AUTOMATIC TRANSMISSION
(DIAGNOSTICS CS)
# 1. Basic Diagnostic Procedure

## A: PROCEDURE

<table>
<thead>
<tr>
<th>Step</th>
<th>Check</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>CHECK PRE-INSPECTION.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1) Ask the customer when and how the trouble occurred using the interview check list. &lt;Ref. to 4AT(diag)-4, Check List for Interview.&gt;</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2) Before performing diagnosis, inspect the following items which may influence AT problems.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• General inspection &lt;Ref. to 4AT(diag)-5, INSPECTION, General Description.&gt;</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Disconnection of harness connector</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Visual check for harness damage</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Oil leakage</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Stall speed test &lt;Ref. to 4AT-30, Stall Test.&gt;</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Line pressure test &lt;Ref. to 4AT-33, Line Pressure Test.&gt;</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Transfer clutch pressure test &lt;Ref. to 4AT-34, Transfer Clutch Pressure Test.&gt;</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Time lag test &lt;Ref. to 4AT-32, Time Lag Test.&gt;</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Road test &lt;Ref. to 4AT-29, Road Test.&gt;</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Inhibitor switch &lt;Ref. to 4AT-47, Inhibitor Switch.&gt;</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Is the unit that is thought to influence the AT problem working properly?</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Go to step 2. Repair or replace each item.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>ATF TEMPERATURE WARNING LIGHT INSPECTION.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Start the engine and wait for 2 seconds or more.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>ATF TEMPERATURE WARNING LIGHT INSPECTION.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1) Turn the ignition switch to OFF.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2) Check the ATF temperature warning light. &lt;Ref. to 4AT(diag)-23, INSPECTION, AT Oil Temp Warning Light Display.&gt;</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3) Turn the ignition switch to ON and wait for at least 2 seconds.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4) Start the engine.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Is the ATF temperature warning light blinking?</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Go to step 4. Go to step 3.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>CHECK DTC.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Display DTC.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>NOTE: If the communication function of Subaru Select Monitor cannot be executed normally, check the communication circuit. &lt;Ref. to 4AT(diag)-25, COMMUNICATION FOR INITIALIZING IMPOSSIBLE, Diagnostic Procedure for Subaru Select Monitor Communication.&gt;</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Is DTC displayed?</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Go to step 6. NOTE: Record all DTC.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Go to step 5.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>PERFORM GENERAL DIAGNOSTICS.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1) Inspect using “Diagnostic Procedure without Diagnostic Trouble Code (DTC)”. &lt;Ref. to 4AT(diag)-81, Diagnostic Procedure without Diagnostic Trouble Code (DTC).&gt;</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2) Inspect using “Diagnostics with Phenomenon”. &lt;Ref. to 4AT(diag)-89, Diagnostics with Phenomenon.&gt;</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3) Perform the Inspection Mode. &lt;Ref. to 4AT(diag)-20, Inspection Mode.&gt;</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4) Display DTC.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Is DTC displayed?</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Go to step 6. Finish the diagnosis.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Basic Diagnostic Procedure

#### AUTOMATIC TRANSMISSION (DIAGNOSTICS)

6 PERFORM DIAGNOSIS.


   **NOTE:**
   For DTC table, refer to “List of Diagnostic Trouble Code (DTC)”, <Ref. to 4AT(diag)-29, List of Diagnostic Trouble Code (DTC).>

2) Repair the trouble cause.

3) Perform the Clear Memory Mode.

4) Perform the Inspection Mode. <Ref. to 4AT(diag)-20, Inspection Mode.>

5) Display DTC.

<table>
<thead>
<tr>
<th>Step</th>
<th>Check</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
</table>

Finish the diagnosis.
## Check List for Interview

### A: CHECK

Check the following item when problem has occurred.

**NOTE:**
Use copies of this page for interviewing customers.

<table>
<thead>
<tr>
<th>Customer's name</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Date of purchase</td>
<td></td>
</tr>
<tr>
<td>Date of repair</td>
<td></td>
</tr>
<tr>
<td>Transmission model</td>
<td>Transmission V.I.N.</td>
</tr>
<tr>
<td>Odometer reading</td>
<td>km (miles)</td>
</tr>
<tr>
<td>Frequency</td>
<td>☐ Continuous ☐ Intermittent ( times a day)</td>
</tr>
<tr>
<td>Weather</td>
<td>☐ Fine ☐ Cloudy ☐ Rainy ☐ Snowy ☐ Others ( )</td>
</tr>
<tr>
<td>Place</td>
<td>☐ Highland ☐ Suburbs ☐ Inner city ☐ Uphill ☐ Rough road ☐ Others ( )</td>
</tr>
<tr>
<td>Ambient air temperature</td>
<td>☐ Hot ☐ Warm ☐ Cool ☐ Cold</td>
</tr>
<tr>
<td>Vehicle speed</td>
<td>km/h (MPH)</td>
</tr>
<tr>
<td>AT warning light (ATF temperature warning light)</td>
<td>☐ Blinks continuously ☐ Does not blink</td>
</tr>
<tr>
<td>Select lever position</td>
<td>☐ P ☐ R ☐ N ☐ D ☐ SPORT mode</td>
</tr>
<tr>
<td>Driving condition</td>
<td>☐ Not affected ☐ At starting ☐ While idling</td>
</tr>
<tr>
<td></td>
<td>☐ At racing ☐ While accelerating ☐ While cruising</td>
</tr>
<tr>
<td></td>
<td>☐ While decelerating ☐ While turning (RH/LH)</td>
</tr>
<tr>
<td>SPORT mode</td>
<td>☐ ON ☐ OFF</td>
</tr>
<tr>
<td>Symptom</td>
<td>☐ No up-shift ☐ No down-shift ☐ No kick down</td>
</tr>
<tr>
<td></td>
<td>☐ Vehicle does not move ( ☐ Any position ☐ Particular position)</td>
</tr>
<tr>
<td></td>
<td>☐ Lock-up malfunction</td>
</tr>
<tr>
<td></td>
<td>☐ Noise or vibration</td>
</tr>
<tr>
<td></td>
<td>☐ Shift shock or slip</td>
</tr>
<tr>
<td></td>
<td>☐ Select lever does not move</td>
</tr>
<tr>
<td></td>
<td>☐ Others ( )</td>
</tr>
</tbody>
</table>
3. General Description

A: CAUTION

1. SUPPLEMENTAL RESTRAINT SYSTEM “AIRBAG”

The airbag system wiring harness is routed near the TCM.

CAUTION:
- All the airbag system wiring harnesses and connectors are colored yellow. Do not use an electric test equipment to check these circuits.
- Be careful not to damage the airbag system wiring harness when performing TCM diagnostics or servicing.

2. MEASUREMENT

When measuring the voltage and resistance of the ECM, TCM or each sensor, use a tapered pin with a diameter of less than 0.64 mm (0.025 in) in order to avoid poor contact. Do not insert a pin of more than 0.65 mm (0.026 in) diameter.

B: INSPECTION

1. BATTERY

Measure the battery voltage and specific gravity of the electrolyte.

Standard voltage: 12 V or more

Specific gravity: 1.260 or more

2. TRANSMISSION GROUND

Make sure that the ground terminal bolt is tightened securely.

Chassis side

Tightening torque: 13 N·m (1.3 kgf-m, 9.4 ft-lb)

3. ATF LEVEL

Make sure that ATF level is the specified amount. <Ref. to 4AT-26, INSPECTION, Automatic Transmission Fluid.>

4. FRONT DIFFERENTIAL OIL LEVEL

Make sure the front differential oil level is the specified amount. <Ref. to 4AT-28, INSPECTION, Differential Gear Oil.>

5. OPERATION OF SELECT LEVER

Make sure there is no noise, dragging or contact pattern in each select lever range.

WARNING:
Stop the engine while checking operation of the select lever.
## General Description

### C: PREPARATION TOOL

#### 1. SPECIAL TOOL

<table>
<thead>
<tr>
<th>ILLUSTRATION</th>
<th>TOOL NUMBER</th>
<th>TOOL NAME</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="ST1B021XU0" alt="SUBARU SELECT MONITOR III KIT" /></td>
<td>1B021XU0</td>
<td>SUBARU SELECT MONITOR III KIT</td>
<td>Used for troubleshooting for electrical system.</td>
</tr>
</tbody>
</table>

#### 2. GENERAL TOOL

<table>
<thead>
<tr>
<th>TOOL NAME</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Circuit tester</td>
<td>Used for measuring resistance, voltage and current.</td>
</tr>
<tr>
<td>Oscilloscope</td>
<td>Used for measuring the sensor.</td>
</tr>
</tbody>
</table>
4. Electrical Component Location

A: LOCATION

1. CONTROL MODULE

(1) Engine control module (ECM)  (3) Transmission control module (TCM)
(2) ATF temperature warning light (AT temperature warning light)  (4) Data link connector
(5) Body integrated unit
### Electrical Component Location

#### AUTOMATIC TRANSMISSION (DIAGNOSTICS)

<table>
<thead>
<tr>
<th>Number</th>
<th>Component</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>AT-01874</td>
</tr>
<tr>
<td>2</td>
<td>AT-04561</td>
</tr>
<tr>
<td>3</td>
<td>AT-01875</td>
</tr>
<tr>
<td>4</td>
<td>AT-01877</td>
</tr>
<tr>
<td>5</td>
<td>AT-01876</td>
</tr>
</tbody>
</table>

![Diagram](image_url)
2. SENSOR

(1) Accelerator pedal position sensor
(2) Front vehicle speed sensor
(3) Inhibitor switch
(4) Rear vehicle speed sensor
(5) Torque converter turbine speed sensor
(6) ATF temperature sensor
3. SOLENOID

(1) Line pressure linear solenoid
(2) High clutch duty solenoid
(3) 2-4 brake duty solenoid
(4) Low & reverse duty solenoid
(5) Low clutch duty solenoid
(6) Transfer duty solenoid
(7) Lock-up duty solenoid
## 5. Transmission Control Module (TCM) I/O Signal

### A: ELECTRICAL SPECIFICATION

<table>
<thead>
<tr>
<th>Contents</th>
<th>Measured terminal (Connector &amp; Terminal No.)</th>
<th>Measuring condition</th>
<th>Measuring condition</th>
<th>Voltage (V)</th>
<th>Resistance (Ω)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Backup power supply</td>
<td>(B54) No. 27 Chassis ground</td>
<td>—</td>
<td>—</td>
<td>10 — 13</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>(B54) No. 26 Chassis ground</td>
<td>—</td>
<td>—</td>
<td>10 — 13</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>(B54) No. 25 Chassis ground</td>
<td>—</td>
<td>—</td>
<td>10 — 13</td>
<td>—</td>
</tr>
<tr>
<td>Ignition power supply</td>
<td>(B54) No. 1 Chassis ground</td>
<td>Ignition Switch ON</td>
<td>—</td>
<td>10 — 13</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td>(B54) No. 2 Chassis ground</td>
<td>—</td>
<td>—</td>
<td>10 — 13</td>
<td>—</td>
</tr>
<tr>
<td>Inhibitor switch</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>“P” range switch</td>
<td>(B55) No. 14 Chassis ground</td>
<td>Select lever “P” range</td>
<td>Less than 1</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Select lever Except “P” range</td>
<td>8 or more</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td>“N” range switch</td>
<td>(B55) No. 11 Chassis ground</td>
<td>Select lever “N” range</td>
<td>Less than 1</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Select lever Except “N” range</td>
<td>8 or more</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td>“R” range switch</td>
<td>(B55) No. 13 Chassis ground</td>
<td>Select lever “R” range</td>
<td>Less than 1</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Select lever Except “R” range</td>
<td>8 or more</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td>“D” range switch</td>
<td>(B55) No. 10 Chassis ground</td>
<td>Select lever “D” range</td>
<td>Less than 1</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Select lever Except “D” range</td>
<td>8 or more</td>
<td>—</td>
<td></td>
</tr>
<tr>
<td>ATF temperature sensor</td>
<td>(B55) No. 23 Chassis ground</td>
<td>ATF temperature 20°C</td>
<td>3.5 — 4.3</td>
<td>2.5k — 7.0 k</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(B54) No. 12 Chassis ground</td>
<td>(68°F)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>ATF temperature 80°C</td>
<td>1.0 — 2.2</td>
<td>300 — 800</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(176°F)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Transmission Control Module (TCM) I/O Signal

### Automatic Transmission (Diagnostics)

#### Measured terminal

<table>
<thead>
<tr>
<th>Contents</th>
<th>Measured terminal</th>
<th>Measuring condition</th>
<th>Voltage (V)</th>
<th>Resistance (Ω)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive terminal</td>
<td>Ground terminal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>ATF temperature sensor ground</strong></td>
<td>(B55) No. 12</td>
<td>Chassis ground</td>
<td>—</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Less than 1</td>
<td>(When inserting connector)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>∞</td>
<td>(When disconnecting connector)</td>
</tr>
<tr>
<td><strong>Rear vehicle speed sensor</strong></td>
<td>(B55) No. 26</td>
<td>(B55) No. 15</td>
<td>20 km/h (12 MPH) Vehicle speed at least</td>
<td>2 or more</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>—</td>
</tr>
<tr>
<td><strong>Rear vehicle speed sensor ground</strong></td>
<td>(B55) No. 15</td>
<td>Chassis ground</td>
<td>—</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Less than 1</td>
<td>(When inserting connector)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>∞</td>
<td>(When disconnecting connector)</td>
</tr>
<tr>
<td><strong>Front vehicle speed sensor</strong></td>
<td>(B55) No. 27</td>
<td>(B55) No. 16</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td><strong>Front vehicle speed sensor ground</strong></td>
<td>(B55) No. 16</td>
<td>Chassis ground</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td><strong>Torque converter turbine speed sensor</strong></td>
<td>(B55) No. 1</td>
<td>(B55) No. 2</td>
<td>Engine idling after warm-up (&quot;D&quot; range)</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Engine idling after warm-up (&quot;N&quot; range)</td>
<td>1 or more</td>
</tr>
<tr>
<td><strong>Torque converter turbine speed sensor ground</strong></td>
<td>(B55) No. 2</td>
<td>Chassis ground</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td><strong>Line pressure linear solenoid</strong></td>
<td>(B55) No. 4</td>
<td>(B55) No. 3</td>
<td>Ignition switch ON, throttle fully closed in “R” range after warm-up.</td>
<td>3.7 — 7.7</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Ignition switch ON, throttle fully open in “R” range after warm-up.</td>
<td>4.0 — 6.0</td>
</tr>
<tr>
<td><strong>Line pressure linear solenoid ground</strong></td>
<td>(B55) No. 3</td>
<td>Chassis ground</td>
<td>—</td>
<td>Less than 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Less than 1</td>
<td></td>
</tr>
<tr>
<td><strong>Lock-up duty solenoid</strong></td>
<td>(B55) No. 6</td>
<td>Chassis ground</td>
<td>When lock up occurs.</td>
<td>10.5 or more</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>When lock up is released.</td>
<td>Less than 1</td>
</tr>
<tr>
<td><strong>Transfer duty solenoid</strong></td>
<td>(B55) No. 5</td>
<td>Chassis ground</td>
<td>With fuse installed to FWD switch</td>
<td>Less than 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>With fuse removed from FWD switch (1st gear)</td>
<td>2.0 — 3.0</td>
</tr>
<tr>
<td><strong>2-4 brake duty solenoid</strong></td>
<td>(B54) No. 4</td>
<td>Chassis ground</td>
<td>“P” or “N” range</td>
<td>5.0 or more</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2nd or 4th gear</td>
<td>Less than 1</td>
</tr>
<tr>
<td><strong>High clutch duty solenoid</strong></td>
<td>(B54) No. 6</td>
<td>Chassis ground</td>
<td>3rd or 4th gear</td>
<td>Less than 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“P” or “N” range</td>
<td>5.0 or more</td>
</tr>
<tr>
<td><strong>Low clutch duty solenoid</strong></td>
<td>(B54) No. 7</td>
<td>Chassis ground</td>
<td>1st or 2nd gear</td>
<td>Less than 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“P” or “N” range</td>
<td>5.0 or more</td>
</tr>
</tbody>
</table>

---

*Check with ignition switch ON.*
## Transmission Control Module (TCM) I/O Signal

### AUTOMATIC TRANSMISSION (DIAGNOSTICS)

- **Transmission Control Module (TCM) I/O Signal**

<table>
<thead>
<tr>
<th>Contents</th>
<th>Measured terminal (Connector &amp; Terminal No.)</th>
<th>Measuring condition</th>
<th>Voltage (V)</th>
<th>Resistance (Ω)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low &amp; reverse duty solenoid</td>
<td>(B54) No. 5 Chassis ground</td>
<td>Driving at 1st gear on manual mode (15 km/h (9.3 MPH) or more)</td>
<td>5.0 or more</td>
<td>2.0 — 4.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Driving at 1st gear on manual mode (15 km/h (9.3 MPH) or more)</td>
<td>2.5 — 5.0</td>
<td></td>
</tr>
<tr>
<td>Data link signal (Subaru Select Monitor)</td>
<td>(B54) No. 8 Chassis ground</td>
<td>Ignition switch ON</td>
<td>Pulse signal</td>
<td></td>
</tr>
<tr>
<td>CAN communication signal (+)</td>
<td>(B55) No. 18 Chassis ground</td>
<td>Ignition switch ON</td>
<td>Pulse signal</td>
<td></td>
</tr>
<tr>
<td>CAN communication signal (−)</td>
<td>(B55) No. 17 Chassis ground</td>
<td>Ignition switch ON</td>
<td>Pulse signal</td>
<td></td>
</tr>
<tr>
<td>FWD switch</td>
<td>(B54) No. 10 Chassis ground</td>
<td>Fuse removed</td>
<td>10.5 or more</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fuse installed</td>
<td>1 or less</td>
<td></td>
</tr>
<tr>
<td>System ground circuit</td>
<td>(B54) No. 20 Chassis ground</td>
<td>Ignition switch ON</td>
<td>0</td>
<td>Less than 1</td>
</tr>
<tr>
<td></td>
<td>(B54) No. 21 Chassis ground</td>
<td>Ignition switch ON</td>
<td>0</td>
<td>Less than 1</td>
</tr>
<tr>
<td></td>
<td>(B54) No. 22 Chassis ground</td>
<td>Ignition switch ON</td>
<td>0</td>
<td>Less than 1</td>
</tr>
<tr>
<td></td>
<td>(B54) No. 23 Chassis ground</td>
<td>Ignition switch ON</td>
<td>0</td>
<td>Less than 1</td>
</tr>
<tr>
<td>SPORT shift switch</td>
<td>(B54) No. 17 Chassis ground</td>
<td>Ignition switch ON</td>
<td>Less than 1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ignition switch ON</td>
<td>8 or more</td>
<td></td>
</tr>
<tr>
<td>SPORT shift UP switch</td>
<td>(B54) No. 18 Chassis ground</td>
<td>Ignition switch ON</td>
<td>Less than 1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ignition switch ON</td>
<td>8 or more</td>
<td></td>
</tr>
<tr>
<td>SPORT shift DOWN switch</td>
<td>(B54) No. 19 Chassis ground</td>
<td>Ignition switch ON</td>
<td>Less than 1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ignition switch ON</td>
<td>8 or more</td>
<td></td>
</tr>
</tbody>
</table>

**Check with ignition switch ON.**
6. Subaru Select Monitor

A: OPERATION

1. READ DIAGNOSTIC TROUBLE CODE (DTC)

1) Prepare the Subaru Select Monitor kit.
2) Prepare PC with Subaru Select Monitor installed.
3) Connect the SDI (Subaru Diagnostic Interface) to the PC USB port (exclusively for Subaru Selector Monitor) using a USB cable.

NOTE:
Port exclusively for Subaru Select Monitor refers to the USB port used when installing Subaru Select Monitor.
4) Connect the diagnosis cable to the SDI.
5) Connect the SDI to data link connector located in the lower portion of the instrument panel (on the driver’s side).

CAUTION:
Do not connect scan tools other than the Subaru Select Monitor.
6) Start the PC.
7) Turn the ignition switch to ON.
8) Run the “PC application for Subaru Select Monitor”.
9) On the «Main Menu», select {Each System Check}.
10) On the «System Selection Menu», select {Transmission}.
11) After transmission type information pops up, select [OK].
12) On the «Transmission Diagnosis», select {DTC Display}.
13) On the «DTC Display», select {Temporary Code} or {Memory Code}.

NOTE:
• For details concerning the operation procedure, refer to the “help on PC application for Subaru Select Monitor”.
• For details concerning DTC, refer to “List of Diagnostic Trouble Code (DTC)”. <Ref. to 4AT(diag)-29, List of Diagnostic Trouble Code (DTC).>
## 2. READ CURRENT DATA

1) On the «Main Menu», select {Each System Check}.
2) On the «System Selection Menu», select {Transmission}.
3) After transmission type information pops up, select [OK].
4) On the «Transmission Diagnosis», select {Current Data Display & Save}.
5) On the «Current Data Display & Save», select {Normal Measurement}.
6) Using the scroll key, scroll the display screen up or down until the desired data is shown.

A list of the support data is shown in the following table.

<table>
<thead>
<tr>
<th>Contents</th>
<th>Display</th>
<th>Unit of measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Battery voltage</td>
<td>Battery Voltage</td>
<td>V</td>
</tr>
<tr>
<td>Rear vehicle speed sensor signal</td>
<td>Rear Wheel Speed</td>
<td>km/h or MPH</td>
</tr>
<tr>
<td>Front vehicle speed sensor signal</td>
<td>Front Wheel Speed</td>
<td>km/h or MPH</td>
</tr>
<tr>
<td>Engine speed signal</td>
<td>Engine Speed</td>
<td>rpm</td>
</tr>
<tr>
<td>Automatic transmission fluid temperature signal</td>
<td>ATF Temp.</td>
<td>°C or °F</td>
</tr>
<tr>
<td>Gear position</td>
<td>Gear Position</td>
<td>—</td>
</tr>
<tr>
<td>Line pressure control duty ratio</td>
<td>Line Pressure Duty Ratio</td>
<td>%</td>
</tr>
<tr>
<td>Lock up clutch control duty ratio</td>
<td>Lock up Duty Ratio</td>
<td>%</td>
</tr>
<tr>
<td>Transfer clutch control duty ratio</td>
<td>Transfer Duty Ratio</td>
<td>%</td>
</tr>
<tr>
<td>Torque converter turbine speed signal</td>
<td>Turbine Revolution Speed</td>
<td>rpm</td>
</tr>
<tr>
<td>2 — 4 brake timing pressure control duty ratio</td>
<td>Brake Clutch Duty Ratio</td>
<td>%</td>
</tr>
<tr>
<td>Low clutch duty ratio</td>
<td>L/C Duty</td>
<td>%</td>
</tr>
<tr>
<td>High clutch duty ratio</td>
<td>H/C Duty</td>
<td>%</td>
</tr>
<tr>
<td>Low &amp; reverse brake duty ratio</td>
<td>L&amp;R/B Duty</td>
<td>%</td>
</tr>
<tr>
<td>Accelerator position</td>
<td>Acceleration Opening Angle</td>
<td>%</td>
</tr>
<tr>
<td>FWD switch signal</td>
<td>FWD SW</td>
<td>ON or OFF</td>
</tr>
<tr>
<td>Stop light switch signal</td>
<td>Stop light SW</td>
<td>ON or OFF</td>
</tr>
<tr>
<td>Anti lock brake system signal</td>
<td>ABS signal</td>
<td>ON or OFF</td>
</tr>
<tr>
<td>Parking range signal</td>
<td>P Range Signal</td>
<td>ON or OFF</td>
</tr>
<tr>
<td>Neutral range signal</td>
<td>N Range Signal</td>
<td>ON or OFF</td>
</tr>
<tr>
<td>Reverse range signal</td>
<td>R Range Signal</td>
<td>ON or OFF</td>
</tr>
<tr>
<td>Drive range signal</td>
<td>D Range Signal</td>
<td>ON or OFF</td>
</tr>
<tr>
<td>AT diagnosis light output signal</td>
<td>Diagnosis Light</td>
<td>ON or OFF</td>
</tr>
<tr>
<td>Cruise control signal</td>
<td>Cruise Control Signal</td>
<td>ON or OFF</td>
</tr>
<tr>
<td>ATF temperature light</td>
<td>ATF temperature light</td>
<td>ON or OFF</td>
</tr>
<tr>
<td>Up shift signal</td>
<td>Up SW</td>
<td>ON or OFF</td>
</tr>
<tr>
<td>Down shift signal</td>
<td>Down SW</td>
<td>ON or OFF</td>
</tr>
<tr>
<td>SPORT mode signal</td>
<td>Tiptronic Mode Switch</td>
<td>ON or OFF</td>
</tr>
</tbody>
</table>

**NOTE:**
For details concerning the operation procedure, refer to the “PC application help for Subaru Select Monitor”.

4AT(diag)-16
3. CLEAR MEMORY MODE
1) Move the select lever to “P” range.
2) On the «Main Menu», select {Each System Check}.
3) On the «System Selection Menu», select {Transmission}.
4) After transmission type information pops up, select [OK].
5) On the «Transmission Diagnosis», select {Clear Memory}.
6) When the «Done. Turn ignition switch to OFF» pops up, select [OK].
7) Turn Subaru Select Monitor and ignition switch to OFF. To turn the ignition switch to ON again, wait for 10 seconds or more.

NOTE:
- If {Clear Memories 2} is selected and performed, DTC and learned control memory are cleared. If {Clear Memories 2} is performed, perform learning control promotion. <Ref. to 4AT(diag)-17, FACILITATION OF LEARNING CONTROL, OPERATION, Subaru Select Monitor.>
- For details concerning the operation procedure, refer to the “PC application help for Subaru Select Monitor”.

4. FACILITATION OF LEARNING CONTROL
NOTE:
- After performing the following services, perform the transmission learning operation.
Replacement of TCM/Replacement or disassembly of transmission assembly/Replacement of control valve body/Performing “Clear Memories 2”.
- Perform the procedures according to the message displayed on the Subaru Select Monitor.
1) Warm-up or cool down until the ATF temperature displayed on the Subaru Select Monitor reaches 60 — 80°C (140 — 176°F).
2) Shift the select lever to “P” range.
3) Fully apply the parking brake.
4) Lift up the vehicle.

CAUTION:
Be sure to keep the lowest edge of the tires 30 cm or more off the ground because the vehicle vibrates during the work.
5) Connect the Subaru Select Monitor to the data link connector.
6) Turn the ignition switch to ON.
7) Turn OFF all switches, which produce an electrical load, including headlight, air conditioner, seat heater, rear defogger, etc.
8) Turn the ECO switch to ON for model with ECO switch. Turn the SPORT mode switch to OFF for model with SPORT mode. Turn the POWER/HOLD switch to OFF for model with POWER/HOLD switch. Set to I mode for model with SI-DRIVE.

NOTE:
Error message is not displayed even when an incorrect mode is set. While the operation is continued, “AT learning promoting” is displayed, but it cannot end normally. If the message does not change after 2 minutes have passed, retry “AT learning mode” from the beginning.

CAUTION:
Do not turn the power of the Subaru Select Monitor to OFF or disconnect the data link connector during the operation.
9) Select {Learning and inspection mode related to AT} on the «Transmission Diagnosis» display screen of Subaru Select Monitor.
10) Select (AT learning mode) on the «Learning and inspection mode related to AT» display screen of Subaru Select Monitor.
11) Perform the procedures according to the message displayed on the Subaru Select Monitor.

NOTE:
During AT learning in progress, SPORT indicator light in the combination meter starts flashing at 2 Hz and the learning operation starts. The following message is displayed on the screen when the SPORT indicator light turns off.
12) “AT learning normally ended.” is displayed, simple AT learning is completed.

NOTE:
• If communication error occurs during learning, retry “AT learning mode” from the beginning.
• If “Execute AT learning again after fixing troubles of the vehicle” is displayed during learning, select [OK] to display the List of Diagnostics Trouble Code. Retry “AT learning mode” from the beginning after repairing the DTC detecting portion.
• If “AT learning ended abnormally.” is displayed, retry “AT learning mode” from the beginning.

<table>
<thead>
<tr>
<th>Message</th>
<th>Primary cause of abnormal end</th>
</tr>
</thead>
<tbody>
<tr>
<td>“AT learning ended abnormally.”</td>
<td>• Fault is detected during AT learning.</td>
</tr>
<tr>
<td></td>
<td>• The accelerator pedal is depressed during AT learning.</td>
</tr>
<tr>
<td></td>
<td>• Operation which is not directed is performed during AT learning.</td>
</tr>
<tr>
<td></td>
<td>• The brake pedal is not depressed fully.</td>
</tr>
<tr>
<td></td>
<td>• The parking brake is not applied fully.</td>
</tr>
<tr>
<td></td>
<td>• Abnormal idle rise occurs. Other similar causes are probable.</td>
</tr>
</tbody>
</table>

• For details concerning the operation procedure, refer to the “PC application help for Subaru Select Monitor”.
7. Read Diagnostic Trouble Code (DTC)

A: OPERATION

Refer to “Subaru Select Monitor” for information on how to display a DTC. <Ref. to 4AT(diag)-15, OPERATION, Subaru Select Monitor.>

For details concerning DTCs, refer to “List of Diagnostic Trouble Code (DTC)”. <Ref. to 4AT(diag)-29, List of Diagnostic Trouble Code (DTC).>
8. Inspection Mode

A: PROCEDURE

WARNING:
Observe the traffic law when driving on public roads.

1) Shift the select lever to “D” range, and then drive the vehicle at 60 km/h (37 MPH) for at least 10 seconds.
2) Drive the vehicle with manual mode.
9. Clear Memory Mode

A: OPERATION

Refer to “Subaru Select Monitor” for information about how to clear a DTC.
<Ref. to 4AT(diag)-17, CLEAR MEMORY MODE, OPERATION, Subaru Select Monitor.>
10. AT Oil Temp Warning Light Display

A: OPERATION

When any on-board diagnostics item is malfunctioning, the ATF temperature warning light blinks when a malfunction is detected after starting the engine until the ignition switch is turned OFF. The malfunctioning part or unit can be determined by a DTC during the on-board diagnostics operation. Problems which occurred previously can also be identified through the memory function. If the ATF temperature warning light does not show a problem (although a problem is occurring), the problem can be determined by checking the performance characteristics of each sensor using the Subaru Select Monitor. Warning light signal patterns are shown in the figure.

Perform the inspection when the ATF temperature warning light does not operate correctly. <Ref. to 4AT(diag)-23, INSPECTION, AT Oil Temp Warning Light Display.>
B: INSPECTION

DIAGNOSIS:
ATF temperature warning light circuit is open or shorted.

TROUBLE SYMPTOM:
When the ignition switch is turned to ON, the ATF temperature warning light does not illuminate.

WIRING DIAGRAM:
## AUTOMATIC TRANSMISSION (DIAGNOSTICS)

### AT Oil Temp Warning Light Display

<table>
<thead>
<tr>
<th>Step</th>
<th>Check</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>ATF TEMPERATURE WARNING LIGHT INSPECTION. Turn the ignition switch to ON.</td>
<td>Does the ATF temperature warning light illuminate?</td>
<td>Go to step 2.</td>
</tr>
<tr>
<td>2</td>
<td>ATF TEMPERATURE WARNING LIGHT INSPECTION. After the ignition switch is ON, wait for at least 2 seconds.</td>
<td>Does the ATF temperature warning light illuminate?</td>
<td>Go to step 3.</td>
</tr>
<tr>
<td>4</td>
<td>CHECK SUBARU SELECT MONITOR COMMUNICATION. Connect the Subaru Select Monitor to the data link connector.</td>
<td>Is the communication between Subaru Select Monitor and TCM normal?</td>
<td>Go to step 5.</td>
</tr>
</tbody>
</table>
| 5    | CHECK TCM.  
1) Display the current data of TCM using Subaru Select Monitor. <Ref. to 4AT(diag)-15, OPERATION, Subaru Select Monitor.>  
2) Read the data of “Diagnosis Light”. | Is ON displayed? | Go to step 6. | Replace the TCM. <Ref. to 4AT-64, Transmission Control Module (TCM).> |
| 6    | CHECK BODY INTEGRATED UNIT.  
1) Display the current data of body integrated unit using Subaru Select Monitor. <Ref. to LAN(diag)-14, OPERATION, Subaru Select Monitor.>  
2) Read the data of “ATF Temperature Light”. | Is “ON” displayed? | Replace the combination meter assembly. <Ref. to IDI-14, Combination Meter.> | Check DTC of body integrated unit. <Ref. to LAN(diag)-14, OPERATION, Subaru Select Monitor.> |
| 7    | CHECK TCM.  
1) Display the current data of TCM using Subaru Select Monitor.  
2) Read the data of “Diagnosis Light”. | Is ON displayed? | Replace the TCM. <Ref. to 4AT-64, Transmission Control Module (TCM).> | Go to step 8. |
| 8    | CHECK BODY INTEGRATED UNIT.  
1) Display the current data of body integrated unit using Subaru Select Monitor.  
2) Read the data of “ATF Temperature Light”. | Is “ON” displayed? | Check DTC of body integrated unit. Perform the diagnosis according to DTC. <Ref. to LAN(diag)-14, OPERATION, Subaru Select Monitor.> | Perform the self-diagnosis of combination meter. <Ref. to IDI-4, INSPECTION, Combination Meter System.> |
11. Diagnostic Procedure for Subaru Select Monitor Communication

A: COMMUNICATION FOR INITIALIZING IMPOSSIBLE

DIAGNOSIS:
Defective harness connector

TROUBLE SYMPTOM:
Subaru Select Monitor communication failure

WIRING DIAGRAM:
## Diagnostic Procedure for Subaru Select Monitor Communication

<table>
<thead>
<tr>
<th>Step</th>
<th>Check</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
</table>
| **1** | CHECK INSTALLATION OF TCM CONNECTOR.  
Turn the ignition switch to OFF. | Is TCM connector connected to TCM? | Go to step 2. | Connect the TCM connector to TCM. |
| **2** | CHECK SUBARU SELECT MONITOR POWER SUPPLY CIRCUIT.  
Measure the voltage between data link connector and chassis ground.  
*Connector & terminal (B40) No. 16 (+) — Chassis ground (−):* | Is the voltage 10 V or more? | Go to step 3. | Repair harness connector between the battery and data link connector, and poor contact of the connector. |
| **3** | CHECK SUBARU SELECT MONITOR GROUND CIRCUIT.  
Measure the resistance of harness between data link connector and chassis ground.  
*Connector & terminal (B40) No. 4 — Chassis ground:  
(B40) No. 5 — Chassis ground:* | Is the resistance 1 MΩ or more? | Go to step 4. | Repair the short circuit of harness between data link connector and ground terminals. |
| **4** | CHECK ENGINE GROUND CIRCUIT.  
Check the engine ground circuit. | Is the engine ground circuit normal? | Go to step 5. | Repair ground circuit of ECM. |
| **5** | CHECK COMMUNICATION OF SUBARU SELECT MONITOR.  
1) Turn the ignition switch to ON.  
2) Using the Subaru Select Monitor, check whether communication to transmission system can be executed normally. | Is the name of system displayed on Subaru Select Monitor? | Go to step 10. | Go to step 6. |
| **6** | CHECK COMMUNICATION OF SUBARU SELECT MONITOR.  
1) Turn the ignition switch to OFF.  
2) Disconnect the TCM connector.  
3) Check whether communication to engine system can be executed normally. | Is the name of system displayed on Subaru Select Monitor? | Go to step 8. | Go to step 7. |
| **7** | CHECK COMMUNICATION OF SUBARU SELECT MONITOR.  
1) Turn the ignition switch to OFF.  
2) Connect the TCM connector.  
3) Disconnect the connectors of TPM control module, airbag control module, body integrated unit, and ABSCM&H/U.  
**CAUTION:**  
When disconnecting the connector from airbag control module, always follow the precautions on AB section. <Ref. to AB-5, CAUTION, General Description.>  
4) Turn the ignition switch to ON.  
5) Check whether communication to transmission system can be executed normally. | Is the name of system displayed on Subaru Select Monitor? | Check each control module. | Go to step 8. |
| **8** | CHECK HARNESS CONNECTOR BETWEEN EACH CONTROL MODULE AND DATA LINK CONNECTOR.  
1) Turn the ignition switch to OFF.  
2) Disconnect the connectors of TCM, ECM, TPM control module, airbag control module, body integrated unit, and ABSCM&H/U.  
3) Measure the resistance between TCM connector and chassis ground.  
*Connector & terminal (B40) No. 7 — Chassis ground:* | Is the resistance 1 MΩ or more? | Go to step 9. | Check harness and connector between each control module and data link connector. |
<table>
<thead>
<tr>
<th>Step</th>
<th>Check</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
</table>
| 9 | CHECK OUTPUT SIGNAL OF TCM.  
1) Turn the ignition switch to ON.  
2) Measure the voltage between TCM and chassis ground.  
   **Connector & terminal**  
   *(B40) No. 7 (+) — Chassis ground (–):* | Is the voltage 1 V or more? | Check harness and connector between each control module and data link connector. | Go to step 10. |
| 10 | CHECK HARNESS CONNECTOR BETWEEN TCM AND DATA LINK CONNECTOR.  
Measure the resistance between TCM connector and data link connector.  
   **Connector & terminal**  
   *(B54) No. 8 — (B40) No. 7:* | Is resistance less than 1 Ω? | Go to step 11. | Repair the harness and connector between TCM and data link connector. |
| 11 | CHECK INSTALLATION OF TRANSMISSION HARNESS CONNECTOR. | Is the transmission harness connector connected to bulkhead harness connector? | Go to step 12. | Connect the bulkhead harness connector to transmission harness connector. |
| 12 | CHECK POOR CONTACT IN CONNECTORS. | Is there poor contact in control module power supply and data link connector? | Repair the poor contact. | Go to step 13. |
| 13 | CHECK POWER SUPPLY OF TCM.  
1) Disconnect the connector from TCM.  
2) Turn the ignition switch to ON.  
3) Measure the voltage between TCM connector and chassis ground.  
   **Connector & terminal**  
   *(B54) No. 27 (+) — Chassis ground (–):*  
   *(B54) No. 26 (+) — Chassis ground (–):*  
| 14 | CHECK FUSE (NO. 12).  
1) Turn the ignition switch to OFF.  
2) Remove the fuse (M/B No. 12). | Is the fuse (No. 12) blown out? | Replace the fuse (No. 12). If the replaced fuse (No. 12) blows out easily, repair the short circuit of harness between fuse (No. 12) and TCM. | Repair the open circuit of harness between fuse (No. 12) and TCM, or fuse (No. 12) and battery, and poor contact of the connector. |
| 15 | CHECK IGNITION POWER SUPPLY CIRCUIT.  
1) Turn the ignition switch to ON.  
2) Measure the ignition power supply voltage between TCM connector and chassis ground.  
   **Connector & terminal**  
   *(B54) No. 1 (+) — Chassis ground (–):*  
   *(B54) No. 2 (+) — Chassis ground (–):* | Is the voltage 10 — 13 V? | Go to step 17. | Go to step 16. |
| 16 | CHECK FUSE (NO. 12).  
Remove the fuse (F/B No. 12). | Is the fuse (No. 12) blown out? | Replace the fuse (No. 12). If the replaced fuse (No. 12) blows out easily, repair the short circuit of harness between fuse (No. 12) and TCM. | Repair the open circuit of harness between fuse (No. 12) and TCM, or fuse (No. 12) and battery, and poor contact of the connector. |
## Step 17: Check Harness Connector Between TCM and Transmission

1) Turn the ignition switch to OFF.
2) Disconnect the connectors from TCM and transmission.
3) Measure the resistance of harness between TCM and transmission connector.

<table>
<thead>
<tr>
<th>Connector &amp; terminal</th>
</tr>
</thead>
<tbody>
<tr>
<td>(B54) No. 20 — (B11) No. 20:</td>
</tr>
<tr>
<td>(B54) No. 21 — (B11) No. 20:</td>
</tr>
<tr>
<td>(B54) No. 22 — (B11) No. 19:</td>
</tr>
<tr>
<td>(B54) No. 23 — (B11) No. 19:</td>
</tr>
</tbody>
</table>

Is resistance less than 1 Ω?

- **Yes**: Go to step 18.
- **No**: Repair the open circuit of the harness between TCM and transmission harness connector, and poor contact of connector.

## Step 18: Check Harness Connector Between Transmission and Transmission Ground

Measure the resistance of the harness between transmission and transmission ground.

<table>
<thead>
<tr>
<th>Connector &amp; terminal</th>
</tr>
</thead>
<tbody>
<tr>
<td>(T4) No. 19 — Transmission ground:</td>
</tr>
<tr>
<td>(T4) No. 20 — Transmission ground:</td>
</tr>
</tbody>
</table>

Is resistance less than 1 Ω?

- **Yes**: Go to step 19.
- **No**: Repair the open circuit of the harness between transmission and transmission ground.

## Step 19: Check Poor Contact in Connectors

Is there poor contact in TCM power supply, ground and data link connector?

- **Yes**: Repair the connector.
- **No**: Replace the TCM.<ref to 4AT-64, Transmission Control Module (TCM).>
### 12. List of Diagnostic Trouble Code (DTC)

#### A: LIST

<table>
<thead>
<tr>
<th>DTC</th>
<th>Contents</th>
<th>Diagnosis content</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>P0705</td>
<td>Transmission Range Sensor Circuit (PRNDL Input)</td>
<td>Inhibitor switch malfunction or short circuit</td>
<td>&lt;Ref. to 4AT(diag)-31, DTC P0705 TRANSMISSION RANGE SENSOR CIRCUIT (PRNDL INPUT), Diagnostic Procedure with Diagnostic Trouble Code (DTC).&gt;</td>
</tr>
<tr>
<td>P0712</td>
<td>Transmission Fluid Temperature Sensor Circuit Low Input</td>
<td>ATF temperature sensor is faulty or input signal circuit is open.</td>
<td>&lt;Ref. to 4AT(diag)-38, DTC P0712 TRANSMISSION FLUID TEMPERATURE SENSOR CIRCUIT LOW INPUT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).&gt;</td>
</tr>
<tr>
<td>P0713</td>
<td>Transmission Fluid Temperature Sensor Circuit High Input</td>
<td>ATF temperature sensor is faulty or input signal circuit is shorted.</td>
<td>&lt;Ref. to 4AT(diag)-41, DTC P0713 TRANSMISSION FLUID TEMPERATURE SENSOR CIRCUIT HIGH INPUT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).&gt;</td>
</tr>
<tr>
<td>P0715</td>
<td>Input/Turbine Speed Sensor Circuit</td>
<td>Torque converter turbine speed sensor malfunction, open or shorted input signal circuit</td>
<td>&lt;Ref. to 4AT(diag)-43, DTC P0715 INPUT/TURBINE SPEED SENSOR CIRCUIT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).&gt;</td>
</tr>
<tr>
<td>P0719</td>
<td>Brake Switch Circuit Low</td>
<td>Brake switch malfunction, open input signal circuit</td>
<td>&lt;Ref. to 4AT(diag)-45, DTC P0719 BRAKE SWITCH CIRCUIT LOW, Diagnostic Procedure with Diagnostic Trouble Code (DTC).&gt;</td>
</tr>
<tr>
<td>P0720</td>
<td>Output Speed Sensor Circuit</td>
<td>Front vehicle speed sensor malfunction, open or shorted input signal circuit</td>
<td>&lt;Ref. to 4AT(diag)-48, DTC P0720 OUTPUT SPEED SENSOR CIRCUIT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).&gt;</td>
</tr>
<tr>
<td>P0724</td>
<td>Brake Switch Circuit High</td>
<td>Brake switch malfunction, shorted input signal circuit</td>
<td>&lt;Ref. to 4AT(diag)-50, DTC P0724 BRAKE SWITCH CIRCUIT HIGH, Diagnostic Procedure with Diagnostic Trouble Code (DTC).&gt;</td>
</tr>
<tr>
<td>P0731</td>
<td>Gear 1 Incorrect Ratio</td>
<td>Vehicle sensor, torque converter turbine speed sensor or control valve malfunction</td>
<td>&lt;Ref. to 4AT(diag)-52, DTC P0731 GEAR 1 INCORRECT RATIO, Diagnostic Procedure with Diagnostic Trouble Code (DTC).&gt;</td>
</tr>
<tr>
<td>P0732</td>
<td>Gear 2 Incorrect Ratio</td>
<td>Vehicle sensor, torque converter turbine speed sensor or control valve malfunction</td>
<td>&lt;Ref. to 4AT(diag)-52, DTC P0732 GEAR 2 INCORRECT RATIO, Diagnostic Procedure with Diagnostic Trouble Code (DTC).&gt;</td>
</tr>
<tr>
<td>P0733</td>
<td>Gear 3 Incorrect Ratio</td>
<td>Vehicle sensor, torque converter turbine speed sensor or control valve malfunction</td>
<td>&lt;Ref. to 4AT(diag)-52, DTC P0733 GEAR 3 INCORRECT RATIO, Diagnostic Procedure with Diagnostic Trouble Code (DTC).&gt;</td>
</tr>
<tr>
<td>P0734</td>
<td>Gear 4 Incorrect Ratio</td>
<td>Vehicle sensor, torque converter turbine speed sensor or control valve malfunction</td>
<td>&lt;Ref. to 4AT(diag)-52, DTC P0734 GEAR 4 INCORRECT RATIO, Diagnostic Procedure with Diagnostic Trouble Code (DTC).&gt;</td>
</tr>
<tr>
<td>P0736</td>
<td>Reverse Incorrect Ratio</td>
<td>Vehicle sensor, torque converter turbine speed sensor or control valve malfunction</td>
<td>&lt;Ref. to 4AT(diag)-53, DTC P0736 REVERSE INCORRECT RATIO, Diagnostic Procedure with Diagnostic Trouble Code (DTC).&gt;</td>
</tr>
<tr>
<td>P0741</td>
<td>Torque Converter Clutch Circuit Performance or Stuck Off</td>
<td>Lock-up clutch is faulty or valve is stuck.</td>
<td>&lt;Ref. to 4AT(diag)-54, DTC P0741 TORQUE CONVERTER CLUTCH CIRCUIT PERFORMANCE OR STUCK OFF, Diagnostic Procedure with Diagnostic Trouble Code (DTC).&gt;</td>
</tr>
<tr>
<td>P0743</td>
<td>Torque Converter Clutch Circuit Electrical</td>
<td>Lock-up solenoid is faulty or output signal circuit is open or shorted.</td>
<td>&lt;Ref. to 4AT(diag)-55, DTC P0743 TORQUE CONVERTER CLUTCH CIRCUIT ELECTRICAL, Diagnostic Procedure with Diagnostic Trouble Code (DTC).&gt;</td>
</tr>
<tr>
<td>P0748</td>
<td>Pressure Control Solenoid “A” Electrical</td>
<td>Line pressure linear solenoid is faulty or output signal circuit is open or shorted.</td>
<td>&lt;Ref. to 4AT(diag)-58, DTC P0748 PRESSURE CONTROL SOLENOID “A” ELECTRICAL, Diagnostic Procedure with Diagnostic Trouble Code (DTC).&gt;</td>
</tr>
</tbody>
</table>
# List of Diagnostic Trouble Code (DTC)

## AUTOMATIC TRANSMISSION (DIAGNOSTICS)

<table>
<thead>
<tr>
<th>DTC</th>
<th>Contents</th>
<th>Diagnosis content</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>P0753</td>
<td>Shift Solenoid “A” Electrical</td>
<td>Low clutch duty solenoid is faulty or output signal circuit is open or shorted.</td>
<td>&lt;Ref. to 4AT(diag)-60, DTC P0753 SHIFT SOLENOID “A” ELECTRICAL, Diagnostic Procedure with Diagnostic Trouble Code (DTC).&gt;</td>
</tr>
<tr>
<td>P0758</td>
<td>Shift Solenoid “B” Electrical</td>
<td>2-4 brake duty solenoid is faulty or output signal circuit is open or shorted.</td>
<td>&lt;Ref. to 4AT(diag)-63, DTC P0758 SHIFT SOLENOID “B” ELECTRICAL, Diagnostic Procedure with Diagnostic Trouble Code (DTC).&gt;</td>
</tr>
<tr>
<td>P0763</td>
<td>Shift Solenoid “C” Electrical</td>
<td>High clutch duty solenoid is faulty or output signal circuit is open or shorted.</td>
<td>&lt;Ref. to 4AT(diag)-66, DTC P0763 SHIFT SOLENOID “C” ELECTRICAL, Diagnostic Procedure with Diagnostic Trouble Code (DTC).&gt;</td>
</tr>
<tr>
<td>P0768</td>
<td>Shift Solenoid “D” Electrical</td>
<td>Low &amp; reverse clutch duty solenoid is faulty or output signal circuit is open or shorted.</td>
<td>&lt;Ref. to 4AT(diag)-69, DTC P0768 SHIFT SOLENOID “D” ELECTRICAL, Diagnostic Procedure with Diagnostic Trouble Code (DTC).&gt;</td>
</tr>
<tr>
<td>P0801</td>
<td>Reverse Inhibit Control Circuit</td>
<td>Shift lock solenoid is faulty or output signal circuit is open or shorted.</td>
<td>&lt;Ref. to 4AT(diag)-72, DTC P0801 REVERSE INHIBIT CONTROL CIRCUIT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).&gt;</td>
</tr>
<tr>
<td>P1706</td>
<td>AT Vehicle Speed Sensor Circuit Malfunction (Rear Wheel)</td>
<td>Rear vehicle speed sensor is faulty or input signal circuit is open or shorted.</td>
<td>&lt;Ref. to 4AT(diag)-74, DTC P1706 AT VEHICLE SPEED SENSOR CIRCUIT MALFUNCTION (REAR WHEEL), Diagnostic Procedure with Diagnostic Trouble Code (DTC).&gt;</td>
</tr>
<tr>
<td>P1707</td>
<td>AT AWD Solenoid Valve Circuit Malfunction</td>
<td>Transfer duty solenoid is faulty or output signal circuit is open or shorted.</td>
<td>&lt;Ref. to 4AT(diag)-76, DTC P1707 AT AWD SOLENOID VALVE CIRCUIT MALFUNCTION, Diagnostic Procedure with Diagnostic Trouble Code (DTC).&gt;</td>
</tr>
<tr>
<td>P1718</td>
<td>CAN Communication Circuit</td>
<td>CAN communication circuit is open or shorted.</td>
<td>&lt;Ref. to 4AT(diag)-78, DTC P1718 CAN COMMUNICATION CIRCUIT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).&gt;</td>
</tr>
<tr>
<td>P1817</td>
<td>SPORT Mode Switch Circuit</td>
<td>SPORT shift switch is faulty or input signal circuit is open or shorted.</td>
<td>&lt;Ref. to 4AT(diag)-79, DTC P1817 SPORT MODE SWITCH CIRCUIT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).&gt;</td>
</tr>
</tbody>
</table>
13. Diagnostic Procedure with Diagnostic Trouble Code (DTC)

A: DTC P0705 TRANSMISSION RANGE SENSOR CIRCUIT (PRNDL INPUT)

DTC DETECTING CONDITION:
- Inhibitor switch is faulty.
- At least 2 range signal is input.

TROUBLE SYMPTOM:
- Shift characteristics are erroneous.
- The range position of the select lever and the AT select lever position indicator light on the combination meter do not match.
Diagnostic Procedure with Diagnostic Trouble Code (DTC)
AUTOMATIC TRANSMISSION (DIAGNOSTICS)

WIRING DIAGRAM:
### Diagnostic Procedure with Diagnostic Trouble Code (DTC)

**AUTOMATIC TRANSMISSION (DIAGNOSTICS)**

<table>
<thead>
<tr>
<th>Step</th>
<th>Check</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>CHECK INDICATOR LIGHT. 1) Turn the ignition switch to ON. 2) Move the select lever to “P” range.</td>
<td>Does the “P” range indicator light on combination meter illuminate?</td>
<td>Go to step 2.</td>
</tr>
<tr>
<td>2</td>
<td>CHECK INDICATOR LIGHT.</td>
<td>Does the “R” range indicator light on combination meter illuminate?</td>
<td>Go to step 26.</td>
</tr>
<tr>
<td>3</td>
<td>CHECK INDICATOR LIGHT.</td>
<td>Does the “N” range indicator light on combination meter illuminate?</td>
<td>Go to step 33.</td>
</tr>
<tr>
<td>4</td>
<td>CHECK INDICATOR LIGHT.</td>
<td>Does the “D” range indicator light on combination meter illuminate?</td>
<td>Go to step 40.</td>
</tr>
<tr>
<td>5</td>
<td>CHECK “P” RANGE SWITCH.  Read the data of “P range” using Subaru Select Monitor.</td>
<td>Is ON displayed?</td>
<td>Go to step 19.</td>
</tr>
<tr>
<td>6</td>
<td>CHECK INDICATOR LIGHT.  Set the select lever to “R” range.</td>
<td>Does the “R” range indicator light on combination meter illuminate?</td>
<td>Go to step 8.</td>
</tr>
<tr>
<td>7</td>
<td>CHECK “R” RANGE SWITCH.  Read the data of “R range” using Subaru Select Monitor.</td>
<td>Is ON displayed?</td>
<td>Go to step 23.</td>
</tr>
<tr>
<td>8</td>
<td>CHECK INDICATOR LIGHT.  Set the select lever to “N” range.</td>
<td>Does the “P” range indicator light on combination meter illuminate?</td>
<td>Go to step 10.</td>
</tr>
<tr>
<td>9</td>
<td>CHECK “N” RANGE SWITCH.  Read the data of “N range” using Subaru Select Monitor.</td>
<td>Is ON displayed?</td>
<td>Go to step 30.</td>
</tr>
<tr>
<td>10</td>
<td>CHECK INDICATOR LIGHT.  Set the select lever to the “D” range.</td>
<td>Does the “D” range indicator light on combination meter illuminate?</td>
<td>Even if the ATF temperature warning light blinks, the circuit is in normal condition at this time. A temporary poor contact of connector or harness may be the cause. Repair the harness or connector in TCM and transmission.</td>
</tr>
<tr>
<td>11</td>
<td>CHECK “D” RANGE SWITCH.  Read the data of “D range” using Subaru Select Monitor.</td>
<td>Is ON displayed?</td>
<td>Go to step 37.</td>
</tr>
<tr>
<td>12</td>
<td>CHECK HARNESS CONNECTOR BETWEEN INHIBITOR SWITCH AND CHASSIS GROUND.  1) Turn the ignition switch to OFF.  2) Disconnect the connector from inhibitor switch.  3) Measure the resistance of harness between inhibitor switch and chassis ground.  <em>Connector &amp; terminal (T7) No. 5 — Chassis ground:</em></td>
<td>Is the resistance less than 1 Ω?</td>
<td>Go to step 13.</td>
</tr>
</tbody>
</table>
### Diagnostic Procedure with Diagnostic Trouble Code (DTC)

#### AUTOMATIC TRANSMISSION (DIAGNOSTICS)

<table>
<thead>
<tr>
<th>Step</th>
<th>Check</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
</table>
| 13   | CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.  
      1) Turn the ignition switch to OFF.  
      2) Disconnect the connector from TCM and inhibitor switch.  
      3) Measure the resistance of the harness between TCM and inhibitor switch connector.  
      Connector & terminal  
      (B55) No. 14 — (T7) No. 9: | Is resistance less than 1 Ω? | Go to step 14. | Repair the open circuit of harness between TCM and inhibitor switch connector, and poor contact of the connector. |
| 14   | CHECK INPUT SIGNAL FOR TCM.  
      1) Turn the ignition switch to OFF.  
      2) Connect the connector to TCM and inhibitor switch.  
      3) Turn the ignition switch to ON.  
      4) Shift the select lever to “P” range.  
      5) Measure the voltage between TCM and chassis ground.  
      Connector & terminal  
      (B55) No. 14 (+) — Chassis ground (−): | Is the voltage less than 1 V? | Go to step 15. | Go to step 41. |
| 15   | CHECK INPUT SIGNAL FOR TCM.  
      1) Shift the select lever to any range other than “P”.  
      2) Measure the voltage between TCM and chassis ground.  
      Connector & terminal  
      (B55) No. 14 (+) — Chassis ground (−): | Is the voltage 8 V or more? | Go to step 16. | Replace the TCM. <Ref. to 4AT-64, Transmission Control Module (TCM).> |
| 16   | CHECK BODY INTEGRATED UNIT.  
      Read the data of inhibitor switch using Subaru Select Monitor. <Ref. to LAN(diag)-14, OPERATION, Subaru Select Monitor.> | Is “7” displayed? | Go to step 17. | Check the body integrated unit. |
| 17   | CHECK BODY INTEGRATED UNIT.  
      Check DTC of body integrated unit. | Is DTC of CAN communication displayed? | Perform the diagnosis according to DTC. | Go to step 18. |
| 18   | CHECK COMBINATION METER.  
      Check the “P” range indicator light. <Ref. to IDI-4, INSPECTION, Combination Meter System.> | Is the “P” range indicator light bulb OK? | Go to step 41. | Replace the combination meter assembly. <Ref. to IDI-14, Combination Meter.> |
| 19   | CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.  
      1) Turn the ignition switch to OFF.  
      2) Disconnect the connectors from TCM, inhibitor switch and combination meter.  
      3) Measure the resistance of harness between TCM connector and chassis ground.  
      Connector & terminal  
      (B55) No. 14 — Chassis ground: | Is the resistance 1 MΩ or more? | Go to step 42. | Repair ground short circuit in “P” range circuit. |
| 20   | CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.  
      1) Turn the ignition switch to OFF.  
      2) Disconnect the connector from TCM and inhibitor switch.  
      3) Measure the resistance of the harness between TCM and inhibitor switch connector.  
      Connector & terminal  
      (B55) No. 13 — (T7) No. 8: | Is resistance less than 1 Ω? | Go to step 21. | Repair the open circuit of harness between TCM and inhibitor switch connector, and poor contact of the connector. |
## Automatic Transmission (Diagnosis)

### 21 CHECK INPUT SIGNAL FOR TCM.
- 1) Turn the ignition switch to OFF.
- 2) Connect the connector to TCM and inhibitor switch.
- 3) Turn the ignition switch to ON.
- 4) Shift the select lever to “R” range.
- 5) Measure the voltage between TCM and chassis ground.

**Connector & terminal**

**22 CHECK INPUT SIGNAL FOR TCM.**
- 1) Shift the select lever to any range other than “R”.
- 2) Measure the voltage between TCM and chassis ground.

**Connector & terminal**

**23 CHECK BODY INTEGRATED UNIT.**
Read the shift position data using Subaru Select Monitor. <Ref. to LAN(diag)-14, OPERATION, Subaru Select Monitor.>

**24 CHECK BODY INTEGRATED UNIT.**
Check DTC of body integrated unit.

**25 CHECK COMBINATION METER.**
Check the “R” range indicator light. <Ref. to IDI-4, INSPECTION, Combination Meter System.>

**26 CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.**
- 1) Turn the ignition switch to OFF.
- 2) Disconnect the connectors from TCM, inhibitor switch and combination meter.
- 3) Measure the resistance of harness between TCM connector and chassis ground.

**Connector & terminal**

**27 CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.**
- 1) Turn the ignition switch to OFF.
- 2) Disconnect the connector from TCM and inhibitor switch.
- 3) Measure the resistance of the harness between TCM and inhibitor switch connector.

**Connector & terminal**

**28 CHECK INPUT SIGNAL FOR TCM.**
- 1) Turn the ignition switch to OFF.
- 2) Connect the connector to TCM and inhibitor switch.
- 3) Turn the ignition switch to ON.
- 4) Shift the select lever to “N” range.
- 5) Measure the voltage between TCM and chassis ground.

**Connector & terminal**
### Diagnostic Procedure with Diagnostic Trouble Code (DTC)

#### AUTOMATIC TRANSMISSION (DIAGNOSTICS)

<table>
<thead>
<tr>
<th>Step</th>
<th>Check</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
</table>
| **29** | CHECK INPUT SIGNAL FOR TCM.  
1) Shift the select lever to any range other than "N".  
2) Measure the voltage between TCM and chassis ground.  
**Connector & terminal (B55) No. 11 (+) — Chassis ground (−):** | Is the voltage 8 V or more? | Go to step 41. | Replace the TCM.  
<Ref. to 4AT-64, Transmission Control Module (TCM).> |
| **30** | CHECK BODY INTEGRATED UNIT.  
Read the shift position data using Subaru Select Monitor. <Ref. to LAN(diag)-14, OPERATION, Subaru Select Monitor.> | Is "5" displayed? | Go to step 31. | Check the body integrated unit. |
| **31** | CHECK BODY INTEGRATED UNIT.  
Check DTC of body integrated unit. | Is DTC of CAN communication displayed? | Perform the diagnosis according to DTC. | Go to step 32. |
| **32** | CHECK COMBINATION METER.  
Check the "N" range indicator light. <Ref. to IDI-4, INSPECTION, Combination Meter System.> | Is the "N" range indicator light OK? | Go to step 41. | Replace the combination meter assembly. <Ref. to IDI-14, Combination Meter.> |
| **33** | CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.  
1) Turn the ignition switch to OFF.  
2) Disconnect the connectors from TCM, inhibitor switch and combination meter.  
3) Measure the resistance of harness between TCM connector and chassis ground.  
**Connector & terminal (B55) No. 11 — Chassis ground:** | Is the resistance 1 MΩ or more? | Go to step 41. | Repair the ground short circuit in "N" range circuit. |
| **34** | CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.  
1) Turn the ignition switch to OFF.  
2) Disconnect the connector from TCM and inhibitor switch.  
3) Measure the resistance of the harness between TCM and inhibitor switch connector.  
**Connector & terminal (B55) No. 10 — (T7) No. 3:** | Is resistance less than 1 Ω? | Go to step 35. | Repair the open circuit of harness between TCM and inhibitor switch connector, and poor contact of the connector. |
| **35** | CHECK INPUT SIGNAL FOR TCM.  
1) Turn the ignition switch to OFF.  
2) Connect the connector to TCM and inhibitor switch.  
3) Turn the ignition switch to ON.  
4) Shift the select lever to "D" range.  
5) Measure the voltage between TCM and chassis ground.  
**Connector & terminal (B55) No. 10 (+) — Chassis ground (−):** | Is the voltage less than 1 V? | Go to step 36. | Go to step 41. |
| **36** | CHECK INPUT SIGNAL FOR TCM.  
1) Shift the select lever to any range other than "D".  
2) Measure the voltage between TCM and chassis ground.  
**Connector & terminal (B55) No. 10 (+) — Chassis ground (−):** | Is the voltage 8 V or more? | Go to step 41. | Replace the TCM.  
<Ref. to 4AT-64, Transmission Control Module (TCM).> |
| **37** | CHECK BODY INTEGRATED UNIT.  
Read the data of inhibitor switch using Subaru Select Monitor. <Ref. to LAN(diag)-14, OPERATION, Subaru Select Monitor.> | Is "4" displayed? | Go to step 38. | Check the body integrated unit. |
## AUTOMATIC TRANSMISSION (DIAGNOSTICS)

### Diagnostic Procedure with Diagnostic Trouble Code (DTC)

#### 38 CHECK BODY INTEGRATED UNIT.
- **Check**: Check DTC of body integrated unit.
- **Check**: Is DTC of CAN communication displayed?
- **Yes**: Perform the diagnosis according to DTC.
- **No**: Go to step 39.

#### 39 CHECK COMBINATION METER.
- **Check**: Check the “D” range indicator light. <Ref. to IDI-4, INSPECTION, Combination Meter System.>
- **Check**: Is the “D” range indicator light OK?
- **Yes**: Go to step 41.
- **No**: Replace the combination meter assembly. <Ref. to IDI-14, Combination Meter.>

#### 40 CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.
- **Step 1**: Turn the ignition switch to OFF.
- **Step 2**: Disconnect the connectors from TCM, inhibitor switch and combination meter.
- **Step 3**: Measure the resistance of harness between TCM connector and chassis ground.
  - **Connector & terminal (B55) No. 10 — Chassis ground:**
  - **Check**: Is the resistance 1 MΩ or more?
  - **Yes**: Go to step 41.
  - **No**: Repair ground short circuit in “D” range circuit.

#### 41 CHECK POOR CONTACT.
- **Check**: Is there poor contact in the inhibitor switch circuit?
- **Yes**: Repair the poor contact.
- **No**: Go to step 42.

#### 42 CHECK INHIBITOR SWITCH.
- **Check**: Is the inhibitor switch in the normal position?
  - **Yes**: Replace the TCM. <Ref. to 4AT-64, Transmission Control Module (TCM).>
  - **No**: Adjust inhibitor switch and select cable. <Ref. to 4AT-47, Inhibitor Switch.> <Ref. to CS-29, Select Cable.>
B: DTC P0712 TRANSMISSION FLUID TEMPERATURE SENSOR CIRCUIT LOW INPUT

DTC DETECTING CONDITION:
Input signal circuit to ATF temperature sensor is open or shorted.

TROUBLE SYMPTOM:
Excessive shift shock

WIRING DIAGRAM:
### Diagnostic Procedure with Diagnostic Trouble Code (DTC)

<table>
<thead>
<tr>
<th>Step</th>
<th>Check</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
</table>
| 1    | CHECK HARNESS CONNECTOR BETWEEN TCM AND ATF TEMPERATURE SENSOR.  
1) Turn the ignition switch to OFF.  
2) Disconnect the connector from transmission and TCM.  
3) Measure the resistance of harness between TCM and transmission connector.  
**Connector & terminal**  
(B55) No. 23 — (B11) No. 11: | Is resistance less than 1 Ω? | Go to step 2. | Repair the open circuit of harness between TCM and transmission connector. |
| 2    | CHECK HARNESS CONNECTOR BETWEEN TCM AND ATF TEMPERATURE SENSOR.  
Measure the resistance of harness between TCM and transmission connector.  
**Connector & terminal**  
(B55) No. 12 — (B11) No. 15: | Is resistance less than 1 Ω? | Go to step 3. | Repair the open circuit of harness between TCM and transmission connector. |
| 3    | CHECK ATF TEMPERATURE SENSOR.  
1) Turn the ignition switch to OFF.  
2) Connect the connectors to transmission and TCM.  
3) Start the engine.  
4) Warm-up the transmission until the ATF temperature exceeds 80°C (176°F).  
**NOTE:**  
If the ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature.  
5) Disconnect the connector from transmission.  
6) Measure the resistance between transmission connector terminals.  
**Connector & terminal**  
(T4) No. 11 — No. 15: | Is the resistance between 300 — 800 Ω? | Go to step 4. | Go to step 7. |
| 4    | CHECK ATF TEMPERATURE SENSOR.  
Measure the resistance between transmission connector terminals.  
**Connector & terminal**  
(T4) No. 11 — No. 15: | Does the resistance value increase while the ATF temperature decreases? | Go to step 5. | Go to step 7. |
| 5    | CHECK INPUT SIGNAL FOR TCM USING SUBARU SELECT MONITOR.  
1) Connect the connector to transmission.  
2) Connect the Subaru Select Monitor to the data link connector.  
3) Turn the ignition switch to ON.  
4) Read the data of “ATF temperature sensor” using Subaru Select Monitor.  
**Does the ATF temperature gradually decrease?** | Even if the ATF temperature warning light blinks, the circuit is in normal condition at this time. A temporary poor contact of connector or harness may be the cause. Repair the harness and poor contact of ATF temperature sensor and transmission connector. | Go to step 6. |
| 6    | CHECK POOR CONTACT.  
Is there poor contact in ATF temperature sensor circuit? | Repair the poor contact. | Replace the TCM.  
<Ref. to 4AT-64, Transmission Control Module (TCM).> |

---

4AT(diag)-39
## AUTOMATIC TRANSMISSION (DIAGNOSTICS)

### Diagnostic Procedure with Diagnostic Trouble Code (DTC)

<table>
<thead>
<tr>
<th>Step</th>
<th>Check</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
</table>
| 7 | CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND ATF TEMPERATURE SENSOR.  
1) Turn the ignition switch to OFF.  
2) Disconnect the connector from transmission.  
3) Remove the transmission connector from bracket.  
4) Lift up the vehicle.  
5) Drain the automatic transmission fluid.  
**CAUTION:**  
Do not drain ATF until it cools down.  
6) Remove the oil pan, and disconnect the control valve connector.  
7) Measure the resistance of harness between ATF temperature sensor and transmission connector.  
**Connector & terminal**  
(T4) No. 11 — (AT2) No. 4: | Is resistance less than 1 Ω? | Go to step 8. | Repair the open circuit of harness between ATF temperature sensor and transmission connector. |
| 8 | CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND ATF TEMPERATURE SENSOR.  
Measure the resistance of harness between ATF temperature sensor and transmission connector.  
**Connector & terminal**  
(T4) No. 15 — (AT2) No. 9: | Is resistance less than 1 Ω? | Go to step 9. | Repair the open circuit of harness between ATF temperature sensor and transmission connector. |
| 9 | CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND ATF TEMPERATURE SENSOR.  
Measure the resistance of harness between transmission connector and transmission ground.  
**Connector & terminal**  
(T4) No. 11 — Transmission ground: | Is the resistance 1 MΩ or more? | Go to step 10. | Repair the short circuit of harness between ATF temperature sensor and transmission connector. |
| 10 | CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND ATF TEMPERATURE SENSOR.  
Measure the resistance of harness between transmission connector and transmission ground.  
**Connector & terminal**  
(T4) No. 15 — Transmission ground: | Is the resistance 1 MΩ or more? | Replace the control valve body.  
<Ref. to 4AT-58, Control Valve Body.> | Repair the short circuit of harness between ATF temperature sensor and transmission connector. |
C: DTC P0713 TRANSMISSION FLUID TEMPERATURE SENSOR CIRCUIT HIGH INPUT

DTC DETECTING CONDITION:
Input signal circuit to ATF temperature sensor is shorted.

TROUBLE SYMPTOM:
Excessive shift shock

WIRING DIAGRAM:

<table>
<thead>
<tr>
<th>Step</th>
<th>Check Harness Connector Between TCM and ATF Temperature Sensor.</th>
<th>Check</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Turn the ignition switch to OFF.</td>
<td>Is the resistance 500 Ω or more?</td>
<td>Go to step 2.</td>
<td>Go to step 4.</td>
</tr>
<tr>
<td></td>
<td>Disconnect the connector from TCM.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Measure the resistance between TCM connector terminals.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Connector &amp; terminal</strong> (B55) No. 23 — No. 12:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Check Harness Connector Between TCM and ATF Temperature Sensor.</td>
<td>Is the resistance 1 MΩ or more?</td>
<td>Go to step 3.</td>
<td>Go to step 4.</td>
</tr>
<tr>
<td></td>
<td>Measure the resistance of harness between TCM connector and chassis ground.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Connector &amp; terminal</strong> (B55) No. 23 — Chassis ground:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Check Harness. Measure the resistance between TCM connector terminals while shaking the harness.</td>
<td>Does the resistance change?</td>
<td>Go to step 4.</td>
<td>&lt;Ref. to 4AT-64, Transmission Control Module (TCM).&gt;</td>
</tr>
<tr>
<td></td>
<td><strong>Connector &amp; terminal</strong> (B55) No. 23 — Chassis ground:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Check Harness Connector Between TCM and ATF Temperature Sensor.</td>
<td>Is the resistance 1 MΩ or more?</td>
<td>Go to step 5.</td>
<td>Repair the short circuit of harness between TCM and transmission harness.</td>
</tr>
<tr>
<td></td>
<td>Turn the ignition switch to OFF.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Disconnect the connector from transmission.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Measure the resistance of harness between TCM connector and chassis ground.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Connector &amp; terminal</strong> (B55) No. 23 — Chassis ground:</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### AUTOMATIC TRANSMISSION (DIAGNOSTICS)

#### Diagnostic Procedure with Diagnostic Trouble Code (DTC)

<table>
<thead>
<tr>
<th>Step</th>
<th>Check</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
</table>
| 5 | CHECK HARNESS CONNECTOR BETWEEN TCM AND ATF TEMPERATURE SENSOR. Measure the resistance of harness between TCM connector and chassis ground. 
   **Connector & terminal** 
   (B55) No. 12 — Chassis ground: | Is the resistance 1 MΩ or more? | Go to step 6. | Repair the short circuit of harness between TCM and transmission harness. |
| 6 | CHECK ATF TEMPERATURE SENSOR. Measure the resistance between transmission connector terminals. 
   **Connector & terminal** 
   (T4) No. 11 — No. 15: | Is the resistance 500 Ω or more? | Even if the ATF temperature warning light blinks, the circuit is in normal condition at this time. A temporary short circuit of connector or harness may be the cause. Repair the harness or connector. | Go to step 7. |
| 7 | CHECK TRANSMISSION HARNESS. 
   1) Lift up the vehicle. 
   2) Drain the automatic transmission fluid. 
   **CAUTION:** Do not drain ATF until it cools down. 
   3) Remove the oil pan. 
   4) Disconnect the harness connector from control valve. 
   5) Measure the resistance between ATF temperature sensor connector terminals. 
   6) Measure the resistance between transmission connector and transmission ground. 
   **Connector & terminal** 
   (T4) No. 11 — Transmission ground: | Is the resistance 1 MΩ or more? | Go to step 8. | Replace the transmission harness. |
| 8 | CHECK TRANSMISSION HARNESS. Measure the resistance between transmission connector and transmission ground. 
   **Connector & terminal** 
   (T4) No. 15 — Transmission ground: | Is the resistance 1 MΩ or more? | Go to step 9. | Replace the transmission harness. |
| 9 | CHECK ATF TEMPERATURE SENSOR. Measure the resistance between control valve connector terminals. 
   **Connector & terminal** 
   (AT2) No. 4 — No. 9: | Is the resistance 500 Ω or more? | Even if the ATF temperature warning light blinks, the circuit is in normal condition at this time. A temporary short circuit of connector or harness may be the cause. Repair the harness or connector. | Replace the control valve body. <Ref. to 4AT-58, Control Valve Body.> |
D: DTC P0715 INPUT/TURBINE SPEED SENSOR CIRCUIT

DTC DETECTING CONDITION:
Input signal circuit of TCM is open or shorted.

TROUBLE SYMPTOM:
Excessive shift shock

WIRING DIAGRAM:
## Diagnostic Procedure with Diagnostic Trouble Code (DTC)

### AUTOMATIC TRANSMISSION (DIAGNOSTICS)

<table>
<thead>
<tr>
<th>Step</th>
<th>Check</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
</table>
| **1** | CHECK TORQUE CONVERTER TURBINE SPEED SENSOR.  
1) Turn the ignition switch to OFF.  
2) Disconnect the connector from transmission.  
3) Measure the resistance between transmission connector receptacle's terminals.  
   Connector & terminal  
   (T4) No. 5 — No. 10:  
   Is the resistance between 450 — 650 Ω?  
Go to step 2. | Go to step 2. |
| **2** | CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.  
1) Disconnect the connector from TCM.  
2) Measure the resistance of harness between TCM connector and transmission connector.  
   Connector & terminal  
   (B55) No. 1 — (B11) No. 5:  
   Is resistance less than 1 Ω?  
Go to step 3. | Replace the torque converter turbine speed sensor. <Ref. to 4AT-55, Torque Converter Turbine Speed Sensor.> |
| **3** | CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.  
Measure the resistance of harness between TCM connector and transmission connector.  
   Connector & terminal  
   (B55) No. 2 — (B11) No. 10:  
   Is resistance less than 1 Ω?  
Go to step 4. | Repair the open circuit of harness between TCM and transmission connector. |
| **4** | CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.  
Measure the resistance of harness between TCM connector and chassis ground.  
   Connector & terminal  
   (B55) No. 2 — Chassis ground:  
   Is the resistance 1 MΩ or more?  
Go to step 5. | Repair the short circuit of harness between TCM and transmission connector. |
| **5** | CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.  
Measure the resistance of harness between TCM connector and chassis ground.  
   Connector & terminal  
   (B55) No. 1 — Chassis ground:  
   Is the resistance 1 MΩ or more?  
Go to step 6. | Repair the short circuit of the harness between TCM and transmission connector, and poor contact of connector. |
| **6** | CHECK INPUT SIGNAL FOR TCM USING SUBARU SELECT MONITOR.  
1) Connect the connectors to TCM and transmission.  
2) Connect the Subaru Select Monitor to the data link connector.  
3) Turn the ignition switch to ON.  
4) Start up the Subaru Select Monitor.  
5) Start the engine.  
6) Place the select lever in “P” or “N” range.  
7) Read the data of “Turbine Revolution Speed” using Subaru Select Monitor.  
8) Compare the tachometer with Subaru Select Monitor indications.  
   Is the revolution value same as the tachometer reading shown on the combination meter?  
Even if the ATF temperature warning light blinks, the circuit is in normal condition at this time. A temporary poor contact of connector or harness may be the cause. Repair the harness or connector in TCM and transmission.  
Go to step 7. | Go to step 7. |
| **7** | CHECK POOR CONTACT.  
Is there poor contact in torque converter turbine speed sensor circuit?  
Repair the poor contact.  
<Ref. to 4AT-64, Transmission Control Module (TCM).> |
E: DTC P0719 BRAKE SWITCH CIRCUIT LOW

DTC DETECTING CONDITION:
Brake switch malfunction, open input signal circuit

Trouble symptom:
Gear is not shifted down when driving a down hill.

WIRING DIAGRAM:
<table>
<thead>
<tr>
<th>Step</th>
<th>Check</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>CHECK DTC.</td>
<td>Is DTC of CAN communication displayed?</td>
<td>Perform the diagnosis according to DTC.</td>
</tr>
<tr>
<td>2</td>
<td>CHECK FUSE (NO. 8). 1) Turn the ignition switch to OFF. 2) Remove the fuse (No. 8).</td>
<td>Is the fuse (No. 8) blown out?</td>
<td>Replace the fuse (No. 8). If the replaced fuse (No. 8) has blown out easily, repair the short circuit of harness between fuse (No. 8) and stop light switch.</td>
</tr>
<tr>
<td>3</td>
<td>CHECK FUSE (RELAY BLOCK) (7.5A). Remove the fuse (relay block) (7.5 A).</td>
<td>Is the fuse (7.5A) blown out?</td>
<td>Replace the fuse (7.5A). If the replaced fuse (7.5A) blows out easily, repair the short circuit of harness between fuse (7.5A) and TCM.</td>
</tr>
<tr>
<td>4</td>
<td>CHECK BODY INTEGRATED UNIT. 1) Turn the ignition switch to OFF. 2) Connect the Subaru Select Monitor to the data link connector. 3) Turn the ignition switch to ON. 4) Run the Subaru Select Monitor. 5) Depress the brake pedal. 6) Read the data of “Stop Light Switch” using Subaru Select Monitor. &lt;Ref. to LAN(diag)-14, OPERATION, Subaru Select Monitor.&gt;</td>
<td>Is ON displayed?</td>
<td>Go to step 5.</td>
</tr>
<tr>
<td>5</td>
<td>CHECK TCM. Read the data of “Stop Light Switch” using Subaru Select Monitor. &lt;Ref. to 4AT(diag)-15, OPERATION, Subaru Select Monitor.&gt;</td>
<td>Is ON displayed?</td>
<td>A temporary poor contact of connector or harness may be the cause. Check the poor contact.</td>
</tr>
<tr>
<td>6</td>
<td>CHECK BODY INTEGRATED UNIT INPUT SIGNAL. 1) Disconnect the connector from body integrated unit. 2) Depress the brake pedal. 3) Measure the voltage of harness between the body integrated unit and chassis ground. Connector &amp; terminal (B280) No. 2 (+) — Chassis ground (–):</td>
<td>Is the voltage 10 V or more?</td>
<td>Go to step 9.</td>
</tr>
<tr>
<td>7</td>
<td>CHECK HARNESS CONNECTOR BETWEEN BODY INTEGRATED UNIT AND STOP LIGHT SWITCH. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from stop light switch. 3) Measure the resistance of harness between body integrated unit and stop light switch. Connector &amp; terminal SEDAN MODEL (B280) No. 2 — (B65) No. 4: WAGON MODEL (B280) No. 2 — (B65) No. 2:</td>
<td>Is resistance less than 1 Ω?</td>
<td>Go to step 8.</td>
</tr>
</tbody>
</table>
## Diagnostic Procedure with Diagnostic Trouble Code (DTC)

### AUTOMATIC TRANSMISSION (DIAGNOSTICS)

#### Step 8
**CHECK HARNESS CONNECTOR BETWEEN BODY INTEGRATED UNIT AND STOP LIGHT SWITCH.**
Measure the resistance of harness between body integrated unit and stop light switch. *Connector & terminal (B280) No. 2 — Chassis ground:*

- **Check**
  - Is the resistance 1 MΩ or more?
- **Yes**
  - Go to step 9.
- **No**
  - Repair the short circuit of harness between body integrated unit and stop light switch.

#### Step 9
**CHECK POOR CONTACT.**
Is there poor contact in input signal of brake switch?

- **Yes**
  - Repair the poor contact.
- **No**
  - Check the body integrated unit.
**Diagnostic Procedure with Diagnostic Trouble Code (DTC)**

**AUTOMATIC TRANSMISSION (DIAGNOSTICS)**

**F: DTC P0720 OUTPUT SPEED SENSOR CIRCUIT**

**DTC DETECTING CONDITION:**
- The vehicle speed signal is abnormal.
- The harness connector between TCM and front vehicle speed sensor is shorted or open.

**TROUBLE SYMPTOM:**
Driving performance is poor.

**WIRING DIAGRAM:**

```
<table>
<thead>
<tr>
<th>Step</th>
<th>Check</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
</table>
| 1    | CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.  
  1) Turn the ignition switch to OFF.  
  2) Disconnect the connectors from TCM and transmission.  
  3) Measure the resistance of harness between TCM connector and transmission connector.  
  **Connector & terminal**  
  (B55) No. 27 — (B11) No. 14:  
  Is resistance less than 1 Ω? | Go to step 2. | Repair the open circuit of harness between TCM and transmission connector. |
| 2    | CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.  
  Measure the resistance of harness between TCM connector and transmission connector.  
  **Connector & terminal**  
  (B55) No. 16 — (B11) No. 18:  
  Is resistance less than 1 Ω? | Go to step 3. | Repair the open circuit of harness between TCM and transmission connector, and poor contact of the connector. |
| 3    | CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.  
  Measure the resistance of harness between TCM connector and transmission connector.  
  **Connector & terminal**  
  (B55) No. 27 — Chassis ground:  
  Is the resistance 1 MΩ or more? | Go to step 4. | Repair the short circuit of harness between TCM and transmission connector. |
```
### Diagnostic Procedure with Diagnostic Trouble Code (DTC)

#### AUTOMATIC TRANSMISSION (DIAGNOSTICS)

<table>
<thead>
<tr>
<th>Step</th>
<th>Check</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>4</strong></td>
<td>CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. Measure the resistance of harness between TCM connector and transmission connector. <em>Connector &amp; terminal (B55) No. 16 — Chassis ground:</em></td>
<td>Is the resistance 1 MΩ or more?</td>
<td>Go to step 5.</td>
</tr>
<tr>
<td><strong>5</strong></td>
<td>CHECK FRONT VEHICLE SPEED SENSOR. Measure the resistance between transmission connector receptacle’s terminals. <em>Connector &amp; terminal (T4) No. 14 — No. 18:</em></td>
<td>Is the resistance between 450 — 650 Ω?</td>
<td>Go to step 6.</td>
</tr>
<tr>
<td><strong>6</strong></td>
<td>CHECK INPUT SIGNAL FOR TCM USING SUBARU SELECT MONITOR. 1) Connect all connectors. 2) Connect the Subaru Select Monitor to the data link connector. 3) Lift up the vehicle. 4) Turn the ignition switch to ON. 5) Start up the Subaru Select Monitor. 6) Start the engine. 7) Read the data of “front wheel speed” using Subaru Select Monitor. 8) Compare the speedometer with Subaru Select Monitor indications. 9) Slowly increase the vehicle speed to 60 km/h (37 MPH). <strong>NOTE:</strong> The speed difference between front and rear wheels may illuminate the ABS warning light, but this does not indicate a malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. [&lt;Ref. to ABS(diag)-23, Clear Memory Mode.&gt;]</td>
<td>Does the speedometer indication increase as the Subaru Select Monitor front wheel speed data increases?</td>
<td>Even if the ATF temperature warning light blinks, the circuit is in normal condition at this time. A temporary poor contact of connector or harness may be the cause. Repair the harness in of front vehicle speed sensor circuit.</td>
</tr>
<tr>
<td><strong>7</strong></td>
<td>CHECK POOR CONTACT.</td>
<td>Is there poor contact in front vehicle speed sensor circuit?</td>
<td>Repair the poor contact.</td>
</tr>
</tbody>
</table>
G: DTC P0724 BRAKE SWITCH CIRCUIT HIGH

DTC DETECTING CONDITION:
Brake switch malfunction, open input signal circuit

Trouble symptom:
Gear is not shifted down when driving a down hill.

WIRING DIAGRAM:
## Diagnostic Procedure with Diagnostic Trouble Code (DTC)

### AUTOMATIC TRANSMISSION (DIAGNOSTICS)

<table>
<thead>
<tr>
<th>Step</th>
<th>Check</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>CHECK DTC. Is DTC of CAN communication displayed? Perform the diagnosis according to DTC. Go to step 2.</td>
</tr>
<tr>
<td>3</td>
<td>CHECK TCM. Is OFF displayed? A temporary poor contact of connector or harness may be the cause. Check the poor contact. Replace the TCM. Go to step 5. Go to step 7.</td>
</tr>
<tr>
<td>4</td>
<td>CHECK BODY INTEGRATED UNIT INPUT SIGNAL. Is the voltage 10 V or more? Go to step 5. Go to step 7.</td>
</tr>
<tr>
<td>5</td>
<td>CHECK STOP LIGHT SWITCH. Is the resistance 1 MΩ or more? Go to step 6. Replace the stop light switch.</td>
</tr>
<tr>
<td>6</td>
<td>CHECK HARNESS CONNECTOR BETWEEN BODY INTEGRATED UNIT AND STOP LIGHT SWITCH. Is the voltage less than 1 V? Go to step 7. Repair the short circuit of harness between TCM and stop light switch.</td>
</tr>
<tr>
<td>7</td>
<td>CHECK POOR CONTACT. Is there poor contact in input signal of brake switch? Repair the poor contact. Check the body integrated unit.</td>
</tr>
</tbody>
</table>

---

1. Turn the ignition switch to OFF.
2. Connect the Subaru Select Monitor to the data link connector.
3. Turn the ignition switch to ON.
4. Start up the Subaru Select Monitor.
5. Read the data of “Stop Light Switch” using Subaru Select Monitor. <Ref. to LAN(diag)-14, OPERATION, Subaru Select Monitor.>

---

1. Turn the ignition switch to OFF.
2. Disconnect the connector from stop light switch.
3. Measure the resistance of harness between stop light switch connectors.

---

1. Disconnect the harness connector of body integrated unit.
2. Measure the voltage of harness between body integrated unit and stop light switch.

---

1. Disconnect the harness connector of body integrated unit.
2. Measure the voltage of harness between body integrated unit and stop light switch.

---

1. Disconnect the harness connector of body integrated unit.
2. Measure the voltage of harness between body integrated unit and chassis ground.

---

Is there poor contact in input signal of brake switch? Repair the poor contact. Check the body integrated unit.
H: DTC P0731 GEAR 1 INCORRECT RATIO

NOTE:
Refer to DTC P0736 for diagnostic procedure. <Ref. to 4AT(diag)-53, DTC P0736 REVERSE INCORRECT RATIO, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

I: DTC P0732 GEAR 2 INCORRECT RATIO

NOTE:
Refer to DTC P0736 for diagnostic procedure. <Ref. to 4AT(diag)-53, DTC P0736 REVERSE INCORRECT RATIO, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

J: DTC P0733 GEAR 3 INCORRECT RATIO

NOTE:
Refer to DTC P0736 for diagnostic procedure. <Ref. to 4AT(diag)-53, DTC P0736 REVERSE INCORRECT RATIO, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

K: DTC P0734 GEAR 4 INCORRECT RATIO

NOTE:
Refer to DTC P0736 for diagnostic procedure. <Ref. to 4AT(diag)-53, DTC P0736 REVERSE INCORRECT RATIO, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
**L: DTC P0736 REVERSE INCORRECT RATIO**

**DTC DETECTING CONDITION:**
Vehicle sensor, torque converter turbine speed sensor or control valve malfunction

**TROUBLE SYMPTOM:**
- Shift point is too high or too low.
- Excessive shift shock
- Tight corner braking phenomenon occurs.
- Gear is not shifted to reverse.
- Gear position is held by fail safe function.

<table>
<thead>
<tr>
<th>Step</th>
<th>Check</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>CHECK ACCELERATOR PEDAL POSITION SENSOR.  &lt;br&gt;1) Connect the Subaru Select Monitor to the data link connector.  &lt;br&gt;2) Turn the ignition switch to ON.  &lt;br&gt;3) Read the data of “Accel. opening angle” using Subaru Select Monitor.  &lt;br&gt;Does the value of “Accel. opening angle” change from 0% to 100% smoothly when throttle is operated from fully closed to fully open?</td>
<td>Go to step 2.</td>
<td>Check the accelerator pedal position sensor circuit.</td>
</tr>
<tr>
<td>2.</td>
<td>CHECK FRONT VEHICLE SPEED SENSOR.  &lt;br&gt;1) Lift up the vehicle.  &lt;br&gt;2) Start the engine.  &lt;br&gt;3) Shift the select lever to “D” range and slowly increase vehicle speed.  &lt;br&gt;NOTE: The speed difference between front and rear wheels illuminates the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. &lt;Ref. to ABS(diag)-23, Clear Memory Mode.&gt;  &lt;br&gt;Does the vehicle speed displayed by Subaru Select Monitor roughly correspond with vehicle speed indicated by the combination meter?</td>
<td>Go to step 3.</td>
<td>Check the front vehicle speed sensor circuit.</td>
</tr>
<tr>
<td>3.</td>
<td>CHECK TORQUE CONVERTER TURBINE SPEED SENSOR.  &lt;br&gt;1) Place the select lever in “P” or “N” range.  &lt;br&gt;2) Idle the engine.  &lt;br&gt;Does the value of torque converter turbine speed sensor displayed by Subaru Select Monitor roughly correspond with the value of tachometer in combination meter?</td>
<td>There are malfunctions in TCM, TCM connector poor contact, or transmission assembly mechanical malfunction.</td>
<td>Check the torque converter turbine speed sensor circuit.</td>
</tr>
</tbody>
</table>
M: DTC P0741 TORQUE CONVERTER CLUTCH CIRCUIT PERFORMANCE OR STUCK OFF

DTC DETECTING CONDITION:
- Lock up clutch malfunction
- Sticky valve

TROUBLE SYMPTOM:
No lock-up occurs.

<table>
<thead>
<tr>
<th>Step</th>
<th>Check</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>CHECK LOCK-UP DUTY SOLENOID CIRCUIT. Diagnose according to DTC P0743 procedure.</td>
<td>Is there any fault?</td>
<td>Repair or replace the lock up duty solenoid circuit.</td>
</tr>
<tr>
<td>2</td>
<td>CHECK INHIBITOR SWITCH CIRCUIT. Diagnose according to DTC P0705 procedure.</td>
<td>Is there any fault?</td>
<td>Repair or replace the inhibitor switch circuit.</td>
</tr>
<tr>
<td>3</td>
<td>CHECK STOP LIGHT SWITCH CIRCUIT. Diagnose according to DTC P0719 and P0724 procedures.</td>
<td>Is there any fault?</td>
<td>Repair or replace the stop light switch circuit.</td>
</tr>
<tr>
<td>4</td>
<td>CHECK ATF TEMPERATURE SENSOR CIRCUIT. Diagnose according to DTC P0712 AND P0713 procedure.</td>
<td>Is there any fault?</td>
<td>Repair or replace the ATF temperature sensor circuit.</td>
</tr>
<tr>
<td>5</td>
<td>CHECK ACCELERATOR PEDAL POSITION SENSOR. 1) Connect the Subaru Select Monitor to the data link connector. 2) Turn the ignition switch to ON. 3) Read the data of “Accel. opening angle” using Subaru Select Monitor.</td>
<td>Does the value of accelerator pedal position sensor change from 0% to 100% smoothly when throttle is operated from fully closed to fully open?</td>
<td>Go to step 6.</td>
</tr>
<tr>
<td>6</td>
<td>CHECK TORQUE CONVERTER TURBINE SPEED SENSOR. 1) Place the select lever in “P” or “N” range. 2) Idle the engine.</td>
<td>Does the value of turbine speed displayed by Subaru Select Monitor almost correspond with the value of the tachometer?</td>
<td>Go to step 7.</td>
</tr>
<tr>
<td>7</td>
<td>CHECK ENGINE SPEED SIGNAL. Idle the engine.</td>
<td>Does the value of turbine speed displayed by Subaru Select Monitor almost correspond with the value of the tachometer?</td>
<td>There is transmission assembly mechanical malfunction.</td>
</tr>
</tbody>
</table>
N: DTC P0743 TORQUE CONVERTER CLUTCH CIRCUIT ELECTRICAL

DTC DETECTING CONDITION:
Output signal circuit of lock-up duty solenoid is open or shorted.

TROUBLE SYMPTOM:
No lock-up occurs. (After engine is warmed-up)

WIRING DIAGRAM:
<table>
<thead>
<tr>
<th>Step</th>
<th>Check</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>CHECK DTC.</td>
<td>Are multiple DTCs displayed?</td>
<td>Go to other DTC.</td>
</tr>
</tbody>
</table>
| 2    | CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.  
1) Turn the ignition switch to OFF.  
2) Disconnect the connectors from TCM and transmission.  
3) Measure the resistance of harness between TCM connector and transmission connector.  
Connector & terminal  
(B55) No. 6 — (B11) No. 12: | Is resistance less than 1 Ω? | Go to step 3. | Repair the open circuit of harness between TCM and transmission connector. |
| 3    | CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.  
Measure the resistance of the harness connector between TCM connector and chassis ground.  
Connector & terminal  
(B55) No. 6 — Chassis ground: | Is the resistance 1 MΩ or more? | Go to step 4. | Repair the short circuit of harness between TCM and transmission connector. |
| 4    | CHECK LOCK-UP DUTY SOLENOID.  
Measure the resistance between transmission connector receptacle’s terminals.  
Connector & terminal  
(T4) No. 12 — No. 20: | Is the resistance between 2.0 — 6.0 Ω? | Go to step 5. | Go to step 8. |
| 5    | CHECK OUTPUT SIGNAL FROM TCM USING SUBARU SELECT MONITOR.  
1) Connect the connectors to TCM and transmission.  
2) Lift up the vehicle.  
3) Connect the Subaru Select Monitor to the data link connector.  
4) Start the engine.  
5) Start up the Subaru Select Monitor.  
6) Warm-up the engine until the ATF temperature exceeds 80°C (176°F).  
NOTE:  
If the ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature.  
7) Read the data of “Lock Up Duty Ratio” using Subaru Select Monitor.  
8) Shift the select lever to “D”, and slowly increase vehicle speed to 60 km/h (37 MPH).  
NOTE:  
The speed difference between front and rear wheels illuminates the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to ABS(diag)-23, Clear Memory Mode.> | Is the measured value 95%? | Go to step 6. | Go to step 7. |
<table>
<thead>
<tr>
<th>Step</th>
<th>Check</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>CHECK OUTPUT SIGNAL FROM TCM USING SUBARU SELECT MONITOR. Return the engine to idling speed, shift the select lever to “N” range and read the data. <strong>NOTE:</strong> The speed difference between front and rear wheels illuminates the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. &lt;Ref. to ABS(diag)-23, Clear Memory Mode.&gt;</td>
<td>Is the measured value 0%?</td>
<td>Even if the ATF temperature warning light blinks, the circuit is in normal condition at this time. A temporary poor contact of connector or harness may be the cause. Repair the harness or connector in TCM and transmission.</td>
</tr>
<tr>
<td>7</td>
<td>CHECK POOR CONTACT.</td>
<td>Is there poor contact in lock-up duty solenoid circuit?</td>
<td>Repair the poor contact.</td>
</tr>
<tr>
<td>8</td>
<td>CHECK LOCK-UP DUTY SOLENOID (IN TRANSMISSION). 1) Disconnect the transmission connector. 2) Drain the automatic transmission fluid. <strong>CAUTION:</strong> Do not drain ATF until it cools down. 3) Remove the oil pan, and disconnect the connector from control valve body. 4) Measure the resistance between lock-up duty solenoid and transmission ground. <strong>Connector &amp; terminal (AT2) No. 6 — Transmission ground:</strong></td>
<td>Is the resistance between 2.0 — 6.0 Ω?</td>
<td>Go to step 9.</td>
</tr>
<tr>
<td>9</td>
<td>CHECK HARNESS CONNECTOR BETWEEN LOCK-UP DUTY SOLENOID AND TRANSMISSION. Measure the resistance of harness between lock-up duty solenoid and transmission connector. <strong>Connector &amp; terminal (T4) No. 12 — (AT2) No. 6:</strong></td>
<td>Is resistance less than 1 Ω?</td>
<td>Go to step 10.</td>
</tr>
<tr>
<td>10</td>
<td>CHECK HARNESS CONNECTOR BETWEEN LOCK-UP DUTY SOLENOID AND TRANSMISSION. Measure the resistance of harness between transmission connector and transmission ground. <strong>Connector &amp; terminal (T4) No. 12 — Transmission ground:</strong></td>
<td>Is the resistance 1 MΩ or more?</td>
<td>Even if the ATF temperature warning light blinks, the circuit is in normal condition at this time. A temporary poor contact of connector or harness may be the cause. Repair the harness or connector in lock-up duty solenoid and transmission.</td>
</tr>
</tbody>
</table>
**Diagnostic Procedure with Diagnostic Trouble Code (DTC)**

### AUTOMATIC TRANSMISSION (DIAGNOSTICS)

**O: DTC P0748 PRESSURE CONTROL SOLENOID “A” ELECTRICAL**

**DTC DETECTING CONDITION:**
Output signal circuit of line pressure linear solenoid is open or shorted.

**TROUBLE SYMPTOM:**
Excessive shift shock

**WIRING DIAGRAM:**

![Wiring Diagram]

**Step** | **Check** | **Yes** | **No**
---|---|---|---
1 | CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.  
   1) Turn the ignition switch to OFF.  
   2) Disconnect the connector from transmission and TCM.  
   3) Measure the resistance between harness TCM connector and transmission TCM connector.  
   **Connector & terminal**  
   (B55) No. 3 — (B11) No. 2:  
   (B55) No. 4 — (B11) No. 1:  
   Is resistance less than 1 Ω?  
   Go to step 2.  
   Repair the open circuit of harness between TCM and transmission connector. |  |  
2 | CHECK HARNESS CONNECTOR BETWEEN TCM AND CHASSIS GROUND.  
   Measure the resistance between harness TCM connector and chassis ground.  
   **Connector & terminal**  
   (B55) No. 3 — Chassis ground:  
   (B55) No. 4 — Chassis ground:  
   Is the resistance 1 MΩ or more?  
   Go to step 3.  
   Repair the short circuit of harness between TCM and transmission connector. |  |  
3 | CHECK LINE PRESSURE LINEAR SOLENOID.  
   Measure the resistance between transmission connector receptacle’s terminals.  
   **Connector & terminal**  
   (T4) No. 1 — No. 2:  
   Is the resistance between 4 — 8 Ω?  
   Go to step 5.  
   Go to step 4. |  |  

4AT(diag)-58
## Diagnostic Procedure with Diagnostic Trouble Code (DTC)

### AUTOMATIC TRANSMISSION (DIAGNOSTICS)

### 4 CHECK LINE PRESSURE LINEAR SOLENOID (IN TRANSMISSION).

1. Remove the transmission connector from bracket.
2. Drain the automatic transmission fluid.

**CAUTION:**
Do not drain ATF until it cools down.

3. Remove the oil pan, and disconnect the connector from control valve body.
4. Measure the resistance of line pressure linear solenoid connector terminals.

**Connector & terminal**

| (AT2) No. 5 — No. 10: |

| Is the resistance between 4 — 8 Ω? |

| Yes | No |

- Go to step 5.
- Replace the control valve body.  
  <Ref. to 4AT-58, Control Valve Body.>

### 5 CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND LINE PRESSURE LINEAR SOLENOID.

Measure the resistance of harness between line pressure linear solenoid and transmission connector.

**Connector & terminal**

| (T4) No. 2 — (AT2) No. 10: |
| (T4) No. 1 — (AT2) No. 5: |

| Is resistance less than 1 Ω? |

| Yes | No |

- Go to step 6.
- Repair the open circuit of harness between line pressure linear solenoid and transmission connector.

### 6 CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND LINE PRESSURE LINEAR SOLENOID.

Measure the resistance of harness between transmission connector and transmission ground.

**Connector & terminal**

| (T4) No. 1 — Transmission ground: |
| (T4) No. 2 — Transmission ground: |

| Is the resistance 1 MΩ or more? |

| Yes | No |

- Even if the ATF temperature warning light blinks, the circuit is in normal condition at this time. A temporary poor contact of connector or harness may be the cause. Repair the harness or connector in line pressure linear solenoid and transmission.
- Repair the short circuit of harness between line pressure linear solenoid and transmission connector.
P: DTC P0753 SHIFT SOLENOID “A” ELECTRICAL

DTC DETECTING CONDITION:
Output signal circuit of low clutch duty solenoid is open or shorted.

TROUBLE SYMPTOM:
Excessive shift shock

WIRING DIAGRAM:
<table>
<thead>
<tr>
<th>Step</th>
<th>Check</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from TCM and transmission. 3) Measure the resistance of harness between TCM and transmission connector. <strong>Connector &amp; terminal (B54) No. 7 — (B11) No. 4:</strong></td>
<td>Is resistance less than 1 Ω?</td>
<td>Go to step 2.</td>
</tr>
<tr>
<td>2</td>
<td>CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. Measure the resistance of harness between TCM connector and transmission ground. <strong>Connector &amp; terminal (B54) No. 7 — Chassis ground:</strong></td>
<td>Is the resistance 1 MΩ or more?</td>
<td>Go to step 3.</td>
</tr>
<tr>
<td>3</td>
<td>CHECK LOW CLUTCH DUTY SOLENOID. Measure the resistance between transmission connector terminals. <strong>Connector &amp; terminal (T4) No. 4 — No. 20:</strong></td>
<td>Is the resistance between 2.0 — 6.0 Ω?</td>
<td>Go to step 4.</td>
</tr>
<tr>
<td>4</td>
<td>CHECK OUTPUT SIGNAL FROM TCM USING SUBARU SELECT MONITOR. 1) Connect the connectors to TCM and transmission. 2) Connect the Subaru Select Monitor to the data link connector. 3) Start the engine. 4) Start up the Subaru Select Monitor. 5) Warm-up the transmission until the ATF temperature exceeds approximately 80°C (176°F). NOTE: If the ambient temperature falls below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature. 6) Stop the engine. 7) Turn the ignition switch to ON. 8) Shift the select lever to “P” or “N” range, and depress the accelerator pedal. 9) Read the data of “Low Clutch Duty Ratio” using Subaru Select Monitor.</td>
<td>Is the measured value 100%?</td>
<td>Go to step 5.</td>
</tr>
<tr>
<td>5</td>
<td>CHECK OUTPUT SIGNAL FROM TCM USING SUBARU SELECT MONITOR. 1) Turn the ignition switch to ON. 2) Set the select lever to the “D” range. 3) Read the data of “Low Clutch Duty Ratio”</td>
<td>Is the measured value 0%?</td>
<td>Go to step 6.</td>
</tr>
<tr>
<td>6</td>
<td>CHECK POOR CONTACT.</td>
<td>Is there poor contact in low clutch duty solenoid circuit?</td>
<td>Repair the poor contact.</td>
</tr>
</tbody>
</table>
## Diagnostic Procedure with Diagnostic Trouble Code (DTC)

### AUTOMATIC TRANSMISSION (DIAGNOSTICS)

### 7 CHECK LOW CLUTCH DUTY SOLENOID (IN TRANSMISSION).
1) Remove the transmission connector from bracket.
2) Drain the automatic transmission fluid.

**CAUTION:**
Do not drain ATF until it cools down.

3) Remove the oil pan, and disconnect the connector from control valve body.
4) Measure the resistance between low clutch duty solenoid connector and transmission ground.

**Connector & terminal**
- (AT2) No. 2 — Transmission ground:

<table>
<thead>
<tr>
<th>Step</th>
<th>Check</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>Is the resistance between 2.0 — 6.0 Ω?</td>
<td>Go to step 8.</td>
<td>Replace the control valve body. &lt;Ref. to 4AT-58, Control Valve Body.&gt;</td>
</tr>
</tbody>
</table>

### 8 CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND LOW CLUTCH DUTY SOLENOID.

Measure the resistance of harness between low clutch duty solenoid and transmission connector.

**Connector & terminal**
- (T4) No. 4 — (AT2) No. 2:

<table>
<thead>
<tr>
<th>Step</th>
<th>Check</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>Is resistance less than 1 Ω?</td>
<td>Go to step 9.</td>
<td>Repair the open circuit of harness between low clutch duty solenoid and transmission connector.</td>
</tr>
</tbody>
</table>

### 9 CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND LOW CLUTCH DUTY SOLENOID.

Measure the resistance of harness between transmission connector and transmission ground.

**Connector & terminal**
- (T4) No. 4 — Transmission ground:

<table>
<thead>
<tr>
<th>Step</th>
<th>Check</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>Is the resistance 1 MΩ or more?</td>
<td>Even if the ATF temperature warning light blinks, the circuit is in normal condition at this time. A temporary poor contact of connector or harness may be the cause. Repair the harness or connector of the low clutch duty solenoid and transmission.</td>
<td>Repair the short circuit of harness between low clutch duty solenoid and transmission connector.</td>
</tr>
</tbody>
</table>
Q: DTC P0758 SHIFT SOLENOID “B” ELECTRICAL

DTC DETECTING CONDITION:
Output signal circuit of 2-4 brake duty solenoid is open or shorted.

TROUBLE SYMPTOM:
Excessive shift shock

WIRING DIAGRAM:
# Diagnostic Procedure with Diagnostic Trouble Code (DTC)

## AUTOMATIC TRANSMISSION (DIAGNOSTICS)

<table>
<thead>
<tr>
<th>Step</th>
<th>Check</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
</table>
| 1 | CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.  
   1) Turn the ignition switch to OFF.  
   2) Disconnect the connectors from TCM and transmission.  
   3) Measure the resistance of harness between TCM connector and transmission connector.  
   **Connector & terminal (B54) No. 4 — (B11) No. 3:**  
   Is resistance less than 1 Ω? | Go to step 2. | Repair the open circuit of harness between TCM and transmission connector. |
| 2 | CHECK HARNESS CONNECTOR BETWEEN TCM AND CHASSIS GROUND.  
   Measure the resistance of harness between TCM connector and chassis ground.  
   **Connector & terminal (B54) No. 4 — Chassis ground:**  
   Is the resistance 1 MΩ or more? | Go to step 3. | Repair the short circuit of harness between TCM and transmission connector. |
| 3 | CHECK 2-4 BRAKE DUTY SOLENOID.  
   Measure the resistance between transmission connector terminals.  
   **Connector & terminal (T4) No. 3 — No. 20:**  
   Is the resistance between 2.0 — 6.0 Ω? | Go to step 4. | Go to step 7. |
| 4 | CHECK OUTPUT SIGNAL FROM TCM USING SUBARU SELECT MONITOR.  
   1) Connect all connectors.  
   2) Connect the Subaru Select Monitor to the data link connector.  
   3) Start the engine.  
   4) Start up the Subaru Select Monitor.  
   5) Warm-up the transmission until the ATF temperature exceeds approximately 80°C (176°F).  
   **NOTE:** If the ambient temperature falls below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature.  
   6) Stop the engine.  
   7) Turn the ignition switch to ON.  
   8) Shift the select lever to “N” range, and depress the accelerator pedal.  
   9) Read the data of “Brake Clutch Duty Ratio” using Subaru Select Monitor. | Is the measured value 100%? | Go to step 5. | Go to step 6. |
| 5 | CHECK OUTPUT SIGNAL FROM TCM USING SUBARU SELECT MONITOR.  
   Shift the select lever to 2nd on manual mode.  
   Is the measured value 0%? | Even if the ATF temperature warning light blinks, the circuit is in normal condition at this time. A temporary poor contact of connector or harness may be the cause. Repair the harness or connector in TCM and transmission. | Go to step 6. |
| 6 | CHECK POOR CONTACT.  
   Is there poor contact in 2-4 brake duty solenoid circuit? | Repair the poor contact. | Replace the TCM. <Ref. to 4AT-64, Transmission Control Module (TCM).> |
### Automatic Transmission (Diagnostics)

#### 7 Check 2-4 Brake Duty Solenoid (In Transmission)
1. Remove the transmission connector from bracket.
2. Drain the automatic transmission fluid.

**CAUTION:**
Do not drain ATF until it cools down.
3. Remove the oil pan, and disconnect the connector from 2-4 brake duty solenoid.
4. Measure the resistance of harness between 2-4 brake duty solenoid connector and transmission ground.

**Connector & terminal**

<table>
<thead>
<tr>
<th>Step</th>
<th>Check</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
</table>
| 7    | CHECK 2-4 BRAKE DUTY SOLENOID (IN TRANSMISSION).  
      1) Remove the transmission connector from bracket.  
      2) Drain the automatic transmission fluid.  
      **CAUTION:**  
      Do not drain ATF until it cools down.  
      3) Remove the oil pan, and disconnect the connector from 2-4 brake duty solenoid.  
      4) Measure the resistance of harness between 2-4 brake duty solenoid connector and transmission ground. | Is the resistance between 2.0 and 6.0 Ω? | Go to step 8. | Replace the control valve body.  
<Ref. to 4AT-58, Control Valve Body.> |

#### 8 Check Harness Connector Between 2-4 Brake Duty Solenoid and Transmission

Measure the resistance of harness between 2-4 brake duty solenoid and transmission connector.

**Connector & terminal**

<table>
<thead>
<tr>
<th>Step</th>
<th>Check</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
</table>
| 8    | CHECK HARNESS CONNECTOR BETWEEN 2-4 BRAKE DUTY SOLENOID AND TRANSMISSION.  
      Measure the resistance of harness between 2-4 brake duty solenoid and transmission connector. | Is resistance less than 1 Ω? | Go to step 9. | Repair the open circuit of harness between 2-4 brake duty solenoid and transmission connector. |

#### 9 Check Harness Connector Between 2-4 Brake Duty Solenoid and Transmission

Measure the resistance of harness between transmission connector and transmission ground.

**Connector & terminal**

<table>
<thead>
<tr>
<th>Step</th>
<th>Check</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
</table>
| 9    | CHECK HARNESS CONNECTOR BETWEEN 2-4 BRAKE DUTY SOLENOID AND TRANSMISSION.  
      Measure the resistance of harness between transmission connector and transmission ground. | Is the resistance 1 MΩ or more? | Even if the ATF temperature warning light blinks, the circuit is in normal condition at this time. A temporary poor contact of connector or harness may be the cause. Repair the harness or connector in 2-4 brake duty solenoid and transmission. | Repair the short circuit of harness between 2-4 brake duty solenoid and transmission connector. |
R: DTC P0763 SHIFT SOLENOID “C” ELECTRICAL

DTC DETECTING CONDITION:
Output signal circuit of high clutch duty solenoid is open or shorted.

TROUBLE SYMPTOM:
Excessive shift shock

WIRING DIAGRAM:
## Diagnostic Procedure with Diagnostic Trouble Code (DTC)

### AUTOMATIC TRANSMISSION (DIAGNOSTICS)

<table>
<thead>
<tr>
<th>Step</th>
<th>Check</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1</strong></td>
<td><strong>CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.</strong>&lt;br&gt;1) Turn the ignition switch to OFF.&lt;br&gt;2) Disconnect the connectors from TCM and transmission.&lt;br&gt;3) Measure the resistance of harness between TCM connector and transmission connector. <strong>Connector &amp; terminal (B54) No. 6 — (B11) No. 7:</strong></td>
<td>Is resistance less than 1 Ω?</td>
<td>Go to step 2.</td>
</tr>
<tr>
<td><strong>2</strong></td>
<td><strong>CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.</strong>&lt;br&gt;Measure the resistance of the harness connector between TCM connector and chassis ground. <strong>Connector &amp; terminal (B54) No. 6 — Chassis ground:</strong></td>
<td>Is the resistance 1 MΩ or more?</td>
<td>Go to step 3.</td>
</tr>
<tr>
<td><strong>3</strong></td>
<td><strong>CHECK HIGH CLUTCH DUTY SOLENOID.</strong>&lt;br&gt;Measure the resistance between transmission connector receptacle’s terminals. <strong>Connector &amp; terminal (T4) No. 7 — No. 20:</strong></td>
<td>Is the resistance between 2.0 — 6.0 Ω?</td>
<td>Go to step 4.</td>
</tr>
<tr>
<td><strong>4</strong></td>
<td><strong>CHECK OUTPUT SIGNAL FROM TCM USING SUBARU SELECT MONITOR.</strong>&lt;br&gt;1) Connect the connectors to TCM and transmission.&lt;br&gt;2) Lift up the vehicle.&lt;br&gt;3) Connect the Subaru Select Monitor to the data link connector.&lt;br&gt;4) Start the engine.&lt;br&gt;5) Start up the Subaru Select Monitor.&lt;br&gt;6) Warm-up the engine until the ATF temperature exceeds 80°C (176°F).&lt;br&gt;NOTE:&lt;br&gt;IF the ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature.&lt;br&gt;7) Read the data of “High Clutch Duty Ratio” using Subaru Select Monitor.&lt;br&gt;8) Shift the select lever to “D”, and slowly increase vehicle speed to measure at 3rd or 4th.&lt;br&gt;NOTE:&lt;br&gt;The speed difference between front and rear wheels illuminates the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. &lt;Ref. to ABS(diag)-23, Clear Memory Mode.&gt;</td>
<td>Is the measured value 0%?</td>
<td>Go to step 5.</td>
</tr>
<tr>
<td>Step</td>
<td>Check</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>------</td>
<td>-------</td>
<td>-----</td>
<td>----</td>
</tr>
</tbody>
</table>
| 5    | CHECK OUTPUT SIGNAL FROM TCM USING SUBARU SELECT MONITOR.  
1) Return the engine to idling speed.  
2) Set the select lever to “N” range.  
NOTE:  
The speed difference between front and rear wheels illuminates the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to ABS(diag)-23, Clear Memory Mode.> | Is the measured value 100%? | Even if the ATF temperature warning light blinks, the circuit is in normal condition at this time. A temporary poor contact of connector or harness may be the cause. Repair the harness or connector in TCM and transmission. | Go to step 6. |
| 6    | CHECK POOR CONTACT. | Is there poor contact in high clutch duty solenoid circuit? | Repair the poor contact. | Replace the TCM. <Ref. to 4AT-64, Transmission Control Module (TCM).> |
| 7    | CHECK HIGH CLUTCH DUTY SOLENOID (IN TRANSMISSION).  
1) Remove the transmission connector from bracket.  
2) Drain the automatic transmission fluid.  
CAUTION:  
Do not drain ATF until it cools down.  
3) Remove the oil pan, and disconnect the control valve body connector.  
4) Measure the resistance between high clutch duty solenoid connector and transmission ground.  
Connector & terminal (AT2) No. 3 — Transmission ground: | Is the resistance between 2.0 — 6.0 Ω? | Go to step 8. | Replace the control valve body. <Ref. to 4AT-58, Control Valve Body.> |
| 8    | CHECK HARNESS CONNECTOR BETWEEN HIGH CLUTCH DUTY SOLENOID AND TRANSMISSION.  
Measure the resistance of harness between high clutch duty solenoid and transmission connector.  
Connector & terminal (T4) No. 7 — (AT2) No. 3: | Is resistance less than 1 Ω? | Go to step 9. | Repair the open circuit of harness between TCM and transmission connector. |
| 9    | CHECK HARNESS CONNECTOR BETWEEN HIGH CLUTCH DUTY SOLENOID AND TRANSMISSION.  
Measure the resistance of harness between transmission connector and transmission ground.  
Connector & terminal (T4) No. 7 — Transmission ground: | Is the resistance 1 MΩ or more? | Even if the ATF temperature warning light blinks, the circuit is in normal condition at this time. A temporary poor contact of connector or harness may be the cause. Repair the harness or connector in high clutch duty solenoid and transmission. | Repair the short circuit of harness between high clutch duty solenoid and transmission connector. |
S: DTC P0768 SHIFT SOLENOID “D” ELECTRICAL

DTC DETECTING CONDITION:
The output signal circuit of low & reverse duty solenoid is open or shorted.

TROUBLE SYMPTOM:
Gear is not changed.

WIRING DIAGRAM:
### Diagnostic Procedure with Diagnostic Trouble Code (DTC)

#### AUTOMATIC TRANSMISSION (DIAGNOSTICS)

<table>
<thead>
<tr>
<th>Step</th>
<th>Check</th>
</tr>
</thead>
</table>
| 1 | CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.  
1) Turn the ignition switch to OFF.  
2) Disconnect the connector from transmission and TCM.  
3) Measure the resistance of harness between TCM connector and transmission connector. **Connector & terminal (B54) No. 5 — (B11) No. 6:**  
Is resistance less than 1 Ω? | Yes | Go to step 2.  
No | Repair the open circuit of harness between TCM and transmission connector. |
| 2 | CHECK HARNESS CONNECTOR BETWEEN TCM AND CHASSIS GROUND.  
Measure the resistance of harness between TCM connector and chassis ground. **Connector & terminal (B54) No. 5 — Chassis ground:**  
Is the resistance 1 MΩ or more? | Yes | Go to step 3.  
No | Repair the short circuit of harness between TCM and transmission connector. |
| 3 | CHECK LOW & REVERSE DUTY SOLENOID.  
Measure the resistance between transmission connector terminals. **Connector & terminal (T4) No. 6 — No. 20:**  
Is the resistance between 2.0 — 6.0 Ω? | Yes | Go to step 4.  
No | Go to step 7. |
| 4 | CHECK OUTPUT SIGNAL FROM TCM USING SUBARU SELECT MONITOR.  
1) Connect all connectors.  
2) Connect the Subaru Select Monitor to the data link connector.  
3) Start the engine.  
4) Start up the Subaru Select Monitor.  
5) Warm-up the transmission until the ATF temperature exceeds approximately 80°C (176°F).  
**NOTE:**  
If the ambient temperature falls below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature.  
6) Stop the engine.  
7) Turn the ignition switch to ON.  
8) Set the select lever to “N” range.  
9) Read the data of “L&R/B duty ratio” using Subaru Select Monitor.  
Is the measured value 100%? | Yes | Go to step 5.  
No | Go to step 6. |
| 5 | CHECK OUTPUT SIGNAL FROM TCM USING SUBARU SELECT MONITOR.  
1) Lift up the vehicle.  
2) Shift the select lever to manual mode, and then hold it on 1st. Slowly increase the vehicle speed up to 15 km/h (9 MPH), and then return the accelerator pedal.  
**NOTE:**  
The speed difference between front and rear wheels illuminates the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to ABS(diag)-23, Clear Memory Mode.>  
3) Read the data of “L&R/B duty ratio”.  
Is the measured value 55%? | Yes | Even if the ATF temperature warning light blinks, the circuit is in normal condition at this time. A temporary poor contact of connector or harness may be the cause. Repair the harness or connector in TCM and transmission.  
No | Go to step 6. |
## Diagnostic Procedure with Diagnostic Trouble Code (DTC)

### AUTOMATIC TRANSMISSION (DIAGNOSTICS)

<table>
<thead>
<tr>
<th>Step</th>
<th>Check</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>CHECK POOR CONTACT.</td>
<td>Is there poor contact in the low &amp; reverse duty solenoid circuit?</td>
<td>Repair the poor contact. Replace the TCM. &lt;Ref. to 4AT-64, Transmission Control Module (TCM).&gt;</td>
</tr>
</tbody>
</table>
| 7    | CHECK LOW & REVERSE BRAKE DUTY SOLENOID (IN TRANSMISSION).  
   1) Remove the transmission connector from bracket.  
   2) Drain the automatic transmission fluid.  
   CAUTION: Do not drain ATF until it cools down.  
   3) Remove the oil pan, and disconnect the connector from control valve body.  
   4) Measure the resistance between low & reverse duty solenoid connector and transmission ground.  
   **Connector & terminal**  
   (AT2) No. 1 — Transmission ground: | Is the resistance between 2.0 — 6.0 Ω? | Go to step 8. Replace the control valve body. <Ref. to 4AT-58, Control Valve Body.> |
| 8    | CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND LOW & REVERSE DUTY SOLENOID.  
   Measure the resistance of harness between low & reverse duty solenoid and transmission connector.  
   **Connector & terminal**  
   (T4) No. 6 — (AT2) No. 1: | Is resistance less than 1 Ω? | Go to step 9. Repair open circuit of harness between low & reverse duty solenoid and transmission connector. |
| 9    | CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND LOW & REVERSE DUTY SOLENOID.  
   Measure the resistance of harness between transmission connector and transmission ground.  
   **Connector & terminal**  
   (T4) No. 6 — Transmission ground: | Is the resistance 1 MΩ or more? | Even if the ATF temperature warning light blinks, the circuit is in normal condition at this time. A temporary poor contact of connector or harness may be the cause. Repair harness or connector in low & reverse duty solenoid and transmission. | Repair the short circuit of the harness between the low & reverse duty solenoid and the transmission connector. |
T: DTC P0801 REVERSE INHIBIT CONTROL CIRCUIT

DTC DETECTING CONDITION:
Shift lock solenoid malfunction, open or short reverse inhibitor control circuit

TROUBLE SYMPTOM:
• Gear is shifted from “N” range to “R” range during driving at 20 km/h (12 MPH) or more.
• Gear cannot be selected from “N” range to “R” range.

WIRING DIAGRAM:

<table>
<thead>
<tr>
<th>Step</th>
<th>Check</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>CHECK SHIFT LOCK SOLENOID. &lt;br&gt;1) Start the integrated unit by force, and check &lt;br&gt;the operation of shift lock solenoid. &lt;Ref. to LAN(diag)-14, READ DIAGNOSTIC TROUBLE CODE (DTC), OPERATION, Subaru Select Monitor.&gt; &lt;br&gt;2) Operate the select lever without depressing the brake pedal.</td>
<td>Does the select lever operate?</td>
<td>Go to step 2.</td>
</tr>
<tr>
<td>2</td>
<td>CHECK OUTPUT SIGNAL OF INTEGRATED UNIT. &lt;br&gt;1) Display the following items using Subaru Select Monitor. &lt;br&gt;• Key warning SW &lt;br&gt;• Shift position &lt;br&gt;• P SW &lt;br&gt;• Stop light switch &lt;br&gt;2) Step on the brake and shift the select lever to “P” range.</td>
<td>Do the units of measure of items displayed change?</td>
<td>Go to step 3.</td>
</tr>
<tr>
<td>3</td>
<td>CHECK HARNESS CONNECTOR BETWEEN BODY INTEGRATED UNIT AND SHIFT LOCK SOLENOID. &lt;br&gt;Measure the harness resistance between the body integrated unit and chassis ground.</td>
<td>Is the resistance 1 MΩ or more?</td>
<td>Go to step 4.</td>
</tr>
</tbody>
</table>
## Diagnostic Procedure with Diagnostic Trouble Code (DTC)
### AUTOMATIC TRANSMISSION (DIAGNOSTICS)

<table>
<thead>
<tr>
<th>Step</th>
<th>Check</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>CHECK HARNESS BETWEEN SHIFT LOCK SOLENOID AND CHASSIS GROUND TERMINAL. Measure the resistance of harness between shift lock solenoid and chassis ground. <strong>Connector &amp; terminal (B117) No. 4 — Chassis ground:</strong></td>
<td>Is the resistance less than 1 Ω?</td>
<td>Go to step 5.</td>
</tr>
<tr>
<td>5</td>
<td>CHECK SHIFT LOCK SOLENOID. Measure the resistance of shift lock solenoid terminals. <strong>Connector &amp; terminal (B117) No. 3 — No. 4:</strong></td>
<td>Is the resistance between 12 — 18 Ω?</td>
<td>Go to step 6.</td>
</tr>
<tr>
<td>6</td>
<td>CHECK OUTPUT SIGNAL OF BODY INTEGRATED UNIT. 1) Connect all connectors. 2) Turn the ignition switch to ON. 3) Set the select lever to the “D” range. 4) Measure the voltage between body integrated unit and chassis ground. <strong>Connector &amp; terminal (B279) No. 12 (+) — Chassis ground (-):</strong></td>
<td>Is the voltage 10.5 V or more?</td>
<td>Go to step 7.</td>
</tr>
<tr>
<td>7</td>
<td>CHECK OUTPUT SIGNAL OF BODY INTEGRATED UNIT. 1) Lift up the vehicle. 2) Start the engine. 3) Shift the select lever to “D” range and slowly increase vehicle speed to over 20 km/h (12 MPH). NOTE: The speed difference between front and rear wheels illuminates the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnosis system. &lt;Ref. to ABS(diag)-23, Clear Memory Mode.&gt; 4) Measure the voltage between body integrated unit and chassis ground. <strong>Connector &amp; terminal (B279) No. 12 (+) — Chassis ground (-):</strong></td>
<td>Is the voltage less than 1 V?</td>
<td>Even if the ATF temperature warning light blinks, the circuit is in normal condition at this time. A temporary poor contact of connector or harness may be the cause. Repair the harness or connector in the reverse inhibitor control circuit.</td>
</tr>
<tr>
<td>8</td>
<td>CHECK POOR CONTACT.</td>
<td>Is there poor contact in the reverse inhibitor control circuit?</td>
<td>Repair the poor contact.</td>
</tr>
</tbody>
</table>
**U: DTC P1706 AT VEHICLE SPEED SENSOR CIRCUIT MALFUNCTION (REAR WHEEL)**

**DTC DETECTING CONDITION:**
Input signal circuit of TCM is open or shorted.

**TROUBLE SYMPTOM:**
No lock up or tight corner braking phenomenon is occurred.

**WIRING DIAGRAM:**

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
<th>Check</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
</table>
| 1    | CHECK IGNITION POWER SUPPLY CIRCUIT.  
1) Turn the ignition switch to OFF.  
2) Disconnect the connector from rear vehicle speed sensor.  
3) Turn the ignition switch to ON.  
4) Measure the ignition power supply voltage between rear vehicle speed sensor connector and transmission ground.  
Connector & terminal (AT4) No. 3 (+) — Transmission ground (−): | Is the voltage 10 V or more? | Go to step 2. | Check harness between rear vehicle speed sensor and battery for open circuit, short or poor contact. Repair the harness if required. |
| 2    | CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.  
1) Turn the ignition switch to OFF.  
2) Measure the resistance of harness between TCM connector and rear vehicle speed sensor connector.  
Connector & terminal (B55) No. 15 — (AT4) No. 1: | Is resistance less than 1 Ω? | Go to step 3. | Repair the open circuit or poor contact of the connector in harness between TCM and rear vehicle speed sensor connector. |
| 3    | CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.  
Measure the resistance of harness between TCM connector and rear vehicle speed sensor connector.  
Connector & terminal (B55) No. 26 — (AT4) No. 2: | Is resistance less than 1 Ω? | Go to step 4. | Repair the open circuit or poor contact of the connector in harness between TCM and rear vehicle speed sensor connector. |
<table>
<thead>
<tr>
<th>Step</th>
<th>Check</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. Measure the resistance of harness between TCM connector and chassis ground. <strong>Connector &amp; terminal (B55) No. 15 — Chassis ground:</strong></td>
<td>Is the resistance 1 MΩ or more?</td>
<td>Go to step 5. Repair the short circuit of harness between TCM and rear vehicle speed sensor connector.</td>
</tr>
<tr>
<td>5</td>
<td>CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. Measure the resistance of harness between TCM connector and chassis ground. <strong>Connector &amp; terminal (B55) No. 26 — Chassis ground:</strong></td>
<td>Is the resistance 1 MΩ or more?</td>
<td>Go to step 6. Repair the short circuit of harness between TCM and rear vehicle speed sensor connector.</td>
</tr>
<tr>
<td>6</td>
<td>PREPARE OSCILLOSCOPE.</td>
<td>Do you have an oscilloscope?</td>
<td>Go to step 8. Go to step 7.</td>
</tr>
<tr>
<td>7</td>
<td>CHECK INPUT SIGNAL FOR TCM. 1) Connect the connectors to TCM and transmission. 2) Lift up the vehicle. 3) Start the engine and set vehicle in 20 km/h (12 MPH) condition. <strong>NOTE:</strong> The speed difference between front and rear wheels illuminates the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. &lt;Ref. to ABS(diag)-23, Clear Memory Mode.&gt; 4) Measure the AC voltage between TCM connector terminals. <strong>Connector &amp; terminal (B55) No. 26 (+) — No. 15 (–):</strong></td>
<td>Is the voltage approx. 2 V or more?</td>
<td>Go to step 9. Replace the rear vehicle speed sensor.</td>
</tr>
<tr>
<td>8</td>
<td>CHECK INPUT SIGNAL FOR TCM USING OSCILLOSCOPE. 1) Connect the connectors to TCM and transmission. 2) Lift up the vehicle. 3) Set the oscilloscope to TCM connector terminals. <strong>Connector &amp; terminal Positive probe; (B55) No. 26: Ground lead; (B55) No. 15:</strong> 4) Start the engine and set vehicle in 20 km/h (12 MPH) condition. <strong>NOTE:</strong> The speed difference between front and rear wheels illuminates the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. &lt;Ref. to ABS(diag)-23, Clear Memory Mode.&gt; 5) Measure the signal voltage indicated on oscilloscope.</td>
<td>Is the pulse voltage approx. 5 V?</td>
<td>Go to step 9. Replace the rear vehicle speed sensor.</td>
</tr>
<tr>
<td>9</td>
<td>CHECK POOR CONTACT.</td>
<td>Is there poor contact in rear vehicle speed sensor circuit?</td>
<td>Repair the poor contact. Replace the TCM. &lt;Ref. to 4AT-64, Transmission Control Module (TCM).&gt;</td>
</tr>
</tbody>
</table>
V: DTC P1707 AT AWD SOLENOID VALVE CIRCUIT MALFUNCTION

DTC DETECTING CONDITION:
Output signal circuit of transfer duty solenoid is open or shorted.

TROUBLE SYMPTOM:
• Tight corner braking phenomenon occurs.
• Front wheel slips on the slippery road.

WIRING DIAGRAM:
## Diagnostic Procedure with Diagnostic Trouble Code (DTC)

### AUTOMATIC TRANSMISSION (DIAGNOSTICS)

<table>
<thead>
<tr>
<th>Step</th>
<th>Check</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
</table>
| 1    | CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.  
   1) Turn the ignition switch to OFF.  
   2) Disconnect the connectors from TCM and transmission.  
   3) Measure the resistance of harness between TCM connector and transmission connector.  
   **Connector & terminal**  
   (B55) No. 5 — (B11) No. 8:  
   | Is resistance less than 1 Ω? | Go to step 2.  
   Repair the open circuit of harness between TCM and transmission connector. |  
| 2    | CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.  
   Measure the resistance of harness connector between TCM and chassis ground.  
   **Connector & terminal**  
   (B55) No. 5 — Chassis ground:  
   | Is the resistance 1 MΩ or more? | Go to step 3.  
   Repair the short circuit of harness between TCM and transmission connector. |  
| 3    | CHECK TRANSFER DUTY SOLENOID.  
   Measure the resistance between transmission connector and transmission terminals.  
   **Connector & terminal**  
   (T4) No. 8 — No. 20:  
   | Is the resistance between 2.0 — 6.0 Ω? | Go to step 4.  
   Go to step 7. |  
| 4    | CHECK OUTPUT SIGNAL FROM TCM USING SUBARU SELECT MONITOR.  
   1) Connect the connectors to TCM and transmission.  
   2) Connect the Subaru Select Monitor to the data link connector.  
   3) Turn the ignition switch to ON.  
   4) Start up the Subaru Select Monitor.  
   5) Shift the select lever to the “N” range, and fully close the throttle pedal. (Vehicle speed is 0 km/h (0 MPH))  
   6) Read the data of “AWD Duty Ratio” using Subaru Select Monitor.  
   | Is the value approx. 5%? | Go to step 5.  
   Go to step 6. |  
| 5    | CHECK OUTPUT SIGNAL FROM TCM USING SUBARU SELECT MONITOR.  
   1) Set the select lever to the “D” range.  
   2) Read the data of “AWD Duty Ratio” using Subaru Select Monitor.  
   | Is the measured value approx. 18 — 35%? | Go to step 6. \(\text{Even if the ATF temperature warning light blinks, the circuit is in normal condition at this time. A temporary poor contact of connector or harness may be the cause. Repair the harness or connector in TCM and transmission.}\) |  
| 6    | CHECK POOR CONTACT.  
   | Is there poor contact in transfer duty solenoid circuit? | Repair the poor contact.  
   Replace the TCM.  
   \(<\text{Ref. to 4AT-64, Transmission Control Module (TCM).}\)> |  

---

4AT(diag)-77
Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

W: DTC P1718 CAN COMMUNICATION CIRCUIT

NOTE:
Refer to “Body Integrated Unit” for diagnosis of P1718. <Ref. to LAN(diag)-2, Basic Diagnostic Procedure.>

<table>
<thead>
<tr>
<th>Step</th>
<th>Check</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>CHECK TRANSFER DUTY SOLENOID (IN TRANSMISSION).&lt;br&gt;1) Lift up the vehicle.&lt;br&gt;2) Drain the automatic transmission fluid.&lt;br&gt;CAUTION:&lt;br&gt;Do not drain ATF until it cools down.&lt;br&gt;3) Remove the extension case, and disconnect the connector from transfer duty solenoid.&lt;br&gt;4) Measure the resistance between transfer duty solenoid connector and transmission ground.</td>
<td>Is the resistance between 2.0 — 6.0 Ω?</td>
<td>Go to step 8.</td>
</tr>
<tr>
<td>8</td>
<td>CHECK HARNESS CONNECTOR BETWEEN TRANSFER DUTY SOLENOID AND TRANSMISSION. Measure the resistance of harness between transfer duty solenoid and transmission connector.</td>
<td>Is resistance less than 1 Ω?</td>
<td>Go to step 9.</td>
</tr>
<tr>
<td>9</td>
<td>CHECK HARNESS CONNECTOR BETWEEN TRANSFER DUTY SOLENOID AND TRANSMISSION. Measure the resistance of harness between transmission connector and transmission ground.</td>
<td>Is the resistance 1 MΩ or more?</td>
<td>Even if the ATF temperature warning light blinks, the circuit is in normal condition at this time. A temporary poor contact of connector or harness may be the cause. Repair the harness or poor contact in the transfer duty solenoid and transmission.</td>
</tr>
</tbody>
</table>
X: DTC P1817 SPORT MODE SWITCH CIRCUIT

DTC DETECTING CONDITION:
Input signal circuit of SPORT/manual mode switch is shorted.

TROUBLE SYMPTOM:
• Manual mode can not be set.
• The SPORT indicator light does not illuminate.
• No SPORT mode occurs.

WIRING DIAGRAM:
### Diagnostic Procedure with Diagnostic Trouble Code (DTC)

#### AUTOMATIC TRANSMISSION (DIAGNOSTICS)

<table>
<thead>
<tr>
<th>Step</th>
<th>Check</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
</table>
| 1    | CHECK GROUND CIRCUIT OF SPORT SHIFT SWITCH.  
1) Turn the ignition switch to OFF.  
2) Disconnect the connector from SPORT shift switch.  
3) Measure the resistance of harness between the SPORT shift switch connector and chassis ground.  
  **Connector & terminal**  
  *(B117) No. 8 — Chassis ground:* | Is the resistance less than 1 Ω? | Go to step 2. | Repair the open circuit of harness between SPORT shift switch and chassis ground. |
| 2    | CHECK SPORT SHIFT SWITCH.  
Measure the resistance between SPORT shift switch terminals.  
  **Connector & terminal**  
  *(B117) No. 7 — No. 8:* | Is the resistance 1 MΩ or more? | Go to step 3. | Replace the lever plate assembly. |
| 3    | CHECK SPORT SHIFT SWITCH.  
1) Move the select lever to SPORT shift mode.  
2) Measure the resistance between SPORT shift switch terminals.  
  **Connector & terminal**  
  *(B117) No. 7 — No. 8:* | Is the resistance less than 1 Ω? | Go to step 4. | Replace the lever plate assembly. |
| 4    | CHECK HARNESS CONNECTOR BETWEEN TCM AND SPORT SHIFT SWITCH.  
1) Disconnect the connector from TCM.  
2) Measure the resistance of harness between TCM connector and SPORT shift switch connector.  
  **Connector & terminal**  
  *(B117) No. 7 — (B54) No. 17:* | Is the resistance less than 1 Ω? | Go to step 5. | Repair the open circuit of harness between SPORT shift switch connector and TCM connector, and the poor contact of the connector. |
| 5    | CHECK HARNESS CONNECTOR BETWEEN TCM AND SPORT SHIFT SWITCH.  
1) Disconnect the connector from TCM.  
2) Measure the resistance of harness between the SPORT shift switch connector and chassis ground.  
  **Connector & terminal**  
  *(B117) No. 7 — Chassis ground:* | Is the resistance 1 MΩ or more? | Go to step 6. | Repair the short circuit of harness between SPORT shift switch connector and TCM connector. |
| 6    | CHECK INPUT SIGNAL TO TCM.  
1) Connect the connectors to TCM and SPORT shift switch.  
2) Turn the ignition switch to ON.  
3) Return the select lever to the normal mode.  
4) Measure the signal voltage for the TCM.  
  **Connector & terminal**  
  *(B54) No. 17 (+) — Chassis ground (–):* | Is the voltage 9 V or more? | Go to step 7. | Replace the TCM.  
<Ref. to 4AT-64, Transmission Control Module (TCM).> |
| 7    | CHECK POOR CONTACT.  
Is there poor contact in the SPORT shift switch circuit? | Repair the poor contact. | Replace the TCM.  
<Ref. to 4AT-64, Transmission Control Module (TCM).> |
14. Diagnostic Procedure without Diagnostic Trouble Code (DTC)

A: CHECK FWD SWITCH

**DIAGNOSIS:**
- LED does not illuminate even with the fuse installed on FWD fuse holder.
- FWD signal circuit is open or shorted.

**WIRING DIAGRAM:**

<table>
<thead>
<tr>
<th>Step</th>
<th>Check</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>CHECK SPARE FUSE.</td>
<td>Is the spare fuse OK?</td>
<td>Go to step 2.</td>
</tr>
<tr>
<td>2</td>
<td>CHECK FWD FUSE HOLDER. Connect the Subaru Select Monitor to the data link connector.</td>
<td>When the fuse is inserted to FWD fuse holder, does the LED illuminate?</td>
<td>Go to step 3.</td>
</tr>
</tbody>
</table>
### Diagnostic Procedure without Diagnostic Trouble Code (DTC)

#### AUTOMATIC TRANSMISSION (DIAGNOSTICS)

<table>
<thead>
<tr>
<th>Step</th>
<th>Check</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>CHECK COMBINATION METER.</td>
<td>Does the AWD warning light illuminate?</td>
<td>Go to INSPECTION FOR SPORT/MANUAL MODE SWITCH. &lt;Ref. to 4AT(diag)-83, CHECK SPORT SHIFT SWITCH, Diagnostic Procedure without Diagnostic Trouble Code (DTC).&gt;</td>
</tr>
<tr>
<td>4</td>
<td>CHECK HARNESS CONNECTOR BETWEEN TCM AND FWD FUSE HOLDER.</td>
<td>Is resistance less than 1 Ω?</td>
<td>Go to step 5.</td>
</tr>
<tr>
<td></td>
<td>1) Turn the ignition switch to OFF.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2) Disconnect the connector from TCM.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3) Measure the resistance of harness between TCM and FWD fuse holder.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Connector &amp; terminal (B55) No. 10 — (B158) No. 7:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>CHECK HARNESS CONNECTOR BETWEEN FWD FUSE HOLDER AND CHASSIS GROUND.</td>
<td>Is resistance less than 1 Ω?</td>
<td>Go to step 6.</td>
</tr>
<tr>
<td></td>
<td>Measure the resistance of harness between FWD fuse holder and chassis ground.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Connector &amp; terminal (i5) No. 13 — Chassis ground:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>CHECK HARNESS CONNECTOR BETWEEN TCM AND FWD FUSE HOLDER.</td>
<td>Is the resistance 1 MΩ or more?</td>
<td>Go to step 7.</td>
</tr>
<tr>
<td></td>
<td>Measure the resistance of harness connector between TCM and body to make sure that circuit does not short.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Connector &amp; terminal (B55) No. 10 — Chassis ground:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>CHECK INPUT SIGNAL FOR TCM.</td>
<td>Is the voltage less than 1 V?</td>
<td>Go to step 8.</td>
</tr>
<tr>
<td></td>
<td>1) Turn the ignition switch to OFF.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2) Connect the connector to TCM.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3) Turn the ignition switch to ON.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4) Measure the signal voltage for TCM with the fuse installed to FWD fuse holder.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Connector &amp; terminal (B55) No. 10 (+) — Chassis ground (−):</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>CHECK INPUT SIGNAL FOR TCM.</td>
<td>Is the voltage 10.5 V or more?</td>
<td>Go to step 9.</td>
</tr>
<tr>
<td></td>
<td>Measure the signal voltage for TCM with the fuse removed from FWD fuse holder.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Connector &amp; terminal (B55) No. 10 (+) — Chassis ground (−):</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>CHECK BODY INTEGRATED UNIT.</td>
<td>Is DTC of CAN communication displayed?</td>
<td>Perform the diagnosis according to DTC.</td>
</tr>
<tr>
<td></td>
<td>Check DTC of body integrated unit.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>CHECK COMBINATION METER.</td>
<td>Is the AWD warning light OK?</td>
<td>Go to step 11.</td>
</tr>
<tr>
<td></td>
<td>Check the AWD warning light. &lt;Ref. to IDI-4, INSPECTION, Combination Meter System.&gt;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>CHECK POOR CONTACT.</td>
<td>Is there poor contact in FWD switch circuit?</td>
<td>Repair the poor contact.</td>
</tr>
</tbody>
</table>
B: CHECK SPORT SHIFT SWITCH

DIAGNOSIS:
Input signal circuit of SPORT shift switch is open or shorted.

TROUBLE SYMPTOM:
Does not shift on manual mode.

WIRING DIAGRAM:
<table>
<thead>
<tr>
<th>Step</th>
<th>Check</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
</table>
| 1    | CHECK SPORT SHIFT SWITCH.  
1) Shift the select lever to the SPORT shift mode.  
2) Shift and hold the select lever to shift up side. | Does the LED light illuminate? | Go to step 2. | Go to step 3. |
| 2    | CHECK SPORT SHIFT SWITCH.  
Shift and hold the select lever to shift down side. | Does the LED light illuminate? | Go to step 3. | Go to step 10. |
| 3    | CHECK SPORT SHIFT SWITCH GROUND CIRCUIT.  
1) Turn the ignition switch to OFF.  
2) Disconnect the connector from SPORT shift switch.  
3) Measure the resistance of harness between the SPORT shift switch connector and chassis ground.  
   **Connector & terminal**  
   *(B117) No. 6 — Chassis ground:* | Is the resistance less than 1 Ω? | Go to step 4. | Repair the open circuit of harness between SPORT shift switch and chassis ground. |
| 4    | CHECK SPORT SHIFT SWITCH.  
Measure the resistance between SPORT shift switch terminals.  
   **Connector & terminal**  
   *(B117) No. 6 — No. 2:* | Is the resistance 1 MΩ or more? | Go to step 5. | Replace the guide plate assembly. |
| 5    | CHECK SPORT SHIFT SWITCH.  
1) Shift the select lever to the SPORT shift mode side.  
2) Shift and hold the select lever to shift up side, and measure the resistance between SPORT shift switch terminals.  
   **Connector & terminal**  
   *(B117) No. 6 — No. 5:* | Is resistance less than 1 Ω? | Go to step 6. | Replace the guide plate assembly. |
| 6    | CHECK HARNESS CONNECTOR BETWEEN TCM AND SPORT SHIFT SWITCH.  
1) Disconnect the connector from TCM.  
2) Measure the resistance of harness between TCM connector and SPORT shift switch connector.  
   **Connector & terminal**  
   *(B117) No. 5 — (B54) No. 19:* | Is the resistance less than 1 Ω? | Go to step 7. | Repair the open circuit of harness between SPORT shift switch connector and TCM connector, and the poor contact of the connector. |
| 7    | CHECK HARNESS CONNECTOR BETWEEN TCM AND SPORT SHIFT SWITCH.  
Measure the resistance of harness between the SPORT shift switch connector and chassis ground.  
   **Connector & terminal**  
   *(B117) No. 5 — Chassis ground:* | Is the resistance 1 MΩ or more? | Go to step 8. | Repair the short circuit of harness between SPORT shift switch connector and TCM connector. |
| 8    | CHECK INPUT SIGNAL TO TCM.  
1) Connect all connectors.  
2) Turn the ignition switch to ON.  
3) Measure the signal voltage for the TCM.  
   **Connector & terminal**  
   *(B54) No. 19 (+) — Chassis ground (–):* | Is the voltage 9 V or more? | Go to step 9. | Replace the TCM.  
<Ref. to 4AT-64, Transmission Control Module (TCM).> |
| 9    | CHECK INPUT SIGNAL TO TCM.  
1) Hold the select lever to shift up side.  
2) Measure the signal voltage for the TCM.  
   **Connector & terminal**  
   *(B54) No. 19 (+) — Chassis ground (–):* | Is the voltage less than 1 V? | Go to step 17. | Replace the TCM.  
<Ref. to 4AT-64, Transmission Control Module (TCM).> |
### Diagnostic Procedure without Diagnostic Trouble Code (DTC)

#### AUTOMATIC TRANSMISSION (DIAGNOSTICS)

<table>
<thead>
<tr>
<th>Step</th>
<th>Check</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
</table>
| 10   | CHECK GROUND CIRCUIT OF SPORT SHIFT SWITCH.  
      1) Turn the ignition switch to OFF.  
      2) Disconnect the connector from SPORT shift switch.  
      3) Measure the resistance of harness between the SPORT shift switch connector and chassis ground.  
      Connector & terminal  
      (B117) No. 10 — Chassis ground: | Is the resistance less than 1 Ω? | Go to step 11. | Repair the open circuit of harness between SPORT shift switch and chassis ground. |
| 11   | CHECK SPORT SHIFT SWITCH.  
      Measure the resistance between SPORT shift switch terminals.  
      Connector & terminal  
      (B117) No. 10 — No. 9: | Is the resistance 1 MΩ or more? | Go to step 12. | Replace the guide plate assembly. |
| 12   | CHECK SPORT SHIFT SWITCH.  
      1) Shift the select lever to the SPORT shift mode side.  
      2) Shift and hold the select lever to shift down side, and measure the resistance between SPORT shift switch terminals.  
      Terminals  
      No. 10 — No. 9: | Is the resistance less than 1 Ω? | Go to step 13. | Replace the guide plate assembly. |
| 13   | CHECK HARNESS CONNECTOR BETWEEN TCM AND SPORT SHIFT SWITCH.  
      1) Disconnect the connector from TCM.  
      2) Measure the resistance of harness between TCM connector and SPORT shift switch connector.  
      Connector & terminal  
      (B117) No. 9 — (B54) No. 18: | Is the resistance less than 1 Ω? | Go to step 14. | Repair the open circuit of harness between SPORT shift switch connector and TCM connector, and the poor contact of the connector. |
| 14   | CHECK HARNESS CONNECTOR BETWEEN TCM AND SPORT SHIFT SWITCH.  
      Measure the resistance of harness between the SPORT shift switch connector and chassis ground.  
      Connector & terminal  
      (B117) No. 9 — Chassis ground: | Is the resistance 1 MΩ or more? | Go to step 15. | Repair the short circuit of harness between SPORT shift switch connector and TCM connector. |
| 15   | CHECK INPUT SIGNAL TO TCM.  
      1) Connect all connectors.  
      2) Turn the ignition switch to ON.  
      3) Measure the signal voltage for the TCM.  
      Connector & terminal  
      (B54) No. 18 (+) — Chassis ground (–): | Is the voltage 9 V or more? | Go to step 16. | Replace the TCM.  
      <Ref. to 4AT-64, Transmission Control Module (TCM).> |
| 16   | CHECK INPUT SIGNAL TO TCM.  
      1) Hold the select lever to shift down side.  
      2) Measure the signal voltage for the TCM.  
      Connector & terminal  
      (B54) No. 18 (+) — Chassis ground (–): | Is the voltage less than 1 V? | Go to step 17. | Replace the TCM.  
      <Ref. to 4AT-64, Transmission Control Module (TCM).> |
| 17   | CHECK POOR CONTACT.  
      Is there poor contact in the SPORT shift switch circuit? | Repair the poor contact. | Temporary poor contact of the SPORT shift switch circuit connector or harness. |
C: CHECK SPORT SHIFT INDICATOR

DIAGNOSIS:
Output signal circuit of SPORT shift indicator is open or shorted.

TROUBLE SYMPTOM:
• SPORT shift indicator does not display or remains displayed.
• SPORT shift indicator display does not change.

WIRING DIAGRAM:
<table>
<thead>
<tr>
<th>Step</th>
<th>Check Body Integrated Unit. Check DTC of body integrated unit.</th>
<th>Check</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Is DTC of CAN communication displayed?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Perform the diagnosis according to DTC.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Go to step 2.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>CHECK TCM.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1) Turn the ignition switch to OFF.</td>
<td>Is the gear position 2?</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2) Connect the Subaru Select Monitor to the data link connector.</td>
<td>Go to step 3.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3) Turn the ignition switch to ON.</td>
<td>Replace the TCM.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4) Start up the Subaru Select Monitor.</td>
<td>&lt;Ref. to 4AT-64, Transmission Control Module (TCM).&gt;</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5) Shift the select lever to the SPORT mode side.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>6) Shift up the selector lever.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>7) Read the “Gear Position” data of TCM using Subaru Select Monitor.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>CHECK TCM.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1) Shift down the selector lever.</td>
<td>Is the gear position 1?</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2) Read the “Gear Position” data of TCM using Subaru Select Monitor.</td>
<td>Go to step 4.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Replace the TCM.</td>
<td>&lt;Ref. to 4AT-64,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Transmission Control Module (TCM).&gt;</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>CHECK BODY INTEGRATED UNIT. Read the data of “SPORT shift gear position” using Subaru Select Monitor.</td>
<td>Is the SPORT shift gear position 2?</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Is the SPORT shift gear position 2?</td>
<td>Go to step 5.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Check the body integrated unit.</td>
<td>Check the body integrated unit.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>CHECK COMBINATION METER. &lt;Ref. to IDI-4, INSPECTION, Combination Meter System.&gt;</td>
<td>Is the SPORT shift indicator OK?</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Is the SPORT shift indicator OK?</td>
<td>Check the buzzer. &lt;Ref. to 4AT(diag)-88, CHECK BUZZER, Diagnostic Procedure without Diagnostic Trouble Code (DTC).&gt;</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Replace the combination meter assembly. &lt;Ref. to IDI-14, Combination Meter.&gt;</td>
<td>Replace the combination meter assembly.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
D: CHECK BUZZER

DIAGNOSIS:
Output signal circuit of buzzer is open or shorted.

TROUBLE SYMPTOM:
Buzzer remains beeping.

WIRING DIAGRAM:

<table>
<thead>
<tr>
<th>Step</th>
<th>CHECK BODY INTEGRATED UNIT.</th>
<th>Check</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
</table>
| 1    | 1) Turn the ignition switch to OFF.  
      2) Connect the Subaru Select Monitor to the data link connector.  
      3) Turn the ignition switch to ON.  
      4) Run the Subaru Select Monitor.  
      5) Read the data of “SPORT shift (buzzer)” of body integrated unit using Subaru Select Monitor. | Is ON displayed? | Replace the TCM. <Ref. to 4AT-64, Transmission Control Module (TCM).> | Go to step 2. |

| 2    | CHECK COMBINATION METER. <Ref. to IDI-4, INSPECTION, Combination Meter System.> | Is the buzzer OK? | Refer to “Diagnostics by Phenomenon”. <Ref. to 4AT(diag)-89, Diagnostics with Phenomenon.> | Replace the combination meter assembly. <Ref. to IDI-14, Combination Meter.> |
## 15. Diagnostics with Phenomenon

### A: INSPECTION

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Problem parts</th>
</tr>
</thead>
</table>
| Starter does not operate when select lever is in “P” or “N” range. Starter operates when select lever is in “R” or “D” range. | • Inhibitor switch  
• Select cable  
• AT select lever  
• Starter motor and harness |
| Abnormal noise when select lever is in “P” or “N”                      | • Strainer  
• Transfer duty solenoid  
• Oil pump  
• Drive plate  
• ATF level too high or too low |
| Hissing noise occurs during standing start.                             | • Strainer  
• ATF level too high or too low |
| Noise occurs while driving in “D1”.                                    | • Final gear  
• Planetary gear  
• Reduction gear  
• Differential gear oil level too high or too low |
| Noise occurs while driving in “D2”.                                    | • Final gear  
• Low & reverse brake  
• Reduction gear  
• Differential gear oil level too high or too low |
| Noise occurs while driving in “D3”.                                    | • Final gear  
• Low & reverse brake  
• Planetary gear  
• Reduction gear  
• Differential gear oil level too high or too low |
| Noise occurs while driving in “D4”.                                    | • Final gear  
• Low & reverse brake  
• Planetary gear  
• Reduction gear  
• Differential gear oil level too high or too low |
| Vehicle moves when select lever is in “N” range.                      | • Select cable  
• Inhibitor switch  
• TCM  
• Low clutch |
| Shock occurs when select lever is shifted from “N” to “D” range.        | • Accelerator pedal position sensor  
• ATF temperature sensor  
• Line pressure linear solenoid  
• Low clutch duty solenoid  
• Low clutch  
• TCM  
• Harness  
• Control valve  
• ATF deterioration |
| Excessive time lag occurs when select lever is shifted from “N” to “D” range. | • Control valve  
• Low clutch  
• Line pressure linear solenoid  
• Seal ring  
• Front gasket of transmission case |
| Shock occurs when select lever is shifted from “N” to “R” range.        | • Accelerator pedal position sensor  
• ATF temperature sensor  
• Line pressure linear solenoid  
• TCM  
• Harness  
• Control valve  
• ATF deterioration |
| Excessive time lag occurs when select lever is shifted from “N” to “R” range. | • Control valve  
• Low & reverse clutch  
• Reverse clutch  
• Line pressure linear solenoid  
• Seal ring  
• Front gasket of transmission case |
<table>
<thead>
<tr>
<th>Symptom</th>
<th>Problem parts</th>
</tr>
</thead>
</table>
| Vehicle does not start in any shift range. (Engine stalls)            | • Parking brake mechanism  
<p>|                                                                        | • Planetary gear                                                             |
|                                                                        | • Strainer                                                                   |
|                                                                        | • Line pressure linear solenoid                                               |
|                                                                        | • Control valve                                                              |
|                                                                        | • Drive pinion                                                               |
|                                                                        | • Hypoid gear                                                                |
|                                                                        | • Axle shaft                                                                 |
|                                                                        | • Differential gear                                                          |
|                                                                        | • Oil pump                                                                   |
|                                                                        | • Input shaft                                                                 |
|                                                                        | • Output shaft                                                                |
|                                                                        | • Planetary gear                                                              |
|                                                                        | • Drive plate                                                                |
|                                                                        | • ATF level is too low                                                       |
|                                                                        | • Front gasket of transmission case                                          |
| Vehicle does not start in any shift range. (Engine operates)          | • Select cable                                                               |
|                                                                        | • AT select lever                                                            |
|                                                                        | • Line pressure linear solenoid                                               |
|                                                                        | • Control valve                                                              |
|                                                                        | • Low &amp; reverse clutch                                                       |
|                                                                        | • Reverse clutch                                                             |
| Vehicle does not start in “R” range only. (Engine operates)           | • Low clutch                                                                 |
|                                                                        | • 2-4 brake                                                                  |
|                                                                        | • Planetary gear                                                              |
|                                                                        | • Parking brake mechanism                                                    |
| Vehicle does not start in “D” range. (Engine operates)                | • Low clutch                                                                 |
|                                                                        | • One-way clutch                                                             |
| Vehicle does not start in “D” range. (Engine stalls)                  | Reverse clutch                                                               |
| Vehicle does not start in “R” range only. (Engine operates)           | Control valve                                                                |
| Acceleration during standing start is poor. (High rpm stall)           | • Control valve                                                              |
|                                                                        | • Low clutch                                                                 |
|                                                                        | • Reverse clutch                                                             |
|                                                                        | • ATF level is too low                                                       |
|                                                                        | • ATF deterioration                                                          |
|                                                                        | • Front gasket of transmission case                                          |
|                                                                        | • Differential gear oil level too high or too low                             |
| Acceleration during standing start is poor. (Low rpm stall)            | • Oil pump                                                                   |
|                                                                        | • Torque converter one-way clutch                                            |
|                                                                        | • Engine performance                                                         |
| Acceleration is poor when select lever is in “D” range. (Normal rpm stall) | • TCM                                                                        |
|                                                                        | • Control valve                                                              |
|                                                                        | • High clutch                                                                |
|                                                                        | • 2-4 brake                                                                  |
|                                                                        | • Planetary gear                                                              |
| Acceleration is poor when select lever is in “R” range. (Normal rpm stall) | • Control valve                                                              |
|                                                                        | • High clutch                                                                |
|                                                                        | • 2-4 brake                                                                  |
|                                                                        | • Planetary gear                                                              |
| No shift occurs from 1st to 2nd gear.                                  | • TCM                                                                        |
|                                                                        | • Rear vehicle speed sensor                                                  |
|                                                                        | • Front vehicle speed sensor                                                 |
|                                                                        | • Accelerator pedal position sensor                                          |
|                                                                        | • Control valve                                                              |
|                                                                        | • 2-4 brake                                                                  |
| No shift occurs from 2nd to 3rd gear.                                  | • TCM                                                                        |
|                                                                        | • Control valve                                                              |
|                                                                        | • High clutch                                                                |</p>
<table>
<thead>
<tr>
<th>Symptom</th>
<th>Problem parts</th>
</tr>
</thead>
<tbody>
<tr>
<td>No shift occurs from 3rd to 4th gear.</td>
<td>• TCM&lt;br&gt;  • ATF temperature sensor&lt;br&gt;  • Control valve&lt;br&gt;  • 2-4 brake</td>
</tr>
<tr>
<td>Engine brake is not effected when select lever is shifted from 4th gear to 3rd gear.</td>
<td>• Inhibitor switch&lt;br&gt;  • TCM&lt;br&gt;  • Accelerator pedal position sensor&lt;br&gt;  • Control valve</td>
</tr>
<tr>
<td>Engine brake is not effected when select lever is shifted from 3rd gear to 2nd gear.</td>
<td>Control valve</td>
</tr>
<tr>
<td>Engine brake is not effected when select lever is shifted from 2nd gear to 1st gear.</td>
<td>• Control valve&lt;br&gt;  • Low &amp; reverse brake</td>
</tr>
<tr>
<td>Shift characteristics are erroneous.</td>
<td>• Inhibitor switch&lt;br&gt;  • TCM&lt;br&gt;  • Front vehicle speed sensor&lt;br&gt;  • Rear vehicle speed sensor&lt;br&gt;  • Accelerator pedal position sensor&lt;br&gt;  • Control valve&lt;br&gt;  • Ground</td>
</tr>
<tr>
<td>No lock-up occurs.</td>
<td>• TCM&lt;br&gt;  • Accelerator pedal position sensor&lt;br&gt;  • ATF temperature sensor&lt;br&gt;  • Control valve&lt;br&gt;  • Lock-up facing&lt;br&gt;  • Engine speed signal</td>
</tr>
<tr>
<td>Parking brake does not function.</td>
<td>• Select cable&lt;br&gt;  • AT select lever&lt;br&gt;  • Parking mechanism</td>
</tr>
<tr>
<td>Shift lever cannot be moved or is hard to move from “P” range.</td>
<td>• ATF spurts out.</td>
</tr>
<tr>
<td>ATFs spurts out.</td>
<td>• Differential oil spurts out.</td>
</tr>
<tr>
<td>Differential oil spurts out.</td>
<td>• ATF level too high</td>
</tr>
<tr>
<td>Differential oil level changes excessively.</td>
<td>• Seal pipe&lt;br&gt;  • Double oil seal</td>
</tr>
<tr>
<td>Odor is produced from ATF supply pipe.</td>
<td>• High clutch&lt;br&gt;  • 2-4 brake&lt;br&gt;  • Low &amp; reverse clutch&lt;br&gt;  • Reverse clutch&lt;br&gt;  • Lock-up facing&lt;br&gt;  • ATF deterioration</td>
</tr>
<tr>
<td>Shock occurs when shifting from 1st to 2nd gear.</td>
<td>• TCM&lt;br&gt;  • Torque converter turbine speed sensor&lt;br&gt;  • Accelerator pedal position sensor&lt;br&gt;  • 2-4 brake duty solenoid&lt;br&gt;  • ATF temperature sensor&lt;br&gt;  • Line pressure linear solenoid&lt;br&gt;  • Control valve&lt;br&gt;  • 2-4 brake&lt;br&gt;  • ATF deterioration&lt;br&gt;  • Engine performance&lt;br&gt;  • Low &amp; reverse duty solenoid</td>
</tr>
<tr>
<td>Slippage occurs when shifting from 1st to 2nd gear.</td>
<td>• TCM&lt;br&gt;  • Acceleration pedal position sensor&lt;br&gt;  • 2-4 brake duty solenoid&lt;br&gt;  • ATF temperature sensor&lt;br&gt;  • Line pressure linear solenoid&lt;br&gt;  • Control valve&lt;br&gt;  • 2-4 brake</td>
</tr>
<tr>
<td>Symptom</td>
<td>Problem parts</td>
</tr>
<tr>
<td>---------</td>
<td>---------------</td>
</tr>
</tbody>
</table>
| Shock occurs when shifting from 2nd to 3rd gear. | • TCM  
• Torque converter turbine speed sensor  
• Accelerator pedal position sensor  
• 2-4 brake duty solenoid  
• ATF temperature sensor  
• Line pressure linear solenoid  
• Low & reverse duty solenoid  
• Control valve  
• High clutch  
• 2-4 brake  
• ATF deterioration  
• Engine performance  
• High clutch duty solenoid |
| Slippage occurs when shifting from 2nd to 3rd gear. | • TCM  
• Accelerator pedal position sensor  
• 2-4 brake duty solenoid  
• ATF temperature sensor  
• Line pressure linear solenoid  
• Control valve  
• High clutch  
• 2-4 brake  
• Low & reverse duty solenoid |
| Shock occurs when shifting from 3rd to 4th gear. | • TCM  
• Torque converter turbine speed sensor  
• Accelerator pedal position sensor  
• 2-4 brake duty solenoid  
• ATF temperature sensor  
• Line pressure linear solenoid  
• Control valve  
• Low clutch duty solenoid  
• 2-4 brake  
• ATF deterioration  
• Engine performance |
| Slippage occurs when shifting from 3rd to 4th gear. | • TCM  
• Acceleration pedal position sensor  
• 2-4 brake duty solenoid  
• ATF temperature sensor  
• Line pressure linear solenoid  
• Control valve  
• 2-4 brake |
| Shock occurs when shifting from 3rd to 2nd gear. | • TCM  
• Torque converter turbine speed sensor  
• Accelerator pedal position sensor  
• ATF temperature sensor  
• Line pressure linear solenoid  
• Control valve  
• 2-4 brake duty solenoid  
• 2-4 brake  
• ATF deterioration  
• High clutch duty solenoid |
| Shock occurs when shifting from 2nd to 1st gear. | • TCM  
• Torque converter turbine speed sensor  
• Accelerator pedal position sensor  
• ATF temperature sensor  
• Line pressure linear solenoid  
• Control valve  
• Low & reverse clutch  
• ATF deterioration  
• 2-4 brake duty solenoid  
• Low & reverse brake duty solenoid |
<table>
<thead>
<tr>
<th>Symptom</th>
<th>Problem parts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shock occurs when accelerator pedal is released from medium speed.</td>
<td>• TCM&lt;br&gt;• Accelerator pedal position sensor&lt;br&gt;• ATF temperature sensor&lt;br&gt;• Line pressure linear solenoid&lt;br&gt;• Control valve&lt;br&gt;• Lock-up damper&lt;br&gt;• Engine performance</td>
</tr>
<tr>
<td>Vibration occurs during straight-forward operation.</td>
<td>• TCM&lt;br&gt;• Lock-up duty solenoid&lt;br&gt;• Lock-up facing&lt;br&gt;• Lock-up damper</td>
</tr>
<tr>
<td>Vibration occurs during turns. (Tight corner braking phenomenon)</td>
<td>• TCM&lt;br&gt;• Front vehicle speed sensor&lt;br&gt;• Rear vehicle speed sensor&lt;br&gt;• Accelerator pedal position sensor&lt;br&gt;• ATF temperature sensor&lt;br&gt;• Transfer clutch&lt;br&gt;• Transfer valve&lt;br&gt;• Transfer duty solenoid&lt;br&gt;• ATF deterioration&lt;br&gt;• Harness</td>
</tr>
<tr>
<td>Front wheel slippage occurs during standing starts.</td>
<td>• TCM&lt;br&gt;• Front vehicle speed sensor&lt;br&gt;• Accelerator pedal position sensor&lt;br&gt;• ATF temperature sensor&lt;br&gt;• Control valve&lt;br&gt;• Transfer clutch&lt;br&gt;• Transfer valve&lt;br&gt;• Transfer pipe&lt;br&gt;• Transfer duty solenoid</td>
</tr>
<tr>
<td>It is not set in FWD mode.</td>
<td>• TCM&lt;br&gt;• Transfer clutch&lt;br&gt;• Transfer valve&lt;br&gt;• Transfer duty solenoid&lt;br&gt;• Fuse</td>
</tr>
<tr>
<td>Select lever is hard to move.</td>
<td>• Select cable&lt;br&gt;• AT select lever&lt;br&gt;• Detent spring&lt;br&gt;• Manual plate</td>
</tr>
<tr>
<td>Select lever is excessively hard to move. (Unreasonable resistance)</td>
<td>• Detent spring&lt;br&gt;• Manual plate</td>
</tr>
<tr>
<td>Select lever slips out of selected shift position during acceleration or while driving on rough terrain.</td>
<td>• Select cable&lt;br&gt;• AT select lever&lt;br&gt;• Detent spring&lt;br&gt;• Manual plate</td>
</tr>
<tr>
<td>Manual mode can not be set.</td>
<td>• SPORT/manual mode switch&lt;br&gt;• TCM&lt;br&gt;• Body integrated unit</td>
</tr>
<tr>
<td>Gear does not change though the select lever is operated in manual mode.</td>
<td>• Up shift switch&lt;br&gt;• Down shift switch&lt;br&gt;• TCM&lt;br&gt;• Body integrated unit</td>
</tr>
<tr>
<td>AWD warning light remains blinking or illuminated.</td>
<td>• Tire size&lt;br&gt;• Tire pressure&lt;br&gt;• TCM&lt;br&gt;• FWD fuse holder&lt;br&gt;• Harness</td>
</tr>
</tbody>
</table>