

13. Diagnostic Procedure with Diagnostic Trouble Code (DTC)

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

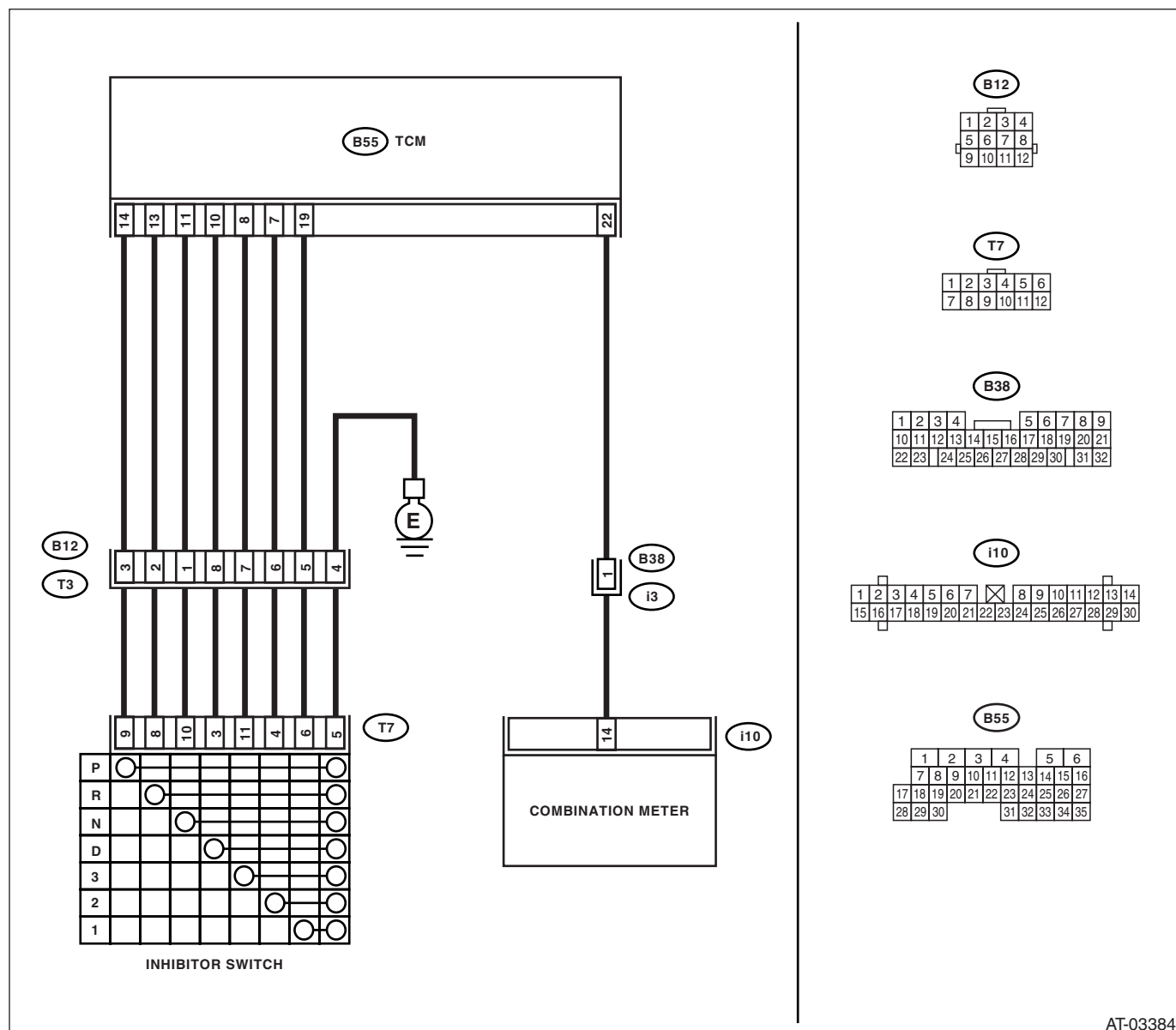
DTC DETECTING CONDITION:

- Inhibitor switch is faulty.
- The inhibitor input signal circuit is shorted.
- More than 2 range signal is input.
- No “D” range signal is input when select lever is moved from the “N” to the “3” range.

TROUBLE SYMPTOM:

- Shift characteristics are erroneous.
- Engine brake does not come into effect when the select lever is shifted to “3” range.
- Engine brake does not come into effect when the select lever is shifted to “2” range.
- Engine brake does not come into effect when the select lever is shifted to “1” range.
- The range position of the select lever and the AT select lever position indicator in the combination meter do not match.

WIRING DIAGRAM:



AT-03384

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

	Step	Check	Yes	No
1	CHECK “P” RANGE SWITCH. Connect the Subaru Select Monitor to data link connector, and then check the LED display screen.	When the “P” range is selected, does the LED illuminate?	Go to step 2.	Go to step 22.
2	CHECK INDICATOR LIGHT.	Does the combination meter “P” range indicator light illuminate?	Go to step 3.	Go to step 26.
3	CHECK “P” RANGE SWITCH.	When the “R” range is selected, does the “P” range LED light up?	Go to step 27.	Go to step 4.
4	CHECK “R” RANGE SWITCH.	When the “R” range is selected, does the LED illuminate?	Go to step 5.	Go to step 28.
5	CHECK INDICATOR LIGHT.	Does the combination meter “R” range indicator light illuminate?	Go to step 6.	Go to step 31.
6	CHECK “R” RANGE SWITCH.	When the “N” range is selected, does the “R” range LED light up?	Go to step 32.	Go to step 7.
7	CHECK “N” RANGE SWITCH.	When the “N” range is selected, does the LED illuminate?	Go to step 8.	Go to step 33.
8	CHECK INDICATOR LIGHT.	Does the combination meter “N” range indicator light illuminate?	Go to step 9.	Go to step 36.
9	CHECK “N” RANGE SWITCH.	When the “D” range is selected, does the “N” range LED light up?	Go to step 37.	Go to step 10.
10	CHECK “D” RANGE SWITCH.	When the “D” range is selected, does the LED illuminate?	Go to step 11.	Go to step 38.
11	CHECK INDICATOR LIGHT.	Does the combination meter “D” range indicator light illuminate?	Go to step 12.	Go to step 41.
12	CHECK “D” RANGE SWITCH.	When the “3” range is selected, does the “D” range LED light up?	Go to step 42.	Go to step 13.
13	CHECK “3” RANGE SWITCH.	When the “3” range is selected, does the LED illuminate?	Go to step 14.	Go to step 43.
14	CHECK INDICATOR LIGHT.	Does the combination meter “3” range indicator light illuminate?	Go to step 15.	Go to step 46.
15	CHECK “3” RANGE SWITCH.	When the “2” range is selected, does the “3” range LED light up?	Go to step 47.	Go to step 16.
16	CHECK “2” RANGE SWITCH.	When the “2” range is selected, does the LED illuminate?	Go to step 17.	Go to step 48.
17	CHECK INDICATOR LIGHT.	Does the combination meter “2” range indicator light illuminate?	Go to step 18.	Go to step 51.
18	CHECK “2” RANGE SWITCH.	When the “1” range is selected, does the “2” range LED light up?	Go to step 52.	Go to step 19.
19	CHECK “1” RANGE SWITCH.	When the “1” range is selected, does the LED illuminate?	Go to step 20.	Go to step 53.
20	CHECK INDICATOR LIGHT.	Does the combination meter “1” range indicator light illuminate?	Go to step 21.	Go to step 56.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Step	Check	Yes	No
21 CHECK "1" RANGE SWITCH.	When the "2" range is selected, does the "1" range LED light up?	Go to step 57.	Even if the AT OIL TEMP warning light is blinking, the circuit has returned to normal condition at this time. A temporary poor contact of connector or harness may be the cause. Repair the poor contact of harness.
22 CHECK HARNESS CONNECTOR BETWEEN INHIBITOR SWITCH AND CHASSIS GROUND. 1) Turn the ignition switch OFF. 2) Disconnect the connector from inhibitor switch. 3) Measure the resistance of harness between inhibitor switch and chassis ground. Connector & terminal (T7) No. 5 — Chassis ground:	Is the resistance less than 1 Ω ?	Go to step 23.	Repair the open circuit of harness between inhibitor switch and chassis ground, and poor contact of the connector.
23 CHECK HARNESS CONNECTOR BETWEEN TCM AND COMBINATION METER. 1) Disconnect the connectors from TCM and combination meter. 2) Measure the resistance of harness between TCM and combination meter. Connector & terminal (B55) No. 22 — (IIO) No. 14:	Is the resistance less than 1 Ω ?	Go to step 24.	Repair open circuit of harness between TCM connector and combination meter, and poor contact in connector.
24 CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH. 1) Turn the ignition switch 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 the resistance less than 1 Ω ?	Go to step 25.	Repair the open circuit of harness between TCM and inhibitor switch connector, and poor contact of the connector.
25 CHECK INPUT SIGNAL FOR TCM. 1) Turn the ignition switch OFF. 2) Connect the connector to TCM and inhibitor switch. 3) Turn the ignition switch 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 26.	Go to step 59.
26 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 more than 8 V?	Go to step 59.	Replace the TCM. <Ref. to 4AT-64, Transmission Control Module (TCM).>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Step	Check	Yes	No
27 CHECK "P" RANGE INDICATOR LIGHT BULB. 1) Turn the ignition switch OFF. 2) Remove the combination meter. 3) Remove the "P" range indicator light bulb from the combination meter.	Is the "P" range indicator light bulb OK?	Go to step 59.	Replace the "P" range indicator light bulb. <Ref. to IDI-10, Combination Meter.>
28 CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH. 1) Turn the ignition switch OFF. 2) Disconnect the connectors from TCM, inhibitor switch and combination meter. 3) Measure the resistance of the harness between TCM connector and chassis ground. Connector & terminal (B55) No. 14 — Chassis ground:	Is the resistance more than 1 MΩ?	Go to step 29.	Repair ground short circuit in "P" range circuit.
29 CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH. 1) Turn the ignition switch 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 the resistance less than 1 Ω?	Go to step 30.	Repair the open circuit of harness between TCM and inhibitor switch connector, and poor contact of the connector.
30 CHECK INPUT SIGNAL FOR TCM. 1) Turn the ignition switch OFF. 2) Connect the connector to TCM and inhibitor switch. 3) Turn the ignition switch ON. 4) Move the select lever to "R" 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 31.	Go to step 59.
31 CHECK INPUT SIGNAL FOR TCM. 1) Position the select lever to any other than "R" range. 2) Measure the voltage between TCM and chassis ground. Connector & terminal (B55) No. 13 (+) — Chassis ground (-):	Is the voltage more than 8 V?	Go to step 59.	Replace the TCM. <Ref. to 4AT-64, Transmission Control Module (TCM).>
32 CHECK "R" RANGE INDICATOR LIGHT BULB. 1) Turn the ignition switch OFF. 2) Remove the combination meter. 3) Remove the "R" range indicator light bulb from combination meter.	Is the "R" range indicator light bulb OK?	Go to step 59.	Replace the "R" range indicator light bulb. <Ref. to IDI-10, Combination Meter.>
33 CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH. 1) Turn the ignition switch OFF. 2) Disconnect the connectors from TCM, inhibitor switch and combination meter. 3) Measure the resistance of the harness between TCM connector and chassis ground. Connector & terminal (B55) No. 13 — Chassis ground:	Is the resistance more than 1 MΩ?	Go to step 34.	Repair ground short circuit in "R" range circuit.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Step	Check	Yes	No
34 CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH. 1) Turn the ignition switch 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. 11 — (T7) No. 10:	Is the 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 OFF. 2) Connect the connector to TCM and inhibitor switch. 3) Turn the ignition switch ON. 4) Move the select lever to "N" range. 5) Measure the voltage between TCM and chassis ground. Connector & terminal (B55) No. 11 (+) — Chassis ground (-):	Is the voltage less than 1 V?	Go to step 36.	Go to step 59.
36 CHECK INPUT SIGNAL FOR TCM. 1) Move the select lever to any other than "N" range. 2) Measure the voltage between TCM and chassis ground. Connector & terminal (B55) No. 11 (+) — Chassis ground (-):	Is the voltage more than 8 V?	Go to step 59.	Replace the TCM. <Ref. to 4AT-64, Transmission Control Module (TCM).>
37 CHECK "N" RANGE INDICATOR LIGHT BULB. 1) Turn the ignition switch OFF. 2) Remove the combination meter. 3) Remove the "N" range indicator light bulb from the combination meter.	Is the "N" range indicator light bulb OK?	Go to step 59.	Replace the "N" range indicator light bulb. <Ref. to IDI-10, Combination Meter.>
38 CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH. 1) Turn the ignition switch OFF. 2) Disconnect the connectors from TCM, inhibitor switch and combination meter. 3) Measure the resistance of the harness between TCM connector and chassis ground. Connector & terminal (B55) No. 11 — Chassis ground:	Is the resistance more than 1 M Ω ?	Go to step 39.	Repair the ground short circuit in "N" range circuit.
39 CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH. 1) Turn the ignition switch 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 the resistance less than 1 Ω ?	Go to step 40.	Repair the open circuit of harness between TCM and inhibitor switch connector, and poor contact of the connector.
40 CHECK INPUT SIGNAL FOR TCM. 1) Turn the ignition switch OFF. 2) Connect the connector to TCM and inhibitor switch. 3) Turn the ignition switch ON. 4) Move the select lever to the "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 41.	Go to step 59.

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AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Step	Check	Yes	No
41 CHECK INPUT SIGNAL FOR TCM. 1) Move the select lever to any other than "D" range. 2) Measure the voltage between TCM and chassis ground. Connector & terminal (B55) No. 10 (+) — Chassis ground (-):	Is the voltage more than 8 V?	Go to step 59.	Replace the TCM. <Ref. to 4AT-64, Transmission Control Module (TCM).>
42 CHECK "D" RANGE INDICATOR LIGHT BULB. 1) Turn the ignition switch OFF. 2) Remove the combination meter. 3) Remove the "D" range indicator light bulb from combination meter.	Is the "D" range indicator light bulb OK?	Go to step 59.	Replace the "D" range indicator light bulb. <Ref. to IDI-10, Combination Meter.>
43 CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH. 1) Turn the ignition switch OFF. 2) Disconnect the connectors from TCM, inhibitor switch and combination meter. 3) Measure the resistance of the harness between TCM connector and chassis ground. Connector & terminal (B55) No. 8 — Chassis ground:	Is the resistance more than 1 MΩ?	Go to step 44.	Repair ground short circuit in "D" range circuit.
44 CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH. 1) Turn the ignition switch 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. 8 — (T7) No. 11:	Is the resistance less than 1 Ω?	Go to step 45.	Repair the open circuit of harness between TCM and inhibitor switch connector, and poor contact of the connector.
45 CHECK INPUT SIGNAL FOR TCM. 1) Turn the ignition switch OFF. 2) Connect the connector to TCM and inhibitor switch. 3) Turn the ignition switch ON. 4) Move the select lever to the "3" range. 5) Measure the voltage between TCM and chassis ground. Connector & terminal (B55) No. 8 (+) — Chassis ground (-):	Is the voltage less than 1 V?	Go to step 46.	Go to step 59.
46 CHECK INPUT SIGNAL FOR TCM. 1) Move the select lever out of the "3" range. 2) Measure the voltage between TCM and chassis ground. Connector & terminal (B55) No. 8 (+) — Chassis ground (-):	Is the voltage more than 8 V?	Go to step 59.	Replace the TCM. <Ref. to 4AT-64, Transmission Control Module (TCM).>
47 CHECK "3" RANGE INDICATOR LIGHT BULB. 1) Turn the ignition switch OFF. 2) Remove the combination meter. 3) Remove the "3" range indicator light bulb from combination meter.	Is the "3" range indicator light bulb OK?	Go to step 59.	Replace the "3" range indicator light bulb. <Ref. to IDI-10, Combination Meter.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Step	Check	Yes	No
48 CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH. 1) Turn the ignition switch OFF. 2) Disconnect the connectors from TCM, inhibitor switch and combination meter. 3) Measure the resistance of the harness between TCM connector and chassis ground. Connector & terminal (B55) No. 8 — Chassis ground:	Is the resistance more than 1 MΩ?	Go to step 49.	Repair ground short circuit in "3" range circuit.
49 CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH. 1) Turn the ignition switch 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. 7 — (T7) No. 4:	Is the resistance less than 1 Ω?	Go to step 50.	Repair the open circuit of harness between TCM and inhibitor switch connector, and poor contact of the connector.
50 CHECK INPUT SIGNAL FOR TCM. 1) Turn the ignition switch OFF. 2) Connect the connector to TCM and inhibitor switch. 3) Turn the ignition switch ON. 4) Move the select lever to the "2" range. 5) Measure the voltage between TCM and chassis ground. Connector & terminal (B55) No. 7 (+) — Chassis ground (-):	Is the voltage less than 1 V?	Go to step 51.	Go to step 59.
51 CHECK INPUT SIGNAL FOR TCM. 1) Move the select lever out of the "2" range. 2) Measure the voltage between TCM and chassis ground. Connector & terminal (B55) No. 7 (+) — Chassis ground (-):	Is the voltage more than 8 V?	Go to step 59.	Replace the TCM. <Ref. to 4AT-64, Transmission Control Module (TCM).>
52 CHECK "2" RANGE INDICATOR LIGHT BULB. 1) Turn the ignition switch OFF. 2) Remove the combination meter. 3) Remove the "2" range indicator light bulb from combination meter.	Is the "2" range indicator light bulb OK?	Go to step 59.	Replace the "2" range indicator light bulb. <Ref. to IDI-10, Combination Meter.>
53 CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH. 1) Turn the ignition switch OFF. 2) Disconnect the connectors from TCM, inhibitor switch and combination meter. 3) Measure the resistance of the harness between TCM connector and chassis ground. Connector & terminal (B55) No. 7 — Chassis ground:	Is the resistance more than 1 MΩ?	Go to step 54.	Repair ground short circuit in "2" range circuit.
54 CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH. 1) Turn the ignition switch 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. 19 — (T7) No. 6:	Is the resistance less than 1 Ω?	Go to step 55.	Repair the open circuit of harness between TCM and inhibitor switch connector, and poor contact of the connector.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Step	Check	Yes	No
55 CHECK INPUT SIGNAL FOR TCM. 1) Turn the ignition switch OFF. 2) Connect the connector to TCM and inhibitor switch. 3) Turn the ignition switch ON. 4) Move the select lever to the "1" range. 5) Measure the voltage between TCM and chassis ground. Connector & terminal (B55) No. 19 (+) — Chassis ground (-):	Is the voltage less than 1 V?	Go to step 56.	Go to step 59.
56 CHECK INPUT SIGNAL FOR TCM. 1) Move the select lever out of the "1" range. 2) Measure the voltage between TCM and chassis ground. Connector & terminal (B55) No. 19 (+) — Chassis ground (-):	Is the voltage more than 8 V?	Go to step 59.	Replace the TCM. <Ref. to 4AT-64, Transmission Control Module (TCM).>
57 CHECK "1" RANGE INDICATOR LIGHT BULB. 1) Turn the ignition switch OFF. 2) Remove the combination meter. 3) Remove the "1" range indicator light bulb from combination meter.	Is the "1" range indicator light bulb OK?	Go to step 59.	Replace the "1" range indicator light bulb. <Ref. to IDI-10, Combination Meter.>
58 CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH. 1) Turn the ignition switch OFF. 2) Disconnect the connectors from TCM, inhibitor switch and combination meter. 3) Measure the resistance of the harness between TCM connector and chassis ground. Connector & terminal (B55) No. 19 — Chassis ground:	Is the resistance more than 1 MΩ?	Go to step 59.	Repair ground short circuit in "1" range circuit.
59 CHECK FOR POOR CONTACT.	Is there poor contact in the inhibitor switch circuit?	Repair the poor contact.	Go to step 60.
60 CHECK INHIBITOR SWITCH.	Is the inhibitor switch in the normal position?	Replace the TCM. <Ref. to 4AT-64, Transmission Control Module (TCM).>	Adjust inhibitor switch and select cable. <Ref. to 4AT-48, Inhibitor Switch.> <Ref. to CS-25, Select Cable.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

B: DTC P0712 TRANSMISSION FLUID TEMPERATURE SENSOR CIRCUIT LOW INPUT

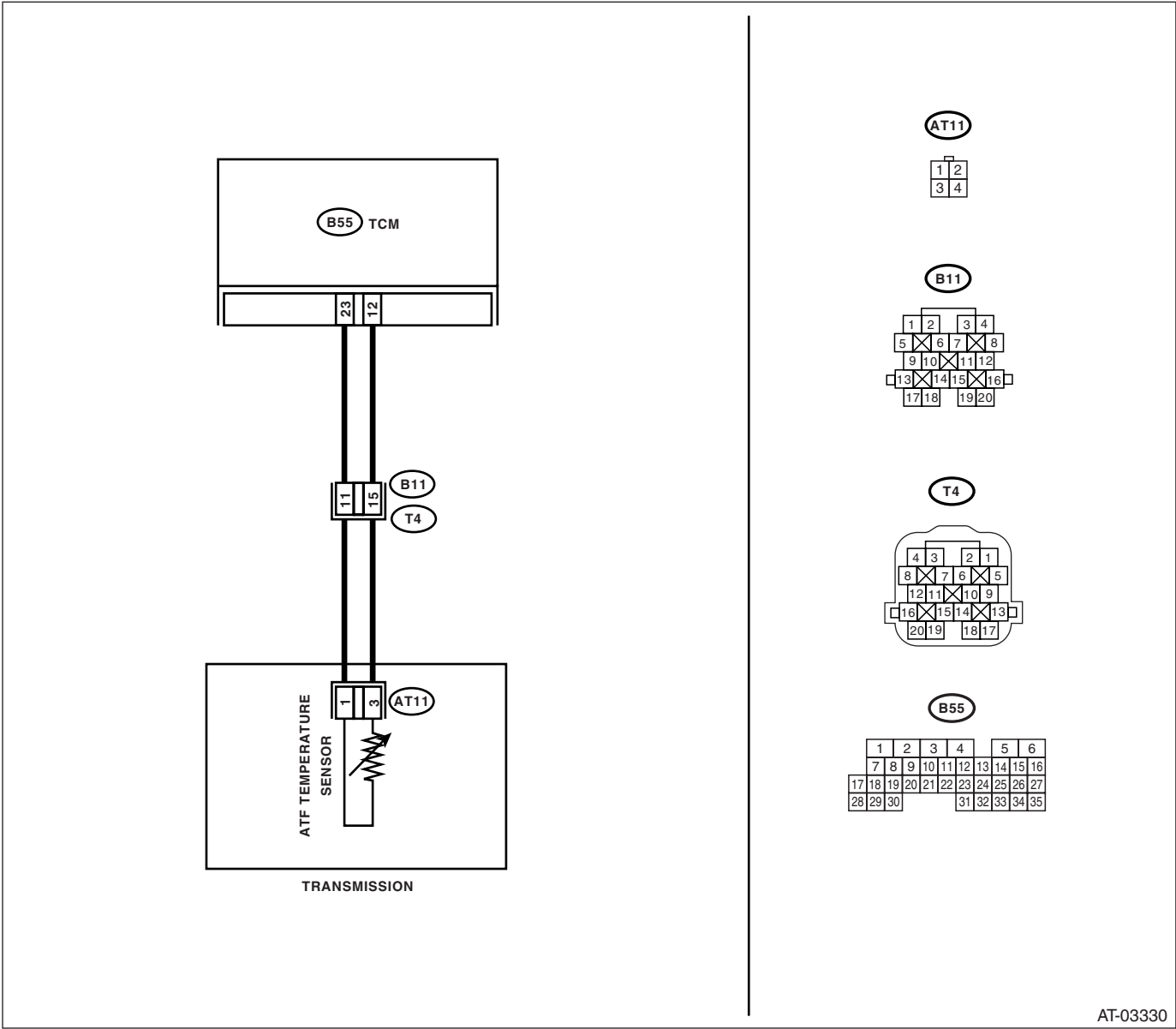
DTC DETECTING CONDITION:

Input signal circuit to ATF temperature sensor is open or shorted.

TROUBLE SYMPTOM:

Excessive shift shock

WIRING DIAGRAM:



Step	Check	Yes	No
1 CHECK HARNESS CONNECTOR BETWEEN TCM AND ATF TEMPERATURE SENSOR. 1) Turn the ignition switch OFF. 2) Disconnect the connector from TCM. 3) Measure the resistance of harness between TCM and transmission connector. Connector & terminal (B55) No. 23 — No. 11:	Is the resistance less than 1 Ω?	Go to step 2.	Repair the open circuit of harness between TCM and transmission connector.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Step	Check	Yes	No
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 the 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 OFF. 2) Connect the connectors to transmission and TCM. 3) Turn the ignition switch ON and start engine. 4) Warm-up the transmission until the ATF temperature reaches to 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 and 800 Ω ?	Go to step 4.	Go to step 7.
4 CHECK ATF TEMPERATURE SENSOR. 1) Turn the ignition switch ON (engine OFF). 2) 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 ON. (Engine OFF) 4) Read the data of ATF temperature using Subaru Select Monitor.	Does the ATF temperature gradually decrease?	Even if the AT OIL TEMP warning light is blinking, the circuit has returned to 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 FOR 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).>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Step	Check	Yes	No
7 CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND ATF TEMPERATURE SENSOR. 1) Turn the ignition switch OFF. 2) Disconnect the connector from transmission. 3) Remove the transmission connector from bracket. 4) Lift up the vehicle and place it on rigid racks. NOTE: Raise all wheels off the floor. 5) Drain the automatic transmission fluid. CAUTION: Do not drain ATF until it cools down. 6) Remove the oil pan, and disconnect the connector from ATF temperature sensor connector. 7) Measure the resistance of harness between ATF temperature sensor and transmission connector. 8) Measure the resistance between transmission connector and transmission ground. Connector & terminal (T4) No. 11 — (AT11) No.1:	Is the 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 — (AT11) No. 3:	Is the 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 more than 1 M Ω ?	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 more than 1 M Ω ?	Replace the control valve body. <Ref. to 4AT-59, Control Valve Body.>	Repair the short circuit of harness between ATF temperature sensor and transmission connector.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

C: DTC P0713 TRANSMISSION FLUID TEMPERATURE SENSOR CIRCUIT HIGH INPUT

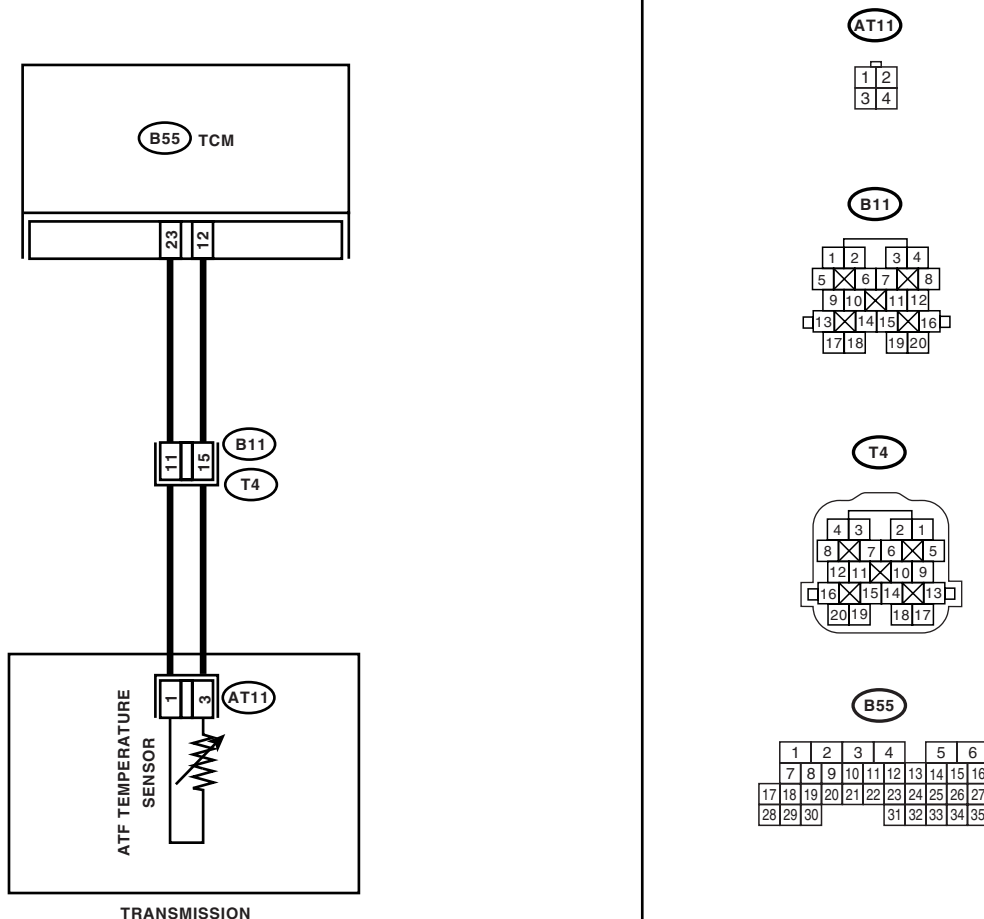
DTC DETECTING CONDITION:

Input signal circuit to ATF temperature sensor is open or shorted.

TROUBLE SYMPTOM:

Excessive shift shock

WIRING DIAGRAM:



AT-03330

Step	Check	Yes	No
1 CHECK HARNESS CONNECTOR BETWEEN TCM AND ATF TEMPERATURE SENSOR. 1) Turn the ignition switch OFF. 2) Disconnect the connector from TCM. 3) Measure the resistance between TCM connector terminals. Connector & terminal (B55) No. 23 — No. 12:	Is the resistance more than 500Ω?	Go to step 2.	Go to step 4.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Step	Check	Yes	No
2 CHECK HARNESS CONNECTOR BETWEEN TCM AND ATF TEMPERATURE SENSOR. Measure the resistance of the harness between TCM connector and chassis ground. <i>Connector & terminal</i> <i>(B55) No. 23 — Chassis ground:</i>	Is the resistance more than 1 MΩ?	Go to step 3.	Go to step 4.
3 CHECK HARNESS. Measure the resistance between TCM connector terminals while shaking the harness. <i>Connector & terminal</i> <i>(B55) No. 23 — No. 12:</i>	Does the resistance change?	Go to step 4.	Replace the TCM. <Ref. to 4AT-64, Transmission Control Module (TCM).>
4 CHECK HARNESS CONNECTOR BETWEEN TCM AND ATF TEMPERATURE SENSOR. 1) Turn the ignition switch OFF. 2) Disconnect the connector from transmission. 3) Measure the resistance of the harness between TCM connector and chassis ground. <i>Connector & terminal</i> <i>(B55) No. 23 — Chassis ground:</i>	Is the resistance more than 1 MΩ?	Go to step 5.	Repair the short circuit of harness between TCM and transmission harness.
5 CHECK HARNESS CONNECTOR BETWEEN TCM AND ATF TEMPERATURE SENSOR. Measure the resistance of the harness between TCM connector and chassis ground. <i>Connector & terminal</i> <i>(B55) No. 12 — Chassis ground:</i>	Is the resistance more than 1 MΩ?	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. <i>Connector & terminal</i> <i>(T4) No. 11 — No. 15:</i>	Is the resistance more than 500Ω?	Even if the AT OIL TEMP warning light is blinking, the circuit has returned to 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 and place it on rigid racks. 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 transmission connector and transmission ground. <i>Connector & terminal</i> <i>(T4) No. 11 — Transmission ground:</i>	Is the resistance more than 1 MΩ?	Go to step 8.	Replace the transmission harness.
8 CHECK TRANSMISSION HARNESS. Measure the resistance between transmission connector and transmission ground. <i>Connector & terminal</i> <i>(T4) No. 15 — Transmission ground:</i>	Is the resistance more than 1 MΩ?	Go to step 9.	Replace the transmission harness.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Step	Check	Yes	No
9 CHECK ATF TEMPERATURE SENSOR. Measure the resistance between control valve connector terminals. Terminals No. 1 — No. 3:	Is the resistance more than 500Ω?	Even if the AT OIL TEMP warning light is blinking, the circuit has returned to 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-59, Control Valve Body.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

D: DTC P0715 INPUT/TURBINE SPEED SENSOR CIRCUIT

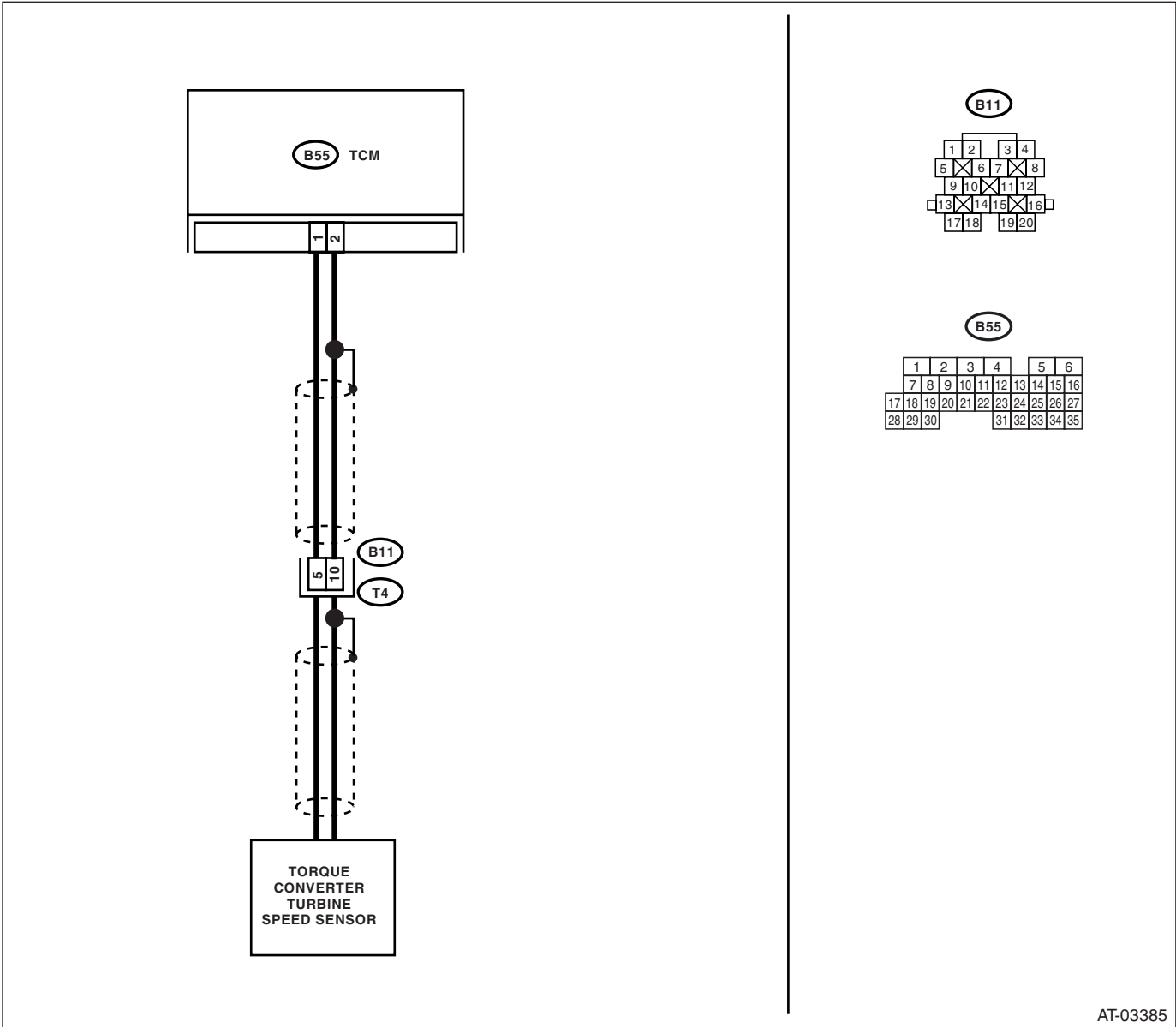
DTC DETECTING CONDITION:

Input signal circuit of TCM is open or shorted.

TROUBLE SYMPTOM:

Excessive shift shock

WIRING DIAGRAM:



AT-03385

Step	Check	Yes	No
1 CHECK TORQUE CONVERTER TURBINE SPEED SENSOR. 1) Turn the ignition switch 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 and 650 Ω?	Go to step 2.	Replace the torque converter turbine speed sensor. <Ref. to 4AT-56, Torque Converter Turbine Speed Sensor.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Step	Check	Yes	No
2 CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. 1) Disconnect the connector from TCM. 2) Measure the resistance of the harness between TCM connector and transmission connector. Connector & terminal (B55) No. 1 — (B11) No. 5:	Is the 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 between TCM connector and transmission connector. Connector & terminal (B55) No. 2 — (B11) No. 10:	Is the resistance less than 1 Ω ?	Go to step 4.	Repair the open circuit of harness between TCM and transmission connector, and poor contact of the connector.
4 CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. Measure the resistance of the harness between TCM connector and chassis ground. Connector & terminal (B55) No. 2 — Chassis ground:	Is the resistance more than 1 M Ω ?	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 the harness between TCM connector and chassis ground. Connector & terminal (B55) No. 1 — Chassis ground:	Is the resistance more than 1 M Ω ?	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 ON and the Subaru Select Monitor power switch ON. 4) Start the engine. 5) Shift the select lever to "P" or "N" range. 6) Read the data of turbine speed using Subaru Select Monitor. • 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 AT OIL TEMP warning light is blinking, the circuit has returned to 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.
7 CHECK FOR POOR CONTACT.	Is there poor contact in torque converter turbine speed sensor circuit?	Repair the poor contact.	Replace the TCM. <Ref. to 4AT-64, Transmission Control Module (TCM).>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

E: DTC P0719 TORQUE CONVERTER/BRAKE SWITCH "B" CIRCUIT LOW

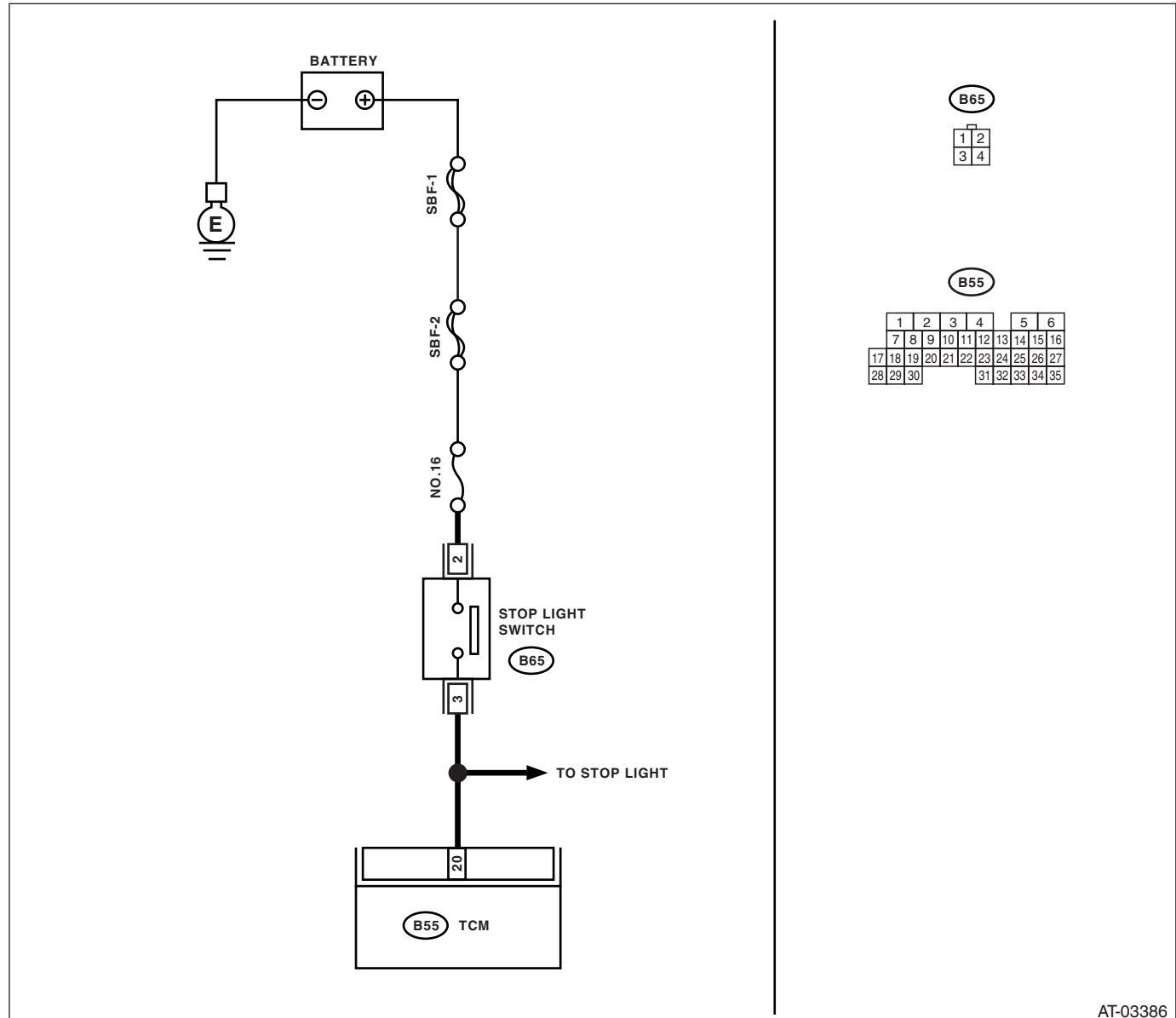
DTC DETECTING CONDITION:

Stop light switch malfunction, open input signal circuit

TROUBLE SYMPTOM:

Gear is not shifted down when climbing a hill.

WIRING DIAGRAM:



AT-03386

Step	Check	Yes	No
1 CHECK FUSE (NO. 16). Remove the fuse (No. 16).	Is the fuse (No. 16) blown out?	Replace the fuse (No. 16). If the replaced fuse (No. 16) is blown out easily, repair the short circuit of the harness between fuse (No. 16) and stop light switch.	Go to step 2.
2 CHECK OPERATION OF BRAKE LIGHT. Depress the brake pedal.	Does the brake light illuminate?	Go to step 3.	Check the brake light circuit.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Step	Check	Yes	No
3 CHECK INPUT SIGNAL FROM TCM. 1) Depress the brake pedal. 2) Measure the voltage of the harness between TCM and stop light switch. Connector & terminal (B55) No. 20 (+) — Chassis ground (-):	Is the voltage more than 10.5 V?	Go to step 6.	Go to step 4.
4 CHECK HARNESS CONNECTOR BETWEEN TCM AND STOP LIGHT SWITCH. 1) Turn the ignition switch OFF. 2) Disconnect the connectors from the TCM and stop light switch. 3) Measure the resistance of harness between the TCM and stop light switch. Connector & terminal (B55) No. 20 — (B65) No. 3:	Is the resistance less than 1 Ω ?	Go to step 5.	Repair the open circuit of the harness between the TCM and the stop light switch.
5 CHECK HARNESS CONNECTOR BETWEEN TCM AND STOP LIGHT SWITCH. Measure the resistance of the harness between TCM and chassis ground. Connector & terminal (B55) No. 20 — Chassis ground:	Is the resistance more than 1 M Ω ?	Go to step 6.	Repair the short circuit of the harness between the TCM and the stop light switch.
6 CHECK FOR POOR CONTACT.	Is there poor contact in input signal circuit of the stop light switch?	Repair the poor contact.	Replace the TCM. <Ref. to 4AT-64, Transmission Control Module (TCM).>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

F: DTC P0720 OUTPUT SPEED SENSOR CIRCUIT

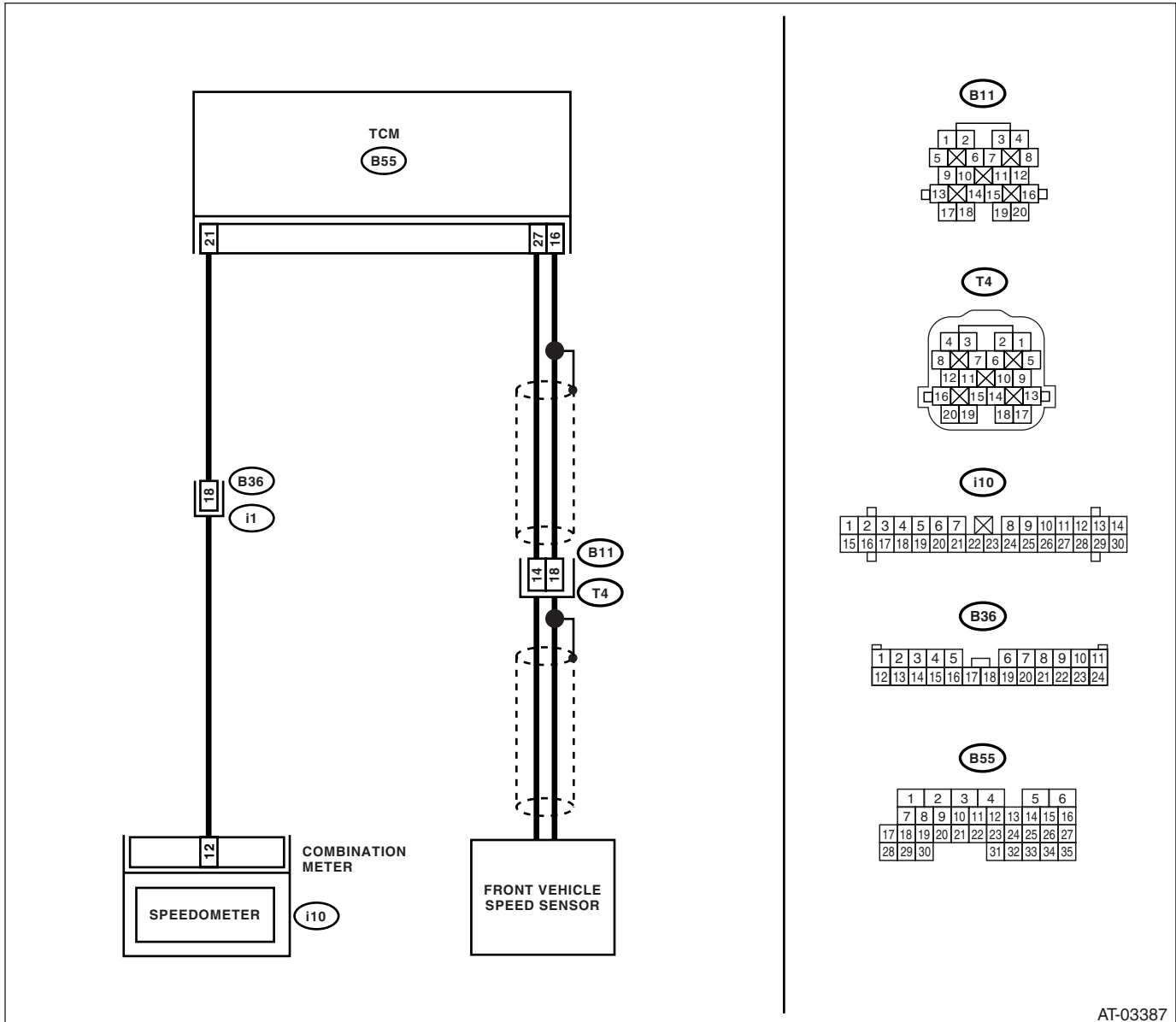
DTC DETECTING CONDITION:

- The vehicle speed signal is abnormal.
- The circuit in combination meter is faulty.
- The harness connector between TCM and vehicle speed sensor is shorted or open.

TROUBLE SYMPTOM:

- Erroneous idling.
- Engine stalls.
- Driving performance is poor.

WIRING DIAGRAM:



AT-03387

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. 1) Turn the ignition switch OFF. 2) Disconnect the connectors from TCM and transmission. 3) Measure the resistance of the harness between TCM connector and transmission connector. Connector & terminal (B55) No. 27 — (B11) No. 14:	Is the 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 the harness between TCM connector and transmission connector. Connector & terminal (B55) No. 16 — (B11) No. 18:	Is the 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 the harness between TCM connector and transmission connector. Connector & terminal (B55) No. 27 — Chassis ground:	Is the resistance more than 1 $M\Omega$?	Go to step 4.	Repair the short circuit of harness between TCM and transmission connector.
4 CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. Measure the resistance of the harness between TCM connector and transmission connector. Connector & terminal (B55) No. 16 — Chassis ground:	Is the resistance more than 1 $M\Omega$?	Go to step 5.	Repair the short circuit of the harness between TCM and transmission connector, and poor contact of connector.
5 CHECK FRONT VEHICLE SPEED SENSOR. Measure the resistance between transmission connector receptacle's terminals. Connector & terminal (T4) No. 14 — No. 18:	Is the resistance between 450 and 650 Ω ?	Go to step 6.	Replace the front vehicle speed sensor. <Ref. to 4AT-52, Front Vehicle Speed Sensor.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Step	Check	Yes	No
6 CHECK INPUT SIGNAL FOR TCM USING SUBARU SELECT MONITOR. 1) Connect all the connectors. 2) Connect the Subaru Select Monitor to the data link connector. 3) Lift up the vehicle and place it on rigid racks. NOTE: Raise all wheels off the floor. 4) Turn the ignition switch ON and the Subaru Select Monitor power switch ON. 5) Start the engine. 6) Read the data of vehicle speed using Subaru Select Monitor. <ul style="list-style-type: none"> Compare the speedometer with Subaru Select Monitor indications. Vehicle speed is indicated in "km/h" or "MPH" 7) Slowly increase the vehicle speed to 60 km/h (37 MPH). NOTE: The speed difference between front and rear wheels may light the ABS warning light, but this does not indicate a malfunction. When AT control diagnosis is finished, perform the ABS or VDC diagnostics clear memory. <Ref. to ABS(diag)-26, Clear Memory Mode.>	Does the speedometer indication increase as the Subaru Select Monitor data increases?	Even if the AT OIL TEMP warning light is blinking, the circuit has returned to 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.	Go to step 7.
7 CHECK FOR POOR CONTACT.	Is there poor contact in front vehicle speed sensor circuit?	Repair the poor contact.	Replace the TCM. <Ref. to 4AT-64, Transmission Control Module (TCM).>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

G: DTC P0724 TORQUE CONVERTER/BRAKE SWITCH “B” CIRCUIT HIGH

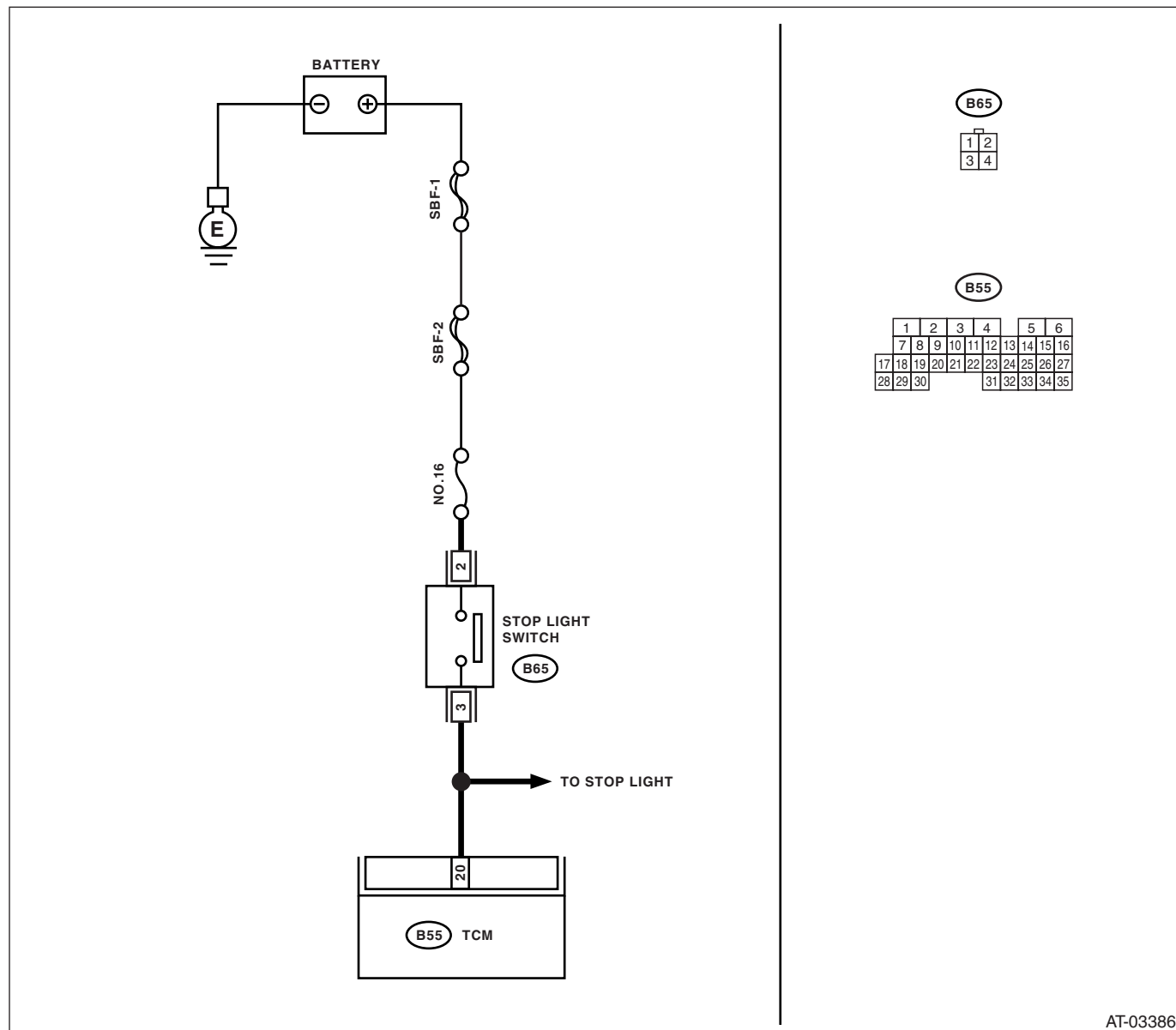
DTC DETECTING CONDITION:

Stop light switch malfunction, open input signal circuit

TROUBLE SYMPTOM:

Gear is not shifted down when climbing a hill.

WIRING DIAGRAM:



AT-03386

Step	Check	Yes	No
1 CHECK OPERATION OF BRAKE LIGHT. Depress the brake pedal.	The brake light illuminates.	Go to step 2.	Check the brake light circuit.
2 CHECK INPUT SIGNAL FROM TCM. 1) Depress the brake pedal. 2) Measure the voltage of the harness between TCM and stop light switch. Connector & terminal (B55) No. 20 (+) — Chassis ground (–):	Is the voltage more than 10 V?	Go to step 5.	Go to step 3.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Step	Check	Yes	No
3 CHECK STOP LIGHT SWITCH. 1) Turn the ignition switch OFF. 2) Disconnect the connector from stop light switch. 3) Measure the resistance of harness between stop light switch connectors. Connector & terminal (B65) No. 2 — No. 3:	Is the resistance more than 1 M Ω ?	Go to step 4.	Replace the stop light switch. <Ref. to BR-51, Stop Light Switch.>
4 CHECK HARNESS CONNECTOR BETWEEN TCM AND STOP LIGHT SWITCH. 1) Turn the ignition switch ON. 2) Measure the voltage of harness between TCM and chassis ground. Connector & terminal (B55) No. 20 (+) — Chassis ground (-):	Is the voltage less than 1 V?	Go to step 5.	Repair the short circuit of harness between TCM and stop light switch.
5 CHECK FOR POOR CONTACT.	Is there poor contact in input signal circuit of the stop light switch?	Repair the poor contact.	Replace the TCM. <Ref. to 4AT-64, Transmission Control Module (TCM).>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

H: DTC P0725 ENGINE SPEED INPUT CIRCUIT

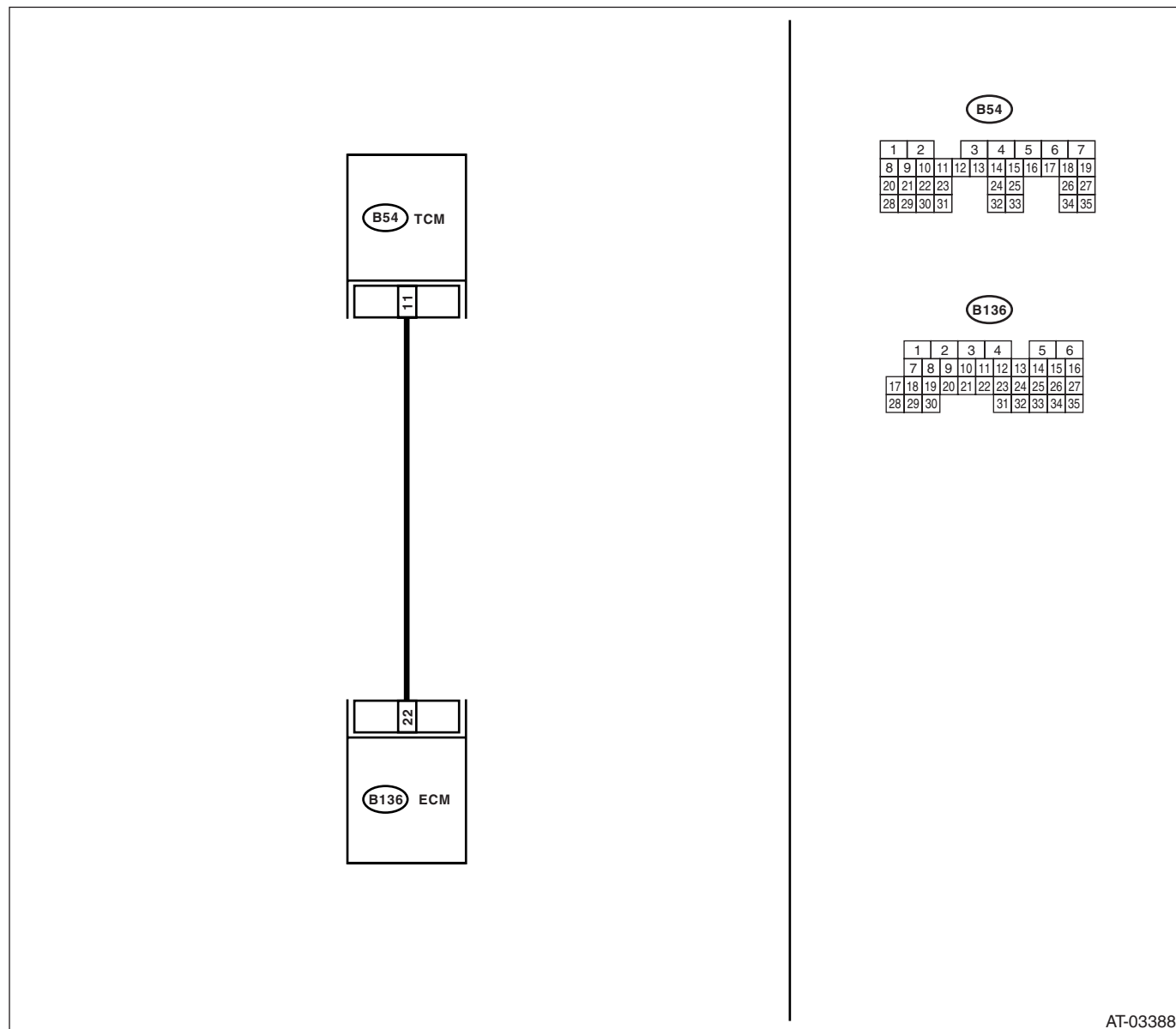
DTC DETECTING CONDITION:

Engine speed input signal circuit is open or shorted.

TROUBLE SYMPTOM:

- No lock-up occurs. (After engine is warmed-up)
- AT OIL TEMP warning light remains on when the vehicle speed is 0.

WIRING DIAGRAM:



Step	Check	Yes	No
1 CHECK HARNESS CONNECTOR BETWEEN TCM AND ECM. 1) Turn the ignition switch OFF. 2) Disconnect the connector from TCM and ECM. 3) Measure the resistance of harness between TCM and ECM. Connector & terminal (B54) No. 11 — (B136) No. 22:	Is the resistance less than 1 Ω ?	Go to step 2.	Repair the open circuit of harness between TCM and ECM connector.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Step	Check	Yes	No
2 CHECK HARNESS CONNECTOR BETWEEN TCM AND ECM. Measure the resistance of the harness between TCM connector and chassis ground. Connector & terminal (B54) No. 11 (+) — Chassis ground:	Is the resistance more than 1 MΩ?	Go to step 3.	Repair the short circuit of harness between TCM and ECM connector.
3 CHECK INPUT SIGNAL FOR TCM USING SUBARU SELECT MONITOR. 1) Connect the connectors to TCM and ECM. 2) Connect the Subaru Select Monitor to the data link connector. 3) Start the engine, and turn the Subaru Select Monitor power switch ON. 4) Run the engine at idle. 5) Read the data of engine speed using Subaru Select Monitor. • Display shows engine speed signal value sent from ECM.	Is the revolution value almost same as the tachometer reading shown on the combination meter?	Even if the AT OIL TEMP warning light is blinking, the circuit has returned to normal condition at this time. A temporary poor contact of connector or harness may be the cause. Repair the harness or connector in the TCM and ECM.	Go to step 4.
4 CHECK FOR POOR CONTACT.	Is there poor contact in engine speed signal circuit?	Repair the poor contact.	Go to step 5.
5 CONFIRM DTC P0725. Replace the ECM with a new one.	Does the DTC appear again, after the memory has been cleared?	Replace the TCM. <Ref. to 4AT-64, Transmission Control Module (TCM).>	Replace the ECM. <Ref. to FU(H4SO)-40, Engine Control Module (ECM).>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

I: DTC P0731 GEAR 1 INCORRECT RATIO

NOTE:

Refer to DTC P0736 for diagnostic procedure. <Ref. to 4AT(D)(diag)-57, DTC P0736 REVERSE INCORRECT RATIO, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

J: DTC P0732 GEAR 2 INCORRECT RATIO

NOTE:

Refer to DTC P0736 for diagnostic procedure. <Ref. to 4AT(D)(diag)-57, DTC P0736 REVERSE INCORRECT RATIO, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

K: DTC P0733 GEAR 3 INCORRECT RATIO

NOTE:

Refer to DTC P0736 for diagnostic procedure. <Ref. to 4AT(D)(diag)-57, DTC P0736 REVERSE INCORRECT RATIO, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

L: DTC P0734 GEAR 4 INCORRECT RATIO

NOTE:

Refer to DTC P0736 for diagnostic procedure. <Ref. to 4AT(D)(diag)-57, DTC P0736 REVERSE INCORRECT RATIO, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

M: 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.

Step	Check	Yes	No
1 CHECK ACCELERATOR PEDAL POSITION SENSOR. 1) Connect the Subaru Select Monitor to the data link connector. 2) Turn the ignition switch ON. 3) Read the value of accelerator pedal position sensor on Subaru Select Monitor display.	Does the value of accelerator pedal position sensor change from 0% to 100% smoothly when throttle is operated from fully closed to fully open?	Go to step 2.	Check the accelerator pedal position sensor circuit.
2 CHECK FRONT VEHICLE SPEED SENSOR. 1) Lift up the vehicle and support with rigid racks. 2) Start the engine. 3) Shift the select lever to "D" range and slowly increase vehicle speed. NOTE: The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS or VDC clear memory of on-board diagnostics system.	Does the vehicle speed displayed by Subaru Select Monitor roughly correspond with vehicle speed indicated by the combination meter?	Go to step 3.	Check the front vehicle speed sensor circuit.
3 CHECK TORQUE CONVERTER TURBINE SPEED SENSOR. 1) Move the select lever to "P" or "N" range. 2) Idle the engine.	Does the value of torque converter turbine speed sensor displayed by Subaru Select Monitor roughly correspond with the value of tachometer in combination meter?	There are malfunctions in TCM, TCM connector poor contact, or transmission assembly mechanical malfunction.	Check the torque converter turbine speed sensor circuit.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

N: 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.

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

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

O: DTC P0743 TORQUE CONVERTER CLUTCH CIRCUIT ELECTRICAL

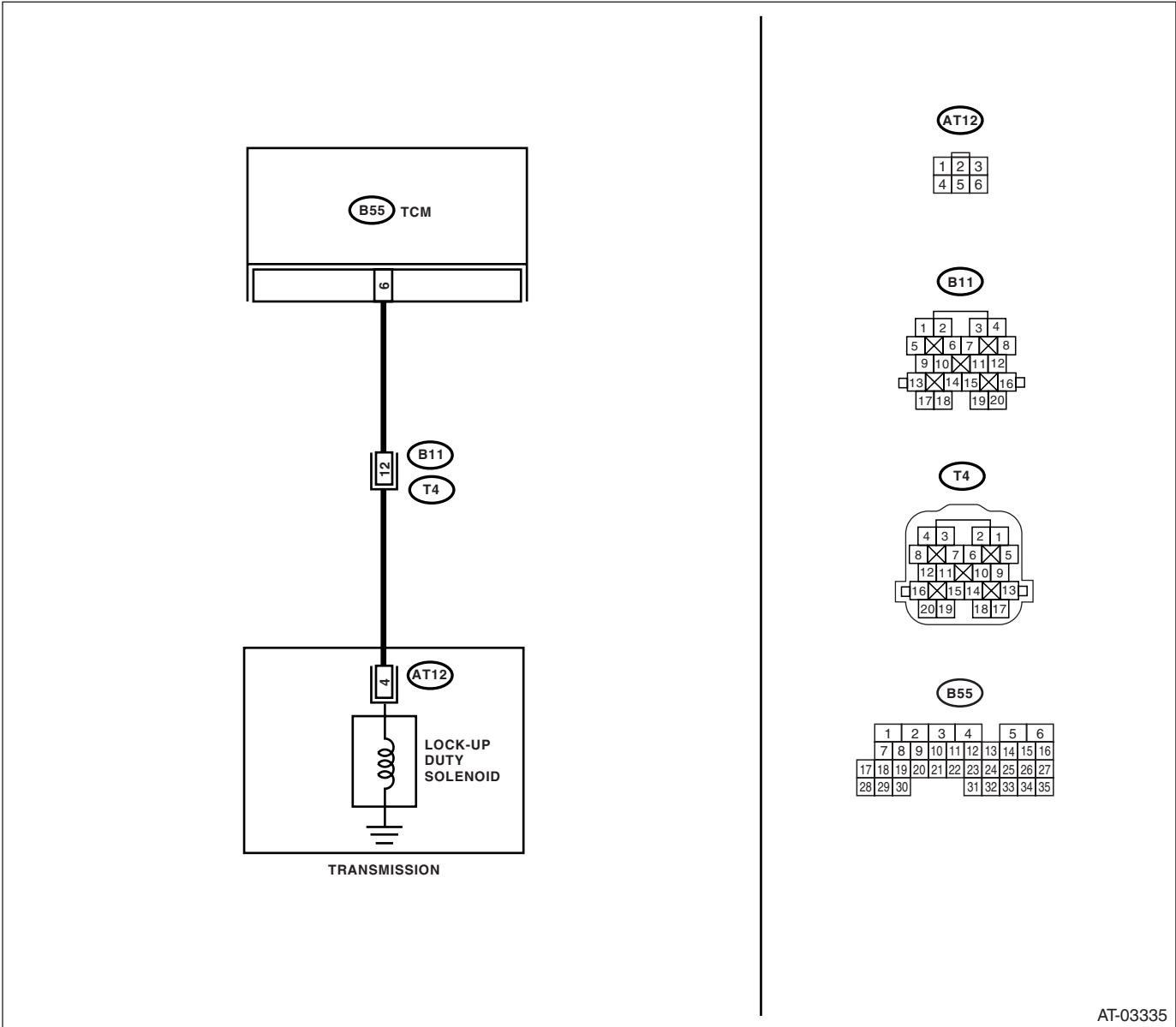
DTC DETECTING CONDITION:

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:



AT-03335

Step	Check	Yes	No
1	CHECK ANY OTHER DTC ON DISPLAY.	Is any other DTC displayed?	Perform the diagnosis according to DTC.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Step	Check	Yes	No
2 CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. 1) Turn the ignition switch OFF. 2) Disconnect the connectors from TCM and transmission. 3) Measure the resistance of the harness between TCM connector and transmission connector. Connector & terminal (B55) No. 6 — (B11) No. 12:	Is the 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 more than 1 M Ω ?	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. 19:	Is the resistance between 2.0 and 4.5 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 and place it on rigid racks. NOTE: Raise all wheels off the floor. 3) Connect the Subaru Select Monitor to the data link connector. 4) Start the engine, and turn the Subaru Select Monitor power switch ON. 5) Start the engine and 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. 6) Read the data of lock-up duty solenoid using the Subaru Select Monitor. • Lock-up duty solenoid is indicated in “%.” 7) 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 may light the ABS warning light, but this does not indicate a malfunction. When AT control diagnosis is finished, perform the ABS or VDC diagnostics clear memory. <Ref. to ABS(diag)-26, Clear Memory Mode.>	Is the measured value 95%?	Go to step 6.	Go to step 7.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Step	Check	Yes	No
6 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.	Is the measured value 5%?	Even if the AT OIL TEMP warning light is blinking, the circuit has returned to 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.
7 CHECK FOR POOR CONTACT.	Is there poor contact in lock-up duty solenoid circuit?	Repair the poor contact.	Replace the TCM. <Ref. to 4AT-64, Transmission Control Module (TCM).>
8 CHECK LOCK-UP DUTY SOLENOID (IN TRANSMISSION). 1) Disconnect the transmission connector. 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 lock-up duty solenoid. 4) Measure the resistance between lock-up duty solenoid and transmission ground. Connector & terminal (AT12) No. 4 — Transmission ground:	Is the resistance between 2.0 and 4.5 Ω ?	Go to step 9.	Replace the control valve body. <Ref. to 4AT-59, Control Valve Body.>
9 CHECK HARNESS CONNECTOR BETWEEN LOCK-UP DUTY SOLENOID AND TRANSMISSION. Measure the resistance of harness between lock-up duty solenoid and transmission connector. Connector & terminal (T4) No. 12 — (AT12) No. 4:	Is the resistance less than 1 Ω ?	Go to step 10.	Repair the open circuit of harness between TCM and transmission connector.
10 CHECK HARNESS CONNECTOR BETWEEN LOCK-UP DUTY SOLENOID AND TRANSMISSION. Measure the resistance of harness between transmission connector and transmission ground. Connector & terminal (T4) No. 12 — Transmission ground:	Is the resistance more than 1 M Ω ?	Even if the AT OIL TEMP warning light is blinking, the circuit has returned to 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.	Repair the short circuit of harness between lock-up duty solenoid and transmission connector.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

P: DTC P0748 PRESSURE CONTROL SOLENOID “A” ELECTRICAL

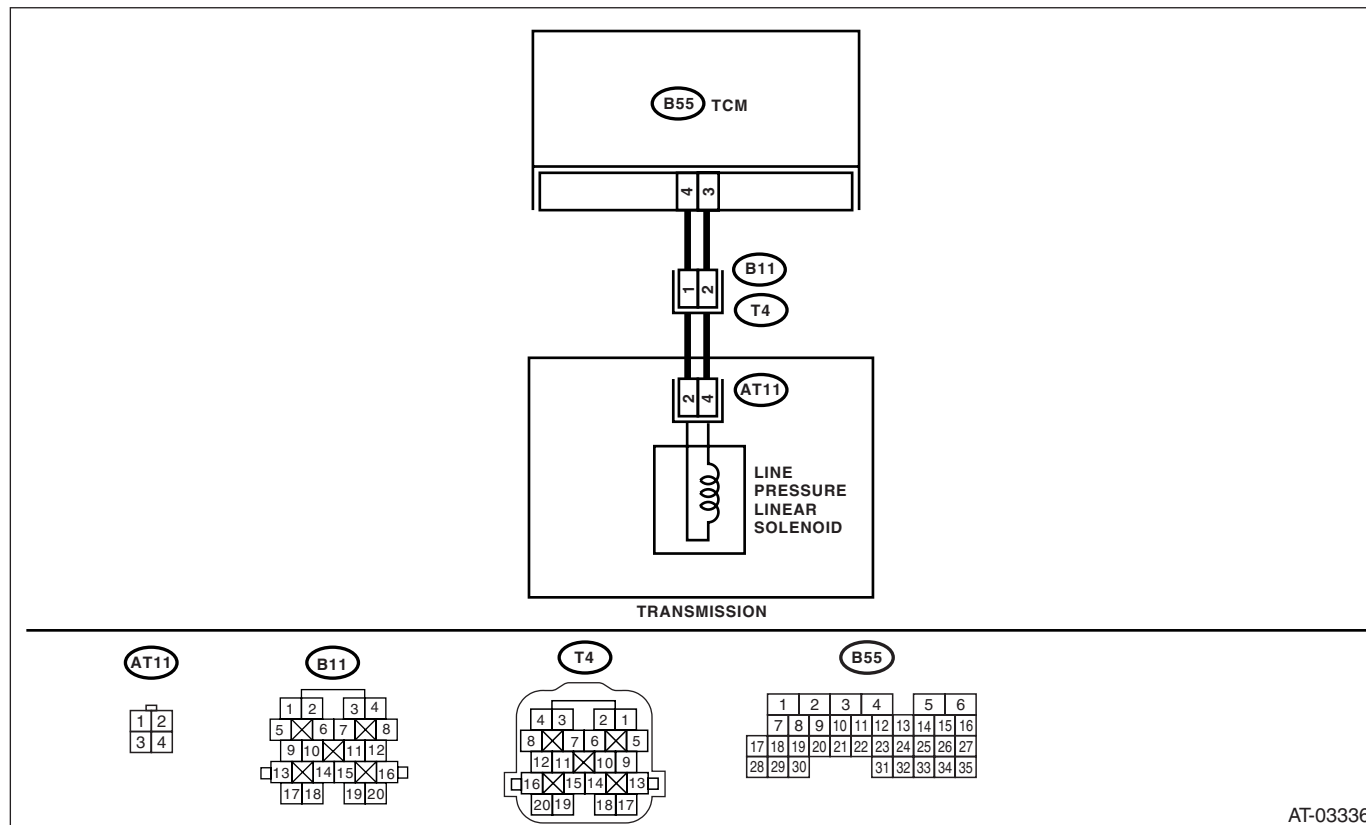
DTC DETECTING CONDITION:

Output signal circuit of line pressure linear solenoid is open or shorted.

TROUBLE SYMPTOM:

Excessive shift shock

WIRING DIAGRAM:



Step	Check	Yes	No
1 CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. 1) Turn the ignition switch OFF. 2) Disconnect the connector from transmission and TCM. 3) Measure the resistance of the harness between TCM connector and transmission connector. <i>Connector & terminal</i> <i>(B55) No. 3 — (B11) No. 2:</i> <i>(B55) No. 4 — (B11) No. 1:</i>	Is the 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 the harness between TCM connector and chassis ground. <i>Connector & terminal</i> <i>(B55) No. 3 — Chassis ground:</i> <i>(B55) No. 4 — Chassis ground:</i>	Is the resistance more than 1 $M\Omega$?	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. <i>Connector & terminal</i> <i>(T4) No. 1 — No. 2:</i>	Is the resistance between 4 and 6 Ω ?	Go to step 4.	Go to step 5.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Step	Check	Yes	No
4 CHECK FOR POOR CONTACT.	Is there poor contact in line pressure linear solenoid circuit?	Repair the poor contact.	Replace the TCM. <Ref. to 4AT-64, Transmission Control Module (TCM).>
5 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 line pressure linear solenoid. 4) Measure the resistance between line pressure linear solenoid connector and transmission ground. Connector & terminal (AT11) No. 2 — No. 4:	Is the resistance between 4 and 8 Ω ?	Go to step 6.	Replace the control valve body. <Ref. to 4AT-59, Control Valve Body.>
6 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. 1 — (AT11) No. 2: (T4) No. 2 — (AT11) No. 4:	Is the resistance less than 1 Ω ?	Go to step 7.	Repair the open circuit of harness between line pressure linear solenoid and transmission connector.
7 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 more than 1 $M\Omega$?	Even if the AT OIL TEMP warning light is blinking, the circuit has returned to 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.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Q: DTC P0753 SHIFT SOLENOID “A” ELECTRICAL

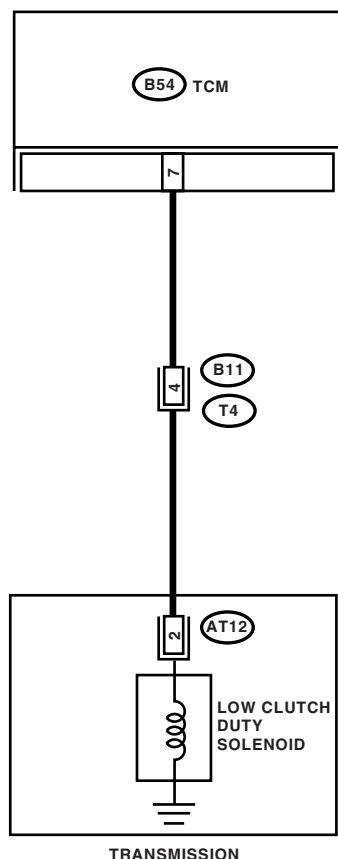
DTC DETECTING CONDITION:

Output signal circuit of low clutch duty solenoid is open or shorted.

TROUBLE SYMPTOM:

Excessive shift shock

WIRING DIAGRAM:



AT12

1	2	3
4	5	6

B11

1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	16
17	18	19	20

T4

4	3	2	1
8	7	6	5
12	11	10	9
16	15	14	13
20	19	18	17

B54

1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	32	33	34	35

AT-03337

Step	Check	Yes	No
1 CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. 1) Turn the ignition switch OFF. 2) Disconnect the connectors from TCM and transmission. 3) Measure the resistance of harness between TCM and transmission connector. Connector & terminal (B54) No. 7 — (B11) No. 4:	Is the resistance less than 1 Ω?	Go to step 2.	Repair the open circuit of harness between TCM and transmission connector.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Step	Check	Yes	No
2 CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. Measure the resistance of harness between TCM connector and transmission ground. Connector & terminal (B54) No. 7 — Chassis ground:	Is the resistance more than 1 MΩ?	Go to step 3.	Repair the short circuit of harness between TCM and transmission connector.
3 CHECK LOW CLUTCH DUTY SOLENOID. Measure the resistance between transmission connector terminals. Connector & terminal (T4) No. 4 — No. 20:	Is the resistance between 2.0 and 4.5 Ω?	Go to step 5.	Go to step 4.
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) Start the engine, and turn the Subaru Select Monitor power switch ON. 4) Warm-up the transmission until the ATF temperature reaches 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. 5) Stop the engine and turn the ignition switch ON. (Engine OFF) 6) Shift the select lever to "P" or "N" range. 7) Read the data of low clutch duty solenoid using Subaru Select Monitor. • Low clutch duty solenoid is indicated in "%."	Is the measured value 100%?	Go to step 5.	Go to step 7.
5 CHECK OUTPUT SIGNAL FROM TCM USING SUBARU SELECT MONITOR. 1) Turn the ignition switch ON. (Engine OFF) 2) Shift the select lever to "D" range. 3) Read the data of low clutch duty solenoid.	Is the measured value 0%?	Even if the AT OIL TEMP warning light is blinking, the circuit has returned to normal condition at this time. A temporary poor contact of connector or harness may be the cause. Repair the harness or connector in transmission.	Go to step 6.
6 CHECK FOR POOR CONTACT.	Is there poor contact in low clutch duty solenoid circuit?	Repair the poor contact.	Replace the TCM. <Ref. to 4AT-64, Transmission Control Module (TCM).>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Step	Check	Yes	No
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 low clutch duty solenoid. 4) Measure the resistance between low clutch duty solenoid connector and transmission ground. Connector & terminal (AT12) No. 2 — Transmission ground:	Is the resistance between 2.0 and 4.5 Ω ?	Go to step 8.	Replace the control valve body. <Ref. to 4AT-59, Control Valve Body.>
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 — (AT12) No. 2:	Is the resistance less than 1 Ω ?	Go to step 9.	Repair the open circuit of harness between low clutch duty solenoid and transmission connector.
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:	Is the resistance more than 1 M Ω ?	Even if the AT OIL TEMP warning light is blinking, the circuit has returned to 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.	Repair the short circuit of harness between low clutch duty solenoid and transmission connector.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

R: DTC P0758 SHIFT SOLENOID “B” ELECTRICAL

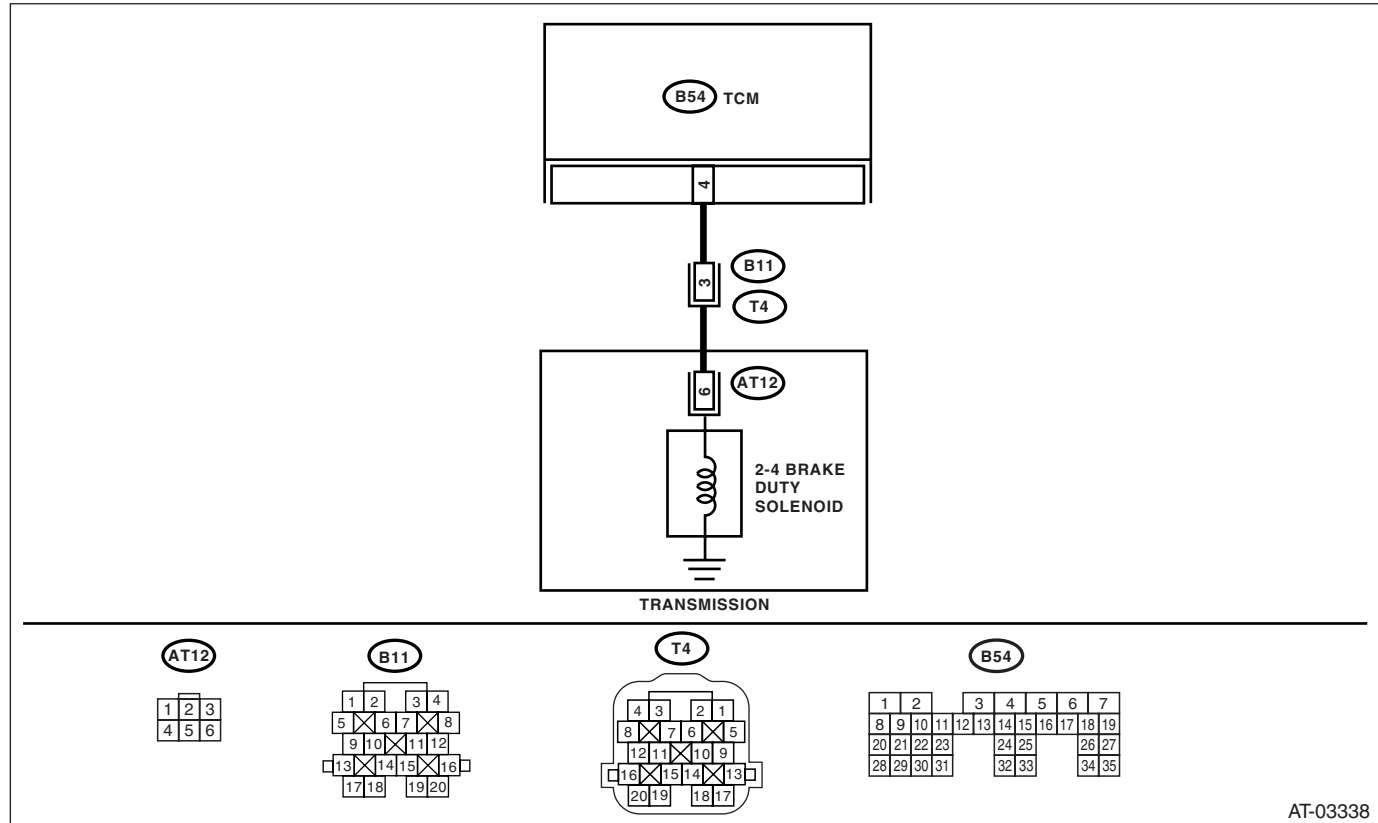
DTC DETECTING CONDITION:

Output signal circuit of 2-4 brake duty solenoid is open or shorted.

TROUBLE SYMPTOM:

Excessive shift shock

WIRING DIAGRAM:



AT-03338

Step	Check	Yes	No
1 CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. 1) Turn the ignition switch OFF. 2) Disconnect the connectors from TCM and transmission. 3) Measure the resistance of the harness between TCM connector and transmission connector. Connector & terminal (B54) No. 4 — (B11) No. 3:	Is the 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 ground. Connector & terminal (B54) No. 4 — Chassis ground:	Is the resistance more than 1 $M\Omega$?	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 and 4.5 Ω ?	Go to step 4.	Go to step 7.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Step	Check	Yes	No
4 CHECK OUTPUT SIGNAL FROM TCM USING SUBARU SELECT MONITOR. 1) Connect all the connectors. 2) Connect the Subaru Select Monitor to the data link connector. 3) Start the engine, and turn the Subaru Select Monitor power switch ON. 4) Warm-up the transmission until the ATF temperature reaches 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. 5) Stop the engine and turn the ignition switch ON. (Engine OFF) 6) Shift the select lever to "N" range. 7) While depressing the accelerator pedal, read the data of 2-4 brake duty solenoid using Subaru Select Monitor. • 2-4 brake duty solenoid is indicated in "%."	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 "2" range.	Is the measured value 0%?	Even if the AT OIL TEMP warning light is blinking, the circuit has returned to 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 FOR 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).>
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 (AT12) No. 6 — Transmission ground:	Is the resistance between 2.0 and 4.5 Ω?	Go to step 8.	Replace the control valve body. <Ref. to 4AT-59, Control Valve Body.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Step	Check	Yes	No
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. <i>Connector & terminal</i> <i>(T4) No. 3 — (AT12) No. 6:</i>	Is the 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. <i>Connector & terminal</i> <i>(T4) No. 3 — Transmission ground:</i>	Is the resistance more than 1 $M\Omega$?	Even if the AT OIL TEMP warning light is blinking, the circuit has returned to 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.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

S: DTC P0763 SHIFT SOLENOID “C” ELECTRICAL

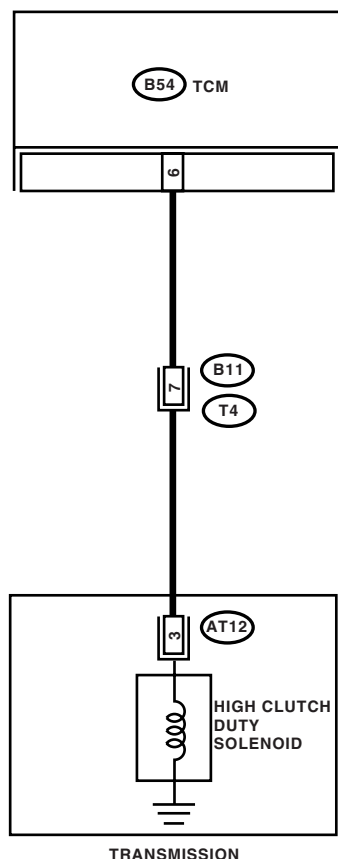
DTC DETECTING CONDITION:

Output signal circuit of high clutch duty solenoid is open or shorted.

TROUBLE SYMPTOM:

Excessive shift shock

WIRING DIAGRAM:



AT12

1 2 3
4 5 6

B11

1 2 3 4
5 6 7 8
9 10 11 12
13 14 15 16
17 18 19 20

T4

4 3 2 1
8 7 6 5
12 11 10 9
16 15 14 13
20 19 18 17

B54

1 2 3 4 5 6 7
8 9 10 11 12 13 14 15 16 17 18 19
20 21 22 23 24 25 26 27
28 29 30 31 32 33 34 35

AT-03339

Step	Check	Yes	No
1 CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. 1) Turn the ignition switch OFF. 2) Disconnect the connectors from TCM and transmission. 3) Measure the resistance of the harness between TCM connector and transmission connector. Connector & terminal (B54) No. 6 — (B11) No. 7:	Is the resistance less than 1 Ω ?	Go to step 2.	Repair the open circuit of harness between TCM and transmission connector.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Step	Check	Yes	No
2 CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. Measure the resistance of the harness connector between TCM connector and chassis ground. Connector & terminal (B54) No. 6 — Chassis ground:	Is the resistance more than 1 MΩ?	Go to step 3.	Repair the short circuit of harness between TCM and transmission connector.
3 CHECK HIGH CLUTCH DUTY SOLENOID. Measure the resistance between transmission connector receptacle's terminals. Connector & terminal (T4) No. 7 — No. 20:	Is the resistance between 2.0 and 4.5 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) Lift up the vehicle and place it on rigid racks. NOTE: Raise all wheels off the floor. 3) Connect the Subaru Select Monitor to the data link connector. 4) Start the engine, and turn the Subaru Select Monitor power switch ON. 5) Start the engine and 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. 6) Read the data of high clutch duty solenoid using Subaru Select Monitor. • High clutch duty solenoid is indicated in "%." 7) Shift the select lever to "D," and slowly increase vehicle speed to measure at 3rd or 4th. NOTE: The speed difference between front and rear wheels may light the ABS warning light, but this does not indicate a malfunction. When AT control diagnosis is finished, perform the ABS or VDC diagnostics clear memory. <Ref. to ABS(diag)-26, Clear Memory Mode.>	Is the measured value 0%?	Go to step 5.	Go to step 6.
5 CHECK OUTPUT SIGNAL FROM TCM USING SUBARU SELECT MONITOR. Return the engine to idling speed and shift the select lever to "N" range. NOTE: The speed difference between front and rear wheels may light the ABS warning light, but this does not indicate a malfunction. When AT control diagnosis is finished, perform the ABS or VDC diagnostics Clear Memory Mode. <Ref. to ABS(diag)-26, Clear Memory Mode.>	Is the measured value 100%?	Even if the AT OIL TEMP warning light is blinking, the circuit has returned to 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.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Step	Check	Yes	No
6 CHECK FOR 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 connector from high clutch duty solenoid. 4) Measure the resistance between high clutch duty solenoid connector and transmission ground. Connector & terminal (AT12) No. 3 — Transmission ground:	Is the resistance between 2.0 and 4.5 Ω ?	Go to step 8.	Replace the control valve body. <Ref. to 4AT-59, 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 — (AT12) No. 3:	Is the 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 more than 1 M Ω ?	Even if the AT OIL TEMP warning light is blinking, the circuit has returned to 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.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

T: DTC P0768 SHIFT SOLENOID “D” ELECTRICAL

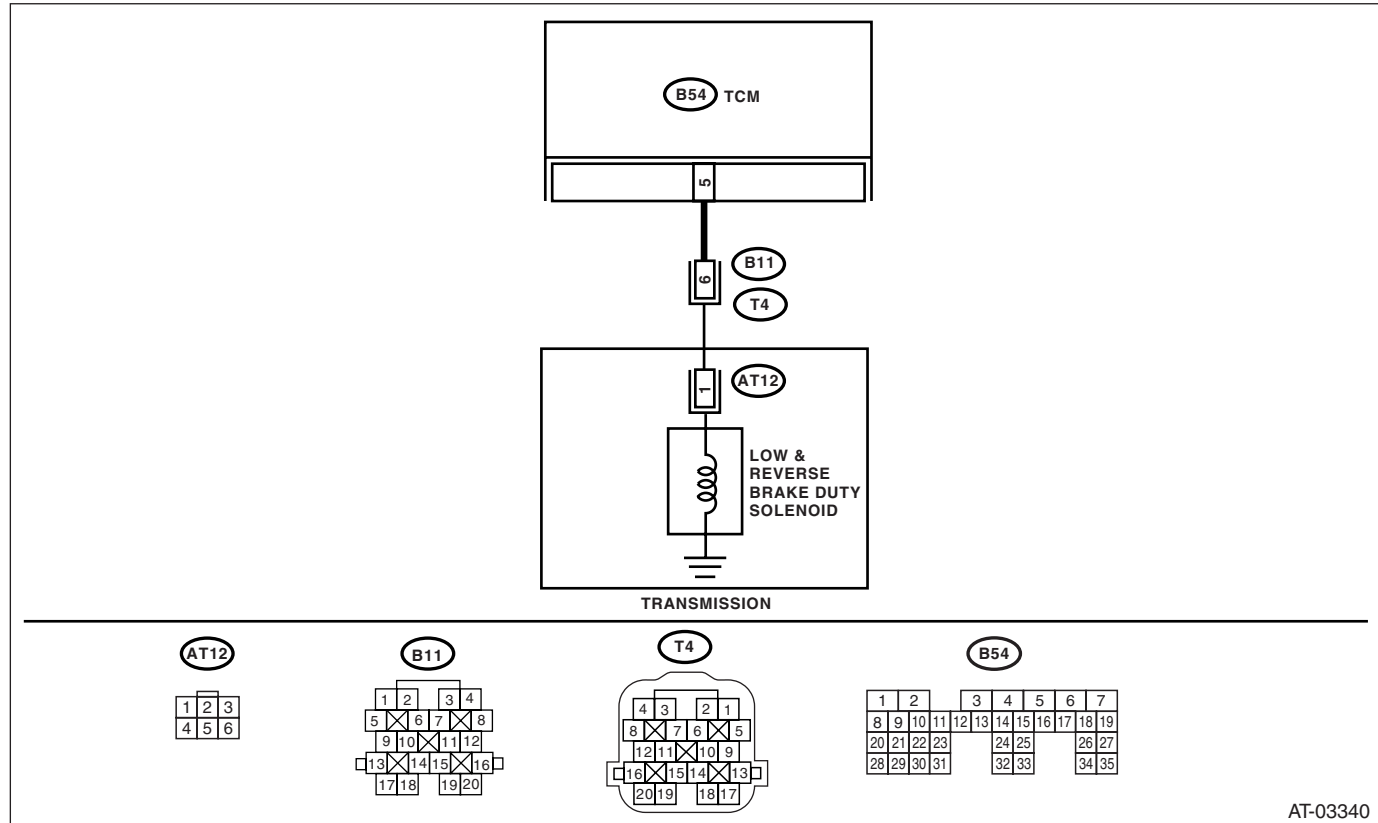
DTC DETECTING CONDITION:

The output signal circuit of low & reverse duty solenoid is open or shorted.

TROUBLE SYMPTOM:

Gear is not changed.

WIRING DIAGRAM:



AT-03340

Step	Check	Yes	No
1 CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. 1) Turn the ignition switch OFF. 2) Disconnect the connector from transmission and TCM. 3) Measure the resistance of the harness between TCM connector and transmission connector. Connector & terminal (B54) No. 5 — (B11) No. 6:	Is the 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 the harness between TCM connector and chassis ground. Connector & terminal (B54) No. 5 — Chassis ground:	Is the resistance more than 1 $M\Omega$?	Go to step 3.	Repair the short circuit of harness between TCM and transmission connector.
3 CHECK LOW & REVERSE BRAKE DUTY SOLENOID. Measure the resistance between transmission connector terminals. Connector & terminal (T4) No. 6 — No. 20:	Is the resistance between 2.0 and 4.5 Ω ?	Go to step 4.	Go to step 7.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Step	Check	Yes	No
4 CHECK OUTPUT SIGNAL FROM TCM USING SUBARU SELECT MONITOR. 1) Connect all the connectors. 2) Connect the Subaru Select Monitor to the data link connector. 3) Start the engine, and turn the Subaru Select Monitor power switch ON. 4) Warm-up the transmission until the ATF temperature reaches 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. 5) Stop the engine and turn the ignition switch ON. (Engine OFF) 6) Move the select lever to "N". 7) Read the data of low & reverse brake duty solenoid using Subaru Select Monitor. • Low & reverse brake duty solenoid is indicated in "%."	Is the measured value 100%?	Go to step 5.	Go to step 6.
5 CHECK OUTPUT SIGNAL FROM TCM USING SUBARU SELECT MONITOR. 1) Lift up the vehicle and support with rigid racks. NOTE: Raise all wheels off the floor. 2) Shift the select lever to "1" range. 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 may light the ABS warning light, but this does not indicate a malfunction. When AT control diagnosis is finished, perform the ABS or VDC diagnostics clear memory procedures. <Ref. to ABS(diag)-26, Clear Memory Mode.> 3) Read the data of the low & reverse duty solenoid.	Is the measured value 55%?	Even if the AT OIL TEMP warning light is blinking, the circuit has returned to 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 FOR POOR CONTACT.	Is there poor contact in the low & reverse duty solenoid circuit?	Repair the poor contact.	Replace the TCM. <Ref. to 4AT-64, Transmission Control Module (TCM).>
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 low & reverse brake duty solenoid. 4) Measure the resistance between low & reverse brake duty solenoid connector and transmission ground. Connector & terminal (AT12) No. 1 — Transmission ground:	Is the resistance between 2.0 and 4.5 Ω?	Go to step 8.	Replace the control valve body. <Ref. to 4AT-59, Control Valve Body.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Step	Check	Yes	No
8 CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND LOW & REVERSE BRAKE DUTY SOLENOID. Measure the resistance of harness between low & reverse duty solenoid and transmission connector. <i>Connector & terminal</i> <i>(T4) No. 6 — (AT12) No. 1:</i>	Is the resistance less than 1 Ω ?	Go to step 9.	Repair open circuit of harness between low & reverse brake duty solenoid and transmission connector.
9 CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND LOW & REVERSE BRAKE DUTY SOLENOID. Measure the resistance of harness between transmission connector and transmission ground. <i>Connector & terminal</i> <i>(T4) No. 6 — Transmission ground:</i>	Is the resistance more than 1 M Ω ?	Even if the AT OIL TEMP warning light is blinking, the circuit has returned to normal condition at this time. A temporary poor contact of connector or harness may be the cause. Repair harness or connector in low & reverse brake duty solenoid and transmission.	Repair the short circuit of the harness between the low & reverse brake duty solenoid and the transmission connector.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

U: DTC P0801 REVERSE INHIBIT CONTROL CIRCUIT

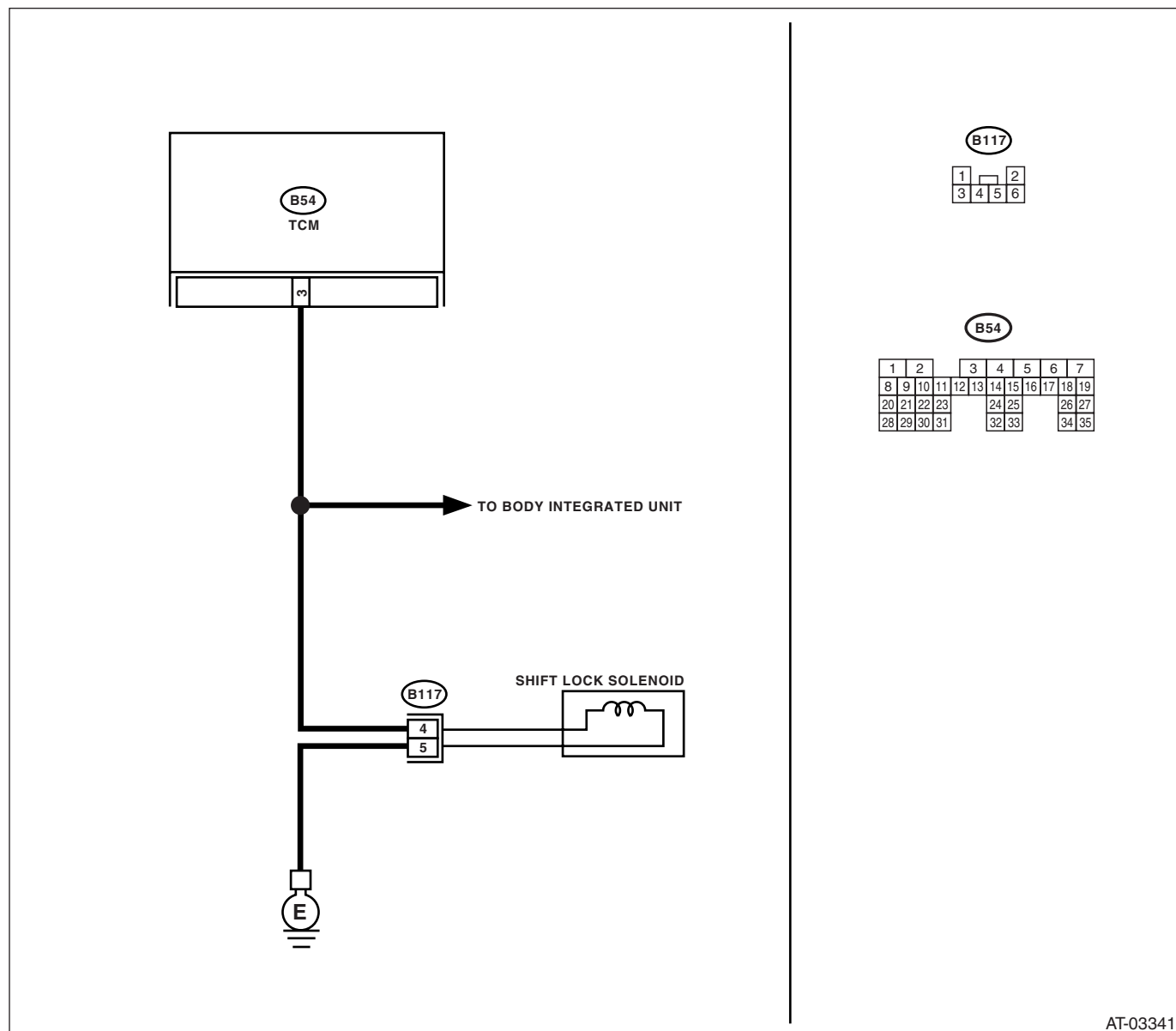
DTC DETECTING CONDITION:

Shift lock solenoid malfunction, open or short reverse inhibitor control circuit

TROUBLE SYMPTOM:

- Gear is shifted from “N” range to “P” range during driving at 20 km/h (12 MPH) or more.
- Gear cannot be shifted from “N” range to “R” range.

WIRING DIAGRAM:



AT-03341

Step	Check	Yes	No
1 CHECK HARNESS CONNECTOR BETWEEN TCM AND SHIFT LOCK SOLENOID. 1) Turn the ignition switch OFF. 2) Disconnect the connector from TCM and shift lock solenoid. 3) Measure the resistance of harness between TCM and shift lock solenoid connector. Connector & terminal (B54) No. 3 — (B117) No. 4:	Is the resistance less than 1 Ω ?	Go to step 2.	Repair the open circuit of harness between TCM and shift lock solenoid connector.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Step	Check	Yes	No
2 CHECK HARNESS CONNECTOR BETWEEN TCM AND SHIFT LOCK SOLENOID. Measure the resistance of the harness between TCM and chassis ground. Connector & terminal (B54) No. 3 — Chassis ground:	Is the resistance more than 1 MΩ?	Go to step 3.	Repair the short circuit of harness between TCM and shift lock solenoid connector.
3 CHECK HARNESS BETWEEN SHIFT LOCK SOLENOID AND CHASSIS GROUND TERMINAL. Measure the resistance of harness between shift lock solenoid and chassis ground. Connector & terminal (B117) No. 5 — Chassis ground:	Is the resistance less than 1 Ω?	Go to step 4.	Repair the open circuit of harness between chassis ground and shift lock solenoid connector.
4 CHECK SHIFT LOCK SOLENOID. Measure the resistance of shift lock solenoid terminals. Connector & terminal (B117) No. 5 — No. 4:	Is the resistance between 7 and 18 Ω?	Go to step 5.	Replace the shift lock solenoid. <Ref. to CS-28, AT Shift Lock Solenoid and "P" Range Switch.>
5 CHECK OUTPUT SIGNAL OF TCM. 1) Connect all the connectors. 2) Turn the ignition switch ON. 3) Shift the select lever to "D" range. 4) Measure the voltage between TCM and chassis ground. Connector & terminal (B54) No. 3 (+) — Chassis ground (-):	Is the voltage more than 10.5 V?	Go to step 6.	Go to step 7.
6 CHECK OUTPUT SIGNAL OF TCM. 1) Lift up the vehicle and place it on rigid racks. NOTE: Raise all wheels off the floor. 2) Start the engine. 3) Shift the select lever to "D" range and slowly increase vehicle speed to 20 km/h (12 MPH). NOTE: The speed difference between front and rear wheels may light the ABS warning light, but this does not indicate a malfunction. When AT control diagnosis is finished, perform the ABS or VDC diagnostics clear memory. <Ref. to ABS(diag)-26, Clear Memory Mode.> 4) Measure the voltage between TCM and chassis ground. Connector & terminal (B54) No. 3 (+) — Chassis ground (-):	Is the voltage less than 1 V?	Even if the AT OIL TEMP warning light is blinking, the circuit has returned to 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.	Go to step 7.
7 CHECK FOR POOR CONTACT.	Is there poor contact in the reverse inhibitor control circuit?	Repair the poor contact.	Replace the TCM. <Ref. to 4AT-64, Transmission Control Module (TCM).>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

V: DTC P1706 AT VEHICLE SPEED SENSOR CIRCUIT MALFUNCTION (REAR WHEEL)

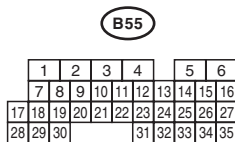
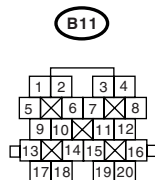
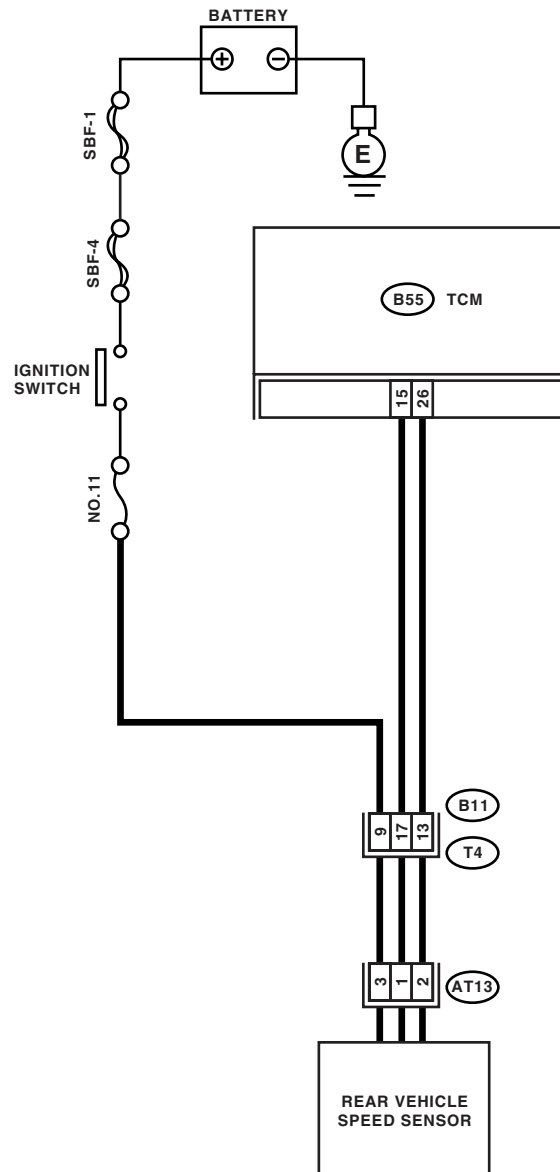
DTC DETECTING CONDITION:

Input signal circuit of TCM is open or shorted.

TROUBLE SYMPTOM:

No lock up or tight corner braking.

WIRING DIAGRAM:



AT-03342

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK IGNITION POWER SUPPLY CIRCUIT. 1) Turn the ignition switch OFF. 2) Disconnect the connector from rear vehicle speed sensor. 3) Turn the ignition switch ON. 4) Measure the ignition power supply voltage between rear vehicle speed sensor connector and transmission ground. Connector & terminal (AT13) No. 3 (+) — Transmission ground (-):	Is the voltage more than 10 V?	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 OFF. 2) Measure the resistance of the harness between TCM connector and transmission connector. Connector & terminal (B55) No. 15 — (AT13) No. 1:	Is the 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 the harness between TCM connector and transmission connector. Connector & terminal (B55) No. 26 — (AT13) No. 2:	Is the 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.
4 CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. Measure the resistance of the harness between TCM connector and chassis ground. Connector & terminal (B55) No. 15 — Chassis ground:	Is the resistance more than 1 M Ω ?	Go to step 5.	Repair the short circuit of harness between TCM and rear vehicle speed sensor connector.
5 CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. Measure the resistance of the harness between TCM connector and chassis ground. Connector & terminal (B55) No. 26 — Chassis ground:	Is the resistance more than 1 M Ω ?	Go to step 6.	Repair the short circuit of harness between TCM and rear vehicle speed sensor connector.
6 CHECK INPUT SIGNAL FOR TCM. 1) Connect the connectors to TCM and transmission. 2) Lift up the vehicle and place it on rigid racks. NOTE: Raise all wheels off the floor. 3) Start the engine and set vehicle in 20 km/h (12 MPH) condition. NOTE: The speed difference between front and rear wheels may light the ABS warning light, but this does not indicate a malfunction. When AT control diagnosis is finished, perform the ABS or VDC diagnostics clear memory. <Ref. to ABS(diag)-26, Clear Memory Mode.> 4) Measure the AC voltage between TCM connector terminals. Connector & terminal (B55) No. 26 (+) — No. 15 (-):	Is the voltage approx. 2 V or more?	Go to step 7.	Replace the rear vehicle speed sensor. <Ref. to 4AT-55, Rear Vehicle Speed Sensor.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Step	Check	Yes	No
7 CHECK FOR POOR CONTACT.	Is there poor contact in rear vehicle speed sensor circuit?	Repair the poor contact.	Replace the TCM. <Ref. to 4AT-64, Transmission Control Module (TCM).>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

W: DTC P1707 AT AWD SOLENOID VALVE CIRCUIT MALFUNCTION

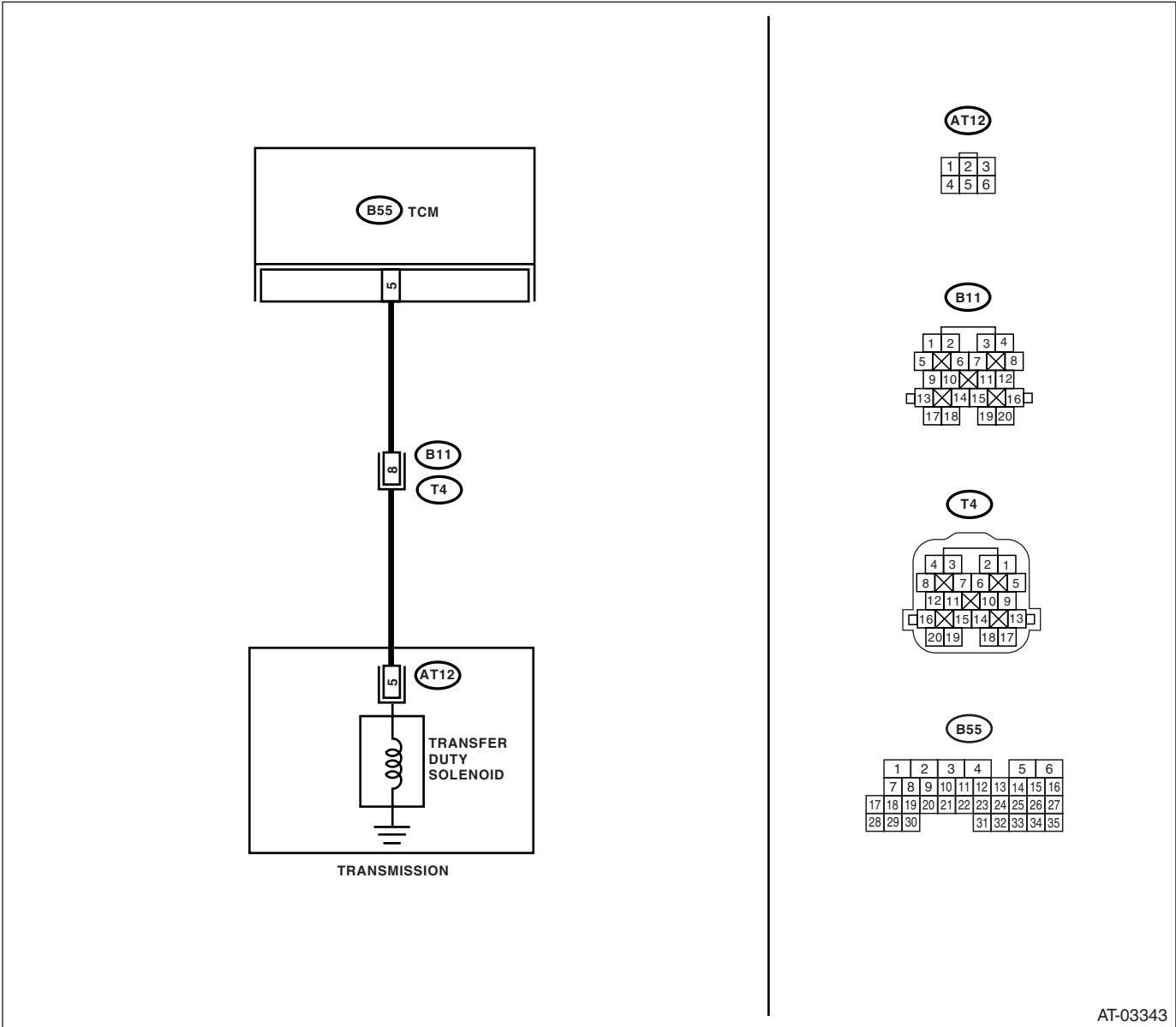
DTC DETECTING CONDITION:

Output signal circuit of transfer duty solenoid is open or shorted.

TROUBLE SYMPTOM:

Tight corner braking phenomenon occurs.

WIRING DIAGRAM:



AT-03343

Step	Check	Yes	No
1 CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. 1) Turn the ignition switch OFF. 2) Disconnect the connectors from TCM and transmission. 3) Measure the resistance of the harness between TCM connector and transmission connector. Connector & terminal (B55) No. 5 — (B11) No. 8:	Is the resistance less than 1 Ω?	Go to step 2.	Repair the open circuit of harness between TCM and transmission connector.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Step	Check	Yes	No
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 more than 1 MΩ?	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 and 4.5 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 ON (engine OFF), and turn the Subaru Select Monitor power switch ON. 4) Shift the select lever to the "N" range, and fully close the throttle pedal. (Vehicle speed is 0 km/h (0 MPH)) 5) Read the data of transfer duty solenoid using Subaru Select Monitor. • Transfer duty solenoid is indicated in "%."	Is the measured value 5%?	Go to step 5.	Go to step 8.
5 CHECK OUTPUT SIGNAL FROM TCM USING SUBARU SELECT MONITOR. 1) Shift the select lever to "D" range. 2) Read the data of transfer duty solenoid using Subaru Select Monitor. • Transfer duty solenoid is indicated in "%."	Is the measured value approximately 18 to 35%?	Even if the AT OIL TEMP warning light is blinking, the circuit has returned to 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 FOR POOR CONTACT.	Is there poor contact in transfer duty solenoid circuit?	Repair the poor contact.	Replace the TCM. <Ref. to 4AT-64, Transmission Control Module (TCM).>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Step	Check	Yes	No
7 CHECK TRANSFER DUTY SOLENOID (IN TRANSMISSION). 1) Lift up the vehicle and place it on rigid racks. NOTE: Raise all wheels off the floor. 2) Drain the automatic transmission fluid. CAUTION: Do not drain ATF until it cools down. 3) Remove the extension case, and disconnect the connector from transfer duty solenoid. 4) Measure the resistance between transfer duty solenoid connector and transmission ground. <i>Connector & terminal</i> <i>(AT12) No. 5 — Transmission ground:</i>	Is the resistance between 2.0 and 4.5 Ω ?	Go to step 8.	Replace the control valve body. <Ref. to 4AT-59, Control Valve Body.>
8 CHECK HARNESS CONNECTOR BETWEEN TRANSFER DUTY SOLENOID AND TRANSMISSION. Measure the resistance of harness between transfer duty solenoid and transmission connector. <i>Connector & terminal</i> <i>(T4) No. 8 — (AT12) No. 5:</i>	Is the resistance less than 1 Ω ?	Go to step 9.	Repair the open circuit of harness between transfer duty solenoid and transmission connector.
9 CHECK HARNESS CONNECTOR BETWEEN TRANSFER DUTY SOLENOID AND TRANSMISSION. Measure the resistance of harness between transmission connector and transmission ground. <i>Connector & terminal</i> <i>(T4) No. 8 — Transmission ground:</i>	Is the resistance more than 1 M Ω ?	Even if the AT OIL TEMP warning light turns on, the circuit has returned to 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.	Repair short circuit of the harness between the transfer duty solenoid and transmission connector.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

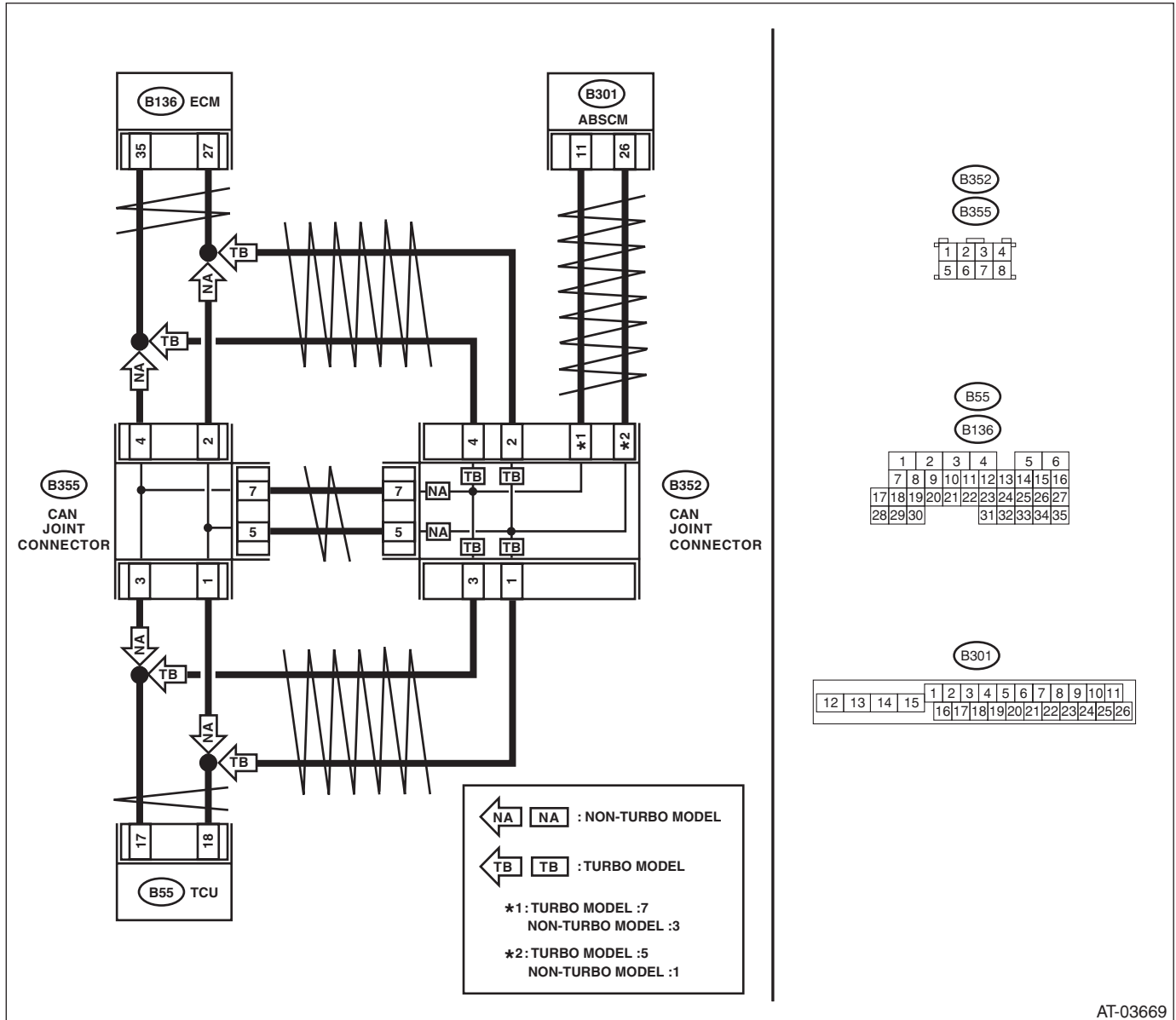
X: DTC P1718 AT CAN COMMUNICATION CIRCUIT

DTC DETECTING CONDITION:

Input signal circuit of TCM is open or shorted.

WIRING DIAGRAM:

- Model without VDC

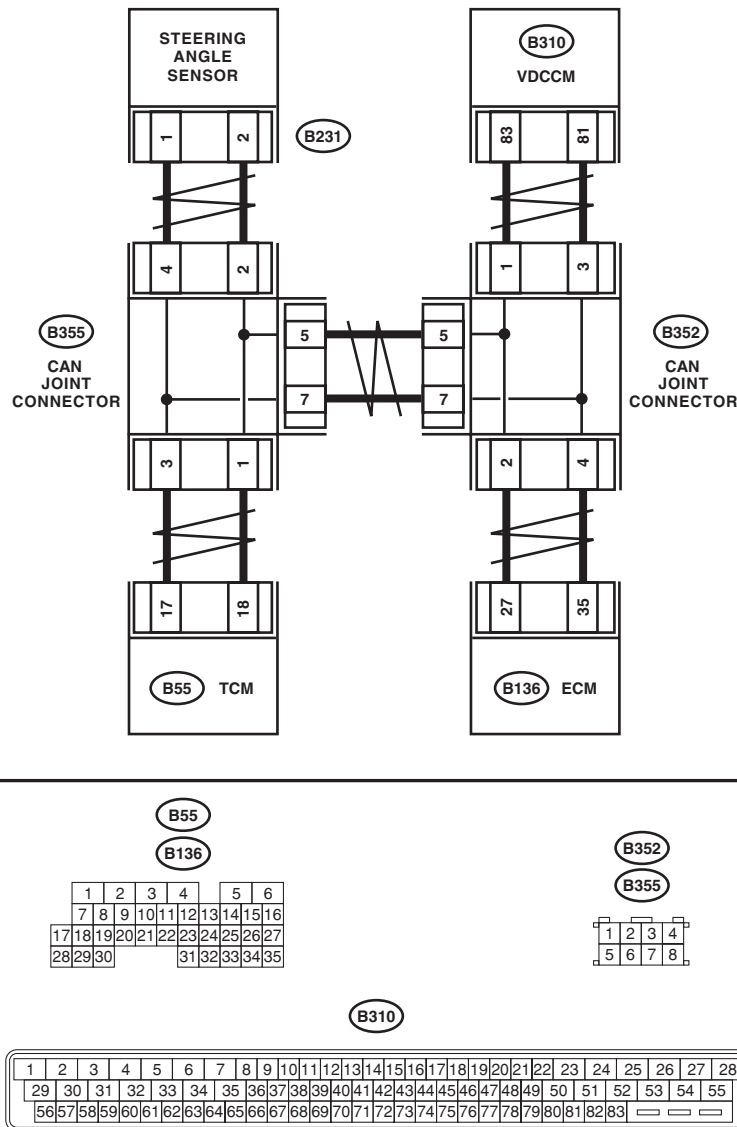


AT-03669

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

- Model with VDC



AT-03670

Step	Check	Yes	No
1 CHECK HARNESS CONNECTOR BETWEEN TCM AND VDCCM OR ABSCM&H/U. 1) Turn the ignition switch OFF. 2) Disconnect the connector from TCM, ECM, VDCCM or ABSCM&H/U. 3) Measure the resistance of the harness between TCM, VDCCM and ABSCM&H/U connector. Connector & terminal Model with VDC (B55) No. 17 — (B310) No. 81: Model without VDC (B55) No. 17 — (F49) No. 11:	Is the resistance less than 1 Ω ?	Go to step 2.	Repair open circuit of the harness between the TCM and the VDCCM, or the poor contact in the connector.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Step	Check	Yes	No
2 CHECK HARNESS CONNECTOR BETWEEN TCM AND VDCCM OR ABSCM&H/U. Measure the resistance of the harness between TCM, VDCCM and ABSCM&H/U connector. <i>Connector & terminal</i> <i>Model with VDC</i> <i>(B55) No. 18 — (B310) No. 83:</i> <i>Model without VDC</i> <i>(B55) No. 18 — (F49) No. 26:</i>	Is the resistance less than 1 Ω ?	Go to step 3.	Repair open circuit of the harness between the TCM and the VDCCM, or the poor contact in the connector.
3 CHECK HARNESS CONNECTOR BETWEEN TCM AND ECM. 1) Turn the ignition switch OFF. 2) Disconnect the connector from TCM and ECM. 3) Measure the resistance of harness between TCM and ECM connector. <i>Connector & terminal</i> <i>Turbo model</i> <i>(B55) No. 17 — (B134) No. 10:</i> <i>Non-turbo model</i> <i>(B55) No. 17 — (B136) No. 35:</i>	Is the resistance less than 1 Ω ?	Go to step 4.	Repair open circuit of the harness between the TCM and the ECM, or the poor contact in the connector.
4 CHECK HARNESS CONNECTOR BETWEEN TCM AND ECM. Measure the resistance of harness between TCM and ECM connector. <i>Connector & terminal</i> <i>Turbo model</i> <i>(B55) No. 18 — (B134) No. 3:</i> <i>Non-turbo model</i> <i>(B55) No. 18 — (B136) No. 27:</i>	Is the resistance less than 1 Ω ?	Go to step 5.	Repair open circuit of the harness between the TCM and the ECM, or the poor contact in the connector.
5 CHECK HARNESS CONNECTOR BETWEEN TCM, ECM AND VDCCM OR ABSCM&H/U. Measure the resistance of the harness between TCM and chassis ground. <i>Connector & terminal</i> <i>(B55) No. 17 — Chassis ground:</i> <i>(B55) No. 18 — Chassis ground:</i>	Is the resistance more than 1 $M\Omega$?	It is possible that the TCM, ECM, VDCCM or ABSCM&H/U are defected (replace and recheck).	Repair the short circuit of the harness between TCM, ECM, VDCCM and ABSCM&H/U.