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AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Basic Diagnostic Procedure

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

1. Basic Diagnostic Procedure

A: PROCEDURE

Step	Check	Yes	No
1 CHECK PRE-INSPECTION. 1) Ask the customer when and how the trouble occurred using the interview check list. <Ref. to 4AT(D)(diag)-4, Check List for Interview.> 2) Before performing diagnosis, inspect the following items which may influence AT problems. <ul style="list-style-type: none"> • General Inspection <Ref. to 4AT(D)(diag)-5, INSPECTION, General Description.> • Disconnection of harness connector • Visual check for harness damage • Oil leakage • Stall speed test <Ref. to 4AT-32, Stall Test.> • Line pressure test <Ref. to 4AT-34, Line Pressure Test.> • Transfer clutch pressure test <Ref. to 4AT-35, Transfer Clutch Pressure Test.> • Time lag test <Ref. to 4AT-33, Time Lag Test.> • Road test <Ref. to 4AT-31, Road Test.> • Inhibitor switch <Ref. to 4AT-46, Inhibitor Switch.> 	Is the item that might influence the AT problem normal?	Go to step 2.	Repair or replace each item.
2 CHECK ATF TEMPERATURE WARNING LIGHT. Turn the ignition switch to ON.	Does the ATF temperature warning light illuminate?	Go to step 4.	Go to step 3.
3 CHECK ATF TEMPERATURE WARNING LIGHT. 1) Turn the ignition switch to OFF. 2) Repair the ATF temperature warning light circuit or power supply and ground line circuit. <Ref. to 4AT(D)(diag)-20, AT Oil Temp Warning Light Display.> 3) Turn the ignition switch to ON.	Does the ATF temperature warning light illuminate?	Go to step 4.	Go to step 5.
4 CHECK INDICATION OF DTC. Display the DTC. <Ref. to 4AT(D)(diag)-17, OPERATION, Read Diagnostic Trouble Code (DTC).> NOTE: If the communication function of Select Monitor cannot be executed normally, check communication circuit. <Ref. to 4AT(D)(diag)-26, COMMUNICATION FOR INITIALIZING IMPOSSIBLE, Diagnostic Procedure for Subaru Select Monitor Communication.>	Is DTC displayed?	Record all DTC. Go to step 6.	Go to step 5.

Basic Diagnostic Procedure

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Step	Check	Yes	No
<p>5 PERFORM GENERAL DIAGNOSTICS.</p> <p>1) Inspect using “Diagnostic Procedure without Diagnostic Trouble Code (DTC)”. <Ref. to 4AT(D)(diag)-88, Diagnostic Procedure without Diagnostic Trouble Code (DTC).></p> <p>2) Inspect using “General Diagnostic Table”. <Ref. to 4AT(D)(diag)-91, General Diagnostic Table.></p> <p>3) Perform the Clear Memory Mode. <Ref. to 4AT(D)(diag)-19, WHEN USING THE SUBARU SELECT MONITOR, OPERATION, Clear Memory Mode.></p> <p>4) Perform the Inspection Mode. <Ref. to 4AT(D)(diag)-18, Inspection Mode.></p> <p>5) Display the DTC. <Ref. to 4AT(D)(diag)-17, OPERATION, Read Diagnostic Trouble Code (DTC).></p>	Is DTC displayed?	Go to step 6.	Finish the diagnosis.
<p>6 PERFORM DIAGNOSIS.</p> <p>1) Inspect using the “Diagnostic Procedure with Diagnostic Trouble Code (DTC)”. <Ref. to 4AT(D)(diag)-31, Diagnostic Procedure with Diagnostic Trouble Code (DTC).></p> <p>NOTE: Refer to “List of Diagnostic Trouble Code (DTC)” for DTC table. <Ref. to 4AT(D)(diag)-29, List of Diagnostic Trouble Code (DTC).></p> <p>2) Repair the trouble cause.</p> <p>3) Perform the Clear Memory Mode. <Ref. to 4AT(D)(diag)-19, WHEN USING THE SUBARU SELECT MONITOR, OPERATION, Clear Memory Mode.></p> <p>4) Perform the Inspection Mode. <Ref. to 4AT(D)(diag)-18, Inspection Mode.></p> <p>5) Display the DTC. <Ref. to 4AT(D)(diag)-17, OPERATION, Read Diagnostic Trouble Code (DTC).></p>	Is DTC displayed?	Inspect using the “Diagnostic Procedure with Diagnostic Trouble Code (DTC)”. <Ref. to 4AT(D)(diag)-31, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>	Finish the diagnosis.

Check List for Interview

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

2. Check List for Interview

A: CHECK

Check the following items when a problem has occurred.

NOTE:

Use copies of this page for interviewing customers.

Customer's name		
Date of purchase		
Date of repair		
Transmission model	Transmission	V.I.N.
Odometer reading	km (miles)	
Frequency	<input type="checkbox"/> Continuous <input type="checkbox"/> Intermittent (times a day)	
Weather	<input type="checkbox"/> Fine <input type="checkbox"/> Cloudy <input type="checkbox"/> Rainy <input type="checkbox"/> Snowy <input type="checkbox"/> Others ()	
Place	<input type="checkbox"/> Highland <input type="checkbox"/> Suburbs <input type="checkbox"/> Inner city <input type="checkbox"/> Uphill <input type="checkbox"/> Rough road <input type="checkbox"/> Others ()	
Ambient air temperature	<input type="checkbox"/> Hot <input type="checkbox"/> Warm <input type="checkbox"/> Cool <input type="checkbox"/> Cold	
Vehicle speed	km/h (MPH)	
AT warning light (ATF temperature warning light)	<input type="checkbox"/> Blinks continuously	<input type="checkbox"/> Does not blink
Select lever position	<input type="checkbox"/> P <input type="checkbox"/> R <input type="checkbox"/> N <input type="checkbox"/> D <input type="checkbox"/> 3 <input type="checkbox"/> 2 <input type="checkbox"/> 1	
Driving condition	<input type="checkbox"/> Not affected <input type="checkbox"/> At racing <input type="checkbox"/> When decelerating	<input type="checkbox"/> At starting <input type="checkbox"/> When accelerating <input type="checkbox"/> When turning (<input type="checkbox"/> RH/ <input type="checkbox"/> LH)
Power switch	<input type="checkbox"/> ON <input type="checkbox"/> OFF	
Hold switch	<input type="checkbox"/> ON <input type="checkbox"/> OFF	
Symptom	<input type="checkbox"/> No up-shift	
	<input type="checkbox"/> No down-shift	
	<input type="checkbox"/> No kick down	
	<input type="checkbox"/> Vehicle does not move (<input type="checkbox"/> Any position <input type="checkbox"/> Particular position)	
	<input type="checkbox"/> Lock-up malfunction	
	<input type="checkbox"/> Noise or vibration	
	<input type="checkbox"/> Shift shock or slip	
	<input type="checkbox"/> Select lever does not move	
	<input type="checkbox"/> Others ()	

3. General Description

A: CAUTION

- **SUPPLEMENTAL RESTRAINT SYSTEM “AIR-BAG”**

The airbag system wiring harness is routed near the TCM.

CAUTION:

- Airbag system wiring harnesses and connectors are yellow. Do not use an electric test equipment to check these circuits.

- Be careful not to damage the airbag system wiring harness when performing diagnostics or servicing the TCM.

- **Measurement**

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

B: INSPECTION

1. BATTERY

Measure the battery voltage and specific gravity of the electrolyte.

Standard voltage: 12 V or more

Specific gravity: 1.260 or more

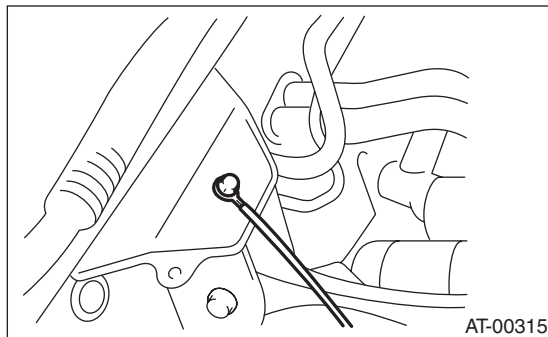
2. TRANSMISSION GROUND

Make sure that the ground terminal bolt is tightened securely.

- **Chassis side**

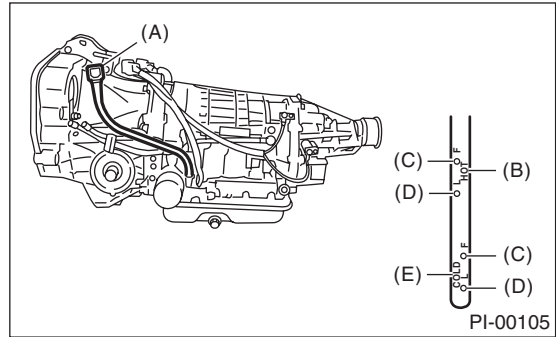
Tightening torque:

13 N·m (1.3 kgf·m, 9.4 ft·lb)



3. ATF LEVEL

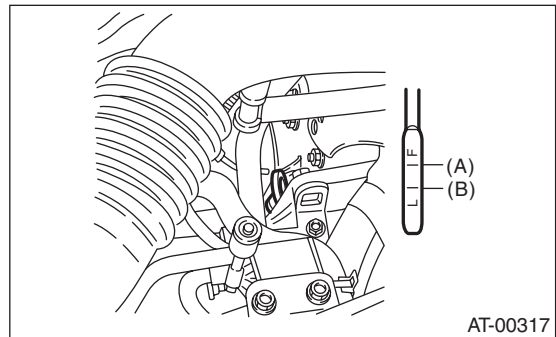
Make sure that ATF level is the specified amount. <Ref. to 4AT-28, INSPECTION, Automatic Transmission Fluid.>



- (A) Level gauge
- (B) Inspection position when “HOT”
- (C) Upper level
- (D) Lower level
- (E) Inspection position when “COLD”

4. FRONT DIFFERENTIAL OIL LEVEL

Make sure the front differential oil level is the specified amount. <Ref. to 4AT-30, INSPECTION, Differential Gear Oil.>



- (A) Upper level
- (B) Lower level

General Description

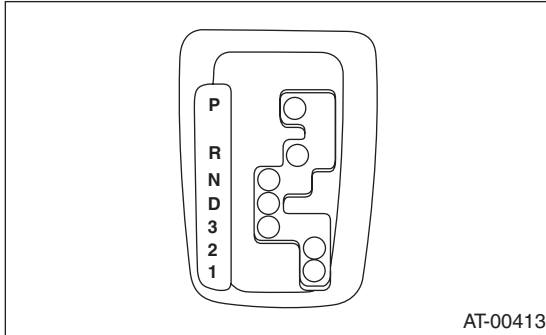
AUTOMATIC TRANSMISSION (DIAGNOSTICS)

5. OPERATION OF SELECT LEVER

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

WARNING:

Stop the engine while checking operation of the select lever.



C: PREPARATION TOOL

1. SPECIAL TOOL

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
<p>ST1B020XU0</p>	1B020XU0	SUBARU SELECT MONITOR KIT	Used for troubleshooting the electrical system.

2. GENERAL TOOL

TOOL NAME	REMARKS
Circuit tester	Used for measuring resistance, voltage and current.
Oscilloscope	Used for measuring the sensor.

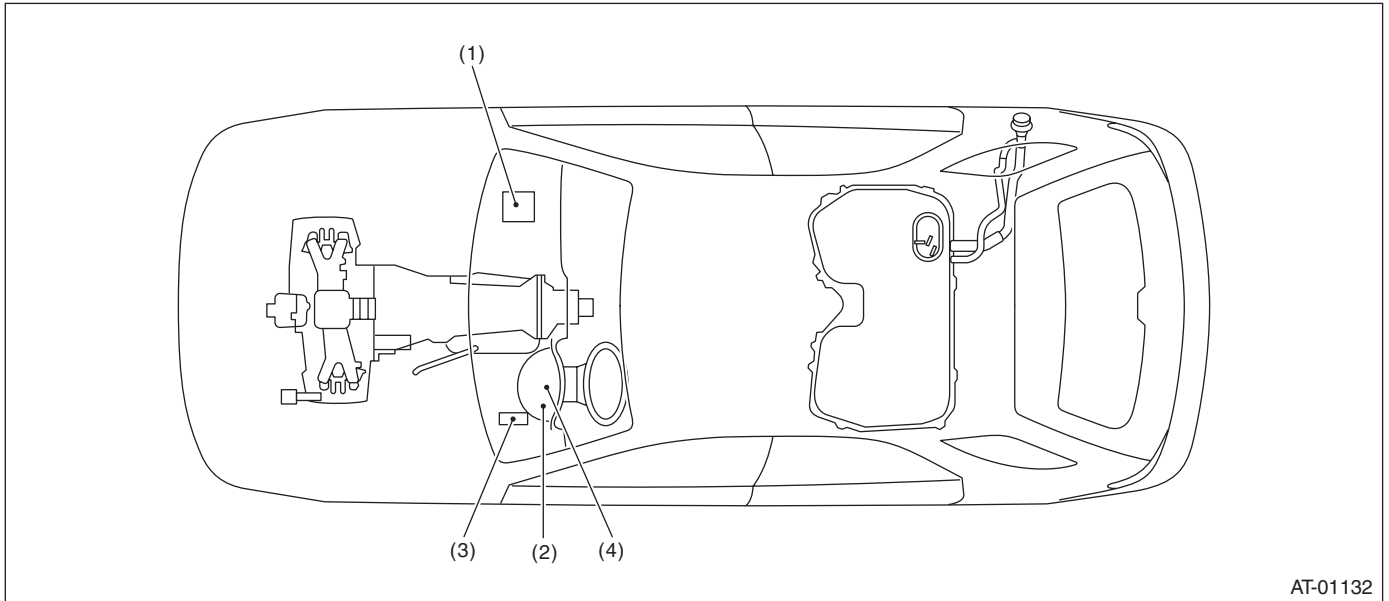
Electrical Component Location

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

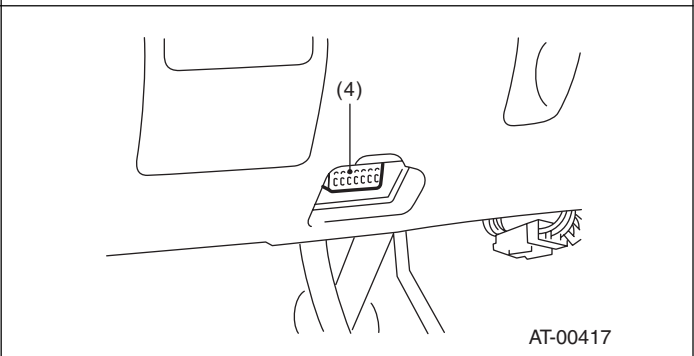
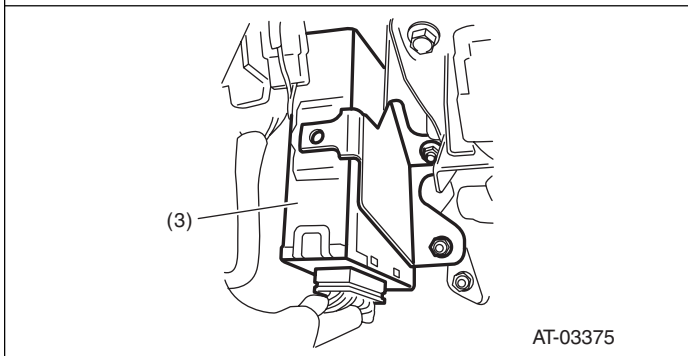
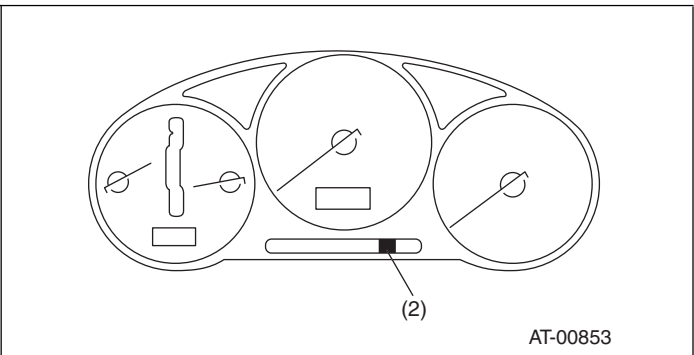
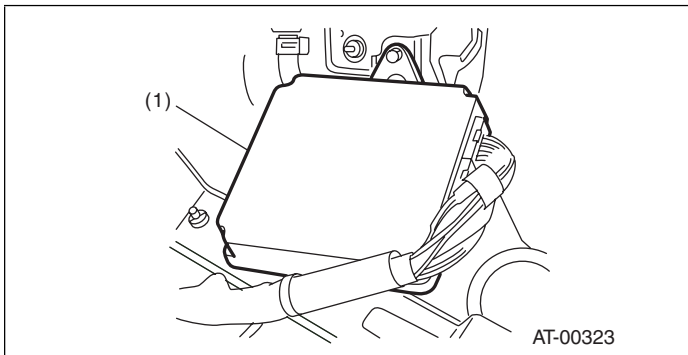
4. Electrical Component Location

A: LOCATION

1. CONTROL MODULE



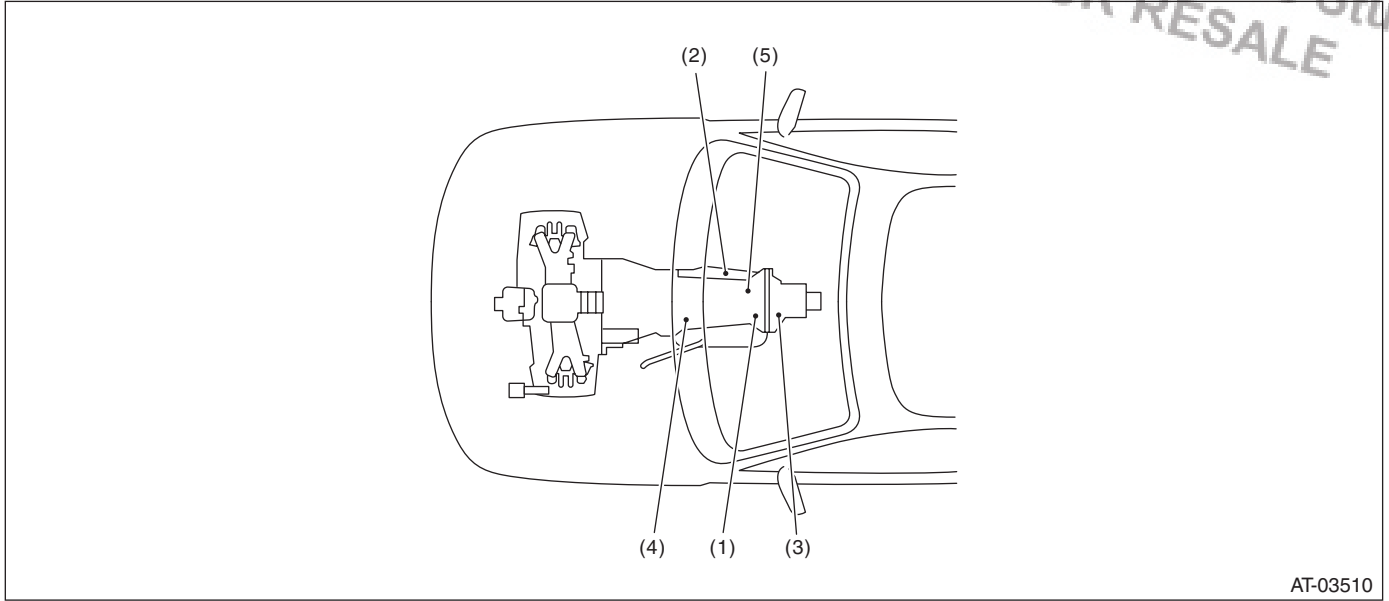
- (1) Engine control module (ECM)
- (2) ATF temperature warning light (AT temperature warning light)
- (3) Transmission control module (TCM)
- (4) Data link connector



Electrical Component Location

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

2. SENSOR



AT-03510

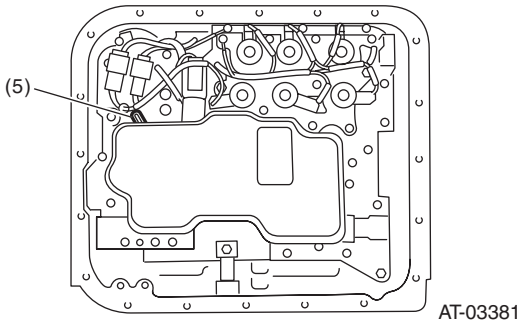
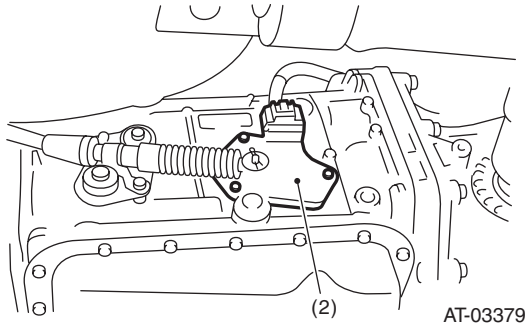
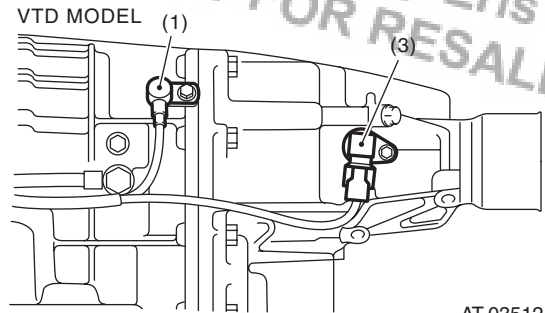
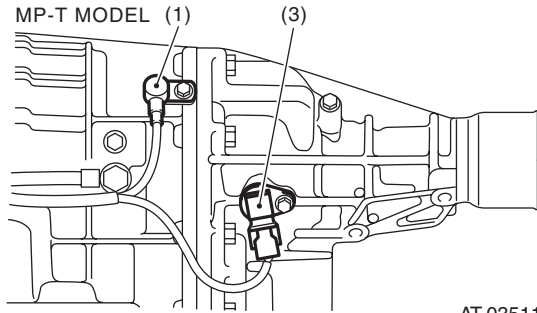
- (1) Front vehicle speed sensor
- (2) Inhibitor switch
- (3) Rear vehicle speed sensor

- (4) Torque converter turbine speed sensor

- (5) ATF temperature sensor

Electrical Component Location

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

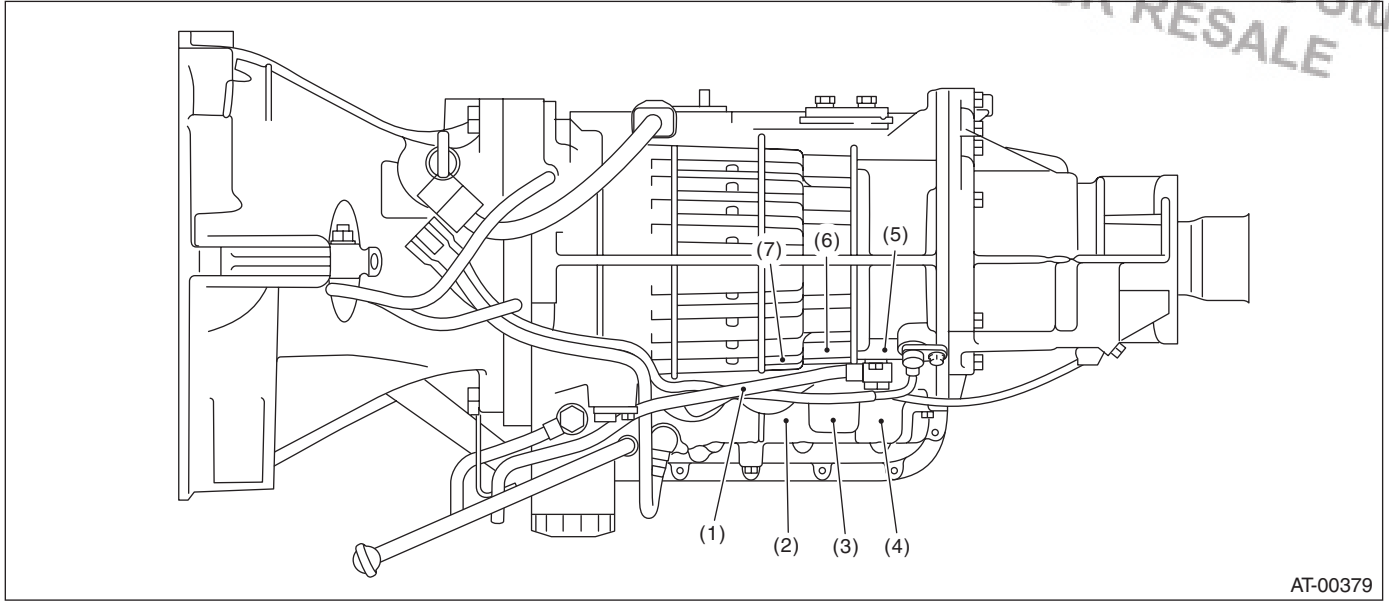


SUBARU.

Electrical Component Location

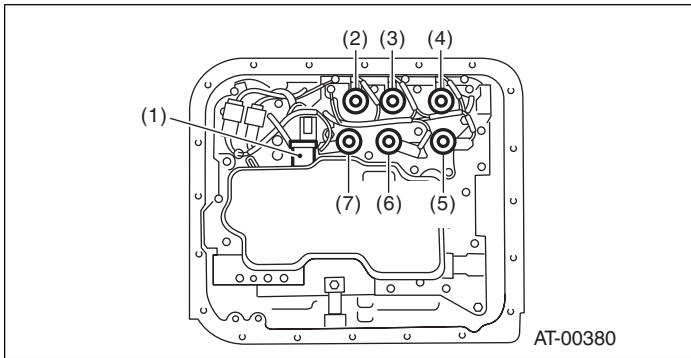
AUTOMATIC TRANSMISSION (DIAGNOSTICS)

3. SOLENOID



AT-00379

- | | | |
|-----------------------------------|---------------------------------|----------------------------------|
| (1) Line pressure linear solenoid | (4) Low & reverse duty solenoid | (6) Transfer duty solenoid valve |
| (2) High clutch duty solenoid | (5) Low clutch duty solenoid | (7) Lockup duty solenoid valve |
| (3) 2-4 brake duty solenoid valve | | |



AT-00380

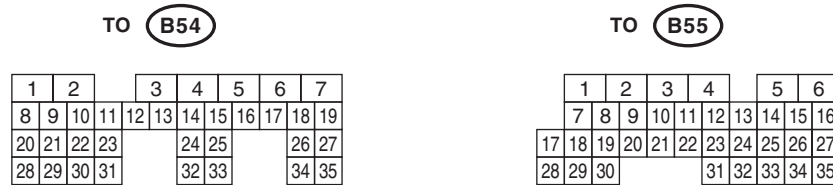
SUBARU.

Transmission Control Module (TCM) I/O Signal

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

5. Transmission Control Module (TCM) I/O Signal

A: ELECTRICAL SPECIFICATION



AT-03513

Check with ignition switch ON.

Item	Connector No.	Terminal No.	Measuring condition	Voltage (V)	Resistance to the chassis ground (Ω)	
Backup power supply	B54	25	Ignition switch OFF	10 — 13	—	
		26				
		27				
ACC power supply	B54	12	Ignition switch ACC	10 — 13	—	
Ignition power supply	B54	1	Ignition switch ON (engine OFF)	10 — 13	—	
		2				
Inhibitor switch	"P" range switch	B55	14	Select lever in "P" range	Less than 1	—
				Select lever in any other than "P" range (except "N" range)	8 or more	
	"N" range switch	B55	11	Select lever in "N" range	Less than 1	—
				Select lever in any other than "N" range	8 or more	
	"R" range switch	B55	13	Select lever in "R" range	Less than 1	—
				Select lever in any other than "R" range	8 or more	
	"D" range switch	B55	10	Select lever in "D" range	Less than 1	—
				Select lever in any other than "D" range	8 or more	
	"3" range switch	B55	8	Select lever in "3" range	Less than 1	—
				Select lever in any other than "3" range	8 or more	
	"2" range switch	B55	7	Select lever in "2" range	Less than 1	—
				Select lever in any other than "2" range	8 or more	
	"1" range switch	B55	19	Select lever in "1" range	Less than 1	—
				Select lever in any other than "1" range	8 or more	

Transmission Control Module (TCM) I/O Signal

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Check with ignition switch ON.					
Item	Connector No.	Terminal No.	Measuring condition	Voltage (V)	Resistance to the chassis ground (Ω)
Brake switch	B55	20	When brake pedal is depressed.	10.5 or more	—
			When brake pedal is released.	Less than 1	
ATF temperature warning light	B54	15	When light is ON	Less than 1	—
			When light is OFF	9 or more	
ATF temperature sensor	B55	23	ATF temperature 20°C (68°F)	3.5 — 4.3	2.3 k — 5.3 k
			ATF temperature 80°C (176°F)	1.5 — 1.9	300 — 800
Rear vehicle speed sensor	B55	26	Vehicle speed at least 20 km/h (12 MPH)	2 or more (AC range)	—
Front vehicle speed sensor	B55	27	Vehicle stopped	0	450 — 650
			Vehicle speed at least 20 km/h (12 MPH)	1 or more (AC range)	
Torque converter turbine speed sensor	B55	1	Engine idling after warm-up ("D" range)	0	450 — 650
			Engine idling after warm-up ("N" range)	1 or more (AC range)	
Vehicle speed output signal	B55	21	Vehicle speed at least 10 km/h (6 MPH)	Less than 1 ← →4 or more	—
Engine speed signal	B54	11	Ignition switch ON (engine OFF)	Less than 1	—
			Ignition switch ON (engine ON)	5 or more (AC range)	
Line pressure linear solenoid	B55	4	Ignition switch ON (engine OFF) "R" range throttle fully closed after engine warm-up.	3.7 — 7.5	4.0 — 8.0
			Ignition switch ON (engine OFF) "R" range throttle fully open after engine warm-up.	1.0 — 5.1	
Lockup duty solenoid valve	B55	6	When lock up occurs.	10.5 or more	2.0 — 6.0
			When lock up is released.	Less than 1	
Transfer duty solenoid valve	B55	5	"P" or "N" range	Less than 1	2.0 — 6.0
			Select lever is in 1st gear	1.7 — 4.0	
2-4 brake duty solenoid valve	B54	4	"P" or "N" range	10.5 or more	2.0 — 6.0
			2nd or 4th gear	Less than 1	
High clutch duty solenoid	B54	6	3rd or 4th gear	Less than 1	2.0 — 6.0
			"P" or "N" range	10.5 or more	
Low clutch duty solenoid	B54	7	1st or 2nd gear	Less than 1	2.0 — 6.0
			"P" or "N" range	10.5 or more	
Low & reverse duty solenoid	B54	5	"P" or "N" range	10.5 or more	2.0 — 6.0
			"1" range	5 — 10	
Front vehicle speed sensor ground	B55	16	—	0	Less than 1
Rear vehicle speed sensor ground	B55	15	—	0	Less than 1
System ground circuit	B54	23	—	0	Less than 1
	B54	20			
	B54	21			
	B54	22			

Transmission Control Module (TCM) I/O Signal

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Check with ignition switch ON.					
Item	Connector No.	Terminal No.	Measuring condition	Voltage (V)	Resistance to the chassis ground (Ω)
Torque converter turbine speed sensor ground	B55	2	—	0	Less than 1
ATF temperature sensor ground	B55	12	—	0	Less than 1
Range lock signal	B54	3	"D" range vehicle speed 0 km/h (0 mile/h)	10.5 or more	7 — 18
			"D" range vehicle speed 20 km/h (12 mile/h)	Less than 1	
Data link signal (Subaru Select Monitor)	B54	8	—	—	—
FWD switch	B54	10	Fuse removed	9.5	—
			Fuse installed	Less than 1	
AWD warning light	B54	13	With fuse installed to FWD switch	Less than 1	—
			With FWD switch fuse removed	9 or more	
CAN communication signal (+)	B55	18	Ignition switch ON	Pulse signal	—
CAN communication signal (-)	B55	17	Ignition switch ON	Pulse signal	—
Line pressure linear solenoid ground	B55	3	—	Less than 1	Less than 1

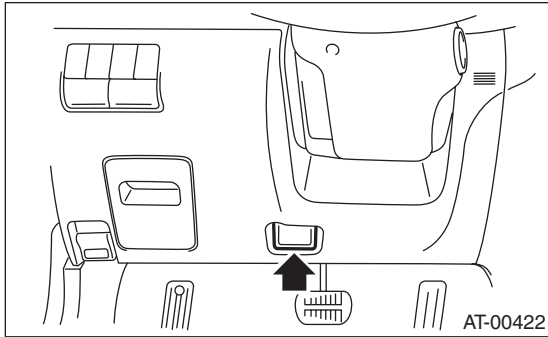
6. Subaru Select Monitor

A: OPERATION

1. READ DIAGNOSTIC TROUBLE CODE (DTC)

- 1) Prepare the Subaru Select Monitor kit.
- 2) Connect the diagnosis cable to the Subaru Select Monitor.
- 3) Connect the Subaru Select Monitor to the data link connector.

(1) Data link connector is located in the lower portion of instrument panel (on the driver's side).



(2) Connect the diagnosis cable to the data link connector.

NOTE:

Do not connect scan tools except for Subaru Select Monitor.

- 4) Turn the ignition switch to ON (engine OFF) and run the Subaru Select Monitor.
- 5) On the «Main Menu» display screen, select {Each System Check}.
- 6) On the «System Selection Menu» display screen, select {Transmission}.
- 7) Select the [OK] after the information of transmission type is displayed.
- 8) On the «Transmission Diagnosis» display screen, select {DTC Display}.

NOTE:

- For details concerning the operation procedure, refer to the «SUBARU SELECT MONITOR OPERATION MANUAL».
- For details concerning the diagnostic trouble codes (DTC), refer to the List of DTC. <Ref. to 4AT(D)(diag)-29, List of Diagnostic Trouble Code (DTC).>

2. READ CURRENT DATA

- 1) On the «Main Menu» display screen, select {Each System Check}.
- 2) On the «System Selection Menu» display screen, select {Transmission}.
- 3) Select the [OK] after the information of transmission type is displayed.
- 4) Select {Current Data Display & Save} in the «Transmission Diagnosis» screen.
- 5) On the «Transmission Diagnosis» display screen, select {Normal Measurement}.

Subaru Select Monitor

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

6) Using the scroll key, scroll the display screen up or down until the desired data is shown.

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

Item	Display	Unit of measure
Battery voltage	Battery Voltage	V
Rear vehicle speed sensor signal	Rear Wheel Speed	km/h or MPH
Front vehicle speed sensor signal	Front Wheel Speed	km/h or MPH
Engine speed signal	Engine Speed	rpm
Automatic transmission fluid temperature signal	ATF Temp.	°C or °F
Gear position	Gear Position	—
Line pressure control duty ratio	Line Pressure Duty Ratio	%
Lock up clutch control duty ratio	Lock Up Duty Ratio	%
Transfer clutch control duty ratio	Transfer Duty Ratio	%
Torque converter turbine speed signal	Turbine Revolution Speed	rpm
2-4 brake timing pressure control duty ratio	Brake Clutch Duty Ratio	%
Low clutch duty ratio	L/C Duty	%
High clutch duty ratio	H/C Duty	%
Low & reverse brake duty ratio	L&R/B Duty	%
Stop light switch signal	Stop Light SW	ON or OFF
Parking range signal	P Range Signal	ON or OFF
Neutral range signal	N Range Signal	ON or OFF
Reverse range signal	R Range Signal	ON or OFF
Drive range signal	D Range Signal	ON or OFF
3rd range signal	“3” range	ON or OFF
2nd range signal	“2” range	ON or OFF
1st range signal	“1” range	ON or OFF
Automatic transmission diagnosis indicator light	Diagnosis Light	ON or OFF
Shift lock solenoid signal	Shift Lock Solenoid	ON or OFF
FWD switch signal	FWD SW	ON or OFF
Cruise control ON signal	Cruise Control Signal	ON or OFF
ATF oil temperature warning light	ATF Temperature Light	ON or OFF

NOTE:

For details concerning the operation procedure, refer to the «SUBARU SELECT MONITOR OPERATION MANUAL».

Subaru Select Monitor

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

3. CLEAR MEMORY MODE

- 1) On the «Main Menu» display screen, select {Each System Check}.
- 2) On the «System Selection Menu» display screen, select {Transmission}.
- 3) Select the [OK] after the information of transmission type is displayed.
- 4) On the «Transmission Diagnosis» display screen, select {Clear Memory}.

NOTE:

- For details concerning the operation procedure, refer to the «SUBARU SELECT MONITOR OPERATION MANUAL».
- If {Clear Memory 2} is selected and performed, DTC and learned control memory are cleared. If Clear Memory 2 is performed, execute the advance operation of learning control. <Ref. to 4AT(D)(diag)-16, FACILITATION OF LEARNING CONTROL, OPERATION, Subaru Select Monitor.>

4. FACILITATION OF LEARNING CONTROL

NOTE:

When the following services have been performed, or when shift shock occurs during the total check with vehicle driving, perform the learning with following procedure.

- Replacement of TCM
 - Replacement of transmission assembly
 - Replacement of clutches
 - Replacement of control valve body
 - When Clear Memory 2 is performed
- 1) Shift the select lever to “P” range, and apply the parking brake.
 - 2) Lift up the vehicle.
 - 3) Connect the Subaru Select Monitor to the data link connector, and then turn the ignition switch to ON.
 - 4) Perform {Clear Memory 2} using the Subaru Select Monitor. <Ref. to 4AT(D)(diag)-16, CLEAR MEMORY MODE, OPERATION, Subaru Select Monitor.>
 - 5) Using the Subaru Select Monitor, check that there is no DTC displayed. <Ref. to 4AT(D)(diag)-14, READ DIAGNOSTIC TROUBLE CODE (DTC), OPERATION, Subaru Select Monitor.>
 - 6) Warm-up the engine until the ATF temperature displayed on the Subaru Select Monitor reaches 60 — 90°C (140 — 194°F). <Ref. to 4AT(D)(diag)-14, READ CURRENT DATA, OPERATION, Subaru Select Monitor.>
 - 7) Shift the select lever to “R” range.
 - 8) Turn all switches including headlight, air conditioner, seat heater, rear defogger and etc. OFF.
 - 9) Turn the ignition switch to OFF.

10) When “Communication Failed!” is displayed on Subaru Select Monitor, press the brake pedal fully until the learning control promotion is completed.

- 11) Turn the ignition switch to ON.
 - 12) Read the current data to make sure that the Subaru Select Monitor returns to normal status. <Ref. to 4AT(D)(diag)-14, READ CURRENT DATA, OPERATION, Subaru Select Monitor.>
 - 13) Shift the select lever to “P” range, and then wait for three seconds or more.
 - 14) Shift the select lever to “R” range, and then wait for three seconds or more.
 - 15) Shift the select lever to “N” range, and then wait for three seconds or more.
 - 16) Shift the select lever to “D” range, and then wait for three seconds or more.
 - 17) Shift the select lever to “N” range, and then wait for three seconds or more.
 - 18) Slowly depress the accelerator pedal to full open.
 - 19) Slowly release the accelerator pedal to full close.
 - 20) Start the engine, and idle it.
 - 21) Shift the select lever to “D” range.
 - 22) Start learning control promotion. At this time, the ATF temperature warning light in the combination meter will start to blink at 2 Hz. When the ATF temperature warning light does not blink, turn the ignition switch to OFF and repeat the procedures from step 4). When the ATF temperature warning light which was blinking at 2 Hz turns to blink at 0.5 Hz, facilitation of learning control is completed.
- NOTE:
- When blinking of the ATF temperature warning light changes from 2 Hz to 4 Hz during learning control promotion, repeat the procedure from step 4).
- 23) Shift the select lever to “N” range, and then turn the ignition switch to OFF.
 - 24) Shift the select lever to “P” range to complete the learning control promotion.

Read Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

7. Read Diagnostic Trouble Code (DTC)

A: OPERATION

Refer to Subaru Select Monitor for information about how to obtain and understand DTC. <Ref. to 4AT(D)(diag)-14, OPERATION, Subaru Select Monitor.>

NOTE:

It is not possible to read the DTC by ATF temperature warning light.

8. Inspection Mode

A: OPERATION

WARNING:

Observe the traffic law when driving on public roads.

Shift the select lever to “D” range, and then drive the vehicle at 60 km/h (37 MPH) for at least 10 seconds.

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9. Clear Memory Mode

A: OPERATION

1. WHEN USING THE SUBARU SELECT MONITOR

Refer to Subaru Select Monitor for information about how to clear a DTC.

<Ref. to 4AT(D)(diag)-16, CLEAR MEMORY MODE, OPERATION, Subaru Select Monitor.>

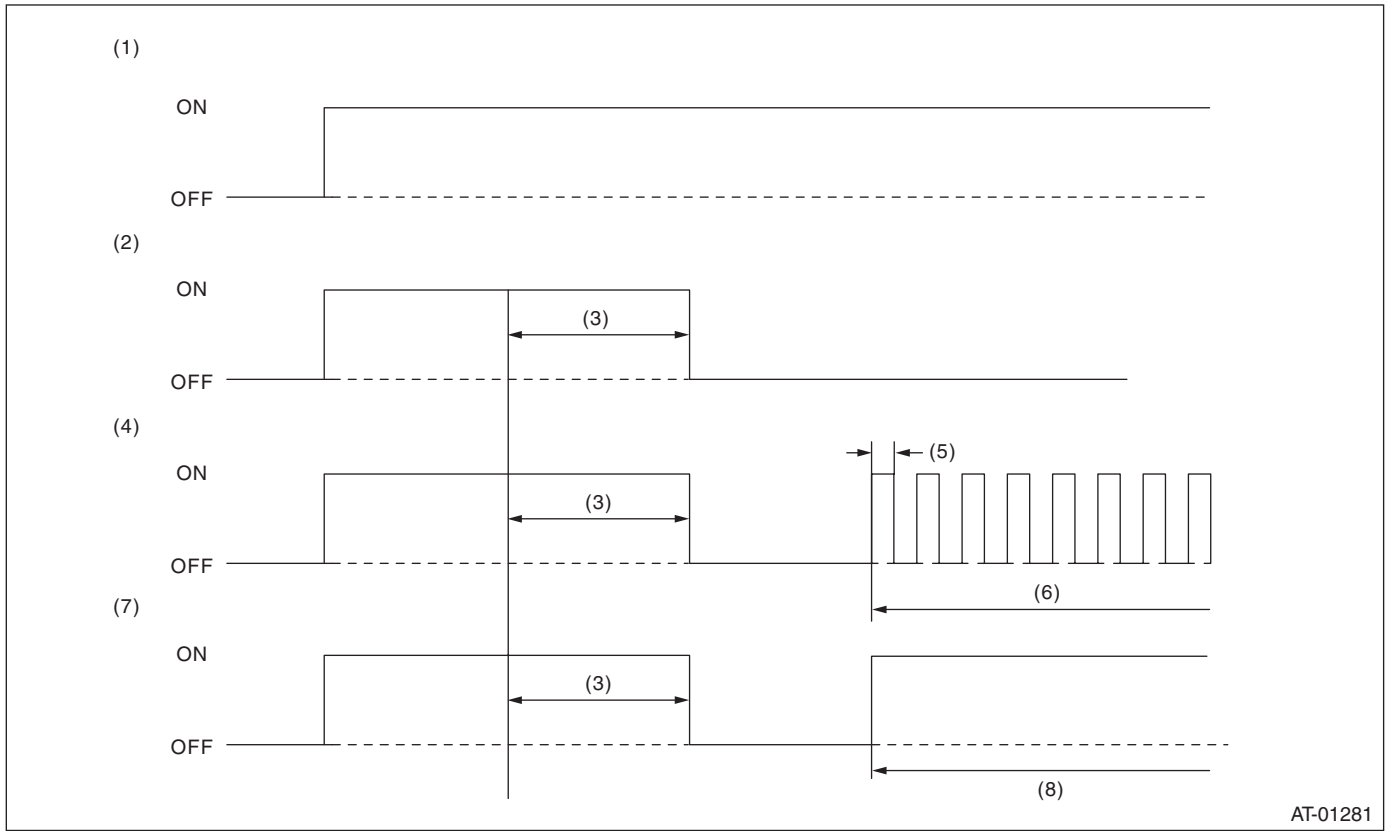
AT Oil Temp Warning Light Display

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

10.AT Oil Temp Warning Light Display

A: OPERATION

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



AT-01281

- | | | |
|----------------------------------|-------------------------------|--------------------------------------|
| (1) Ignition switch (engine OFF) | (4) Abnormal (Trouble occurs) | (7) Normal (ATF temperature is high) |
| (2) Normal | (5) 0.25 seconds | (8) ATF temperature is high |
| (3) 2 seconds | (6) Blink | |

Perform the inspection when the ATF temperature warning light does not operate correctly. <Ref. to 4AT(D)(diag)-21, INSPECTION, AT Oil Temp Warning Light Display.>

AT Oil Temp Warning Light Display

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

B: INSPECTION

DIAGNOSIS:

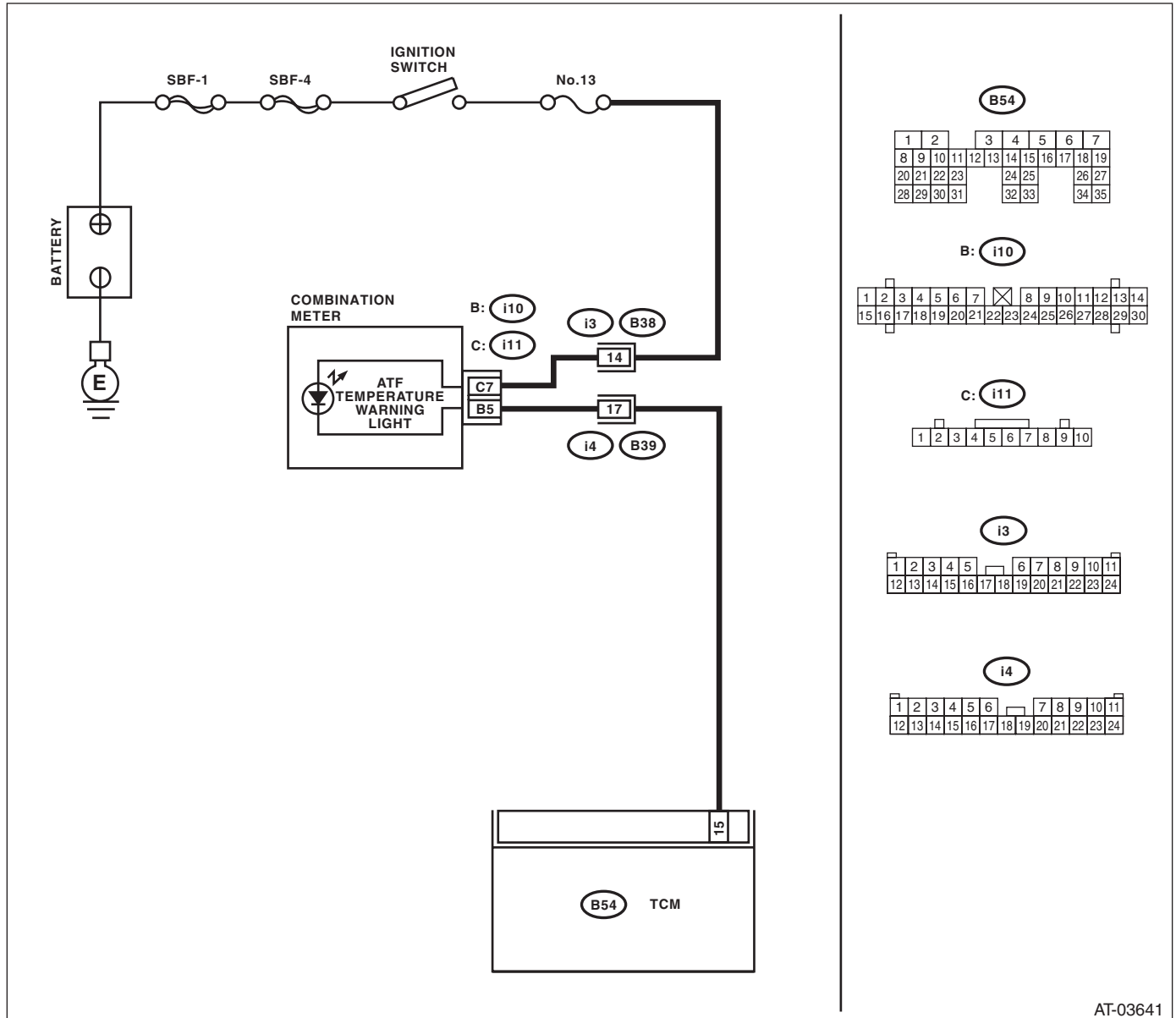
ATF temperature warning light circuit is open or shorted.

TROUBLE SYMPTOM:

When the ignition switch is turned to ON (engine OFF), the ATF temperature warning light does not illuminate.

WIRING DIAGRAM:

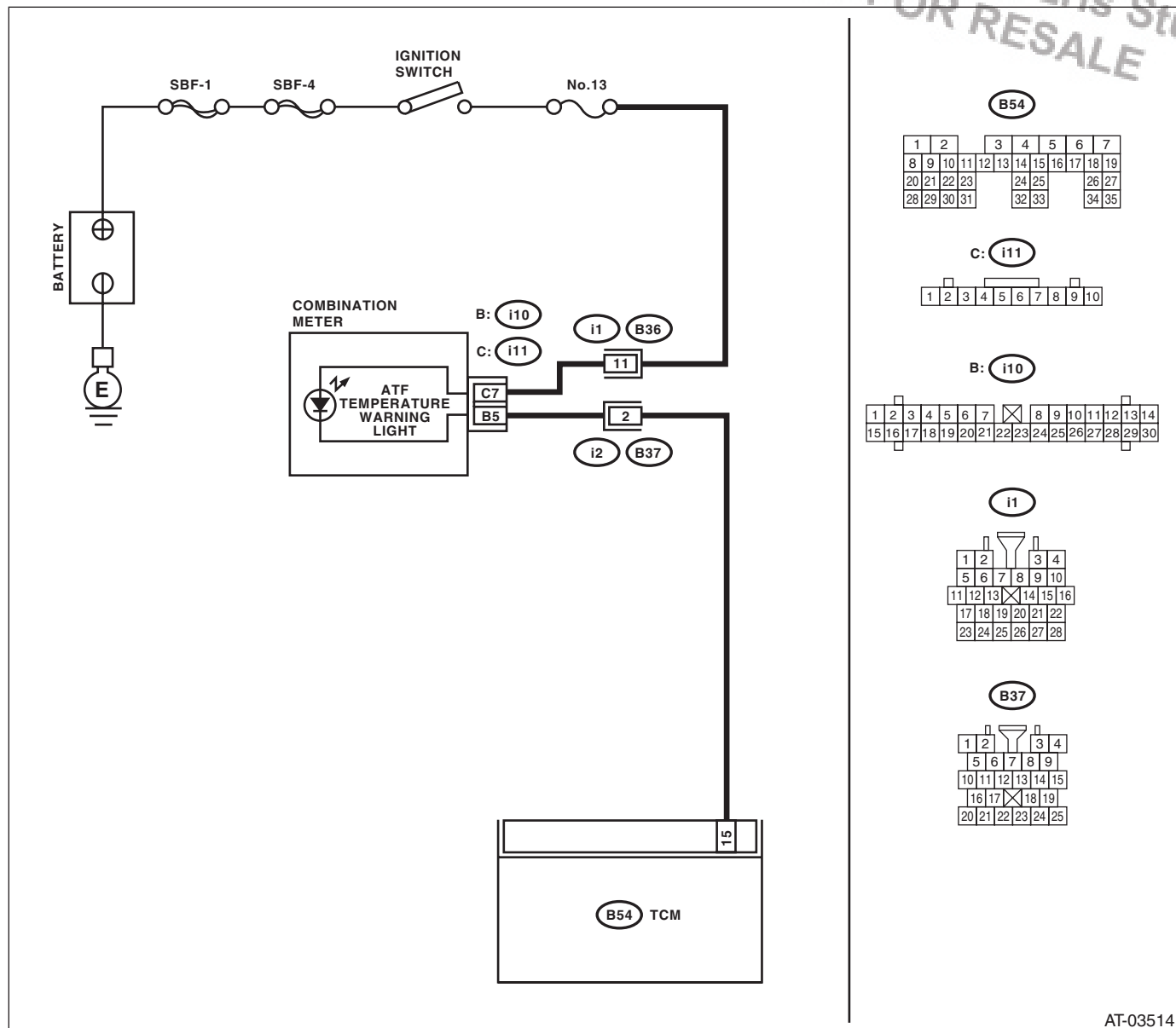
- Manual A/C model



AT Oil Temp Warning Light Display

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

- Auto A/C model



AT-03514

AT Oil Temp Warning Light Display

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

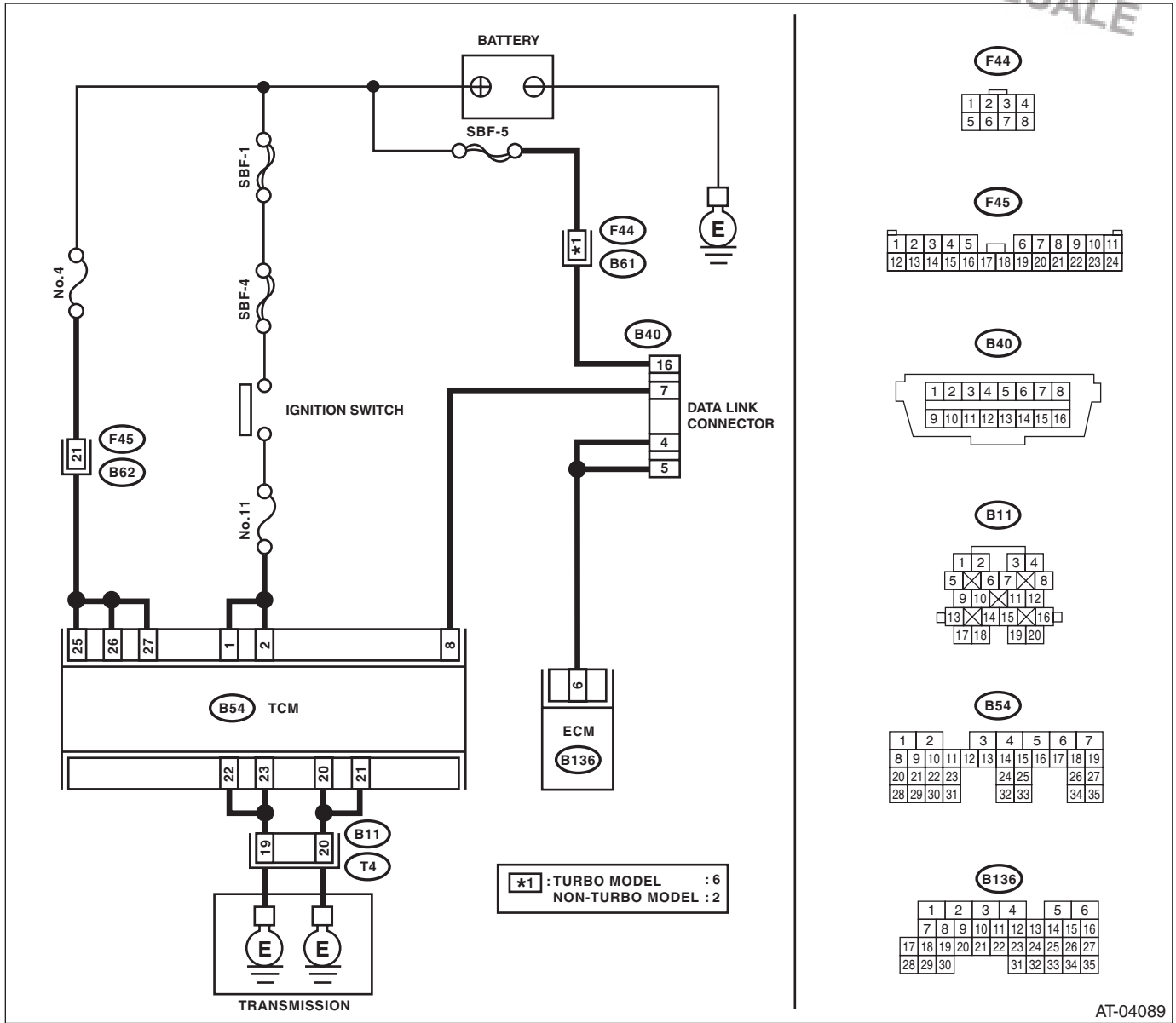
Step	Check	Yes	No
1 CHECK ATF TEMPERATURE WARNING LIGHT. Turn the ignition switch to ON (engine OFF).	Does the ATF temperature warning light illuminate?	Go to step 2.	Go to step 3.
2 CHECK FUSE (NO. 13). Remove the fuse (No. 13).	Is the fuse (No. 13) blown out?	Replace the fuse (No. 13). If the replaced fuse (No. 13) is blown out easily, repair the short circuit of the harness between fuse (No. 13) and the combination meter.	Go to step 4.
3 ATF TEMPERATURE WARNING LIGHT INSPECTION. 1) Turn the ignition switch to OFF. 2) Remove the combination meter.	Is the ATF temperature warning light OK?	Go to step 4.	Check the combination meter.
4 CHECK HARNESS CONNECTOR BETWEEN COMBINATION METER AND IGNITION SWITCH. 1) Turn the ignition switch to ON (engine OFF). 2) Measure the voltage between combination meter and chassis ground. <i>Connector & terminal (i11) No. 7 (+) — Chassis ground (-):</i>	Is the voltage 9 V or more?	Go to step 5.	Repair the open circuit of harness between the combination meter and battery.
5 CHECK COMBINATION METER. Measure the voltage between combination meter connector and chassis ground. <i>Connector & terminal (i10) No. 5 (+) — Chassis ground (-):</i>	Is the voltage less than 1 V?	Repair the combination meter. <Ref. to IDI-11, Combination Meter.>	Go to step 6.
6 CHECK OPEN CIRCUIT OF HARNESS. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from combination meter connector. 3) Measure the resistance of harness between combination meters. <i>Connector & terminal (B54) No. 15 — (i10) No. 5:</i>	Is the resistance less than 1 Ω?	Go to step 7.	Repair the open circuit of harness between TCM and combination meter, and the poor contact of the connector.
7 CHECK INPUT SIGNAL FOR TCM. 1) Connect the connectors to TCM and combination meter. 2) Turn the ignition switch to ON (engine OFF). 3) Measure the voltage between TCM connector and chassis ground. <i>Connector & terminal (B54) No. 15 (+) — Chassis ground (-):</i>	Is the voltage less than 1 V?	Go to step 8.	Repair the poor contact.
8 CHECK ATF TEMPERATURE WARNING LIGHT.	Does the ATF temperature warning light illuminate?	Proceed with the diagnosis corresponding to the Basic Diagnostic Procedure.	Check the power supply and ground circuit.

AT Oil Temp Warning Light Display

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

C: CHECK POWER SUPPLY AND GROUND LINE

WIRING DIAGRAM:



AT-04089

AT Oil Temp Warning Light Display

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Step	Check	Yes	No	
1	CHECK BATTERY TERMINAL. Turn the ignition switch to OFF.	Is there poor contact at the battery terminal?	Repair the poor contact.	Go to step 2.
2	CHECK POWER SUPPLY OF TCM. 1) Disconnect the connector from TCM. 2) Turn the ignition switch to ON. 3) Measure the voltage between TCM connector and chassis ground. Connector & terminal (B54) No. 25 (+) — Chassis ground (-): (B54) No. 26 (+) — Chassis ground (-): (B54) No. 27 (+) — Chassis ground (-):	Is the voltage 10 — 13 V?	Go to step 4.	Go to step 3.
3	CHECK FUSE (NO. 4). 1) Turn the ignition switch to OFF. 2) Remove the fuse (No. 4).	Is the fuse (No. 4) blown out?	Replace the fuse (No. 4). If the new fuse (No. 4) has blown out easily, repair the short circuit of harness between fuse (No. 4) and TCM.	Repair the open circuit of harness between fuse (No. 4) and TCM, or fuse (No. 4) and battery, and poor contact of the connector.
4	CHECK IGNITION POWER SUPPLY CIRCUIT. 1) Turn the ignition switch to ON. 2) Measure the ignition power supply voltage between TCM connector and chassis ground. Connector & terminal (B54) No. 1 (+) — Chassis ground (-): (B54) No. 2 (+) — Chassis ground (-):	Is the voltage 10 — 13 V?	Go to step 6.	Go to step 5.
5	CHECK FUSE (NO. 11). Remove the fuse (No. 11).	Is the fuse (No. 11) blown out?	Replace the fuse (No. 11). If the new fuse (No. 11) has blown out easily, repair the short circuit of harness between fuse (No. 11) and TCM.	Repair the open circuit of harness between fuse (No. 4) and TCM, or fuse (No. 4) and battery, and poor contact of the connector.
6	CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from TCM and transmission. 3) Measure the resistance of harness between TCM and transmission connector. Connector & terminal (B54) No. 22 — (B11) No. 19: (B54) No. 23 — (B11) No. 19: (B54) No. 20 — (B11) No. 20: (B54) No. 21 — (B11) No. 20:	Is the resistance less than 1 Ω?	Go to step 7.	Repair the open circuit of harness between TCM and transmission harness connector, and poor contact of connector.
7	CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND TRANSMISSION GROUND. Measure the resistance of the harness between transmission and transmission ground. Connector & terminal (T4) No. 19 — Transmission ground: (T4) No. 20 — Transmission ground:	Is the resistance less than 1 Ω?	Repair the poor contact.	Repair the open circuit of the harness between transmission and transmission ground.

Diagnostic Procedure for Subaru Select Monitor Communication

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

11. Diagnostic Procedure for Subaru Select Monitor Communication

A: COMMUNICATION FOR INITIALIZING IMPOSSIBLE

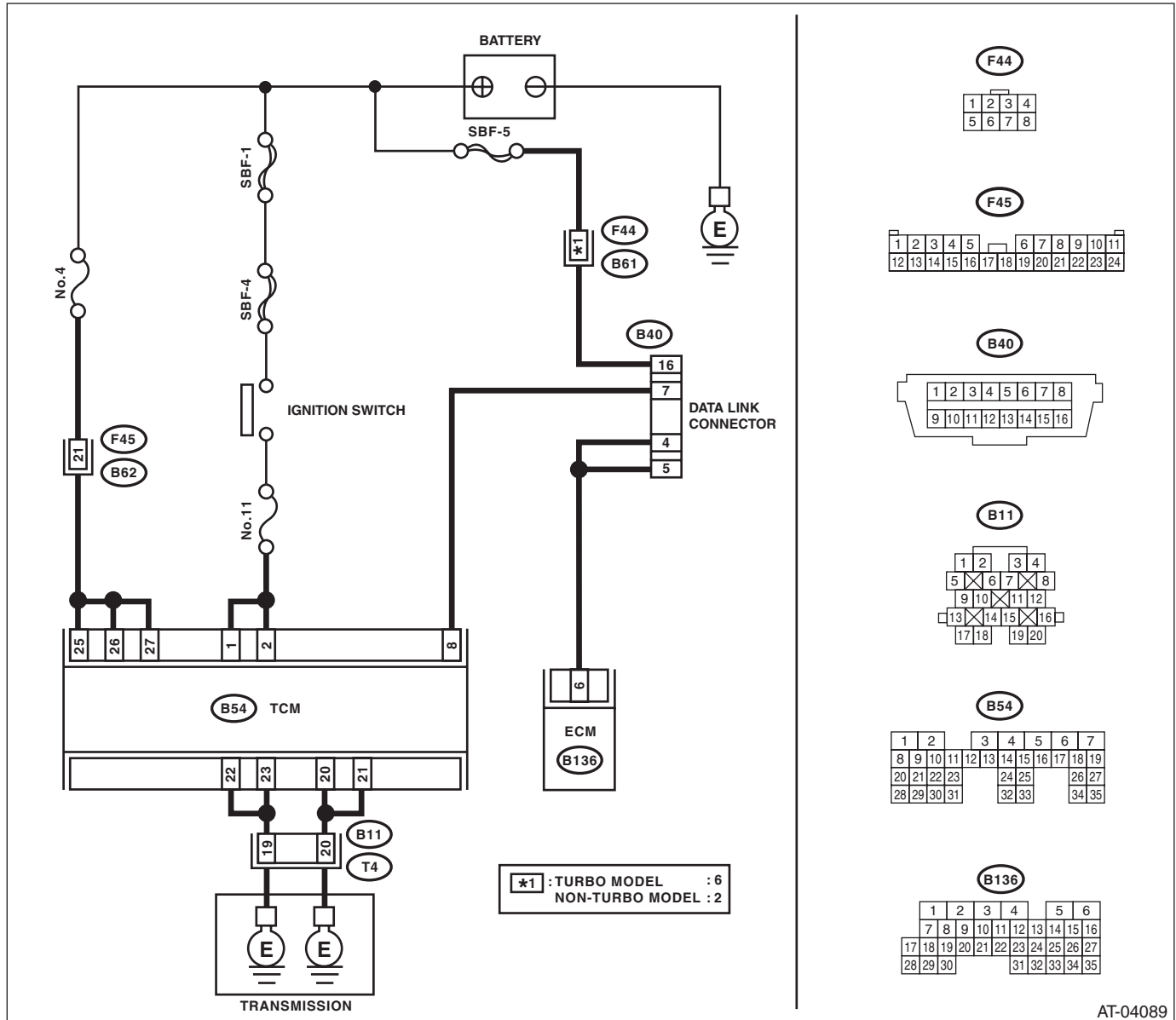
DIAGNOSIS:

Defective harness connector

TROUBLE SYMPTOM:

Subaru Select Monitor communication failure

WIRING DIAGRAM:



AT-04089

Diagnostic Procedure for Subaru Select Monitor Communication

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK SUBARU SELECT MONITOR POWER SUPPLY CIRCUIT. Measure the voltage between data link connector and chassis ground. <i>Connector & terminal</i> <i>(B40) No. 16 (+) — Chassis ground (-):</i>	Is the voltage 10 V or more?	Go to step 2.	Repair harnesses and connectors between the battery and data link connector, and poor contact of the connector.
2 CHECK SUBARU SELECT MONITOR GROUND CIRCUIT. Measure the resistance of harness between data link connector and chassis ground. <i>Connector & terminal</i> <i>(B40) No. 4 — Chassis ground:</i> <i>(B40) No. 5 — Chassis ground:</i>	Is the resistance less than 1 Ω ?	Go to step 3.	Repair the open circuit of harness between data link connector and ground terminal, and poor contact of connector.
3 CHECK COMMUNICATION OF SUBARU SELECT MONITOR. 1) Turn the ignition switch to ON. 2) Using the Subaru Select Monitor, check whether communication to the transmission system can be executed normally.	Is the name of system displayed on Subaru Select Monitor?	Go to step 8.	Go to step 4.
4 CHECK COMMUNICATION OF SUBARU SELECT MONITOR. 1) Turn the ignition switch to OFF. 2) Disconnect the TCM connector. 3) Turn the ignition switch to ON and run the Subaru Select Monitor. 4) Check whether communication to engine system can be executed normally.	Is the name of system displayed on Subaru Select Monitor?	Go to step 6.	Go to step 5.
5 CHECK COMMUNICATION OF SUBARU SELECT MONITOR. 1) Turn the ignition switch to OFF. 2) Connect the TCM connector. 3) Check whether communication to transmission system can be executed normally.	Is the name of system displayed on Subaru Select Monitor?	Inspect the ECM.	Go to step 6.
6 CHECK HARNESS CONNECTOR BETWEEN EACH CONTROL MODULE AND DATA LINK CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the TCM and ECM connector. 3) Measure the resistance between TCM connector and chassis ground. <i>Connector & terminal</i> <i>(B40) No. 7 — Chassis ground:</i>	Is the resistance 1 M Ω or more?	Go to step 7.	Check harness and connector between each control module and data link connector.
7 CHECK OUTPUT SIGNAL OF TCM. 1) Turn the ignition switch to ON. 2) Measure the voltage between TCM and chassis ground. <i>Connector & terminal</i> <i>(B40) No. 7 (+) — Chassis ground (-):</i>	Is the voltage 1 V or more?	Check harness and connector between each control module and data link connector.	Go to step 8.
8 CHECK HARNESS CONNECTOR BETWEEN TCM AND DATA LINK CONNECTOR. Measure the resistance between TCM connector and data link connector. <i>Connector & terminal</i> <i>(B54) No. 8 — (B40) No. 7:</i>	Is the resistance less than 0.5 Ω ?	Go to step 9.	Repair the harness and connector between TCM and data link connector.
9 CHECK INSTALLATION OF TCM CONNECTOR. Turn the ignition switch to OFF.	Is TCM connector connected to TCM?	Go to step 10.	Connect the TCM connector to TCM.

Diagnostic Procedure for Subaru Select Monitor Communication

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Step	Check	Yes	No
10 CHECK INSTALLATION OF TRANSMISSION HARNESS CONNECTOR.	Is the transmission harness connector inserted to the bulkhead harness connector?	Go to step 11.	Insert the bulkhead harness connector to the transmission harness connector.
11 CHECK POOR CONTACT OF CONNECTORS.	Is there poor contact in control module power supply and data link connector?	Repair the poor contact.	Go to step 12.
12 CHECK IGNITION POWER SUPPLY CIRCUIT. 1) Turn the ignition switch to ON (engine OFF). 2) Measure the ignition power supply voltage between TCM connector and chassis ground. <i>Connector & terminal</i> (B54) No. 25 (+) — Chassis ground (-): (B54) No. 26 (+) — Chassis ground (-): (B54) No. 27 (+) — Chassis ground (-):	Is the voltage 10 — 13 V?	Go to step 14.	Go to step 13.
13 CHECK FUSE (NO. 11). Remove the fuse (No. 11).	Is the fuse (No. 11) blown out?	Replace the fuse (No. 11). If the new fuse (No. 11) has blown out easily, repair the short circuit of harness between fuse (No. 11) and TCM.	Repair the open circuit of harness between fuse (No. 11) and TCM, or fuse (No. 11) and battery, and poor contact of the connector.
14 CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from TCM and transmission. 3) Measure the resistance of harness between TCM and transmission connector. <i>Connector & terminal</i> (B54) No. 22 — (B11) No. 19: (B54) No. 23 — (B11) No. 19: (B54) No. 20 — (B11) No. 20: (B54) No. 21 — (B11) No. 20:	Is the resistance less than 1 Ω?	Go to step 15.	Repair the open circuit of harness between TCM and transmission harness connector, and poor contact of connector.
15 CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND TRANSMISSION GROUND. Measure the resistance of the harness between transmission and transmission ground. <i>Connector & terminal</i> (T4) No. 19 — Transmission ground: (T4) No. 20 — Transmission ground:	Is the resistance less than 1 Ω?	Repair the poor contact.	Repair the open circuit of the harness between transmission and transmission ground.

List of Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

12. List of Diagnostic Trouble Code (DTC)

A: LIST

DTC	Item	Content of diagnosis	Reference target
P0705	Transmission Range Sensor Circuit (PRNDL Input)	Inhibitor switch malfunction, open or short circuit	<Ref. to 4AT(D)(diag)-31, DTC P0705 TRANSMISSION RANGE SENSOR CIRCUIT (PRNDL INPUT), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P0712	Transmission Fluid Temperature Sensor Circuit Low Input	ATF temperature sensor is faulty or input signal circuit is open.	<Ref. to 4AT(D)(diag)-42, DTC P0712 TRANSMISSION FLUID TEMPERATURE SENSOR CIRCUIT LOW INPUT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P0713	Transmission Fluid Temperature Sensor Circuit High Input	ATF temperature sensor is faulty or input signal circuit is shorted.	<Ref. to 4AT(D)(diag)-45, DTC P0713 TRANSMISSION FLUID TEMPERATURE SENSOR CIRCUIT HIGH INPUT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P0715	Input/Turbine Speed Sensor Circuit	Torque converter turbine speed sensor malfunction, open or shorted input signal circuit	<Ref. to 4AT(D)(diag)-48, DTC P0715 INPUT/TURBINE SPEED SENSOR CIRCUIT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P0719	Brake Switch Circuit Low	Brake switch malfunction, open input signal circuit	<Ref. to 4AT(D)(diag)-50, DTC P0719 BRAKE SWITCH CIRCUIT LOW, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P0720	Output Speed Sensor Circuit	Front vehicle speed sensor malfunction, open or shorted input signal circuit	<Ref. to 4AT(D)(diag)-52, DTC P0720 OUTPUT SPEED SENSOR CIRCUIT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P0724	Brake Switch Circuit High	Brake switch malfunction, shorted input signal circuit	<Ref. to 4AT(D)(diag)-55, DTC P0724 BRAKE SWITCH CIRCUIT HIGH, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P0725	Engine Speed Input Circuit	Open or shorted engine speed output signal circuit	<Ref. to 4AT(D)(diag)-57, DTC P0725 ENGINE SPEED INPUT CIRCUIT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P0731	Gear 1 Incorrect Ratio	Vehicle sensor, torque converter turbine speed sensor or control valve malfunction	<Ref. to 4AT(D)(diag)-58, DTC P0731 GEAR 1 INCORRECT RATIO, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P0732	Gear 2 Incorrect Ratio	Vehicle sensor, torque converter turbine speed sensor or control valve malfunction	<Ref. to 4AT(D)(diag)-58, DTC P0732 GEAR 2 INCORRECT RATIO, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P0733	Gear 3 Incorrect Ratio	Vehicle sensor, torque converter turbine speed sensor or control valve malfunction	<Ref. to 4AT(D)(diag)-58, DTC P0733 GEAR 3 INCORRECT RATIO, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P0734	Gear 4 Incorrect Ratio	Vehicle sensor, torque converter turbine speed sensor or control valve malfunction	<Ref. to 4AT(D)(diag)-58, DTC P0734 GEAR 4 INCORRECT RATIO, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P0736	Reverse Incorrect Ratio	Vehicle sensor, torque converter turbine speed sensor or control valve malfunction	<Ref. to 4AT(D)(diag)-59, DTC P0736 REVERSE INCORRECT RATIO, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P0741	Torque Converter Clutch Circuit Performance or Stuck Off	Lock-up clutch is faulty or valve is stuck.	<Ref. to 4AT(D)(diag)-60, DTC P0741 TORQUE CONVERTER CLUTCH CIRCUIT PERFORMANCE OR STUCK OFF, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P0743	Torque Converter Clutch Circuit Electrical	Lock-up solenoid is faulty or output signal circuit is open or shorted.	<Ref. to 4AT(D)(diag)-61, DTC P0743 TORQUE CONVERTER CLUTCH CIRCUIT ELECTRICAL, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

List of Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

DTC	Item	Content of diagnosis	Reference target
P0748	Pressure Control Solenoid "A" Electrical	Line pressure linear solenoid is faulty or output signal circuit is open or shorted.	<Ref. to 4AT(D)(diag)-64, DTC P0748 PRESSURE CONTROL SOLENOID "A" ELECTRICAL, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P0753	Shift Solenoid "A" Electrical	Low clutch duty solenoid is faulty or output signal circuit is open or shorted.	<Ref. to 4AT(D)(diag)-66, DTC P0753 SHIFT SOLENOID "A" ELECTRICAL, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P0758	Shift Solenoid "B" Electrical	2-4 brake duty solenoid is faulty or output signal circuit is open or shorted.	<Ref. to 4AT(D)(diag)-69, DTC P0758 SHIFT SOLENOID "B" ELECTRICAL, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P0763	Shift Solenoid "C" Electrical	High clutch duty solenoid is faulty or output signal circuit is open or shorted.	<Ref. to 4AT(D)(diag)-72, DTC P0763 SHIFT SOLENOID "C" ELECTRICAL, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P0768	Shift Solenoid "D" Electrical	Low & reverse clutch duty solenoid is faulty or output signal circuit is open or shorted.	<Ref. to 4AT(D)(diag)-75, DTC P0768 SHIFT SOLENOID "D" ELECTRICAL, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P0801	Reverse Inhibit Control Circuit	Shift lock solenoid is faulty or output signal circuit is open or shorted.	<Ref. to 4AT(D)(diag)-78, DTC P0801 REVERSE INHIBIT CONTROL CIRCUIT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P1706	AT Vehicle Speed Sensor Circuit Malfunction (Rear Wheel)	Rear vehicle speed sensor is faulty or input signal circuit is open or shorted.	<Ref. to 4AT(D)(diag)-80, DTC P1706 AT VEHICLE SPEED SENSOR CIRCUIT MALFUNCTION (REAR WHEEL), Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P1707	AT AWD Solenoid Valve Circuit Malfunction	Transfer duty solenoid is faulty or output signal circuit is open or shorted.	<Ref. to 4AT(D)(diag)-83, DTC P1707 AT AWD SOLENOID VALVE CIRCUIT MALFUNCTION, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>
P1718	CAN Communication Circuit	CAN communication circuit is open or shorted.	<Ref. to 4AT(D)(diag)-85, DTC P1718 CAN COMMUNICATION CIRCUIT, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

13. Diagnostic Procedure with Diagnostic Trouble Code (DTC)

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

DIAGNOSIS:

- Inhibitor switch is faulty.
- Input signal circuit of the inhibitor is open or shorted.

TROUBLE SYMPTOM:

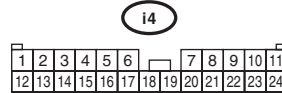
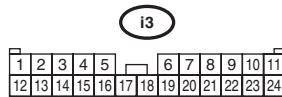
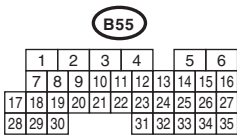
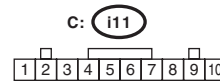
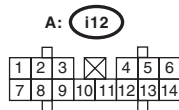
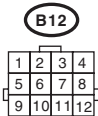
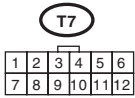
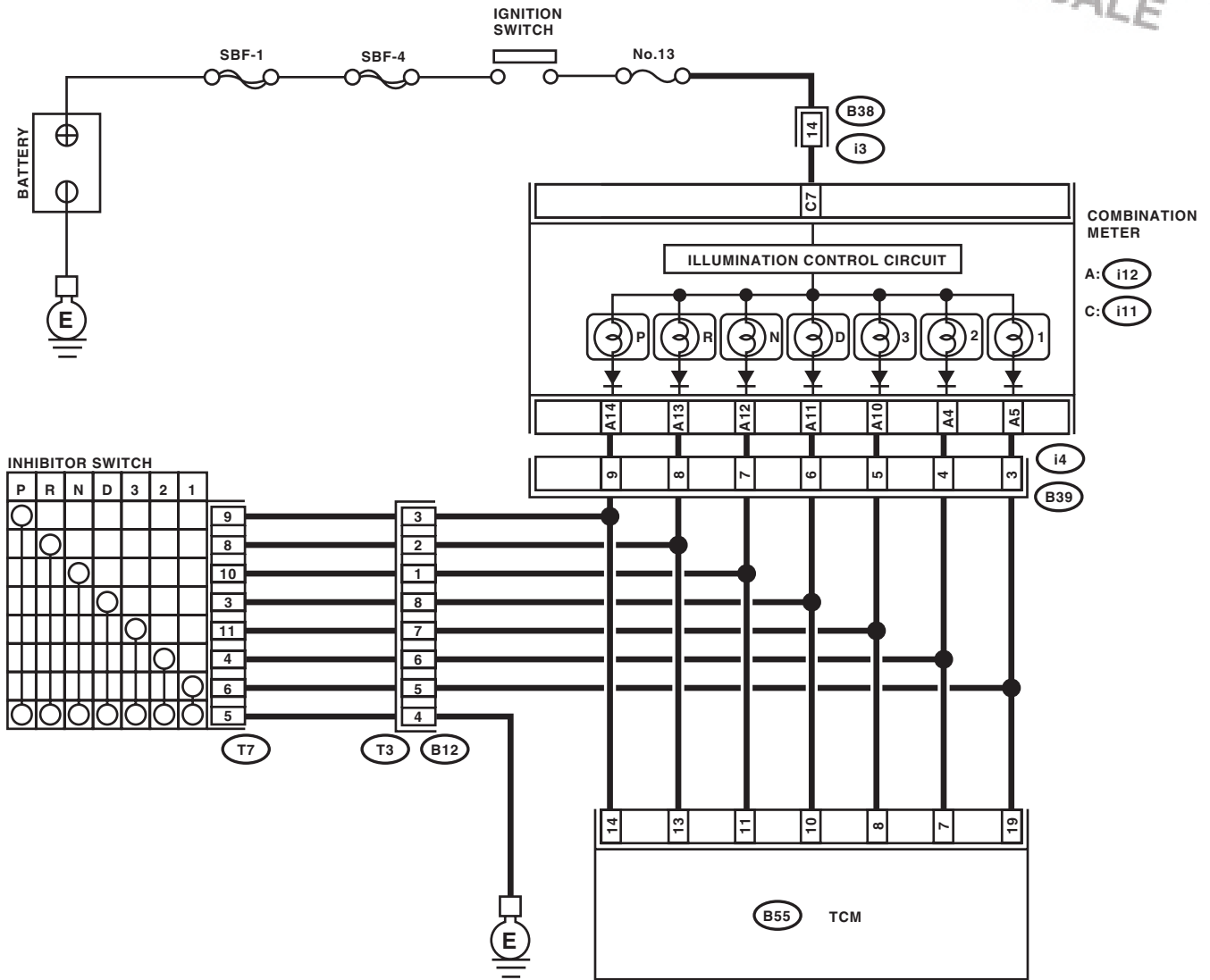
- Shift characteristics are erroneous.
- Engine brake does not come into effect when the select lever is shifted to “3” range.
- Engine brake does not come into effect when the select lever is shifted to “2” range.
- Engine brake does not come into effect when the select lever is shifted to “1” range.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

WIRING DIAGRAM:

- Manual A/C model

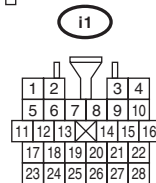
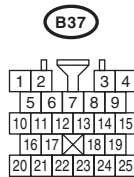
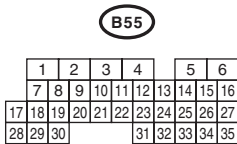
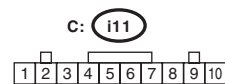
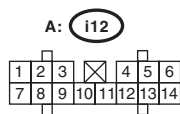
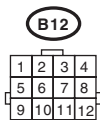
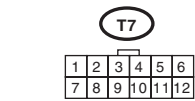
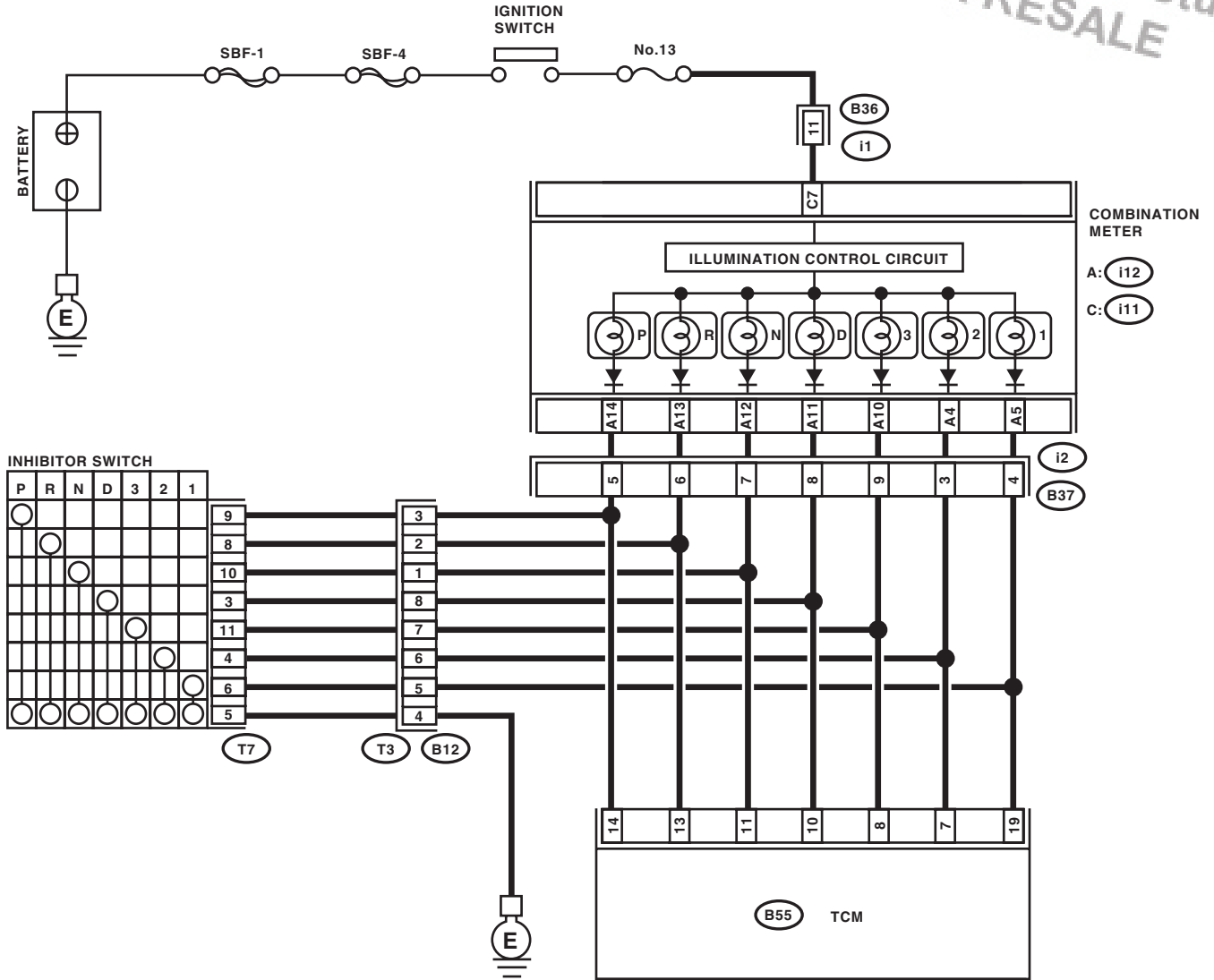


AT-03643

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

- Auto A/C model



AT-03516

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Step	Check	Yes	No	
1	CHECK "P" RANGE SWITCH.	When the "P" range is selected, does the LED illuminate?	Go to step 2.	Go to step 22.
2	CHECK INDICATOR LIGHT.	Does the combination meter "P" range indicator light illuminate?	Go to step 3.	Go to step 26.
3	CHECK "P" RANGE SWITCH.	When the "R" range is selected, does the "P" range LED illuminate?	Go to step 28.	Go to step 4.
4	CHECK "R" RANGE SWITCH.	When the "R" range is selected, does the LED illuminate?	Go to step 5.	Go to step 29.
5	CHECK INDICATOR LIGHT.	Does the "R" range indicator light on combination meter illuminate?	Go to step 6.	Go to step 32.
6	CHECK "R" RANGE SWITCH.	When the "N" range is selected, does the "R" range LED illuminate?	Go to step 34.	Go to step 7.
7	CHECK "N" RANGE SWITCH.	When the "N" range is selected, does the LED illuminate?	Go to step 8.	Go to step 35.
8	CHECK INDICATOR LIGHT.	Does the combination meter "N" range indicator light illuminate?	Go to step 9.	Go to step 38.
9	CHECK "N" RANGE SWITCH.	When the "D" range is selected, does the "N" range LED illuminate?	Go to step 40.	Go to step 10.
10	CHECK "D" RANGE SWITCH.	When the "D" range is selected, does the LED illuminate?	Go to step 11.	Go to step 41.
11	CHECK INDICATOR LIGHT.	Does the "D" range indicator light on combination meter illuminate?	Go to step 12.	Go to step 44.
12	CHECK "D" RANGE SWITCH.	When the "3" range is selected, does the "D" range LED illuminate?	Go to step 46.	Go to step 13.
13	CHECK "3" RANGE SWITCH.	When the "3" range is selected, does the LED illuminate?	Go to step 14.	Go to step 47.
14	CHECK INDICATOR LIGHT.	Does the "3" range indicator light on combination meter illuminate?	Go to step 15.	Go to step 50.
15	CHECK "3" RANGE SWITCH.	When the "2" range is selected, does the "3" range LED illuminate?	Go to step 52.	Go to step 16.
16	CHECK "2" RANGE SWITCH.	When the "2" range is selected, does the LED illuminate?	Go to step 17.	Go to step 53.
17	CHECK INDICATOR LIGHT.	Does the "2" range indicator light on combination meter illuminate?	Go to step 18.	Go to step 56.
18	CHECK "2" RANGE SWITCH.	When the "1" range is selected, does the "2" range LED illuminate?	Go to step 58.	Go to step 19.
19	CHECK "1" RANGE SWITCH.	When the "1" range is selected, does the LED illuminate?	Go to step 20.	Go to step 59.
20	CHECK INDICATOR LIGHT.	Does the "1" range indicator light on combination meter illuminate?	Go to step 21.	Go to step 62.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Step	Check	Yes	No
21 CHECK "1" RANGE SWITCH.	When the "2" range is selected, does the "1" range LED illuminate?	Go to step 64.	Replace the TCM. <Ref. to 4AT-60, Transmission Control Module (TCM).>
22 CHECK HARNESS CONNECTOR BETWEEN INHIBITOR SWITCH AND CHASSIS GROUND. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from inhibitor switch. 3) Measure the resistance of harness between inhibitor switch and chassis ground. Connector & terminal (T7) No. 5 — Chassis ground:	Is the resistance less than 1 Ω ?	Go to step 23.	Repair the open circuit of harness between inhibitor switch and chassis ground, and poor contact of the connector.
23 CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from TCM and inhibitor switch. 3) Measure the resistance of the harness between TCM and inhibitor switch connector. Connector & terminal (B55) No. 14 — (T7) No. 9:	Is the resistance less than 1 Ω ?	Go to step 24.	Repair the open circuit of harness between TCM and inhibitor switch connector, and poor contact of the connector.
24 CHECK INPUT SIGNAL FOR TCM. 1) Turn the ignition switch to OFF. 2) Connect the connector to TCM and inhibitor switch. 3) Turn the ignition switch to ON. 4) Shift the select lever to "P" range. 5) Measure the voltage between TCM and chassis ground. Connector & terminal (B55) No. 14 (+) — Chassis ground (-):	Is the voltage less than 1 V?	Go to step 25.	Go to step 65.
25 CHECK INPUT SIGNAL FOR TCM. 1) Shift the select lever to any range other than "P". 2) Measure the voltage between TCM and chassis ground. Connector & terminal (B55) No. 14 (+) — Chassis ground (-):	Is the voltage 8 V or more?	Go to step 65.	Replace the TCM. <Ref. to 4AT-60, Transmission Control Module (TCM).>
26 CHECK "P" RANGE INDICATOR LIGHT. 1) Turn the ignition switch to OFF. 2) Remove the combination meter.	Is the "P" range indicator light bulb OK?	Go to step 27.	Replace the combination meter. <Ref. to IDI-11, Combination Meter.>
27 CHECK HARNESS CONNECTOR BETWEEN TCM AND COMBINATION METER. 1) Disconnect the connectors from TCM and combination meter. 2) Measure the resistance of harness between TCM and combination meter. Connector & terminal (B55) No. 14 — (i12) No. 14:	Is the resistance less than 1 Ω ?	Go to step 65.	Repair the open circuit of harness between TCM connector and combination meter, and the poor contact of the connector.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Step	Check	Yes	No
28 CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from TCM, inhibitor switch and combination meter. 3) Measure the resistance of harness between TCM connector and chassis ground. <i>Connector & terminal</i> <i>(B55) No. 14 — Chassis ground:</i>	Is the resistance 1 M Ω or more?	Go to step 29.	Repair ground short circuit in "P" range circuit.
29 CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from TCM and inhibitor switch. 3) Measure the resistance of the harness between TCM and inhibitor switch connector. <i>Connector & terminal</i> <i>(B55) No. 13 — (T7) No. 8:</i>	Is the resistance less than 1 Ω ?	Go to step 30.	Repair the open circuit of harness between TCM and inhibitor switch connector, and poor contact of the connector.
30 CHECK INPUT SIGNAL FOR TCM. 1) Turn the ignition switch to OFF. 2) Connect the connector to TCM and inhibitor switch. 3) Turn the ignition switch to ON. 4) Shift the select lever to "R" range. 5) Measure the voltage between TCM and chassis ground. <i>Connector & terminal</i> <i>(B55) No. 13 (+) — Chassis ground (-):</i>	Is the voltage less than 1 V?	Go to step 31.	Go to step 65.
31 CHECK INPUT SIGNAL FOR TCM. 1) Shift the select lever to any range other than "R". 2) Measure the voltage between TCM and chassis ground. <i>Connector & terminal</i> <i>(B55) No. 13 (+) — Chassis ground (-):</i>	Is the voltage 8 V or more?	Go to step 65.	Replace the TCM. <Ref. to 4AT-60, Transmission Control Module (TCM).>
32 CHECK "R" RANGE INDICATOR LIGHT. 1) Turn the ignition switch to OFF. 2) Remove the combination meter.	Is the "R" range indicator light OK?	Go to step 33.	Replace the combination meter. <Ref. to IDI-11, Combination Meter.>
33 CHECK HARNESS CONNECTOR BETWEEN TCM AND COMBINATION METER. 1) Disconnect the connectors from TCM and combination meter. 2) Measure the resistance of harness between TCM and combination meter. <i>Connector & terminal</i> <i>(B55) No. 13 — (i12) No. 13:</i>	Is the resistance less than 1 Ω ?	Go to step 65.	Repair the open circuit of harness between TCM connector and combination meter, and the poor contact of the TCM connector.
34 CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from TCM, inhibitor switch and combination meter. 3) Measure the resistance of harness between TCM connector and chassis ground. <i>Connector & terminal</i> <i>(B55) No. 13 — Chassis ground:</i>	Is the resistance 1 M Ω or more?	Go to step 35.	Repair ground short circuit in "R" range circuit.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Step	Check	Yes	No
35 CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from TCM and inhibitor switch. 3) Measure the resistance of the harness between TCM and inhibitor switch connector. Connector & terminal (B55) No. 11 — (T7) No. 10:	Is the resistance less than 1 Ω ?	Go to step 36.	Repair the open circuit of harness between TCM and inhibitor switch connector, and poor contact of the connector.
36 CHECK INPUT SIGNAL FOR TCM. 1) Turn the ignition switch to OFF. 2) Connect the connector to TCM and inhibitor switch. 3) Turn the ignition switch to ON. 4) Shift the select lever to "N" range. 5) Measure the voltage between TCM and chassis ground. Connector & terminal (B55) No. 11 (+) — Chassis ground (-):	Is the voltage less than 1 V?	Go to step 37.	Go to step 65.
37 CHECK INPUT SIGNAL FOR TCM. 1) Shift the select lever to any range other than "N". 2) Measure the voltage between TCM and chassis ground. Connector & terminal (B55) No. 11 (+) — Chassis ground (-):	Is the voltage 8 V or more?	Go to step 65.	Replace the TCM. <Ref. to 4AT-60, Transmission Control Module (TCM).>
38 CHECK "N" RANGE INDICATOR LIGHT. 1) Turn the ignition switch to OFF. 2) Remove the combination meter.	Is the "N" range indicator light OK?	Go to step 39.	Replace the combination meter. <Ref. to IDI-11, Combination Meter.>
39 CHECK HARNESS CONNECTOR BETWEEN TCM AND COMBINATION METER. 1) Disconnect the connectors from TCM and combination meter. 2) Measure the resistance of harness between TCM and combination meter. Connector & terminal (B55) No. 11 — (i12) No. 12:	Is the resistance less than 1 Ω ?	Go to step 65.	Repair the open circuit of harness between TCM connector and combination meter, and the poor contact of the TCM connector.
40 CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from TCM, inhibitor switch and combination meter. 3) Measure the resistance of harness between TCM connector and chassis ground. Connector & terminal (B55) No. 11 — Chassis ground:	Is the resistance 1 M Ω or more?	Go to step 41.	Repair the ground short circuit in "N" range circuit.
41 CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from TCM and inhibitor switch. 3) Measure the resistance of the harness between TCM and inhibitor switch connector. Connector & terminal (B55) No. 10 — (T7) No. 3:	Is the resistance less than 1 Ω ?	Go to step 42.	Repair the open circuit of harness between TCM and inhibitor switch connector, and poor contact of the connector.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Step	Check	Yes	No
42 CHECK INPUT SIGNAL FOR TCM. 1) Turn the ignition switch to OFF. 2) Connect the connector to TCM and inhibitor switch. 3) Turn the ignition switch to ON. 4) Shift the select lever to "D" range. 5) Measure the voltage between TCM and chassis ground. Connector & terminal (B55) No. 10 (+) — Chassis ground (-):	Is the voltage less than 1 V?	Go to step 43.	Go to step 65.
43 CHECK INPUT SIGNAL FOR TCM. 1) Shift the select lever to any range other than "D". 2) Measure the voltage between TCM and chassis ground. Connector & terminal (B55) No. 10 (+) — Chassis ground (-):	Is the voltage 8 V or more?	Go to step 65.	Replace the TCM. <Ref. to 4AT-60, Transmission Control Module (TCM).>
44 CHECK "D" RANGE INDICATOR LIGHT. 1) Turn the ignition switch to OFF. 2) Remove the combination meter.	Is the "D" range indicator light OK?	Go to step 45.	Replace the combination meter. <Ref. to IDI-11, Combination Meter.>
45 CHECK HARNESS CONNECTOR BETWEEN TCM AND COMBINATION METER. 1) Disconnect the connectors from TCM and combination meter. 2) Measure the resistance of harness between TCM and combination meter. Connector & terminal (B55) No. 10 — (i12) No. 11:	Is the resistance less than 1 Ω?	Go to step 65.	Repair the open circuit of harness between TCM connector and combination meter.
46 CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from TCM, inhibitor switch and combination meter. 3) Measure the resistance of harness between TCM connector and chassis ground. Connector & terminal (B55) No. 10 — Chassis ground:	Is the resistance 1 MΩ or more?	Go to step 47.	Repair the ground short circuit in "D" range circuit.
47 CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from TCM and inhibitor switch. 3) Measure the resistance of the harness between TCM and inhibitor switch connector. Connector & terminal (B55) No. 8 — (T7) No. 11:	Is the resistance less than 1 Ω?	Go to step 48.	Repair the open circuit of harness between TCM and inhibitor switch connector, and poor contact of the connector.
48 CHECK INPUT SIGNAL FOR TCM. 1) Turn the ignition switch to OFF. 2) Connect the connector to TCM and inhibitor switch. 3) Turn the ignition switch to ON. 4) Shift the select lever to "3" range. 5) Measure the voltage between TCM and chassis ground. Connector & terminal (B55) No. 8 (+) — Chassis ground (-):	Is the voltage less than 1 V?	Go to step 49.	Go to step 65.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Step	Check	Yes	No
49 CHECK INPUT SIGNAL FOR TCM. 1) Shift the select lever to any range other than "3". 2) Measure the voltage between TCM and chassis ground. Connector & terminal (B55) No. 8 (+) — Chassis ground (-):	Is the voltage 8 V or more?	Go to step 65.	Replace the TCM. <Ref. to 4AT-60, Transmission Control Module (TCM).>
50 CHECK "3" RANGE INDICATOR LIGHT. 1) Turn the ignition switch to OFF. 2) Remove the combination meter.	Is the "3" range indicator light OK?	Go to step 51.	Replace the combination meter. <Ref. to IDI-11, Combination Meter.>
51 CHECK HARNESS CONNECTOR BETWEEN TCM AND COMBINATION METER. 1) Disconnect the connectors from TCM and combination meter. 2) Measure the resistance of harness between TCM and combination meter. Connector & terminal (B55) No. 8 — (i12) No. 10:	Is the resistance less than 1 Ω?	Go to step 65.	Repair the open circuit of harness between TCM connector and combination meter, and the poor contact of the TCM connector.
52 CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from TCM, inhibitor switch and combination meter. 3) Measure the resistance of harness between TCM connector and chassis ground. Connector & terminal (B55) No. 8 — Chassis ground:	Is the resistance 1 MΩ or more?	Go to step 53.	Repair the ground short circuit in "3" range circuit.
53 CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from TCM and inhibitor switch. 3) Measure the resistance of the harness between TCM and inhibitor switch connector. Connector & terminal (B55) No. 7 — (T7) No. 4:	Is the resistance less than 1 Ω?	Go to step 54.	Repair the open circuit of harness between TCM and inhibitor switch connector, and poor contact of the connector.
54 CHECK INPUT SIGNAL FOR TCM. 1) Turn the ignition switch to OFF. 2) Connect the connector to TCM and inhibitor switch. 3) Turn the ignition switch to ON. 4) Shift the select lever to "2" range. 5) Measure the voltage between TCM and chassis ground. Connector & terminal (B55) No. 7 (+) — Chassis ground (-):	Is the voltage less than 1 V?	Go to step 55.	Go to step 65.
55 CHECK INPUT SIGNAL FOR TCM. 1) Shift the select lever to any range other than "2". 2) Measure the voltage between TCM and chassis ground. Connector & terminal (B55) No. 7 (+) — Chassis ground (-):	Is the voltage 8 V or more?	Go to step 65.	Replace the TCM. <Ref. to 4AT-60, Transmission Control Module (TCM).>
56 CHECK "2" RANGE INDICATOR LIGHT. 1) Turn the ignition switch to OFF. 2) Remove the combination meter.	Is the "2" range indicator light OK?	Go to step 57.	Replace the combination meter. <Ref. to IDI-11, Combination Meter.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Step	Check	Yes	No
57 CHECK HARNESS CONNECTOR BETWEEN TCM AND COMBINATION METER. 1) Disconnect the connectors from TCM and combination meter. 2) Measure the resistance of harness between TCM and combination meter. <i>Connector & terminal</i> <i>(B55) No. 7 — (i12) No. 4:</i>	Is the resistance less than 1 Ω?	Go to step 65.	Repair the open circuit of harness between TCM and combination meter, and the poor contact of the TCM connector.
58 CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from TCM, inhibitor switch and combination meter. 3) Measure the resistance of harness between TCM connector and chassis ground. <i>Connector & terminal</i> <i>(B55) No. 7 — Chassis ground:</i>	Is the resistance 1 MΩ or more?	Go to step 59.	Repair the ground short circuit in “2” range circuit.
59 CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from TCM and inhibitor switch. 3) Measure the resistance of the harness between TCM and inhibitor switch connector. <i>Connector & terminal</i> <i>(B55) No. 19 — (T7) No. 6:</i>	Is the resistance less than 1 Ω?	Go to step 60.	Repair the open circuit of harness between TCM and inhibitor switch connector, and poor contact of the connector.
60 CHECK INPUT SIGNAL FOR TCM. 1) Turn the ignition switch to OFF. 2) Connect the connector to TCM and inhibitor switch. 3) Turn the ignition switch to ON. 4) Shift the select lever to “1” range. 5) Measure the voltage between TCM and chassis ground. <i>Connector & terminal</i> <i>(B55) No. 19 (+) — Chassis ground (-):</i>	Is the voltage less than 1 V when the shift lever is in “1” range?	Go to step 61.	Go to step 65.
61 CHECK INPUT SIGNAL FOR TCM. 1) Shift the select lever to any range other than “1”. 2) Measure the voltage between TCM and chassis ground. <i>Connector & terminal</i> <i>(B55) No. 19 (+) — Chassis ground (-):</i>	Is the voltage 8 V or more?	Go to step 65.	Replace the TCM. <Ref. to 4AT-60, Transmission Control Module (TCM).>
62 CHECK “1” RANGE INDICATOR LIGHT. 1) Turn the ignition switch to OFF. 2) Remove the combination meter.	Is the “1” range indicator light OK?	Go to step 63.	Replace the combination meter. <Ref. to IDI-11, Combination Meter.>
63 CHECK HARNESS CONNECTOR BETWEEN TCM AND COMBINATION METER. 1) Disconnect the connectors from TCM and combination meter. 2) Measure the resistance of harness between TCM and combination meter. <i>Connector & terminal</i> <i>(B55) No. 19 — (i12) No. 5:</i>	Is the resistance less than 1 Ω?	Go to step 65.	Repair the open circuit of harness between TCM and combination meter, and the poor contact of the TCM connector.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Step	Check	Yes	No
64 CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from TCM, inhibitor switch and combination meter. 3) Measure the resistance of harness between TCM connector and chassis ground. Connector & terminal (B55) No. 19 — Chassis ground:	Is the resistance 1 MΩ or more?	Go to step 65 .	Repair the ground short circuit in "1" range circuit.
65 CHECK INHIBITOR SWITCH.	Is the inhibitor switch in the normal position?	Repair the poor contact.	Adjust inhibitor switch and select cable. <Ref. to 4AT-46, Inhibitor Switch.> and <Ref. to CS-27, Select Cable.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

B: DTC P0712 TRANSMISSION FLUID TEMPERATURE SENSOR CIRCUIT LOW INPUT

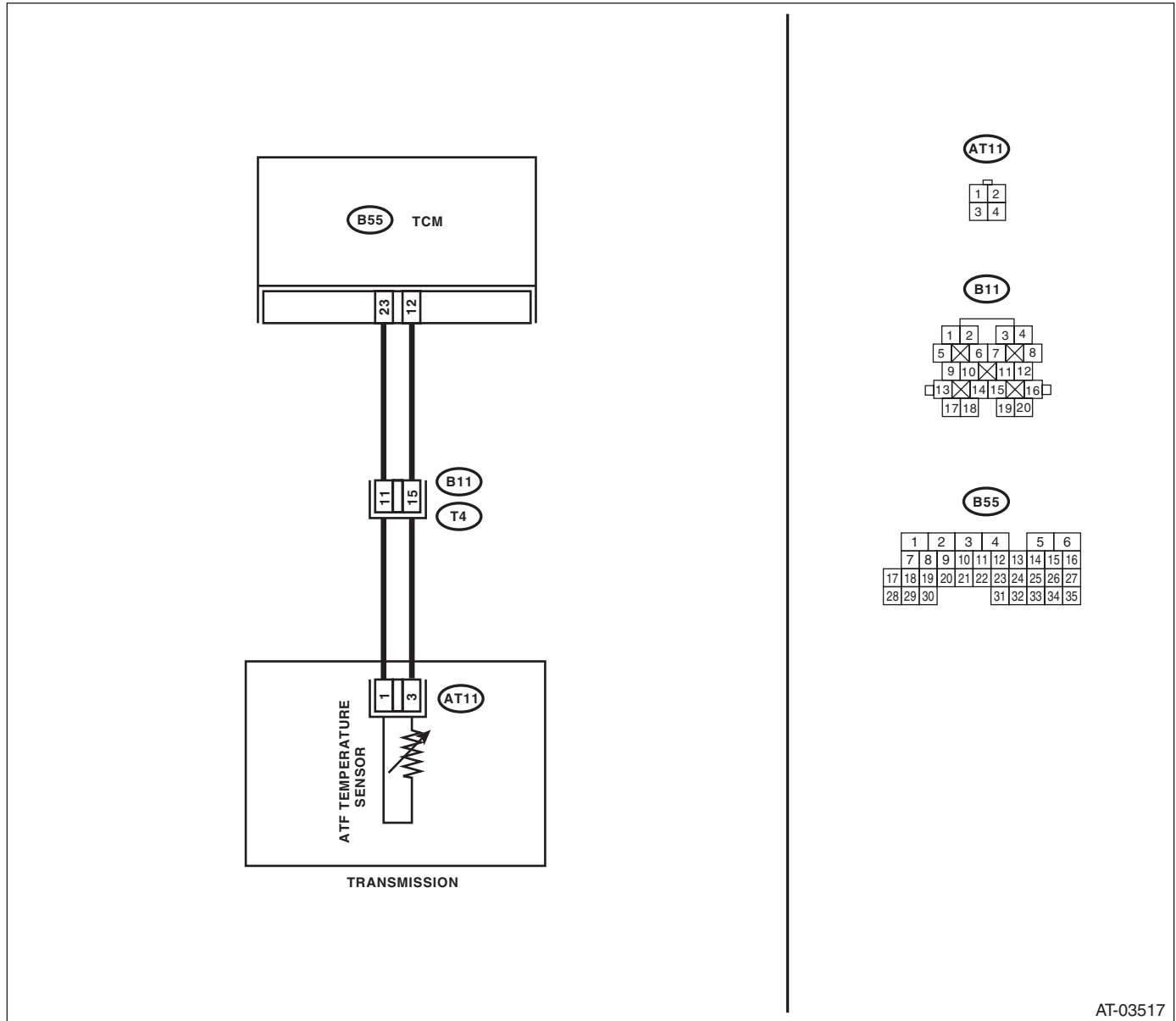
DIAGNOSIS:

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

TROUBLE SYMPTOM:

Excessive shift shock

WIRING DIAGRAM:



AT-03517

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

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

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Step	Check	Yes	No
<p>6</p> <p>CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND ATF TEMPERATURE SENSOR.</p> <p>1) Turn the ignition switch to OFF. 2) Disconnect the connector from transmission. 3) Remove the transmission connector from bracket. 4) Lift up the vehicle.</p> <p>NOTE: Raise all wheels off the floor.</p> <p>5) Drain the automatic transmission fluid.</p> <p>CAUTION: Do not drain ATF until it cools down.</p> <p>6) Remove the oil pan, and disconnect the connector from ATF temperature sensor connector. 7) Measure the resistance of harness between ATF temperature sensor and transmission connector.</p> <p>Connector & terminal (T4) No. 11 — (AT11) No. 1:</p>	<p>Is the resistance less than 1 Ω?</p>	<p>Go to step 7.</p>	<p>Repair the open circuit of harness between ATF temperature sensor and transmission connector.</p>
<p>7</p> <p>CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND ATF TEMPERATURE SENSOR.</p> <p>Measure the resistance of harness between ATF temperature sensor and transmission connector.</p> <p>Connector & terminal (T4) No. 15 — (AT11) No. 3:</p>	<p>Is the resistance less than 1 Ω?</p>	<p>Go to step 8.</p>	<p>Repair the open circuit of harness between ATF temperature sensor and transmission connector.</p>
<p>8</p> <p>CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND ATF TEMPERATURE SENSOR.</p> <p>Measure the resistance of harness between transmission connector and transmission ground.</p> <p>Connector & terminal (T4) No. 11 — Transmission ground:</p>	<p>Is the resistance 1 MΩ or more?</p>	<p>Go to step 9.</p>	<p>Repair the short circuit of harness between ATF temperature sensor and transmission connector.</p>
<p>9</p> <p>CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND ATF TEMPERATURE SENSOR.</p> <p>Measure the resistance of harness between transmission connector and transmission ground.</p> <p>Connector & terminal (T4) No. 15 — Transmission ground:</p>	<p>Is the resistance 1 MΩ or more?</p>	<p>Replace the control valve body. <Ref. to 4AT-55, Control Valve Body.></p>	<p>Repair the short circuit of harness between ATF temperature sensor and transmission connector.</p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

C: DTC P0713 TRANSMISSION FLUID TEMPERATURE SENSOR CIRCUIT HIGH INPUT

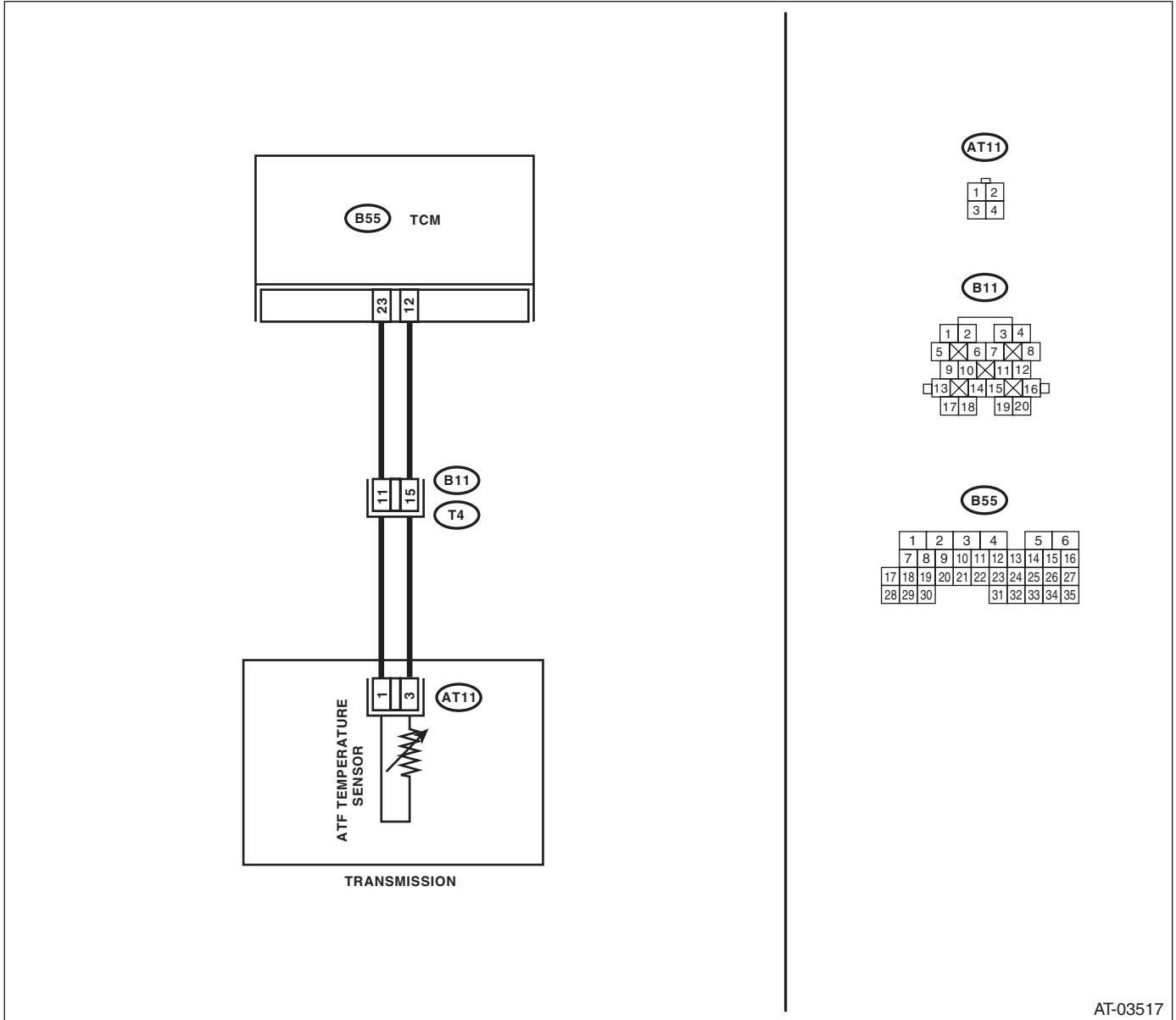
DIAGNOSIS:

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

TROUBLE SYMPTOM:

Excessive shift shock

WIRING DIAGRAM:



Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK HARNESS CONNECTOR BETWEEN TCM AND ATF TEMPERATURE SENSOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from TCM. 3) Measure the resistance between TCM connector terminals. <i>Connector & terminal</i> <i>(B55) No. 23 — No. 12:</i>	Is the resistance 500 Ω or more?	Go to step 2.	Go to step 4.
2 CHECK HARNESS CONNECTOR BETWEEN TCM AND ATF TEMPERATURE SENSOR. Measure the resistance of harness between TCM connector and chassis ground. <i>Connector & terminal</i> <i>(B55) No. 23 — Chassis ground:</i>	Is the resistance 1 MΩ or more?	Go to step 3.	Go to step 4.
3 CHECK HARNESS. Measure the resistance between TCM connector terminals while shaking the harness. <i>Connector & terminal</i> <i>(B55) No. 23 — No. 12:</i>	Does the resistance change?	Go to step 4.	Repair the poor contact.
4 CHECK HARNESS CONNECTOR BETWEEN TCM AND ATF TEMPERATURE SENSOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from transmission. 3) Measure the resistance of harness between TCM connector and chassis ground. <i>Connector & terminal</i> <i>(B55) No. 23 — Chassis ground:</i>	Is the resistance 1 MΩ or more?	Go to step 5.	Repair the short circuit of harness between TCM and transmission harness.
5 CHECK HARNESS CONNECTOR BETWEEN TCM AND ATF TEMPERATURE SENSOR. Measure the resistance of harness between TCM connector and chassis ground. <i>Connector & terminal</i> <i>(B55) No. 12 — Chassis ground:</i>	Is the resistance 1 MΩ or more?	Go to step 6.	Repair the short circuit of harness between TCM and transmission harness.
6 CHECK ATF TEMPERATURE SENSOR. Measure the resistance between transmission connector terminals. <i>Connector & terminal</i> <i>(T4) No. 11 — No. 15:</i>	Is the resistance 500 Ω or more?	Even if the ATF temperature warning light blinks, the circuit is in normal condition at this time. A temporary short circuit of connector or harness may be the cause. Repair the harness or connector.	Go to step 7.
7 CHECK TRANSMISSION HARNESS. 1) Lift up the vehicle. 2) Drain the automatic transmission fluid. CAUTION: Do not drain ATF until it cools down. 3) Remove the oil pan. 4) Disconnect the harness connector from control valve. 5) Measure the resistance between ATF temperature sensor connector terminals. 6) Measure the resistance between transmission connector and transmission ground. <i>Connector & terminal</i> <i>(T4) No. 11 — Transmission ground:</i>	Is the resistance 1 MΩ or more?	Go to step 8.	Replace the transmission harness.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

	Step	Check	Yes	No
8	CHECK TRANSMISSION HARNESS. Measure the resistance between transmission connector and transmission ground. Connector & terminal (T4) No. 15 — Transmission ground:	Is the resistance 1 M Ω or more?	Go to step 9.	Replace the transmission harness.
9	CHECK ATF TEMPERATURE SENSOR. Measure the resistance between control valve connector terminals. Terminals No. 1 — No. 3:	Is the resistance 500 Ω or more?	Even if the ATF temperature warning light blinks, the circuit is in normal condition at this time. A temporary short circuit of connector or harness may be the cause. Repair the harness or connector.	Replace the control valve body. <Ref. to 4AT-55, Control Valve Body.>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

D: DTC P0715 INPUT/TURBINE SPEED SENSOR CIRCUIT

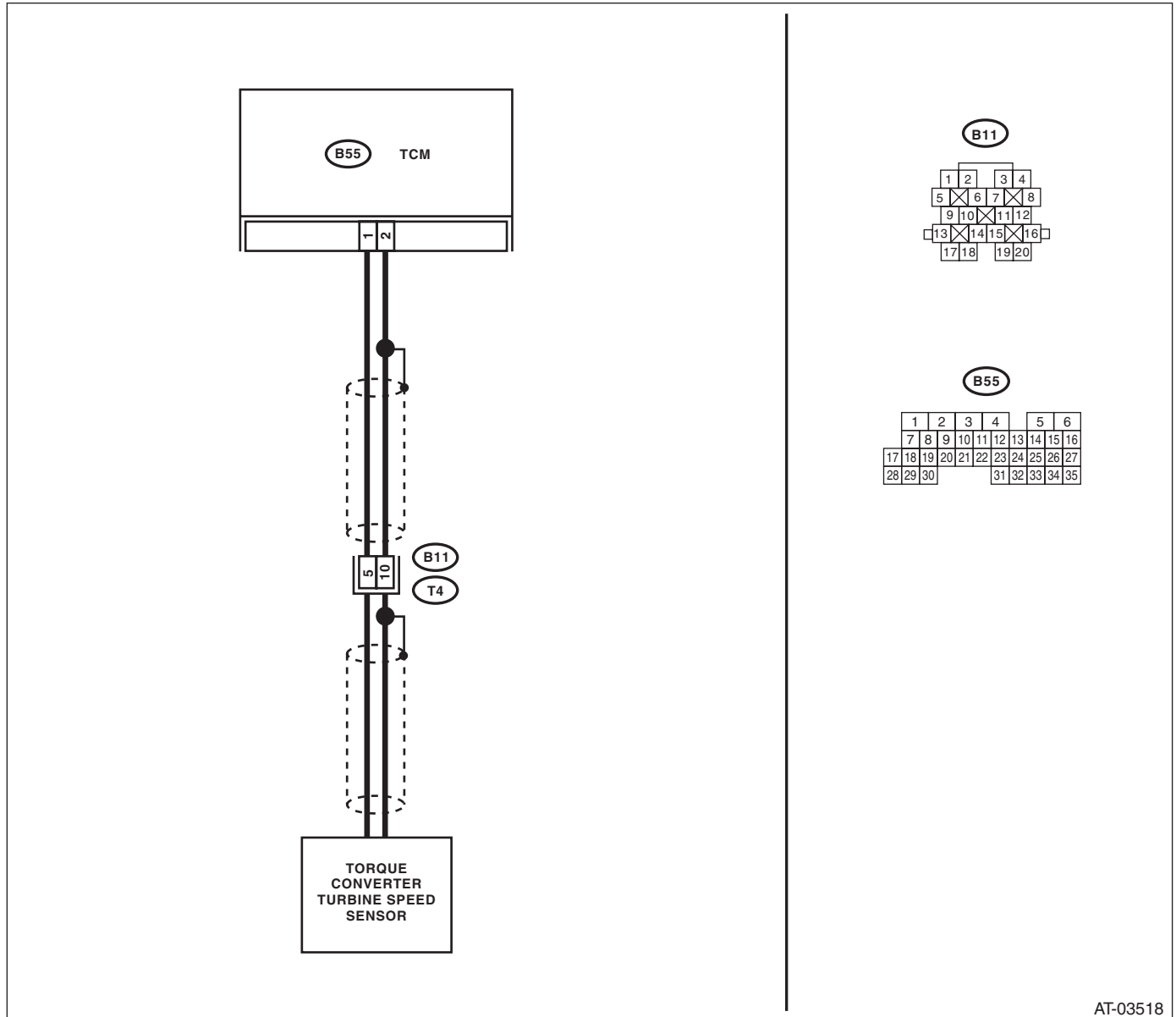
DIAGNOSIS:

Input signal circuit of TCM is open or shorted.

TROUBLE SYMPTOM:

Excessive shift shock

WIRING DIAGRAM:



AT-03518

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

	Step	Check	Yes	No
1	<p>CHECK TORQUE CONVERTER TURBINE SPEED SENSOR.</p> <p>1) Turn the ignition switch to OFF.</p> <p>2) Disconnect the connector from transmission.</p> <p>3) Measure the resistance between transmission connector receptacle's terminals.</p> <p>Connector & terminal (T4) No. 5 — No. 10:</p>	Is the resistance 450 — 650 Ω ?	Go to step 2.	Replace the torque converter turbine speed sensor. <Ref. to 4AT-54, Torque Converter Turbine Speed Sensor.>
2	<p>CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.</p> <p>1) Disconnect the connector from TCM.</p> <p>2) Measure the resistance of harness between TCM connector and transmission connector.</p> <p>Connector & terminal (B55) No. 1 — (B11) No. 5:</p>	Is the resistance less than 1 Ω ?	Go to step 3.	Repair the open circuit of harness between TCM and transmission connector.
3	<p>CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.</p> <p>Measure the resistance of harness between TCM connector and transmission connector.</p> <p>Connector & terminal (B55) No. 2 — (B11) No. 10:</p>	Is the resistance less than 1 Ω ?	Go to step 4.	Repair the open circuit of harness between TCM and transmission connector, and poor contact of the connector.
4	<p>CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.</p> <p>Measure the resistance of harness between TCM connector and chassis ground.</p> <p>Connector & terminal (B55) No. 2 — Chassis ground:</p>	Is the resistance 1 M Ω or more?	Go to step 5.	Repair the short circuit of harness between TCM and transmission connector.
5	<p>CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.</p> <p>Measure the resistance of harness between TCM connector and chassis ground.</p> <p>Connector & terminal (B55) No. 1 — Chassis ground:</p>	Is the resistance 1 M Ω or more?	Go to step 6.	Repair the short circuit of the harness between TCM and transmission connector, and poor contact of connector.
6	<p>CHECK INPUT SIGNAL FOR TCM USING SUBARU SELECT MONITOR.</p> <p>1) Connect the connectors to TCM and transmission.</p> <p>2) Connect the Subaru Select Monitor to the data link connector.</p> <p>3) Turn the ignition switch to ON and run the Subaru Select Monitor.</p> <p>4) Start the engine.</p> <p>5) Move the select lever to "P" or "N" range.</p> <p>6) Read the data of turbine speed using Subaru Select Monitor.</p> <p>Compare the tachometer with Subaru Select Monitor indications.</p>	Is the revolution value same as the tachometer reading shown on the combination meter?	Even if the ATF temperature warning light blinks, the circuit is in normal condition at this time. A temporary poor contact of connector or harness may be the cause. Repair the harness or connector in TCM and transmission.	Repair the poor contact.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

E: DTC P0719 BRAKE SWITCH CIRCUIT LOW

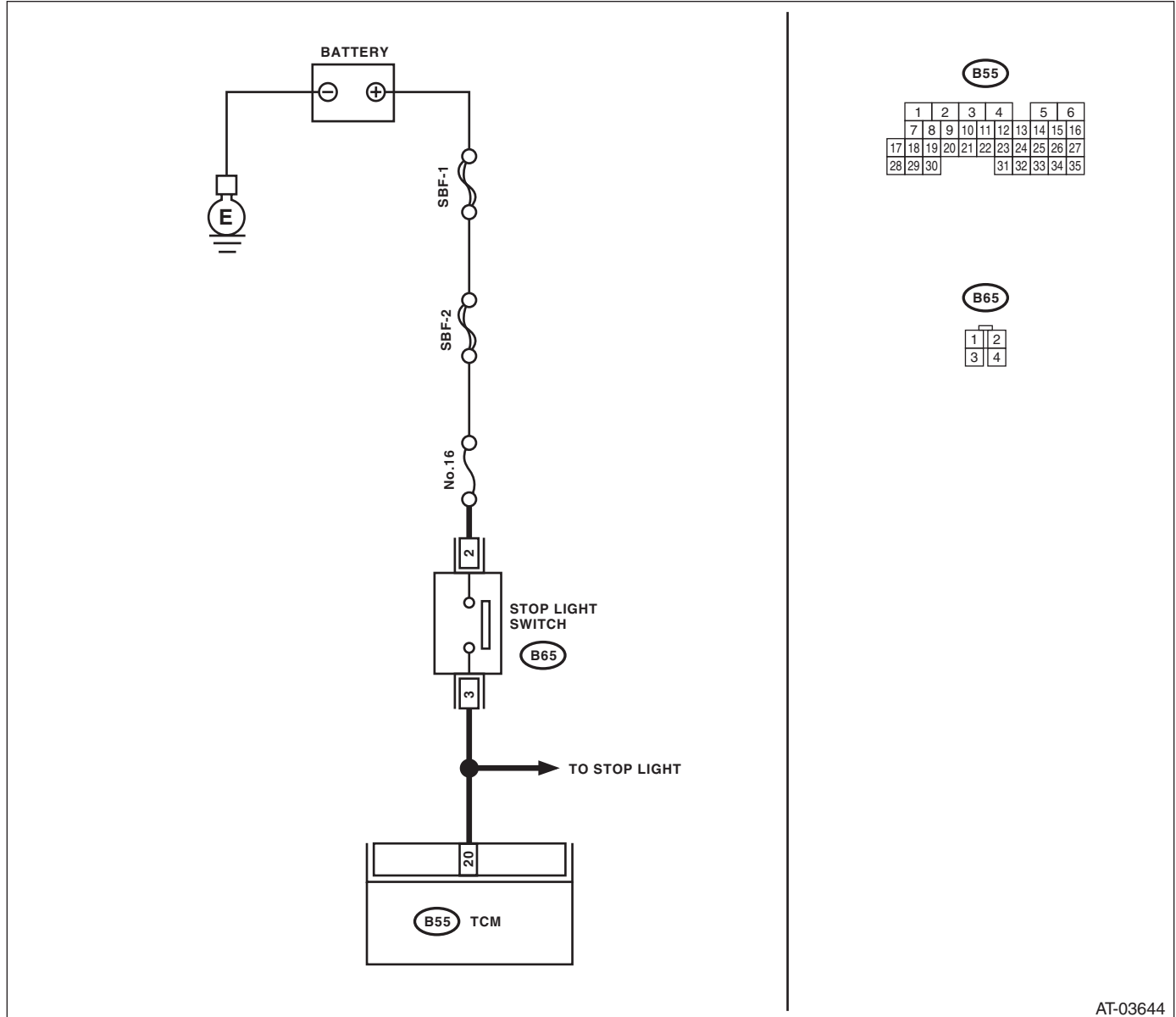
DIAGNOSIS:

Brake switch malfunction, open input signal circuit

TROUBLE SYMPTOM:

Gear is not shifted down when climbing a hill.

WIRING DIAGRAM:



AT-03644

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

	Step	Check	Yes	No
1	CHECK FUSE (NO. 16). Remove the fuse (No. 16).	Is the fuse (No. 16) blown out?	Replace the fuse (No. 16). If the new fuse (No. 16) has blown out easily, repair the short circuit of harness between fuse (No. 16) and stop light switch.	Go to step 2.
2	CHECK OPERATION OF BRAKE LIGHT. Depress the brake pedal.	Does the brake light illuminate?	Go to step 3.	Check the brake light circuit.
3	CHECK INPUT SIGNAL FROM TCM. 1) Depress the brake pedal. 2) Measure the voltage of the harness between TCM and stop light switch. Connector & terminal (B55) No. 20 (+) — Chassis ground (-):	Is the voltage 10 V or more?	Repair the poor contact.	Go to step 4.
4	CHECK HARNESS CONNECTOR BETWEEN TCM AND STOP LIGHT SWITCH. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from the TCM and stop light switch. 3) Measure the resistance of harness between the TCM and stop light switch. Connector & terminal (B55) No. 20 — (B65) No. 3:	Is the resistance less than 1 Ω ?	Go to step 5.	Repair the open circuit of the harness between the TCM and the stop light switch.
5	CHECK HARNESS CONNECTOR BETWEEN TCM AND STOP LIGHT SWITCH. Measure the resistance of harness between the TCM and stop light switch. Connector & terminal (B55) No. 20 — (B65) No. 3:	Is the resistance 1 M Ω or more?	Repair the poor contact.	Repair the short circuit of the harness between the TCM and the stop light switch.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

F: DTC P0720 OUTPUT SPEED SENSOR CIRCUIT

DIAGNOSIS:

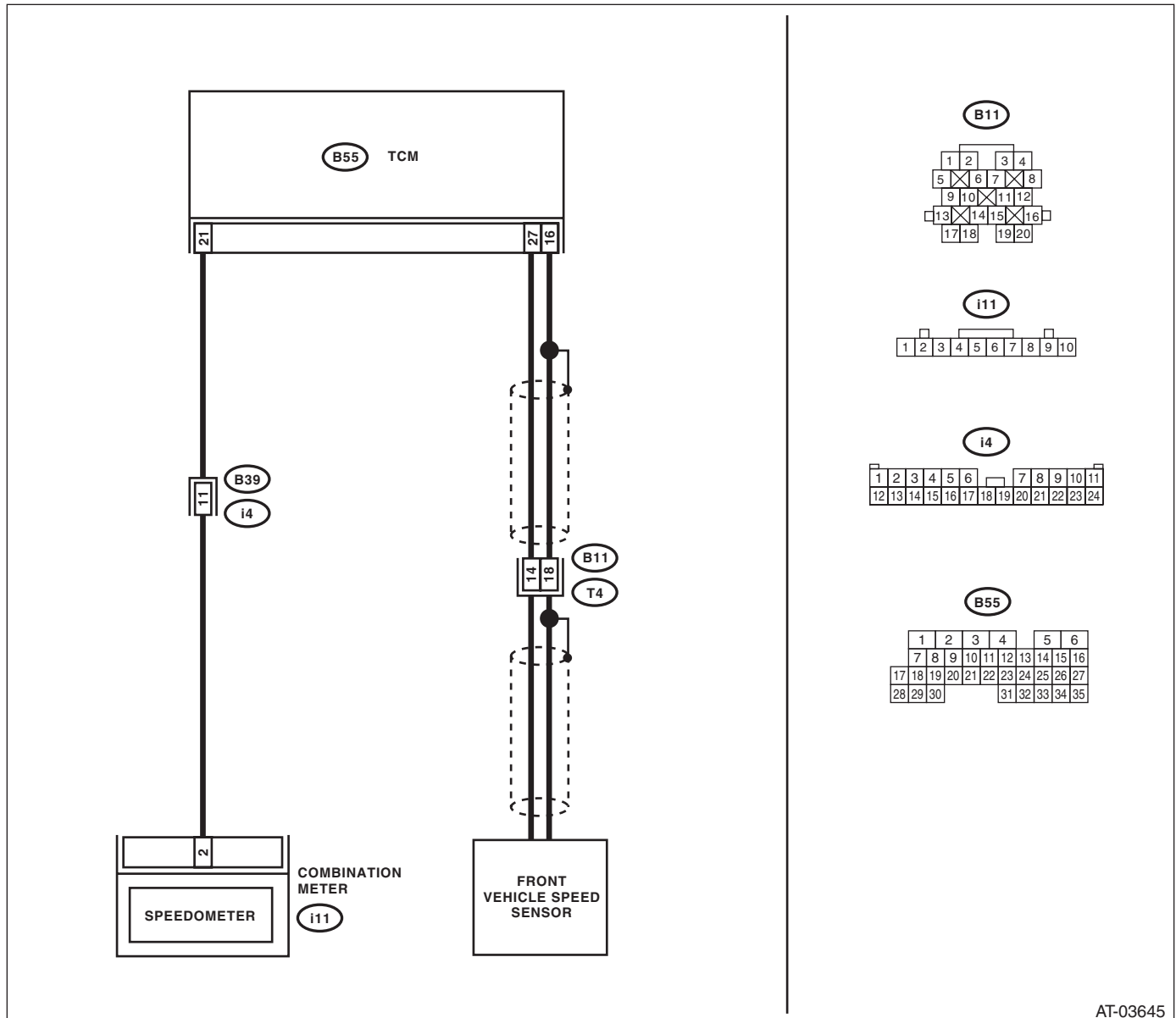
- The vehicle speed signal is abnormal.
- The circuit in combination meter is faulty.
- The harness connector between TCM and vehicle speed sensor is shorted or open.

TROUBLE SYMPTOM:

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

WIRING DIAGRAM:

- NON-TURBO MODEL

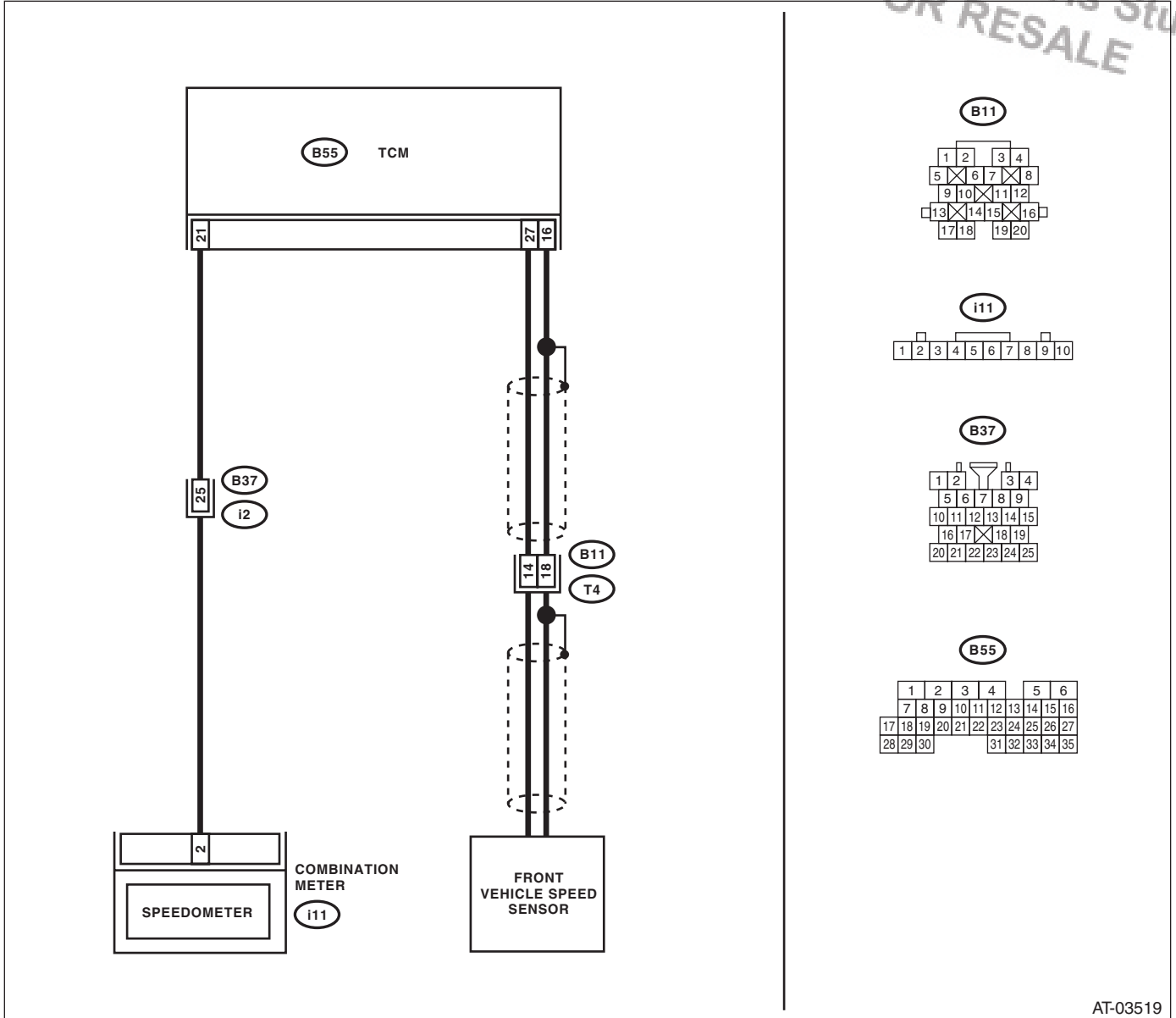


AT-03645

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

- Turbo model



AT-03519

Step	Check	Yes	No
1 CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from TCM and transmission. 3) Measure the resistance of harness between TCM connector and transmission connector. Connector & terminal (B55) No. 27 — (B11) No. 14:	Is resistance less than 1 Ω?	Go to step 2.	Repair the open circuit of harness between TCM and transmission connector.
2 CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. Measure the resistance of harness between TCM connector and transmission connector. Connector & terminal (B55) No. 16 — (B11) No. 18:	Is resistance less than 1 Ω?	Go to step 3.	Repair the open circuit of harness between TCM and transmission connector, and poor contact of the connector.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Step	Check	Yes	No
3 CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. Measure the resistance of harness between TCM connector and transmission connector. <i>Connector & terminal</i> <i>(B55) No. 27 — Chassis ground:</i>	Is the resistance 1 MΩ or more?	Go to step 4.	Repair the short circuit of harness between TCM and transmission connector.
4 CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. Measure the resistance of harness between TCM connector and transmission connector. <i>Connector & terminal</i> <i>(B55) No. 16 — Chassis ground:</i>	Is the resistance 1 MΩ or more?	Go to step 5.	Repair the short circuit of the harness between TCM and transmission connector, and poor contact of connector.
5 CHECK FRONT VEHICLE SPEED SENSOR. Measure the resistance between transmission connector receptacle's terminals. <i>Connector & terminal</i> <i>(T4) No. 14 — No. 18:</i>	Is the resistance 450 — 650 Ω?	Go to step 6.	Replace the front vehicle speed sensor. <Ref. to 4AT-49, Front Vehicle Speed Sensor.>
6 CHECK INPUT SIGNAL FOR TCM USING SUBARU SELECT MONITOR. 1) Connect all connectors. 2) Connect the Subaru Select Monitor to the data link connector. 3) Lift up the vehicle. NOTE: Raise all wheels off the floor. 4) Turn the ignition switch to ON and run the Subaru Select Monitor. 5) Start the engine. 6) Read the data of vehicle speed using Subaru Select Monitor. <ul style="list-style-type: none"> • Compare the speedometer with Subaru Select Monitor indications. • Vehicle speed is indicated in "km/h" or "MPH" 7) Slowly increase the vehicle speed to 60 km/h or 37 MPH. NOTE: The speed difference between front and rear wheels may illuminate the ABS warning light, but this does not indicate a malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to ABS(diag)-26, Clear Memory Mode.>	Does the speedometer indication increase as the Subaru Select Monitor front wheel speed data increases?	Even if the ATF temperature warning light blinks, the circuit is in normal condition at this time. A temporary poor contact of connector or harness may be the cause. Repair the harness in of front vehicle speed sensor circuit.	Repair the poor contact.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

G: DTC P0724 BRAKE SWITCH CIRCUIT HIGH

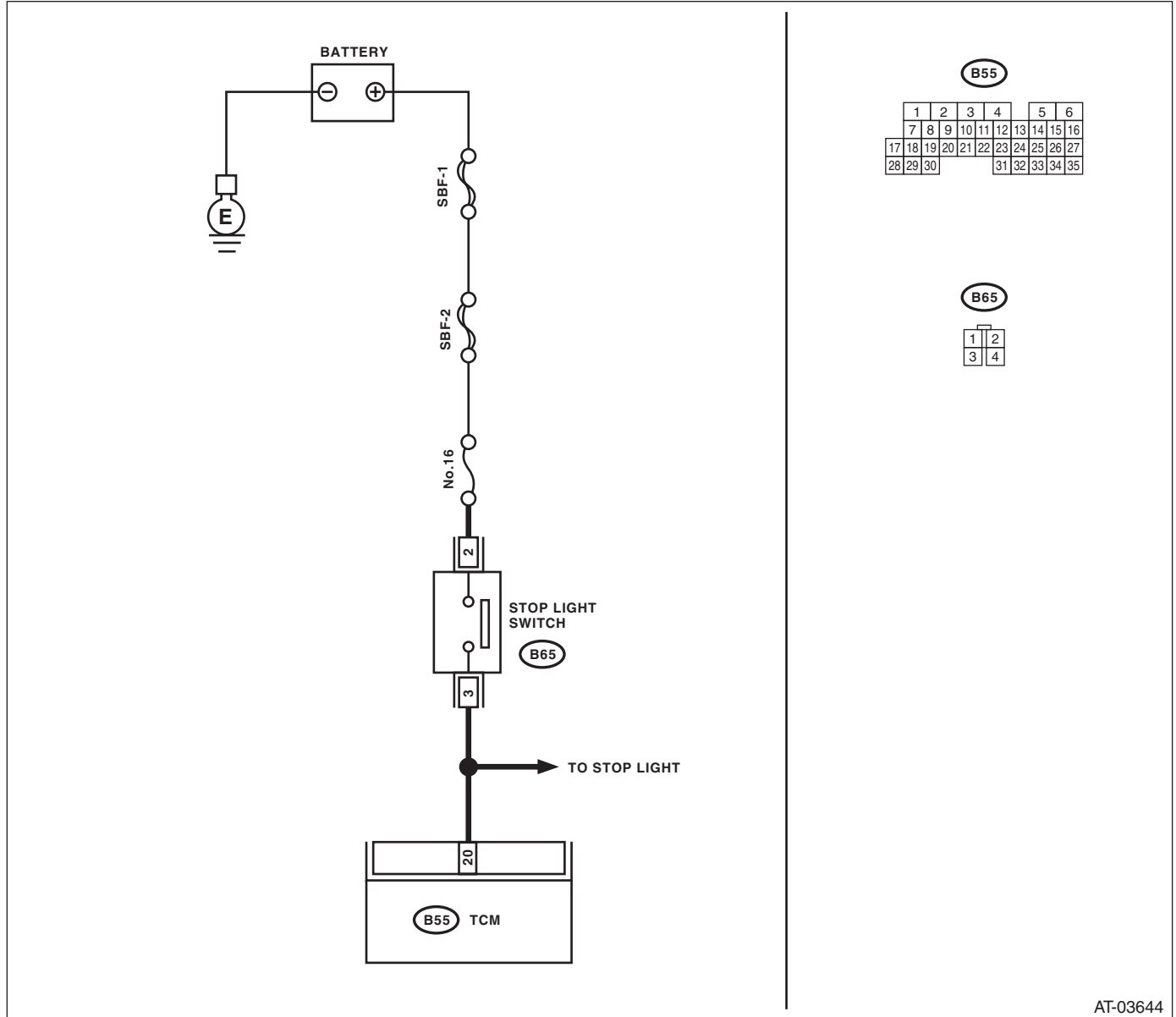
DIAGNOSIS:

Brake switch malfunction, open input signal circuit

TROUBLE SYMPTOM:

Gear is not shifted down when driving a down hill.

WIRING DIAGRAM:



AT-03644

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK OPERATION OF BRAKE LIGHT. Depress the brake pedal.	Brake light illuminates.	Go to step 2.	Check the brake light circuit.
2 CHECK INPUT SIGNAL FROM TCM. 1) Disconnect the harness connector of TCM. 2) Measure the voltage of the harness between TCM and stop light switch. <i>Connector & terminal</i> <i>(B55) No. 20 (+) — Chassis ground (-):</i>	Is the voltage 10 V or more?	Go to step 3.	Repair the poor contact.
3 CHECK STOP LIGHT SWITCH. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from stop light switch. 3) Measure the resistance of harness between stop light switch connectors. <i>Connector & terminal</i> <i>No. 2 — No. 3:</i>	Is the resistance 1 M Ω or more?	Go to step 4.	Replace the stop light switch.
4 CHECK HARNESS CONNECTOR BETWEEN TCM AND STOP LIGHT SWITCH. 1) Turn the ignition switch to ON. 2) Measure the voltage of harness between TCM and chassis ground. <i>Connector & terminal</i> <i>(B55) No. 20 (+) — Chassis ground (-):</i>	Is the voltage less than 1 V?	Repair the poor contact.	Repair the short circuit of harness between TCM and stop light switch.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

H: DTC P0725 ENGINE SPEED INPUT CIRCUIT

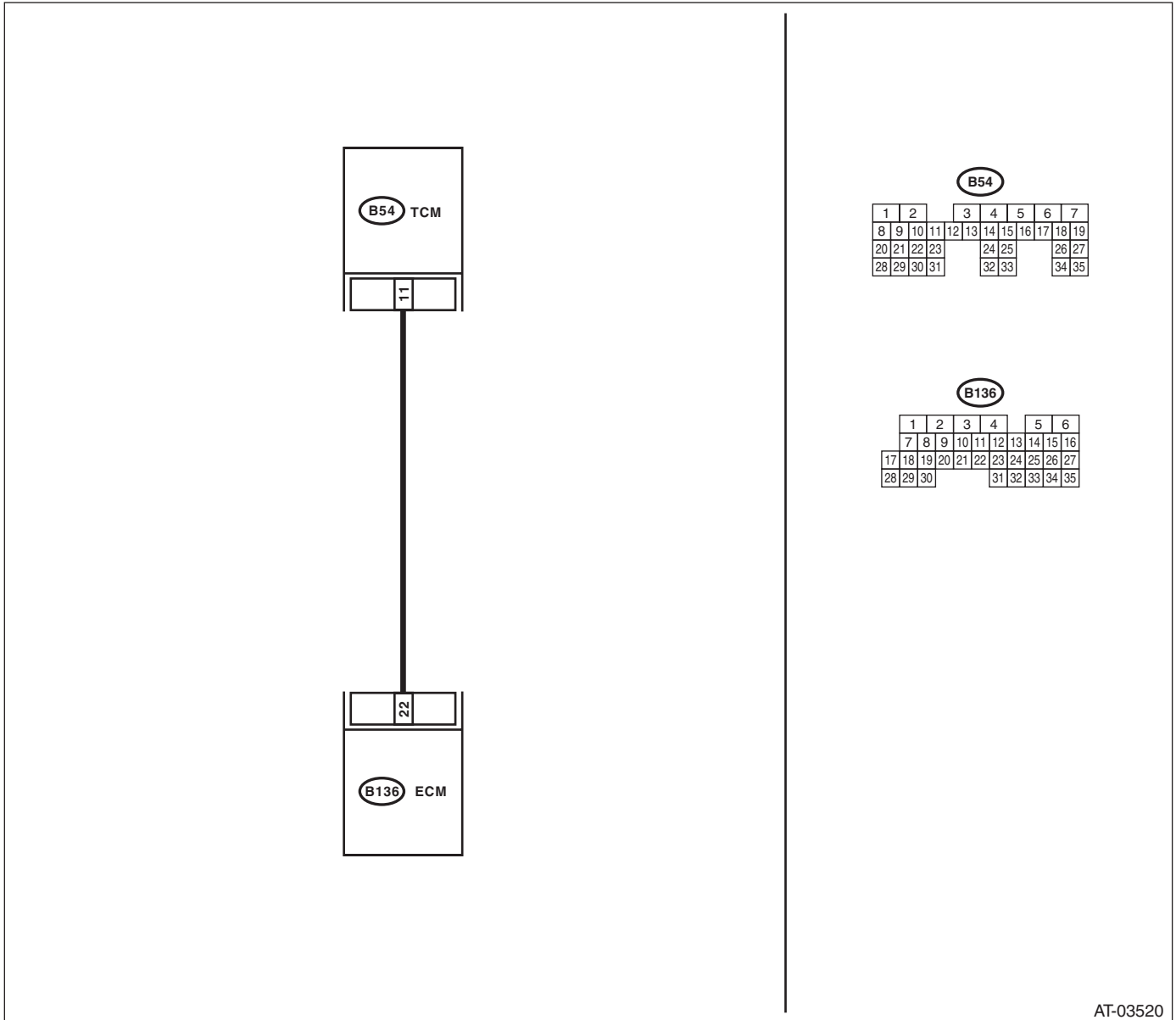
DIAGNOSIS:

Engine speed input signal circuit is open or shorted.

TROUBLE SYMPTOM:

- No lock-up occurs. (After engine is warmed-up)
- ATF temperature warning light remains ON when the vehicle speed is "0".

WIRING DIAGRAM:



AT-03520

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK HARNESS CONNECTOR BETWEEN TCM AND ECM. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from TCM and ECM. 3) Measure the resistance of harness between TCM and ECM. <i>Connector & terminal (B54) No. 11 — (B136) No. 22:</i>	Is resistance less than 1 Ω?	Go to step 2.	Repair the open circuit of harness between TCM and ECM connector.
2 CHECK HARNESS CONNECTOR BETWEEN TCM AND ECM. Measure the resistance of harness between TCM connector and chassis ground. <i>Connector & terminal (B54) No. 11 — Chassis ground:</i>	Is the resistance 1 MΩ or more?	Go to step 3.	Repair the short circuit of harness between TCM and ECM connector.
3 CHECK INPUT SIGNAL FOR TCM USING SUBARU SELECT MONITOR. 1) Connect the connectors to TCM and ECM. 2) Connect the Subaru Select Monitor to the data link connector. 3) Start the engine, and run the Subaru Select Monitor. 4) Idle the engine. 5) Read the data of engine speed using Subaru Select Monitor. Display shows engine speed signal value sent from ECM.	Is the revolution value same as the tachometer reading shown on the combination meter?	Even if the ATF temperature warning light blinks, the circuit is in normal condition at this time. A temporary poor contact of connector or harness may be the cause. Repair the harness or connector in the TCM and ECM.	Go to step 4.
4 CHECK POOR CONTACT.	Is there poor contact in engine speed signal circuit?	Repair the poor contact.	Go to step 5.
5 CONFIRM DTC P0725. Replace the ECM with a new part.	Does the DTC appear again, after the memory has been cleared?	Replace the TCM. <Ref. to 4AT-60, Transmission Control Module (TCM).>	Replace the ECM.

I: DTC P0731 GEAR 1 INCORRECT RATIO

NOTE:

Refer to DTC P0736 for diagnostic procedure. <Ref. to 4AT(D)(diag)-59, DTC P0736 REVERSE INCORRECT RATIO, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

J: DTC P0732 GEAR 2 INCORRECT RATIO

NOTE:

Refer to DTC P0736 for diagnostic procedure. <Ref. to 4AT(D)(diag)-59, DTC P0736 REVERSE INCORRECT RATIO, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

K: DTC P0733 GEAR 3 INCORRECT RATIO

NOTE:

Refer to DTC P0736 for diagnostic procedure. <Ref. to 4AT(D)(diag)-59, DTC P0736 REVERSE INCORRECT RATIO, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

L: DTC P0734 GEAR 4 INCORRECT RATIO

NOTE:

Refer to DTC P0736 for diagnostic procedure. <Ref. to 4AT(D)(diag)-59, DTC P0736 REVERSE INCORRECT RATIO, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

M: DTC P0736 REVERSE INCORRECT RATIO

DIAGNOSIS:

Vehicle sensor, torque converter turbine speed sensor or control valve malfunction

TROUBLE SYMPTOM:

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

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

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

N: DTC P0741 TORQUE CONVERTER CLUTCH CIRCUIT PERFORMANCE OR STUCK OFF

DIAGNOSIS:

- Lock up clutch malfunction
- Sticky valve

TROUBLE SYMPTOM:

No lock-up occurs.

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

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

O: DTC P0743 TORQUE CONVERTER CLUTCH CIRCUIT ELECTRICAL

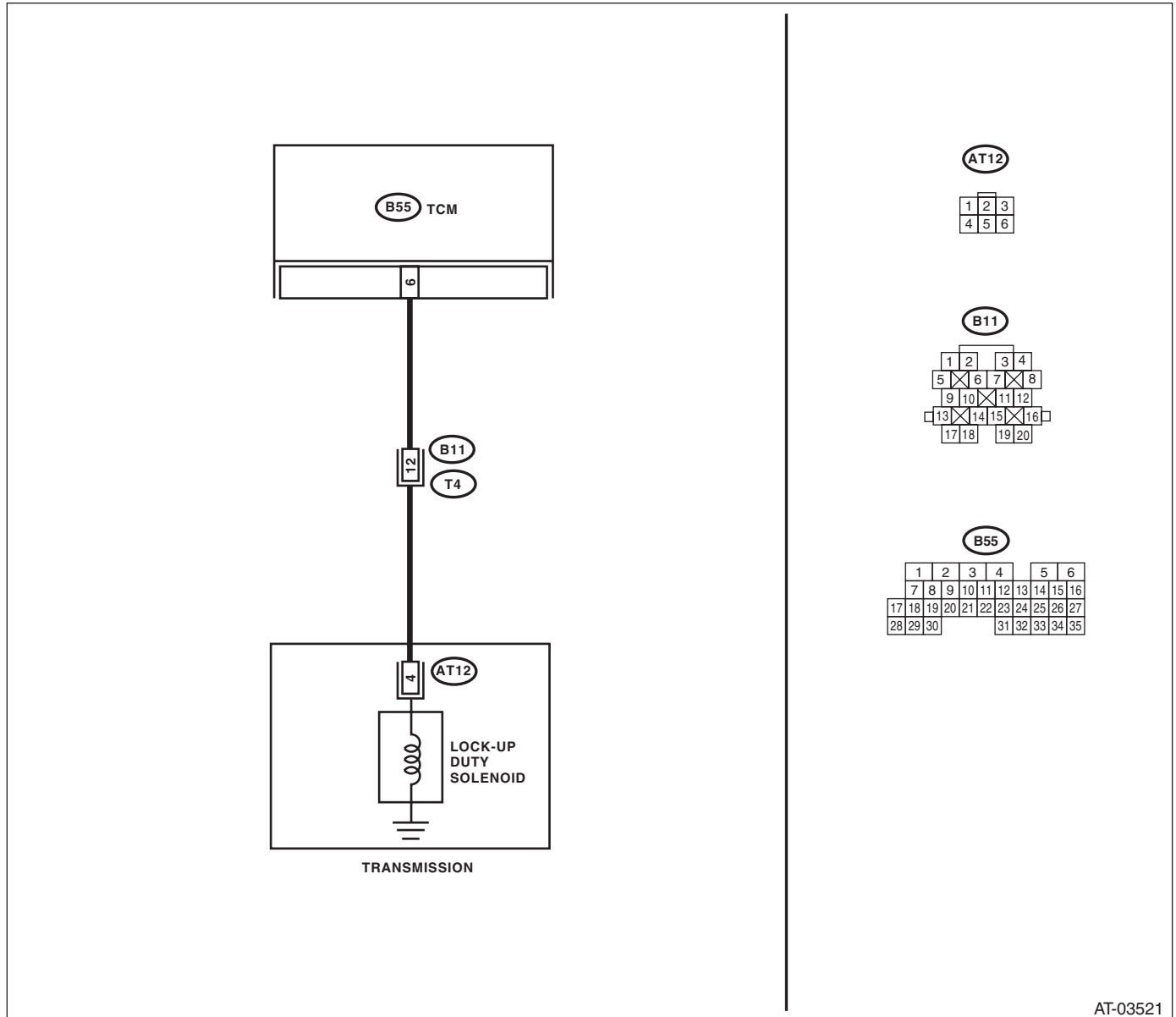
DIAGNOSIS:

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

TROUBLE SYMPTOM:

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

WIRING DIAGRAM:



Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK DTC.	Is any other DTC displayed?	Perform the diagnosis according to DTC.	Go to step 2.
2 CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from TCM and transmission. 3) Measure the resistance of harness between TCM connector and transmission connector. Connector & terminal (B55) No. 6 — (B11) No. 12:	Is resistance less than 1 Ω?	Go to step 3.	Repair the open circuit of harness between TCM and transmission connector.
3 CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. Measure the resistance of the harness connector between TCM connector and chassis ground. Connector & terminal (B55) No. 6 — Chassis ground:	Is the resistance 1 MΩ or more?	Go to step 4.	Repair the short circuit of harness between TCM and transmission connector.
4 CHECK LOCK-UP DUTY SOLENOID. Measure the resistance between transmission connector receptacle's terminals. Connector & terminal (T4) No. 12 — No. 20:	Is the resistance 2.0 — 6.0 Ω?	Go to step 5.	Go to step 7.
5 CHECK OUTPUT SIGNAL FROM TCM USING SUBARU SELECT MONITOR. 1) Connect the connectors to TCM and transmission. 2) Lift up the vehicle. NOTE: Raise all wheels off the floor. 3) Connect the Subaru Select Monitor to the data link connector. 4) Start the engine, and run the Subaru Select Monitor. 5) Start the engine and warm-up the engine until the ATF temperature exceeds 80°C (176°F). NOTE: If the ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature. 6) Read the data of lock-up duty solenoid using the Subaru Select Monitor. Lock-up duty solenoid is indicated in "%". 7) Shift the select lever to "D," and slowly increase vehicle speed to 60 km/h (37 MPH). NOTE: The speed difference between front and rear wheels may illuminate the ABS warning light, but this does not indicate a malfunction. When AT control diagnosis is finished, perform the ABS diagnostics Clear Memory operation. <Ref. to ABS(diag)-26, Clear Memory Mode.>	Is the measured value 95%?	Go to step 6.	Repair the poor contact.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Step	Check	Yes	No
<p>6 CHECK OUTPUT SIGNAL FROM TCM USING SUBARU SELECT MONITOR. Return the engine to idling speed, shift the select lever to "N" range and read the data.</p>	<p>Is the measured value 5%?</p>	<p>Even if the ATF temperature warning light blinks, the circuit is in normal condition at this time. A temporary poor contact of connector or harness may be the cause. Repair the harness or connector in TCM and transmission.</p>	<p>Repair the poor contact.</p>
<p>7 CHECK LOCK-UP DUTY SOLENOID (IN TRANSMISSION). 1) Disconnect the transmission connector. 2) Drain the automatic transmission fluid. CAUTION: Do not drain ATF until it cools down. 3) Remove the oil pan, and disconnect the connector from the lock-up duty solenoid. 4) Measure the resistance between lock-up duty solenoid and transmission ground. Connector & terminal (AT12) No. 4 — Transmission ground:</p>	<p>Is the resistance 2.0 — 6.0 Ω?</p>	<p>Go to step 8.</p>	<p>Replace the control valve body. <Ref. to 4AT-55, Control Valve Body.></p>
<p>8 CHECK HARNESS CONNECTOR BETWEEN LOCK-UP DUTY SOLENOID AND TRANSMISSION. Measure the resistance of harness between lock-up duty solenoid and transmission connector. Connector & terminal (T4) No. 12 — (AT12) No. 4:</p>	<p>Is resistance less than 1 Ω?</p>	<p>Go to step 9.</p>	<p>Repair the open circuit of harness between TCM and transmission connector.</p>
<p>9 CHECK HARNESS CONNECTOR BETWEEN LOCK-UP DUTY SOLENOID AND TRANSMISSION. Measure the resistance of harness between transmission connector and transmission ground. Connector & terminal (T4) No. 12 — Transmission ground:</p>	<p>Is the resistance 1 MΩ or more?</p>	<p>Even if the ATF temperature warning light blinks, the circuit is in normal condition at this time. A temporary poor contact of connector or harness may be the cause. Repair the harness or connector in lock-up duty solenoid and transmission.</p>	<p>Repair the short circuit of harness between lock-up duty solenoid and transmission connector.</p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

P: DTC P0748 PRESSURE CONTROL SOLENOID "A" ELECTRICAL

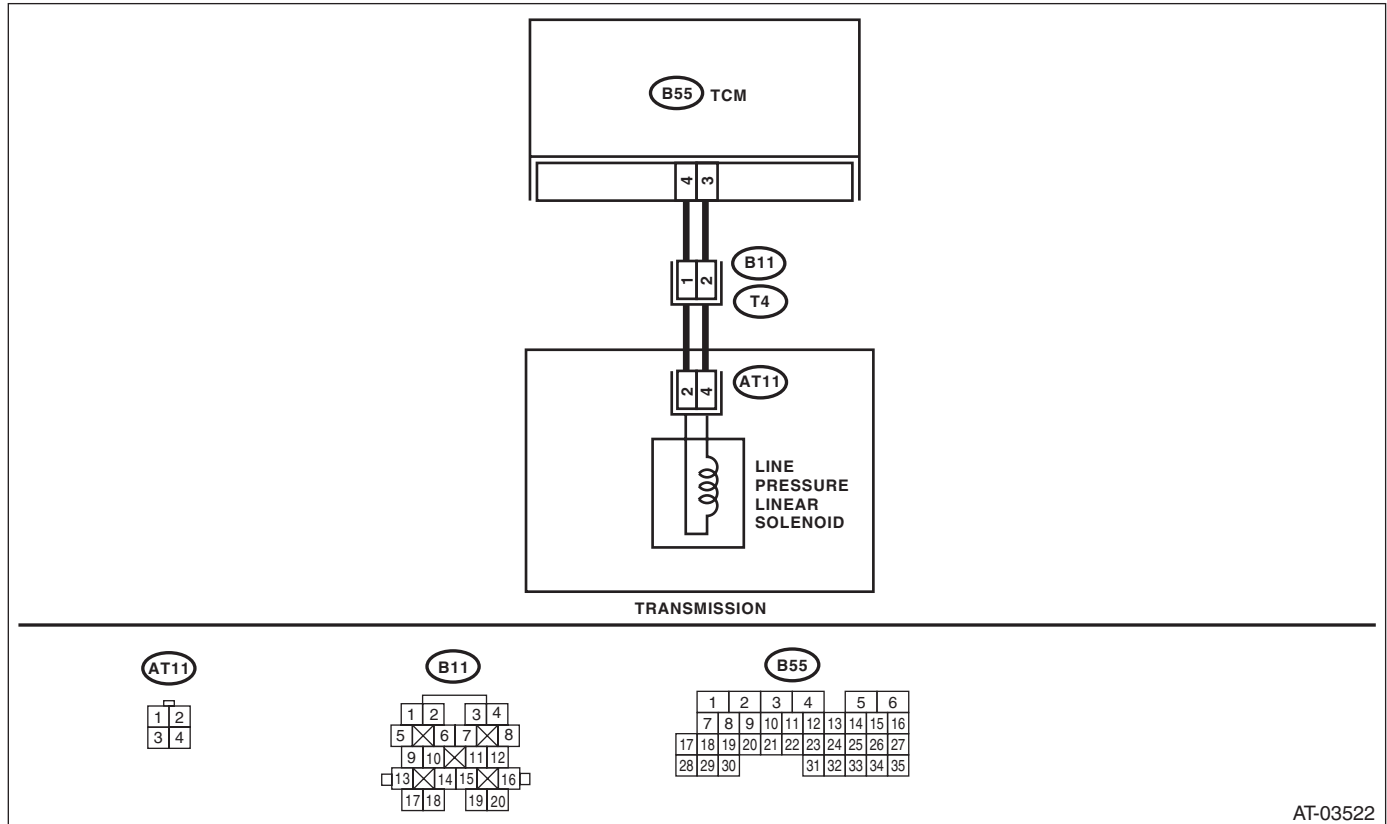
DIAGNOSIS:

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

TROUBLE SYMPTOM:

Excessive shift shock

WIRING DIAGRAM:



AT-03522

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

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Step	Check	Yes	No
<p>4 CHECK LINE PRESSURE LINEAR SOLENOID (IN TRANSMISSION). 1) Remove the transmission connector from bracket. 2) Drain the automatic transmission fluid. CAUTION: Do not drain ATF until it cools down. 3) Remove the oil pan, and disconnect the connector from line pressure linear solenoid. 4) Measure the resistance between line pressure linear solenoid connector and transmission ground. Connector & terminal (AT11) No. 2 — No. 4:</p>	Is the resistance 4 — 8 Ω?	Go to step 5.	Replace the control valve body. <Ref. to 4AT-55, Control Valve Body.>
<p>5 CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND LINE PRESSURE LINEAR SOLENOID. Measure the resistance of harness between line pressure linear solenoid and transmission connector. Connector & terminal (T4) No. 2 — (AT11) No. 4: (T4) No. 1 — (AT11) No. 2:</p>	Is resistance less than 1 Ω?	Go to step 6.	Repair the open circuit of harness between line pressure linear solenoid and transmission connector.
<p>6 CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND LINE PRESSURE LINEAR SOLENOID. Measure the resistance of harness between transmission connector and transmission ground. Connector & terminal (T4) No. 1 — Transmission ground: (T4) No. 2 — Transmission ground:</p>	Is the resistance 1 MΩ or more?	Even if the ATF temperature warning light blinks, the circuit is in normal condition at this time. A temporary poor contact of connector or harness may be the cause. Repair the harness or connector in line pressure linear solenoid and transmission.	Repair the short circuit of harness between line pressure linear solenoid and transmission connector.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Q: DTC P0753 SHIFT SOLENOID "A" ELECTRICAL

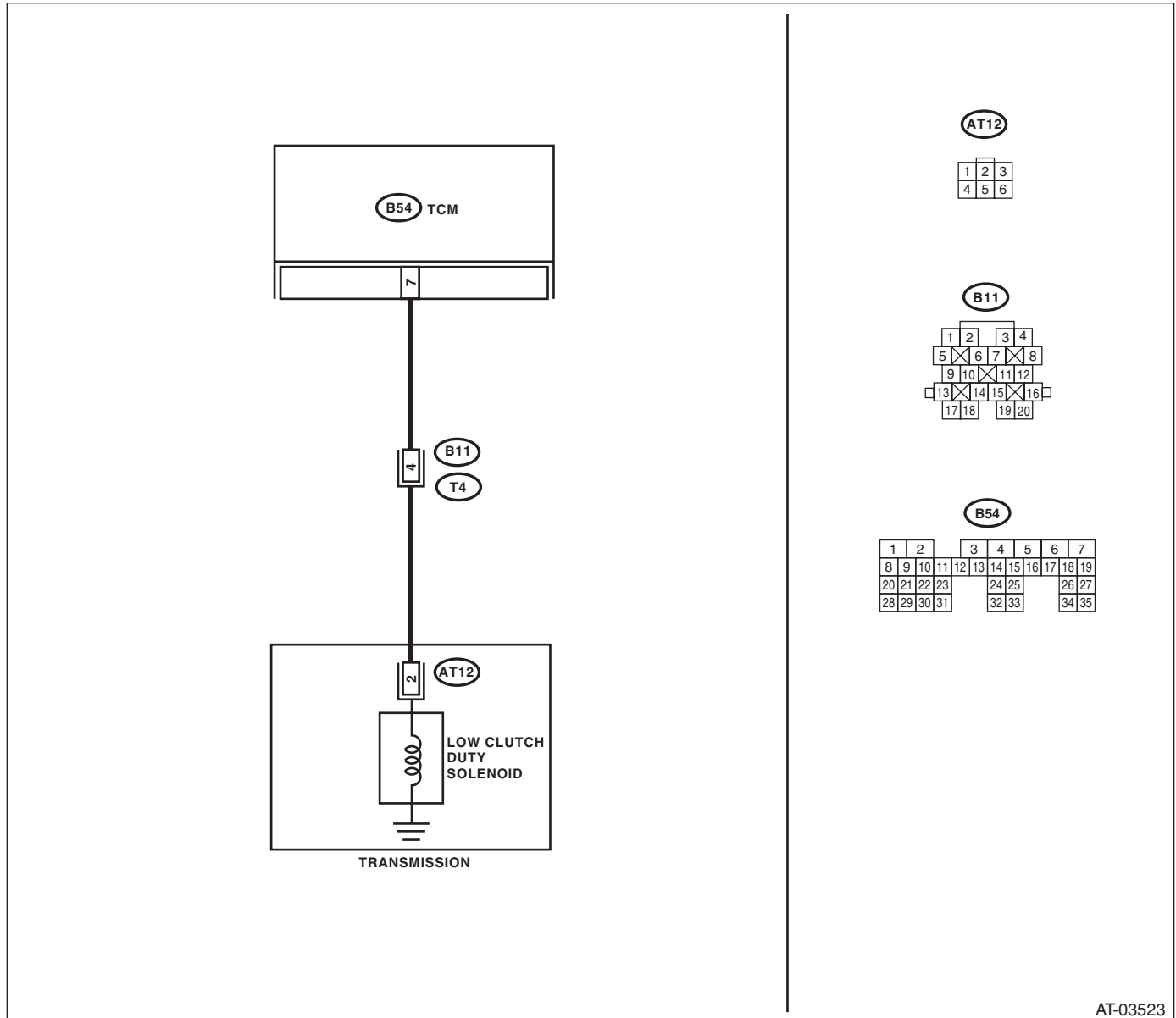
DIAGNOSIS:

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

TROUBLE SYMPTOM:

Excessive shift shock

WIRING DIAGRAM:



AT-03523

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

	Step	Check	Yes	No
1	<p>CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.</p> <p>1) Turn the ignition switch to OFF.</p> <p>2) Disconnect the connectors from TCM and transmission.</p> <p>3) Measure the resistance of harness between TCM and transmission connector.</p> <p>Connector & terminal (B54) No. 7 — (B11) No. 4:</p>	Is resistance less than 1 Ω?	Go to step 2.	Repair the open circuit of harness between TCM and transmission connector.
2	<p>CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.</p> <p>Measure the resistance of harness between TCM connector and transmission ground.</p> <p>Connector & terminal (B54) No. 7 — Chassis ground:</p>	Is the resistance 1 MΩ or more?	Go to step 3.	Repair the short circuit of harness between TCM and transmission connector.
3	<p>CHECK LOW CLUTCH DUTY SOLENOID.</p> <p>Measure the resistance between transmission connector terminals.</p> <p>Connector & terminal (T4) No. 4 — No. 20:</p>	Is the resistance 2.0 — 6.0 Ω?	Go to step 4.	Go to step 6.
4	<p>CHECK OUTPUT SIGNAL FROM TCM USING SUBARU SELECT MONITOR.</p> <p>1) Connect the connectors to TCM and transmission.</p> <p>2) Connect the Subaru Select Monitor to the data link connector.</p> <p>3) Start the engine, and run the Subaru Select Monitor.</p> <p>4) Warm-up the transmission until the ATF temperature exceeds approximately 80°C (176°F).</p> <p>NOTE: If the ambient temperature falls below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature.</p> <p>5) Stop the engine and turn the ignition switch to ON (with engine OFF).</p> <p>6) Shift the select lever to “P” or “N” range, and depress the accelerator pedal.</p> <p>7) Read the data of low clutch duty solenoid using the Subaru Select Monitor. Low clutch duty solenoid is indicated in “%”.</p>	Is the measured value 100%?	Go to step 5.	Repair the poor contact.
5	<p>CHECK OUTPUT SIGNAL FROM TCM USING SUBARU SELECT MONITOR.</p> <p>1) Turn the ignition switch to ON (engine OFF).</p> <p>2) Move the select lever to “D” range.</p> <p>3) Read the data of low clutch duty solenoid.</p>	Is the measured value 0%?	Even if the ATF temperature warning light blinks, the circuit is in normal condition at this time. A temporary poor contact of connector or harness may be the cause. Repair the harness or connector in transmission.	Repair the poor contact.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Step	Check	Yes	No
<p>6 CHECK LOW CLUTCH DUTY SOLENOID (IN TRANSMISSION).</p> <p>1) Remove the transmission connector from bracket. 2) Drain the automatic transmission fluid.</p> <p>CAUTION: Do not drain ATF until it cools down.</p> <p>3) Remove the oil pan, and disconnect the connector from the low clutch duty solenoid. 4) Measure the resistance between low clutch duty solenoid connector and transmission ground.</p> <p>Connector & terminal (AT12) No. 2 — Transmission ground:</p>	Is the resistance 2.0 — 6.0 Ω ?	Go to step 7.	Replace the control valve body. <Ref. to 4AT-55, Control Valve Body.>
<p>7 CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND LOW CLUTCH DUTY SOLENOID.</p> <p>Measure the resistance of harness between low clutch duty solenoid and transmission connector.</p> <p>Connector & terminal (T4) No. 4 — (AT12) No. 2:</p>	Is resistance less than 1 Ω ?	Go to step 8.	Repair the open circuit of harness between low clutch duty solenoid and transmission connector.
<p>8 CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND LOW CLUTCH DUTY SOLENOID.</p> <p>Measure the resistance of harness between transmission connector and transmission ground.</p> <p>Connector & terminal (T4) No. 4 — Transmission ground:</p>	Is the resistance 1 M Ω or more?	Even if the ATF temperature warning light blinks, the circuit is in normal condition at this time. A temporary poor contact of connector or harness may be the cause. Repair the harness or connector of the low clutch duty solenoid and transmission.	Repair the short circuit of harness between low clutch duty solenoid and transmission connector.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

R: DTC P0758 SHIFT SOLENOID "B" ELECTRICAL

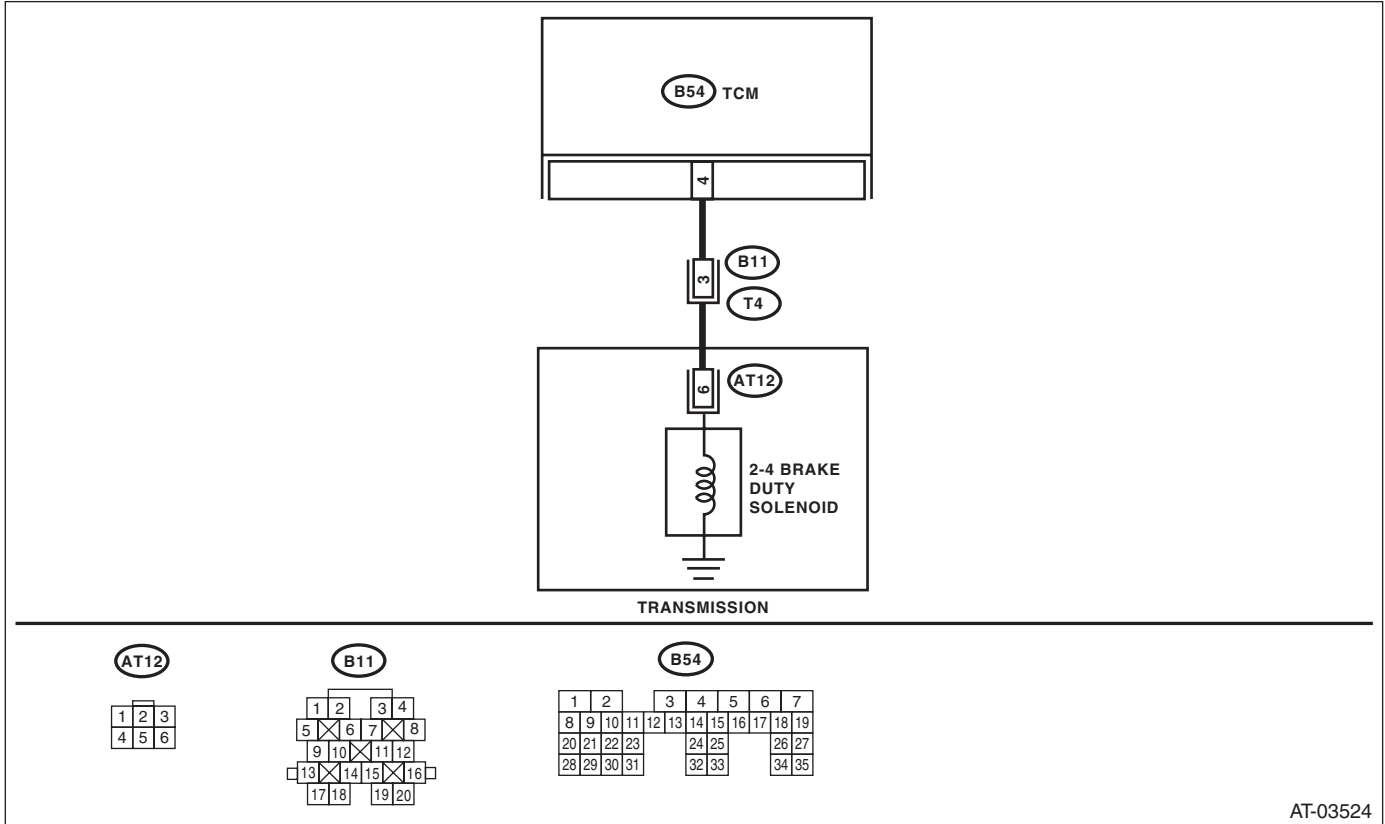
DIAGNOSIS:

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

TROUBLE SYMPTOM:

Excessive shift shock

WIRING DIAGRAM:



AT-03524

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from TCM and transmission. 3) Measure the resistance of harness between TCM connector and transmission connector. Connector & terminal (B54) No. 4 — (B11) No. 3:	Is resistance less than 1 Ω?	Go to step 2.	Repair the open circuit of harness between TCM and transmission connector.
2 CHECK HARNESS CONNECTOR BETWEEN TCM AND CHASSIS GROUND. Measure the resistance of harness between TCM connector and chassis ground. Connector & terminal (B54) No. 4 — Chassis ground:	Is the resistance 1 MΩ or more?	Go to step 3.	Repair the short circuit of harness between TCM and transmission connector.
3 CHECK 2-4 BRAKE DUTY SOLENOID. Measure the resistance between transmission connector terminals. Connector & terminal (T4) No. 3 — No. 20:	Is the resistance 2.0 — 6.0 Ω?	Go to step 4.	Go to step 6.
4 CHECK OUTPUT SIGNAL FROM TCM USING SUBARU SELECT MONITOR. 1) Connect all connectors. 2) Connect the Subaru Select Monitor to the data link connector. 3) Start the engine, and run the Subaru Select Monitor. 4) Warm-up the transmission until the ATF temperature exceeds approximately 80°C (176°F). NOTE: If the ambient temperature falls below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature. 5) Stop the engine and turn the ignition switch to ON (with engine OFF). 6) Move the select lever to "N". 7) Read the data of 2-4 brake duty solenoid using the Subaru Select Monitor. • 2-4 brake duty solenoid is indicated in "%".	Is the measured value 100%?	Go to step 5.	Repair the poor contact.
5 CHECK OUTPUT SIGNAL FROM TCM USING SUBARU SELECT MONITOR. 1) Move the select lever to "2" range. 2) Turn the hold switch to ON.	Is the measured value 0%?	Even if the ATF temperature warning light blinks, the circuit is in normal condition at this time. A temporary poor contact of connector or harness may be the cause. Repair the harness or connector in TCM and transmission.	Repair the poor contact.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Step	Check	Yes	No
<p>6 CHECK 2-4 BRAKE DUTY SOLENOID (IN TRANSMISSION). 1) Remove the transmission connector from bracket. 2) Drain the automatic transmission fluid. CAUTION: Do not drain ATF until it cools down. 3) Remove the oil pan, and disconnect the connector from 2-4 brake duty solenoid. 4) Measure the resistance of harness between 2-4 brake duty solenoid connector and transmission ground. Connector & terminal (AT12) No. 6 — Transmission ground:</p>	Is the resistance 2.0 — 6.0 Ω?	Go to step 7.	Replace the control valve body. <Ref. to 4AT-55, Control Valve Body.>
<p>7 CHECK HARNESS CONNECTOR BETWEEN 2-4 BRAKE DUTY SOLENOID AND TRANSMISSION. Measure the resistance of harness between 2-4 brake duty solenoid and transmission connector. Connector & terminal (T4) No. 3 — (AT12) No. 6:</p>	Is resistance less than 1 Ω?	Go to step 8.	Repair the open circuit of harness between 2-4 brake duty solenoid and transmission connector.
<p>8 CHECK HARNESS CONNECTOR BETWEEN 2-4 BRAKE DUTY SOLENOID AND TRANSMISSION. Measure the resistance of harness between transmission connector and transmission ground. Connector & terminal (T4) No. 3 — Transmission ground:</p>	Is the resistance 1 MΩ or more?	Even if the ATF temperature warning light blinks, the circuit is in normal condition at this time. A temporary poor contact of connector or harness may be the cause. Repair the harness or connector in high clutch duty solenoid and transmission.	Repair the short circuit of harness between 2-4 brake duty solenoid and transmission connector.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

S: DTC P0763 SHIFT SOLENOID "C" ELECTRICAL

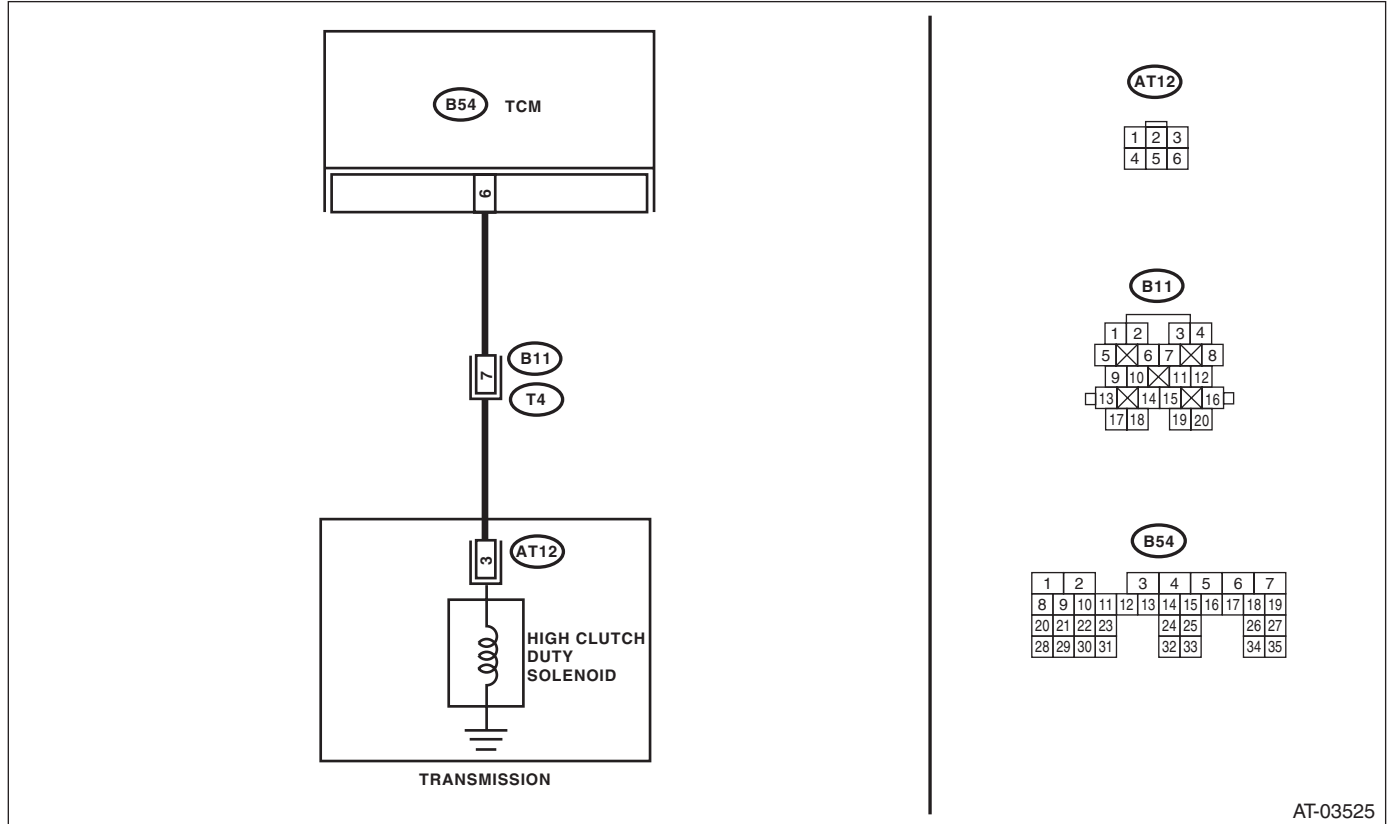
DIAGNOSIS:

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

TROUBLE SYMPTOM:

Excessive shift shock

WIRING DIAGRAM:



AT-03525

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from TCM and transmission. 3) Measure the resistance of harness between TCM connector and transmission connector. Connector & terminal (B55) No. 6 — (B11) No. 7:	Is resistance less than 1 Ω?	Go to step 2.	Repair the open circuit of harness between TCM and transmission connector.
2 CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. Measure the resistance of the harness connector between TCM connector and chassis ground. Connector & terminal (B55) No. 6 — Chassis ground:	Is the resistance 1 MΩ or more?	Go to step 3.	Repair the short circuit of harness between TCM and transmission connector.
3 CHECK HIGH CLUTCH DUTY SOLENOID. Measure the resistance between transmission connector receptacle's terminals. Connector & terminal (T4) No. 7 — No. 20:	Is the resistance 2.0 — 6.0 Ω?	Go to step 4.	Go to step 6.
4 CHECK OUTPUT SIGNAL FROM TCM USING SUBARU SELECT MONITOR. 1) Connect the connectors to TCM and transmission. 2) Lift up the vehicle. NOTE: Raise all wheels off the floor. 3) Connect the Subaru Select Monitor to the data link connector. 4) Start the engine, and run the Subaru Select Monitor. 5) Start the engine and warm-up the engine until the ATF temperature exceeds 80°C (176°F). NOTE: If the ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature. 6) Read the data of high clutch duty solenoid using Subaru Select Monitor. • High clutch duty solenoid is indicated in "%". 7) Shift the select lever to "D" range, and slowly increase vehicle speed to measure at 3rd or 4th. NOTE: The speed difference between front and rear wheels may illuminate the ABS warning light, but this does not indicate a malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to ABS(diag)-26, Clear Memory Mode.>	Is the measured value 0%?	Go to step 5.	Repair the poor contact.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Step	Check	Yes	No
<p>5 CHECK OUTPUT SIGNAL FROM TCM USING SUBARU SELECT MONITOR. Return the engine to idling speed and shift the select lever to "N" range.</p> <p>NOTE: The speed difference between front and rear wheels may illuminate the ABS warning light, but this does not indicate a malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to ABS(diag)-26, Clear Memory Mode.></p>	Is the measured value 100%?	Even if the ATF temperature warning light blinks, the circuit is in normal condition at this time. A temporary poor contact of connector or harness may be the cause. Repair the harness or connector in TCM and transmission.	Repair the poor contact.
<p>6 CHECK HIGH CLUTCH DUTY SOLENOID (IN TRANSMISSION).</p> <ol style="list-style-type: none"> 1) Remove the transmission connector from bracket. 2) Drain the automatic transmission fluid. <p>CAUTION: Do not drain ATF until it cools down.</p> <ol style="list-style-type: none"> 3) Remove the oil pan, and disconnect the connector from high clutch duty solenoid. 4) Measure the resistance between high clutch duty solenoid connector and transmission ground. <p>Connector & terminal (AT12) No. 3 — Transmission ground:</p>	Is the resistance 2.0 — 6.0 Ω?	Go to step 7.	Replace the control valve body. <Ref. to 4AT-55, Control Valve Body.>
<p>7 CHECK HARNESS CONNECTOR BETWEEN HIGH CLUTCH DUTY SOLENOID AND TRANSMISSION.</p> <p>Measure the resistance of harness between high clutch duty solenoid and transmission connector.</p> <p>Connector & terminal (T4) No. 7 — (AT12) No. 3:</p>	Is resistance less than 1 Ω?	Go to step 8.	Repair the open circuit of harness between TCM and transmission connector.
<p>8 CHECK HARNESS CONNECTOR BETWEEN HIGH CLUTCH DUTY SOLENOID AND TRANSMISSION.</p> <p>Measure the resistance of harness between transmission connector and transmission ground.</p> <p>Connector & terminal (T4) No. 7 — Transmission ground:</p>	Is the resistance 1 MΩ or more?	Even if the ATF temperature warning light blinks, the circuit is in normal condition at this time. A temporary poor contact of connector or harness may be the cause. Repair the harness or connector in high clutch duty solenoid and transmission.	Repair the short circuit of harness between high clutch duty solenoid and transmission connector.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

T: DTC P0768 SHIFT SOLENOID "D" ELECTRICAL

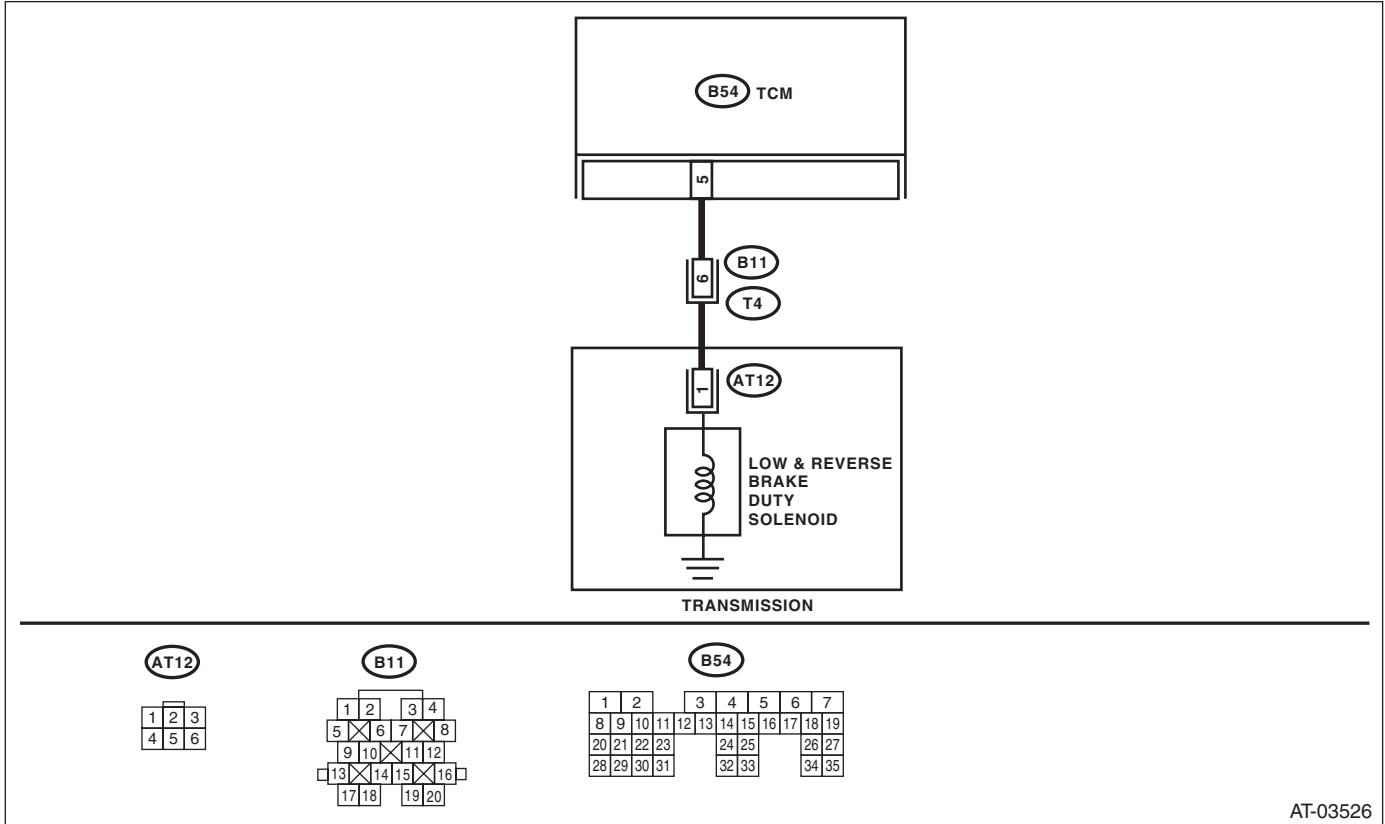
DIAGNOSIS:

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

TROUBLE SYMPTOM:

Gear is not changed.

WIRING DIAGRAM:



AT-03526

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from transmission and TCM. 3) Measure the resistance of harness between TCM connector and transmission connector. Connector & terminal (B54) No. 5 — (B11) No. 6:	Is resistance less than 1 Ω?	Go to step 2.	Repair the open circuit of harness between TCM and transmission connector.
2 CHECK HARNESS CONNECTOR BETWEEN TCM AND CHASSIS GROUND. Measure the resistance of harness between TCM connector and chassis ground. Connector & terminal (B54) No. 5 — Chassis ground:	Is the resistance 1 MΩ or more?	Go to step 3.	Repair the short circuit of harness between TCM and transmission connector.
3 CHECK LOW & REVERSE BRAKE DUTY SOLENOID. Measure the resistance between transmission connector terminals. Connector & terminal (T4) No. 6 — No. 20:	Is the resistance 2.0 — 6.0 Ω?	Go to step 4.	Go to step 6.
4 CHECK OUTPUT SIGNAL FROM TCM USING SUBARU SELECT MONITOR. 1) Connect all connectors. 2) Connect the Subaru Select Monitor to the data link connector. 3) Start the engine, and run the Subaru Select Monitor. 4) Warm-up the transmission until the ATF temperature exceeds approximately 80°C (176°F). NOTE: If the ambient temperature falls below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature. 5) Stop the engine and turn the ignition switch to ON (with engine OFF). 6) Shift the select lever to “P” or “N” range, and depress the accelerator pedal. 7) Read the data of low & reverse brake duty solenoid using Subaru Select Monitor. <ul style="list-style-type: none"> • Low & reverse brake duty solenoid is indicated in “%”. 	Is the measured value 100%?	Go to step 5.	Repair the poor contact.
5 CHECK OUTPUT SIGNAL FROM TCM USING SUBARU SELECT MONITOR. 1) Move the select lever to “1” range. 2) Read the data of the low & reverse duty solenoid.	Is the measured value 55%?	Even if the ATF temperature warning light blinks, the circuit is in normal condition at this time. A temporary poor contact of connector or harness may be the cause. Repair the harness or connector in TCM and transmission.	Repair the poor contact.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Step	Check	Yes	No
<p>6 CHECK LOW & REVERSE BRAKE DUTY SOLENOID (IN TRANSMISSION). 1) Remove the transmission connector from bracket. 2) Drain the automatic transmission fluid. CAUTION: Do not drain ATF until it cools down. 3) Remove the oil pan, and disconnect the connector from low & reverse brake duty solenoid. 4) Measure the resistance between low & reverse brake duty solenoid connector and transmission ground. Connector & terminal (AT12) No. 1 — Transmission ground:</p>	<p>Is the resistance 2.0 — 6.0 Ω?</p>	<p>Go to step 7.</p>	<p>Replace the low & reverse brake duty solenoid. <Ref. to 4AT-55, Control Valve Body.></p>
<p>7 CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND LOW & REVERSE DUTY SOLENOID. Measure the resistance of harness between low & reverse duty solenoid and transmission connector. Connector & terminal (T4) No. 6 — (AT12) No. 1:</p>	<p>Is resistance less than 1 Ω?</p>	<p>Go to step 8.</p>	<p>Repair open circuit of harness between low & reverse brake duty solenoid and transmission connector.</p>
<p>8 CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND LOW & REVERSE BRAKE DUTY SOLENOID. Measure the resistance of harness between transmission connector and transmission ground. Connector & terminal (T4) No. 6 — Transmission ground:</p>	<p>Is the resistance 1 MΩ or more?</p>	<p>Even if the ATF temperature warning light blinks, the circuit is in normal condition at this time. A temporary poor contact of connector or harness may be the cause. Repair harness or connector in low & reverse brake duty solenoid and transmission.</p>	<p>Repair the short circuit of the harness between the low & reverse brake duty solenoid and the transmission connector.</p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

U: DTC P0801 REVERSE INHIBIT CONTROL CIRCUIT

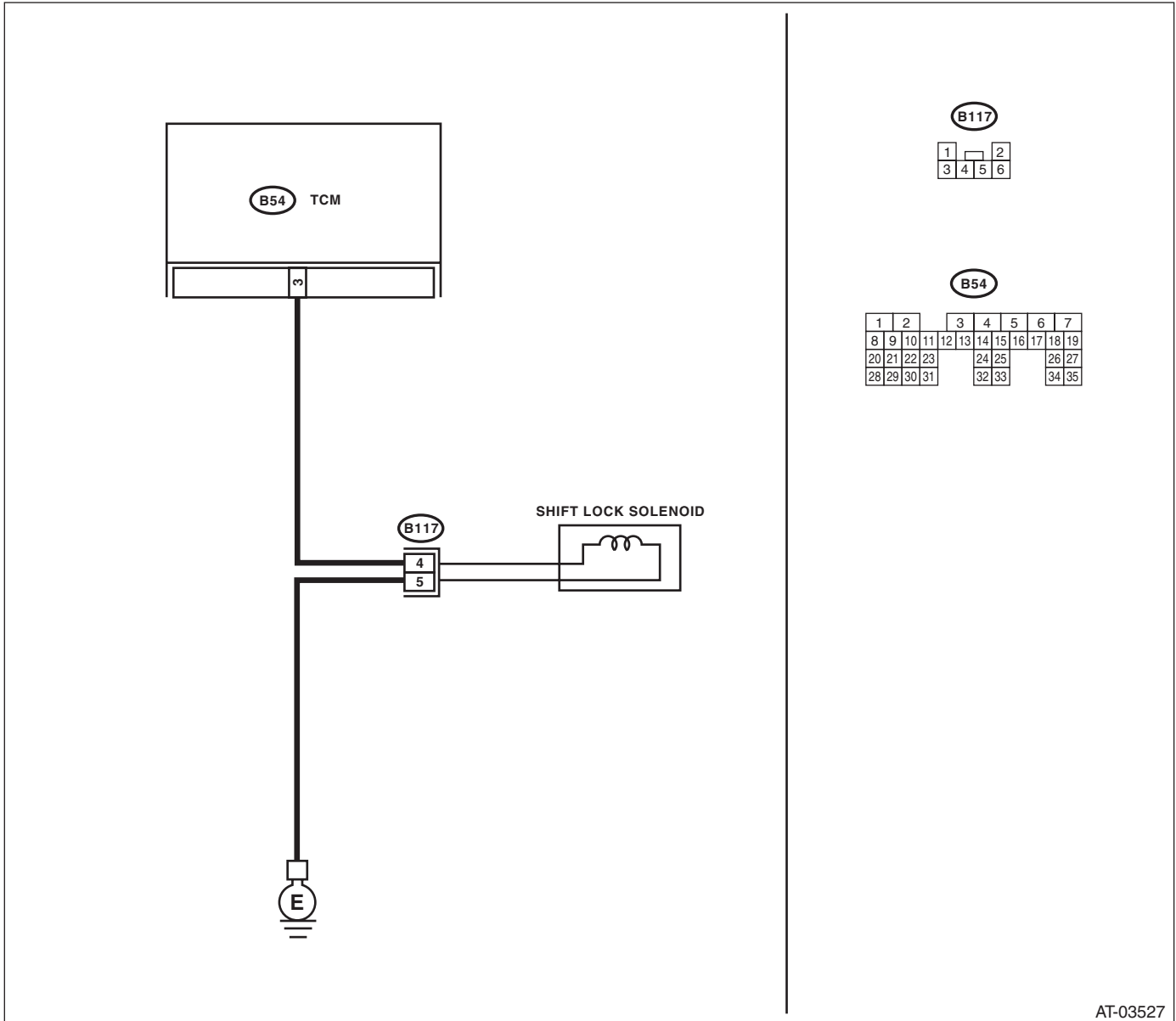
DIAGNOSIS:

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

TROUBLE SYMPTOM:

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

WIRING DIAGRAM:



AT-03527

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

	Step	Check	Yes	No
1	CHECK HARNESS CONNECTOR BETWEEN TCM AND SHIFT LOCK SOLENOID. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from TCM and shift lock solenoid. 3) Measure the resistance of harness between TCM and shift lock solenoid connector. Connector & terminal (B54) No. 3 — (B117) No. 4:	Is resistance less than 1 Ω?	Go to step 2.	Repair the open circuit of harness between TCM and shift lock solenoid connector.
2	CHECK HARNESS CONNECTOR BETWEEN TCM AND SHIFT LOCK SOLENOID. Measure the resistance of the harness between TCM and chassis ground. Connector & terminal (B54) No. 3 — Chassis ground:	Is the resistance 1 MΩ or more?	Go to step 3.	Repair the ground short circuit of harness between TCM and shift lock solenoid connector.
3	CHECK HARNESS BETWEEN SHIFT LOCK SOLENOID AND CHASSIS GROUND TERMINAL. Measure the resistance of harness between shift lock solenoid and chassis ground. Connector & terminal (B117) No. 5 — Chassis ground:	Is resistance less than 1 Ω?	Go to step 4.	Repair the open circuit of harness between chassis ground and shift lock solenoid connector.
4	CHECK SHIFT LOCK SOLENOID. Measure the resistance of shift lock solenoid terminals. Connector & terminal (B117) No. 5 — No. 4:	Is the resistance 7 — 18 Ω?	Go to step 5.	Replace the shift lock solenoid.
5	CHECK OUTPUT SIGNAL OF TCM. 1) Connect all connectors. 2) Turn the ignition switch to ON. 3) Move the select lever to “D” range. 4) Measure the voltage between TCM and chassis ground. Connector & terminal (B54) No. 3 (+) — Chassis ground (-):	Is the voltage 10.5 V or more?	Go to step 6.	Repair the poor contact.
6	CHECK OUTPUT SIGNAL OF TCM. 1) Lift up the vehicle. NOTE: Raise all wheels off the floor. 2) Start the engine. 3) Shift the select lever to “D” range and slowly increase vehicle speed to exceed 20 km/h (12 MPH). NOTE: The speed difference between front and rear wheels may illuminate the ABS warning light, but this does not indicate a malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. 4) Measure the voltage between TCM and chassis ground. Connector & terminal (B54) No. 3 (+) — Chassis ground (-):	Is the voltage less than 1 V?	Even if the ATF temperature warning light blinks, the circuit is in normal condition at this time. A temporary poor contact of connector or harness may be the cause. Repair the harness or connector in the reverse inhibitor control circuit.	Repair the poor contact.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

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

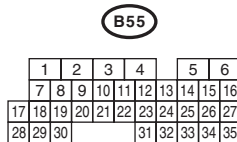
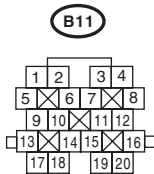
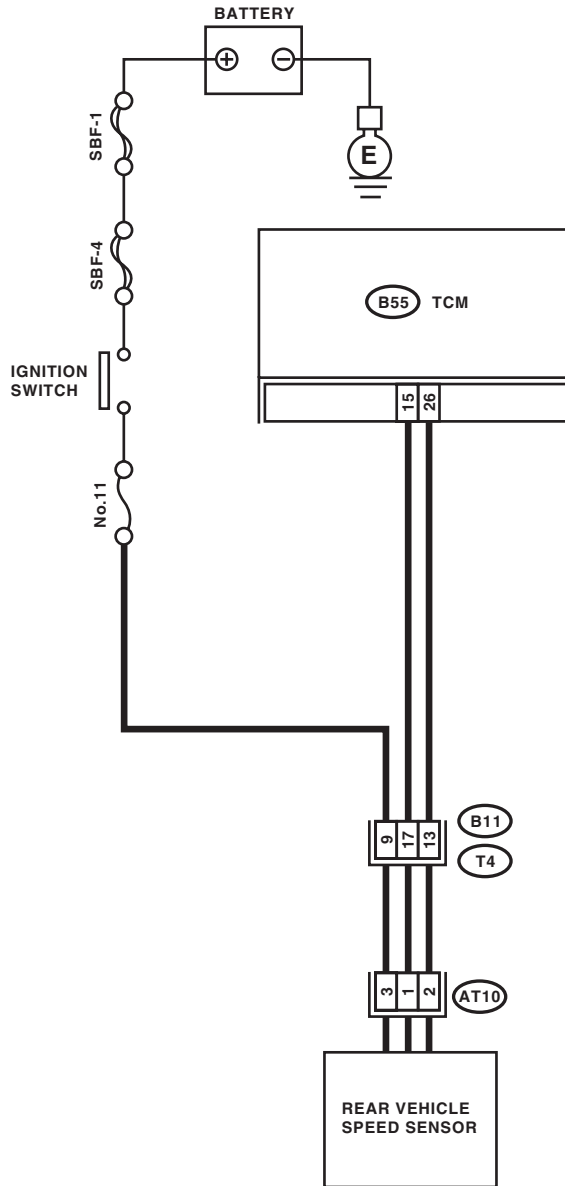
DIAGNOSIS:

Input signal circuit of TCM is open or shorted.

TROUBLE SYMPTOM:

Does not lock-up or excessive braking in tight corners.

WIRING DIAGRAM:



AT-03528

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK IGNITION POWER SUPPLY CIRCUIT. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from rear vehicle speed sensor. Turn the ignition switch to ON. 3) Measure the ignition power supply voltage between rear vehicle speed sensor connector and transmission ground. <i>Connector & terminal</i> <i>(AT10) No. 3 (+) — Transmission ground (-):</i>	Is the voltage 10 V or more?	Go to step 2.	Check harness between rear vehicle speed sensor and battery for open circuit, short or poor contact. Repair the harness if required.
2 CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. 1) Turn the ignition switch to OFF. 2) Measure the resistance of harness between TCM connector and transmission connector. <i>Connector & terminal</i> <i>(B55) No. 15 — (AT10) No. 1:</i>	Is resistance less than 1 Ω?	Go to step 3.	Repair the open circuit or poor contact of the connector in harness between TCM and rear vehicle speed sensor connector.
3 CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. Measure the resistance of harness between TCM connector and transmission connector. <i>Connector & terminal</i> <i>(B55) No. 26 — (AT10) No. 2:</i>	Is resistance less than 1 Ω?	Go to step 4.	Repair the open circuit or poor contact of the connector in harness between TCM and rear vehicle speed sensor connector.
4 CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. Measure the resistance of harness between TCM connector and chassis ground. <i>Connector & terminal</i> <i>(B55) No. 15 — Chassis ground:</i>	Is the resistance 1 MΩ or more?	Go to step 5.	Repair the short circuit of harness between TCM and rear vehicle speed sensor connector.
5 CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. Measure the resistance of harness between TCM connector and chassis ground. <i>Connector & terminal</i> <i>(B55) No. 26 — Chassis ground:</i>	Is the resistance 1 MΩ or more?	Go to step 6.	Repair the short circuit of harness between TCM and rear vehicle speed sensor connector.
6 PREPARE OSCILLOSCOPE.	Do you have an oscilloscope?	Go to step 8.	Go to step 7.
7 CHECK INPUT SIGNAL FOR TCM. 1) Connect the connectors to TCM and transmission. 2) Lift up the vehicle. NOTE: Raise all wheels off the floor. 3) Start the engine and set vehicle in 20 km/h (12 MPH) condition. NOTE: The speed difference between front and rear wheels may illuminate the ABS warning light, but this does not indicate a malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to ABS(diag)-26, Clear Memory Mode.> 4) Measure the AC voltage between TCM connector terminals. <i>Connector & terminal</i> <i>(B55) No. 26 (+) — No. 15 (-):</i>	Is the voltage 2 V or more?	Repair the poor contact.	Replace the rear vehicle speed sensor.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Step	Check	Yes	No
<p>8 CHECK INPUT SIGNAL FOR TCM USING OSCILLOSCOPE.</p> <p>1) Connect the connectors to TCM and transmission.</p> <p>2) Lift up the vehicle.</p> <p>NOTE: Raise all wheels off the floor.</p> <p>3) Set the oscilloscope to TCM connector terminals.</p> <p>Connector & terminal Positive lead; (B55) No. 26: Ground lead; (B55) No. 15:</p> <p>4) Start the engine and set vehicle in 20 km/h (12 MPH) condition.</p> <p>NOTE: The speed difference between front and rear wheels may illuminate the ABS warning light, but this does not indicate a malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to ABS(diag)-26, Clear Memory Mode.></p> <p>5) Measure the signal voltage indicated on oscilloscope.</p>	<p>Is the pulse voltage approx. 5 V?</p>	<p>Repair the poor contact.</p>	<p>Replace the rear vehicle speed sensor.</p>

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

W: DTC P1707 AT AWD SOLENOID VALVE CIRCUIT MALFUNCTION

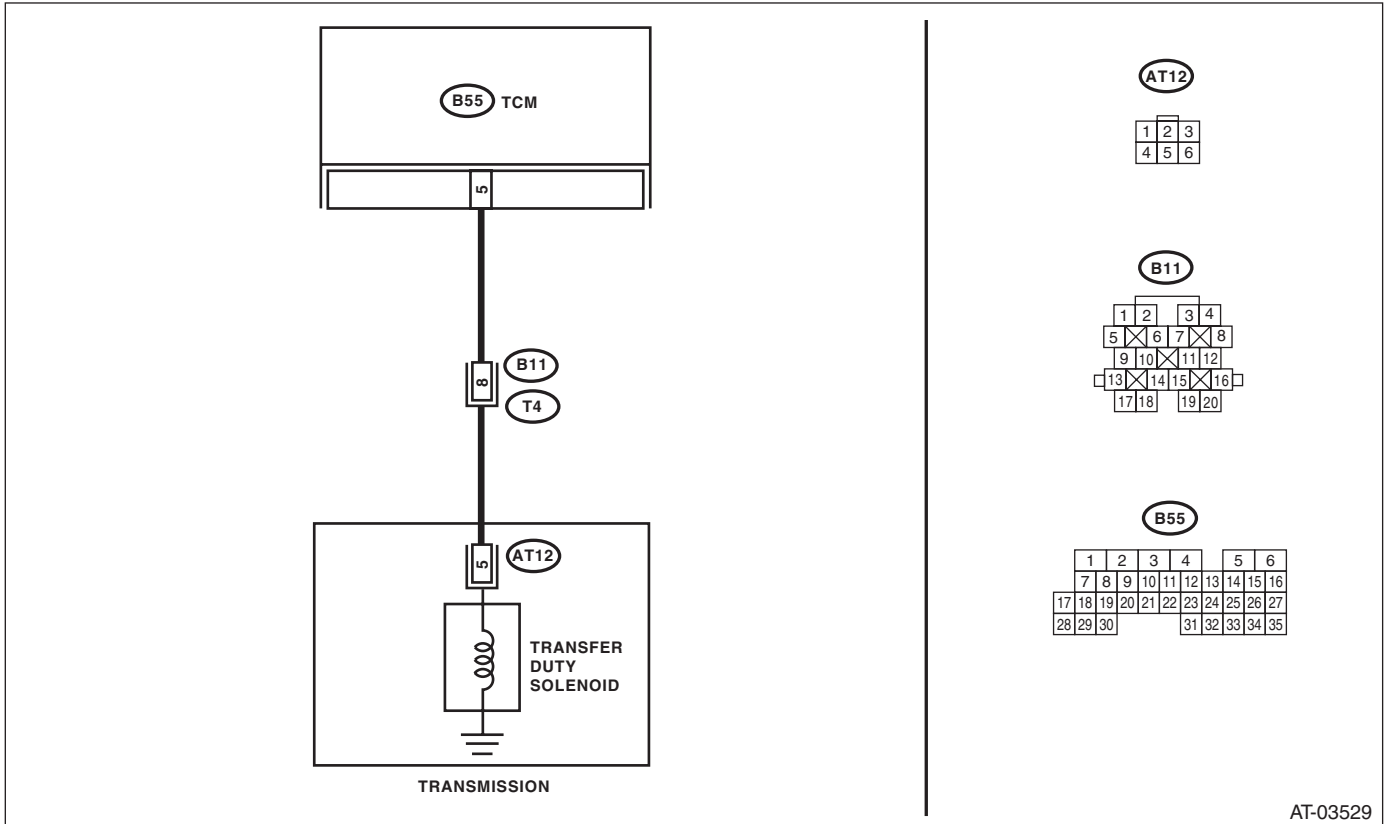
DIAGNOSIS:

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

TROUBLE SYMPTOM:

- Excessive braking in tight corners.
- Front wheel slips on the slippery road.

WIRING DIAGRAM:



AT-03529

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from TCM and transmission. 3) Measure the resistance of harness between TCM connector and transmission connector. Connector & terminal (B55) No. 5 — (B11) No. 8:	Is resistance less than 1 Ω?	Go to step 2.	Repair the open circuit of harness between TCM and transmission connector.
2 CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. Measure the resistance of harness connector between TCM and chassis ground. Connector & terminal (B55) No. 5 — Chassis ground:	Is the resistance 1 MΩ or more?	Go to step 3.	Repair the ground short circuit of harness between TCM and transmission connector.
3 CHECK TRANSFER DUTY SOLENOID. Measure the resistance between transmission connector and transmission terminals. Connector & terminal (T4) No. 8 — No. 20:	Is the resistance 2.0 — 6.0 Ω?	Go to step 5.	Go to step 4.
4 CHECK TRANSFER DUTY SOLENOID (IN TRANSMISSION). 1) Lift up the vehicle. NOTE: Raise all wheels off the floor. 2) Drain the automatic transmission fluid. CAUTION: Do not drain ATF until it cools down. 3) Remove the extension case, and disconnect the connector from transfer duty solenoid. 4) Measure the resistance between transfer duty solenoid connector and transmission ground. Connector & terminal (AT12) No. 5 — Transmission ground:	Is the resistance 2.0 — 6.0 Ω?	Go to step 5.	Replace the control valve body. <Ref. to 4AT-55, Control Valve Body.>
5 CHECK HARNESS CONNECTOR BETWEEN TRANSFER DUTY SOLENOID AND TRANSMISSION. Measure the resistance of harness between transfer duty solenoid and transmission connector. Connector & terminal (T4) No. 8 — (AT12) No. 5:	Is resistance less than 1 Ω?	Go to step 6.	Repair the open circuit of harness between transfer duty solenoid and transmission connector.
6 CHECK HARNESS CONNECTOR BETWEEN TRANSFER DUTY SOLENOID AND TRANSMISSION. Measure the resistance of harness between transmission connector and transmission ground. Connector & terminal (T4) No. 8 — Transmission ground:	Is the resistance 1 MΩ or more?	Even if the ATF temperature warning light blinks, the circuit is in normal condition at this time. A temporary poor contact of connector or harness may be the cause. Repair the harness or poor contact in the transfer duty solenoid and transmission.	Repair short circuit of harness between the transfer duty solenoid and transmission connector.

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

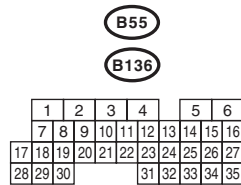
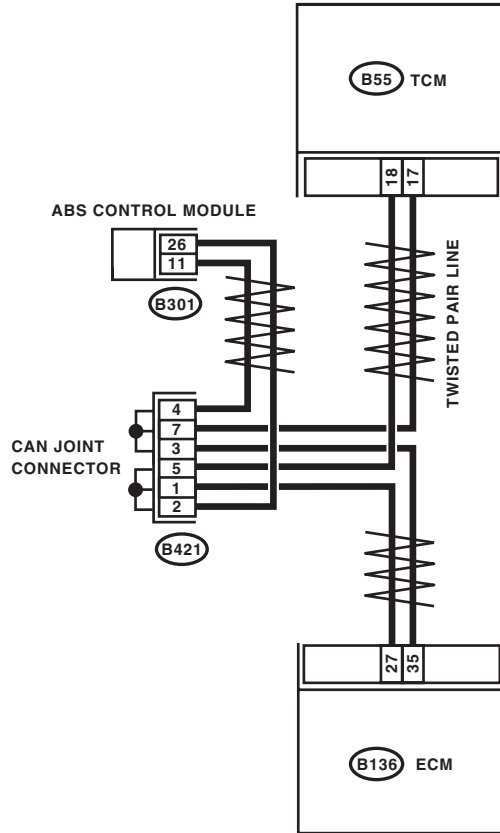
X: DTC P1718 CAN COMMUNICATION CIRCUIT

DIAGNOSIS:

Input signal circuit of TCM is open or shorted.

WIRING DIAGRAM:

- Non-turbo Model

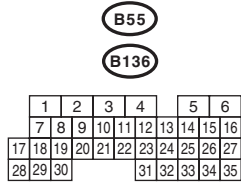
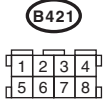
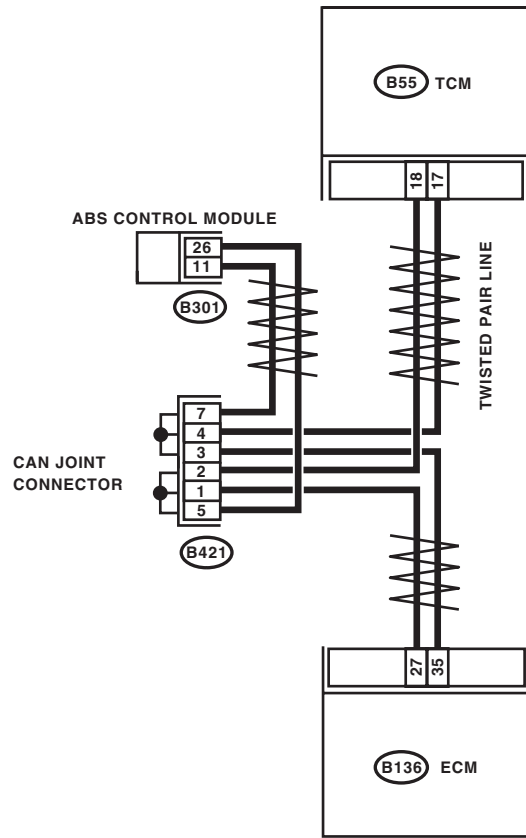


EN-04090

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

- Turbo model



AT-04091

Diagnostic Procedure with Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Step	Check	Yes	No
1 CHECK DIAGNOSTIC CODE. Check whether multiple DTCs appear under on-board diagnostics test mode.	Do multiple DTCs appear?	Go to other DTC.	Go to step 2.
2 CHECK HARNESS CONNECTORS BETWEEN TCM, ECM AND ABSCM. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from TCM, ECM and ABSCM. 3) Measure the resistance of harness between TCM, ECM and ABSCM connectors. <i>Connector & terminal</i> <i>(B55) No. 17 — (B136) No. 35:</i> <i>(B55) No. 17 — (B301) No. 11:</i>	Is resistance less than 1 Ω?	Go to step 3.	Repair open circuit of the harnesses between TCM, ECM and ABSCM, or the poor contact in the connectors.
3 CHECK HARNESS CONNECTORS BETWEEN TCM, ECM AND ABSCM. Measure the resistance of harness between TCM, ECM and ABSCM connectors. <i>Connector & terminal</i> <i>(B55) No. 18 — (B136) No. 27:</i> <i>(B55) No. 18 — (B301) No. 26:</i>	Is resistance less than 1 Ω?	Go to step 4.	Repair open circuit of the harnesses between TCM, ECM and ABSCM, or the poor contact in the connectors.
4 CHECK HARNESS CONNECTORS BETWEEN TCM, ECM AND ABSCM. Measure the resistance of the harness between TCM and chassis ground. <i>Connector & terminal</i> <i>(B55) No. 17 — Chassis ground:</i> <i>(B55) No. 18 — Chassis ground:</i>	Is the resistance 1 MΩ or more?	TCM, ECM or ABSCM may be defective. (Replace and check again.)	Repair the short circuit of harness between TCM, ECM and ABSCM.

Diagnostic Procedure without Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

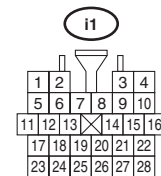
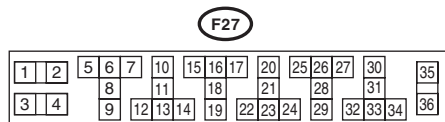
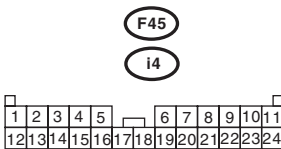
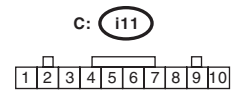
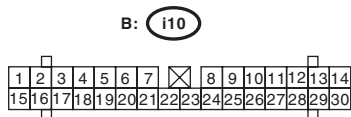
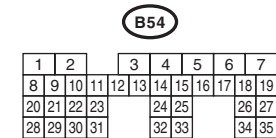
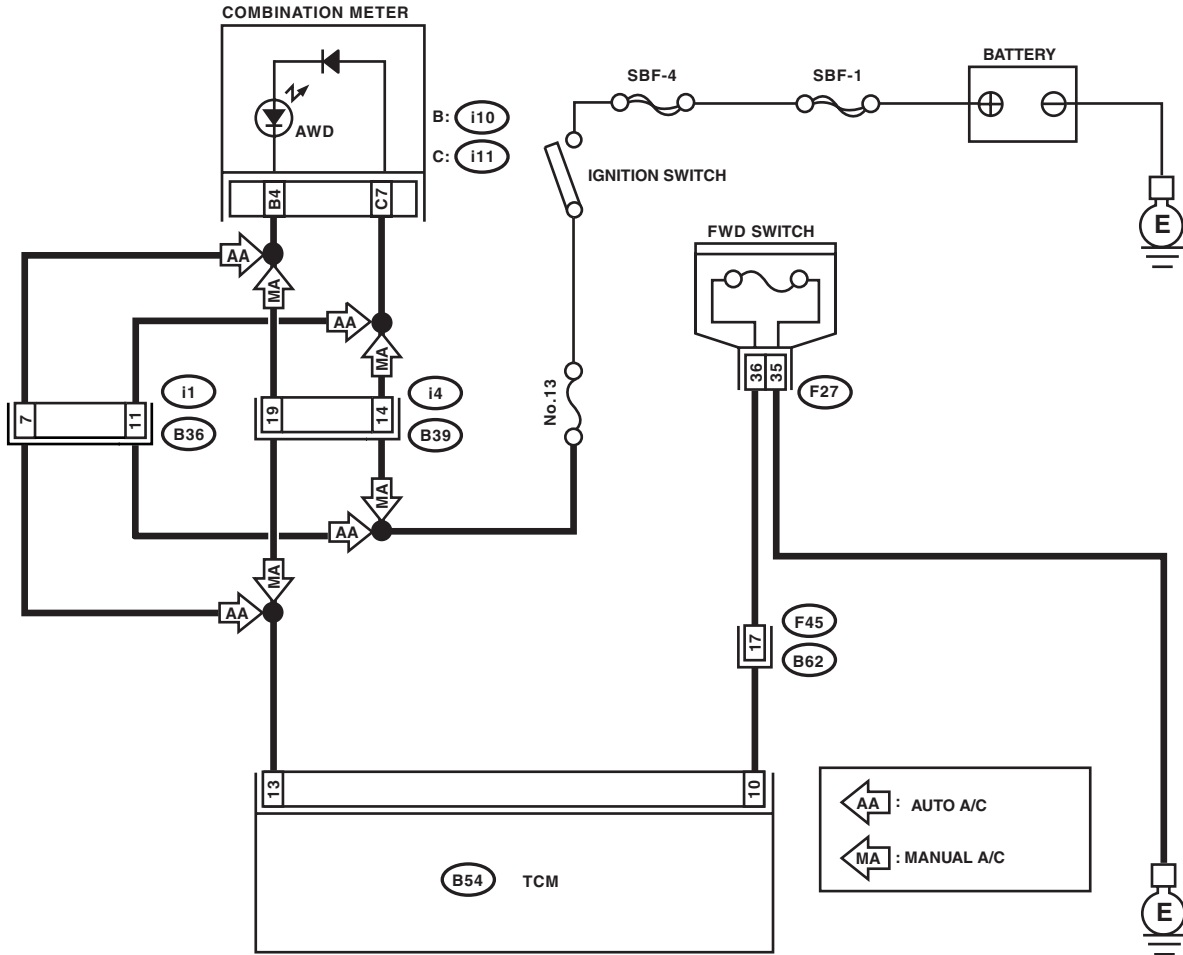
14. Diagnostic Procedure without Diagnostic Trouble Code (DTC)

A: CHECK FWD SWITCH

DIAGNOSIS:

- LED does not come on even if FWD switch is ON.
- FWD signal circuit is open or shorted.

WIRING DIAGRAM:



AT-03969

Diagnostic Procedure without Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

	Step	Check	Yes	No
1	CHECK SPARE FUSE.	Is the spare fuse OK?	Go to step 2.	Replace the fuse.
2	CHECK FWD SWITCH. Connect the Subaru Select Monitor to the data link connector.	When the fuse is inserted to FWD switch, does the LED illuminate?	Go to step 3.	Go to step 4.
3	CHECK COMBINATION METER.	Does the AWD warning light illuminate?	Go to step CHECK CRUISE CONTROL SWITCH. <Ref. to 4AT(D)(diag)-90, CHECK CRUISE CONTROL SWITCH, Diagnostic Procedure without Diagnostic Trouble Code (DTC).>	Go to step 9.
4	CHECK HARNESS CONNECTOR BETWEEN TCM AND FWD SWITCH. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from TCM. 3) Measure the resistance of harness between TCM and FWD switch connector. Connector & terminal (B54) No. 10 — (F27) No. 36:	Is resistance less than 1 Ω?	Go to step 5.	Repair the open circuit of harness between TCM and FWD switch connectors.
5	CHECK HARNESS CONNECTOR BETWEEN FWD SWITCH AND CHASSIS GROUND. Measure the resistance of harness between FWD switch and chassis ground. Connector & terminal (F27) No. 35 — Chassis ground:	Is resistance less than 1 Ω?	Go to step 6.	Repair the open circuit of harness between FWD switch connector and chassis ground.
6	CHECK HARNESS CONNECTOR BETWEEN TCM AND FWD SWITCH. Measure the resistance of harness connector between TCM and body to make sure that circuit does not short. Connector & terminal (B54) No. 10 — Chassis ground:	Is the resistance 1 MΩ or more?	Go to step 7.	Repair the short circuit of harness between TCM and FWD switch connectors.
7	CHECK INPUT SIGNAL FOR TCM. 1) Turn the ignition switch to OFF. 2) Connect the connector to TCM. 3) Turn the ignition switch to ON. 4) Measure the signal voltage for TCM while installing the fuse to FWD switch connector. Connector & terminal (B54) No. 10 (+) — Chassis ground (-):	Is the voltage less than 1 V?	Go to step 8.	Go to step 12.
8	CHECK INPUT SIGNAL FOR TCM. Measure the signal voltage for TCM with the fuse removed from FWD switch connector. Connector & terminal (B54) No. 10 (+) — Chassis ground (-):	Is the voltage 6 — 9.1 V?	Go to step 9.	Replace the TCM. <Ref. to 4AT-60, Transmission Control Module (TCM).>
9	CHECK HARNESS CONNECTOR BETWEEN TCM AND COMBINATION METER. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from TCM and combination meter. 3) Measure the resistance of harness between TCM and line end check connector. Connector & terminal (B54) No. 13 — (i10) No. 4:	Is resistance less than 1 Ω?	Go to step 10.	Repair the open circuit of harness between TCM and combination meter, and the poor contact of the connector.

Diagnostic Procedure without Diagnostic Trouble Code (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Step	Check	Yes	No
10 CHECK HARNESS CONNECTOR BETWEEN TCM AND COMBINATION METER. Measure the resistance of the harness connector between TCM and chassis ground to make sure that circuit is not shorted. <i>Connector & terminal</i> <i>(B54) No. 13 — Chassis ground:</i>	Is the resistance 1 MΩ or more?	Go to step 11.	Repair short circuit of harness between TCM and combination meter connector.
11 CHECK OUTPUT SIGNAL OF TCM. 1) Turn the ignition switch to OFF. 2) Connect the connector to TCM and combination meter. 3) Turn the ignition switch to ON. 4) Measure the signal voltage for TCM while installing the fuse to FWD switch connector. <i>Connector & terminal</i> <i>(B54) No. 13 (+) — Chassis ground (-):</i>	Is the voltage less than 1 V?	Go to step 12.	Go to step 13.
12 CHECK OUTPUT SIGNAL OF TCM. Measure the signal voltage for TCM with the fuse removed from FWD switch connector. <i>Connector & terminal</i> <i>(B54) No. 13 (+) — Chassis ground (-):</i>	Is the voltage 6 — 9.1 V?	Go to step 13.	Replace the TCM. <Ref. to 4AT-60, Transmission Control Module (TCM).>
13 CHECK FUSE.	Is the fuse OK?	Repair the poor contact.	Replace the fuse.

B: CHECK CRUISE CONTROL SWITCH

Step	Check	Yes	No
1 CHECK CRUISE CONTROL SWITCH.	When the cruise control is set, does LED illuminate?	Go to General Diagnostic Table. <Ref. to 4AT(D)(diag)-91, INSPECTION, General Diagnostic Table.>	Check the cruise control switch. <Ref. to CC(ETC)(diag)-19, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>

General Diagnostic Table

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

15. General Diagnostic Table

A: INSPECTION

Symptom	Problem parts
Starter does not operate when select lever is in "P" or "N" range. Starter rotates when select lever is in "R", "D", "3" or "2" range.	<ul style="list-style-type: none"> • Inhibitor switch • Select cable • Select lever • Starter motor and harness
Abnormal noise when select lever is in "P" or "N".	<ul style="list-style-type: none"> • Strainer • Transfer duty solenoid • Oil pump • Drive plate • ATF level too high or too low
Hissing noise occurs during standing start.	<ul style="list-style-type: none"> • Strainer • ATF level too high or too low
Noise occurs while driving in "D1".	<ul style="list-style-type: none"> • Final gear • Planetary gear • Reduction gear • Differential gear oil level too high or too low
Noise occurs while driving in "D2".	<ul style="list-style-type: none"> • Final gear • Low & reverse brake • Reduction gear • Differential gear oil level too high or too low
Noise occurs while driving in "D3".	<ul style="list-style-type: none"> • Final gear • Low & reverse brake • Planetary gear • Reduction gear • Differential gear oil level too high or too low
Noise occurs while driving in "D4".	<ul style="list-style-type: none"> • Control valve • Lock-up damper • Engine performance • Input shaft
Engine stalls while shifting from "1" range to another.	<ul style="list-style-type: none"> • Select cable • Inhibitor switch • TCM • Low clutch
Vehicle moves when select lever is in "N" range.	<ul style="list-style-type: none"> • Accelerator pedal position sensor • ATF temperature sensor • Line pressure linear solenoid • Low clutch duty solenoid • Low clutch • TCM • Harness • Control valve • ATF deterioration
Shock occurs when the select lever is moved from "N" to "D" range.	<ul style="list-style-type: none"> • Control valve • Low clutch • Line pressure linear solenoid • Seal ring • Front gasket of transmission case
Excessive time lag occurs when the select lever is moved from "N" to "D" range.	<ul style="list-style-type: none"> • Accelerator pedal position sensor • ATF temperature sensor • Line pressure linear solenoid • TCM • Harness • Control valve • ATF deterioration
Shock occurs when the select lever is moved from "N" to "R" range.	<ul style="list-style-type: none"> • Accelerator pedal position sensor • ATF temperature sensor • Line pressure linear solenoid • TCM • Harness • Control valve • ATF deterioration

General Diagnostic Table

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Symptom	Problem parts
Excessive time lag occurs when the select lever is moved from "N" to "R" range.	<ul style="list-style-type: none"> • Control valve • Low & reverse clutch • Reverse clutch • Line pressure linear solenoid • Seal ring • Front gasket of transmission case
Vehicle does not start in any shift range. (Engine stalls)	<ul style="list-style-type: none"> • Parking brake mechanism • Planetary gear
Vehicle does not start in any shift range. (Engine operates)	<ul style="list-style-type: none"> • Strainer • Line pressure linear solenoid • Control valve • Drive pinion • Hypoid gear • Axle shaft • Differential gear • Oil pump • Input shaft • Output shaft • Planetary gear • Drive plate • ATF level is too low • Front gasket of transmission case
Vehicle does not start in "R" range only. (Engine operates)	<ul style="list-style-type: none"> • Select cable • Select lever • Line pressure linear solenoid • Control valve • Low & reverse clutch • Reverse clutch
Vehicle does not start in "R" range only. (Engine stalls)	<ul style="list-style-type: none"> • Low clutch • 2-4 brake • Planetary gear • Parking brake mechanism
Vehicle does not start in only when in the "D", "3" range. (Engine operates)	<ul style="list-style-type: none"> • Low clutch • One-way clutch
Vehicle does not start in only in the "D", "3" or "2" range. (Engine operates)	<ul style="list-style-type: none"> • Low clutch
Vehicle does not start in only in the "D", "3" or "2" range. (Engine stalls)	<ul style="list-style-type: none"> • Reverse clutch
Vehicle does not start in "R" range only. (Engine operates)	<ul style="list-style-type: none"> • Control valve
Acceleration during standing start is poor. (High rpm stall)	<ul style="list-style-type: none"> • Control valve • Low clutch • Reverse clutch • ATF level is too low • ATF deterioration • Front gasket of transmission case • Differential gear oil level too high or too low
Acceleration during standing start is poor. (Low rpm stall)	<ul style="list-style-type: none"> • Oil pump • Torque converter one-way clutch • Engine performance
Acceleration is poor when select lever is in the "D", "3" or "2" range. (Normal rpm stall)	<ul style="list-style-type: none"> • TCM • Control valve • High clutch • 2-4 brake • Planetary gear
Acceleration is poor when select lever is in "R" range. (Normal rpm stall)	<ul style="list-style-type: none"> • Control valve • High clutch • 2-4 brake • Planetary gear

General Diagnostic Table

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Symptom	Problem parts
No shift occurs from 1st to 2nd gear.	<ul style="list-style-type: none"> • TCM • Rear vehicle speed sensor • Front vehicle speed sensor • Accelerator pedal position sensor • Control valve • 2-4 brake
No shift occurs from 2nd to 3rd gear.	<ul style="list-style-type: none"> • TCM • Control valve • High clutch
No shift occurs from 3rd to 4th gear.	<ul style="list-style-type: none"> • TCM • ATF temperature sensor • Control valve • 2-4 brake
Engine brake does not come into effect when the select lever is shifted to "3" range.	<ul style="list-style-type: none"> • Inhibitor switch • TCM • Accelerator pedal position sensor • Control valve
Engine brake is not effected when the select lever is in "3" or "2" range.	<ul style="list-style-type: none"> • Control valve
Engine brake does not come into effect when the select lever is shifted to "1" range.	<ul style="list-style-type: none"> • Control valve • Low & reverse brake
Shift characteristics are erroneous.	<ul style="list-style-type: none"> • Inhibitor switch • TCM • Front vehicle speed sensor • Rear vehicle speed sensor • Accelerator pedal position sensor • Control valve • Ground
No lock-up occurs.	<ul style="list-style-type: none"> • TCM • Accelerator pedal position sensor • ATF temperature sensor • Control valve • Lock-up facing • Engine speed signal
Parking brake does not function.	<ul style="list-style-type: none"> • Select cable
Shift lever cannot be moved or is hard to move from "P" range.	<ul style="list-style-type: none"> • Select lever • Parking mechanism
ATF spurts out.	<ul style="list-style-type: none"> • ATF level too high
Differential oil spurts out.	<ul style="list-style-type: none"> • Differential gear oil level too high
Differential oil level changes excessively.	<ul style="list-style-type: none"> • Seal pipe • Double oil seal
Odor is produced from ATF supply pipe.	<ul style="list-style-type: none"> • High clutch • 2-4 brake • Low & reverse clutch • Reverse clutch • Lock-up facing • ATF deterioration
Shock occurs when shifting from 1st to 2nd gear.	<ul style="list-style-type: none"> • TCM • Torque converter turbine speed sensor • Accelerator pedal position sensor • 2-4 brake duty solenoid • ATF temperature sensor • Line pressure linear solenoid • Control valve • 2-4 brake • ATF deterioration • Engine performance • Low & reverse duty solenoid

General Diagnostic Table

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Symptom	Problem parts
Slippage occurs when shifting from 1st to 2nd gear.	<ul style="list-style-type: none"> • TCM • Accelerator pedal position sensor • 2-4 brake duty solenoid • ATF temperature sensor • Line pressure linear solenoid • Control valve • 2-4 brake
Shock occurs when shifting from 2nd to 3rd gear.	<ul style="list-style-type: none"> • TCM • Torque converter turbine speed sensor • Accelerator pedal position sensor • 2-4 brake duty solenoid • ATF temperature sensor • Line pressure linear solenoid • Low & reverse duty solenoid • Control valve • High clutch • 2-4 brake • ATF deterioration • Engine performance • High clutch duty solenoid
Slippage occurs when shifting from 2nd to 3rd gear.	<ul style="list-style-type: none"> • TCM • Accelerator pedal position sensor • 2-4 brake duty solenoid • ATF temperature sensor • Line pressure linear solenoid • Control valve • High clutch • 2-4 brake • Low & reverse duty solenoid
Shock occurs when shifting from 3rd to 4th gear.	<ul style="list-style-type: none"> • TCM • Torque converter turbine speed sensor • Accelerator pedal position sensor • 2-4 brake duty solenoid • ATF temperature sensor • Line pressure linear solenoid • Control valve • Low clutch duty solenoid • 2-4 brake • ATF deterioration • Engine performance
Slippage occurs when shifting from 3rd to 4th gear.	<ul style="list-style-type: none"> • TCM • Accelerator pedal position sensor • 2-4 brake duty solenoid • ATF temperature sensor • Line pressure linear solenoid • Control valve • 2-4 brake
Shock occurs when the select lever is moved from "3" to "2" range.	<ul style="list-style-type: none"> • TCM • Torque converter turbine speed sensor • Accelerator pedal position sensor • ATF temperature sensor • Line pressure linear solenoid • Control valve • 2-4 brake duty solenoid • 2-4 brake • ATF deterioration • High clutch duty solenoid

General Diagnostic Table

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Symptom	Problem parts
Shock occurs when the select lever is moved from "D" to "1" range.	<ul style="list-style-type: none"> • TCM • Torque converter turbine speed sensor • Accelerator pedal position sensor • ATF temperature sensor • Line pressure linear solenoid • Control valve • ATF deterioration • Low & reverse brake duty solenoid • Low & reverse clutch
Shock occurs when the select lever is moved from "2" to "1" range.	<ul style="list-style-type: none"> • TCM • Torque converter turbine speed sensor • Accelerator pedal position sensor • ATF temperature sensor • Line pressure linear solenoid • Control valve • Low & reverse clutch • ATF deterioration • 2-4 brake duty solenoid • Low & reverse brake duty solenoid
Shock occurs when accelerator pedal is released from medium speed.	<ul style="list-style-type: none"> • TCM • Accelerator pedal position sensor • ATF temperature sensor • Line pressure linear solenoid • Control valve • Lock-up damper • Engine performance
Vibration occurs during straight-forward operation.	<ul style="list-style-type: none"> • TCM • Lock-up duty solenoid • Lock-up facing • Lock-up damper
Vibration occurs during turns. (excessive braking phenomenon in tight corners)	<ul style="list-style-type: none"> • TCM • Front vehicle speed sensor • Rear vehicle speed sensor • Accelerator pedal position sensor • ATF temperature sensor • Transfer clutch • Transfer valve • Transfer duty solenoid • ATF deterioration • Harness
Front wheel slippage occurs during standing starts.	<ul style="list-style-type: none"> • TCM • Front vehicle speed sensor • Accelerator pedal position sensor • ATF temperature sensor • Transfer clutch • Control valve • Transfer pipe • Transfer duty solenoid
It is not set in FWD mode.	<ul style="list-style-type: none"> • TCM • Transfer clutch • Control valve • Transfer duty solenoid • FWD fuse
Select lever is hard to move.	<ul style="list-style-type: none"> • Select cable • Select lever • Detent spring • Manual plate
Select lever is excessively hard to move. (Unreasonable resistance)	<ul style="list-style-type: none"> • Detent spring • Manual plate

General Diagnostic Table

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Symptom	Problem parts
Select lever slips out of selected shift position during acceleration or while driving on rough terrain.	<ul style="list-style-type: none">• Select cable• Select lever• Detent spring• Manual plate