

14. Diagnostic Procedure with Trouble Code S004509

A: COMMUNICATION FOR INITIALIZING IMPOSSIBLE S004509E34

1. CONTROL MODULE POWER SUPPLY AND GROUND LINE S004509E3401

DIAGNOSIS:

- Faulty harness connector

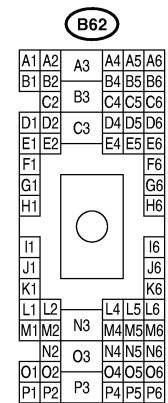
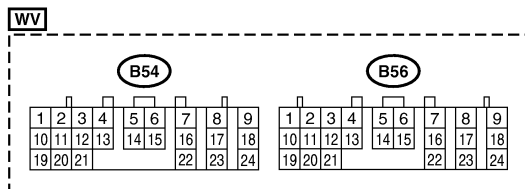
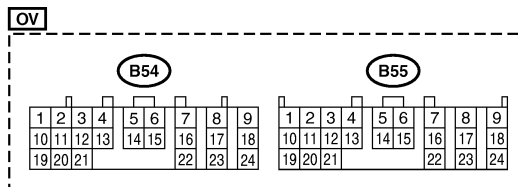
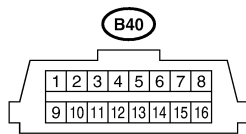
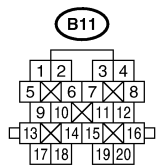
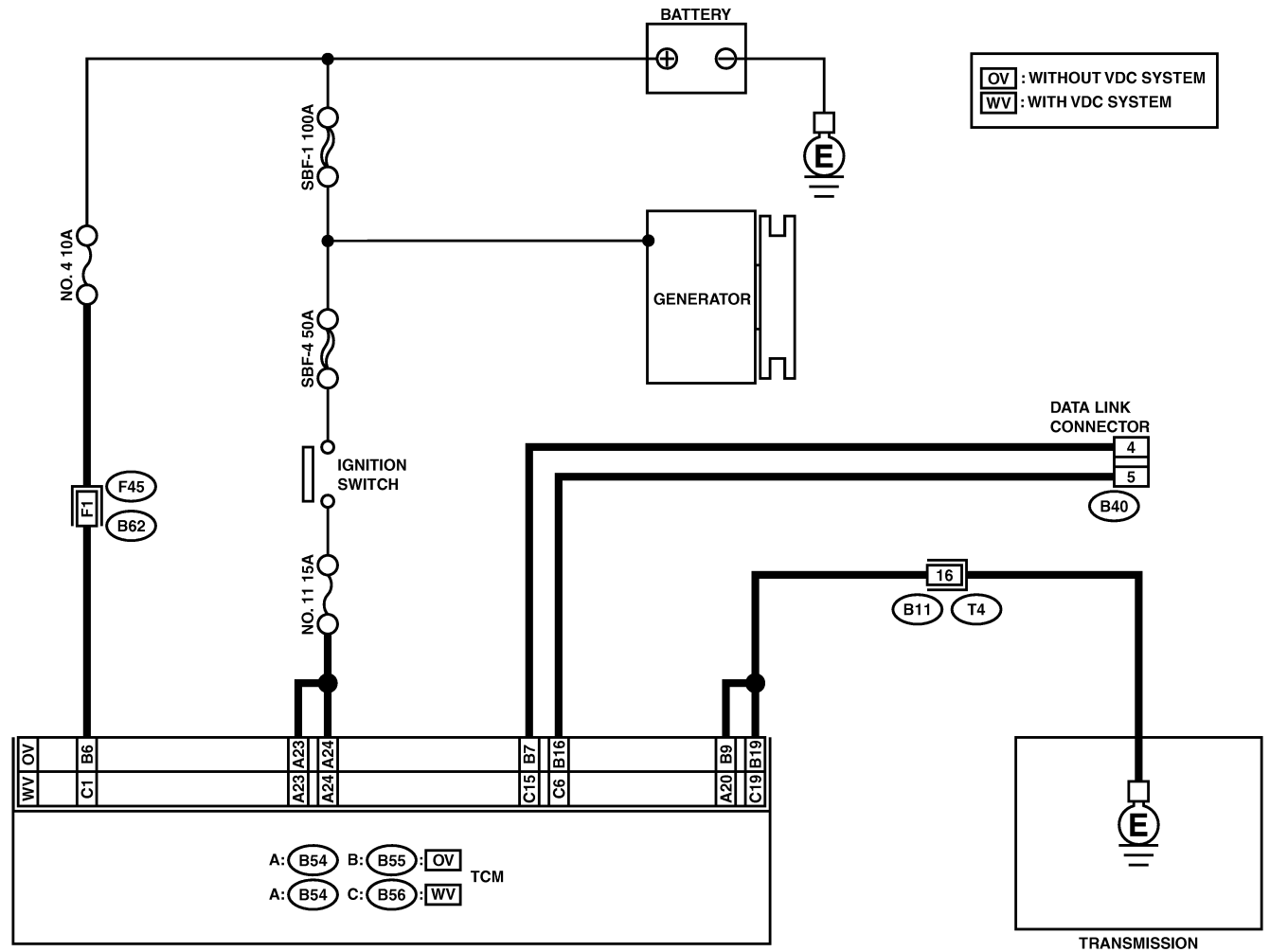
TROUBLE SYMPTOM:

- AT OIL TEMP warning light remains on.

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

WIRING DIAGRAM:



B3M1868

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

No.	Step	Check	Yes	No
1	CHECK IGNITION SWITCH.	Is ignition switch ON?	Go to step 2.	Turn ignition switch ON, and select TCM mode using the select monitor.
2	CHECK GENERATOR. 1) Start the engine. 2) Idle the engine. 3) Measure voltage between generator and chassis ground. Terminal Generator B terminal (+) — Chassis ground (-):	Is the voltage between 10 and 15 V?	Go to step 3.	Repair generator. <Ref. to SC-15 Generator.>
3	CHECK BATTERY TERMINAL. Turn ignition switch to OFF.	Is there poor contact at battery terminal?	Repair battery terminal.	Go to step 4.
4	CHECK COMMUNICATION OF SELECT MONITOR. Using the select monitor, check whether communication to other systems (such as engine, ABS, etc.) can be executed normally.	Are the name and year of the system displayed on the select monitor?	Go to step 5.	Repair select monitor communication cable and connector.
5	CHECK INSTALLATION OF TCM CONNECTOR. Turn ignition switch to OFF.	Is TCM connector inserted into TCM until the tab locks onto it?	Go to step 6.	Insert TCM connector into TCM until the tab locks onto it.
6	CHECK POWER SUPPLY OF TCM. 1) Disconnect connector from TCM. 2) Start engine. 3) Idle the engine. 4) Measure voltage between TCM connector and chassis ground. Connector & terminal WITHOUT VDC SYSTEM (B55) No. 6 (+) — Chassis ground (-): WITHOUT VDC SYSTEM (B56) No. 1 (+) — Chassis ground (-):	Is the voltage between 10 and 15 V?	Go to step 8.	Go to step 7.
7	CHECK FUSE (NO. 4). Remove fuse (No. 4).	Is the fuse (No. 4) blown out?	Replace fuse (No. 4). If replaced fuse (No. 4) has blown out easily, repair short circuit in harness between fuse (No. 4) and TCM.	Repair open circuit in harness between fuse (No. 4) and TCM, and poor contact in coupling connector.
8	CHECK IGNITION POWER SUPPLY CIRCUIT. 1) Turn ignition switch to ON (engine OFF). 2) Measure ignition power supply voltage between TCM connector and chassis ground. Connector & terminal (B53) No. 23 (+) — Chassis ground (-): (B54) No. 24 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Go to step 10.	Go to step 9.
9	CHECK FUSE (NO. 11). Remove fuse (No. 11).	Is the fuse (No. 11) blown out?	Replace fuse (No. 11). If replaced fuse (No. 11) has blown out easily, repair short circuit in harness between fuse (No. 11) and TCM.	Repair open circuit in harness between fuse (No. 11) and TCM, and poor contact in coupling connector.

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

No.	Step	Check	Yes	No
10	CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. 1) Turn ignition switch to OFF. 2) Disconnect connector from TCM and transmission. 3) Measure resistance of harness between TCM and transmission connector. Connector & terminal WITHOUT VDC SYSTEM (B55) No. 19 — (B11) No. 16: WITH VDC SYSTEM (B56) No. 19 — (B11) No. 16:	Is the resistance less than 1 Ω ?	Go to step 11.	Repair open circuit in harness between TCM and transmission harness connector.
11	CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND TCM. 1) Turn ignition switch to OFF. 2) Disconnect connector from inhibitor switch. 3) Measure resistance of harness between inhibitor switch side connector and TCM. Connector & terminal WITHOUT VDC SYSTEM (B11) No. 16 — (B55) No. 9: WITH VDC SYSTEM (B11) No. 16 — (B11) No. 20:	Is the resistance less than 1 Ω ?	Go to step 12.	Repair open circuit in harness between TCM and inhibitor side connector, and poor contact in coupling connector.
12	CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND TRANSMISSION GROUND. Measure resistance of harness between transmission and transmission ground. Connector & terminal (T4) No. 16 — Transmission ground:	Is the resistance less than 1 Ω ?	Go to step 13.	Repair open circuit in harness between transmission and transmission ground.
13	CHECK HARNESS/CONNECTOR BETWEEN TCM AND DATA LINK CONNECTOR. 1) Turn ignition switch OFF. 2) Measure resistance between TCM connector and data link connector. Connector & terminal WITHOUT VDC SYSTEM (B55) No. 16 — (B40) No. 5: (B55) No. 7 — (B40) No. 4: WITH VDC SYSTEM (B56) No. 6 — (B40) No. 5: (B56) No. 15 — (B40) No. 4:	Is the resistance less than 0.5 Ω ?	Repair harness and connector between TCM and data link connector.	Go to step 14.
14	CHECK POOR CONTACT IN CONNECTORS.	Is there poor contact in control module power supply, ground line and data link connector?	Repair connector.	Replace TCM. <Ref. to AT-42 Transmission Control Module (TCM).>

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

B: TROUBLE CODE 11 — ENGINE SPEED SIGNAL — S004509C39

DIAGNOSIS:

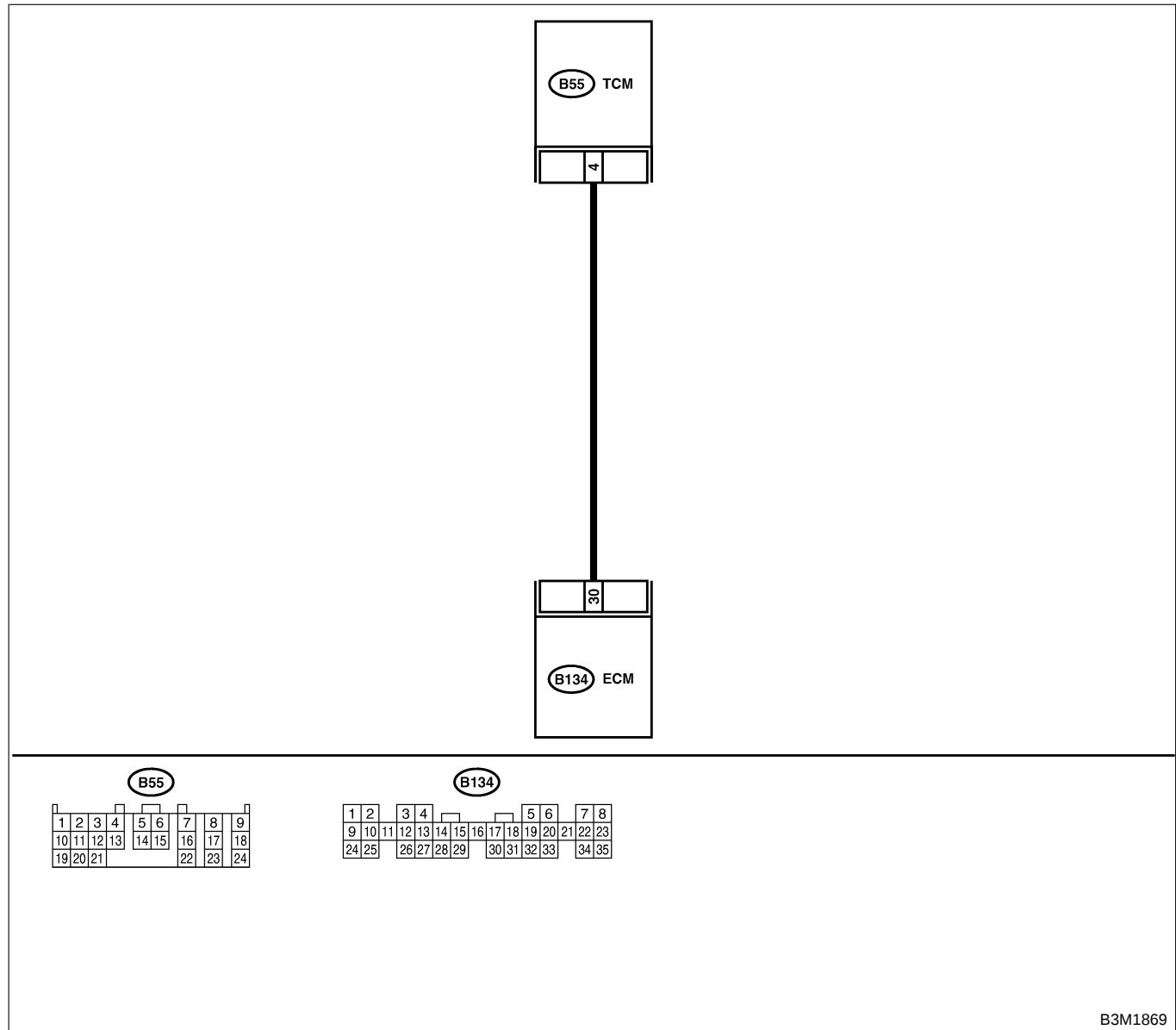
Engine speed input signal circuit is open or shorted.

TROUBLE SYMPTOM:

- No lock-up (after engine warm-up).
- AT OIL TEMP warning remains on when vehicle speed is "0".

WIRING DIAGRAM:

- 2.5 ℓ ENGINE MODEL

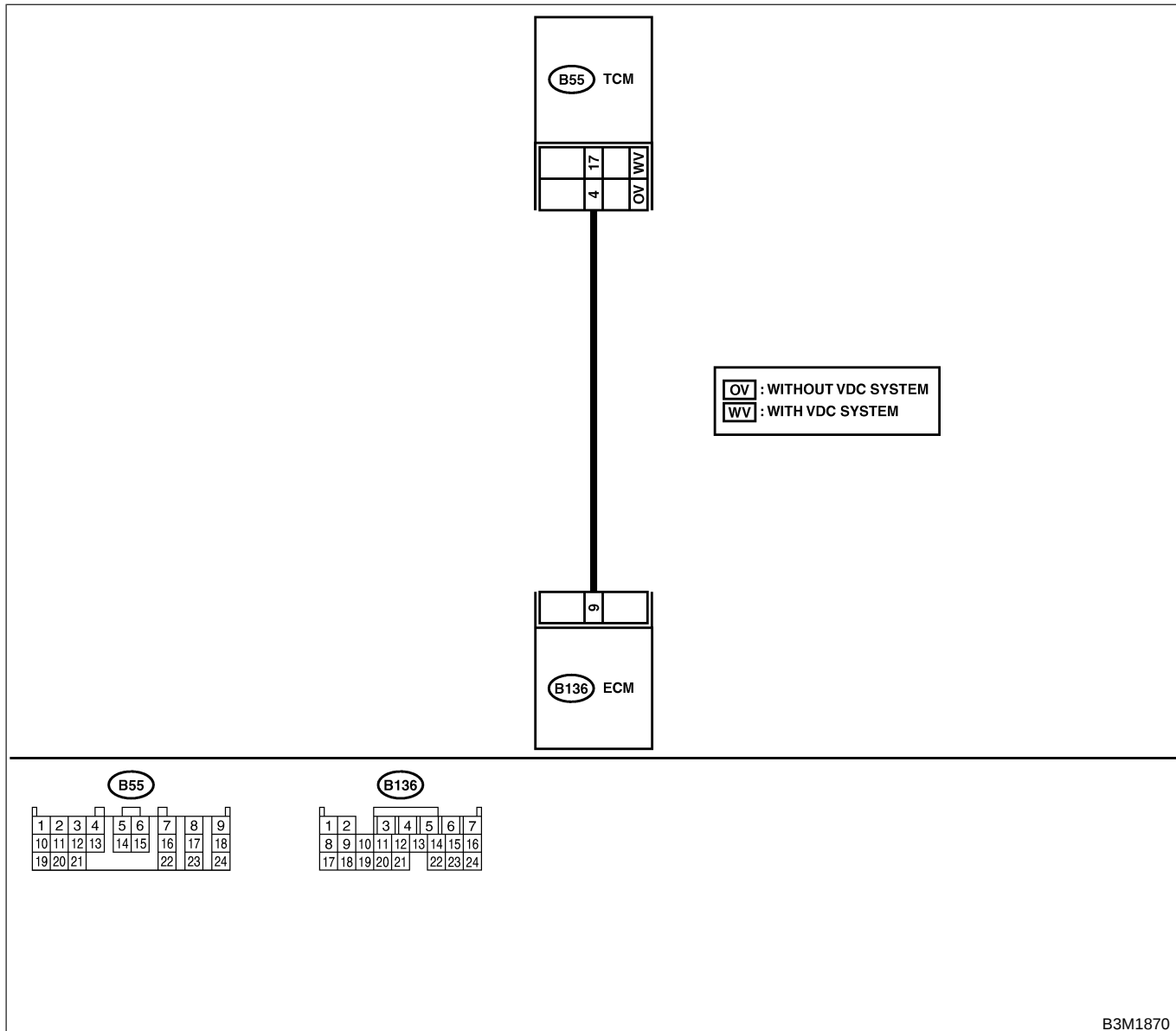


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DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

● 3.0 ℓ ENGINE MODEL



No.	Step	Check	Yes	No
1	CHECK HARNESS CONNECTOR BETWEEN TCM AND ECM. 1) Turn ignition switch to OFF. 2) Disconnect connectors from TCM and ECM. 3) Measure resistance of harness between TCM and ECM connector. Connector & terminal 2.5 ℓ ENGINE MODEL (B55) No. 4 — (B134) No. 30: 3.0 ℓ ENGINE MODEL WITHOUT VDC SYSTEM (B55) No. 4 — (B136) No. 9: 3.0 ℓ ENGINE MODEL WITH VDC SYSTEM (B55) No. 17 — (B136) No. 9:	Is the resistance less than 1 Ω?	Go to step 2.	Repair open circuit in harness between TCM and ECM connector.

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

No.	Step	Check	Yes	No
2	CHECK HARNESS CONNECTOR BETWEEN TCM AND ECM. Measure resistance of harness between TCM connector and chassis ground. <i>Connector & terminal</i> WITHOUT VDC SYSTEM (B55) No. 4 — Chassis ground: WITH VDC SYSTEM (B55) No. 17 — Chassis ground:	Is the resistance more than 1 MΩ?	Go to step 3.	Repair short circuit in harness between TCM and ECM connector.
3	PREPARE SUBARU SELECT MONITOR.	Do you have a Subaru Select Monitor?	Go to step 5.	Go to step 4.
4	CHECK INPUT SIGNAL FOR TCM. 1) Connect connectors to TCM and ECM. 2) Turn ignition switch to ON (engine OFF). 3) Measure voltage between TCM connector and chassis ground. <i>Connector & terminal</i> WITHOUT VDC SYSTEM (B55) No. 4 (+) — Chassis ground (-): WITH VDC SYSTEM (B55) No. 17 (+) — Chassis ground (-):	Is the voltage more than 10.5 V?	Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM and ECM.	Go to step 6.
5	CHECK INPUT SIGNAL FOR TCM USING SUBARU SELECT MONITOR. 1) Connect connectors to TCM and ECM. 2) Connect Subaru Select Monitor to data link connector. 3) Start the engine, and turn Subaru Select Monitor switch to ON. 4) Warm-up the engine until engine coolant temperature is above 80°C (176°F). 5) Engine idling. 6) Read data of engine speed using Subaru Select Monitor. ● Display shows engine speed signal value sent from ECM.	Is the revolution value the same as the tachometer reading shown on the combination meter?	Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM and ECM.	Go to step 6.
6	CHECK POOR CONTACT.	Is there poor contact in engine speed signal circuit?	Repair poor contact.	Go to step 7.
7	CONFIRM TROUBLE CODE 11.	Replace ECM with a new one. Does the trouble code appear again, after the memory has been cleared?	Replace TCM. <Ref. to AT-42 Transmission Control Module (TCM).>	Replace ECM.

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

MEMO:

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

C: TROUBLE CODE 27 — ATF TEMPERATURE SENSOR — S004509C76

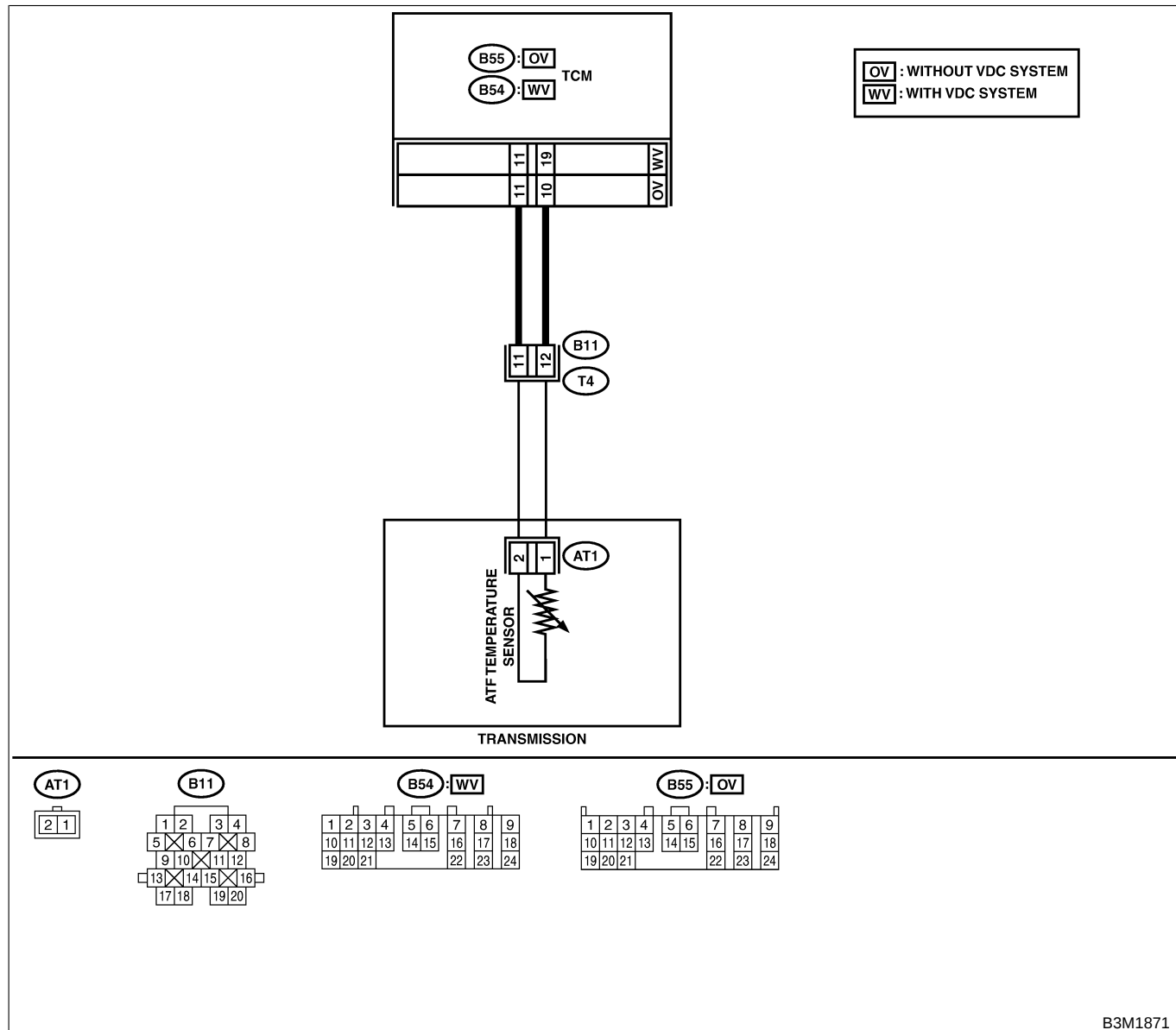
DIAGNOSIS:

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

TROUBLE SYMPTOM:

Excessive shift shock.

WIRING DIAGRAM:



DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

No.	Step	Check	Yes	No
1	CHECK HARNESS CONNECTOR BETWEEN TCM AND ATF TEMPERATURE SENSOR. 1) Turn ignition switch to OFF. 2) Disconnect connector from transmission and TCM. 3) Measure resistance of harness between TCM and transmission connector. Connector & terminal WITHOUT VDC SYSTEM (B55) No. 10 — (B11) No. 12: WITH VDC SYSTEM (B54) No. 19 — (B11) No. 12:	Is the resistance less than 1 Ω ?	Go to step 2.	Repair open circuit in harness between TCM and transmission connector.
2	CHECK HARNESS CONNECTOR BETWEEN TCM AND ATF TEMPERATURE SENSOR. Measure resistance of harness between TCM and transmission connector. Connector & terminal WITHOUT VDC SYSTEM (B55) No. 11 — (B11) No. 11: WITH VDC SYSTEM (B54) No. 11 — (B11) No. 11:	Is the resistance less than 1 Ω ?	Go to step 3.	Repair open circuit in harness between TCM and transmission connector.
3	CHECK HARNESS CONNECTOR BETWEEN TCM AND ATF TEMPERATURE SENSOR. Measure resistance of harness between TCM connector and chassis ground. Connector & terminal WITHOUT VDC SYSTEM (B55) No. 10 — Chassis ground: WITH VDC SYSTEM (B54) No. 19 — Chassis ground:	Is the resistance more than 1 M Ω ?	Go to step 4.	Repair short circuit in harness between TCM and transmission connector.
4	CHECK HARNESS CONNECTOR BETWEEN TCM AND ATF TEMPERATURE SENSOR. Measure resistance of harness between TCM connector and chassis ground. Connector & terminal WITHOUT VDC SYSTEM (B55) No. 11 — Chassis ground: WITH VDC SYSTEM (B54) No. 11 — Chassis ground:	Is the resistance more than 1 M Ω ?	Go to step 5.	Repair short circuit in harness between TCM and transmission connector.
5	CHECK ATF TEMPERATURE SENSOR. 1) Turn ignition switch to OFF. 2) Connect connectors to transmission and TCM. 3) Turn ignition switch to ON and start engine. 4) Warm-up the transmission until ATF temperature reaches to 80°C (176°F). NOTE: If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature. 5) Measure resistance between transmission connector terminals. 6) Disconnect connector from transmission. Connector & terminal (T4) No. 11 — No. 12:	Is the resistance between 275 and 375 Ω ?	Go to step 6.	Go to step 11.

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

No.	Step	Check	Yes	No
6	CHECK ATF TEMPERATURE SENSOR. 1) Turn ignition switch to ON (engine OFF). 2) Measure resistance between transmission connector terminals. <i>Connector & terminal (T4) No. 11 — No. 12:</i>	Does the resistance value increase while the ATF temperature decreases?	Go to step 7.	Go to step 11.
7	PREPARE SUBARU SELECT MONITOR.	Do you have a Subaru Select Monitor?	Go to step 9.	Go to step 8.
8	CHECK INPUT SIGNAL FOR TCM. 1) Warm-up the transmission until ATF temperature is about 80°C (176°F). NOTE: If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature. 2) Measure voltage between TCM connector terminal. <i>Connector & terminal WITHOUT VDC SYSTEM (B55) No. 11 (+) — No. 10 (-): WITH VDC SYSTEM (B54) No. 11 (+) — No. 19 (-):</i>	Is the voltage between 0.5 and 0.8 V?	Even if "AT OIL TEMP" light up, the circuit has returned to a normal condition at this time. Temporary poor contact of the connector or harness may be the case. Repair harness or contact in the ATF temperature sensor and transmission connector.	Go to step 10.
9	CHECK INPUT SIGNAL FOR TCM USING SUBARU SELECT MONITOR. Turn ignition switch to ON (engine OFF).	Does the ATF temperature gradually decrease?	Even if "AT OIL TEMP" light up, the circuit has returned to a normal condition at this time. Temporary poor contact of the connector or harness may be the case. Repair harness or contact in the ATF temperature sensor and transmission connector.	Go to step 10.
10	CHECK POOR CONTACT.	Is there poor contact in ATF temperature sensor circuit?	Repair poor contact.	Replace TCM. <Ref. to AT-42 Transmission Control Module (TCM).>

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

No.	Step	Check	Yes	No
11	CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND ATF TEMPERATURE SENSOR. 1) Turn ignition switch to OFF. 2) Disconnect connector from transmission. 3) Remove transmission connector from bracket. 4) Lift-up the vehicle and place safety stand. CAUTION: On AWD models, raise all wheels off ground. 5) Drain automatic transmission fluid. CAUTION: Do not drain the automatic transmission fluid until it cools down. 6) Remove oil pan, and disconnect connector from ATF temperature sensor connector. 7) Measure resistance of harness between ATF temperature sensor and transmission connector. Connector & terminal (T4) No. 11 — (AT1) No. 2:	Is the resistance less than 1 Ω ?	Go to step 12.	Repair open circuit in harness between ATF temperature sensor and transmission connector.
12	CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND ATF TEMPERATURE SENSOR. Measure resistance of harness between ATF temperature sensor and transmission connector. Connector & terminal (T4) No. 12 — (AT1) No. 1:	Is the resistance less than 1 Ω ?	Go to step 13.	Repair open circuit in harness between ATF temperature sensor and transmission connector.
13	CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND ATF TEMPERATURE SENSOR. Measure 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 14.	Repair short circuit in harness between ATF temperature sensor and transmission connector.
14	CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND ATF TEMPERATURE SENSOR. Measure resistance of harness between transmission connector and transmission ground. Connector & terminal (T4) No. 12 — Transmission ground:	Is the resistance more than 1 M Ω ?	Replace ATF temperature sensor. <Ref. to AT-36 Shift Solenoids, Duty Solenoids and ATF Temperature Sensor.>	Repair short circuit in harness between ATF temperature sensor and transmission connector.

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

D: TROUBLE CODE 31 — THROTTLE POSITION SENSOR — S004509C94

DIAGNOSIS:

Input signal circuit of throttle position sensor is open or shorted.

TROUBLE SYMPTOM:

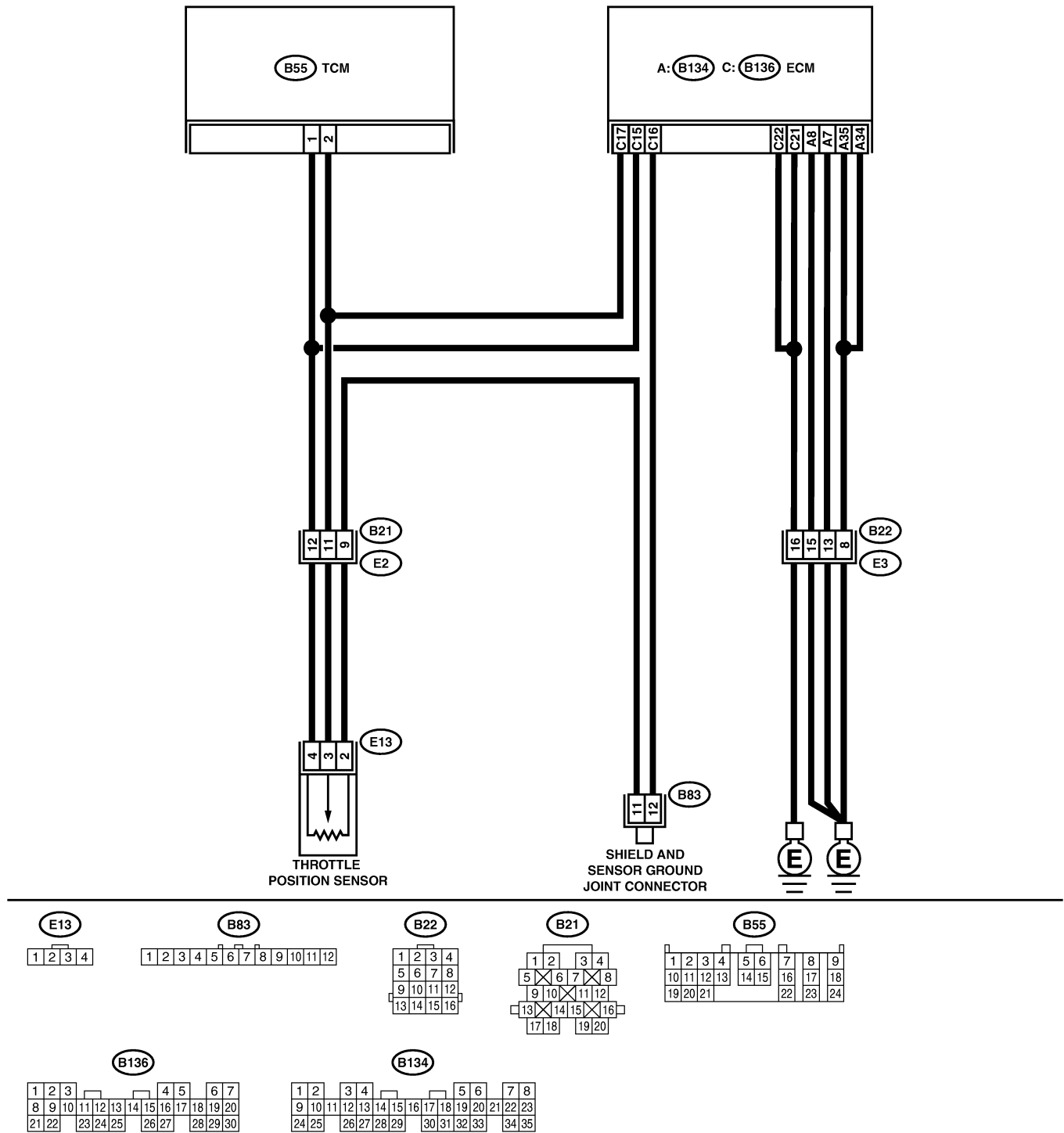
Shift point too high or too low; excessive shift shock; excessive tight corner “braking”.

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

WIRING DIAGRAM:

- 2.5 ℓ ENGINE MODEL

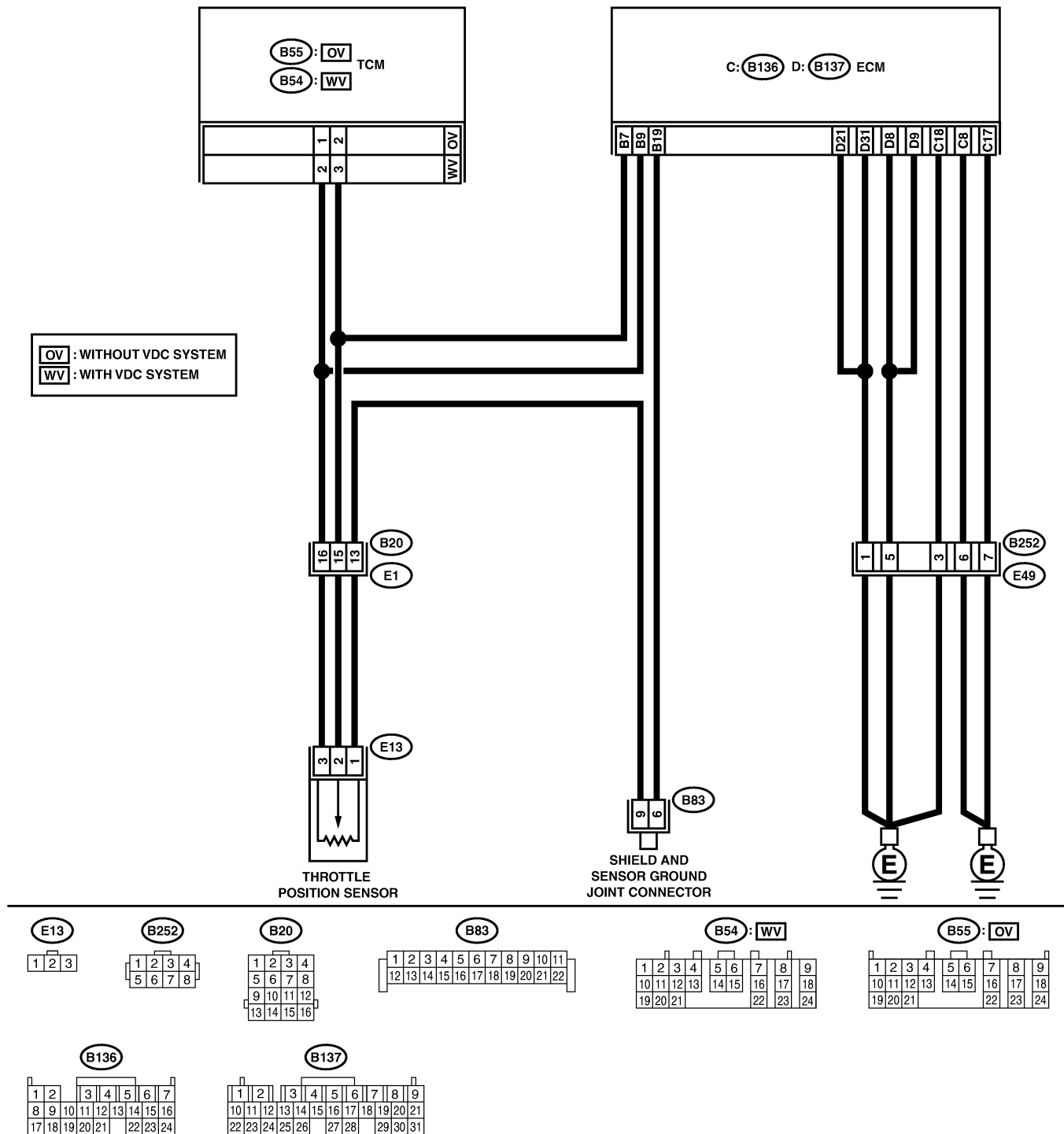


B3M1872

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

● 3.0 ℓ ENGINE MODEL



B3M1873

AT-50

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

No.	Step	Check	Yes	No
1	CHECK ENGINE GROUND TERMINALS.	Have engine ground terminals been tightened?	Go to step 2.	Tighten engine ground terminals.
2	CHECK GROUND CIRCUIT OF ECM. 1) Disconnect connector from ECM. 2) Measure resistance of harness between ECM and engine ground. Connector & terminal 2.5 ℓ ENGINE MODEL (B136) No. 22 — Engine ground: (B136) No. 21 — Engine ground: 3.0 ℓ ENGINE MODEL (B136) No. 17 — Engine ground: (B136) No. 18 — Engine ground: (B136) No. 8 — Engine ground:	Is the resistance less than 5 Ω?	Go to step 3.	Repair open circuit in harness between ECM connector and engine grounding terminal.
3	CHECK GROUND CIRCUIT OF ECM. Measure resistance of harness between ECM and engine ground. Connector & terminal 2.5 ℓ ENGINE MODEL (B134) No. 8 — Engine ground: (B134) No. 7 — Engine ground: (B134) No. 35 — Engine ground: (B134) No. 34 — Engine ground: 3.0 ℓ ENGINE MODEL (B137) No. 8 — Engine ground: (B137) No. 9 — Engine ground: (B137) No. 21 — Engine ground: (B137) No. 31 — Engine ground:	Is the resistance less than 5 Ω?	Go to step 4.	Repair open circuit in harness between ECM connector and engine grounding terminal.
4	CHECK THROTTLE POSITION SENSOR. 1) Turn ignition switch to OFF. 2) Disconnect connector from throttle position sensor. 3) Measure resistance between throttle position sensor connector receptacle's terminals. Terminals 2.5 ℓ ENGINE MODEL No. 4 — No. 2: 3.0 ℓ ENGINE MODEL No. 1 — No. 3:	Is the resistance between 3.5 and 6.5 kΩ?	Go to step 5.	Replace throttle position sensor.
5	CHECK THROTTLE POSITION SENSOR. Measure resistance between throttle position sensor connector receptacle's terminals. Terminals 2.5 ℓ ENGINE MODEL No. 2 — No. 3: 3.0 ℓ ENGINE MODEL No. 1 — No. 2:	Is the resistance between 0.3 and 0.7 kΩ?	Go to step 6.	Replace throttle position sensor.

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

No.	Step	Check	Yes	No
6	CHECK HARNESS CONNECTOR BETWEEN TCM AND THROTTLE POSITION SENSOR. 1) Disconnect connector from TCM. 2) Measure resistance of harness between TCM and throttle position sensor connector. Connector & terminal 2.5 ℓ ENGINE MODEL (B55) No. 2 — (E13) No. 3: 3.0 ℓ ENGINE MODEL WITHOUT VDC SYSTEM (B55) No. 2 — (E13) No. 2: 3.0 ℓ ENGINE MODEL WITH VDC SYSTEM (B54) No. 3 — (E13) No. 2:	Is the resistance less than 1 Ω?	Go to step 7.	Repair open circuit in harness between TCM and throttle position sensor connector, and poor contact in coupling connector.
7	CHECK HARNESS CONNECTOR BETWEEN TCM AND THROTTLE POSITION SENSOR. Measure resistance of harness between TCM and throttle position sensor connector. Connector & terminal 2.5 ℓ ENGINE MODEL (B55) No. 1 — (E13) No. 4: 3.0 ℓ ENGINE MODEL WITHOUT VDC SYSTEM (B55) No. 1 — (E13) No. 3: 3.0 ℓ ENGINE MODEL WITH VDC SYSTEM (B54) No. 2 — (E13) No. 3:	Is the resistance less than 1 Ω?	Go to step 8.	Repair open circuit in harness between TCM and throttle position sensor connector, and poor contact in coupling connector.
8	CHECK HARNESS CONNECTOR BETWEEN TCM AND THROTTLE POSITION SENSOR. Measure resistance of harness between TCM connector and chassis ground. Connector & terminal WITHOUT VDC SYSTEM (B55) No. 2 — Chassis ground: WITH VDC SYSTEM (B54) No. 3 — Chassis ground:	Is the resistance more than 1 MΩ?	Go to step 9.	Repair short circuit in harness between TCM and throttle position sensor connector.
9	CHECK HARNESS CONNECTOR BETWEEN TCM AND THROTTLE POSITION SENSOR. Measure resistance of harness between TCM connector and chassis ground. Connector & terminal WITHOUT VDC SYSTEM (B55) No. 1 — Chassis ground: WITH VDC SYSTEM (B54) No. 2 — Chassis ground:	Is the resistance more than 1 MΩ?	Go to step 10.	Repair short circuit in harness between TCM and throttle position sensor connector.

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

No.	Step	Check	Yes	No
10	CHECK HARNESS CONNECTOR BETWEEN TCM AND ECM. 1) Disconnect connector from ECM. 2) Measure resistance of harness between TCM and ECM connector. Connector & terminal 2.5 ℓ ENGINE MODEL (B55) No. 2 — (B136) No. 17: 3.0 ℓ ENGINE MODEL WITHOUT VDC SYSTEM (B55) No. 2 — (B135) No. 7: 3.0 ℓ ENGINE MODEL WITH VDC SYSTEM (B54) No. 3 — (B135) No. 7:	Is the resistance less than 1 Ω?	Go to step 11.	Repair open circuit in harness between TCM and ECM connector.
11	CHECK HARNESS CONNECTOR BETWEEN TCM AND ECM. Measure resistance of harness between TCM and ECM connector. Connector & terminal 2.5 ℓ ENGINE MODEL (B55) No. 1 — (B136) No. 15: 3.0 ℓ ENGINE MODEL WITHOUT VDC SYSTEM (B55) No. 1 — (B135) No. 9: 3.0 ℓ ENGINE MODEL WITH VDC SYSTEM (B54) No. 2 — (B135) No. 9:	Is the resistance less than 1 Ω?	Go to step 12.	Repair open circuit in harness between TCM and ECM connector.
12	PREPARE SUBARU SELECT MONITOR.	Do you have a Subaru Select Monitor?	Go to step 15.	Go to step 13.
13	CHECK INPUT SIGNAL FOR TCM. 1) Connect connectors to TCM, throttle position sensor and ECM. 2) Turn ignition switch to ON (engine OFF). 3) Close the throttle completely. 4) Measure voltage between TCM connector and chassis ground. Connector & terminal WITHOUT VDC SYSTEM (B55) No. 2 (+) — Chassis ground (-): WITH VDC SYSTEM (B54) No. 3 (+) — Chassis ground (-):	Is the voltage between 0.3 and 0.7 V in throttle fully closed?	Go to step 14.	Go to step 19.
14	CHECK INPUT SIGNAL FOR TCM. 1) Open the throttle completely. 2) Measure voltage between TCM connector and chassis ground. Connector & terminal WITHOUT VDC SYSTEM (B55) No. 2 (+) — Chassis ground (-): WITH VDC SYSTEM (B54) No. 3 (+) — Chassis ground (-):	Is the voltage between 4.3 and 4.9 V with throttle fully open?	Go to step 17.	Go to step 19.

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

No.	Step	Check	Yes	No
15	CHECK INPUT SIGNAL FOR TCM USING SUBARU SELECT MONITOR. 1) Connect connectors to TCM, throttle position sensor and ECM. 2) Connect Subaru Select Monitor to data link connector. 3) Turn ignition switch to ON (engine OFF). 4) Turn Subaru Select Monitor switch to ON. 5) Throttle fully closed. 6) Read data of throttle position sensor using Subaru Select Monitor. ● Throttle position sensor input signal is indicated.	Is the value voltage between 0.3 and 0.7 V?	Go to step 16.	Go to step 19.
16	CHECK INPUT SIGNAL FOR TCM USING SUBARU SELECT MONITOR. Throttle fully open. NOTE: Must be changed correspondingly with accelerator pedal operation (from "released" to "depressed" position).	Is the value voltage between 4.3 and 4.9 V?	Go to step 19.	Go to step 18.
17	CHECK INPUT SIGNAL FOR TCM (THROTTLE POSITION SENSOR POWER SUPPLY). Measure voltage between TCM connector and chassis ground. Connector & terminal 2.5 ℓ ENGINE MODEL (B55) No. 1 (+) — Chassis ground (-): 3.0 ℓ ENGINE MODEL WITHOUT VDC SYSTEM (B55) No. 1 (+) — Chassis ground (-): 3.0 ℓ ENGINE MODEL WITH VDC SYSTEM (B54) No. 2 (+) — Chassis ground (-):	Is the voltage between 4.8 and 5.3 V?	Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in throttle position sensor circuit.	Go to step 19.
18	CHECK INPUT SIGNAL FOR TCM USING SUBARU SELECT MONITOR (THROTTLE POSITION SENSOR POWER SUPPLY). Read data of throttle position sensor power supply using Subaru Select Monitor. ● Throttle position sensor power supply voltage is indicated.	Is the value voltage between 4.8 and 5.3 V?	Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in throttle position sensor circuit.	Go to step 19.
19	CHECK POOR CONTACT.	Is there poor contact in throttle position sensor circuit?	Repair poor contact.	Replace TCM. <Ref. to AT-42 Transmission Control Module (TCM).>

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

MEMO:

AT-55

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

E: TROUBLE CODE 33 — FRONT VEHICLE SPEED SENSOR — S004509F60

DIAGNOSIS:

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

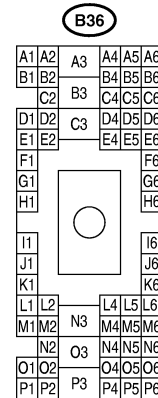
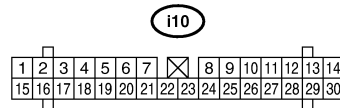
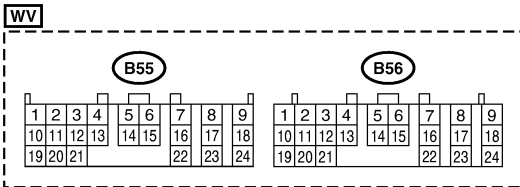
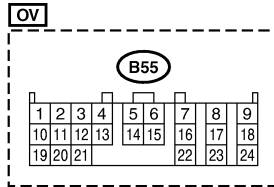
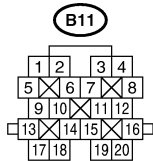
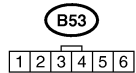
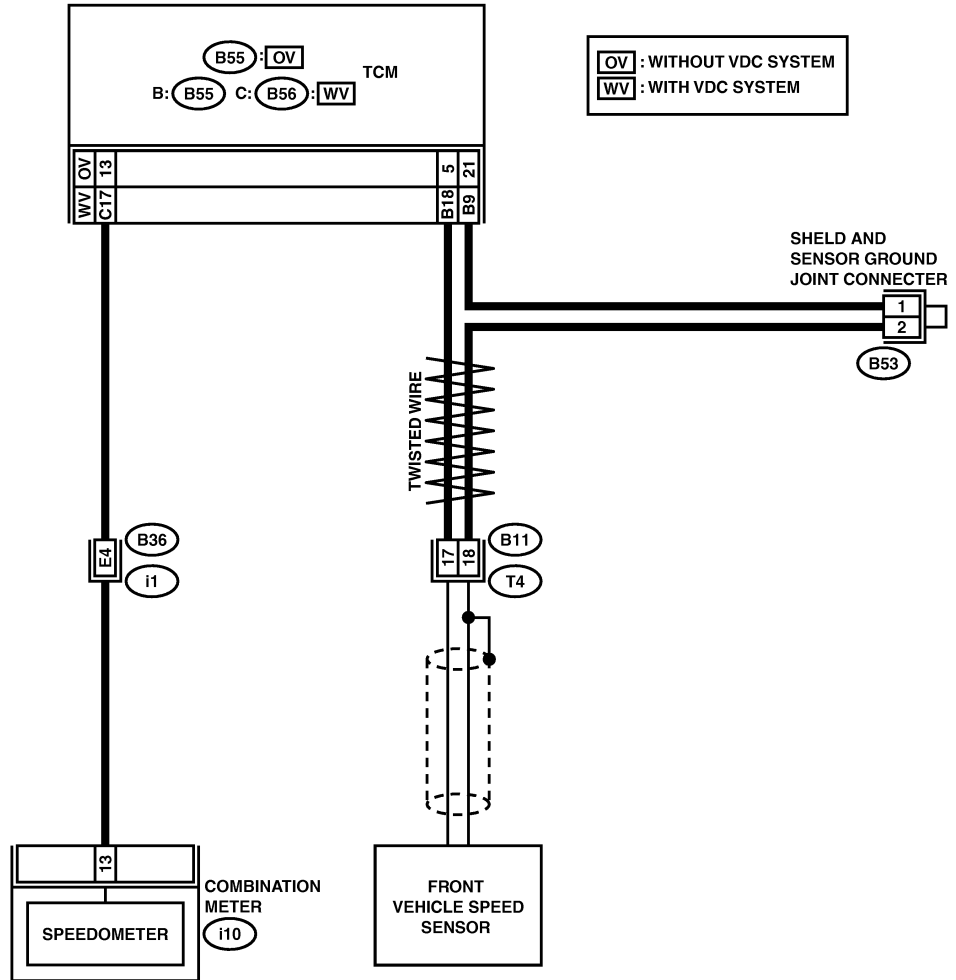
TROUBLE SYMPTOM:

- Erroneous idling.
- Engine stalls.
- Poor driving performance.

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

WIRING DIAGRAM:



B3M1874

AT-57

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

No.	Step	Check	Yes	No
1	CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. 1) Disconnect connector from TCM. 2) Measure resistance of harness between TCM and transmission connector. <i>Connector & terminal</i> <i>Without VDC SYSTEM</i> (B55) No. 5 — (B11) No. 17: <i>With VDC SYSTEM</i> (B55) No. 18 — (B11) No. 17:	Is the resistance less than 1 Ω ?	Go to step 2.	Repair open circuit in harness between TCM and transmission connector.
2	CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. Measure resistance of harness between TCM and transmission connector. <i>Connector & terminal</i> <i>Without VDC SYSTEM</i> (B55) No. 21 — (B11) No. 18: <i>With VDC SYSTEM</i> (B55) No. 9 — (B11) No. 18:	Is the resistance less than 1 Ω ?	Go to step 3.	Repair open circuit in harness between TCM and transmission connector, and poor contact in coupling connector.
3	CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. Measure resistance of harness between TCM and transmission connector. <i>Connector & terminal</i> <i>Without VDC SYSTEM</i> (B55) No. 21 — Chassis ground: <i>With VDC SYSTEM</i> (B55) No. 9 — Chassis ground:	Is the resistance more than 1 $M\Omega$?	Go to step 4.	Repair short circuit in harness between TCM and transmission connector.
4	CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. Measure resistance of harness between TCM and transmission connector. <i>Connector & terminal</i> <i>Without VDC SYSTEM</i> (B55) No. 5 — Chassis ground: <i>With VDC SYSTEM</i> (B55) No. 18 — Chassis ground:	Is the resistance more than 1 $M\Omega$?	Go to step 5.	Repair short circuit in harness between TCM and transmission connector.
5	CHECK FRONT VEHICLE SPEED SENSOR. 1) Turn ignition switch to OFF. 2) Disconnect connector from transmission. 3) Measure resistance between transmission connector receptacle's terminals. <i>Connector & terminal</i> (T4) No. 17 — No. 18:	Is the resistance between 450 and 650 Ω ?	Go to step 6.	Replace transmission harness connector.
6	PREPARE OSCILLOSCOPE.	Do you have oscilloscope?	Go to step 9.	Go to step 7.
7	PREPARE SUBARU SELECT MONITOR.	Do you have a Subaru Select Monitor?	Go to step 10.	Go to step 8.

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

No.	Step	Check	Yes	No
8	CHECK INPUT SIGNAL FOR TCM. 1) Connect all connectors. 2) Lift-up or raise the vehicle and place safety stands. CAUTION: On AWD models, raise all wheels off 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 indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to ABS-20 Clear Memory Mode.> 4) Measure voltage between TCM connector terminals. Connector & terminal Without VDC SYSTEM (B55) No. 5 (+) — No. 21 (-): With VDC SYSTEM (B55) No. 18 (+) — No. 9 (-):	Is the voltage more than AC 1 V?	Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contactor or harness may be the case. Repair harness or connector in the front vehicle speed sensor circuit.	Go to step 11.
9	CHECK FRONT VEHICLE SPEED SENSOR USING OSCILLOSCOPE. 1) Connect all connectors. 2) Lift-up the vehicle and place safety stand. CAUTION: On AWD models, raise all wheels off ground. 3) Set oscilloscope to TCM connector terminals. WITHOUT VDC SYSTEM Positive probe; (B55) No. 5 Earth lead; (B55) No. 21 WITH VDC SYSTEM Positive probe; (B55) No. 18 Earth lead; (B55) No. 9 4) Start the engine, and drive the wheels slowly. NOTE: The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunctions. When AT control diagnosis is finished, perform the ABS memory clearance procedure of self-diagnosis system. <Ref. to ABS-20 Clear Memory Mode.> 5) Measure signal voltage indicated on oscilloscope.	Is the voltage more than AC 4 V?	Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contactor or harness may be the case. Repair harness or connector in the front vehicle speed sensor circuit.	Go to step 11.

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

No.	Step	Check	Yes	No
10	CHECK INPUT SIGNAL FOR TCM USING SUBARU SELECT MONITOR. 1) Connect all connectors. 2) Connect Subaru Select Monitor to data link connector. 3) Lift-up or raise the vehicle and place safety stands. CAUTION: On AWD models, raise all wheels off floor. 4) Turn ignition switch to ON and turn Subaru Select Monitor switch to ON. 5) Start the engine. 6) Read data of vehicle speed using Subaru Select Monitor. ● Compare speedometer with Subaru Select Monitor indications. ● Vehicle speed is indicated in "km/h" or "MPH". 7) Slowly increase vehicle speed to 60 km/h or 37 MPH. 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 memory clearance procedure of on-board diagnostics system. <Ref. to ABS-20 Clear Memory Mode.>	Does the speedometer indication increase as the Subaru Select Monitor data increases?	Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contactor or harness may be the case. Repair harness or connector in the front vehicle speed sensor circuit.	Go to step 11.
11	CHECK POOR CONTACT.	Is there poor contact in vehicle speed sensor 2 circuit?	Repair poor contact.	Replace TCM. <Ref. to AT-42 Transmission Control Module (TCM).>

AT-60

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

MEMO:

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

F: TROUBLE CODE 36 — TORQUE CONVERTER TURBINE SPEED SENSOR

S004509D17

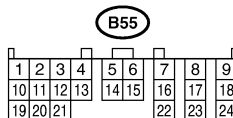
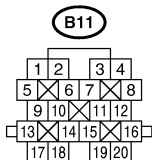
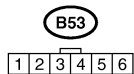
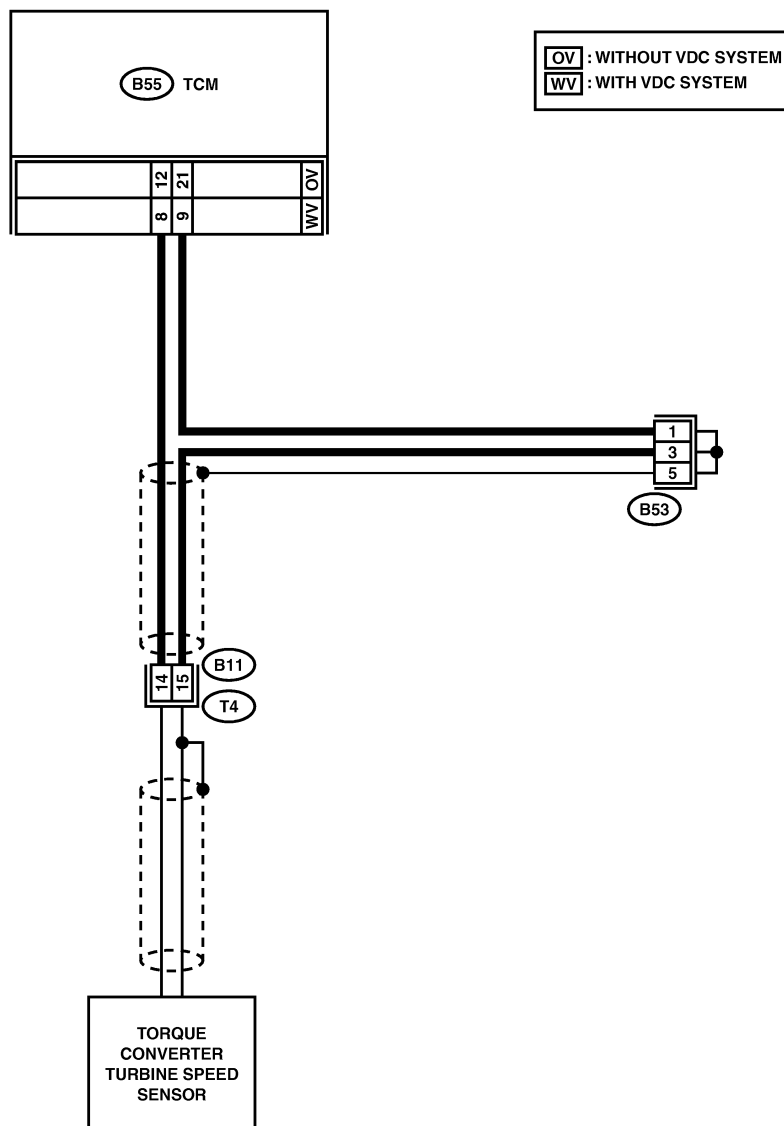
DIAGNOSIS:

Input signal circuit of TCM is open or shorted.

TROUBLE SYMPTOM:

Excessive shift shock.

WIRING DIAGRAM:



B3M1875

AT-62

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

No.	Step	Check	Yes	No
1	CHECK TORQUE CONVERTER TURBINE SPEED SENSOR. 1) Turn ignition switch to OFF. 2) Disconnect connector from transmission. 3) Measure resistance between transmission connector receptacle's terminals. Connector & terminal (T4) No. 14 — No. 15:	Is the resistance between 450 and 650 Ω ?	Go to step 2.	Replace turbine speed sensor. <Ref. to AT-31 Front and Rear Vehicle Speed Sensors, Torque Converter Turbine Speed Sensor and Harness Assembly.>
2	CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. 1) Disconnect connector from TCM. 2) Measure resistance of harness between TCM and transmission connector. Connector & terminal WITHOUT VDC SYSTEM (B55) No. 12 — (B11) No. 14: WITH VDC SYSTEM (B55) No. 8 — (B11) No. 14:	Is the resistance less than 1 Ω ?	Go to step 3.	Repair open circuit in harness between TCM and transmission connector.
3	CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. Measure resistance of harness between TCM and transmission connector. Connector & terminal WITHOUT VDC SYSTEM (B55) No. 21 — (B11) No. 15: WITH VDC SYSTEM (B55) No. 9 — (B11) No. 15:	Is the resistance less than 1 Ω ?	Go to step 4.	Repair open circuit in harness between TCM and transmission connector.
4	CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. Measure resistance of harness between TCM and chassis ground. Connector & terminal WITHOUT VDC SYSTEM (B55) No. 21 — Chassis ground: WITH VDC SYSTEM (B55) No. 9 — Chassis ground:	Is the resistance more than 1 M Ω ?	Go to step 5.	Repair short circuit in harness between TCM and transmission connector.
5	CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. Measure resistance of harness between TCM and chassis ground. Connector & terminal WITHOUT VDC SYSTEM (B55) No. 12 — Chassis ground: WITH VDC SYSTEM (B55) No. 8 — Chassis ground:	Is the resistance more than 1 M Ω ?	Go to step 6.	Repair short circuit in harness between TCM and transmission connector.
6	PREPARE OSCILLOSCOPE.	Do you have oscilloscope?	Go to step 10.	Go to step 7.
7	PREPARE SUBARU SELECT MONITOR.	Do you have a Subaru Select Monitor?	Go to step 9.	Go to step 8.

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

No.	Step	Check	Yes	No
8	CHECK INPUT SIGNAL FOR TCM. 1) Connect connectors to TCM and transmission. 2) Start the engine and move select lever to "P" or "N" range. 3) Measure voltage between TCM connector terminals. Connector & terminal WITHOUT VDC SYSTEM (B55) No. 12 (+) — No. 21 (-): WITH VDC SYSTEM (B55) No. 8 (+) — No. 9 (-):	Is the voltage more than AC 1 V?	Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM and transmission.	Go to step 11.
9	CHECK INPUT SIGNAL FOR TCM USING SUBARU SELECT MONITOR. 1) Connect connectors to TCM and transmission. 2) Connect Subaru Select Monitor to data link connector. 3) Turn ignition switch to ON and turn Subaru Select Monitor switch to ON. 4) Start the engine. 5) Move select lever to "P" or "N" range. 6) Read data of turbine speed using Subaru Select Monitor. • Compare tachometer with Subaru Select Monitor indications.	Is the revolution value same as the tachometer reading shown on the combination meter?	Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM and transmission.	Go to step 11.
10	CHECK INPUT SIGNAL FOR TCM USING OSCILLOSCOPE. 1) Connect connectors to TCM and transmission. 2) Set oscilloscope to TCM connector terminals. WITHOUT VDC SYSTEM Position prove; (B55) No. 12 Earth lead; (B55) No. 21 WITH VDC SYSTEM Position prove; (B55) No. 8 Earth lead; (B55) No. 9 3) Start the engine and move select lever to "P" or "N" range.	Is the signal voltage more than AC 1 V?	Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM and transmission.	Go to step 11.
11	CHECK POOR CONTACT.	Is there poor contact in torque converter turbine speed sensor circuit?	Repair poor contact.	Replace TCM. <Ref. to AT-42 Transmission Control Module (TCM).>

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

MEMO:

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

G: TROUBLE CODE 38 — TORQUE CONTROL SIGNAL — S004509D26

DIAGNOSIS:

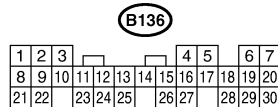
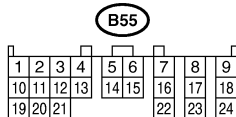
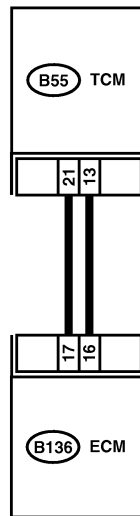
- The signal circuit is open or shorted.

TROUBLE SYMPTOM:

Excessive shift shock.

WIRING DIAGRAM:

- 2.5 ℓ ENGINE MODEL

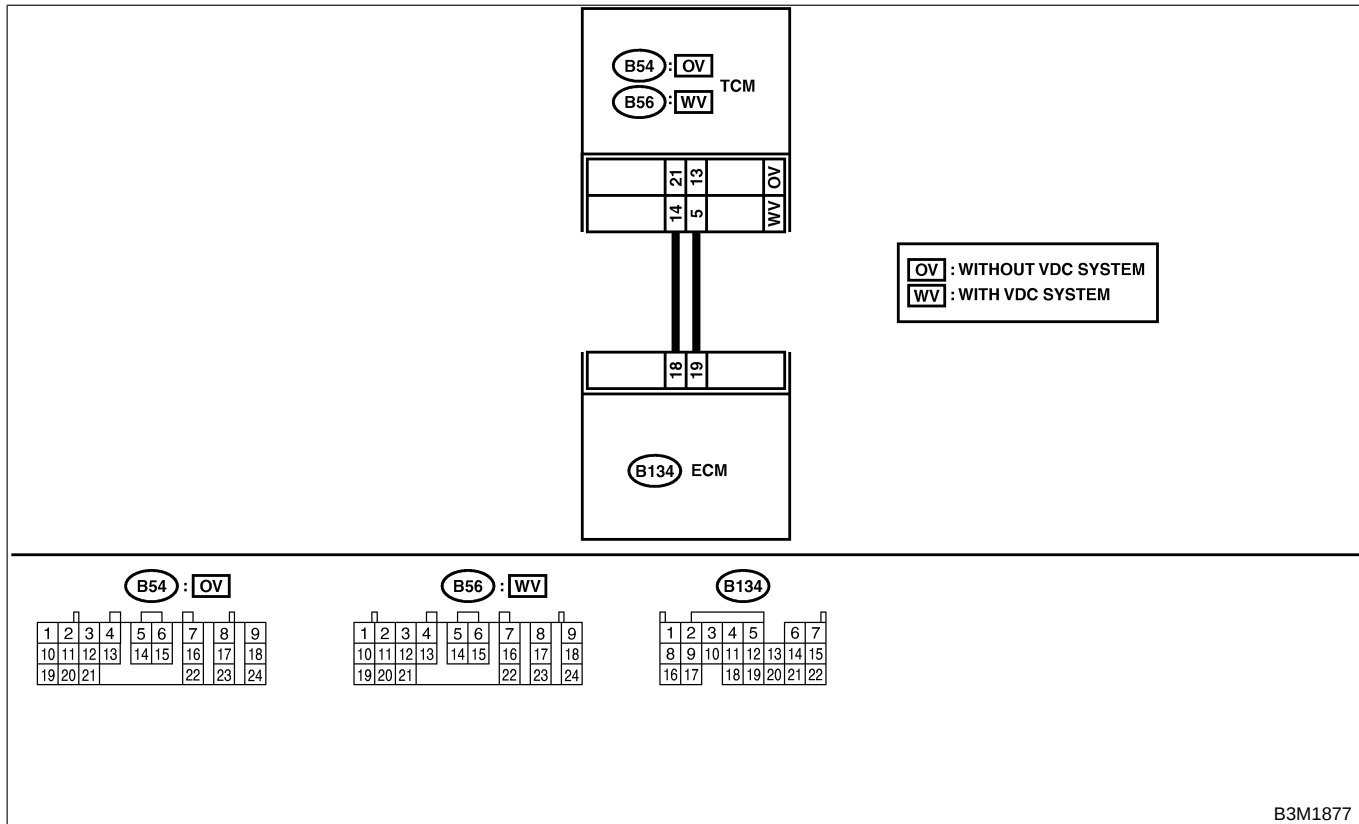


B3M1876

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

● 3.0 ℓ ENGINE MODEL



B3M1877

No.	Step	Check	Yes	No
1	CHECK HARNESS CONNECTOR BETWEEN TCM AND ECM. 1) Turn ignition switch to OFF. 2) Disconnect connectors from TCM and ECM. 3) Measure resistance of harness between TCM and ECM connector. Connector & terminal 2.5 ℓ ENGINE MODEL (B54) No. 21 — (B135) No. 17: (B54) No. 13 — (B135) No. 16: 3.0 ℓ ENGINE MODEL WITHOUT VDC SYSTEM (B54) No. 21 — (B134) No. 18: (B54) No. 13 — (B134) No. 19: 3.0 ℓ ENGINE MODEL WITH VDC SYSTEM (B56) No. 14 — (B134) No. 18: (B56) No. 5 — (B134) No. 19:	Is the resistance less than 1 Ω?	Go to step 2.	Repair open circuit in harness between TCM and ECM connector.
2	CHECK HARNESS CONNECTOR BETWEEN TCM AND ECM. Measure resistance of harness between TCM connector and chassis ground. Connector & terminal WITHOUT VDC SYSTEM (B54) No. 21 — Chassis ground: (B54) No. 13 — Chassis ground: WITH VDC SYSTEM (B56) No. 14 — Chassis ground: (B56) No. 5 — Chassis ground:	Is the resistance more than 1 MΩ?	Go to step 3.	Repair short circuit in harness between TCM and ECM connector.

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

No.	Step	Check	Yes	No
3	CHECK OUTPUT SIGNAL EMITTED FROM TCM. 1) Connect connectors to TCM and ECM. 2) Turn ignition switch to ON (engine OFF). 3) Measure voltage between TCM connector terminals. Connector & terminal WITHOUT VDC SYSTEM (B54) No. 21 (+) — Chassis ground (-): (B54) No. 13 (+) — Chassis ground (-): WITH VDC SYSTEM (B56) No. 14 (+) — Chassis ground (-): (B56) No. 5 (+) — Chassis ground (-):	Is the voltage more than 4.8 V?	Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM and ECM.	Go to step 4.
4	CHECK POOR CONTACT.	Is there poor contact in torque control signal circuit?	Repair poor contact.	Go to step 5.
5	CHECK GROUND LINE BETWEEN TRANSMISSION AND BODY. Check installing condition of ground line in transmission and body.	Is there any dirt or rust at ground line installing point?	Remove dirt and rust.	Go to step 6.
6	CHECK GROUND LINE BETWEEN TRANSMISSION AND BODY. Check installing condition of ground line in transmission and body. Tightening torque: 13±3 N·m (1.3±0.3 kgf-m, 9.4±2.2 ft-lb)	Is tightening torque value within specification?	Go to step 7.	Tighten to specified torque.
7	CHECK GROUND LINE INSIDE TRANSMISSION. 1) Drain AT fluid and remove oil pan. 2) Check tightening torque value of ground line installing bolt. Tightening torque: T: 8±1 N·m (0.8±0.1 kgf-m, 5.8±0.7 ft-lb)	Is tightening torque value within specification?	Go to step 8.	Tighten to specified torque.
8	RECHECK OUTPUT SIGNAL EMITTED FROM TCM. Measure voltage between TCM connector and chassis ground. Connector & terminal WITHOUT VDC SYSTEM (B54) No. 21 (+) — Chassis ground (-): (B54) No. 13 (+) — Chassis ground (-): WITH VDC SYSTEM (B56) No. 14 (+) — Chassis ground (-): (B56) No. 5 (+) — Chassis ground (-):	Is each voltage more than 4.8 V?	Replace TCM. <Ref. to AT-42 Transmission Control Module (TCM).>	Replace ECM.

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

MEMO:

AT-69

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

H: TROUBLE CODE 45 — INTAKE MANIFOLD PRESSURE SIGNAL — S004509D48

DIAGNOSIS:

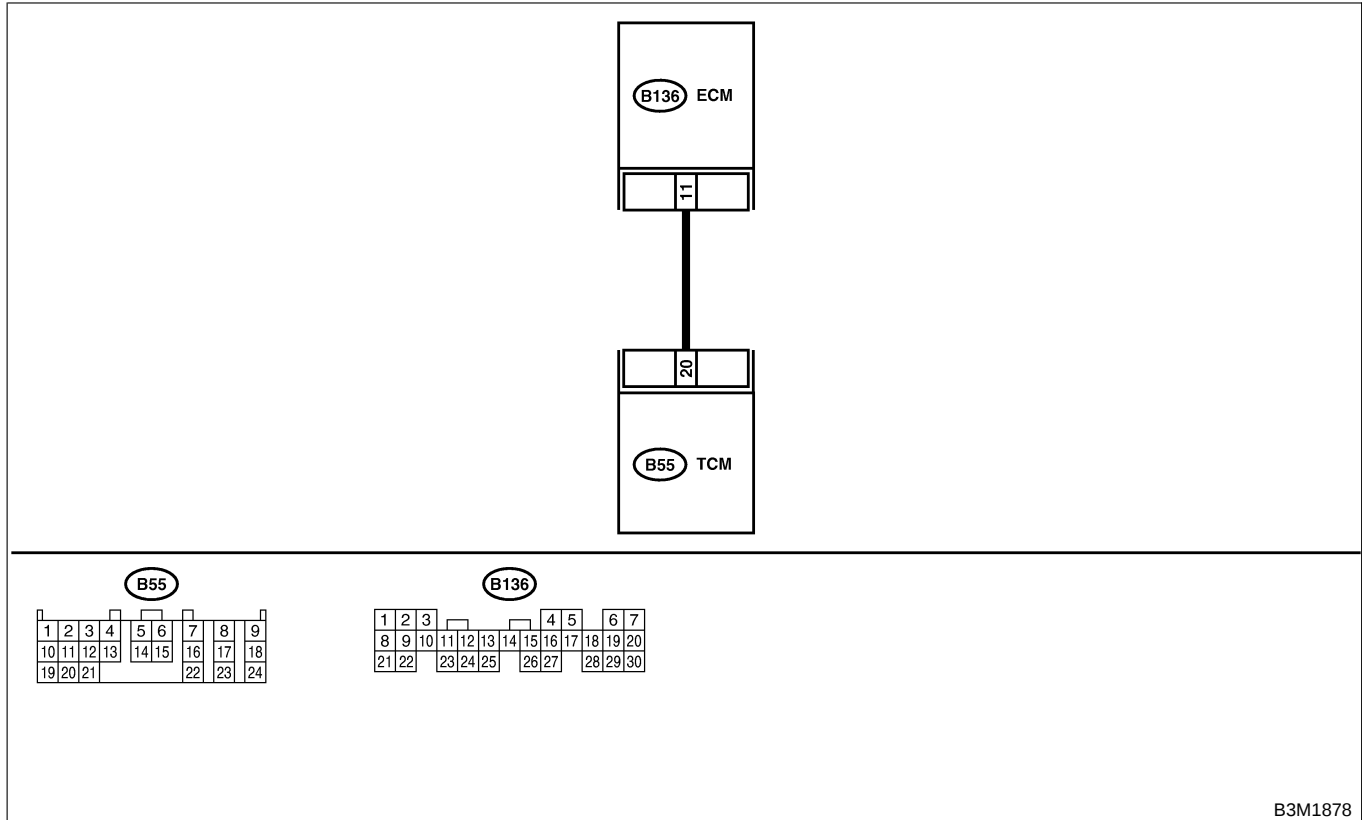
Input signal circuit of TCM from ECM is open or shorted.

TROUBLE SYMPTOM:

Excessive shift shock.

WIRING DIAGRAM:

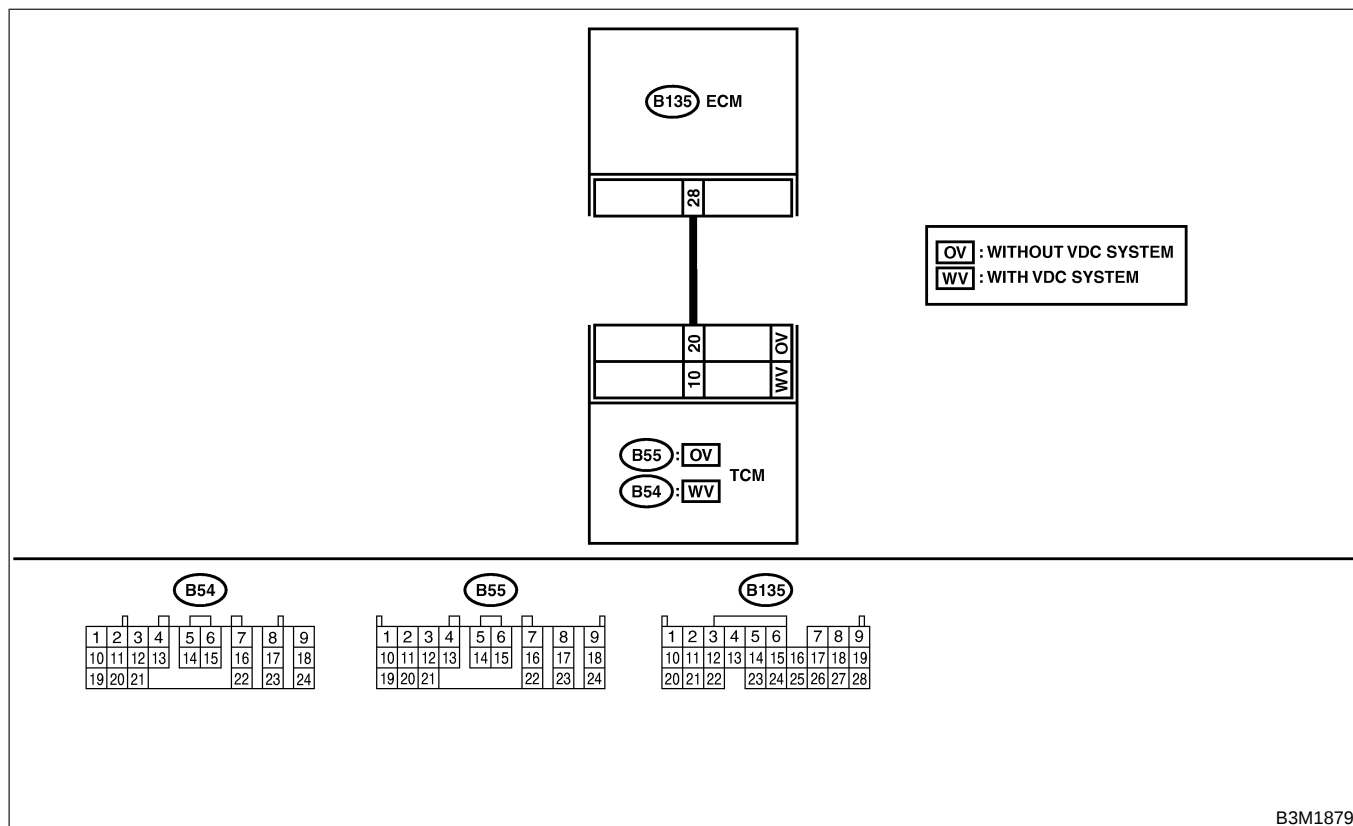
- 2.5 ℓ ENGINE MODEL



DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

● 3.0 ℓ ENGINE MODEL



B3M1879

No.	Step	Check	Yes	No
1	CHECK ENGINE GROUND TERMINALS AND GROUND CIRCUIT OF ECM <Ref. to AT-48 TROUBLE CODE 31 — THROTTLE POSITION SENSOR —, Diagnostic Procedure with Trouble Code.>	Is there any trouble?	Repair ground terminal and/or ground circuit of ECM.	Go to step 2.
2	CHECK HARNESS CONNECTOR BETWEEN TCM AND ECM. 1) Turn ignition switch to OFF. 2) Disconnect connectors from TCM and ECM. 3) Measure resistance of harness between TCM and ECM connector. Connector & terminal 2.5 ℓ ENGINE MODEL (B55) No. 20 — (B136) No. 11: 3.0 ℓ ENGINE MODEL WITHOUT VDC SYSTEM (B55) No. 20 — (B135) No. 28: 3.0 ℓ ENGINE MODEL WITH VDC SYSTEM (B54) No. 10 — (B135) No. 28:	Is the resistance less than 1 Ω?	Go to step 3.	Repair open circuit in harness between TCM and ECM connector.

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

No.	Step	Check	Yes	No
3	CHECK HARNESS CONNECTOR BETWEEN TCM AND ECM. Measure resistance of harness between TCM connector and chassis ground. Connector & terminal WITHOUT VDC SYSTEM (B55) No. 20 — Chassis ground: WITH VDC SYSTEM (B54) No. 10 — Chassis ground:	Is the resistance more than 1 MΩ?	Go to step 4.	Repair short circuit in harness between TCM and ECM connector.
4	PREPARE SUBARU SELECT MONITOR.	Do you have a Subaru Select Monitor?	Go to step 6.	Go to step 5.
5	CHECK INPUT SIGNAL FOR TCM. 1) Connect connectors to TCM and ECM. 2) Start the engine, and warm-up the transmission until ATF temperature is above 80°C (176°F). NOTE: If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature. 3) Engine idling. 4) Measure voltage between TCM connector and chassis ground. Connector & terminal 2.5 ℓ ENGINE MODEL (B55) No. 20 (+) — Chassis ground (-): 3.0 ℓ ENGINE MODEL WITHOUT VDC SYSTEM (B55) No. 20 (+) — Chassis ground (-): 3.0 ℓ ENGINE MODEL WITH VDC SYSTEM (B54) No. 10 (+) — Chassis ground (-):	Is the voltage between 1.2 and 1.8 V?	Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM and ECM.	Go to step 7.
6	CHECK INPUT SIGNAL FOR TCM USING SUBARU SELECT MONITOR. 1) Connect connectors to TCM and ECM. 2) Turn ignition switch to OFF. 3) Connect Subaru Select Monitor to data link connector. 4) Start the engine, and turn Subaru Select monitor switch to ON. 5) Warm-up the engine until engine coolant temperature is above 80°C (176°F). 6) Engine idling. 7) Read data of intake manifold pressure signal using Subaru Select Monitor. ● Display shows intake manifold pressure signal value sent from ECM.	Is the value between 1.2 and 1.8 V?	Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM and ECM.	Go to step 7.
7	CHECK POOR CONTACT.	Is there poor contact in intake manifold pressure signal circuit?	Repair poor contact.	Replace TCM. <Ref. to AT-42 Transmission Control Module (TCM).>

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

MEMO:

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

I: TROUBLE CODE 71 — SHIFT SOLENOID 1 — S004509D91

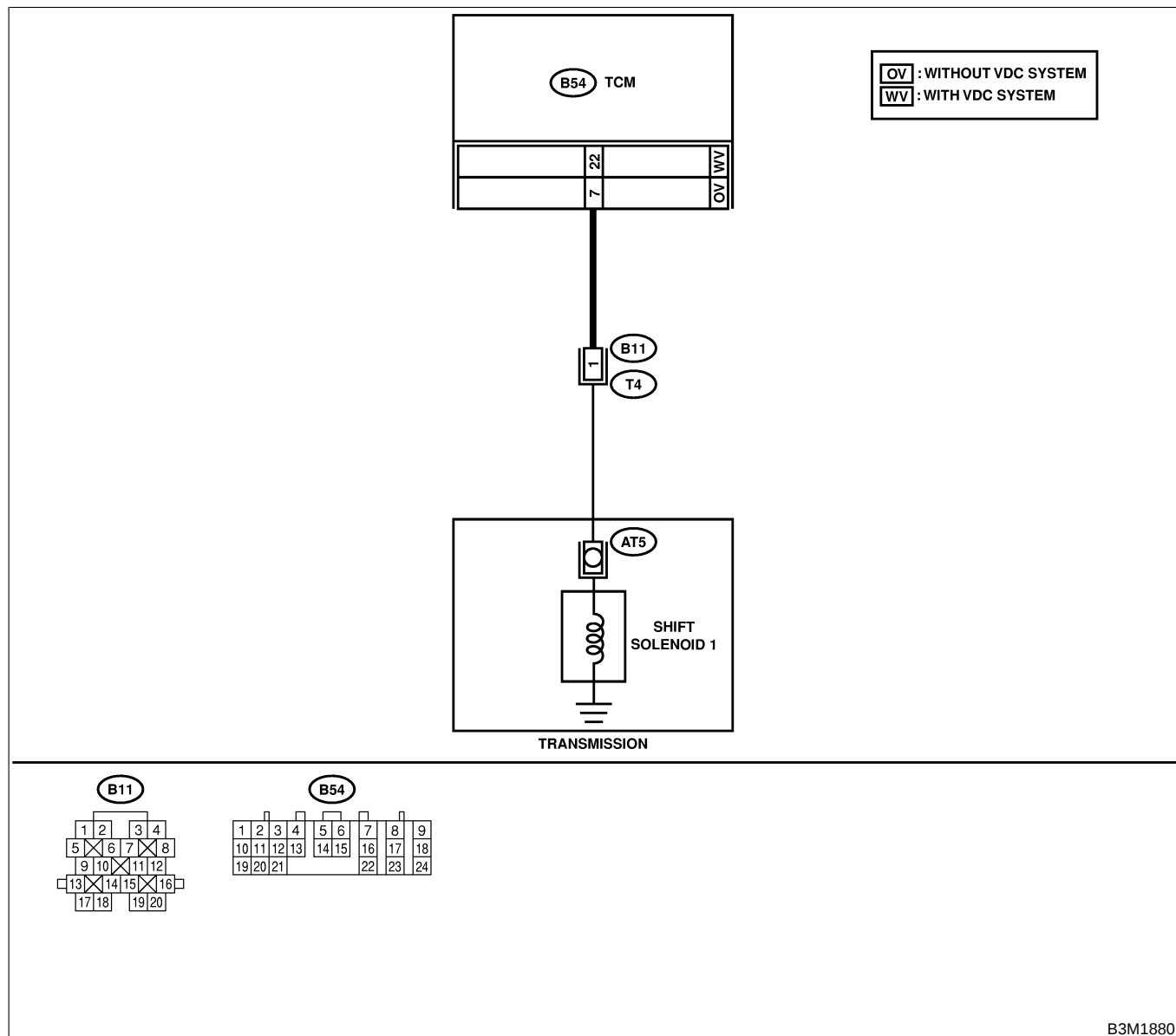
DIAGNOSIS:

Output signal circuit of shift solenoid 1 is open or shorted.

TROUBLE SYMPTOM:

Does not shift.

WIRING DIAGRAM:



No.	Step	Check	Yes	No
1	CHECK SHIFT SOLENOID 1. 1) Turn ignition switch to OFF. 2) Disconnect connector from transmission. 3) Measure resistance between transmission connector terminals. Connector & terminal (T4) No. 1 — No. 16:	Is the resistance between 10 and 16 Ω ?	Go to step 2.	Go to step 6.

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

No.	Step	Check	Yes	No
2	CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. 1) Disconnect connector from TCM. 2) Measure resistance of harness between TCM and shift solenoid 1 connector. Connector & terminal WITHOUT VDC SYSTEM (B54) No. 7 — (B11) No. 1: WITH VDC SYSTEM (B54) No. 22 — (B11) No. 1:	Is the resistance less than 1 Ω ?	Go to step 3.	Repair open circuit in harness between TCM and transmission connector.
3	CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. Measure resistance of harness between TCM connector and chassis ground. Connector & terminal WITHOUT VDC SYSTEM (B54) No. 7 — Chassis ground: WITH VDC SYSTEM (B54) No. 22 — Chassis ground:	Is the resistance more than 1 M Ω ?	Go to step 4.	Repair short circuit in harness between TCM and transmission connector.
4	CHECK OUTPUT SIGNAL EMITTED FROM TCM. 1) Connect connectors to TCM and transmission. 2) Lift-up or raise the vehicle and support with safety stand. CAUTION: On AWD models, raise all wheels off ground. 3) Start the engine and warm-up the transmission until ATF temperature is above 80°C (176°F). NOTE: If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature. 4) Move selector lever to "D", and slowly increase vehicle speed to 50 km/h (31 MPH). 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 memory clearance procedure of on-board diagnostics system. <Ref. to ABS-20 Clear Memory Mode.> 5) Measure voltage between TCM connector and chassis ground. Connector & terminal WITHOUT VDC SYSTEM (B54) No. 7 (+) — Chassis ground (-): WITH VDC SYSTEM (B54) No. 22 (+) — Chassis ground (-):	Is the voltage less than 1 V?	Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM.	Go to step 5.
5	CHECK POOR CONTACT.	Is there poor contact in shift solenoid 1 circuit?	Repair poor contact.	Replace TCM. <Ref. to AT-42 Transmission Control Module (TCM).>

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

No.	Step	Check	Yes	No
6	CHECK SHIFT SOLENOID 1 (IN TRANSMISSION). 1) Remove transmission connector from bracket. 2) Lift-up or raise the vehicle and support with safety stand. CAUTION: On AWD models, raise all wheels off ground. 3) Drain automatic transmission fluid. CAUTION: Do not drain the automatic transmission fluid until it cools down. 4) Remove oil pan, and disconnect connector from shift solenoid 1. 5) Measure resistance between shift solenoid 1 connector and transmission ground. Terminal No. 1 — Transmission ground:	Is the resistance between 10 and 16 Ω ?	Go to step 7.	Replace shift solenoid 1. <Ref. to AT-42 Shift Solenoids, Duty Solenoids and ATF Temperature Sensor.>
7	CHECK HARNESS CONNECTOR BETWEEN SHIFT SOLENOID 1 AND TRANSMISSION. Measure resistance of harness between shift solenoid 1 and transmission connector. Connector & terminal (AT5) No. 1 — (T4) No. 1:	Is the resistance less than 1 Ω ?	Go to step 8.	Repair open circuit in harness between TCM and transmission connector.
8	CHECK HARNESS CONNECTOR BETWEEN SHIFT SOLENOID 1 AND TRANSMISSION. Measure resistance of harness between shift solenoid 1 connector and transmission ground. Connector & terminal (T4) No. 1 — Transmission ground:	Is the resistance more than 1 M Ω ?	Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in shift solenoid 1 and transmission.	Repair short circuit harness between TCM and transmission connector.

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

MEMO:

AT-77

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

J: TROUBLE CODE 72 — SHIFT SOLENOID 2 — S004509D98

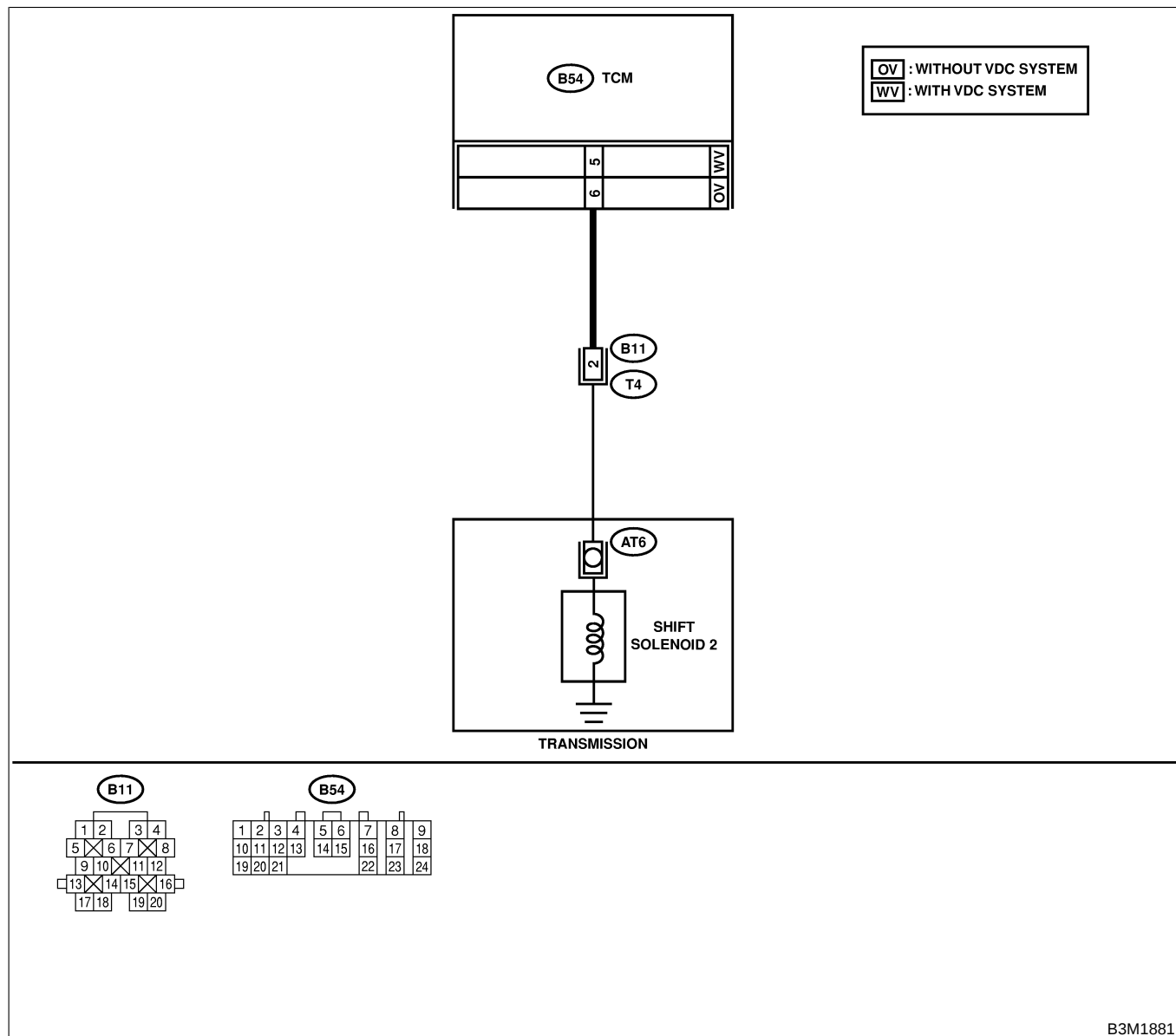
DIAGNOSIS:

Output signal circuit of shift solenoid 2 is open or shorted.

TROUBLE SYMPTOM:

Does not shift.

WIRING DIAGRAM:



B3M1881

No.	Step	Check	Yes	No
1	CHECK SHIFT SOLENOID 2. Measure resistance between transmission connector terminals. Connector & terminal (T4) No. 2 — No. 16:	Is the resistance between 10 and 16 Ω ?	Go to step 2.	Go to step 7.

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

No.	Step	Check	Yes	No
2	CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. 1) Disconnect connector from TCM. 2) Measure resistance of harness between TCM and shift solenoid 2 connector. <i>Connector & terminal</i> WITHOUT VDC SYSTEM (B54) No. 6 — (B11) No. 2: WITH VDC SYSTEM (B54) No. 5 — (B11) No. 2:	Is the resistance less than 1 Ω?	Go to step 3.	Repair open circuit in harness between TCM and transmission connector.
3	CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. Measure resistance of harness between TCM connector and transmission ground. <i>Connector & terminal</i> WITHOUT VDC SYSTEM (B54) No. 6 — Chassis ground: WITH VDC SYSTEM (B54) No. 5 — Chassis ground:	Is the resistance more than 1 MΩ?	Go to step 4.	Repair short circuit in harness between TCM and transmission connector.
4	CHECK OUTPUT SIGNAL EMITTED FROM TCM. 1) Connect connectors to TCM and transmission. 2) Turn ignition switch to ON (engine OFF). 3) Move select lever to "D" range. 4) Measure voltage between TCM connector and chassis ground. <i>Connector & terminal</i> WITHOUT VDC SYSTEM (B54) No. 6 (+) — Chassis ground (-): WITH VDC SYSTEM (B54) No. 5 (+) — Chassis ground (-):	Is the voltage less than 1V → more than 9V?	Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or contact in the TCM.	Go to step 5.
5	CHECK OUTPUT SIGNAL EMITTED FROM TCM. 1) Move select lever to "2" range. 2) Measure voltage between TCM connector and chassis ground. <i>Connector & terminal</i> WITHOUT VDC SYSTEM (B54) No. 6 (+) — Chassis ground (-): WITH VDC SYSTEM (B54) No. 5 (+) — Chassis ground (-):	Is the voltage less than 1V → more than 9V?	Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or contact in the TCM.	Go to step 6.
6	CHECK POOR CONTACT.	Is there poor contact in shift solenoid 2 circuit?	Repair poor contact.	Replace TCM. <Ref. to AT-42 Transmission Control Module (TCM).>

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

No.	Step	Check	Yes	No
7	CHECK SHIFT SOLENOID 2 (IN TRANSMISSION). 1) Remove transmission connector from bracket. 2) Drain automatic transmission fluid. CAUTION: Do not drain the automatic transmission fluid until it cools down. 3) Remove oil pan, and disconnect connector from shift solenoid 2. 4) Measure resistance between shift solenoid 2 connector and transmission ground. Connector & terminal No. 1 — Transmission ground:	Is the resistance between 10 and 16 Ω ?	Go to step 8.	Replace shift solenoid 2 assembly. <Ref. to AT-42 Transmission Control Module (TCM).>
8	CHECK HARNESS CONNECTOR BETWEEN SHIFT SOLENOID 2 AND TRANSMISSION. Measure resistance of harness between shift solenoid 2 and transmission connector. Connector & terminal (AT6) No. 1 — (T4) No. 2:	Is the resistance less than 1 Ω ?	Go to step 9.	Repair open circuit in harness between shift solenoid 2 and transmission connector.
9	CHECK HARNESS CONNECTOR BETWEEN SHIFT SOLENOID 2 AND TRANSMISSION. Measure resistance of harness between shift solenoid 2 connector and transmission ground. Connector & terminal (T4) No. 2 — Transmission ground:	Is the resistance more than 1 M Ω ?	Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or contact in the TCM.	Repair short circuit harness between TCM and transmission connector.

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

MEMO:

AT-81

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

K: TROUBLE CODE 73 — LOW CLUTCH TIMING SOLENOID — S004509E05

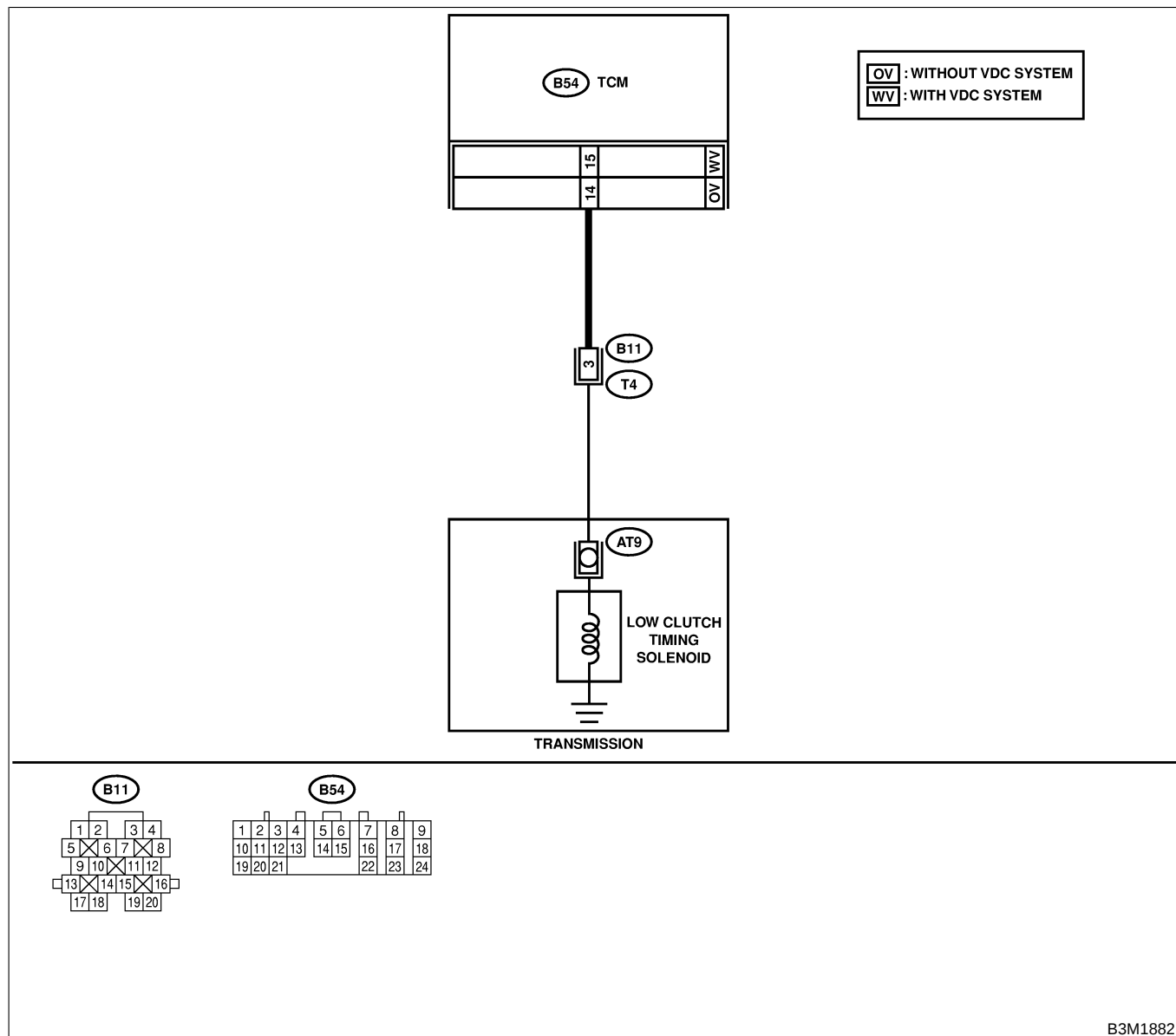
DIAGNOSIS:

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

TROUBLE SYMPTOM:

Excessive shift shock.

WIRING DIAGRAM:



B3M1882

No.	Step	Check	Yes	No
1	CHECK LOW CLUTCH TIMING SOLENOID. Measure resistance between transmission connector terminals. Connector & terminal (T4) No. 3 — No. 16:	Is the resistance between 10 and 16 Ω ?	Go to step 2.	Go to step 7.

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

No.	Step	Check	Yes	No
2	CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. 1) Disconnect connector from TCM. 2) Measure resistance of harness between TCM and transmission connector. <i>Connector & terminal</i> WITHOUT VDC SYSTEM (B54) No. 14 — (B11) No. 3: WITH VDC SYSTEM (B54) No. 15 — (B11) No. 3:	Is the resistance less than 1 Ω?	Go to step 3.	Repair open circuit in harness between TCM and transmission connector.
3	CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. Measure resistance of harness between TCM connector and transmission ground. <i>Connector & terminal</i> WITHOUT VDC SYSTEM (B54) No. 14 — Chassis ground: WITH VDC SYSTEM (B54) No. 15 — Chassis ground:	Is the resistance more than 1 MΩ?	Go to step 4.	Repair short circuit in harness between TCM and transmission connector.
4	CHECK OUTPUT SIGNAL EMITTED FROM TCM. 1) Connect connectors to TCM and transmission. 2) Turn ignition switch to ON (engine OFF). 3) Move select lever to "D" range. 4) Measure voltage between TCM connector and chassis ground. <i>Connector & terminal</i> WITHOUT VDC SYSTEM (B54) No. 14 (+) — Chassis ground (-): WITH VDC SYSTEM (B54) No. 15 (+) — Chassis ground (-):	Is the voltage more than 9V → less than 1 V?	Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or contact in the TCM.	Go to step 5.
5	CHECK OUTPUT SIGNAL EMITTED FROM TCM. 1) Move select lever to "2" range. 2) Measure voltage between TCM connector and chassis ground. <i>Connector & terminal</i> WITHOUT VDC SYSTEM (B54) No. 14 (+) — Chassis ground (-): WITH VDC SYSTEM (B54) No. 15 (+) — Chassis ground (-):	Is the voltage more than 9V → less than 1V?	Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or contact in the TCM.	Go to step 6.
6	CHECK POOR CONTACT.	Is there poor contact in low clutch timing solenoid circuit?	Repair poor contact.	Replace TCM. <Ref. to AT-42 Transmission Control Module (TCM).>

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

No.	Step	Check	Yes	No
7	CHECK LOW CLUTCH TIMING SOLENOID (IN TRANSMISSION). 1) Remove transmission connector from bracket. 2) Lift-up or raise the vehicle and support with safety stand. CAUTION: On AWD models, raise all wheels off ground. 3) Drain automatic transmission fluid. CAUTION: Do not drain the automatic transmission fluid until it cools down. 4) Remove oil pan, and disconnect connector from low clutch timing solenoid. 5) Measure resistance between low clutch timing solenoid connector and transmission ground. Terminal No. 1 — Transmission ground:	Is the resistance between 10 and 16 Ω ?	Go to step 8.	Replace low clutch timing solenoid. <Ref. to AT-36 Shift Solenoids, Duty Solenoids and ATF Temperature Sensor.>
8	CHECK HARNESS CONNECTOR BETWEEN LOW CLUTCH TIMING SOLENOID AND TRANSMISSION. Measure resistance of harness between low clutch timing solenoid and transmission connector. Connector & terminal (AT9) No. 1 — (T4) No. 3:	Is the resistance less than 1 Ω ?	Go to step 9.	Repair open circuit in harness between low clutch timing solenoid and transmission connector.
9	CHECK HARNESS CONNECTOR BETWEEN LOW CLUTCH TIMING SOLENOID AND TRANSMISSION. Measure resistance of harness between low clutch timing solenoid connector and transmission ground. Connector & terminal (T4) No. 3 — Transmission ground:	Is the resistance more than 1 M Ω ?	Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in low clutch timing solenoid and transmission.	Repair short circuit harness between TCM and transmission connector.

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

MEMO:

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

L: TROUBLE CODE 74 — 2-4 BRAKE TIMING SOLENOID — S004509E07

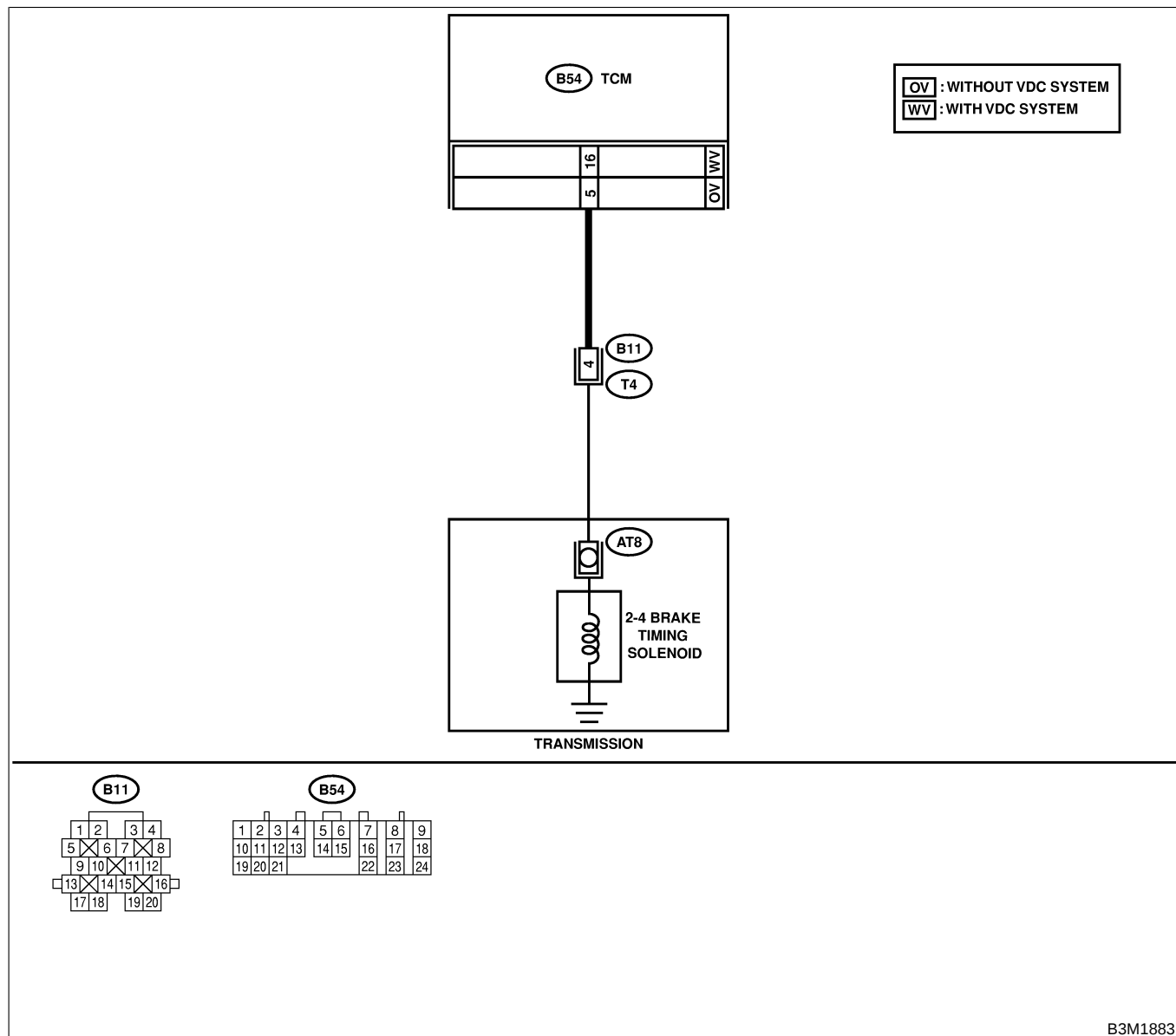
DIAGNOSIS:

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

TROUBLE SYMPTOM:

Excessive shift shock.

WIRING DIAGRAM:



B3M1883

No.	Step	Check	Yes	No
1	CHECK 2-4 BRAKE TIMING SOLENOID. Measure resistance between transmission connector terminals. Connector & terminal (T4) No. 4 — No. 16:	Is the resistance between 10 and 16 Ω ?	Go to step 2.	Go to step 7.

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

No.	Step	Check	Yes	No
2	CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. 1) Disconnect connector from TCM. 2) Measure resistance of harness between TCM and transmission connector. Connector & terminal WITHOUT VDC SYSTEM (B54) No. 5 — (B11) No. 4: WITH VDC SYSTEM (B54) No. 16 — (B11) No. 4:	Is the resistance less than 1 Ω?	Go to step 3.	Repair open circuit in harness between TCM and transmission connector.
3	CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. Measure resistance of harness between TCM connector and transmission ground. Connector & terminal WITHOUT VDC SYSTEM (B54) No. 5 — Chassis ground: WITH VDC SYSTEM (B54) No. 16 — Chassis ground:	Is the resistance more than 1 MΩ?	Go to step 4.	Repair short circuit in harness between TCM and transmission connector.
4	CHECK OUTPUT SIGNAL EMITTED FROM TCM. 1) Connect connectors to TCM and transmission. 2) Lift-up or raise the vehicle and support with safety stand. CAUTION: On AWD models, raise all wheels off ground. 3) Start the engine and warm-up the transmission until ATF temperature is above 80°C (176°F). NOTE: If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature. 4) Move selector lever to "1", and slowly increase vehicle speed to 10 km/h (6 MPH). 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 memory clearance procedure of on-board diagnostics system. <Ref. to ABS-20 Clear Memory Mode.> 5) Measure voltage between TCM connector and chassis ground. Connector & terminal WITHOUT VDC SYSTEM (B54) No. 5 (+) — Chassis ground (-): WITH VDC SYSTEM (B54) No. 16 (+) — Chassis ground (-):	Is the voltage less than 1 V?	Go to step 5.	Go to step 6.

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

No.	Step	Check	Yes	No
5	CHECK OUTPUT SIGNAL EMITTED FROM TCM. 1) Move selector lever to "D", and slowly increase vehicle speed to 65 km/h (40 MPH). 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 memory clearance procedure of on-board diagnostics system. <Ref. to ABS-20 Clear Memory Mode.> 2) Measure voltage between TCM connector and chassis ground. Connector & terminal WITHOUT VDC SYSTEM (B54) No. 5 (+) — Chassis ground (-): WITH VDC SYSTEM (B54) No. 16 (+) — Chassis ground (-):	Is the voltage more than 9 V?	Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or contact in the TCM.	Go to step 6.
6	CHECK POOR CONTACT.	Is there poor contact in 2-4 brake timing solenoid circuit?	Repair poor contact.	Replace TCM. <Ref. to AT-42 Transmission Control Module (TCM).>
7	CHECK 2-4 BRAKE TIMING SOLENOID (IN TRANSMISSION). 1) Remove transmission connector from bracket. 2) Lift-up or raise the vehicle and support with safety stand. CAUTION: On AWD models, raise all wheels off ground. 3) Drain automatic transmission fluid. CAUTION: Do not drain the automatic transmission fluid until it cools down. 4) Remove oil pan, and disconnect connector from 2-4 brake timing solenoid. 5) Measure resistance between 2-4 brake timing solenoid connector and transmission ground. Terminal No. 1 — Transmission ground:	Is the resistance between 10 and 16 Ω ?	Go to step 8.	Replace 2-4 brake timing solenoid. <Ref. to AT-36 Shift Solenoids, Duty Solenoids and ATF Temperature Sensor.>
8	CHECK HARNESS CONNECTOR BETWEEN 2-4 BRAKE TIMING SOLENOID AND TRANSMISSION. Measure resistance of harness between 2-4 brake timing solenoid and transmission connector. Connector & terminal (AT8) No. 1 — (T4) No. 4:	Is the resistance less than 1 Ω ?	Go to step 9.	Repair open circuit in harness between 2-4 brake timing solenoid and transmission connector.

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

No.	Step	Check	Yes	No
9	CHECK HARNESS CONNECTOR BETWEEN 2-4 BRAKE TIMING SOLENOID AND TRANSMISSION. Measure resistance of harness between 2-4 brake timing solenoid connector and transmission ground. Connector & terminal (T4) No. 4 — Transmission ground:	Is the resistance more than 1 MΩ?	Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in 2-4 brake timing solenoid and transmission.	Repair short circuit harness between TCM and transmission connector.

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

M: TROUBLE CODE 75 — LINE PRESSURE DUTY SOLENOID — S004509E14

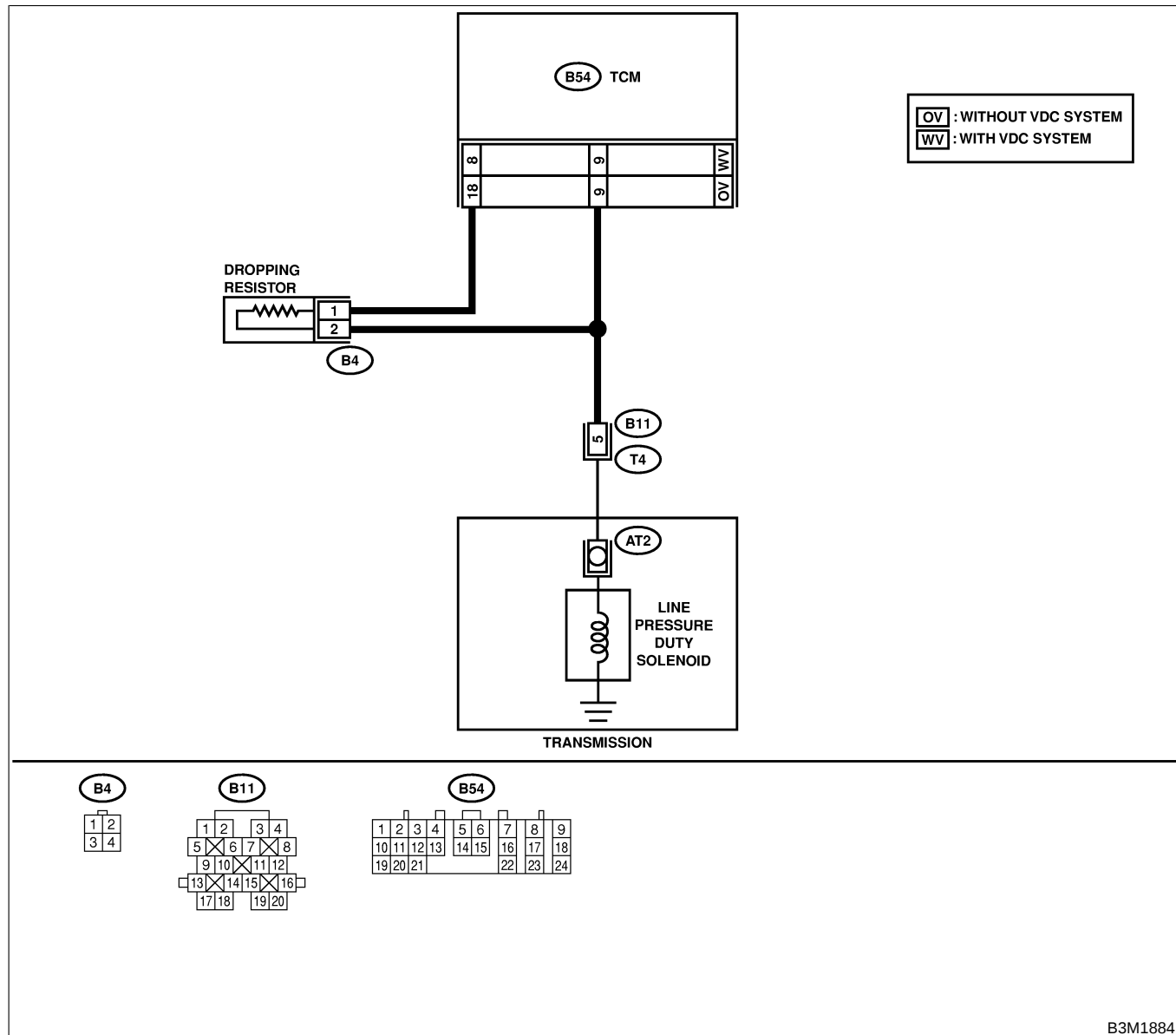
DIAGNOSIS:

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

TROUBLE SYMPTOM:

Excessive shift shock.

WIRING DIAGRAM:



B3M1884

No.	Step	Check	Yes	No
1	CHECK RESISTOR. 1) Turn ignition switch to OFF. 2) Disconnect connector from dropping resistor. 3) Measure resistance between dropping resistor terminal. Terminals No. 1 — No. 2:	Is the resistance between 9 and 15 Ω ?	Go to step 2.	Replace dropping resistor. <Ref. to AT-44 Dropping Resistor.>

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

No.	Step	Check	Yes	No
2	CHECK HARNESS CONNECTOR BETWEEN TCM AND DROPPING RESISTOR. 1) Disconnect connector from TCM. 2) Measure resistance of harness between TCM connector and dropping resistor connector. <i>Connector & terminal</i> WITHOUT VDC SYSTEM (B54) No. 18 — (B4) No. 1: WITH VDC SYSTEM (B54) No. 8 — (B4) No. 1:	Is the resistance less than 1 Ω ?	Go to step 3.	Repair open circuit in harness between TCM and dropping resistor connector.
3	CHECK HARNESS CONNECTOR BETWEEN TCM AND DROPPING RESISTOR. Measure resistance of harness between dropping resistor connector and chassis ground. <i>Connector & terminal</i> (B4) No. 1 — Chassis ground:	Is the resistance more than 1 M Ω ?	Go to step 4.	Repair short circuit in harness between TCM and dropping resistor connector.
4	CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND DROPPING RESISTOR. 1) Disconnect connector from transmission. 2) Measure resistance of harness between transmission and dropping resistor connector. <i>Connector & terminal</i> (B4) No. 2 — (B11) No. 5:	Is the resistance less than 1 Ω ?	Go to step 5.	Repair open circuit in harness between dropping resistor and transmission connector.
5	CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND DROPPING RESISTOR. Measure resistance of harness between dropping resistor connector and chassis ground. <i>Connector & terminal</i> (B4) No. 2 — Chassis ground:	Is the resistance more than 1 M Ω ?	Go to step 6.	Repair short circuit in harness between dropping resistor and transmission connector.
6	CHECK LINE PRESSURE DUTY SOLENOID. Measure resistance between transmission connector receptacle's terminals. <i>Terminal</i> (T4) No. 5 — No. 16:	Is the resistance between 2.0 and 4.5 Ω ?	Go to step 7.	Go to step 17.
7	CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. Measure resistance of harness between TCM and transmission connector. <i>Connector & terminal</i> WITHOUT VDC SYSTEM (B54) No. 9 — (B11) No. 5: WITH VDC SYSTEM (B54) No. 9 — (B11) No. 5:	Is the resistance less than 1 Ω ?	Go to step 8.	Repair open circuit in harness between TCM and transmission connector.
8	CHECK HARNESS CONNECTOR BETWEEN TCM AND CHASSIS GROUND. Measure resistance of harness between TCM and chassis ground. <i>Connector & terminal</i> WITHOUT VDC SYSTEM (B54) No. 9 — Chassis ground: WITH VDC SYSTEM (B54) No. 9 — Chassis ground:	Is the resistance more than 1 M Ω ?	Go to step 9.	Repair short circuit in harness between TCM and transmission connector.
9	PREPARE SUBARU SELECT MONITOR.	Do you have a Subaru Select Monitor?	Go to step 14.	Go to step 10.

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

No.	Step	Check	Yes	No
10	CHECK OUTPUT SIGNAL EMITTED FROM TCM. 1) Connect all connectors. 2) Start the engine and warm-up the transmission until ATF temperature is above 80°C (176°F). NOTE: If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature. 3) Turn ignition switch to ON (engine OFF). 4) Move select lever to "N". 5) Measure voltage between TCM connector and chassis ground. Connector & terminal WITHOUT VDC SYSTEM (B54) No. 9 (+) — Chassis ground (-): WITH VDC SYSTEM (B54) No. 9 (+) — Chassis ground (-):	Is the voltage between 1.5 and 4.0 V with throttle fully closed?	Go to step 11.	Go to step 16.
11	CHECK OUTPUT SIGNAL EMITTED FROM TCM. Measure voltage between TCM connector and chassis ground. Connector & terminal WITHOUT VDC SYSTEM (B54) No. 9 (+) — Chassis ground (-): WITH VDC SYSTEM (B54) No. 9 (+) — Chassis ground (-):	Is the voltage less than 1 V with throttle fully open?	Go to step 12.	Go to step 16.
12	CHECK OUTPUT SIGNAL EMITTED FROM TCM. Measure voltage between TCM connector and chassis ground. Connector & terminal WITHOUT VDC SYSTEM (B54) No. 18 (+) — Chassis ground (-): WITH VDC SYSTEM (B54) No. 8 (+) — Chassis ground (-):	Is the voltage more than 8.5 V with throttle fully closed?	Go to step 13.	Go to step 16.
13	CHECK OUTPUT SIGNAL EMITTED FROM TCM. Measure voltage between TCM connector and chassis ground. Connector & terminal WITHOUT VDC SYSTEM (B54) No. 18 (+) — Chassis ground (-): WITH VDC SYSTEM (B54) No. 8 (+) — Chassis ground (-):	Is the voltage less than 1 V with throttle fully open?	Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in TCM.	Go to step 16.

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

No.	Step	Check	Yes	No
14	CHECK OUTPUT SIGNAL EMITTED FROM TCM USING SUBARU SELECT MONITOR. 1) Connect connectors to TCM and transmission. 2) Connect Subaru Select Monitor to data link connector. 3) Start the engine, and turn Subaru Select Monitor switch to ON. 4) Warm-up the transmission until ATF temperature is above 80°C (176°F). NOTE: If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature. 5) Stop the engine and turn ignition switch to ON (engine OFF). 6) Move select lever to "N". 7) Read data of line pressure duty solenoid using Subaru Select Monitor. ● Line pressure duty solenoid is indicated in "%". 8) Throttle is fully closed.	Is the value 100%?	Go to step 15.	Go to step 16.
15	CHECK OUTPUT SIGNAL EMITTED FROM TCM USING SUBARU SELECT MONITOR. 1) Turn ignition switch to ON (Engine OFF). 2) Throttle is fully open.	Is the value between 10 and 20%?	Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in TCM.	Go to step 16.
16	CHECK POOR CONTACT.	Is there poor contact in line pressure duty solenoid circuit?	Repair poor contact.	Replace TCM. <Ref. to AT-42 Transmission Control Module (TCM).>
17	CHECK LINE PRESSURE DUTY SOLENOID (IN TRANSMISSION). 1) Remove transmission connector from bracket. 2) Drain automatic transmission fluid. CAUTION: Do not drain the automatic transmission fluid until it cools down. 3) Remove oil pan, and disconnect connector from line pressure duty solenoid. 4) Measure resistance between line pressure duty solenoid connector and transmission ground. Terminal No. 1 — Transmission ground:	Is the resistance between 2.0 and 4.5 Ω?	Go to step 18.	Replace line pressure duty solenoid. <Ref. to AT-36 Shift Solenoids, Duty Solenoids and ATF Temperature Sensor.>

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

No.	Step	Check	Yes	No
18	CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND LINE PRESSURE DUTY SOLENOID. Measure resistance of harness between line pressure duty solenoid and transmission connector. <i>Connector & terminal (T4) No. 5 — (AT2) No. 1:</i>	Is the resistance less than 1 Ω ?	Go to step 19.	Repair open circuit in harness between line pressure duty solenoid and transmission connector.
19	CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND LINE PRESSURE DUTY SOLENOID. Measure resistance of harness between transmission connector and transmission ground. <i>Connector & terminal (T4) No. 5 — Transmission ground:</i>	Is the resistance more than 1 M Ω ?	Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in line pressure duty solenoid and transmission connector.	Repair short circuit in harness between line pressure duty solenoid and transmission connector.

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

MEMO:

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

N: TROUBLE CODE 76 — 2-4 BRAKE DUTY SOLENOID — S004509E15

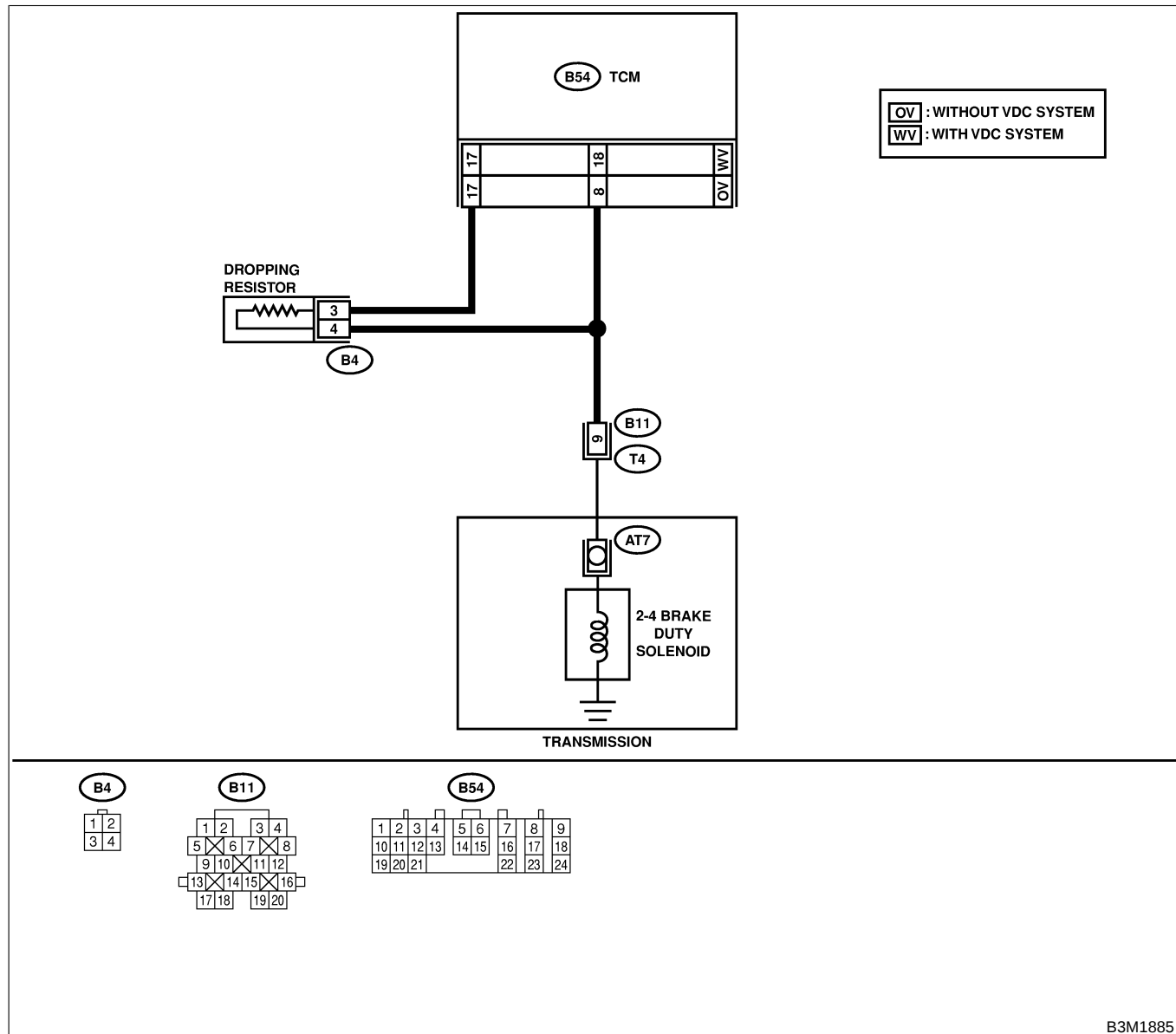
DIAGNOSIS:

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

TROUBLE SYMPTOM:

Excessive shift shock.

WIRING DIAGRAM:



B3M1885

No.	Step	Check	Yes	No
1	CHECK RESISTOR. 1) Turn ignition switch to OFF. 2) Disconnect connector from dropping resistor. 3) Measure resistance between dropping resistor terminal. Terminals No. 3 — No. 4:	Is the resistance between 9 and 15 Ω ?	Go to step 2.	Replace dropping resistor. <Ref. to AT-44 Dropping Resistor.>

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

No.	Step	Check	Yes	No
2	CHECK HARNESS CONNECTOR BETWEEN TCM AND DROPPING RESISTOR. 1) Disconnect connector from TCM. 2) Measure resistance of harness between TCM connector and dropping resistor connector. <i>Connector & terminal</i> WITHOUT VDC SYSTEM (B54) No. 17 — (B4) No. 3: WITH VDC SYSTEM (B54) No. 17 — (B4) No. 3:	Is the resistance less than 1 Ω ?	Go to step 3.	Repair open circuit in harness between TCM and dropping resistor connector.
3	CHECK HARNESS CONNECTOR BETWEEN TCM AND DROPPING RESISTOR. Measure resistance of harness between dropping resistor connector and chassis ground. <i>Connector & terminal</i> (B4) No. 3 — Chassis ground:	Is the resistance more than 1 M Ω ?	Go to step 4.	Repair short circuit in harness between TCM and dropping resistor connector.
4	CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND DROPPING RESISTOR. 1) Disconnect connector from transmission. 2) Measure resistance of harness between transmission and dropping resistor connector. <i>Connector & terminal</i> (B4) No. 4 — (B11) No. 9:	Is the resistance less than 1 Ω ?	Go to step 5.	Repair open circuit in harness between dropping resistor and transmission connector.
5	CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND DROPPING RESISTOR. Measure resistance of harness between dropping resistor connector and chassis ground. <i>Connector & terminal</i> (B4) No. 4 — Chassis ground:	Is the resistance more than 1 M Ω ?	Go to step 6.	Repair short circuit in harness between dropping resistor and transmission connector.
6	CHECK 2-4 BRAKE DUTY SOLENOID. Measure resistance between transmission connector receptacle's terminals. <i>Terminal</i> (T4) No. 16 — No. 9:	Is the resistance between 2.0 and 4.5 Ω ?	Go to step 7.	Go to step 17.
7	CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. Measure resistance of harness between TCM and transmission connector. <i>Connector & terminal</i> WITHOUT VDC SYSTEM (B54) No. 8 — (B11) No. 9: WITH VDC SYSTEM (B54) No. 18 — (B11) No. 9:	Is the resistance less than 1 Ω ?	Go to step 8.	Repair open circuit in harness between TCM and transmission connector.
8	CHECK HARNESS CONNECTOR BETWEEN TCM AND CHASSIS GROUND. Measure resistance of harness between TCM and chassis ground. <i>Connector & terminal</i> WITHOUT VDC SYSTEM (B54) No. 8 — Chassis ground: WITH VDC SYSTEM (B54) No. 18 — Chassis ground:	Is the resistance more than 1 M Ω ?	Go to step 9.	Repair short circuit in harness between TCM and transmission connector.
9	PREPARE SUBARU SELECT MONITOR.	Do you have a Subaru Select Monitor?	Go to step 14.	Go to step 10.

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

No.	Step	Check	Yes	No
10	CHECK OUTPUT SIGNAL EMITTED FROM TCM. 1) Connect all connectors. 2) Start the engine and warm-up the transmission until ATF temperature is above 80°C (176°F). NOTE: If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature. 3) Turn ignition switch to ON (engine OFF). 4) Move select lever to "N". 5) Measure voltage between TCM connector and chassis ground. Connector & terminal WITHOUT VDC SYSTEM (B54) No. 8 (+) — Chassis ground (-): WITH VDC SYSTEM (B54) No. 18 (+) — Chassis ground (-):	Is the voltage between 1.5 and 4.0 V with throttle fully closed?	Go to step 11.	Go to step 16.
11	CHECK OUTPUT SIGNAL EMITTED FROM TCM. Measure voltage between TCM connector and chassis ground. Connector & terminal WITHOUT VDC SYSTEM (B54) No. 8 (+) — Chassis ground (-): WITH VDC SYSTEM (B54) No. 18 (+) — Chassis ground (-):	Is the voltage less than 1 V with throttle fully open?	Go to step 12.	Go to step 16.
12	CHECK OUTPUT SIGNAL EMITTED FROM TCM. Measure voltage between TCM connector and chassis ground. Connector & terminal WITHOUT VDC SYSTEM (B54) No. 17 (+) — Chassis ground (-): WITH VDC SYSTEM (B54) No. 17 (+) — Chassis ground (-):	Is the voltage more than 8.5 V with throttle fully closed?	Go to step 13.	Go to step 16.
13	CHECK OUTPUT SIGNAL EMITTED FROM TCM. Measure voltage between TCM connector and chassis ground. Connector & terminal WITHOUT VDC SYSTEM (B54) No. 17 (+) — Chassis ground (-): WITH VDC SYSTEM (B54) No. 17 (+) — Chassis ground (-):	Is the voltage less than 1 V with throttle fully open?	Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in TCM.	Go to step 16.

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

No.	Step	Check	Yes	No
14	CHECK OUTPUT SIGNAL EMITTED FROM TCM USING SUBARU SELECT MONITOR. 1) Connect all connectors. 2) Connect Subaru Select Monitor to data link connector. 3) Start the engine, and turn Subaru Select Monitor switch to ON. 4) Warm-up the transmission until ATF temperature is above 80°C (176°F). NOTE: If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature. 5) Stop the engine and turn ignition switch to ON (engine OFF). 6) Move select lever to "N". 7) Read data of 2-4 brake duty solenoid using Subaru Select Monitor. ● 2-4 brake duty solenoid is indicated in "%". 8) Throttle is fully closed.	Is the value 100%?	Go to step 15.	Go to step 16.
15	CHECK OUTPUT SIGNAL EMITTED FROM TCM USING SUBARU SELECT MONITOR. 1) Turn ignition switch to ON (Engine OFF). 2) Throttle is fully open.	Is the value between 10 and 20%?	Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in TCM.	Go to step 16.
16	CHECK POOR CONTACT.	Is there poor contact in 2-4 brake duty solenoid circuit?	Repair poor contact.	Replace TCM. <Ref. to AT-42 Transmission Control Module (TCM).>
17	CHECK 2-4 BRAKE DUTY SOLENOID (IN TRANSMISSION). 1) Remove transmission connector from bracket. 2) Drain automatic transmission fluid. CAUTION: Do not drain the automatic transmission fluid until it cools down. 3) Remove oil pan, and disconnect connector from 2-4 brake duty solenoid. 4) Measure resistance between 2-4 brake duty solenoid connector and transmission ground. Terminal No. 1 — Transmission ground:	Is the resistance between 2.0 and 4.5 Ω?	Go to step 18.	Replace 2-4 brake duty solenoid. <Ref. to AT-36 Shift Solenoids, Duty Solenoids and ATF Temperature Sensor.>

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

No.	Step	Check	Yes	No
18	CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND 2-4 BRAKE DUTY SOLENOID. Measure resistance of harness between 2-4 brake duty solenoid and transmission connector. <i>Connector & terminal (T4) No. 9 — (AT7) No. 1:</i>	Is the resistance less than 1 Ω ?	Go to step 19.	Repair open circuit in harness between 2-4 brake duty solenoid and transmission connector.
19	CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND 2-4 BRAKE DUTY SOLENOID. Measure resistance of harness between transmission connector and transmission ground. <i>Connector & terminal (T4) No. 9 — Transmission ground:</i>	Is the resistance more than 1 M Ω ?	Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in line pressure duty solenoid and transmission connector.	Repair short circuit in harness between 2-4 brake duty solenoid and transmission connector.

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

MEMO:

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

O: TROUBLE CODE 77 — LOCK-UP DUTY SOLENOID — S004509E16

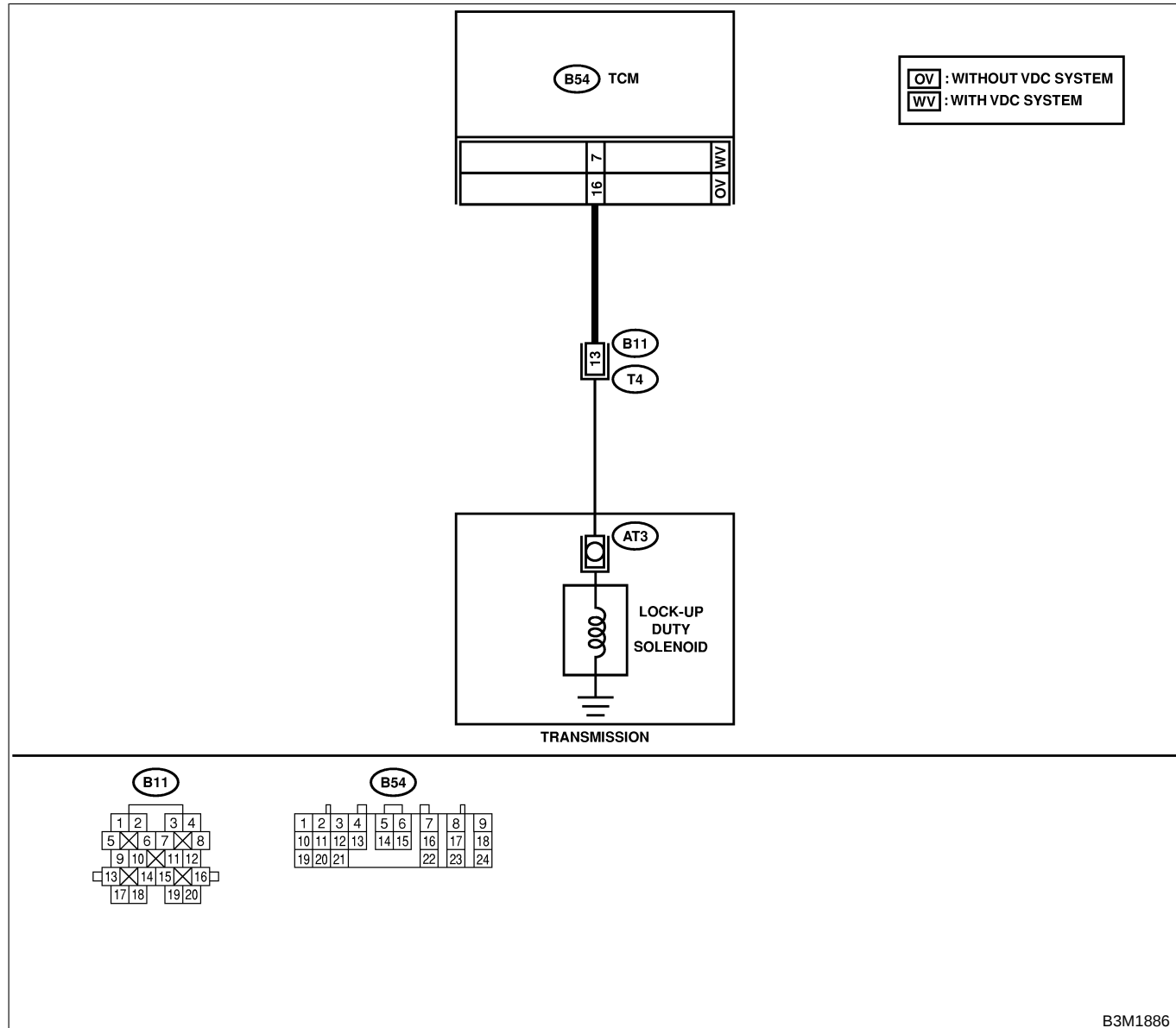
DIAGNOSIS:

Output signal circuit of lock-up duty solenoid is open or shorted.

TROUBLE SYMPTOM:

No "lock-up" (after engine warm-up).

WIRING DIAGRAM:



B3M1886

No.	Step	Check	Yes	No
1	CHECK TROUBLE CODE.	Do multiple trouble codes appear in the on-board diagnostics test mode?	Go to another trouble code.	Go to step 2.
2	CHECK LOCK-UP DUTY SOLENOID. Measure resistance between transmission connector receptacle's terminals. Connector & terminal (T4) No. 13 — No. 16:	Is the resistance between 9 and 15 Ω?	Go to step 3.	Go to step 11.

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

No.	Step	Check	Yes	No
3	CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. 1) Disconnect connector from TCM. 2) Measure resistance of harness between TCM and transmission connector. Connector & terminal WITHOUT VDC SYSTEM (B54) No. 16 — (B11) No. 13: WITH VDC SYSTEM (B54) No. 7 — (B11) No. 13:	Is the resistance than 1 Ω?	Go to step 4.	Repair open circuit in harness between TCM and transmission connector.
4	CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. Measure resistance of harness connector between TCM and chassis ground. Connector & terminal WITHOUT VDC SYSTEM (B54) No. 16 — Chassis ground: WITH VDC SYSTEM (B54) No. 7 — Chassis ground:	Is the resistance more than 1 MΩ?	Go to step 5.	Repair short circuit in harness between TCM and transmission connector.
5	PREPARE SUBARU SELECT MONITOR.	Do you have a Subaru Select Monitor?	Go to step 8.	Go to step 6.
6	CHECK OUTPUT SIGNAL EMITTED FROM TCM. 1) Connect connectors to TCM and transmission. 2) Lift-up the vehicle and place safety stand. CAUTION: On AWD models, raise all wheels off ground. 3) Start the engine and warm-up the transmission until ATF temperature is above 80°C (176°F). NOTE: If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature. 4) Move selector lever to "D" and slowly increase vehicle speed to 75 km/h (47 MPH). Wheels will lock-up. 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 memory clearance procedure of on-board diagnostics system. <Ref. to ABS-20 Clear Memory Mode.> 5) Measure voltage between TCM connector and chassis ground. Connector & terminal WITHOUT VDC SYSTEM (B54) No. 16 (+) — Chassis ground (-): WITH VDC SYSTEM (B54) No. 7 (+) — Chassis ground (-):	Is the voltage more than 8.5 V?	Go to step 7.	Go to step 10.

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

No.	Step	Check	Yes	No
7	CHECK OUTPUT SIGNAL EMITTED FROM TCM. 1) Return the engine to idling speed and move select lever to "N". 2) Measure voltage between TCM connector and chassis ground. Connector & terminal WITHOUT VDC SYSTEM (B54) No. 16 (+) — Chassis ground (-): WITH VDC SYSTEM (B54) No. 7 (+) — Chassis ground (-):	Is the voltage less than 0.5 V?	Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in TCM.	Go to step 10.
8	CHECK OUTPUT SIGNAL EMITTED FROM TCM USING SUBARU SELECT MONITOR. 1) Connect connectors to TCM and transmission. 2) Lift-up the vehicle and place safety stand. CAUTION: On AWD models, raise all wheels off ground. 3) Connect Subaru Select Monitor to data link connector. 4) Start the engine, and turn Subaru Select Monitor switch to ON. 5) Start the engine and warm-up the transmission until ATF temperature is above 80°C (176°F). NOTE: If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature. 6) Read data of lock-up duty solenoid using Subaru Select Monitor. • Lock-up duty solenoid is indicated in "%". 7) Move selector lever to "D" and slowly increase vehicle speed to 75 km/h (47 MPH). Wheels will lock-up. 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 memory clearance procedure of on-board diagnostics system. <Ref. to ABS-20 Clear Memory Mode.>	Is the value 95%?	Go to step 9.	Go to step 10.
9	CHECK OUTPUT SIGNAL EMITTED FROM TCM USING SUBARU SELECT MONITOR. Return the engine to idling speed and move selector lever to "N". 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 memory clearance procedure of on-board diagnostics system. <Ref. to ABS-20 Clear Memory Mode.>	Is the value 5%?	Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in TCM.	Go to step 10.

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

No.	Step	Check	Yes	No
10	CHECK POOR CONTACT.	Is there poor contact in lock-up duty solenoid circuit?	Repair poor contact.	Replace TCM. <Ref. to AT-42 Transmission Control Module (TCM).>
11	CHECK LOCK-UP DUTY SOLENOID (IN TRANSMISSION). 1) Remove transmission connector from bracket. 2) Drain automatic transmission fluid. CAUTION: Do not drain the automatic transmission fluid until it cools down. 3) Remove oil pan, and disconnect connector from lock-up duty solenoid. 4) Measure resistance between lock-up duty solenoid connector and transmission ground. Terminal No. 1 — Transmission ground:	Is the resistance between 10 and 17 Ω ?	Go to step 12.	Replace lock-up duty solenoid. <Ref. to AT-36 Shift Solenoids, Duty Solenoids and ATF Temperature Sensor.>
12	CHECK HARNESS CONNECTOR BETWEEN LOCK-UP DUTY SOLENOID AND TRANSMISSION. Measure resistance of harness between lock-up duty solenoid and transmission connector. Connector & terminal (T4) No. 13 — (AT3) No. 1:	Is the resistance less than 1 Ω ?	Go to step 13.	Repair open circuit in harness between TCM and transmission connector.
13	CHECK HARNESS CONNECTOR BETWEEN LOCK-UP DUTY SOLENOID AND TRANSMISSION. Measure resistance of harness between transmission connector and transmission ground. Connector & terminal (T4) No. 13 — Transmission ground:	Is the resistance more than 1 M Ω ?	Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in lock-up duty solenoid and transmission.	Repair short circuit in harness between TCM and transmission connector.

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

P: TROUBLE CODE 79 — TRANSFER DUTY SOLENOID — S004509E17

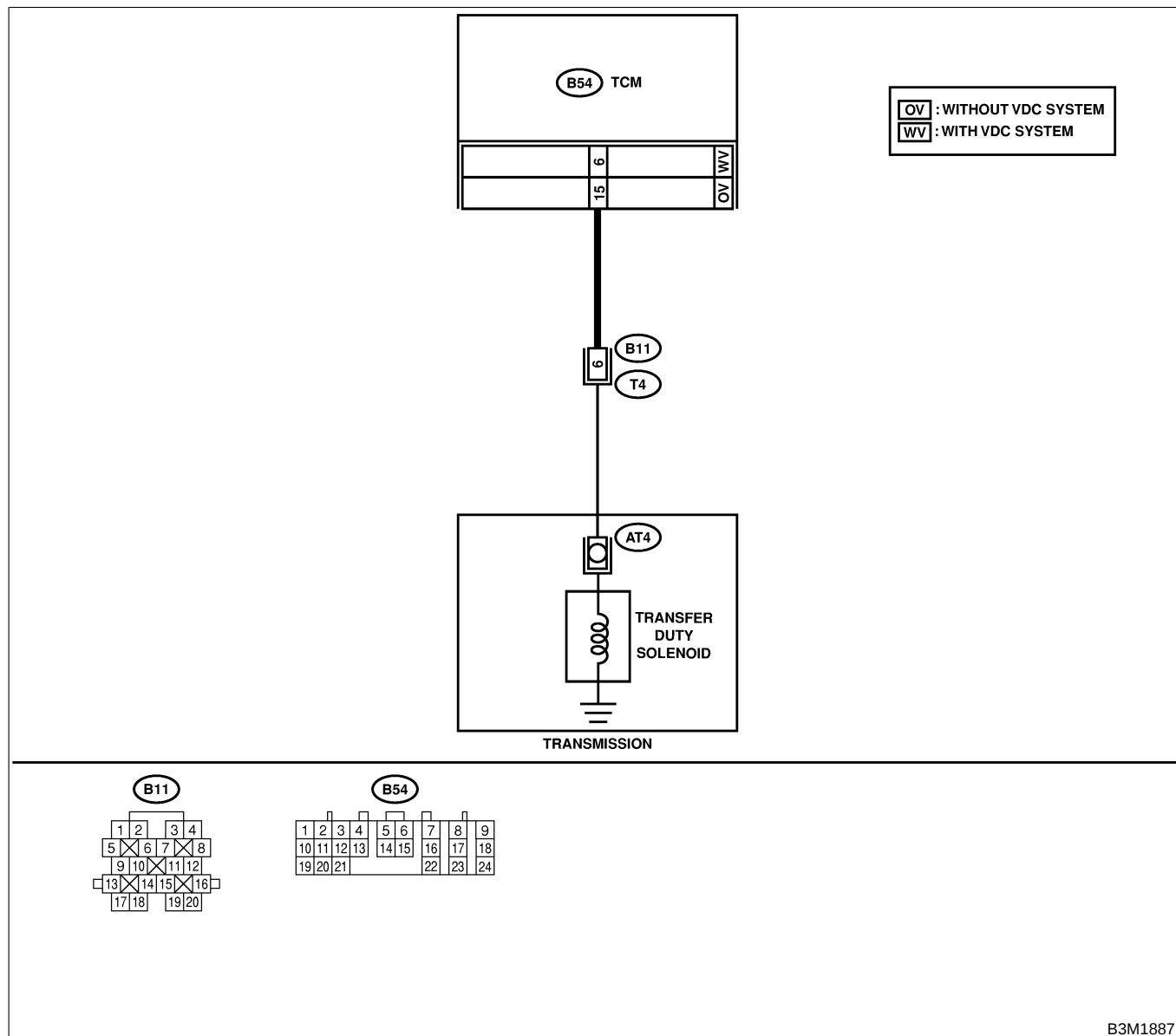
DIAGNOSIS:

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

TROUBLE SYMPTOM:

Excessive “braking” in tight corners.

WIRING DIAGRAM:



B3M1887

No.	Step	Check	Yes	No
1	CHECK TRANSFER DUTY SOLENOID. Measure resistance between transmission connector and transmission terminals. Connector & terminal (T4) No. 6 — No. 16:	Is the resistance between 10 and 17 Ω ?	Go to step 2.	Go to step 13.

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

No.	Step	Check	Yes	No
2	CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. 1) Disconnect connector from TCM. 2) Measure resistance of harness between TCM and transmission connector. <i>Connector & terminal</i> WITHOUT VDC SYSTEM (B54) No. 15 — (B11) No. 6: WITH VDC SYSTEM (B54) No. 6 — (B11) No. 6:	Is the resistance less than 1 Ω ?	Go to step 3.	Repair open circuit in harness between TCM and transmission connector.
3	CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. Measure resistance harness connector between TCM and chassis ground. <i>Connector & terminal</i> WITHOUT VDC SYSTEM (B54) No. 15 — Chassis ground: WITH VDC SYSTEM (B54) No. 6 — Chassis ground:	Is the resistance more than 1 M Ω ?	Go to step 4.	Repair short circuit in harness between TCM and transmission connector.
4	PREPARE SUBARU SELECT MONITOR.	Do you have a Subaru Select Monitor?	Go to step 7.	Go to step 5.
5	CHECK OUTPUT SIGNAL EMITTED FROM TCM. 1) Connect connectors to TCM and transmission. 2) Turn ignition switch to ON (engine OFF). 3) Throttle is fully closed. 4) Measure voltage between TCM connector and chassis ground. <i>Connector & terminal</i> WITHOUT VDC SYSTEM (B54) No. 15 (+) — Chassis ground (-): WITH VDC SYSTEM (B54) No. 6 (+) — Chassis ground (-):	Is the voltage less than 1 V in "P" range?	Go to step 6.	Go to step 12.
6	CHECK OUTPUT SIGNAL EMITTED FROM TCM. Measure voltage between TCM connector and chassis ground. <i>Connector & terminal</i> WITHOUT VDC SYSTEM (B54) No. 15 (+) — Chassis ground (-): WITH VDC SYSTEM (B54) No. 6 (+) — Chassis ground (-):	Is the voltage between 5 and 7 V in "D" range?	Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the transfer duty solenoid and TCM connector.	Go to step 12.
7	CHECK VDC SYSTEM.	Is the vehicle equipped with the VDC system?	Go to step 10.	Go to step 8.

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

No.	Step	Check	Yes	No
8	CHECK OUTPUT SIGNAL EMITTED FROM TCM USING SUBARU SELECT MONITOR. 1) Connect connectors to TCM and transmission. 2) Connect Subaru Select Monitor to data link connector. 3) Turn ignition switch to ON (engine OFF) and turn Subaru Select Monitor switch to ON. 4) Move select lever to "D" with throttle fully open (vehicle speed 0 km/h or 0 MPH). 5) Read data of transfer duty solenoid using Subaru Select Monitor. ● Transfer duty solenoid is indicated in "%".	Is the value between 5 and 10%?	Go to step 9.	Go to step 12.
9	CHECK OUTPUT SIGNAL EMITTED FROM TCM USING SUBARU SELECT MONITOR. 1) Move select lever to "N" with throttle fully closed (vehicle speed 0 km/h or 0 MPH). 2) Rear data of transfer duty solenoid using Subaru Select Monitor. ● Transfer duty solenoid is indicated in "%".	Is the value 95%?	Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the transfer duty solenoid and TCM connector.	Go to step 12.
10	CHECK OUTPUT SIGNAL EMITTED FROM TCM USING SUBARU SELECT MONITOR. 1) Connect connectors to TCM and transmission. 2) Connect Subaru Select Monitor to data link connector. 3) Turn ignition switch to ON (engine OFF) and turn Subaru Select Monitor switch to ON. 4) Move select lever to "D" with throttle fully open (vehicle speed 0 km/h or 0 MPH). 5) Read data of transfer duty solenoid using Subaru Select Monitor. ● Transfer duty solenoid is indicated in "%".	Is the value between 90 and 95%?	Go to step 11.	Go to step 12.
11	CHECK OUTPUT SIGNAL EMITTED FROM TCM USING SUBARU SELECT MONITOR. 1) Move select lever to "N" with throttle fully close (vehicle speed 0 km/h or 0 MPH). 2) Rear data of transfer duty solenoid using Subaru Select Monitor. ● Transfer duty solenoid is indicated in "%".	Is the value 5%?	Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the transfer duty solenoid and TCM connector.	Go to step 12.

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

No.	Step	Check	Yes	No
12	CHECK POOR CONTACT.	Is there poor contact in transfer duty solenoid circuit?	Repair poor contact.	Replace TCM. <Ref. to AT-42 Transmission Control Module (TCM).>
13	CHECK TRANSFER DUTY SOLENOID (IN TRANSMISSION). 1) Lift-up the vehicle and place safety stand. CAUTION: On AWD models, raise all wheels off ground. 2) Drain automatic transmission fluid. CAUTION: Do not drain the automatic transmission fluid until it cools down. 3) Remove extension case, and disconnect connector from transfer duty solenoid. 4) Measure resistance between transfer duty solenoid connector and transmission ground. Connector & terminal (AT4) No. 1 — Transmission ground:	Is the resistance between 10 and 17 Ω ?	Go to step 14.	Replace transfer duty solenoid. <Ref. to AT-36 Shift Solenoids, Duty Solenoids and ATF Temperature Sensor.>
14	CHECK HARNESS CONNECTOR BETWEEN TRANSFER DUTY SOLENOID AND TRANSMISSION. Measure resistance of harness between transfer duty solenoid and transmission connector. Connector & terminal (T4) No. 6 — (AT4) No. 1:	Is the resistance less than 1 Ω ?	Go to step 15.	Repair open circuit in harness between transfer duty solenoid and transmission connector.
15	CHECK HARNESS CONNECTOR BETWEEN TRANSFER DUTY SOLENOID AND TRANSMISSION. Measure resistance of harness between transmission connector and transmission ground. Connector & terminal (T4) No. 6 — Transmission ground:	Is the resistance more than 1 M Ω ?	Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or contact in the transfer duty solenoid and transmission connector.	Repair short circuit in harness between transfer duty solenoid and transmission connector.

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

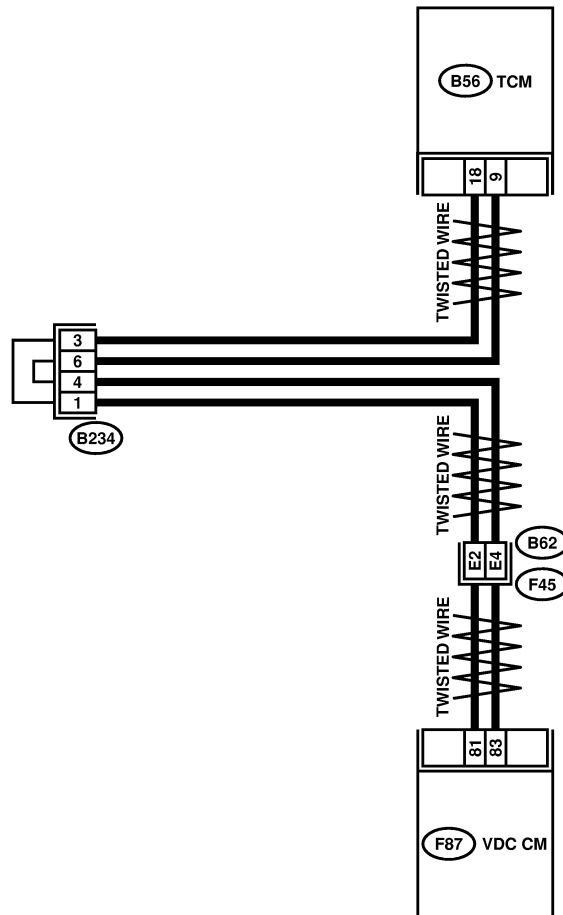
Automatic Transmission (DIAGNOSTICS)

Q: TROUBLE CODE 86 — VDC COMMUNICATION SIGNAL — S004509E19

DIAGNOSIS:

Input signal circuit of TCM is open or shorted.

WIRING DIAGRAM:



B234					
1	2	3	4	5	6

B56								
1	2	3	4	5	6	7	8	9
10	11	12	13	14	15	16	17	18
19	20	21				22	23	24

B62											
A1	A2	A3	A4	A5	A6						
B1	B2	B3	B4	B5	B6						
C1	C2	C3	C4	C5	C6						
D1	D2	D3	D4	D5	D6						
E1	E2	E3	E4	E5	E6						
F1	F2	F3	F4	F5	F6						
G1	G2	G3	G4	G5	G6						
H1	H2	H3	H4	H5	H6						
I1	I2	I3	I4	I5	I6						
J1	J2	J3	J4	J5	J6						
K1	K2	K3	K4	K5	K6						
L1	L2	L3	L4	L5	L6						
M1	M2	M3	M4	M5	M6						
N1	N2	N3	N4	N5	N6						
O1	O2	O3	O4	O5	O6						
P1	P2	P3	P4	P5	P6						

F87

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	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56
57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84

B3M1888

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

No.	Step	Check	Yes	No
1	CHECK TROUBLE CODE.	Do multiple trouble codes appear in the on-board diagnostics test mode?	Go to another trouble code.	Go to step 2.
2	CHECK HARNESS CONNECTOR BETWEEN TCM AND VDCCM. 1) Turn ignition switch to off. 2) Measure resistance of harness between TCM and VDCCM connector. Connector & terminal (B56) No. 18 — (F87) No. 81:	Is the resistance less than 1 Ω ?	Go to step 3.	Repair open circuit in harness between TCM and VDCCM, and poor contact in coupling connector.
3	CHECK HARNESS CONNECTOR BETWEEN TCM AND VDCCM. Measure resistance of harness between TCM and VDCCM connector. Connector & terminal (B56) No. 9 — (F87) No. 83:	Is the resistance less than 1 Ω ?	Go to step 4.	Repair open circuit in harness between TCM and VDCCM, and poor contact in coupling connector.
4	CHECK HARNESS CONNECTOR BETWEEN TCM AND VDCCM. Measure resistance of harness between TCM and VDCCM connector. Connector & terminal (B56) No. 18 — Chassis ground:	Is the resistance less than 1 M Ω ?	Go to step 5.	Repair short circuit in harness between TCM and VDCCM connector.
5	CHECK HARNESS CONNECTOR BETWEEN TCM AND VDCCM. Measure resistance of harness between TCM and VDCCM connector. Connector & terminal (B56) No. 9 — Chassis ground:	Is the resistance less than 1 M Ω ?	Go to step 6.	Repair short circuit in harness between TCM and VDCCM connector.
6	PREPARE OSCILLOSCOPE.	Do you have oscilloscope?	Go to step 8.	Go to step 7.
7	CHECK INPUT SIGNAL FOR TCM. 1) Turn ignition switch to ON (engine OFF). 2) Measure voltage between TCM connector and chassis ground. Connector & terminal (B56) No. 9 (+) — Chassis ground (-): (B56) No. 18 (+) — Chassis ground (-):	Does input voltage value change?	Go to step 10.	Repair poor contact in VDCCM.
8	CHECK INPUT SIGNAL FOR TCM USING OSCILLOSCOPE. 1) Set oscilloscope to TCM connector terminals. Positive probe; (B56) No. 9 Earth lead; (B55) No. 9 2) Turn ignition switch to ON (engine OFF). 3) Check signal waveform pattern on oscilloscope. <Ref. AT-22 WAVEFORM, MEASUREMENT, Transmission Control Module (TCM) I/O Signal.>	Is waveform pattern same as that shown in the figure?	Go to step 9.	Repair poor contact in VDCCM.
9	CHECK INPUT SIGNAL FOR TCM USING OSCILLOSCOPE. 1) Set oscilloscope to TCM connector terminals. Positive probe; (B56) No. 18 Earth lead; (B55) No. 9 2) Turn ignition switch to ON (engine OFF). 3) Check signal waveform pattern on oscilloscope. <Ref. AT-22 WAVEFORM, MEASUREMENT, Transmission Control Module (TCM) I/O Signal.>	Is waveform pattern same as that shown in the figure?	Go to step 10.	Repair poor contact in VDCCM.

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

No.	Step	Check	Yes	No
10	CHECK POOR CONTACT.	Is there poor contact in TCM?	Repair poor contact.	Replace TCM. <Ref. to AT-42 Transmission Control Module (TCM).>

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

MEMO:

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

R: TROUBLE CODE 93 — REAR VEHICLE SPEED SENSOR — S004509F61

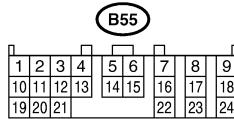
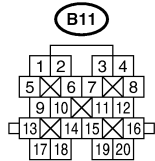
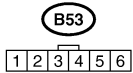
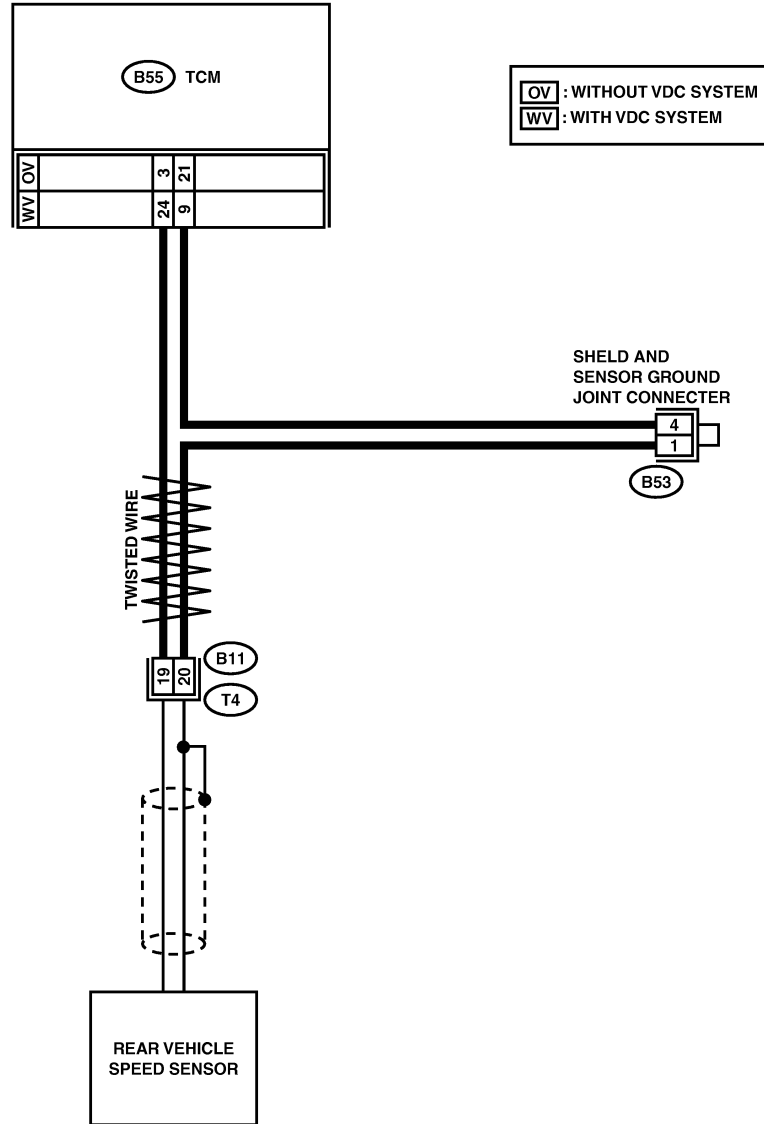
DIAGNOSIS:

Input signal circuit of TCM is open or shorted.

TROUBLE SYMPTOM:

No lock-up or excessive tight corner “braking”.

WIRING DIAGRAM:



B3M1889

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

No.	Step	Check	Yes	No
1	CHECK REAR VEHICLE SPEED SENSOR. 1) Turn ignition switch to OFF. 2) Disconnect connector from transmission. 3) Measure resistance between transmission connector receptacle's terminals. <i>Connector & terminal</i> <i>(T4) No. 19 — No. 20:</i>	Is the resistance between 450 and 650 Ω ?	Go to step 1.	Replace transmission harness connector.
2	CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. 1) Disconnect connector from TCM. 2) Measure resistance of harness between TCM and transmission connector. <i>Connector & terminal</i> <i>WITHOUT VDC SYSTEM</i> <i>(B55) No. 3 — (B11) No. 19:</i> <i>WITH VDC SYSTEM</i> <i>(B55) No. 24 — (B11) No. 19:</i>	Is the resistance less than 1 Ω ?	Go to step 3.	Repair open circuit in harness between TCM and transmission connector.
3	CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. Measure resistance of harness between TCM and transmission connector. <i>Connector & terminal</i> <i>WITHOUT VDC SYSTEM</i> <i>(B55) No. 21 — (B11) No. 20:</i> <i>WITH VDC SYSTEM</i> <i>(B55) No. 9 — (B11) No. 20:</i>	Is the resistance less than 1 Ω ?	Go to step 4.	Repair open circuit in harness between TCM and transmission, and poor contact in coupling connector.
4	CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. Measure resistance of harness between TCM and chassis ground. <i>Connector & terminal</i> <i>WITHOUT VDC SYSTEM</i> <i>(B55) No. 3 — Chassis ground:</i> <i>WITH VDC SYSTEM</i> <i>(B55) No. 24 — Chassis ground:</i>	Is the resistance more than 1 M Ω ?	Go to step 5.	Repair short circuit in harness between TCM and transmission connector.
5	CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. Measure resistance of harness between TCM and chassis ground. <i>Connector & terminal</i> <i>WITHOUT VDC SYSTEM</i> <i>(B55) No. 21 — Chassis ground:</i> <i>WITH VDC SYSTEM</i> <i>(B55) No. 9 — Chassis ground:</i>	Is the resistance more than 1 M Ω ?	Go to step 6.	Repair short circuit in harness between TCM and transmission connector.
6	PREPARE OSCILLOSCOPE.	Do you have oscilloscope?	Go to step 10.	Go to step 7.
7	PREPARE SUBARU SELECT MONITOR.	Do you have a Subaru Select Monitor?	Go to step 9.	Go to step 8.

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

No.	Step	Check	Yes	No
8	CHECK INPUT SIGNAL FOR TCM. 1) Connect connectors to TCM and transmission. 2) Lift-up or raise the vehicle and place safety stands. CAUTION: On AWD models, raise all wheels off 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 indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to ABS-20 Clear Memory Mode.> 4) Measure voltage between TCM connector terminals. Connector & terminal WITHOUT VDC SYSTEM (B55) No. 3 (+) — No. 21 (-): WITH VDC SYSTEM (B55) No. 24 (+) — No. 9 (-):	Is the voltage more than AC 1 V?	Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM and transmission.	Go to step 11.
9	CHECK INPUT SIGNAL FOR TCM USING SUBARU SELECT MONITOR. 1) Connect connectors to TCM and transmission. 2) Connect Subaru Select Monitor to data link connector. 3) Lift-up or raise the vehicle and place safety stands. CAUTION: On AWD models, raise all wheels off floor. 4) Turn ignition switch to ON and turn Subaru Select Monitor switch to ON. 5) Start the engine. 6) Read data of vehicle speed using Subaru Select Monitor. - Compare speedometer with Subaru Select Monitor indications. - Vehicle speed is indicated in "km/h" or "MPH". 7) Slowly increase vehicle speed to 60 km/h or 37 MPH. 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 memory clearance procedure of on-board diagnostics system. <Ref. to ABS-20 Clear Memory Mode.>	Does the speedometer indication increase as the Subaru Select Monitor data increases?	Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM and transmission.	Go to step 11.

DIAGNOSTIC PROCEDURE WITH TROUBLE CODE

Automatic Transmission (DIAGNOSTICS)

No.	Step	Check	Yes	No
10	CHECK INPUT SIGNAL FOR TCM USING OSCILLOSCOPE. 1) Connect connectors to TCM and transmission. 2) Lift-up or raise the vehicle and place safety stands. CAUTION: On AWD models, raise all wheels off floor. 3) Set oscilloscope to TCM connector terminals. Position probe; (B55) No. 3 Earth lead; (B55) No. 21 4) 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 indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to ABS-20 Clear Memory Mode.> 5) Measure signal voltage indicated on oscilloscope.	Is the signal voltage more than AC 1 V?	Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM and transmission.	Go to step 11.
11	CHECK POOR CONTACT.	Is there poor contact in rear vehicle speed sensor circuit?	Repair poor contact.	Replace TCM. <Ref. to AT-42 Transmission Control Module (TCM).>