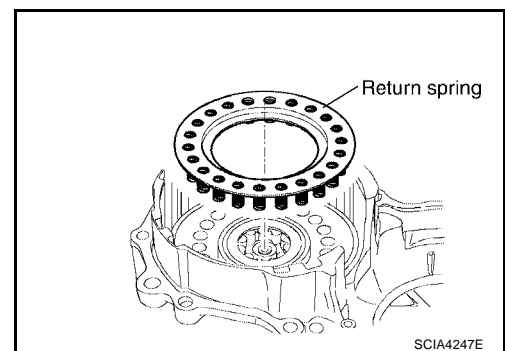
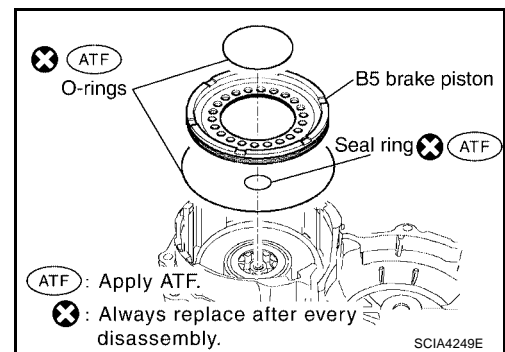
NOTE:

- Do not reuse O-rings.
- Apply ATF to O-rings.

3. Coat the inner surface of transaxle case cover with ATF.

4. Press B5 brake piston into the transaxle case cover.

5. Place return spring on B5 brake piston.



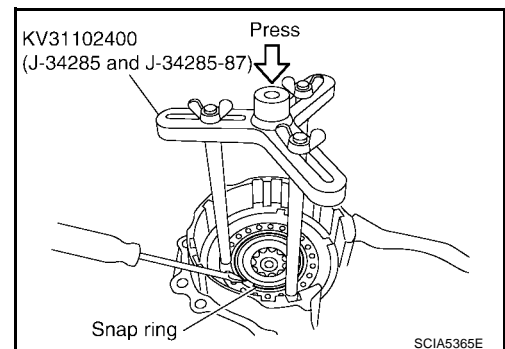
6. Compress return spring with a press, using Tool.

Tool number : KV31102400 (J-34285 and J-34285-87)

CAUTION:

Do not press return spring too much to avoid deformation.

7. Install snap ring, using suitable tool.



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

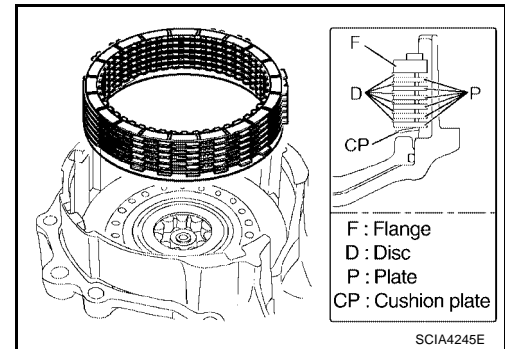
REPAIR FOR COMPONENT PARTS

8. Install B5 brake cushion plate.

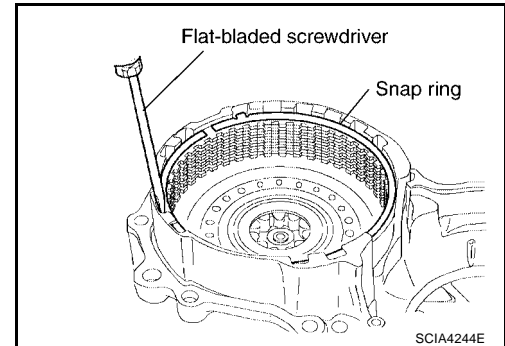
CAUTION:

Be sure direction of B5 brake cushion plate.

9. Install B5 brake flange, B5 brake plates and B5 brake discs as shown.



10. Install snap ring, using suitable tool or flat-bladed screwdriver.



11. Install new O-ring in accumulator cover.

NOTE:

- Do not reuse O-ring.
- Apply ATF to O-ring.

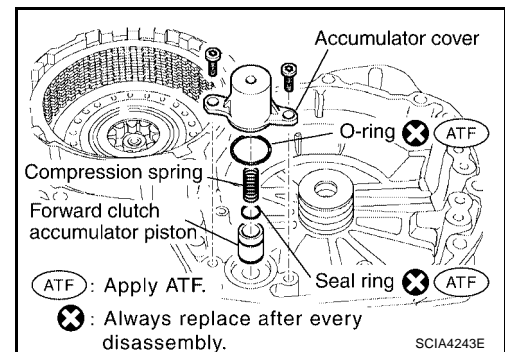
12. Install new seal ring in forward clutch accumulator piston.

NOTE:

- Do not reuse seal ring.
- Apply ATF to seal ring.

13. Install forward clutch accumulator piston, compression spring and accumulator cover in transaxle case cover.

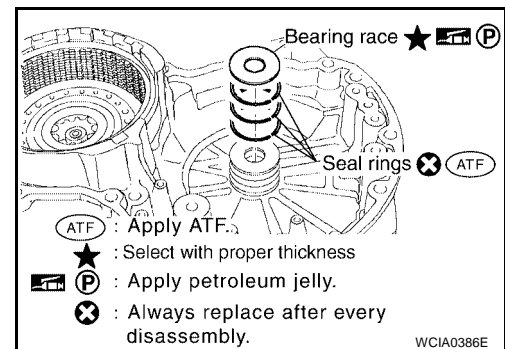
14. Tighten accumulator cover torx bolts to specified torque. Refer to [AT-280, "COMPONENTS"](#).



15. Install new seal rings and bearing race in transaxle case cover.

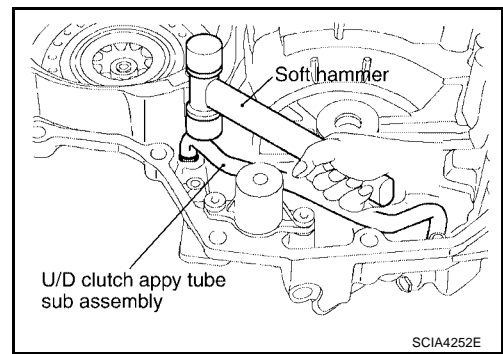
NOTE:

- Do not reuse seal ring.
- Apply ATF to O-ring.
- Refer to ASSEMBLY to select proper bearing race.

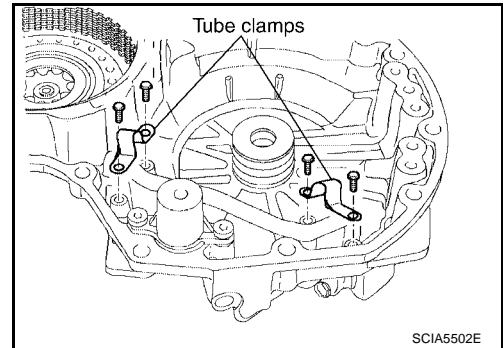


REPAIR FOR COMPONENT PARTS

16. Install the U/D clutch apply tube sub assembly, using suitable soft hammer.



17. Tighten tube clamp bolts to specified torque. Refer to [AT-280, "COMPONENTS"](#).

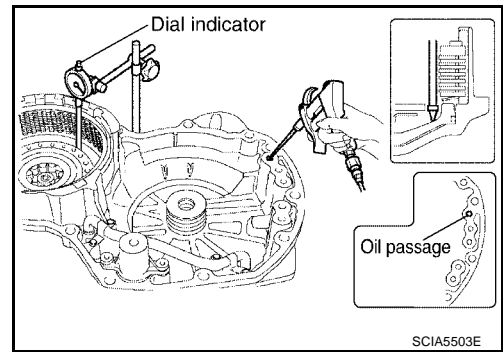


18. Set a dial indicator as shown.

19. When applying compressed air (4Kg/cm²) into the oil passage as shown, measure the B5 brake piston stroke and check the B5 brake piston moves smoothly.

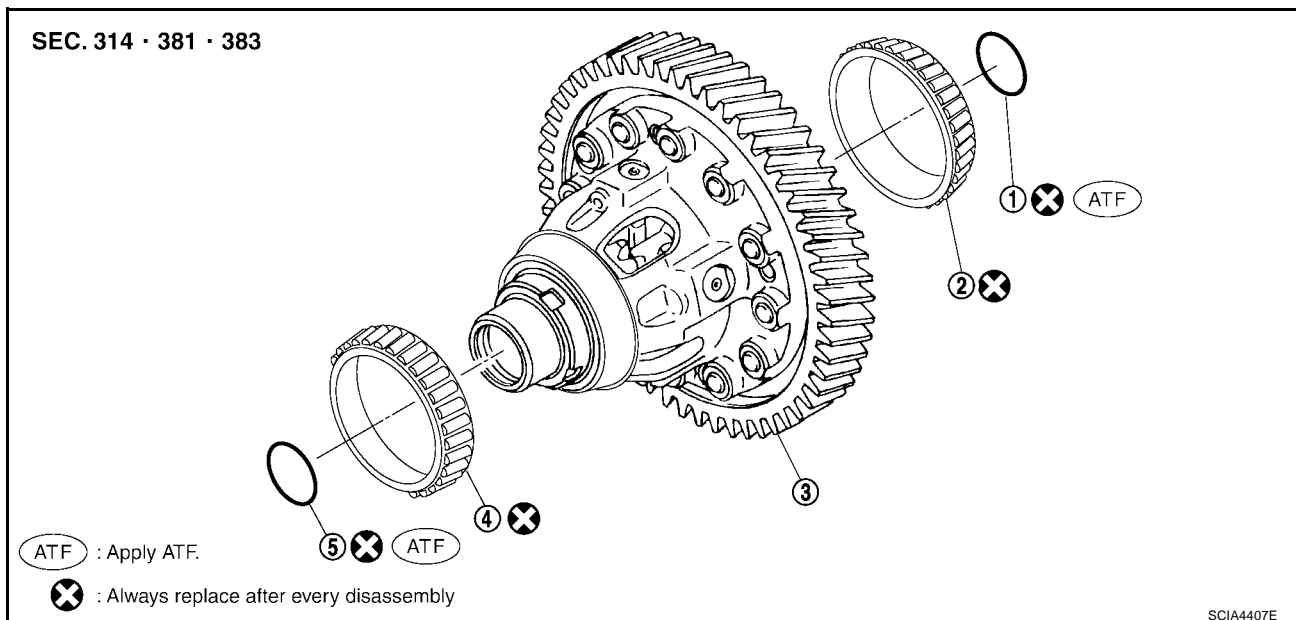
Piston stroke :2.34 - 2.70mm (0.0921 - 0.1063in)

If the B5 brake piston stroke is out standards, select another flange. Refer to [AT-315, "B5 BRAKE"](#).



Differential Gear Assembly COMPONENTS

ECS00BUX



REPAIR FOR COMPONENT PARTS

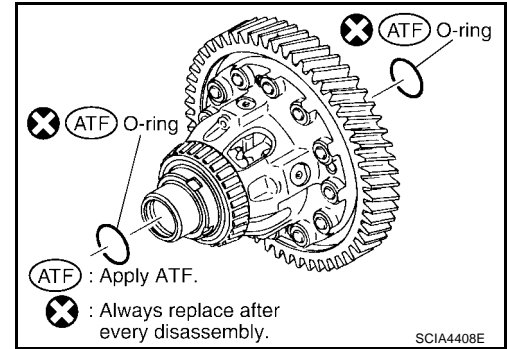
1. O-ring
2. Tapered roller bearing
3. Differential gear assembly
4. Tapered roller bearing
5. O-ring

DISASSEMBLY

1. Remove O-rings from differential gear assembly.

NOTE:

Do not reuse O-rings.

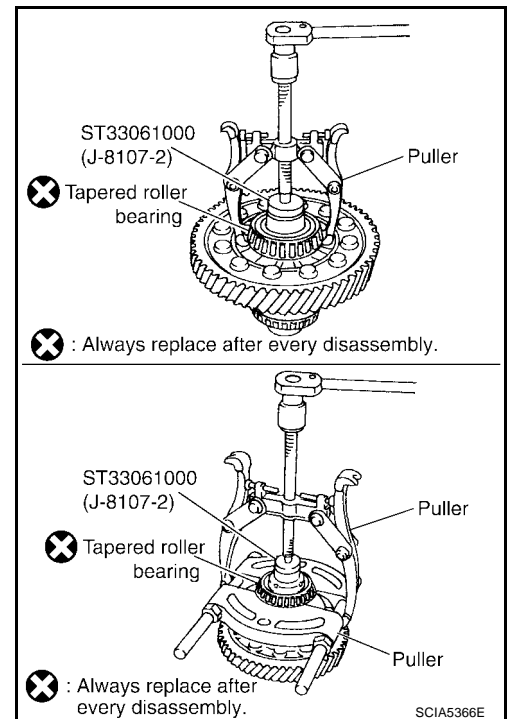


2. Remove tapered roller bearings, using suitable puller and Tool.

Tool number : ST33081000 (J-8107-2)

NOTE:

Do not reuse tapered roller bearings.



REPAIR FOR COMPONENT PARTS

ASSEMBLY

1. Install new tapered roller bearings in differential gear assembly, using Tool.

Tool number : KV38100500 (—)
: ST33720000 (J-25405)

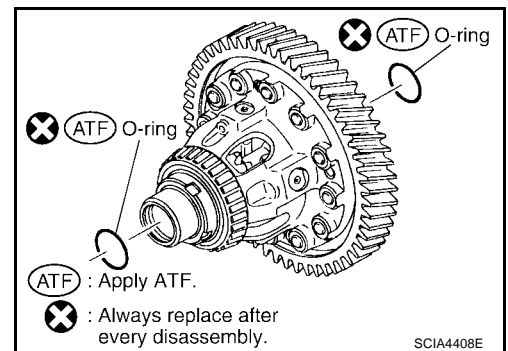
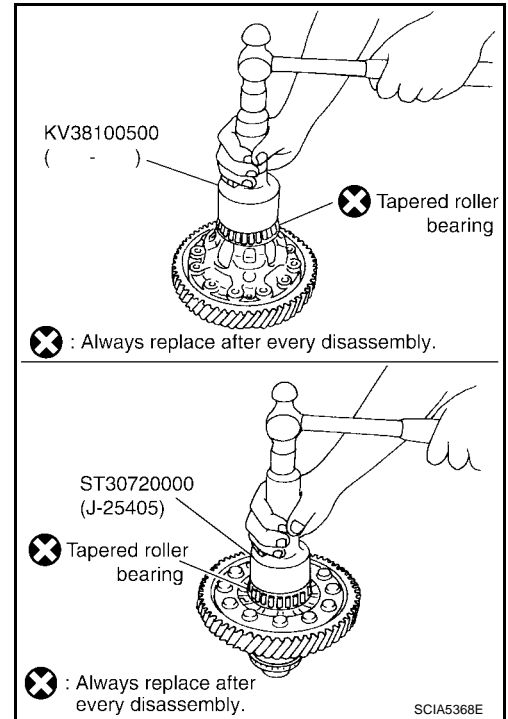
NOTE:

Do not reuse tapered roller bearings.

2. Install new O-rings in differential gear assembly.

NOTE:

- Do not reuse O-rings.
- Apply ATF to O-rings.



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

ASSEMBLY

ASSEMBLY

PFP:00000

Assembly (1)

ECS00BUY

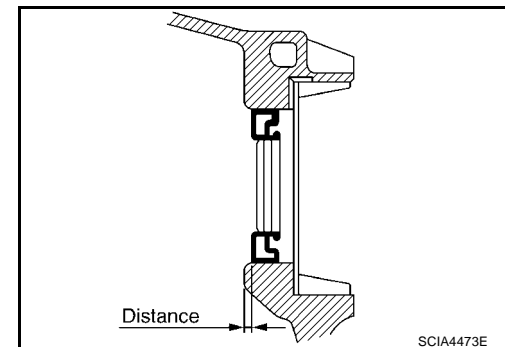
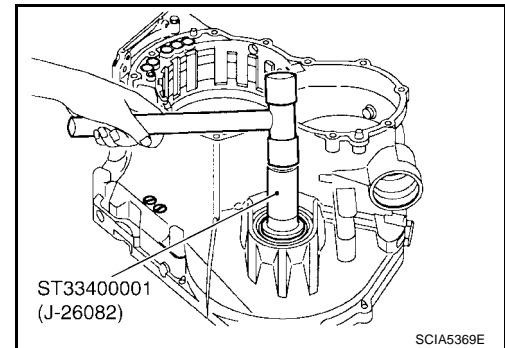
1. Install new differential side oil seal into transaxle case as specified using Tool.

Tool number : ST33400001 (J-26082)

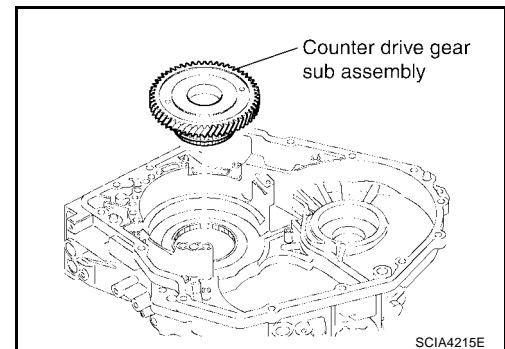
Distance : 3.0 - 4.0 mm (0.118 - 0.157 in)

NOTE:

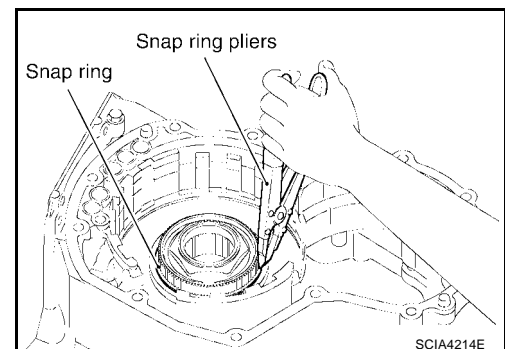
- Do not reuse differential side oil seal.
- Apply ATF to differential side oil seal.



2. Install counter drive gear sub assembly.



3. Install snap ring using snap ring pliers.



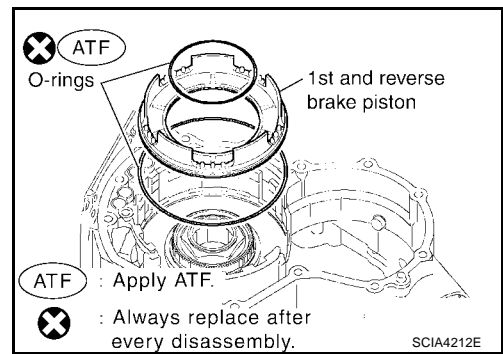
ASSEMBLY

4. Install new O-rings in 1st and reverse brake piston.

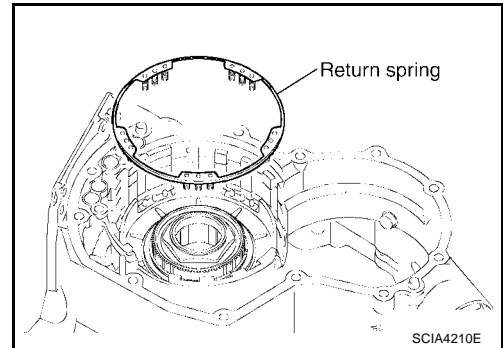
NOTE:

- Do not reuse O-rings.
- Apply ATF to O-rings.

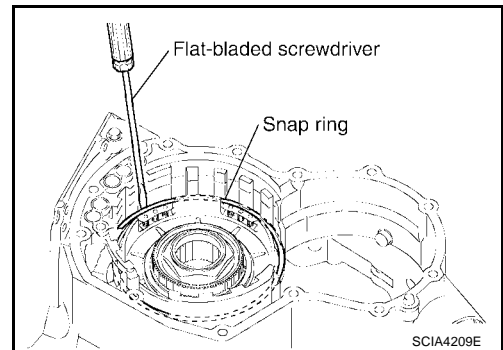
5. Coat the inner surface of transaxle case with ATF.
6. Install 1st and reverse brake piston in transaxle case.



7. Put return spring on 1st and reverse brake piston.



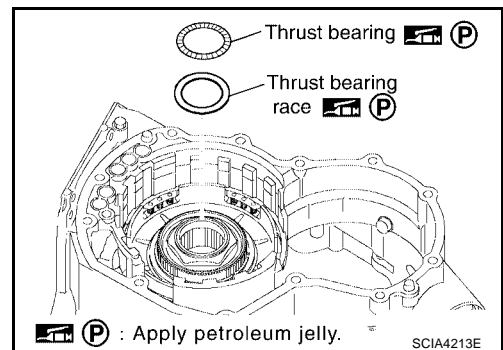
8. Install the snap ring into groove while compressing the return spring by hand using flat-bladed screwdriver or suitable tool.



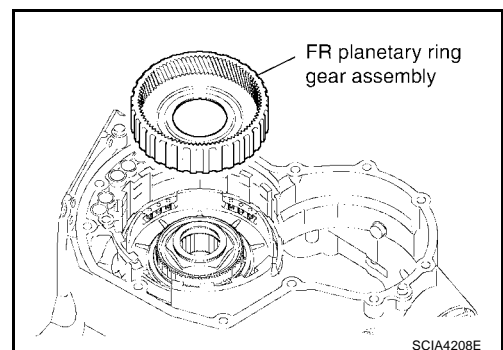
9. Put thrust bearing race and thrust bearing on counter drive gear sub assembly.

NOTE:

Apply petroleum jelly to thrust and thrust bearing race.



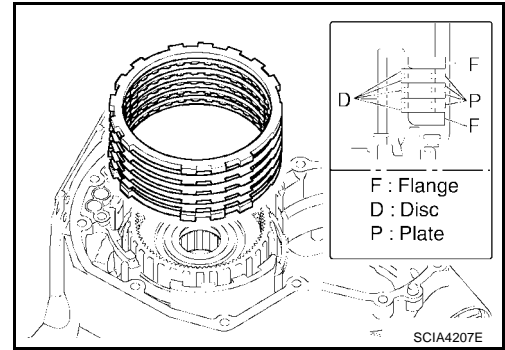
10. Install FR planetary ring gear assembly with one-way clutch No.2.



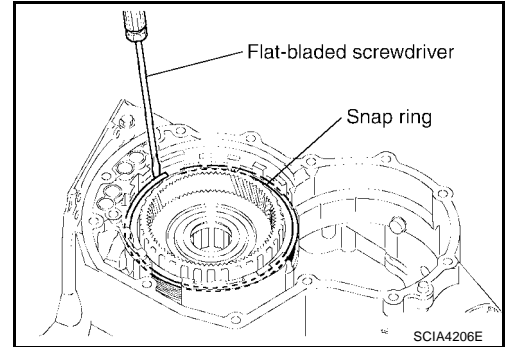
A
B
AT
D
E
F
G
H
I
J
K
L
M

ASSEMBLY

11. Install 1st and reverse brake flanges, 1st and reverse brake discs and 1st and reverse brake plates.



12. Install snap ring using a flat-bladed screwdriver or suitable tool.



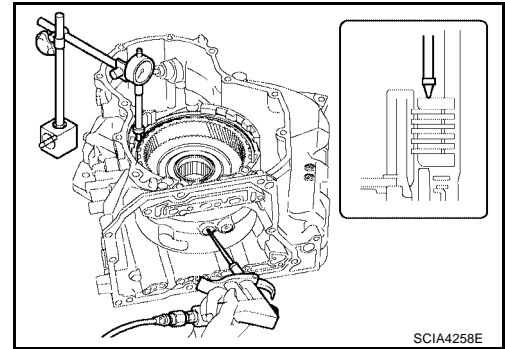
13. Set a dial indicator as shown.

14. Applying compressed air (4Kg/cm²) and measure the 1st and reverse brake piston stroke.

Piston stroke : 1.39 - 2.21 mm (0.0547 - 0.0870 in)

In a case that is out of reference, check the following items:

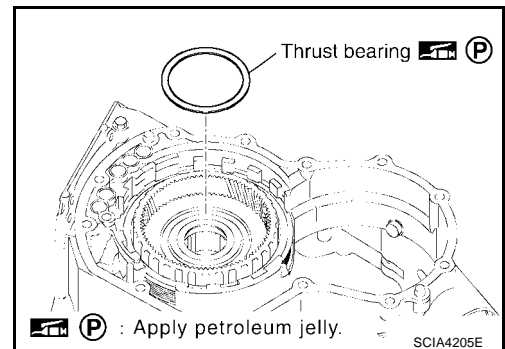
- Oil pressure leak
- Damage of O-ring
- Wear damage of disc



15. Install thrust bearing.

NOTE:

Apply petroleum jelly to thrust bearing.

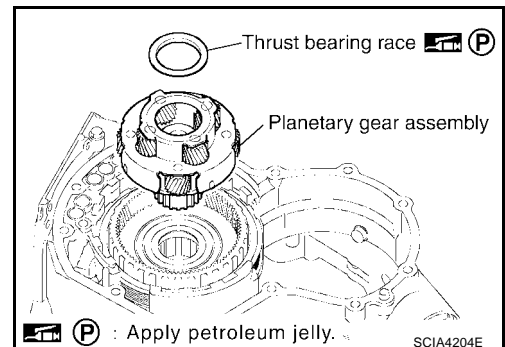


16. Install planetary gear assembly.

17. Install thrust bearing race in planetary gear assembly.

NOTE:

Apply petroleum jelly to thrust bearing race.



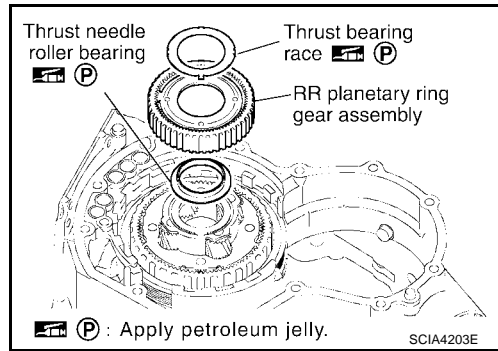
ASSEMBLY

18. Install thrust needle roller bearing and thrust bearing race in RR planetary ring gear assembly.

NOTE:

Apply petroleum jelly to thrust needle roller bearing.

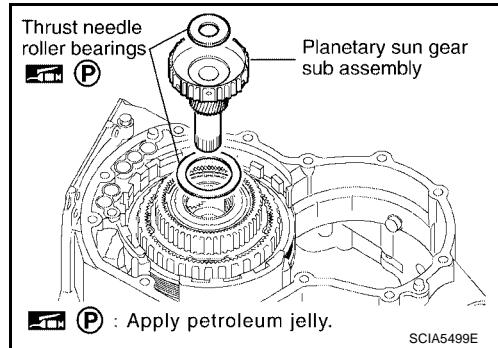
19. Install RR planetary ring gear assembly.



20. Install planetary sun gear sub assembly and thrust needle roller bearing.

NOTE:

Apply petroleum jelly to thrust needle roller bearing.

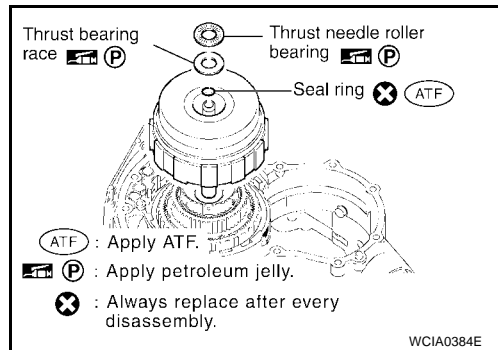


21. Install forward and direct clutch assembly.

22. Install thrust bearing race, thrust needle roller bearing and new seal ring in forward and direct clutch assembly.

NOTE:

- Do not reuse old seal ring.
- Apply ATF to seal ring.
- Apply petroleum jelly to thrust needle roller bearing and thrust bearing race.

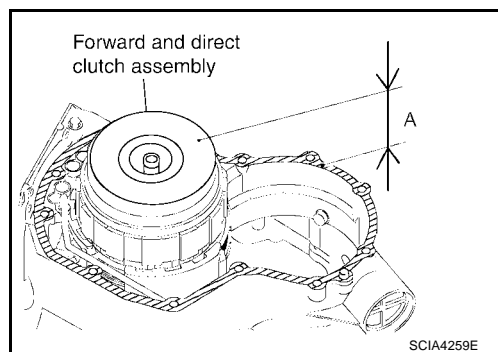


23. Check the distance of "A".

**Dimension "A" : 50.850 - 51.825 mm
(2.0020 - 2.0404 in)**

CAUTION:

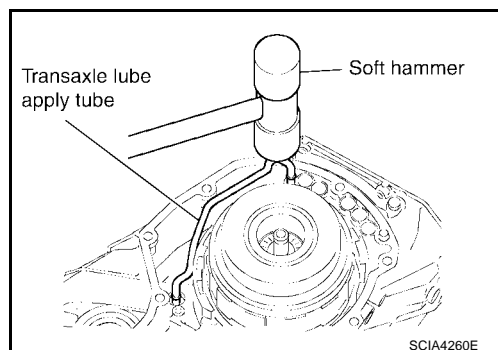
If the distance is out of standards, adjust with in standards again.



24. Install transaxle lube apply tube using a soft hammer.

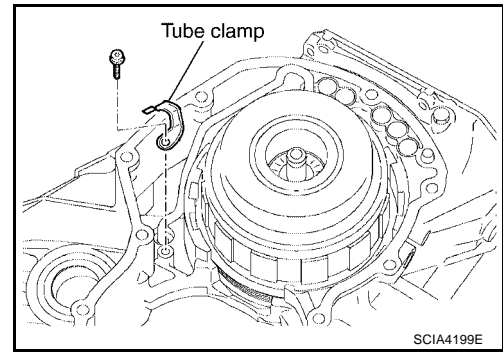
CAUTION:

Be careful not to bend and damage transaxle lube apply tube.



ASSEMBLY

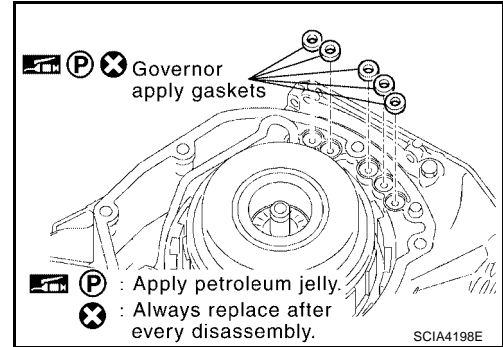
25. Tighten tube clamp bolt to specified torque. Refer to [AT-245, "Components"](#) .



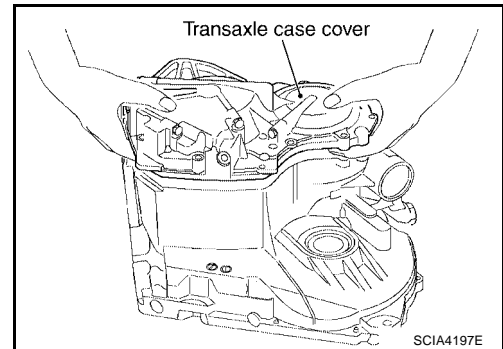
26. Install new governor apply gaskets in transaxle case.

NOTE:

- Do not reuse gaskets.
- Apply petroleum jelly to gaskets.



27. Install transaxle case cover in transaxle case.



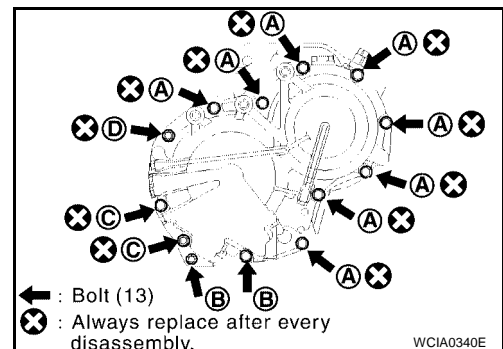
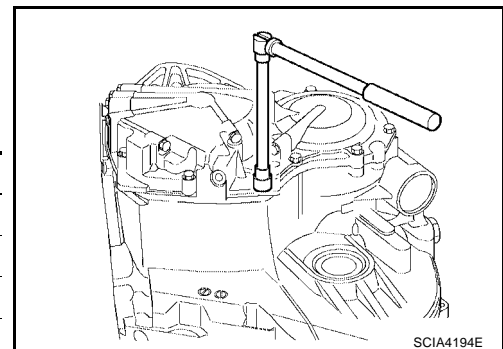
28. Tighten transaxle case cover bolts to specified torque. Refer to [AT-245, "Components"](#) .

CAUTION:

Do not reuse seal bolts.

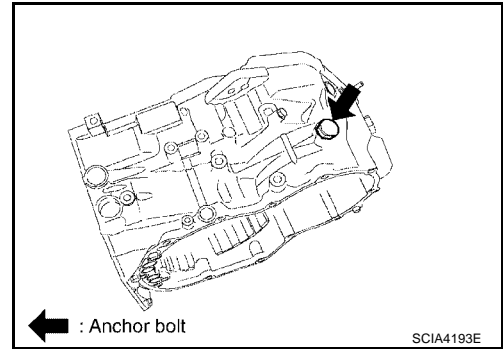
| Bolt symbol | Length mm (in) | Number of bolts |
|-------------|----------------|-----------------|
| A | 30 (1.18) | 8 |
| B | 45 (1.77) | 2 |
| C | 48 (1.89) | 2 |
| D* | — | 1 |

*:Stud bolt



ASSEMBLY

29. Tighten anchor bolt to specified torque. Refer to [AT-245, "Components"](#) .

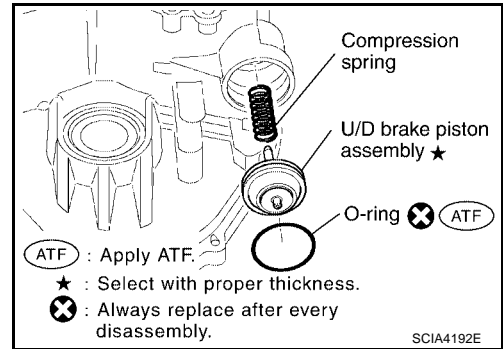


30. Install new O-ring in U/D brake piston assembly.

NOTE:

- Do not reuse O-rings.
- Apply ATF to O-rings.

31. Coat the inner surface of transaxle case with ATF.
 32. Install compression spring and U/D brake piston assembly.

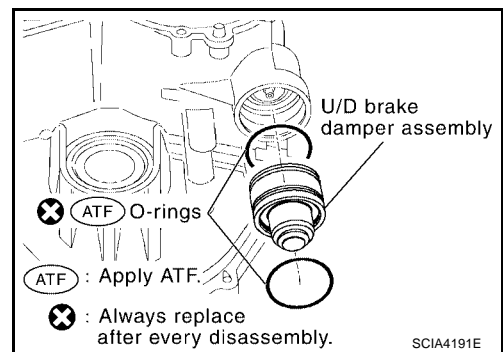


33. Install new O-rings in U/D brake damper assembly.

NOTE:

- Do not reuse O-ring.
- Apply ATF to O-ring.

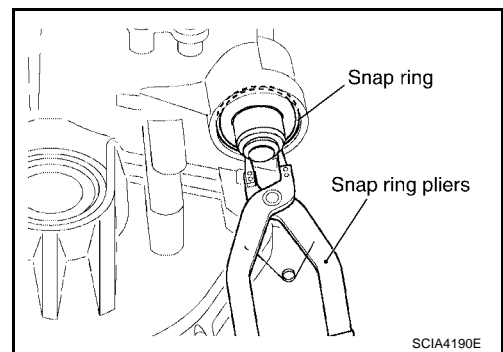
34. Install U/D brake damper assembly.



35. Install snap ring using a snap ring pliers.

CAUTION:

If the snap ring is deformed, replace it.

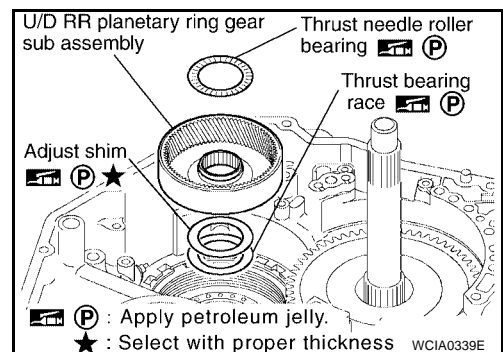


36. Install thrust needle roller bearing adjust shim and thrust bearing race in U/D RR planetary ring gear sub assembly.

NOTE:

Apply petroleum jelly to adjust shim, thrust needle roller bearing and thrust bearing race.

37. Install U/D RR planetary ring gear sub assembly.

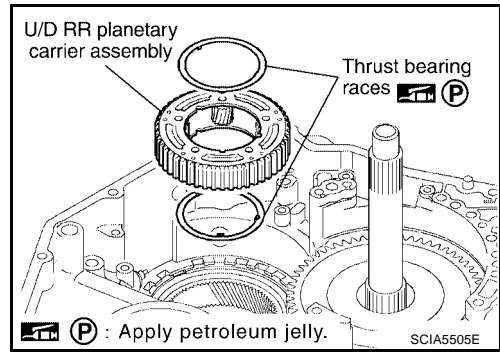


ASSEMBLY

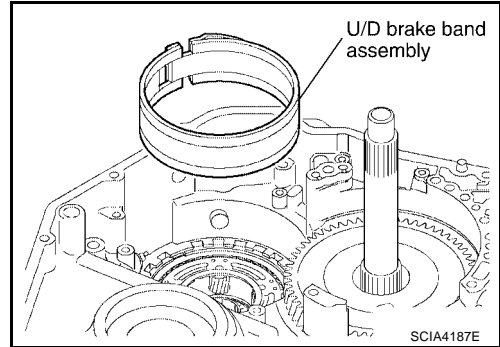
38. Install U/D RR planetary carrier assembly and thrust bearing races.

NOTE:

Apply petroleum jelly to bearing races.

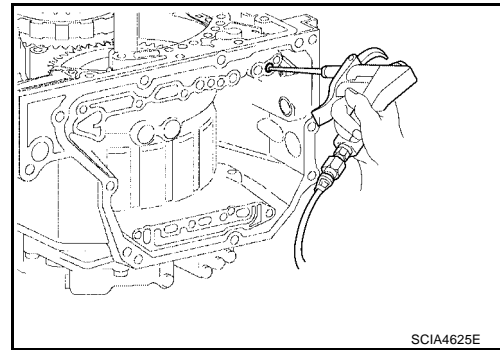
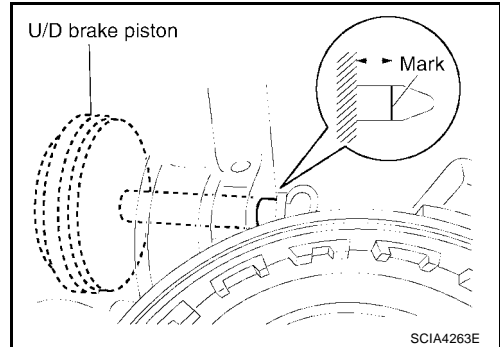


39. Install U/D brake band assembly.

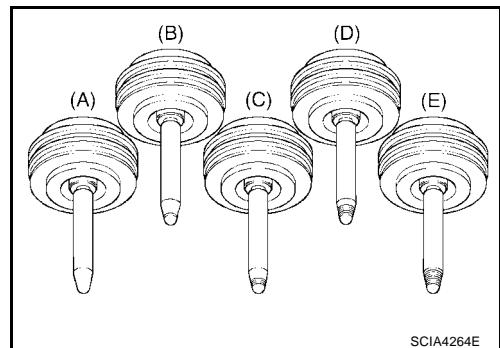


40. Measure the U/D brake piston stroke applying and releasing the compressed air (4Kg/cm²) as shown.

Piston Stroke : 5.76 - 6.76 mm (0.2268 - 0.2661 in)



41. If the piston stroke is out of standards, select another U/D brake piston. Refer to [AT-315, "U/D BRAKE"](#) .



ASSEMBLY

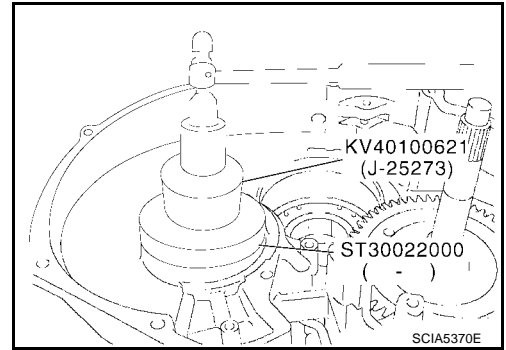
ECS00BUZ

Adjustment

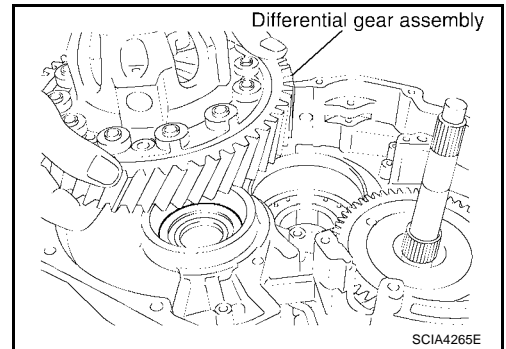
ADJUST PRELOAD OF TAPERED ROLLER BEARING

1. Install adjust shim and outer race in transaxle case using Tool.

Tool number : KV40100621 (J-25273)
 : ST30022000 (—)



2. Install differential gear assembly in transaxle case.
3. Install transaxle housing into transaxle case.



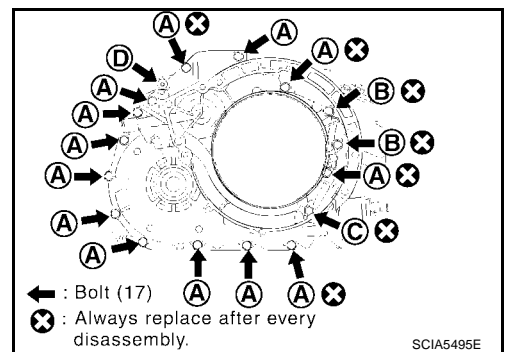
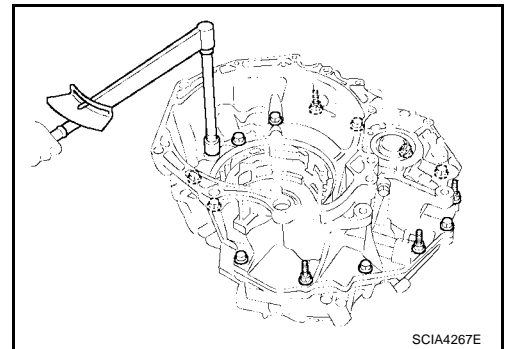
4. Tighten transaxle housing and transaxle case bolts to specified torque. Refer to [AT-245, "Components"](#).

CAUTION:

Use old self-sealing bolts during preload checking and adjustment procedures.

| Bolt symbol | Length mm (in) | Number of bolts |
|-------------|----------------|-----------------|
| A | 30 (1.18) | 13 |
| B | 35 (1.38) | 2 |
| C | 45 (1.77) | 1 |
| D* | — | 1 |

*:Torx bolt



ASSEMBLY

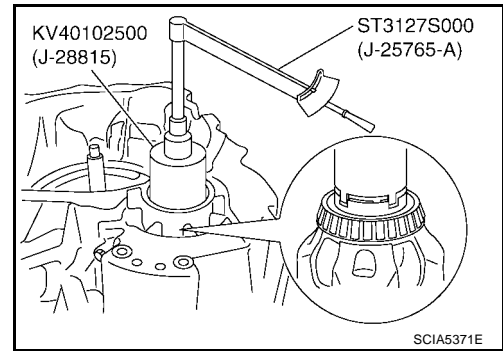
5. Measure turning torque of differential gear assembly using Tool.

Tool number : KV40102500 (J-28815)
: ST3127S000 (J-25765-A)

6. Turn differential gear assembly in both directions several times to seat bearing rollers correctly.

Turning torque : 0.7 - 1.2 N-m
(New bearing) (0.08 - 0.12kg-m, 7 - 10 in-lb)

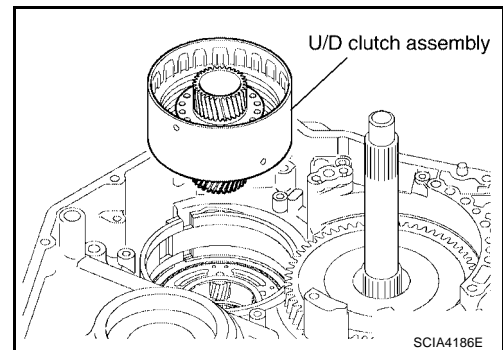
If the preload is not within specification, remove differential gear assembly from transaxle case. Re-select adjust shim. Refer to [AT-315, "DIFFERENTIAL SIDE BEARING ADJUSTING SHIMS"](#)



Assembly (2)

ECS00BV0

1. Remove transaxle housing and differential gear assembly from transaxle case.
2. Install U/D clutch assembly.

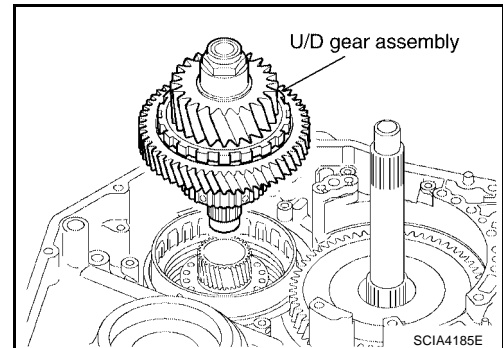


3. Install new seal rings in U/D gear assembly.

NOTE:

- Do not reuse seal rings.
- Apply ATF to seal rings.

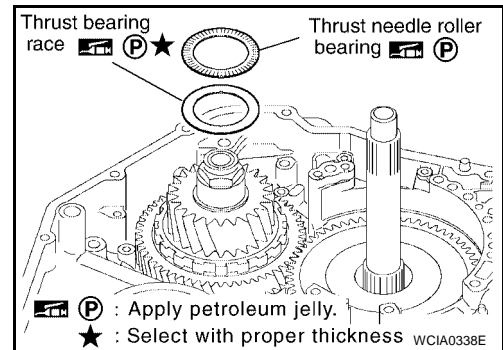
4. Install U/D gear assembly.



5. Install thrust needle roller bearing and thrust bearing race in U/D gear assembly.

NOTE:

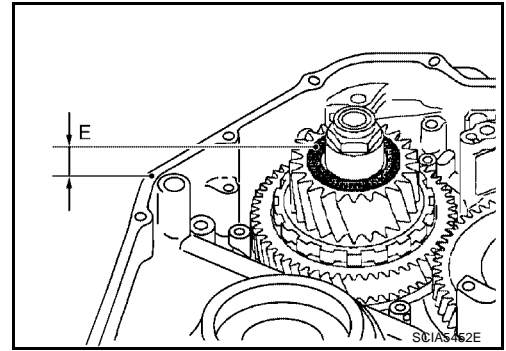
Apply petroleum jelly to thrust needle roller bearing and thrust bearing race.



ASSEMBLY

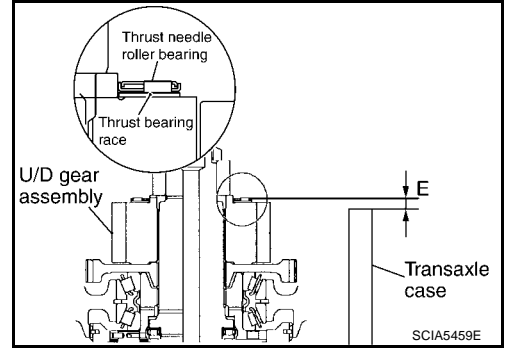
- a. Make sure that measurement "E" is within the specifications.

**Specification "E" : 1.269 - 1.645 mm
(0.0500 - 0.0648 in)**



NOTE:

"E" is the height between the edge of the transaxle case and the roller part of thrust needle roller bearing.



- b. If measurement "E" is outside the specification, replace "T" with a one that has applicable thickness. Refer to [AT-315. "U/D BRAKE"](#) .

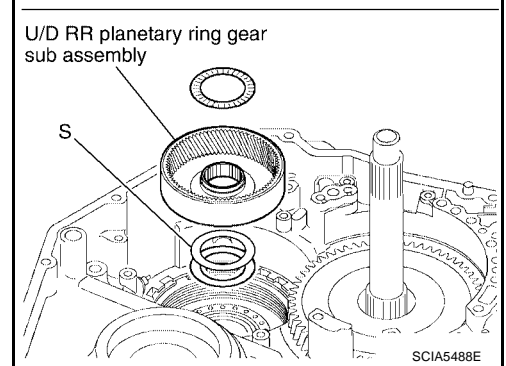
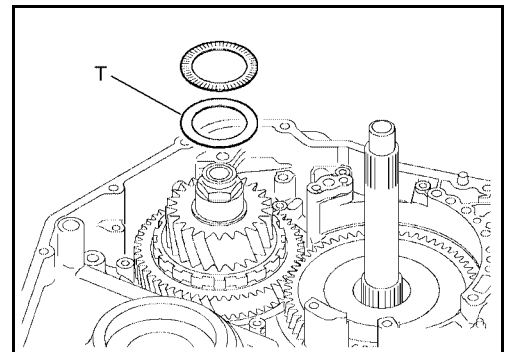
CAUTION:

When adjusting "T", use "S" of thickness 0.81 mm (0.32 in).

- c. If all of "T" do not fit "E" within the specifications, replace "S" with a one that has applicable thickness. Refer to [AT-315. "U/D BRAKE"](#) .

CAUTION:

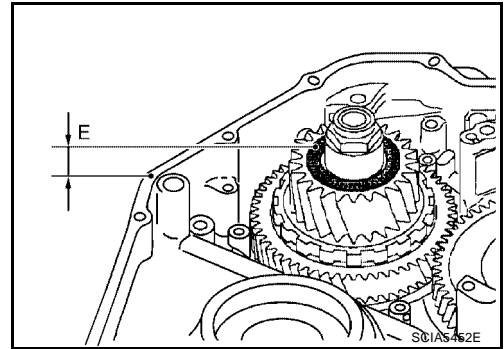
When adjusting "S", use "T" of thickness 0.80 mm (0.31 in).



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

ASSEMBLY

d. Make sure that measurement "E" is within specifications.

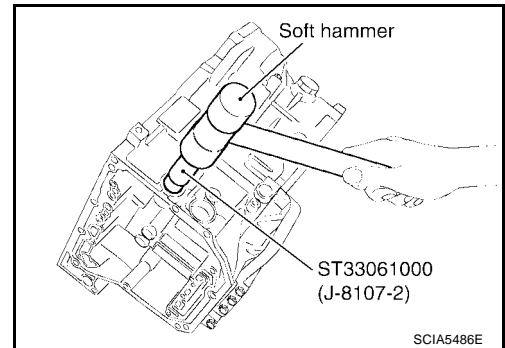


6. Install new manual valve oil seal into transaxle case until it is flush with the transaxle case face, using Tool.

Tool number : ST33061000 (J-8107-2)

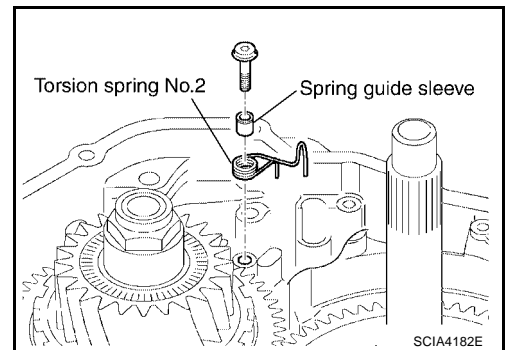
NOTE:

- Do not reuse manual valve oil seal.
- Apply ATF to manual valve oil seal.

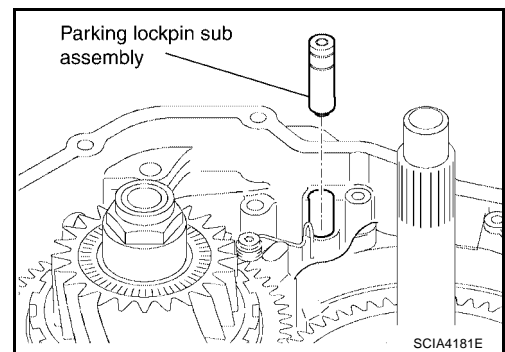


7. Install spring guide sleeve and torsion spring No.2 in transaxle case.

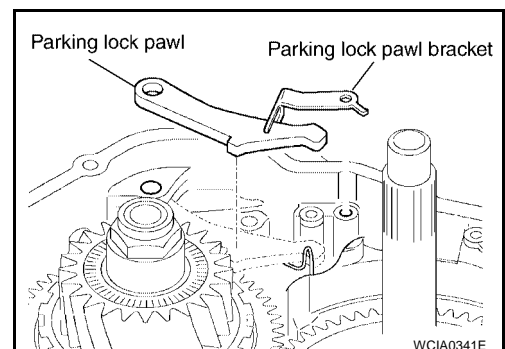
8. Tighten spring guide sleeve and torsion spring No.2 torx bolt to specified torque. Refer to [AT-245, "Components"](#).



9. Install parking lockpin sub assembly.

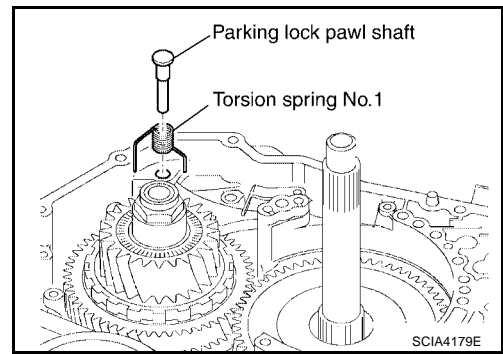


10. Install parking lock pawl bracket and parking lock pawl.



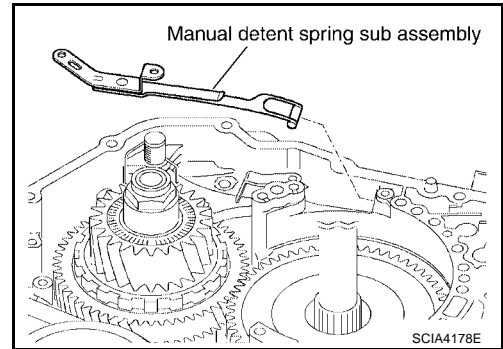
ASSEMBLY

11. Install parking lock pawl shaft and torsion spring No.1.



A
B
AT

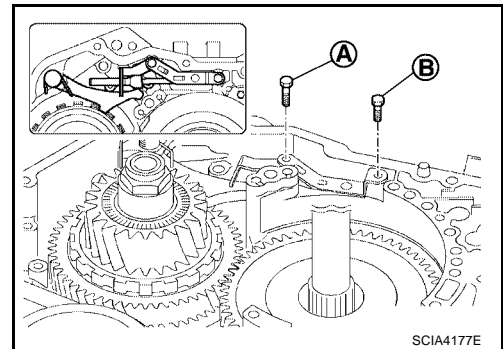
12. Install manual detent spring sub assembly.



D
E
F
G

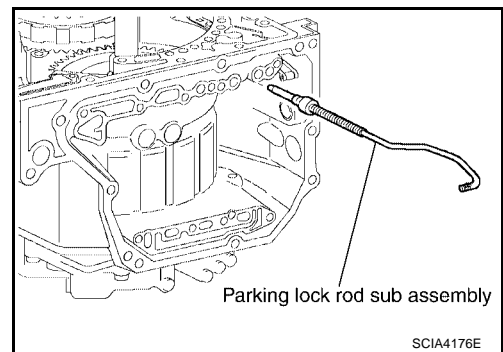
13. Temporary tightening the bolts.

| Bolt symbol | Length mm (in) | Number of bolts |
|-------------|----------------|-----------------|
| A | 16.7 (0.657) | 1 |
| B | 14.0 (0.551) | 1 |



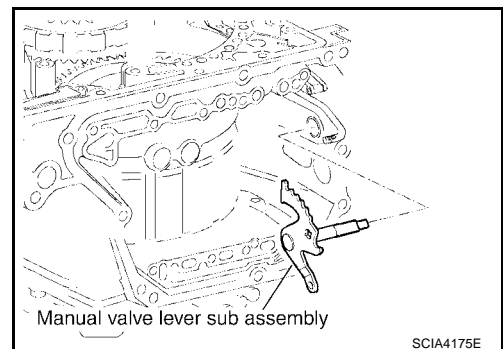
H
I
J
K

14. Install parking lock rod sub assembly.



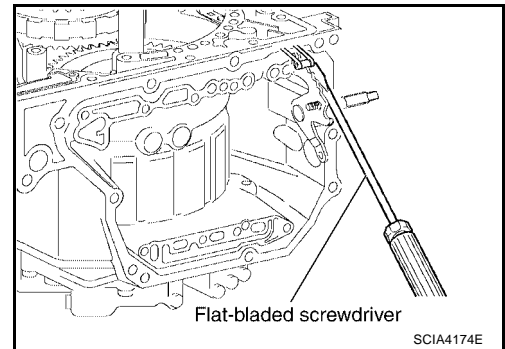
L
M

15. Install manual valve lever sub assembly connect parking lock rod sub assembly to it.

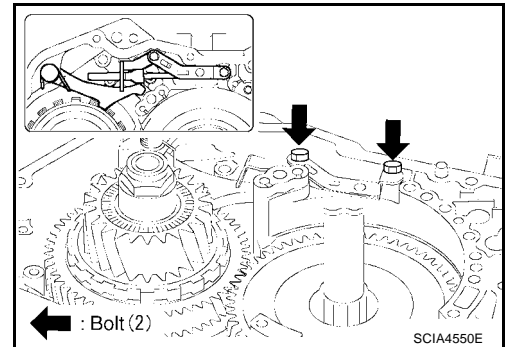


ASSEMBLY

16. Connect manual detent spring sub assembly to manual valve lever sub assembly using a flat-bladed screwdriver.



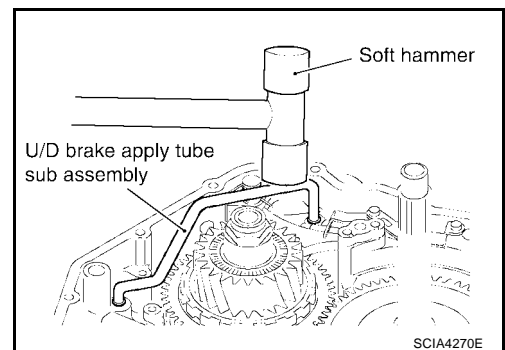
17. Tighten manual detent spring sub assembly bolts to specified torque. Refer to [AT-245, "Components"](#).



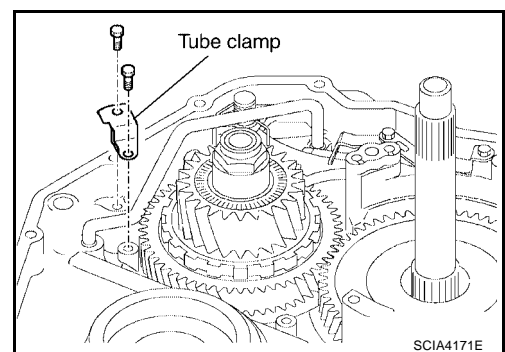
18. Install U/D brake apply tube sub assembly using a soft hammer.

CAUTION:

Be careful not to damage U/D brake apply tube sub assembly.

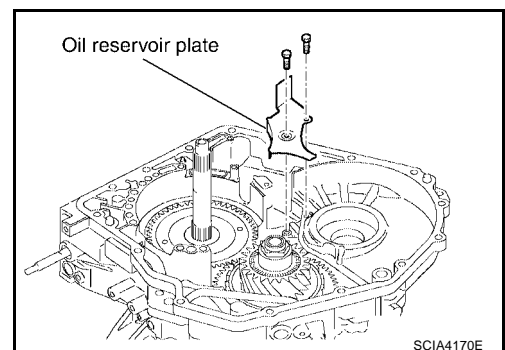


19. Tighten tube clamp bolts to specified torque. Refer to [AT-245, "Components"](#).



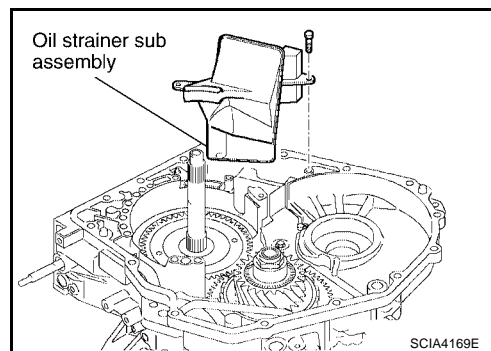
20. Install oil reservoir plate in transaxle case.

21. Tighten oil reservoir plate bolts to specified torque. Refer to [AT-245, "Components"](#).

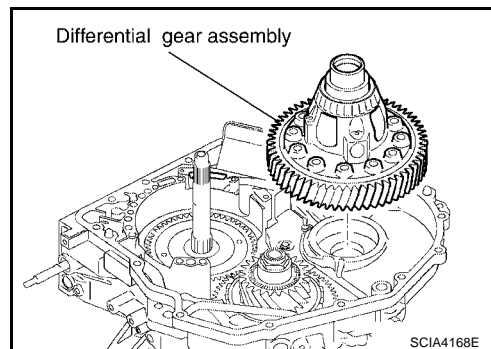


ASSEMBLY

22. Install oil strainer sub assembly in transaxle case.
23. Tighten oil strainer sub assembly bolt to specified torque. Refer to [AT-245, "Components"](#).



24. Install differential gear assembly.



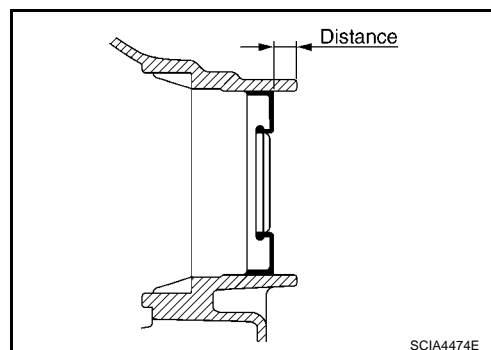
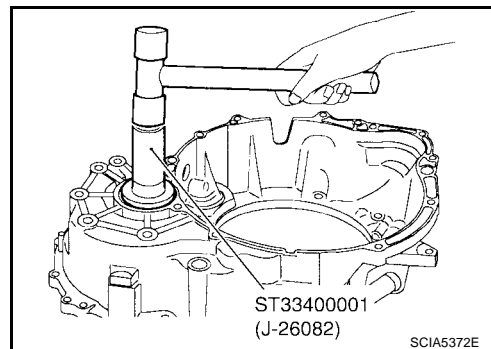
25. Install new differential side oil seal into transaxle housing as specified using Tool.

Tool number : ST33400001 (J-26082)

Distance : 14.8 - 15.8 mm (0.583 - 0.622 in)

NOTE:

- Do not reuse differential side oil seal.
- Apply ATF to differential side oil seal.

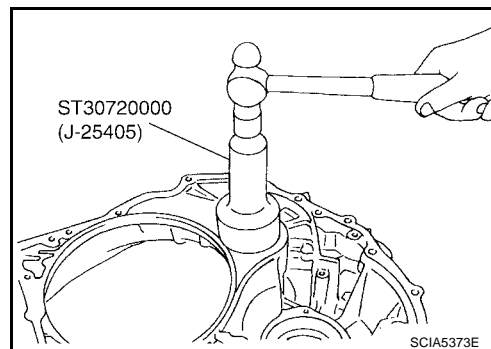


26. Install new thrust roller bearing in transaxle housing using Tool.

Tool number : ST30720000 (J-25405)

NOTE:

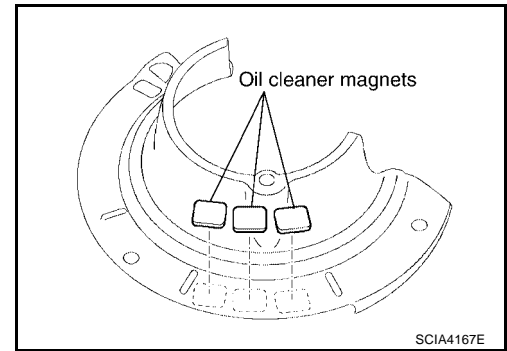
- Do not reuse thrust roller bearing.



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

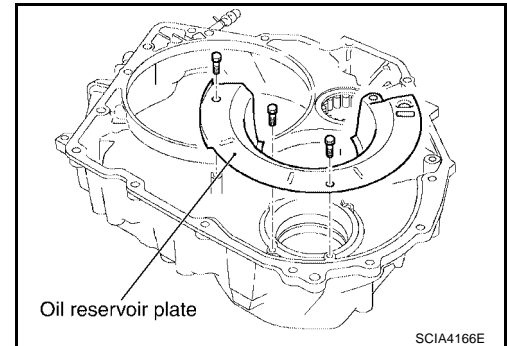
ASSEMBLY

27. Install oil cleaner magnets on oil reservoir plate.



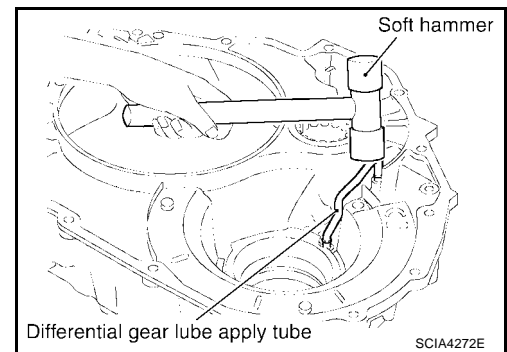
28. Install oil reservoir plate in transaxle housing.

29. Tighten oil reservoir plate bolts to specified torque. Refer to [AT-245, "Components"](#).

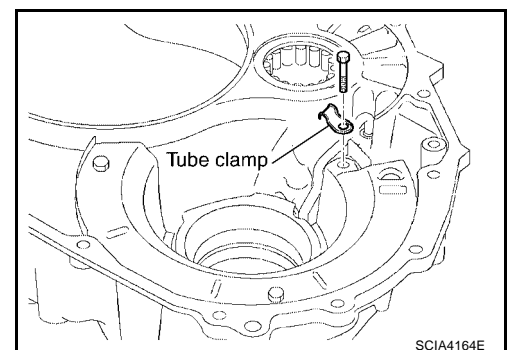


30. Install differential gear lube apply tube using a soft hammer.

CAUTION:
Be careful not to bend or damage differential gear lube apply tube.



31. Tighten tube clamp bolt to specified torque. Refer to [AT-245, "Components"](#).



32. Install new governor apply gasket.

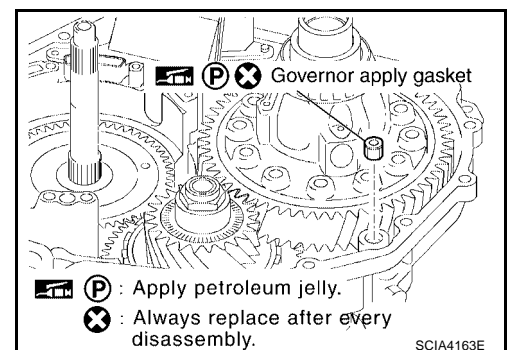
NOTE:

- Do not reuse governor apply gasket.
- Apply petroleum jelly to governor apply gasket.

33. Install new seal ring.

NOTE:

- Do not reuse seal ring.
- Apply ATF to seal ring.

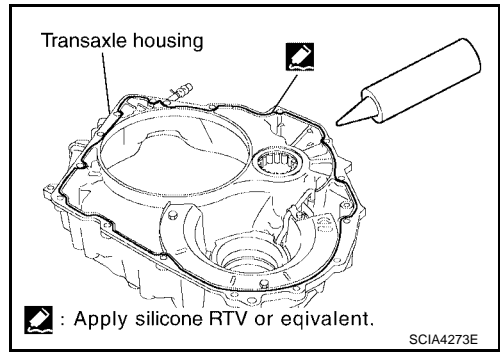


ASSEMBLY

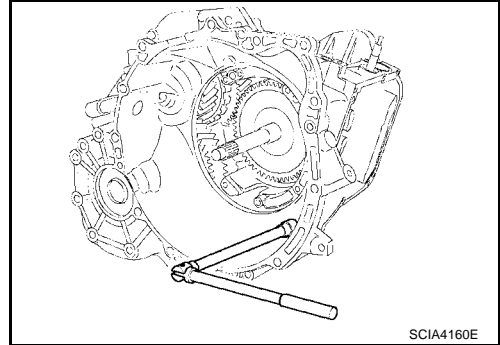
34. Apply silicone RTV to transaxle housing as shown. Refer to [GI-43, "Recommended Chemical Products and Sealants"](#) .

CAUTION:

Complete remove all moisture, oil and sealant, etc. From transaxle housing and transaxle case.



35. Install transaxle housing in transaxle case.



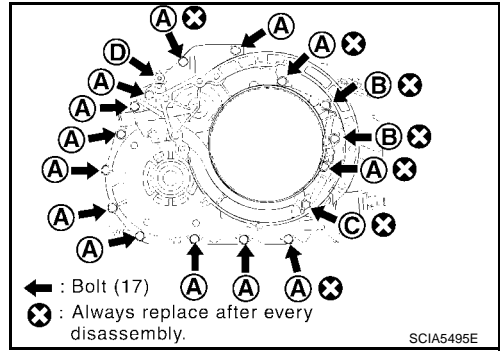
36. Tighten transaxle housing bolts to specified torque. Refer to [AT-245, "Components"](#) .

NOTE:

Do not reuse seal bolt.

| Bolt symbol | Length mm (in) | Number of bolts |
|-------------|----------------|-----------------|
| A | 30 (1.18) | 13 |
| B | 35 (1.38) | 2 |
| C | 45 (1.77) | 1 |
| D* | — | 1 |

*:Torx bolt

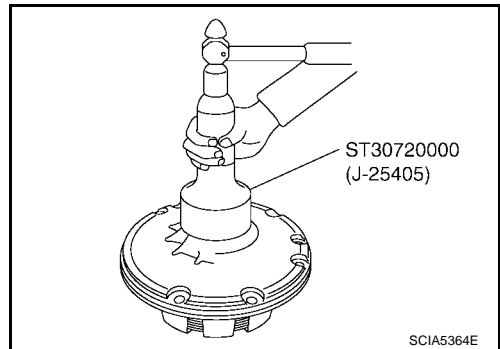


37. Install new oil seal into oil pump assembly until it is flush with oil pump face using Tool.

Tool number : ST30720000 (J-25405)

NOTE:

- Do not reuse oil seal.
- Apply ATF to oil seal.

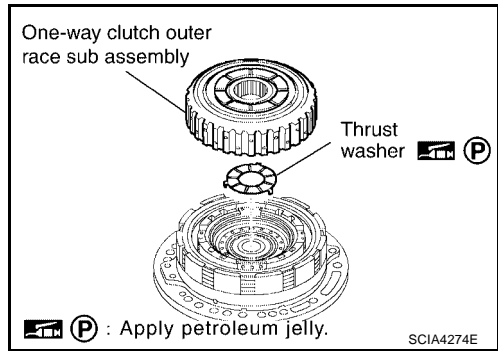


ASSEMBLY

38. Install thrust washer and one-way clutch outer race sub assembly in oil pump assembly.

NOTE:

Apply petroleum jelly to thrust washer.

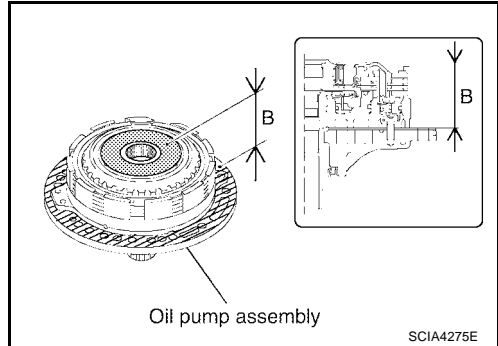


39. Check the distance of "B".

"B" : 51.09 - 51.71 mm (2.0114 - 2.0358 in)

CAUTION:

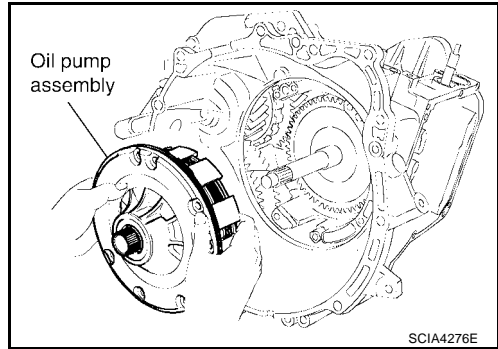
If the distance is out of standards, adjust within standards again.



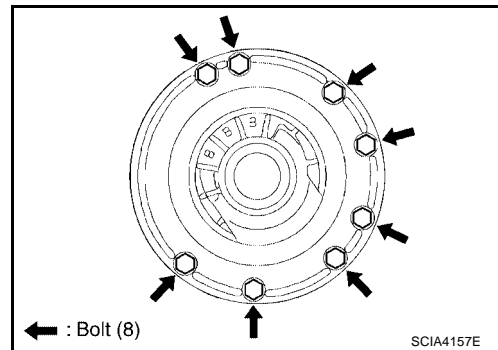
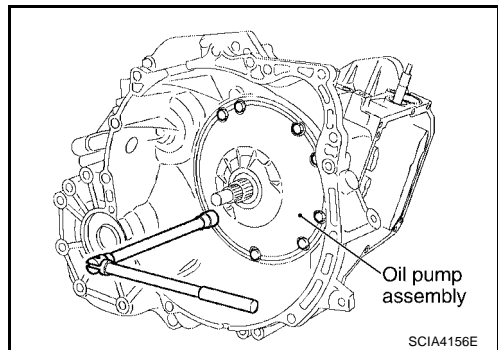
40. Place oil pump assembly through the input shaft in horizontal position, and align the bolt holes of the oil pump assembly with transaxle case. Lightly press oil pump assembly.

CAUTION:

Be careful not to drop one-way clutch outer race sub assembly.



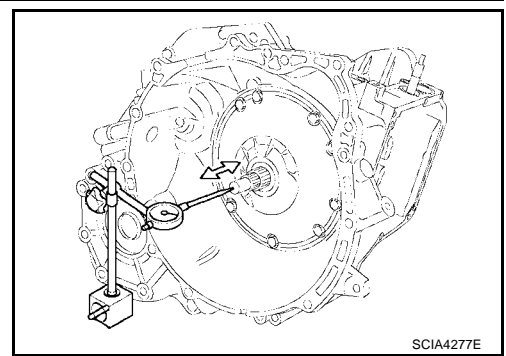
41. Tighten oil pump assembly bolts to specified torque. Refer to [AT-245, "Components"](#).



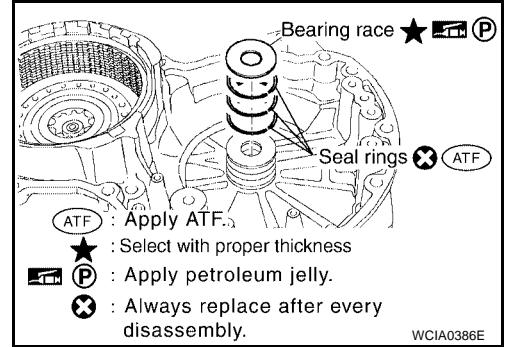
ASSEMBLY

42. Set a dial indicator as shown, move the input shaft and measure the end play.

End play : 0.188 - 0.570 mm (0.0074 - 0.00224 in)

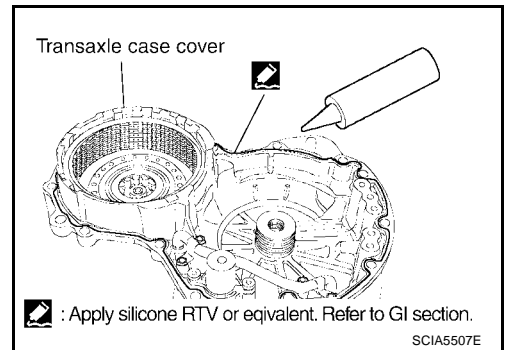


If end play is out of standards, select another thrust bearing race. Refer to [AT-315, "FORWARD AND DIRECT CLUTCH ASSEMBLY"](#).

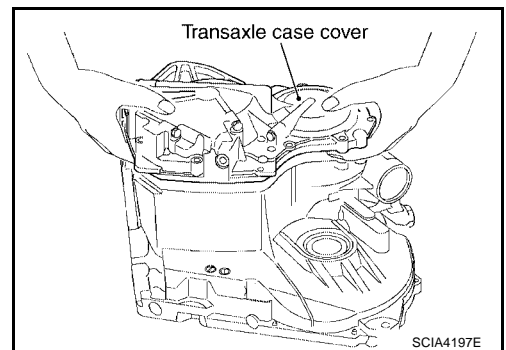


43. Remove transaxle case cover.

44. Apply silicone RTV to transaxle case cover as shown in illustration. Refer to [GI-43, "Recommended Chemical Products and Sealants"](#).



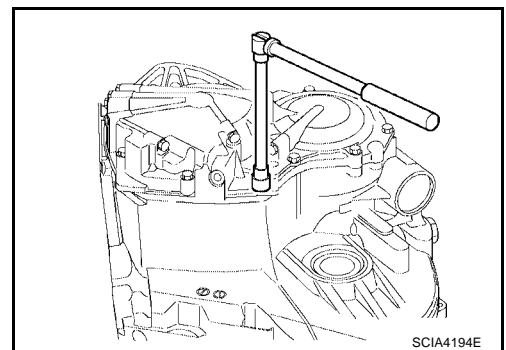
45. Install transaxle case cover in transaxle case.



46. Tighten transaxle case cover bolts to specified torque. Refer to [AT-245, "Components"](#).

CAUTION:
Do not reuse seal bolts.

| Bolt symbol | Length mm (in) | Number of bolts |
|-------------|----------------|-----------------|
| A | 30 (1.18) | 8 |
| B | 45 (1.77) | 2 |

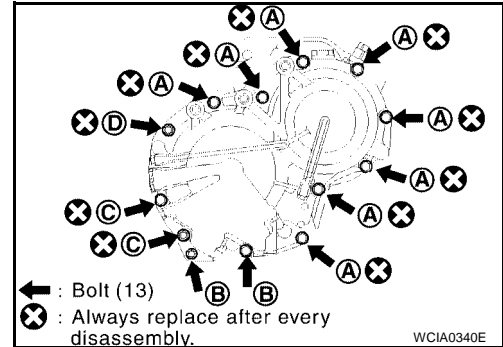


A
B
AT
D
E
F
G
H
I
J
K
L
M

ASSEMBLY

| Bolt symbol | Length mm (in) | Number of bolts |
|-------------|----------------|-----------------|
| C | 48 (1.89) | 2 |
| D* | — | 1 |

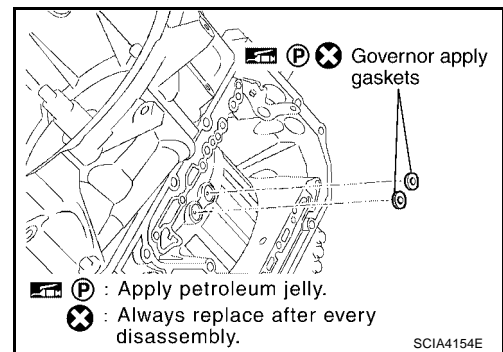
*:Stud bolt



47. Install new governor apply gasket.

NOTE:

- Do not reuse governor apply gaskets.
- Apply petroleum jelly to governor apply gaskets.



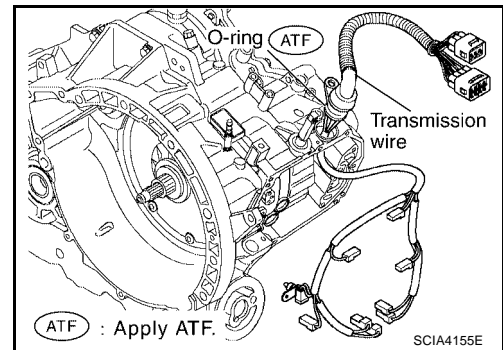
48. Install terminal cord assembly.

CAUTION:

- Be careful not to break the solenoid connector and A/T fluid temperature sensor.

NOTE:

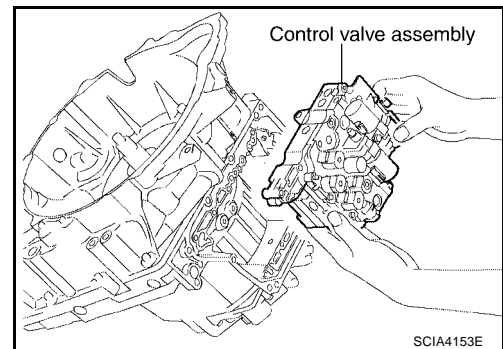
Apply ATF to O-ring.



49. While holding control valve assembly, connect the parking lock rod sub assembly to manual valve lever sub assembly.

NOTE:

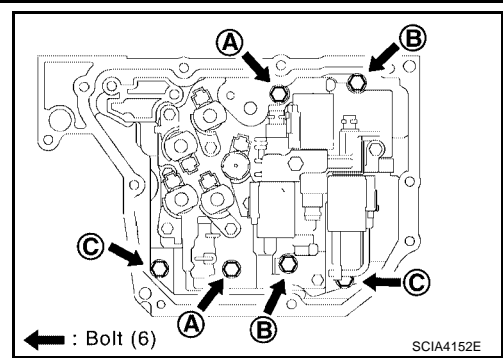
Shift position is "N".



ASSEMBLY

50. Tighten control valve assembly bolts to specified torque. Refer to [AT-245, "Components"](#).

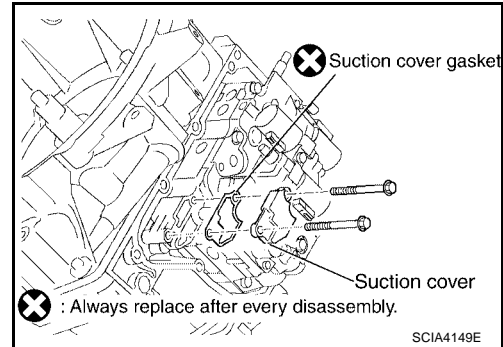
| Bolt symbol | Length mm (in) | Number of bolts |
|-------------|----------------|-----------------|
| A | 55 (2.17) | 2 |
| B | 50 (1.97) | 2 |
| C | 16 (0.63) | 2 |



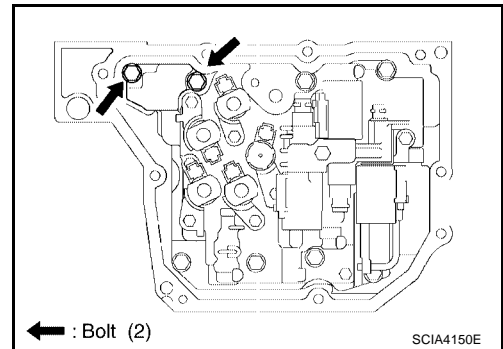
51. Install suction cover and new suction cover gasket in control valve assembly.

NOTE:

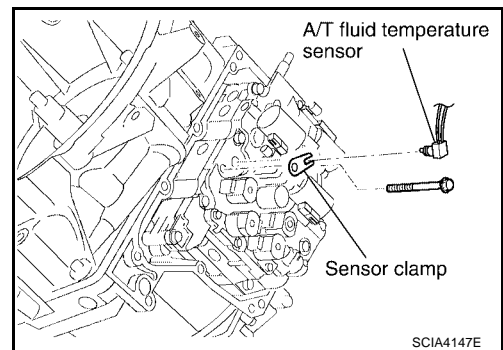
Do not reuse suction cover gasket.



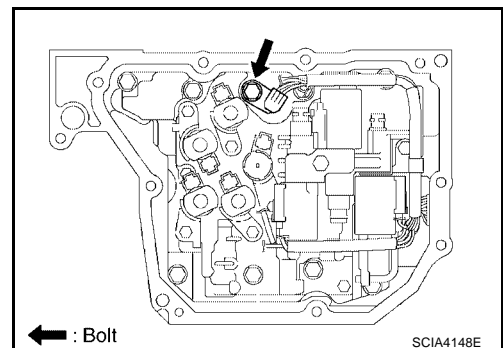
52. Tighten new suction cover gasket and suction cover bolts to specified torque. Refer to [AT-245, "Components"](#).



53. Install sensor clamp and A/T fluid temperature sensor in control valve assembly.

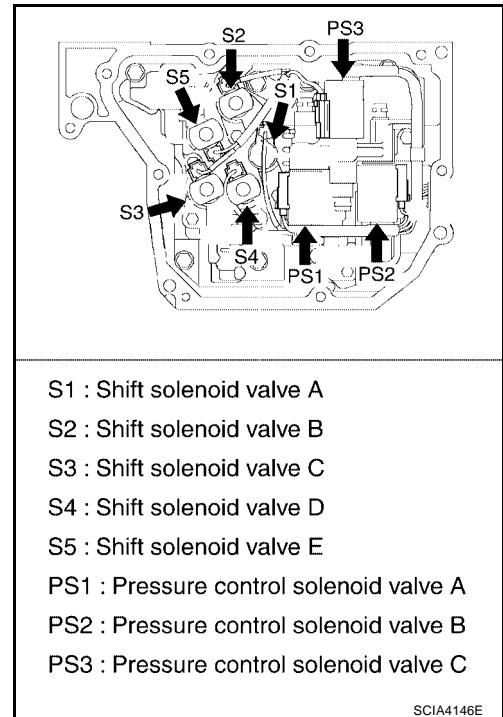


54. Tighten sensor clamp bolts to specified torque. Refer to [AT-245, "Components"](#).



ASSEMBLY

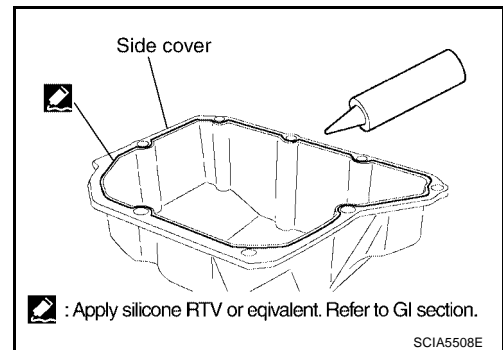
55. Connect the solenoid connectors.



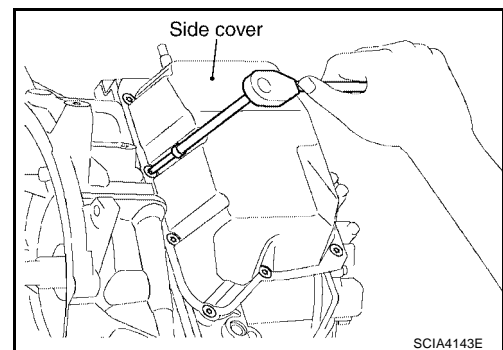
56. Apply silicone RTV to side cover as shown. Refer to [GI-43](#), "[Recommended Chemical Products and Sealants](#)".

CAUTION:

Complete remove all moisture, oil and sealant, etc. From side cover and transaxle case.



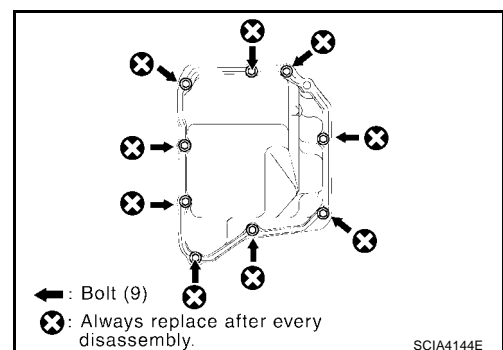
57. Install side cover in transaxle case.



58. Tighten side cover torx bolts to specified torque. Refer to [AT-245](#), "[Components](#)".

NOTE:

Do not reuse seal bolt.



ASSEMBLY

59. Install new O-rings in ATF cooler assembly.

NOTE:

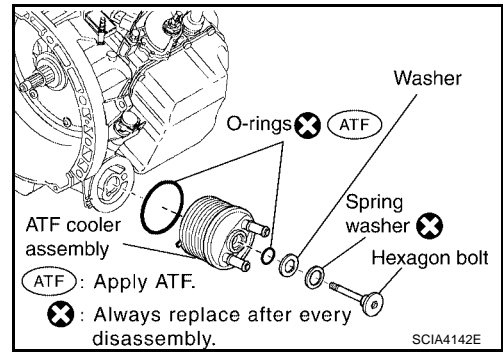
- Do not reuse O-rings.
- Apply ATF to O-rings.

60. Install ATF cooler assembly, washer and new spring washer.

CAUTION:

Do not reuse spring washer.

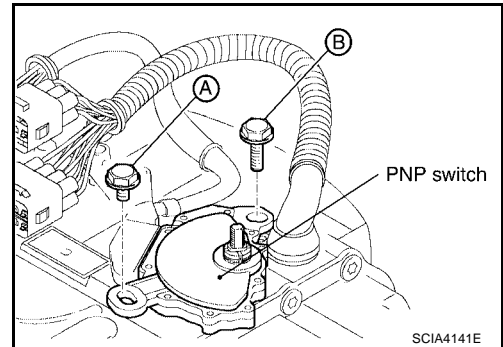
61. Tighten hexagon bolt specified torque. Refer to [AT-245, "Components"](#) .



62. Install PNP switch to manual valve lever sub assembly.

63. Temporary tightening the bolts.

| Bolt symbol | Length mm (in) | Number of bolts |
|-------------|----------------|-----------------|
| A | 20 (0.79) | 1 |
| B | 33 (1.30) | 1 |

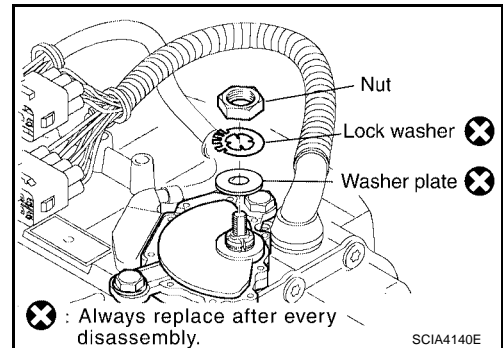


64. Install washer plate and lock washer.

NOTE:

Do not reuse washer plate and lock washer.

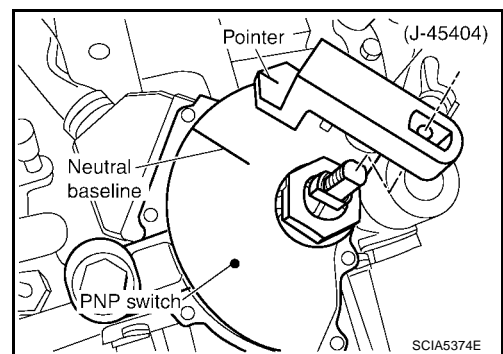
65. Tighten nut specified torque. Refer to [AT-245, "Components"](#) .



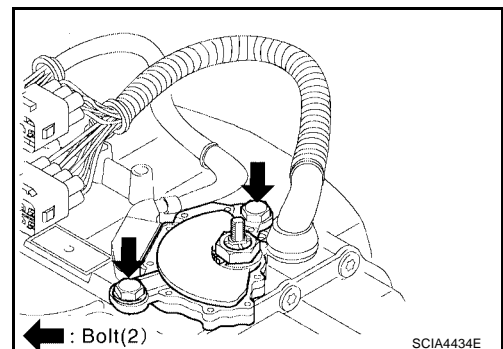
66. Install Tool.

Tool number : KV991J0060 (J-45404)

67. Adjust PNP switch so that Tool pointer aligns with neutral base line on PNP switch body.

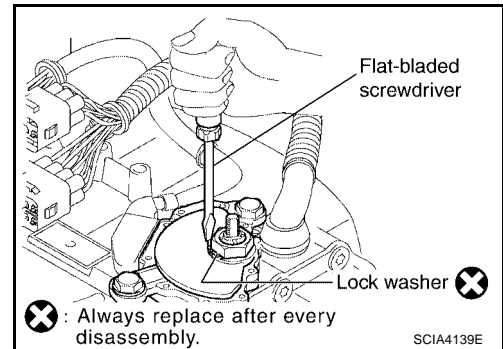


68. Tighten PNP switch bolts to specified torque. Refer to [AT-245, "Components"](#) .



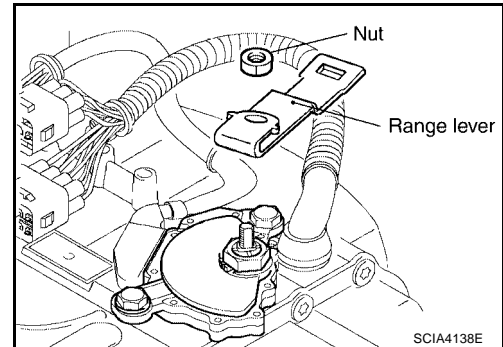
ASSEMBLY

69. Bend the lock washer using a flat-bladed screwdriver.



70. Install range lever in manual valve lever sub assembly.

71. Tighten range lever nut to specified torque. Refer to [AT-245, "Components"](#).

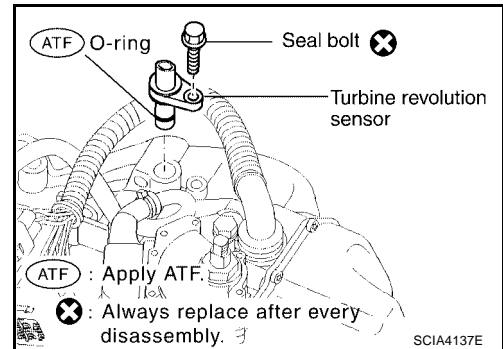


72. Install turbine revolution sensor in transaxle case.

73. Tighten turbine revolution sensor bolt to specified torque. Refer to [AT-245, "Components"](#).

NOTE:

- Do not reuse seal bolt.
- Apply ATF to O-ring.

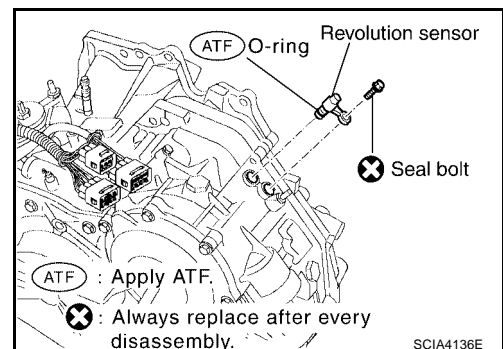


74. Install revolution sensor in transaxle case.

75. Tighten revolution sensor bolt to specified torque. Refer to [AT-245, "Components"](#).

NOTE:

- Do not reuse seal bolt.
- Apply ATF to O-ring.



76. Install new O-ring in A/T fluid charging pipe.

NOTE:

- Do not reuse O-ring.
- Apply petroleum jelly to O-ring.

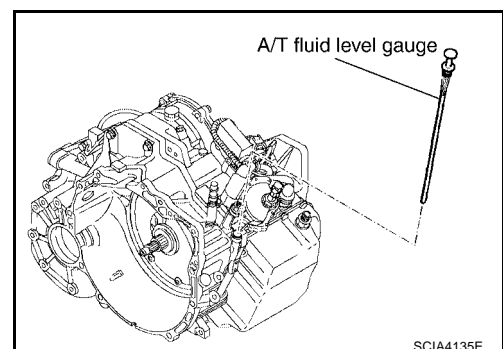
77. Install A/T fluid charging pipe in transaxle housing.

78. Install A/T fluid cooler tube.

NOTE:

Do not reuse copper washer.

79. Tighten A/T fluid cooler tube union to specified torque. Refer to [AT-245, "Components"](#).



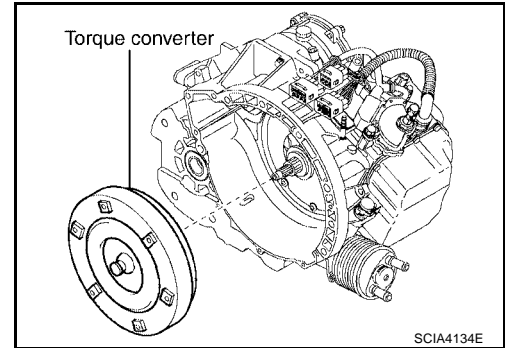
ASSEMBLY

80. Install air breather hose.
81. Install A/T fluid level gauge.
82. Install drain plug in transaxle housing.
83. Tighten drain plug to specified torque. Refer to [AT-245, "Components"](#).

NOTE:

Do not reuse drain plug gasket.

84. Install torque converter.

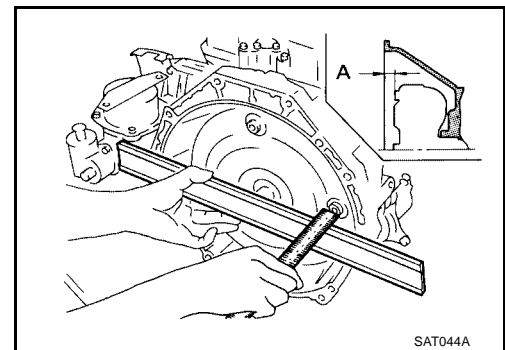


85. Check the dimension of "A".

Dimension "A" : 14.0 mm (0.55 in)

CAUTION:

If the distance is out of standards, adjust within standards again.



A

B

AT

D

E

F

G

H

I

J

K

L

M

SERVICE DATA AND SPECIFICATIONS (SDS)

SERVICE DATA AND SPECIFICATIONS (SDS)

PF0:00030

General Specifications

ECS00BUG

| | | |
|---------------------------------------|-------------|-------------------------------|
| Engine | | VQ35DE |
| Automatic transaxle model | | RE5F22A |
| Automatic transaxle model code number | | 8Y100 |
| Stall torque ratio | | 1.8: 1 |
| Transaxle gear ratio | 1st | 4.657 |
| | 2nd | 3.032 |
| | 3rd | 1.982 |
| | 4th | 1.341 |
| | 5th | 1.018 |
| | Reverse | 5.114 |
| | Final drive | 2.440 |
| Recommended fluid | | Genuine Nissan Matic Fluid K* |
| Fluid capacity ℓ (US qt, Imp qt) | | 7.3 (7-3/4, 6-3/8) |

CAUTION:

- Use only Genuine Nissan Matic Fluid K. Do not mix with other fluid.
- Using automatic transaxle fluid other than Genuine Nissan Matic Fluid K will deteriorate in driveability and automatic transaxle durability, and may damage the automatic transaxle, which is not covered by the warranty.

*: Refer to [MA-9. "RECOMMENDED FLUIDS AND LUBRICANTS"](#).

Shift Schedule

ECS00BUH

VEHICLE SPEED WHEN SHIFTING GEARS

| Accelerator angle | Vehicle speed km/h (MPH) (Approx.) | | | | | | | |
|-------------------|------------------------------------|------------|-------------|--------------|--------------|-------------|------------|------------|
| | D1 →D2 | D2 →D3 | D3 →D4 | D4 →D5 | D5 →D4 | D4 →D3 | D3 →D2 | D2 →D1 |
| 100 % | 59 (37) | 95 (59) | 147 (91) | 217 (135) | 207 (129) | 142 (88) | 83 (52) | 41 (25) |
| 90 % | 59 (37) | 95 (59) | 147 (91) | 217 (135) | 207 (129) | 142 (88) | 83 (52) | 41 (25) |
| 80 % | 59 (37) | 95 (59) | 147 (91) | 217 (135) | 207 (129) | 142 (88) | 83 (52) | 41 (25) |
| 70 % | 59 (37) | 95 (59) | 147 (91) | 217 (135) | 197 (122) | 141 (88) | 81 (50) | 41 (25) |
| 60 % | 59 (37) | 95 (59) | 147 (91) | 217 (135) | 190 (118) | 135 (84) | 76 (47) | 41 (25) |
| 50 % | 59 (37) | 90 (56) | 137 (85) | 202 (126) | 176 (109) | 123 (76) | 69 (43) | 41 (25) |
| 40 % | 50 (31) | 82 (51) | 117 (73) | 172 (107) | 148 (92) | 92 (57) | 54 (34) | 32 (20) |
| 30 % | 37 (23) | 62 (39) | 87 (54) | 127 (79) | 105 (65) | 59 (37) | 35 (22) | 19 (12) |
| 20 % | 27 (17) | 44 (27) | 59 (37) | 87 (54) | 60 (37) | 40 (25) | 22 (14) | 8 (5) |
| 10 % | 19 (12) | 27 (17) | 35 (22) | 55 (34) | 44 (27) | 32 (20) | 22 (14) | 8 (5) |

SERVICE DATA AND SPECIFICATIONS (SDS)

VEHICLE SPEED WHEN PERFORMING AND RELEASING COMPLETE LOCK-UP

| Accelerator angle | Vehicle speed km/h (MPH) (Approx.) | |
|-------------------|------------------------------------|---------------|
| | Lock-up "ON" | Lock-up "OFF" |
| 50 % | 217 (135) | 195 (121) |
| 15% | 108 (67) | 70 (43) |
| 0 - 8 % | 66 (41) | 63 (39) |

- Lock-up vehicle speed indicates the speed in D position.
- Perform lock-up inspection after warming up engine.
- Lock-up vehicle speed may vary depending on the driving conditions and circumstances.

VEHICLE SPEED WHEN PERFORMING AND RELEASING SLIP LOCK-UP

| Accelerator angle | Gear position | Vehicle speed km/h (MPH) (Approx.) | |
|-------------------|---------------|------------------------------------|--------------------|
| | | Slip lock-up "ON" | Slip lock-up "OFF" |
| 0 - 10 % | 4th | 41 (25) | 38 (24) |
| | 5th | 53 (33) | 50 (31) |

- Slip lock-up vehicle speed indicates the speed in D position.
- Perform slip lock-up inspection after warming up engine.
- Slip lock-up vehicle speed may vary depending on the driving conditions and circumstances.

Stall Speed

ECS00BUJ

| | |
|-------------|-------------------|
| Stall speed | 2,430 - 2,730 rpm |
|-------------|-------------------|

Line Pressure

ECS00BUJ

| Engine speed | Line pressure kPa (kg/cm ² , psi) | |
|----------------|--|--|
| | D, M positions | R position |
| At idle speed | 333 - 392 (3.4 - 4.0, 48 - 57) | 500 - 608 (5.1 - 6.2, 73 - 88) |
| At stall speed | 1,285 - 1,393 (13.1 - 14.2, 186 - 202) | 1,706 - 1,981 (17.4 - 20.2, 247 - 287) |

Time Lag

ECS00BUK

| Selector lever | Time |
|-----------------|--------------------|
| N to D position | Less than 0.7 sec. |
| N to R position | Less than 1.2 sec. |

Shift Solenoid Valves

ECS00BUL

| Shift position | Shift solenoid valve | | | | | Remarks |
|----------------|----------------------|--------------|--------------|--------------|--------------|------------------|
| | A | B | C | D | E | |
| P | OFF (Open) | OFF (Closed) | OFF (Closed) | OFF (Open) | OFF (Closed) | PARK POSITION |
| R | OFF (Open) | OFF (Closed) | ON (Open) | OFF (Open) | ON (Open) | REVERSE POSITION |
| N | OFF (Open) | OFF (Closed) | OFF (Closed) | OFF (Open) | OFF (Closed) | NEUTRAL POSITION |
| D | 1st | ON (Closed) | ON (Open) | ON (Open) | OFF (Open) | OFF (Closed) |
| | 1 ⇔ 2 | OFF (Open) | OFF (Closed) | ON (Open) | OFF (Open) | OFF (Closed) |
| | 2nd | OFF (Open) | OFF (Closed) | ON (Open) | OFF (Open) | OFF (Closed) |
| | 2 ⇔ 3 | OFF (Open) | OFF (Closed) | ON (Open) | ON (Closed) | ON (Open) |
| | 3rd | OFF (Open) | OFF (Closed) | ON (Open) | ON (Closed) | OFF (Closed) |
| | 3 ⇔ 4 | OFF (Open) | OFF (Closed) | OFF (Closed) | ON (Closed) | ON (Open) |
| | 4th | OFF (Open) | OFF (Closed) | OFF (Closed) | ON (Closed) | OFF (Closed) |
| | 4 ⇔ 5 | OFF (Open) | ON (Open) | OFF (Closed) | ON (Closed) | OFF (Closed) |
| | 5th | OFF (Open) | ON (Open) | OFF (Closed) | ON (Closed) | OFF (Closed) |

Automatic shift
1 ⇔ 2 ⇔ 3 ⇔ 4 ⇔ 5

SERVICE DATA AND SPECIFICATIONS (SDS)

| Shift position | | Shift solenoid valve | | | | | Remarks |
|----------------|-----|----------------------|--------------|--------------|-------------|--------------|--------------------|
| | | A | B | C | D | E | |
| M5 | 5th | OFF (Open) | ON (Open) | OFF (Closed) | ON (Closed) | OFF (Closed) | Locks in 5th gear* |
| M4 | 4th | OFF (Open) | OFF (Closed) | OFF (Closed) | ON (Closed) | OFF (Closed) | Locks in 4th gear* |
| M3 | 3rd | OFF (Open) | OFF (Closed) | ON (Open) | ON (Closed) | OFF (Closed) | Locks in 3rd gear* |
| M2 | 2nd | OFF (Open) | OFF (Closed) | ON (Open) | OFF (Open) | OFF (Closed) | Locks in 2nd gear* |
| M1 | 1st | ON (Closed) | ON (Open) | ON (Open) | OFF (Open) | ON (Open) | Locks in 1st gear* |

*: Except when automated up/down shift control and up/down shift permission control are actuated. Refer to [AT-37, "MANUAL MODE"](#).

Solenoid Valves

ECS00BUM

| Solenoid valves | Resistance (Approx.) | Connector (Color) | Terminal |
|-----------------------------------|----------------------|-------------------|------------|
| Shift solenoid valve A | 11 - 16 Ω | (B) | 1 - Ground |
| Shift solenoid valve B | | (GR) | 1 - Ground |
| Shift solenoid valve C | | (GR) | 1 - Ground |
| Shift solenoid valve D | | (L) | 1 - Ground |
| Shift solenoid valve E | | (G) | 1 - Ground |
| Pressure control solenoid valve A | 5.0 - 5.6 Ω | (G) | 1 - 2 |
| Pressure control solenoid valve B | | (B) | 1 - 2 |
| Pressure control solenoid valve C | | (L) | 1 - 2 |

Specified resistance at 20°C (68°F).

Clutch and Brakes

2ND BRAKE

ECS00BUM

| | | |
|--------------------------------|-------------------------------|--------------|
| Number of 2nd brake plates | 4 | |
| Number of 2nd brake discs | 4 | |
| Number of 2nd brake flange | 1 | |
| Piston stroke mm (in) | 1.10 - 1.50 (0.0433 - 0.0591) | |
| Thickness of 2nd brake flanges | Thickness mm (in) | Part number* |
| | 3.6 (0.142) | 31537-8Y011 |
| | 3.8 (0.150) | 31537-8Y012 |
| | 4.0 (0.157) | 31537-8Y013 |

*: Always check with the Parts Department for the latest parts information.

2ND COAST BRAKE

| | |
|----------------------------------|-------------------------------|
| Number of 2nd coast brake plates | 3 |
| Number of 2nd coast brake discs | 3 |
| Number of 2nd coast brake flange | 1 |
| Piston stroke mm (in) | 0.76 - 1.44 (0.0299 - 0.0567) |

SERVICE DATA AND SPECIFICATIONS (SDS)

B5 BRAKE

| | | |
|----------------------------------|-------------------------------|--------------|
| Number of B5 brake plates | 6 | |
| Number of B5 brake discs | 6 | |
| Number of B5 brake flange | 1 | |
| Number of B5 brake cushion plate | 1 | |
| Piston stroke mm (in) | 2.34 - 2.70 (0.0921 - 0.1063) | |
| Thickness of B5 brake flanges | Thickness mm (in) | Part number* |
| | 5.0 (0.197) | 31667-8Y010 |
| | 5.1 (0.202) | 31667-8Y015 |
| | 5.2 (0.205) | 31667-8Y011 |
| | 5.3 (0.209) | 31667-8Y013 |
| | 5.5 (0.217) | 31667-8Y014 |

*: Always check with the Parts Department for the latest parts information.

1ST AND REVERSE BRAKE

| | |
|---|-------------------------------|
| Number of 1st and reverse brake plates | 4 |
| Number of 1st and reverse brake discs | 5 |
| Number of 1st and reverse brake flanges | 2 |
| Piston stroke mm (in) | 1.39 - 2.21 (0.0547 - 0.0870) |

FORWARD AND DIRECT CLUTCH ASSEMBLY

| | | |
|----------------------------------|------------------------------------|--------------|
| Thickness of thrust washer races | Thickness mm (in) | Part number* |
| | 0.81 (0.0319) | 31435 8Y011 |
| | 1.15 (0.0453) | 31435 8Y012 |
| End play mm (in) | 0.305 - 0.820 mm (0.0120 - 0.0323) | |

*: Always check with the Parts Department for the latest parts information.

U/D BRAKE

| Piston type | Mark | Piston length mm (in) | Part number* |
|-----------------------|------|----------------------------------|--------------|
| A | — | 63.7 (2.508) | 31615 8Y005 |
| B | 1 | 64.2 (2.528) | 31615 8Y004 |
| C | 2 | 64.7 (2.547) | 31615 8Y003 |
| D | 3 | 65.2 (2.567) | 31615 8Y002 |
| E | 4 | 65.7 (2.587) | 31615 8Y001 |
| Piston stroke mm (in) | | 5.76 - 6.76 mm (0.2268 - 0.2661) | |

*: Always check with the Parts Department for the latest parts information.

Final Drive DIFFERENTIAL SIDE BEARING ADJUSTING SHIMS

ECS00BUO

| Thickness mm (in) | Part number* | Thickness mm (in) | Part number* |
|-------------------|--------------|-------------------|--------------|
| 1.00 (0.0394) | 31438-8Y001 | 1.48 (0.0583) | 31438-8Y013 |
| 1.05 (0.0413) | 31438-8Y002 | 1.51 (0.0594) | 31438-8Y014 |
| 1.10 (0.0433) | 31438-8Y003 | 1.54 (0.0606) | 31438-8Y015 |
| 1.15 (0.0453) | 31438-8Y004 | 1.57 (0.0618) | 31438-8Y016 |
| 1.20 (0.0472) | 31438-8Y005 | 1.60 (0.0630) | 31438-8Y017 |
| 1.25 (0.0492) | 31438-8Y006 | 1.65 (0.0650) | 31438-8Y018 |
| 1.30 (0.0512) | 31438-8Y007 | 1.70 (0.0669) | 31438-8Y019 |
| 1.33 (0.0524) | 31438-8Y008 | 1.75 (0.0689) | 31438-8Y020 |
| 1.36 (0.0535) | 31438-8Y009 | 1.80 (0.0709) | 31438-8Y021 |
| 1.39 (0.0547) | 31438-8Y010 | 1.85 (0.0728) | 31438-8Y022 |
| 1.42 (0.0559) | 31438-8Y011 | 1.90 (0.0748) | 31438-8Y023 |
| 1.45 (0.0571) | 31438-8Y012 | | |

*: Always check with the Parts Department for the latest parts information.

SERVICE DATA AND SPECIFICATIONS (SDS)

TURNING TORQUE

| | |
|--|---|
| Turning torque of final drive assembly | 0.7 - 1.2 N·m (0.08 - 0.12kg-m, 7 - 10 in-lb) |
|--|---|

A/T Fluid Temperature Sensor

ECS00BUP

| Condition | Voltage (Approx.) | Resistance (Approx.) | |
|-----------------|-------------------|----------------------|---------|
| ATF temperature | 0°C (32°F) | 4.0V | 9.8 kΩ |
| | 20°C (68°F) | 3.0V | 4.2 kΩ |
| | 80°C (176°F) | 0.8V | 0.54 kΩ |
| | 100°C (212°F) | 0.5V | 0.31 kΩ |

Turbine Revolution Sensor

ECS00BUQ

| Condition | Signal | Voltage* (Approx.) |
|--|--------|--------------------|
| Connect 12V power supply and 100 Ω resistance, and then shake magnetic body. | HIGH | 1.2 - 1.6V |
| | LOW | 0.4 - 0.8V |

*: Voltage with both end of 100 Ω resistance.

Revolution Sensor

ECS00BUR

| Condition | Signal | Voltage* (Approx.) |
|--|--------|--------------------|
| Connect 12V power supply and 100 Ω resistance, and then shake magnetic body. | HIGH | 1.2 - 1.6V |
| | LOW | 0.4 - 0.8V |

*: Voltage with both end of 100 Ω resistance.