AUTOMATIC TRANSMISSION (DIAGNOSTICS)

4AT(D)

1. Basic Diagnostic Procedure

A: PROCEDURE

NOTE:
This section is specified for H4DOTC engine model.

Step		Check	Yes	No
1	**CHECK PRE-INSPECTION.** 1) Ask the customer when and how trouble occurred using interview checklist. <Ref. to 4AT(D)-4, Check List for Interview.> 2) Before performing the diagnosis, inspect following items which might influence the AT problems. • General inspection <Ref. to 4AT(D)-5, INSPECTION.> • Oil leak • Check each harness connector to ensure it is connected securely. • Visually check harness for any damage. • Stall speed test <Ref. to 4AT-34, Stall Test.> • Line pressure test <Ref. to 4AT-36, Line Pressure Test.> • Transfer clutch pressure test <Ref. to 4AT-38, Transfer Clutch Pressure Test.> • Time lag test <Ref. to 4AT-35, Time Lag Test.> • Road test <Ref. to 4AT-33, Road Test.> • Inhibitor switch <Ref. to 4AT-51, Inhibitor Switch.>	Is the unit that might influence AT problem normal?	Go to step **2.**	Repair or replace each item.
2	**CHECK AT OIL TEMP WARNING LIGHT.** Turn the ignition switch to ON.	Does the AT OIL TEMP warning light turn on?	Go to step **4.**	Go to step **3.**
3	**CHECK AT OIL TEMP WARNING LIGHT.** 1) Turn the ignition switch to OFF. 2) Repair the AT OIL TEMP warning light or power supply and ground line circuit. <Ref. to 4AT(D)-24, Diagnostic Procedure for “AT OIL TEMP” Warning Light.> 3) Turn the ignition switch to ON.	Does the AT OIL TEMP warning light blink?	Go to step **4.**	Go to step **5.**
4	**READ OF DTC.** Calling up the DTC. NOTE: If the communication function of Subaru Select Monitor cannot be executed normally, check the communication circuit. <Ref. to 4AT(D)-30, COMMUNICATION FOR INITIALIZING IMPOSSIBLE.>	Is the DTC displayed?	Go to step **6.** NOTE: Record all DTC.	Go to step **5.**
5	**PERFORM THE GENERAL DIAGNOSTICS.** 1) Inspect using “Diagnostics Procedure without Diagnostic Trouble Code (DTC)”.<Ref. to 4AT(D)-116, Diagnostic Procedure without Diagnostic Trouble Code (DTC).> 2) Inspect using “Symptom Related Diagnostic”. <Ref. to 4AT(D)-124, Symptom and Related Malfunction.> 3) Perform the inspection mode. <Ref. to 4AT(D)-18, Inspection Mode.> 4) Calling up the DTC.	Is the DTC displayed?	Go to step **6.**	Complete the diagnosis.

Step		Check	Yes	No
6	**PERFORM THE DIAGNOSIS.** 1) Inspect using “Diagnostics Procedure with DTC”. <Ref. to 4AT(D)-33, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> NOTE: For DTC table, refer to “List of DTC”. <Ref. to 4AT(D)-21, List of Diagnostic Trouble Code (DTC).> 2) Repair the trouble cause. 3) Perform the clear memory mode. 4) Perform the inspection mode. <Ref. to 4AT(D)-18, Inspection Mode.> 5) Calling up the DTC.	Is the DTC displayed?	Inspect using “Diagnostics procedure with Subaru Select Monitor”. <Ref. to 4AT(D)-33, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>	Complete the diagnosis.

2. Check List for Interview

A: CHECK

Check the following items when problem has occurred.

NOTE:
Use copies of this page for interviewing customers.

Customer's name			
Date of purchase			
Date of repair			
Trans. model	TRANSMISSION	VIN	
Odometer reading	km/h or miles		
Frequency	❑ Continuous ❑ Intermittent (times a day)		
Weather	❑ Fine ❑ Cloudy ❑ Rainy ❑ Snowy ❑ Various/Others ( )		
Place	❑ High ❑ Suburbs ❑ Inner city ❑ Uphill ❑ Rough road ❑ Others ( )		
Outdoor temperature	❑ Hot ❑ Warm ❑ Cool ❑ Cold		
Vehicle speed	km/h (MPH)		
AT diagnostic indicator light (AT OIL TEMP warning light)	❑ Continuously blinking	❑ Not blinking	
Select lever position	❑ P ❑ R ❑ N ❑ D ❑ 3 ❑ 2 ❑ 1 ❑ SPORT shift mode		
Driving condition	❑ Not affected ❑ At racing ❑ While decelerating	❑ At starting ❑ While accelerating ❑ While turning (❑ RH/❑ LH)	❑ While idling ❑ While cruising
Symptoms	❑ No up-shift		
	❑ No down-shift		
	❑ No kick down		
	❑ Vehicle does not move (❑ Any position ❑ Particular position)		
	❑ Lock-up malfunction		
	❑ Noise or vibration		
	❑ Shift shock or slip		
	❑ Select lever does not move		
	❑ Others ( )		

3. General Description

A: CAUTION

• Supplemental Restraint System "Airbag"

The airbag system wiring harness is routed near the TCM.

CAUTION:

• All airbag system wiring harness and connectors are colored yellow. Do not use an electrical test equipment on these circuit.

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

• Measurement

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

B: INSPECTION

1. BATTERY

Measure the battery voltage and specific gravity of electrolyte.

Standard voltage: 12 V or more

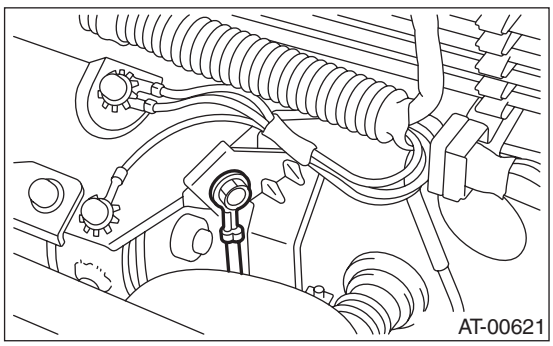
Specific gravity: Above 1.260

2. TRANSMISSION GROUND

Make sure that the ground terminal bolt is tightened securely.

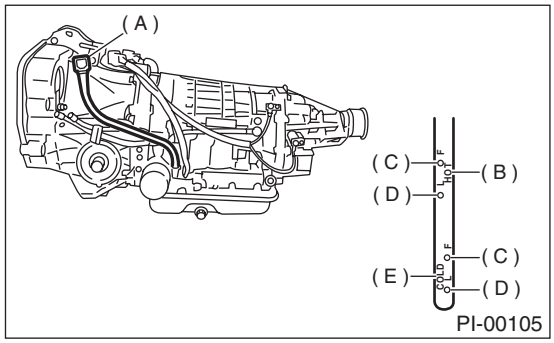
• Chassis side

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



3. ATF LEVEL

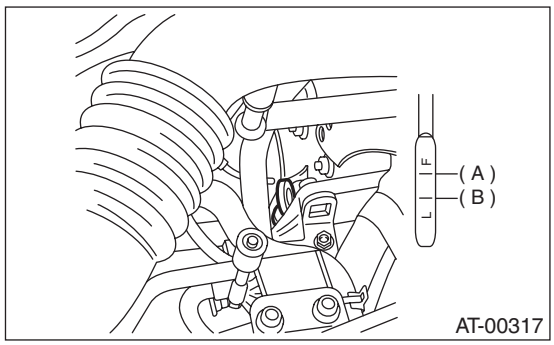
Make sure that ATF level is in the specification. <Ref. to 4AT-31, INSPECTION, Automatic Transmission Fluid.>



(A) Level gauge
(B) "HOT" side
(C) Upper level
(D) Lower level
(E) "COLD" side

4. FRONT DIFFERENTIAL OIL LEVEL

Make sure that front differential oil level is in the specification. <Ref. to 4AT-32, INSPECTION, Differential Gear Oil.>

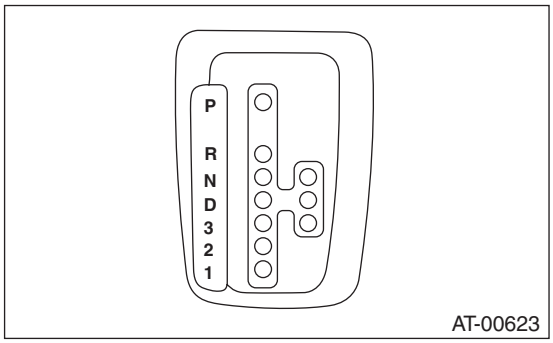


(A) Upper level
(B) Lower level

5. OPERATION OF SELECT LEVER

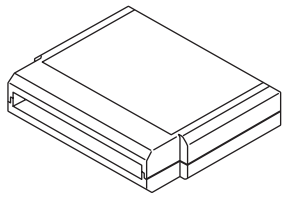
Make sure there is no abnormal noise, dragging or contact pattern in each select lever range.

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



C: PREPARATION TOOL

1. SPECIAL TOOLS

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 ST18482AA010	18482AA010	CARTRIDGE	Troubleshooting for electrical systems.
 ST22771AA030	22771AA030	SUBARU SELECT MONITOR KIT	Troubleshooting for electrical systems.

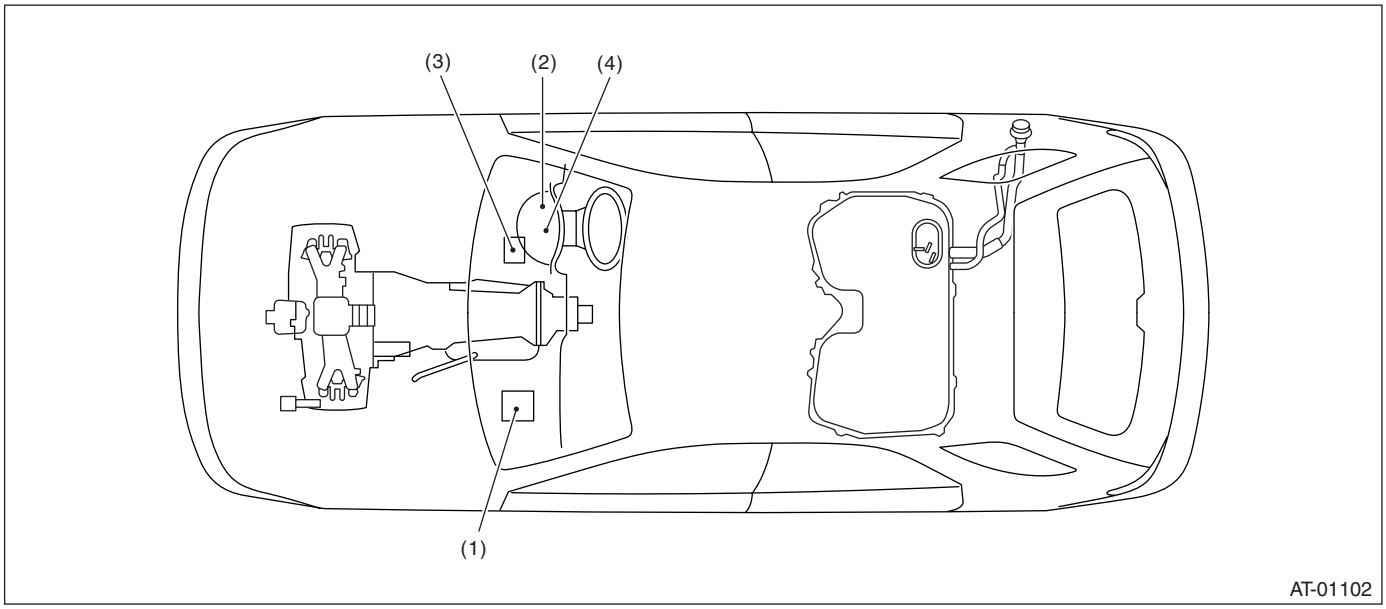
2. GENERAL PURPOSE TOOLS

TOOL NAME	REMARKS
Circuit Tester	Used for measuring resistance, voltage and ampere.
Oscilloscope	Used for measuring sensor.

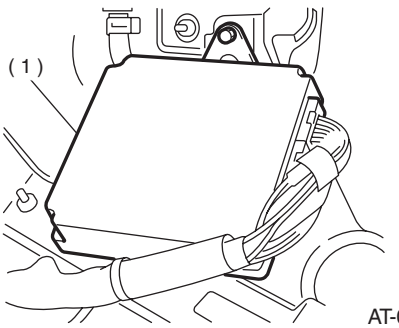
4. Electrical Components Location

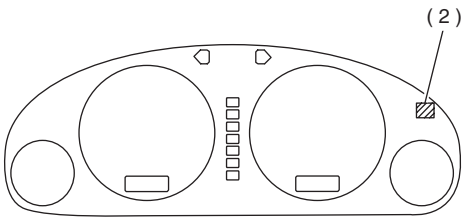
A: LOCATION

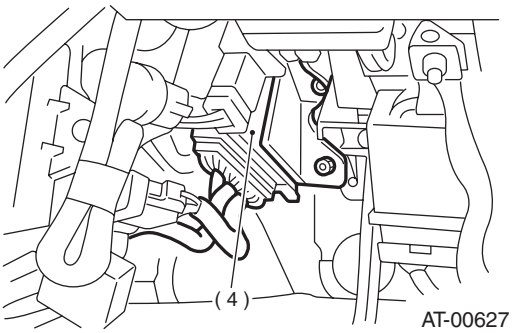
1. CONTROL MODULE

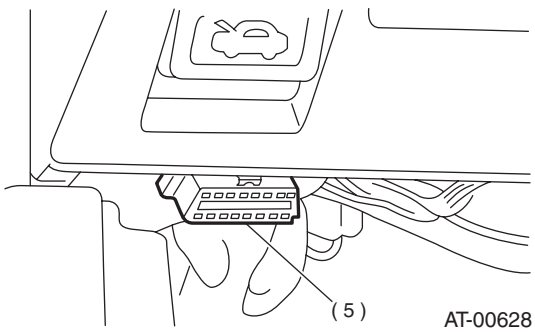


(1) Engine control module (ECM)
(2) AT OIL TEMP warning light (AT diagnostic indicator light)
(3) Transmission control module (TCM)
(4) Data link connector

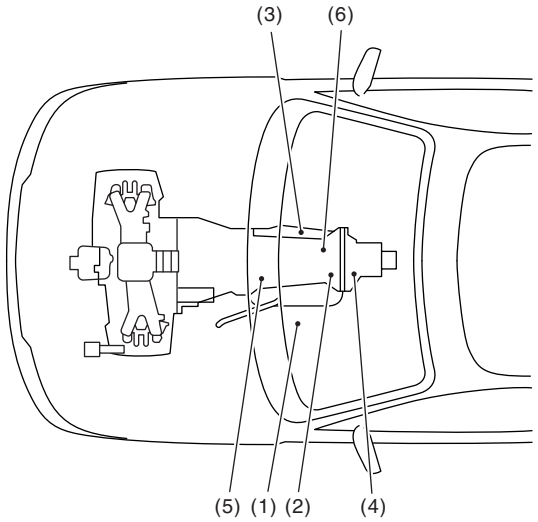






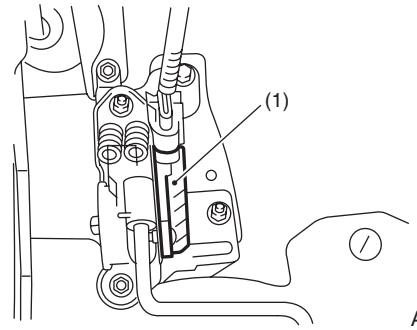


2. SENSOR

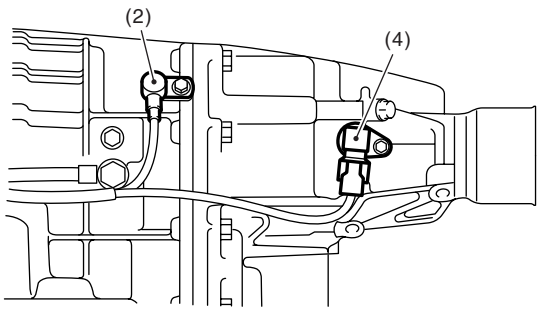


AT-01614

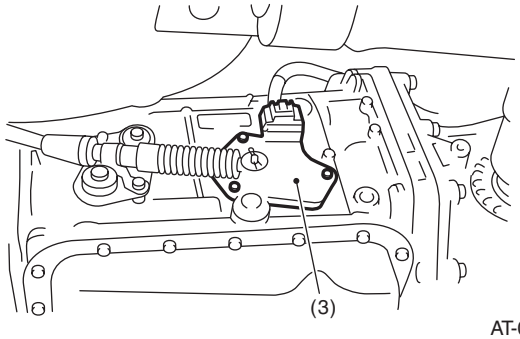
(1) Accelerator pedal position sensor
(2) Front vehicle speed sensor
(3) Inhibitor switch
(4) Rear vehicle speed sensor
(5) Torque converter turbine speed sensor
(6) ATF temperature sensor



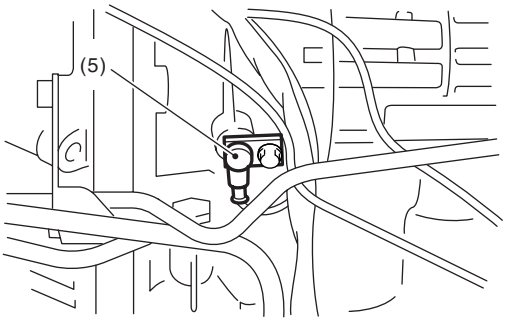
AT-00375



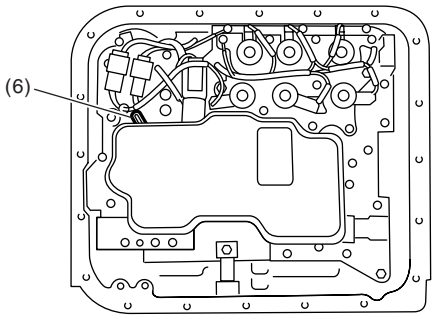
AT-01106



AT-00330

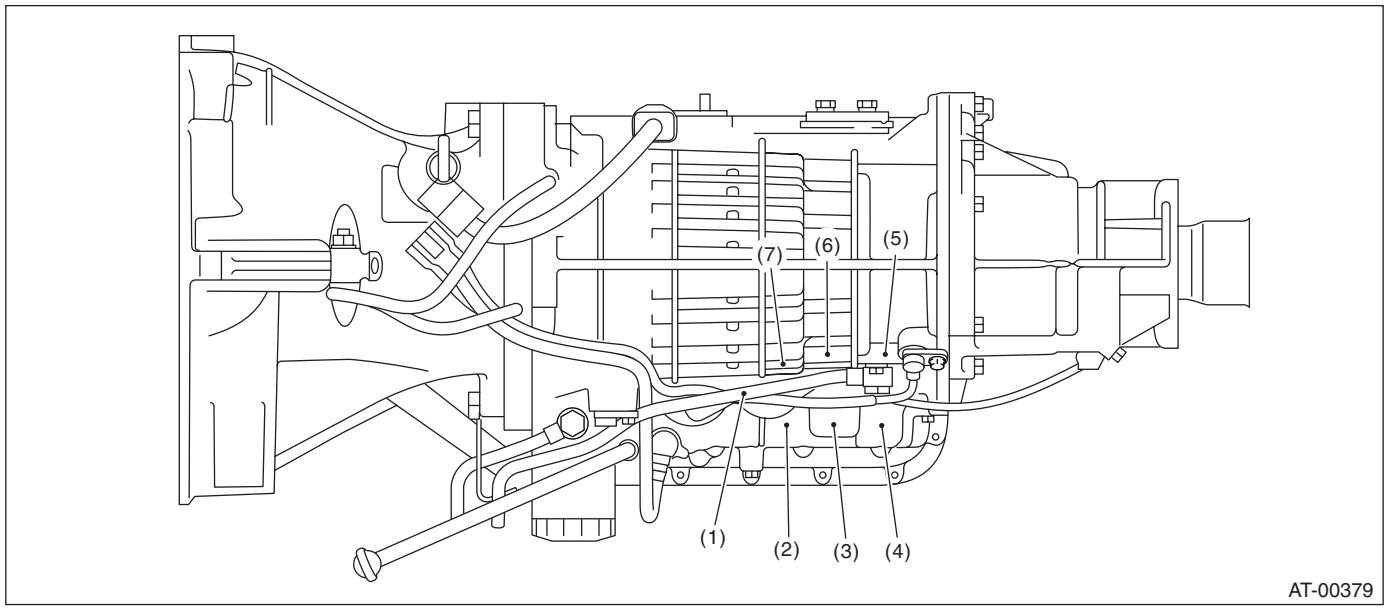


AT-00331

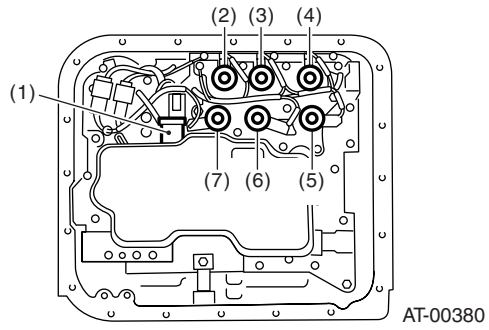


AT-00378

3. SOLENOID

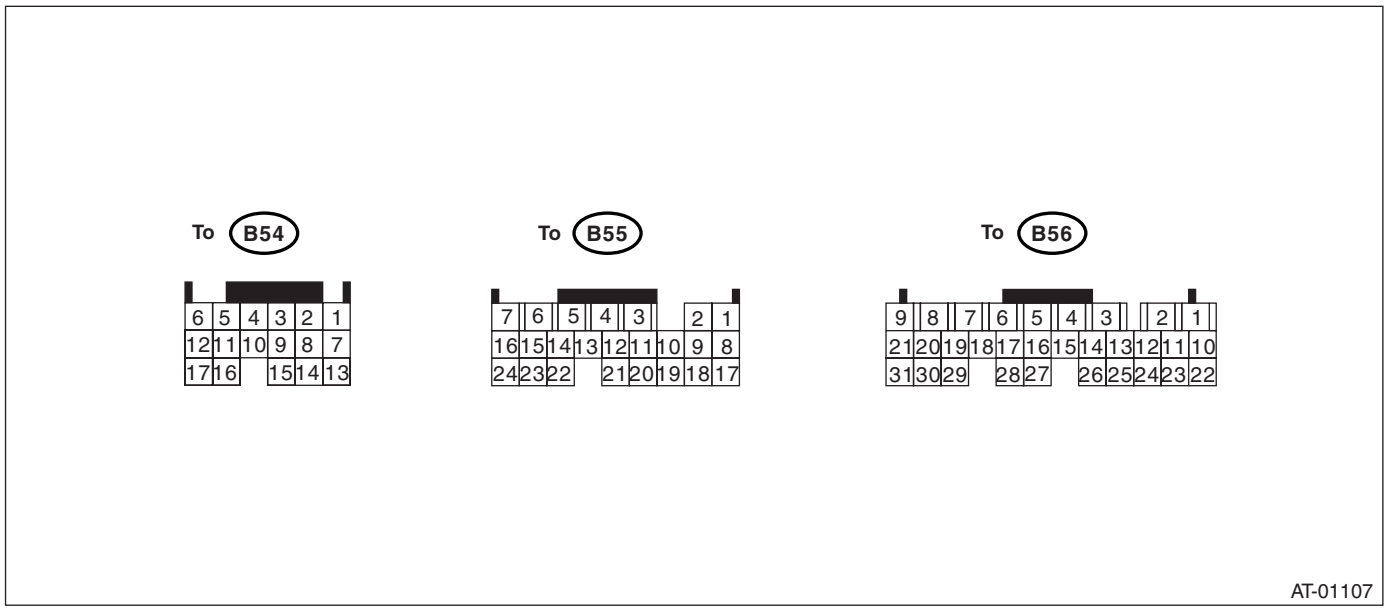


(1) Line pressure linear solenoid
(2) High clutch duty solenoid
(3) 2-4 brake duty solenoid
(4) Low & reverse duty solenoid
(5) Low clutch duty solenoid
(6) Transfer duty solenoid
(7) Lock-up duty solenoid



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

A: ELECTRICAL SPECIFICATION



Check with ignition switch ON.						
Content		Connector No.	Terminal No.	Measuring conditions	Voltage (V)	Resistance to body (Ω)
Back-up power supply		B56	27	Ignition switch OFF	10 — 13	—
			28			
			29			
ACC power supply		B56	16	Ignition switch ACC	10 — 13	—
Ignition power supply		B56	21	Ignition switch ON (with engine OFF)	10 — 13	—
		B56	31			
Inhibitor switch	"P" range switch	B55	5	Select lever in "P" range	Less than 1	—
				Select lever in any other than "P" range (except "N" range)	More than 8	
	"N" range switch	B55	22	Select lever in "N" range	Less than 1	—
				Select lever in any other than "N" range	More than 8	
	"R" range switch	B55	14	Select lever in "R" range	Less than 1	—
				Select lever in any other than "R" range	More than 8	
	"D" range switch	B55	4	Select lever in "D" range	Less than 1	—
				Select lever in any other than "D" range	More than 8	
	"3" range switch	B54	16	Select lever in "3" range	Less than 1	—
				Select lever in any other than "3" range	More than 8	
	"2" range switch	B54	4	Select lever in "2" range	Less than 1	—
				Select lever in any other than "2" range	More than 8	
	"1" range switch	B54	10	Select lever in "1" range	Less than 1	—
				Select lever in any other than "1" range	More than 8	
Brake switch		B55	20	Brake pedal depressed.	More than 10.5	—
				Brake pedal released.	Less than 1	

Check with ignition switch ON.					
Content	Connector No.	Terminal No.	Measuring conditions	Voltage (V)	Resistance to body (Ω)
Throttle position sensor	B55	19	Throttle fully closed.	More than 0.2	—
			Throttle fully open.	Less than 4.6	
Throttle position sensor power supply	B55	10	Ignition switch ON (with engine OFF)	Approx. 5	—
ATF temperature sensor	B55	21	ATF temperature 20°C (68°F)	3.5 — 4.3	2.3 k — 5.3 k
			ATF temperature 80°C (176°F)	1.0 — 2.2	300 — 800
Rear vehicle speed sensor	B55	24	Vehicle speed at least 20 km/h (12 MPH)	More than 2 (AC range)	—
Front vehicle speed sensor	B55	6	Vehicle stopped.	0	—
			Vehicle speed at least 20 km/h (12 MPH)	More than 1 (AC range)	
Torque converter turbine speed sensor	B55	7	Engine idling after warm-up. (“D” range)	0	—
			Engine idling after warm-up. (“N” range)	More than 1 (AC range)	
Vehicle speed output signal	B56	1	Vehicle speed at least 10 km/h (6 MPH)	Less than 1← →More than 4	—
Engine speed signal	B55	13	Ignition switch ON (with engine OFF)	Less than 1	—
			Ignition switch ON (with engine ON)	More than 5 (AC range)	
Line pressure linear solenoid	B56	20	Ignition switch ON (with engine OFF) Throttle fully closed after warm-up. (“R” range)	3.9 — 7.7	4.0 — 8.0
			Ignition switch ON (with engine OFF) Throttle fully open after warm-up. (“R” range)	1.1 — 4.6	
Lock-up duty solenoid	B56	5	When lock up occurs.	More than 10.5	2.0 — 4.5
			When lock up is released.	Less than 1	
Transfer duty solenoid	B56	4	“P” or “N” range	Less than 1	2.0 — 4.5
			Throttle fully open and with select lever in 1st gear.	More than 10.5	
2-4 brake duty solenoid	B56	6	“P” or “N” range	More than 10.5	2.0 — 4.5
			2nd or 4th gear	Less than 1	
High clutch duty solenoid	B56	8	3rd or 4th gear	Less than 1	2.0 — 4.5
			“P” or “N” range	More than 10.5	
Low clutch duty solenoid	B56	9	1st or 2nd gear	Less than 1	2.0 — 4.5
			“P” or “N” range	More than 10.5	
Low & reverse duty solenoid	B56	7	“P” or “N” range	More than 10.5	2.0 — 4.5
			“1” range	More than 5	
AT OIL TEMP warning light	B56	13	Light ON	Less than 1	—
			Light OFF	More than 9	
ABS signal	B54	12	ABS switch ON	Less than 1	—
			ABS switch OFF	6.5 — 15	
Front vehicle speed sensor ground	B55	15	—	0	Less than 1
Rear vehicle speed sensor ground	B55	23	—	0	Less than 1

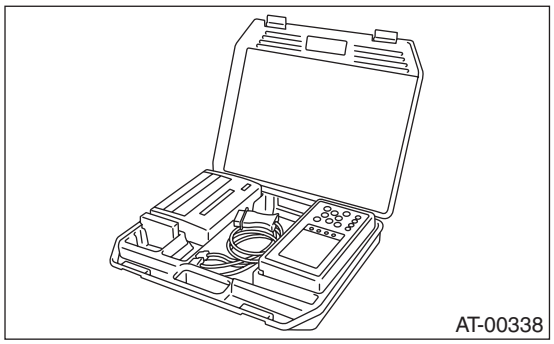
Check with ignition switch ON.					
Content	Connector No.	Terminal No.	Measuring conditions	Voltage (V)	Resistance to body (Ω)
Torque converter turbine speed sensor ground	B55	16	—	0	Less than 1
System ground line	B55	17	—	0	Less than 1
	B56	2			
	B56	3			
	B55	8			
Sensor ground line	B55	9	—	0	Less than 1
Range lock signal	B56	18	"D" range 0 km/h (0 mile)	More than 10.5	20 — 40
			"D" range 20 km/h (12 mile/h)	Less than 1	
Data link signal (Subaru Select Monitor)	B56	12	—	—	—
SPORT shift mode switch	B54	3	SPORT shift mode switch ON	Less than 1	—
			SPORT shift mode switch OFF	More than 8	
Shift up switch	B54	9	Shift up switch ON	Less than 1	—
			Shift up switch OFF	More than 8	
Shift down switch	B54	15	Shift down switch ON	Less than 1	—
			Shift down switch OFF	More than 8	
Buzzer	B56	24	ON	Less than 1	—
			OFF	More than 8	
SPORT shift indicator 4	B54	7	SPORT shift mode OFF	More than 4	—
			Shift down indicator ON	Less than 1	
SPORT shift indicator 3	B54	5	SPORT shift mode OFF	More than 4	—
			SPORT shift mode with 4th gear	Less than 1	
SPORT shift indicator 2	B54	17	SPORT shift mode OFF	More than 4	—
			SPORT shift mode with 2nd and 3rd gear	Less than 1	
SPORT shift indicator 1	B54	6	SPORT shift mode OFF	More than 4	—
			SPORT shift mode with 1st and 3rd gear	Less than 1	
CAN communication signal +	B55	3	Ignition switch ON	Pulse signal	—
CAN communication signal –	B55	12	Ignition switch ON	Pulse signal	

6. Subaru Select Monitor

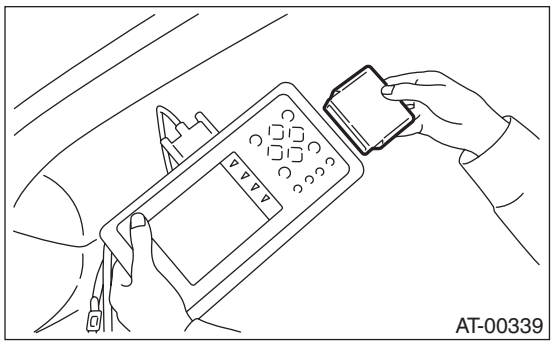
A: OPERATION

1. READ DIAGNOSTIC TROUBLE CODE

1) Prepare the Subaru Select Monitor kit.

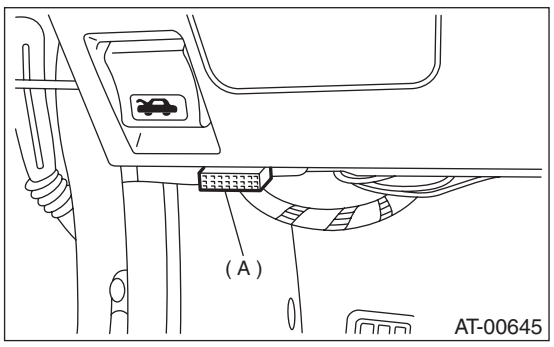


2) Connect the diagnosis cable to Subaru Select Monitor.
3) Insert the cartridge into Subaru Select Monitor. <Ref. to 4AT(D)-6, PREPARATION TOOL.>



4) Connect the Subaru Select Monitor to data link connector.

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

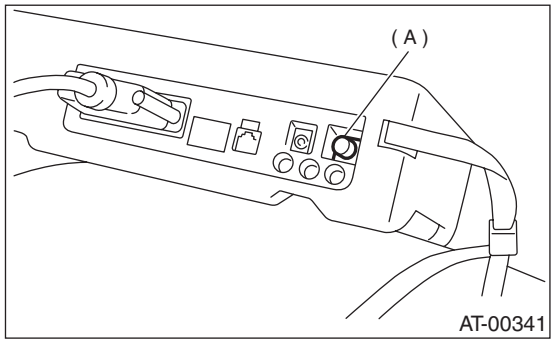


(A) Data link connector

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

NOTE:
Do not connect scan tools except for Subaru Select Monitor.

5) Turn the ignition switch to ON (engine OFF) and Subaru Select Monitor switch to ON.



(A) POWER switch

6) On the «Main Menu» display screen, select the {Each System Check} and press the [YES] key.
7) On the «System Selection Menu» display screen, select the {Transmission Control System} and press the [YES] key.
8) Press the [YES] key after the information of transmission type is displayed.
9) On the «Transmission Diagnosis» display screen, select the {Diagnostic Code(s) Display} and press the [YES] key.

NOTE:
• For detailed operation procedure, refer to the SUBARU SELECT MONITOR OPERATION MANUAL.
• For details concerning the DTC, refer to the DTC LIST. <Ref. to 4AT(D)-21, List of Diagnostic Trouble Code (DTC).>

2. READ CURRENT DATA

1) On the «Main Menu» display screen, select the {Each System Check} and press the [YES] key.
2) On the «System Selection Menu» display screen, select the {Transmission Control System} and press the [YES] key.
3) Press the [YES] key after the information of transmission type is displayed.
4) On the «Transmission Diagnosis» display screen, select the {Current Data Display & Save} and press the [YES] key.
5) On the «Transmission Diagnosis» display screen, select the {Data Display} and press the [YES] key.
6) Using the scroll key, move the display screen up or down until desired data is shown.
• A list of the support data is shown in the following table.

Contents	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
ATF temperature signal	ATF Temp.	°C or °F
Throttle position signal	Throttle Sensor Voltage	V
Gear position	Gear Position	—
Throttle opening angle	Throttle Opening Angle	%
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	%
Power supply for throttle position sensor	Throttle Power Supply	V
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 Switch	ON or OFF
ABS signal	ABS Signal	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	3rd Range Signal	ON or OFF
2nd range signal	2nd Range Signal	ON or OFF
1st range signal	1st Range Signal	ON or OFF
AT diagnosis indicator lamp	Diagnosis Lamp	ON or OFF
Shift up signal	Up Switch	ON or OFF
Shift down signal	Down Switch	ON or OFF
Tip signal	Tip Mode Switch	ON or OFF
Shift lock solenoid signal	Shift Lock solenoid	ON or OFF
ATF temperature warning light	ATF temperature light	ON or OFF

NOTE:
For detailed operation procedure, refer to the SUBARU SELECT MONITOR OPERATION MANUAL.

3. CLEAR MEMORY MODE

1) On the «Main Menu» display screen, select the {2. Each System Check}.
2) On the «System Selection Menu» display screen, select the {Transmission Control System}.
3) Select the {OK} after the information of transmission type is displayed.
4) On the «Transmission Diagnosis» display screen, select the {Clear Memory}.
5) When the “Done” is shown on display screen, turn the Subaru Select Monitor and ignition switch to OFF.

NOTE:
• For detailed operation procedure, refer to the Subaru Select Monitor OPERATION MANUAL.
• When {Clear Memory 2} is selected and executed, DTC and learned control memory is cleared. If Clear Memory 2 is performed, execute the learning control. <Ref. to 4AT(D)-16, FACILITATION OF LEARNING CONTROL, OPERATION, Subaru Select Monitor.>

4. FACILITATION OF LEARNING CONTROL

1) Shift the select lever to “P” range, and apply parking brake.
2) Lift-up the vehicle.
3) Connect the Subaru Select Monitor to data link connector, and then turn the ignition switch to ON.
4) Perform the {Clear Memory 2} using Subaru Select Monitor.<Ref. to 4AT(D)-16, CLEAR MEMORY MODE, OPERATION, Subaru Select Monitor.>
5) Using Subaru Select Monitor, check that the DTC is not output. <Ref. to 4AT(D)-14, READ DIAGNOSTIC TROUBLE CODE, OPERATION, Subaru Select Monitor.>
6) Warm-up the engine until the ATF temperature which is displayed on the Subaru Select Monitor is within 60 - 90 °C (140 - 194 °F). <Ref. to 4AT(D)-15, 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. to OFF.
9) Turn the ignition switch to OFF.
10) Depress the brake pedal fully until the facilitation of learning control is completed when the “Communication Failed!” is displayed on Subaru Select Monitor.
11) Turn the ignition switch to ON.
12) Read the current data to check that the Subaru Select Monitor is returned to normal operation. <Ref. to 4AT(D)-15, READ CURRENT DATA, OPERATION, Subaru Select Monitor.>
13) Shift the select lever to “P” range, and then wait for more than 3 seconds.
14) Shift the select lever to “R” range, and then wait for more than 3 seconds.
15) Shift the select lever to “N” range, and then wait for more than 3 seconds.
16) Shift the select lever to “D” range, and then wait for more than 3 seconds.
17) Shift the select lever to “N” range, and then wait for more than 3 seconds.
18) Slowly depress the accelerator pedal fully.
19) Slowly release the accelerator pedal fully.
20) Start the engine, and idle it.
21) Shift the select lever to “D” range.
22) Start the facilitation of learning control. At this time, the AT OIL TEMP warning light in combination meter blinks at 2 Hz. When the AT OIL TEMP warning light does not blink, turn the ignition switch to OFF and repeat the procedures from step 4). When the AT OIL TEMP warning light which blinking at 2 Hz changes to blink at 0.5 Hz, facilitation of learning control is completed.

NOTE:
When blinking of AT OIL TEMP warning light changes from 2 Hz to 4 Hz during facilitation of learning control, 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 the “P” range, and then complete the facilitation of learning control.

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)-14, OPERATION.>

NOTE:
DTC can not be read through AT OIL TEMP warning light.

8. Inspection Mode

A: OPERATION

WARNING:
Observe the road traffic law.

1) Move the select lever to “D” range, and then drive the vehicle at 60 km/h (37 MPH) for at least 10 seconds.
2) Drive vehicle in SPORT shift mode.

9. Clear Memory Mode

A: OPERATION

1. WITHOUT SUBARU SELECT MONITOR

Current diagnostic trouble codes (DTC) shown on display are cleared by turning the ignition switch to OFF after conducting on-board diagnostics operation. Previous diagnostic trouble codes (DTC), however, cannot be cleared since they are stored in the TCM memory which is operating on back-up power supply. These diagnostic trouble codes (DTC) can be cleared by removing the TCM connector for at least two minutes.

CLEAR MEMORY:

Removal of TCM connector (B56) (for at least two minutes)

- The TCM connector (B56) is located in the line to memory back-up power supply of TCM. Removal of this connector clears the previous diagnostic trouble codes (DTC) stored in TCM memory.
- Be sure to remove the TCM connector (B56) for at least the specified length of time. Otherwise, the diagnostic trouble codes (DTC) may not be cleared.

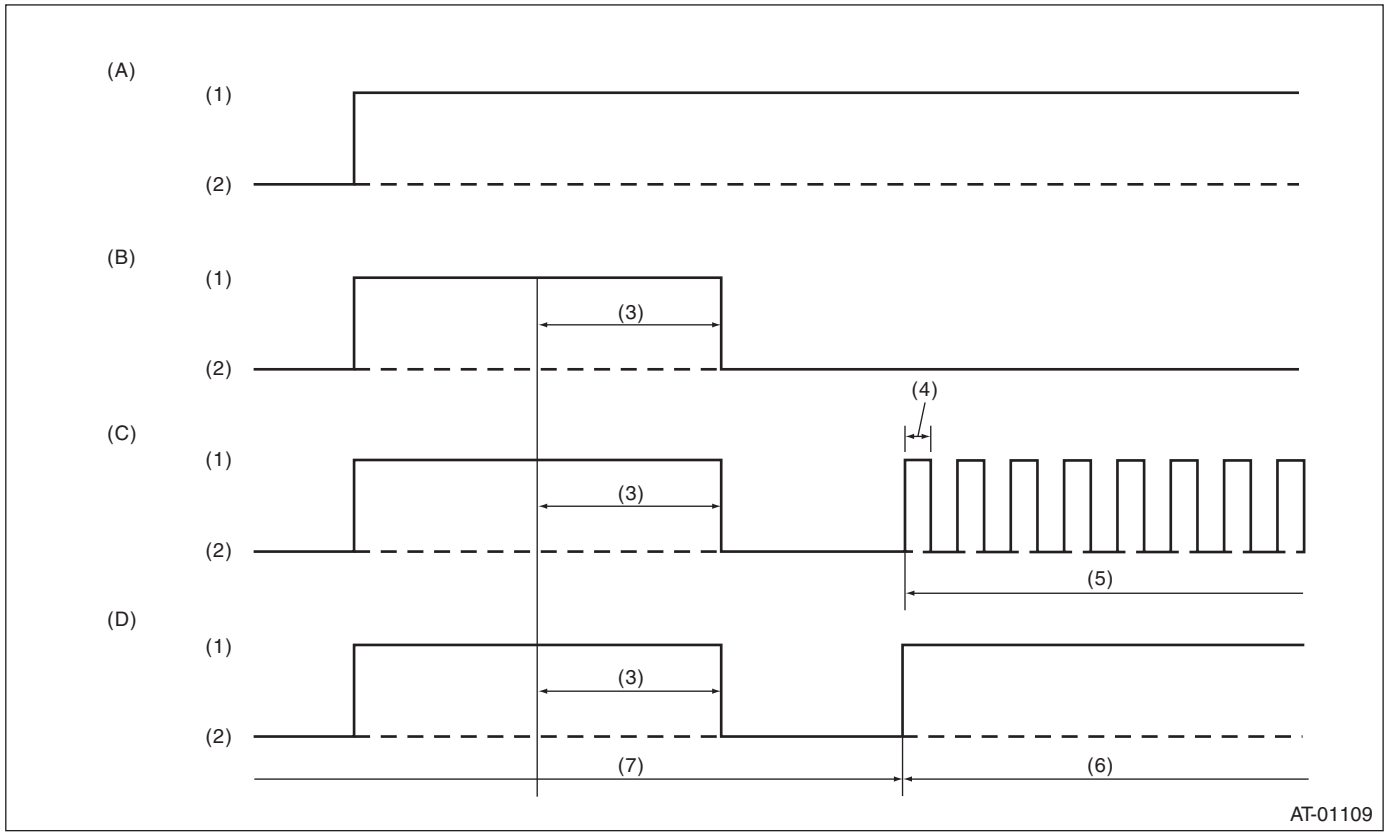
2. WITH SUBARU SELECT MONITOR

Refer to Subaru Select Monitor for information about how to clear DTC.
<Ref. to 4AT(D)-16, CLEAR MEMORY MODE.>

10.“AT OIL TEMP” Warning Light Display

A: INSPECTION

When any on-board diagnostics item is malfunctioning, the display on AT OIL TEMP warning light blinks from the time malfunction is detected after starting the engine until ignition switch is turned to OFF. The malfunctioning part or unit can be determined by a DTC during on-board diagnostics operation. Problems which occurred previously can also be identified through the memory function. If the AT OIL TEMP 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 select monitor. The AT OIL TEMP warning light signal is as shown in the figure.



(A) Ignition switch (engine OFF)
(B) Normal (engine ON)
(C) Faulty (engine ON)
(D) Normal (ATF temperature is high.)

(1) ON
(2) OFF
(3) 2 sec.
(4) 0.25 sec.
(5) Blink
(6) ATF temperature (High)
(7) ATF temperature (Low)

11.List of Diagnostic Trouble Code (DTC)

A: LIST

DTC	Item	Diagnosis content	Reference
P0705	Transmission Range Sensor Circuit (PRNDL Input)	Inhibitor switch malfunction, open or short circuit	<Ref. to 4AT(D)-33, DTC P0705 — TRANSMISSION RANGE SENSOR —.>
P0712	Transmission Fluid Temperature Sensor Circuit Low Input	ATF temperature sensor malfunction, open input signal circuit	<Ref. to 4AT(D)-44, DTC P0712 — TRANSMISSION FLUID TEMPERATURE SENSOR CIRCUIT LOW INPUT —.>
P0713	Transmission Fluid Temperature Sensor Circuit High Input	ATF temperature sensor malfunction, open input signal circuit	<Ref. to 4AT(D)-48, DTC P0713 — TRANSMISSION FLUID TEMPERATURE SENSOR CIRCUIT HIGH INPUT —.>
P0715	Input/Turbine Speed Sensor Circuit	Torque converter turbine speed sensor malfunction, open or short input signal circuit	<Ref. to 4AT(D)-52, DTC P0715 — INPUT/TURBINE SPEED SENSOR CIRCUIT —.>
P0719	Torque Converter/Brake Switch “B” Circuit Low	Brake switch malfunction, open input signal circuit	<Ref. to 4AT(D)-54, DTC P0719 — TORQUE CONVERTER/BRAKE SWITCH “B” CIRCUIT LOW —.>
P0720	AT Vehicle Speed Sensor Circuit	Front vehicle speed sensor malfunction, open or short input signal circuit	<Ref. to 4AT(D)-56, DTC P0720 — AT VEHICLE SPEED SENSOR CIRCUIT —.>
P0724	Torque Converter/Brake Switch “B” Circuit High	Brake switch malfunction, short input signal circuit	<Ref. to 4AT(D)-60, DTC P0724 — TORQUE CONVERTER/BRAKE SWITCH “B” CIRCUIT HIGH —.>
P0725	Engine Speed Input Circuit	Open or short engine speed output signal circuit	<Ref. to 4AT(D)-62, DTC P0725 — ENGINE SPEED INPUT CIRCUIT —.>
P0731	Gear 1 Incorrect Ratio	Vehicle speed sensor, torque converter turbine speed sensor, or control valve malfunction	<Ref. to 4AT(D)-64, DTC P0731 — GEAR 1 INCORRECT RATIO —.>
P0732	Gear 2 Incorrect Ratio	Vehicle speed sensor, torque converter turbine speed sensor, or control valve malfunction	<Ref. to 4AT(D)-64, DTC P0732 — GEAR 2 INCORRECT RATIO —.>
P0733	Gear 3 Incorrect Ratio	Vehicle speed sensor, torque converter turbine speed sensor, or control valve malfunction	<Ref. to 4AT(D)-64, DTC P0733 — GEAR 3 INCORRECT RATIO —.>
P0734	Gear 4 Incorrect Ratio	Vehicle speed sensor, torque converter turbine speed sensor, or control valve malfunction	<Ref. to 4AT(D)-64, DTC P0734 — GEAR 4 INCORRECT RATIO —.>
P0736	Reverse Incorrect Ratio	Vehicle speed sensor, torque converter turbine speed sensor, or control valve malfunction	<Ref. to 4AT(D)-65, DTC P0736 — REVERSE INCORRECT RATIO —.>
P0741	Torque Converter Clutch Circuit Performance or Stuck Off	Lock up clutch malfunction or locking of valve	<Ref. to 4AT(D)-66, DTC P0741 — TORQUE CONVERTER CLUTCH CIRCUIT PERFORMANCE OR STUCK OFF —.>
P0743	Torque Converter Clutch Circuit Electrical	Lock up solenoid malfunction, open or short output signal circuit	<Ref. to 4AT(D)-68, DTC P0743 — TORQUE CONVERTER CLUTCH CIRCUIT ELECTRICAL —.>
P0748	Pressure Control Solenoid “A” Electrical	Line pressure linear solenoid malfunction, open or short output signal circuit	<Ref. to 4AT(D)-70, DTC P0748 — PRESSURE CONTROL SOLENOID “A” ELECTRICAL —.>
P0753	Shift Solenoid “A” Electrical	Low clutch duty solenoid malfunction, open or short output signal circuit	<Ref. to 4AT(D)-74, DTC P0753 — SHIFT SOLENOID “A” ELECTRICAL —.>

DTC	Item	Diagnosis content	Reference
P0758	Shift Solenoid “B” Electrical	2-4 brake duty solenoid malfunction, open or short output signal circuit	<Ref. to 4AT(D)-78, DTC P0758 — SHIFT SOLENOID “B” ELECTRICAL — .>
P0763	Shift Solenoid “C” Electrical	High clutch duty solenoid malfunction, open or short output signal circuit	<Ref. to 4AT(D)-82, DTC P0763 — SHIFT SOLENOID “C” ELECTRICAL — .>
P0768	Shift Solenoid “D” Electrical	Low & reverse clutch duty solenoid malfunction, open or short output signal circuit	<Ref. to 4AT(D)-86, DTC P0768 — SHIFT SOLENOID “D” ELECTRICAL — .>
P0801	Reverse Inhibitor Control Circuit	Shift lock solenoid malfunction, open or short output signal circuit	<Ref. to 4AT(D)-90, DTC P0801 — REVERSE INHIBITOR CONTROL CIRCUIT —.>
P1706	AT Vehicle Speed Sensor Circuit Malfunction (rear wheel)	Rear vehicle speed sensor malfunction, open or short input signal circuit	<Ref. to 4AT(D)-92, DTC P1706 — AT VEHICLE SPEED SENSOR CIRCUIT MALFUNCTION (REAR WHEEL) —.>
P1707	AT AWD Solenoid Valve Circuit Malfunction	Transfer duty solenoid malfunction, open or short output signal circuit	<Ref. to 4AT(D)-96, DTC P1707 — AT AWD SOLENOID VALVE CIRCUIT MALFUNCTION —.>
P1708	Throttle Position Sensor Circuit Low Input	Accelerator pedal position sensor malfunction, open input signal circuit	<Ref. to 4AT(D)-100, DTC P1708 — THROTTLE POSITION SENSOR CIRCUIT LOW INPUT —.>
P1709	Throttle Position Sensor Circuit High Input	Accelerator pedal position sensor malfunction, open input signal circuit	<Ref. to 4AT(D)-104, DTC P1709 — THROTTLE POSITION SENSOR CIRCUIT HIGH INPUT —.>
P1714	Throttle Position Sensor Power Supply Circuit	Accelerator pedal position sensor malfunction, open or short input signal circuit	<Ref. to 4AT(D)-108, DTC P1714 — THROTTLE POSITION SENSOR POWER SUPPLY CIRCUIT —.>
P1718	CAN Communication Circuit Malfunction	Open or short CAN communication signal circuit	<Ref. to 4AT(D)-110, DTC P1718 — CAN COMMUNICATION CIRCUIT MALFUNCTION —.>
P1817	SPORT Mode Switch Circuit (Manual Switch)	Sport shift mode switch malfunction, open or short input signal circuit	<Ref. to 4AT(D)-112, DTC P1817 — SPORT MODE SWITCH CIRCUIT (MANUAL SWITCH) —.>

MEMO:

12.Diagnostic Procedure for “AT OIL TEMP” Warning Light

A: “AT OIL TEMP” WARNING LIGHT DOES NOT COME ON OR GO OFF

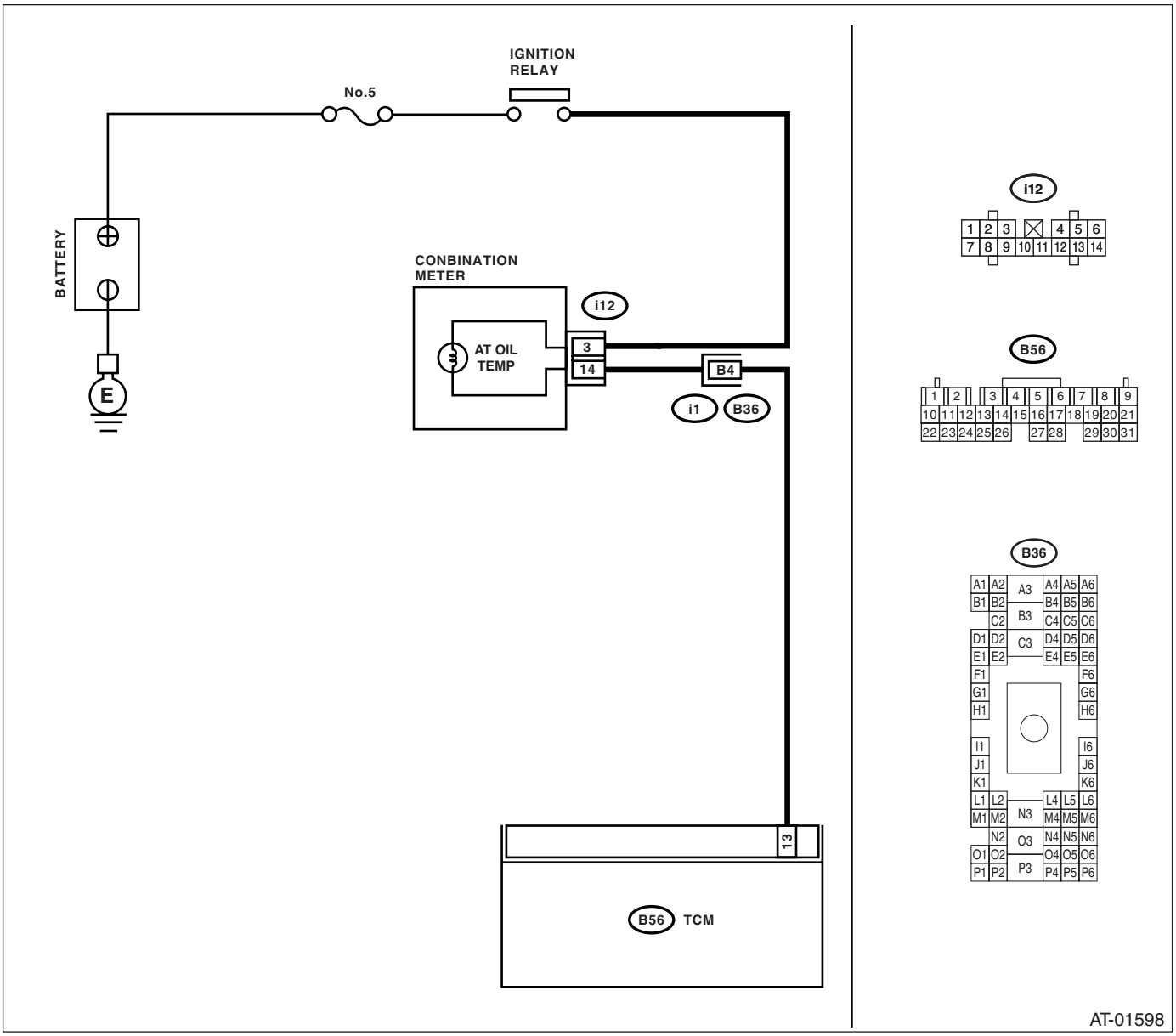
DIAGNOSIS:

AT OIL TEMP warning light circuit is open or shorted.

TROUBLE SYMPTOM:

- When the ignition switch is turned to ON (engine OFF), AT OIL TEMP warning light does not turn on.

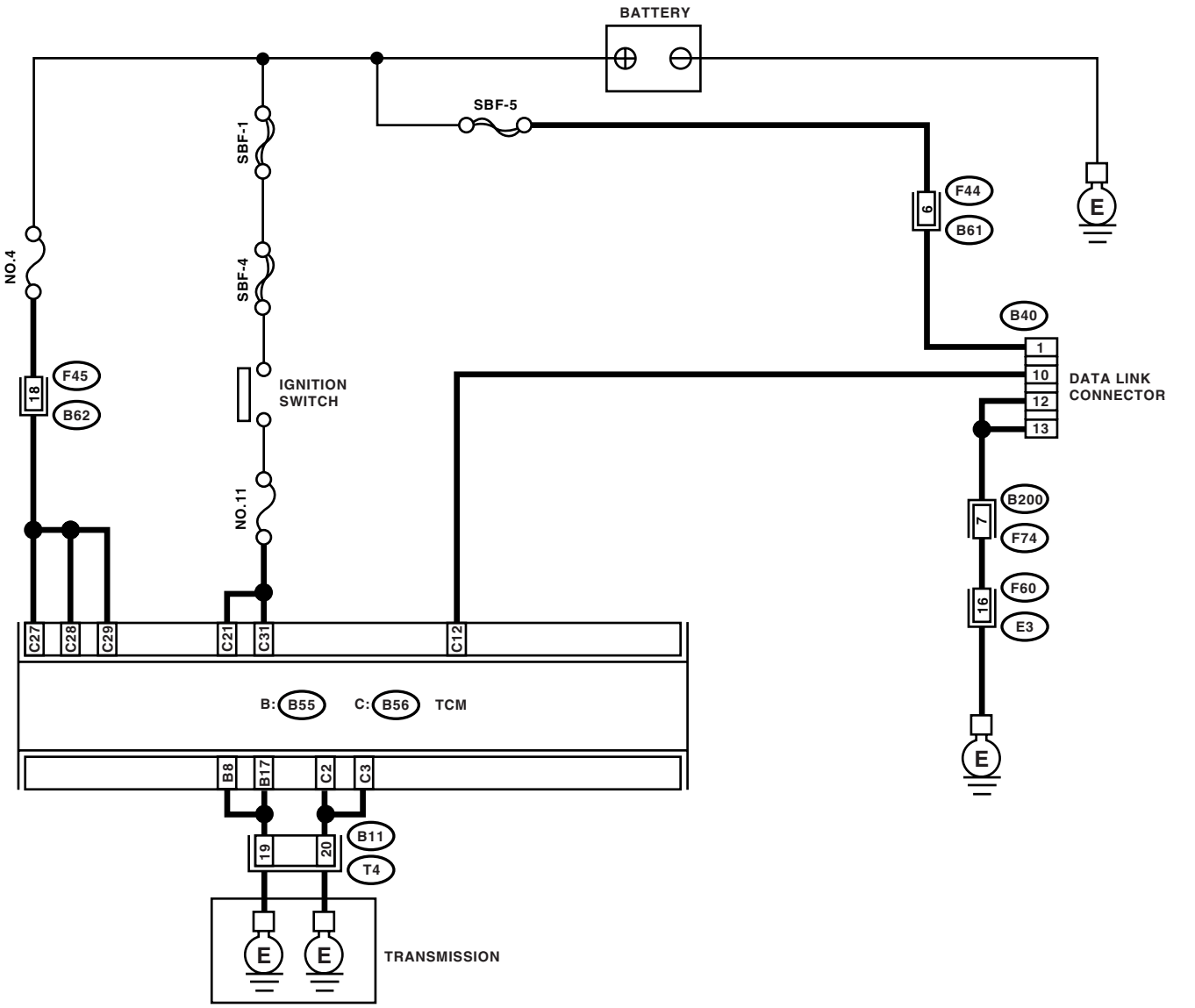
WIRING DIAGRAM:

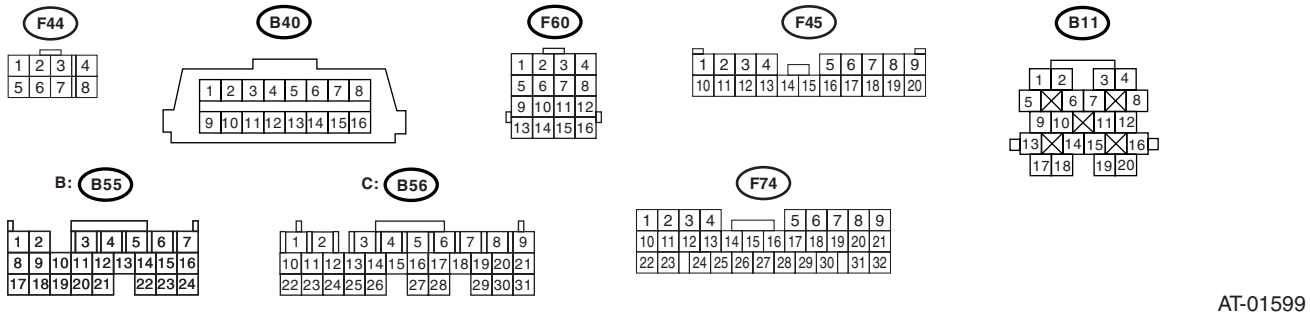


	Step	Check	Yes	No
1	**CHECK AT OIL TEMP WARNING LIGHT.** Turn the ignition switch to ON (engine OFF).	Does the AT OIL TEMP warning light turn on?	Go to step **3.**	Go to step **2.**
2	**CHECK FUSE (No. 5).** Remove the fuse (No. 5).	Is the fuse (No. 5) blown out?	Replace the fuse (No. 5). If replaced fuse (No. 5) is blown out easily, repair short circuit in harness between fuse (No. 5) and combination meter.	Go to step **3.**
3	**CHECK HARNESS CONNECTOR BETWEEN COMBINATION METER AND IGNITION SWITCH.** 1) Turn the ignition switch to OFF. 2) Remove combination meter. 3) Turn the ignition switch to ON (engine OFF). 4) Measure the voltage between combination meter connector and chassis ground. ***Connector & terminal*** ***(i12) No. 3 (+) — Chassis ground (–):***	Is the voltage more than 9 V?	Go to step **4.**	Repair the open circuit in harness between combination meter and battery.
4	**CHECK OPEN CIRCUIT OF HARNESS.** 1) Turn the ignition switch to OFF. 2) Disconnect the connector from TCM. 3) Measure the resistance of harness between combination meter and TCM. ***Connector & terminal*** ***(B56) No. 13 — (i12) No. 14:***	Is the resistance less than 1 Ω?	Go to step **5.**	Repair the open circuit in harness between TCM and combination meter, and poor contact in coupling connector.
5	**CHECK COMBINATION METER.** Measure the resistance between combination meter connector and chassis ground. ***Connector & terminal*** ***(i12) No. 14 (+) — Chassis ground (–):***	Is the resistance more than 1 MΩ?	Go to step **6.**	Repair the short circuit in harness between TCM and combination meter.
6	**CHECK INPUT SIGNAL FOR TCM.** 1) Connect the connector to combination meter. 2) Turn the ignition switch to ON (engine OFF). 3) Measure the voltage between TCM connector and chassis ground. ***Connector & terminal*** ***(B56) No. 13 (+) — Chassis ground (–):***	Is the voltage more than 9 V?	Replace the TCM. <Ref. to 4AT-78, Transmission Control Module (TCM).>	Replace the combination meter. <Ref. to IDI-12, Combination Meter Assembly.>

B: CHECK POWER SUPPLY AND GROUND LINE

WIRING DIAGRAM:





AT-01599

	Step	Check	Yes	No
1	**CHECK BATTERY TERMINAL.** Turn the ignition switch to OFF.	Is there poor contact in battery terminal?	Repair or tighten the battery terminal.	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*** ***(B56) No. 27 (+) — Chassis ground (–):*** ***(B56) No. 28 (+) — Chassis ground (–):*** ***(B56) No. 29 (+) — 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 replaced fuse (No. 4) has blown out easily, repair short circuit in harness between fuse (No. 4) and TCM.	Repair the open circuit in harness between fuse (No. 4) and TCM, or fuse (No. 4) and battery, and poor contact in coupling connector.
4	**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. ***Connector & terminal*** ***(B56) No. 21 (+) — Chassis ground (–):*** ***(B56) No. 31 (+) — 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 replaced fuse (No. 11) has blown out easily, repair short circuit in harness between fuse (No. 11) and TCM.	Repair the open circuit in harness between fuse (No. 11) and TCM, or fuse (No. 11) and battery, and poor contact in coupling connector.
6	**CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.** 1) Turn the ignition switch to OFF. 2) Disconnect the connector from TCM and transmission. 3) Measure the resistance of harness between TCM and transmission connector. ***Connector & terminal*** ***(B55) No. 8 — (B11) No. 19:*** ***(B55) No. 17 — (B11) No. 19:*** ***(B56) No. 2 — (B11) No. 20:*** ***(B56) No. 3 — (B11) No. 20:***	Is the resistance less than 1 Ω?	Go to step **7.**	Repair the open circuit in harness between TCM, transmission harness connector, and poor contact in coupling connector.
7	**CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND TRANSMISSION GROUND.** Measure the resistance of 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?	Go to step **8.**	Repair the open circuit in harness between transmission and transmission ground.

Step	Check	Yes	No
8 **CHECK POOR CONTACT IN CONNECTORS.**	Is there poor contact in TCM power supply, ground line and data link connector?	Repair the connector.	Replace the TCM. <Ref. to 4AT-78, Transmission Control Module (TCM).>

MEMO:

13.Diagnostic Procedure for Subaru Select Monitor Communication

A: COMMUNICATION FOR INITIALIZING IMPOSSIBLE

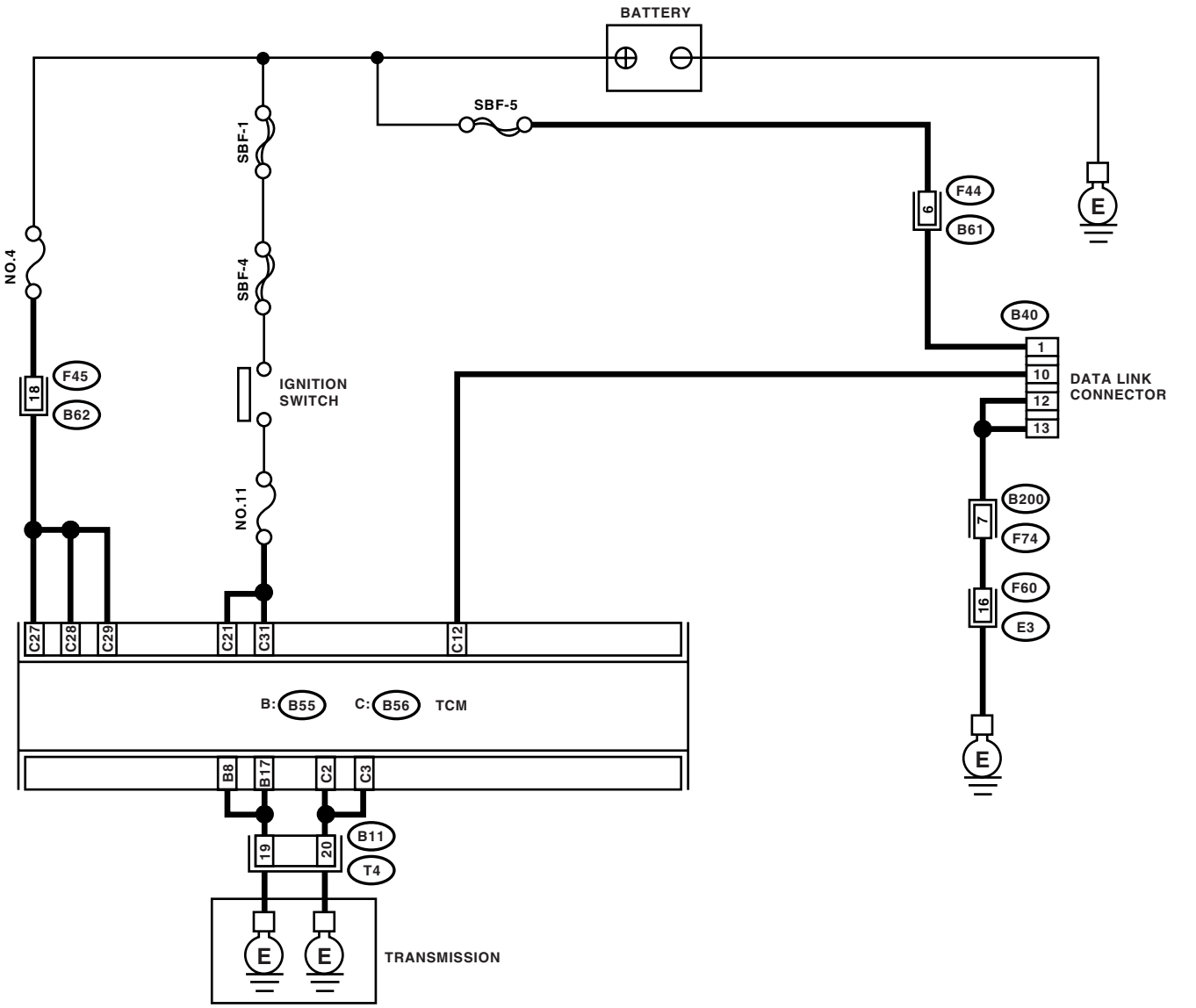
DIAGNOSIS:

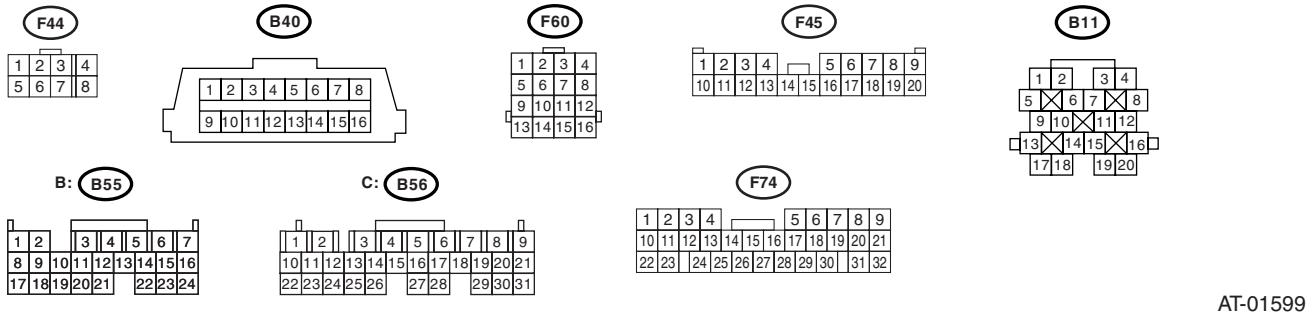
- Faulty harness connector

TROUBLE SYMPTOM:

- Subaru Select Monitor communication failure

WIRING DIAGRAM:





AT-01599

	Step	Check	Yes	No
1	**CHECK SUBARU SELECT MONITOR POWER SUPPLY CIRCUIT.** Measure the voltage between data link connector and chassis ground. ***Connector & terminal*** ***(B40) No. 1 (+) — Chassis ground (–):***	Is the voltage more than 10 V?	Go to step **2.**	Repair the harness and connector between battery and data link connector, and poor contact in coupling connector.
2	**CHECK SUBARU SELECT MONITOR GROUND CIRCUIT.** Measure the resistance of harness between data link connector and chassis ground. ***Connector & terminal*** ***(B40) No. 12 — Chassis ground:*** ***(B40) No. 13 — Chassis ground:***	Is the resistance less than 1 Ω?	Go to step **3.**	Repair the open circuit in harness between data link connector and ground terminal, and poor contact in coupling 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 transmission systems can be executed normally.	Is the system name 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) Check whether communication to engine systems can be executed normally.	Is the system name 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) Disconnect the ECM connector. 4) Check whether communication to transmission systems can be executed normally.	Is the system name 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 connectors. 3) Measure the resistance between TCM connector and chassis ground. ***Connector & terminal*** ***(B40) No. 10 — Chassis ground:***	Is the resistance more than 1 MΩ?	Go to step **7.**	Repair the harness and connector between each control module and data link connector.
7	**CHECK OUTPUT SIGNAL FOR TCM.** 1) Turn the ignition switch to ON. 2) Measure the voltage between TCM and chassis ground. ***Connector & terminal*** ***(B40) No. 10 (+) — Chassis ground (–):***	Is the voltage more than 1 V?	Repair the 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. ***Connector & terminal*** ***(B56) No. 12 — (B40) No. 10:***	Is the resistance less than 0.5 Ω?	Go to step **9.**	Repair the harness and connector between TCM and data link connector.

	Step	Check	Yes	No
9	**INSPECTION OF TRANSMISSION HARNESS CONNECTOR.**	Is the transmission harness connector inserted into bulkhead harness connector?	Go to step **10.**	Connect the bulkhead harness connector to transmission harness connector.
10	**CHECK POOR CONTACT IN CONNECTORS.**	There is poor contact. Is there poor contact in control module and data link connector?	Repair the poor contact.	Replace the TCM. <Ref. to 4AT-78, Transmission Control Module (TCM).>

14.Diagnostic Procedure with Diagnostic Trouble Code (DTC)

A: DTC P0705 — TRANSMISSION RANGE SENSOR —

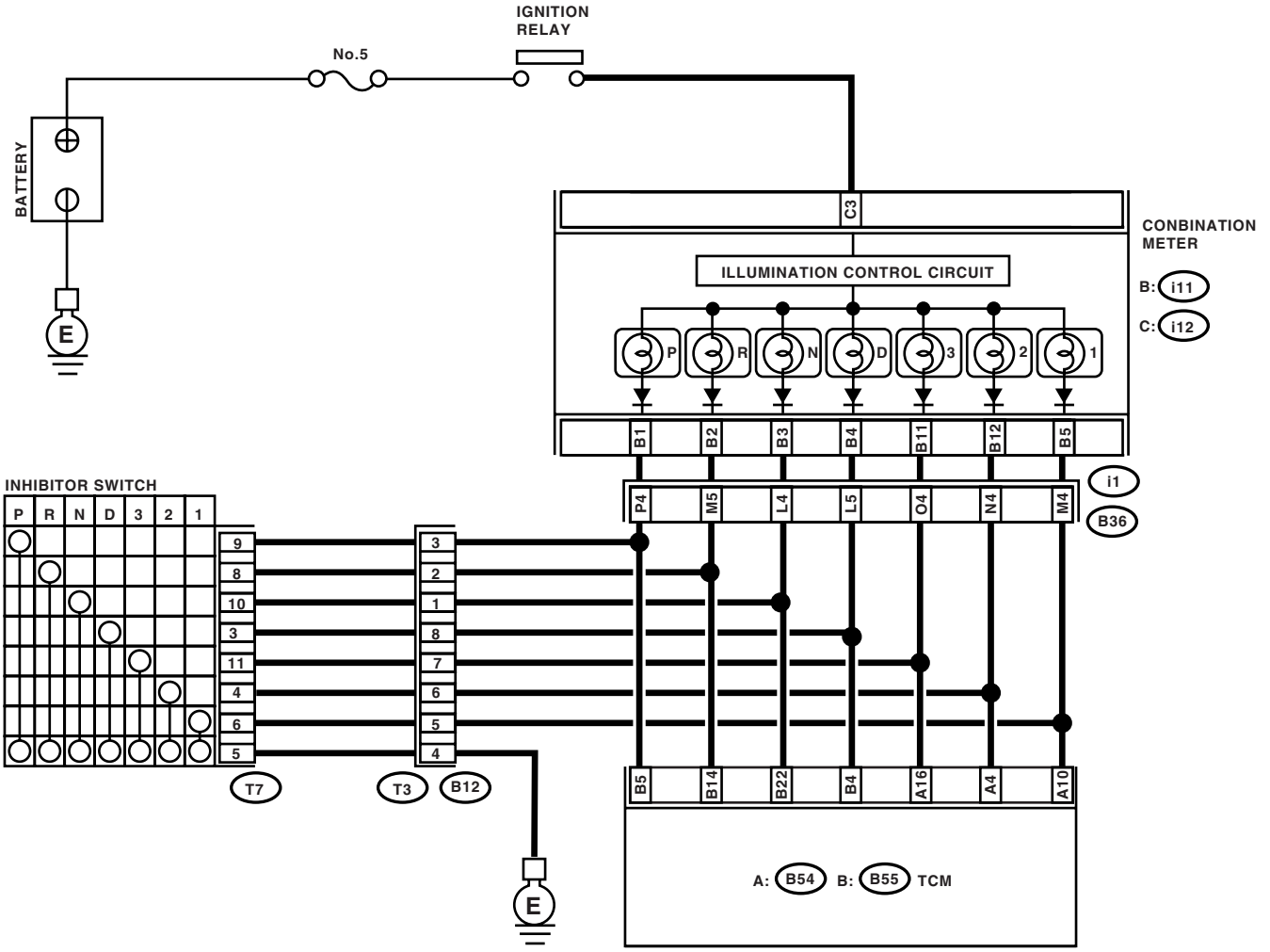
DIAGNOSIS:

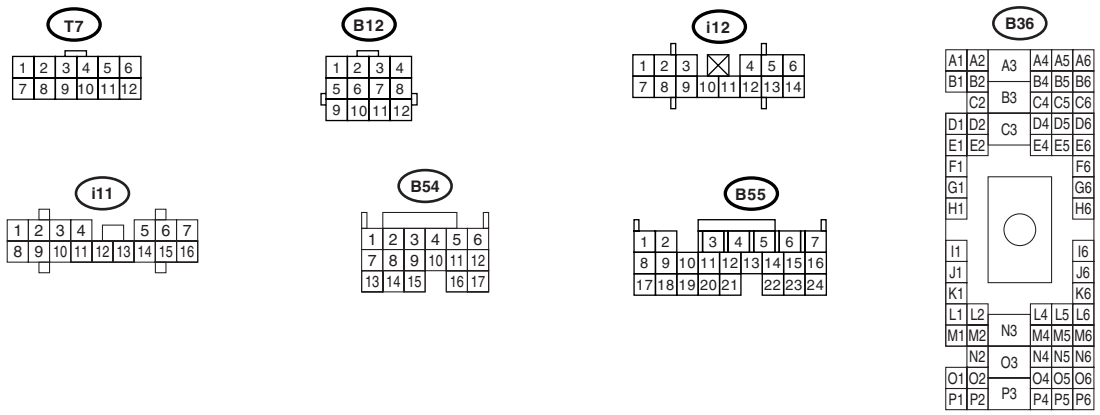
- There is malfunction in inhibitor switch.
- The input signal circuit of inhibitor switch is open or shorted.

TROUBLE SYMPTOM:

- Shift characteristics are erroneous.
- Engine brake is not effected when select lever is in “3” range.
- Engine brake is not effected when select lever is in “2” range.
- Engine brake is not effected when select lever is in “1” range.

WIRING DIAGRAM:





AT-01600

Step		Check	Yes	No
1	**CHECK "P" RANGE SWITCH.**	When the "P" range is selected, does LED light up?	Go to step **2.**	Go to step **22.**
2	**CHECK INDICATOR LIGHT.**	Does the combination meter "P" range indicator illuminate?	Go to step **3.**	Go to step **26.**
3	**CHECK "P" RANGE SWITCH.**	When the "R" range is selected, does "P" range LED light up?	Go to step **28.**	Go to step **4.**
4	**CHECK "R" RANGE SWITCH.**	When the "R" range is selected, does LED light up?	Go to step **5.**	Go to step **29.**
5	**CHECK INDICATOR LIGHT.**	Does the combination meter "R" range indicator illuminate?	Go to step **6.**	Go to step **32.**
6	**CHECK "R" RANGE SWITCH.**	When the "N" range is selected, does "R" range LED light up?	Go to step **34.**	Go to step **7.**
7	**CHECK "N" RANGE SWITCH.**	When the "N" range is selected, does LED light up?	Go to step **8.**	Go to step **35.**
8	**CHECK INDICATOR LIGHT.**	Does the combination meter "N" range indicator illuminate?	Go to step **9.**	Go to step **38.**
9	**CHECK "N" RANGE SWITCH.**	When the "D" range is selected, does "N" range LED light up?	Go to step **40.**	Go to step **10.**
10	**CHECK "D" RANGE SWITCH.**	When the "D" range is selected, does LED light up?	Go to step **11.**	Go to step **41.**
11	**CHECK INDICATOR LIGHT.**	Does the combination meter "D" range indicator illuminate?	Go to step **12.**	Go to step **44.**
12	**CHECK "D" RANGE SWITCH.**	When the "3" range is selected, does "D" range LED light up?	Go to step **46.**	Go to step **13.**
13	**CHECK "3" RANGE SWITCH.**	When the "3" range is selected, does LED light up?	Go to step **14.**	Go to step **47.**
14	**CHECK INDICATOR LIGHT.**	Does the combination meter "3" range indicator illuminate?	Go to step **15.**	Go to step **50.**
15	**CHECK "3" RANGE SWITCH.**	When the "2" range is selected, does "3" range LED light up?	Go to step **52.**	Go to step **16.**
16	**CHECK "2" RANGE SWITCH.**	When the "2" range is selected, does LED light up?	Go to step **17.**	Go to step **53.**
17	**CHECK INDICATOR LIGHT.**	Does the combination meter "2" range indicator illuminate?	Go to step **18.**	Go to step **56.**
18	**CHECK "2" RANGE SWITCH.**	When the "1" range is selected, does "2" range LED light up?	Go to step **58.**	Go to step **19.**
19	**CHECK "1" RANGE SWITCH.**	When the "1" range is selected, does LED light up?	Go to step **20.**	Go to step **59.**
20	**CHECK INDICATOR LIGHT.**	Does the combination meter "1" range indicator illuminate?	Go to step **21.**	Go to step **62.**
21	**CHECK "1" RANGE SWITCH.**	When the "2" range is selected, does "1" range LED light up?	Go to step **64.**	Replace the TCM. <Ref. to 4AT-78, Transmission Control Module (TCM).>

	Step	Check	Yes	No
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 in harness between inhibitor switch connector and chassis ground, and poor contact in coupling connector.
23	**CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.** 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from TCM and inhibitor switch. 3) Measure the resistance of harness between TCM and inhibitor switch connector. ***Connector & terminal*** ***(B55) No. 5 — (T7) No. 9:***	Is the resistance less than 1 Ω?	Go to step **24.**	Repair the open circuit in harness between TCM and inhibitor switch connector, and poor contact in coupling 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) Move the select lever to “P” range. 5) Measure the voltage between TCM and chassis ground. ***Connector & terminal*** ***(B55) No. 5 (+) — Chassis ground (–):***	Is the voltage less than 1 V?	Go to step **25.**	Go to step **65.**
25	**CHECK INPUT SIGNAL FOR TCM.** 1) Move the select lever except for “P” range. 2) Measure the voltage between TCM and chassis ground. ***Connector & terminal*** ***(B55) No. 5 (+) — Chassis ground (–):***	Is the voltage more than 8 V?	Go to step **65.**	Replace the TCM. <Ref. to 4AT-78, Transmission Control Module (TCM).>
26	**CHECK “P” RANGE INDICATOR LIGHT BULB.** 1) Turn the ignition switch to OFF. 2) Remove the combination meter. 3) Remove the “P” range indicator light bulb from combination meter.	Is the “P” range indicator light bulb OK?	Go to step **27.**	Replace the “P” range indicator light bulb. <Ref. to IDI-12, Combination Meter Assembly.>
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. 5 — (i11) No. 1:***	Is the resistance more than 1 Ω?	Go to step **65.**	Repair the open circuit in harness between TCM connector and combination meter, and poor contact in coupling connector.
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 and chassis ground. ***Connector & terminal*** ***(B55) No. 5 — Chassis ground:***	Is the resistance less than 1 MΩ?	Go to step **29.**	Repair the ground short circuit in “P” range circuit.

	Step	Check	Yes	No
29	**CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.** 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from TCM and inhibitor switch. 3) Measure the resistance of harness between TCM and inhibitor switch connector. ***Connector & terminal*** ***(B55) No. 14 — (T7) No. 8:***	Is the resistance less than 1 Ω?	Go to step **30.**	Repair the open circuit in harness between TCM and inhibitor switch connector, and poor contact in coupling 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) Move the select lever to "R" range. 5) Measure the voltage between TCM and chassis ground. ***Connector & terminal*** ***(B55) No. 14 (+) — Chassis ground (–):***	Is the voltage less than 1 V?	Go to step **31.**	Go to step **65.**
31	**CHECK INPUT SIGNAL FOR TCM.** 1) Move the select lever except for "R" range. 2) Measure the voltage between TCM and chassis ground. ***Connector & terminal*** ***(B55) No. 14 (+) — Chassis ground (–):***	Is the voltage more than 8 V?	Go to step **65.**	Replace the TCM. <Ref. to 4AT-78, Transmission Control Module (TCM).>
32	**CHECK "R" RANGE INDICATOR LIGHT BULB.** 1) Turn the ignition switch to OFF. 2) Remove the combination meter. 3) Remove the "R" range indicator light bulb from combination meter.	Is "R" range indicator light bulb OK?	Go to step **33.**	Replace the "R" range indicator light bulb. <Ref. to IDI-12, Combination Meter Assembly.>
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. ***Connector & terminal*** ***(B55) No. 14 — (i11) No. 2:***	Is the resistance less than 1 Ω?	Go to step **65.**	Repair the open circuit in harness between TCM connector and combination meter, and poor contact in 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 and chassis ground. ***Connector & terminal*** ***(B55) No. 14 — Chassis ground:***	Is the resistance more than 1 MΩ?	Go to step **35.**	Repair the ground short circuit in "R" range circuit.
35	**CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.** 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from TCM and inhibitor switch. 3) Measure the resistance of harness between TCM and inhibitor switch connector. ***Connector & terminal*** ***(B55) No. 22 — (T7) No. 10:***	Is the resistance less than 1 Ω?	Go to step **36.**	Repair the open circuit in harness between TCM and inhibitor switch connector, and poor contact in coupling connector.

	Step	Check	Yes	No
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) Move the select lever to "N" range. 5) Measure the voltage between TCM and chassis ground. ***Connector & terminal*** ***(B55) No. 22 (+) — Chassis ground (–):***	Is the voltage less than 1 V?	Go to step **37.**	Go to step **65.**
37	**CHECK INPUT SIGNAL FOR TCM.** 1) Move the select lever to except for "N" range. 2) Measure the voltage between TCM and chassis ground. ***Connector & terminal*** ***(B55) No. 22 (+) — Chassis ground (–):***	Is the voltage more than 8 V?	Go to step **65.**	Replace the TCM. <Ref. to 4AT-78, Transmission Control Module (TCM).>
38	**CHECK "N" RANGE INDICATOR LIGHT BULB.** 1) Turn the ignition switch to OFF. 2) Remove the combination meter. 3) Remove the "N" range indicator light bulb from combination meter.	Is the "N" range indicator light bulb OK?	Go to step **39.**	Replace the "N" range indicator light bulb. <Ref. to IDI-12, Combination Meter Assembly.>
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. 22 — (i11) No. 3:***	Is the resistance less than 1 Ω?	Go to step **65.**	Repair the open circuit in harness between TCM connector and combination meter, and poor contact in 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 and chassis ground. ***Connector & terminal*** ***(B55) No. 22 — Chassis ground:***	Is the resistance more than 1 MΩ?	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 connectors from TCM and inhibitor switch. 3) Measure the resistance of harness between TCM and inhibitor switch connector. ***Connector & terminal*** ***(B55) No. 4 — (T7) No. 3:***	Is the resistance less than 1 Ω?	Go to step **42.**	Repair the open circuit in harness between TCM and inhibitor switch connector, and poor contact in coupling connector.
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) Move the select lever to "D" range. 5) Measure the voltage between TCM and chassis ground. ***Connector & terminal*** ***(B55) No. 4 (+) — Chassis ground (–):***	Is the voltage less than 1 V?	Go to step **43.**	Go to step **65.**

	Step	Check	Yes	No
43	**CHECK INPUT SIGNAL FOR TCM.** 1) Move the select lever except for “D” range. 2) Measure the voltage between TCM and chassis ground. ***Connector & terminal*** ***(B55) No. 4 (+) — Chassis ground (–):***	Is the voltage more than 8 V?	Go to step **65.**	Replace the TCM. <Ref. to 4AT-78, Transmission Control Module (TCM).>
44	**CHECK “D” RANGE INDICATOR LIGHT BULB.** 1) Turn the ignition switch to OFF. 2) Remove the combination meter. 3) Remove the “D” range indicator light bulb from combination meter.	Is the “D” range indicator light bulb OK?	Go to step **45.**	Replace the “D” range indicator light bulb. <Ref. to IDI-12, Combination Meter Assembly.>
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. 4 — (i11) No. 4:***	Is the resistance less than 1 Ω?	Go to step **65.**	Repair the open circuit in harness between TCM connector and combination meter, and TCM connector.
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 and chassis ground. ***Connector & terminal*** ***(B55) No. 4 — Chassis ground:***	Is the resistance more than 1 MΩ?	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 harness between TCM and inhibitor switch connector. ***Connector & terminal*** ***(B54) No. 16 — (T7) No. 11:***	Is the resistance less than 1 Ω?	Go to step **48.**	Repair the open circuit in harness between TCM and inhibitor switch connector, and poor contact in coupling 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) Move the select lever to “3” range. 5) Measure the voltage between TCM and chassis ground. ***Connector & terminal*** ***(B54) No. 16 (+) — Chassis ground (–):***	Is the voltage less than 1 V?	Go to step **49.**	Go to step **65.**
49	**CHECK INPUT SIGNAL FOR TCM.** 1) Move the select lever except for “3” range. 2) Measure the voltage between TCM and chassis ground. ***Connector & terminal*** ***(B54) No. 16 (+) — Chassis ground (–):***	Is the voltage more than 8 V?	Go to step **65.**	Replace the TCM. <Ref. to 4AT-78, Transmission Control Module (TCM).>

	Step	Check	Yes	No
50	**CHECK "3" RANGE INDICATOR LIGHT BULB.** 1) Turn the ignition switch to OFF. 2) Remove the combination meter. 3) Remove the "3" range indicator light bulb from combination meter.	Is the "3" range indicator light bulb OK?	Go to step **51.**	Replace the "3" range indicator light bulb. <Ref. to IDI-12, Combination Meter Assembly.>
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*** ***(B54) No. 16 — (i11) No. 11:***	Is the resistance more than 1 Ω?	Go to step **65.**	Repair the open circuit in harness between TCM connector and combination meter, and poor contact in 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 and chassis ground. ***Connector & terminal*** ***(B54) No. 16 — Chassis ground:***	Is the resistance more than 1 MΩ?	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 harness between TCM and inhibitor switch connector. ***Connector & terminal*** ***(B54) No. 4 — (T7) No. 4:***	Is the resistance less than 1 Ω?	Go to step **54.**	Repair the open circuit in harness between TCM and inhibitor switch connector, and poor contact in coupling 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) Move the select lever to "2" range. 5) Measure the voltage between TCM and chassis ground. ***Connector & terminal*** ***(B54) No. 4 (+) — Chassis ground (–):***	Is the voltage less than 1 V?	Go to step **55.**	Go to step **65.**
55	**CHECK INPUT SIGNAL FOR TCM.** 1) Move the select lever except for "2" range. 2) Measure the voltage between TCM and chassis ground. ***Connector & terminal*** ***(B54) No. 4 (+) — Chassis ground (–):***	Is the voltage more than 8 V?	Go to step **65.**	Replace the TCM. <Ref. to 4AT-78, Transmission Control Module (TCM).>
56	**CHECK "2" RANGE INDICATOR LIGHT BULB.** 1) Turn the ignition switch to OFF. 2) Remove the combination meter. 3) Remove the "2" range indicator light bulb from combination meter.	Is the "2" range indicator light bulb OK?	Go to step **57.**	Replace the "2" range indicator light bulb. <Ref. to IDI-12, Combination Meter Assembly.>

	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. ***Connector & terminal*** ***(B54) No. 4 — (i11) No. 12:***	Is the resistance less than 1 Ω?	Go to step **65.**	Repair the open circuit in harness between TCM and combination meter, and poor contact in 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 and chassis ground. ***Connector & terminal*** ***(B54) No. 4 — Chassis ground:***	Is the resistance more than 1 MΩ?	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 connectors from TCM and inhibitor switch. 3) Measure the resistance of harness between TCM and inhibitor switch connector. ***Connector & terminal*** ***(B54) No. 10 — (T7) No. 6:***	Is the resistance less than 1 Ω?	Go to step **60.**	Repair the open circuit in harness between TCM and inhibitor switch connector, and poor contact in coupling 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) Move the select lever to "1" range. 5) Measure the voltage between TCM and chassis ground. ***Connector & terminal*** ***(B54) No. 10 (+) — Chassis ground (–):***	Is the voltage less than 1 V?	Go to step **61.**	Go to step **65.**
61	**CHECK INPUT SIGNAL FOR TCM.** 1) Move the select lever except for "1" range. 2) Measure the voltage between TCM and chassis ground. ***Connector & terminal*** ***(B54) No. 10 (+) — Chassis ground (–):***	Is the voltage more than 8 V?	Go to step **65.**	Replace the TCM. <Ref. to 4AT-78, Transmission Control Module (TCM).>
62	**CHECK "1" RANGE INDICATOR LIGHT BULB.** 1) Turn the ignition switch to OFF. 2) Remove the combination meter. 3) Remove the "1" range indicator light bulb from combination meter.	Is the "1" range indicator light bulb OK?	Go to step **63.**	Replace the "1" range indicator light bulb. <Ref. to IDI-12, Combination Meter Assembly.>
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. ***Connector & terminal*** ***(B54) No. 10 — (i11) No. 5:***	Is the resistance less than 1Ω?	Go to step **65.**	Repair the open circuit in harness between TCM and combination meter, poor contact in TCM connector.

	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 and chassis ground. ***Connector & terminal*** ***(B54) No. 10 — Chassis ground:***	Is the resistance more than 1 MΩ?	Go to step **65.**	Repair the ground short circuit in "1" range circuit.
65	**CHECK POOR CONTACT.**	Is there poor contact in inhibitor switch circuit?	Repair the poor contact.	Go to step **66.**
66	**CHECK INHIBITOR SWITCH.**	Is the inhibitor switch in proper position?	Replace the TCM. <Ref. to 4AT-78, Transmission Control Module (TCM).>	Adjust the inhibitor switch and select cable. <Ref. to 4AT-51, Inhibitor Switch.> and <Ref. to CS-31, Select Cable.>

MEMO:

B: DTC P0712 — TRANSMISSION FLUID TEMPERATURE SENSOR CIRCUIT LOW INPUT —

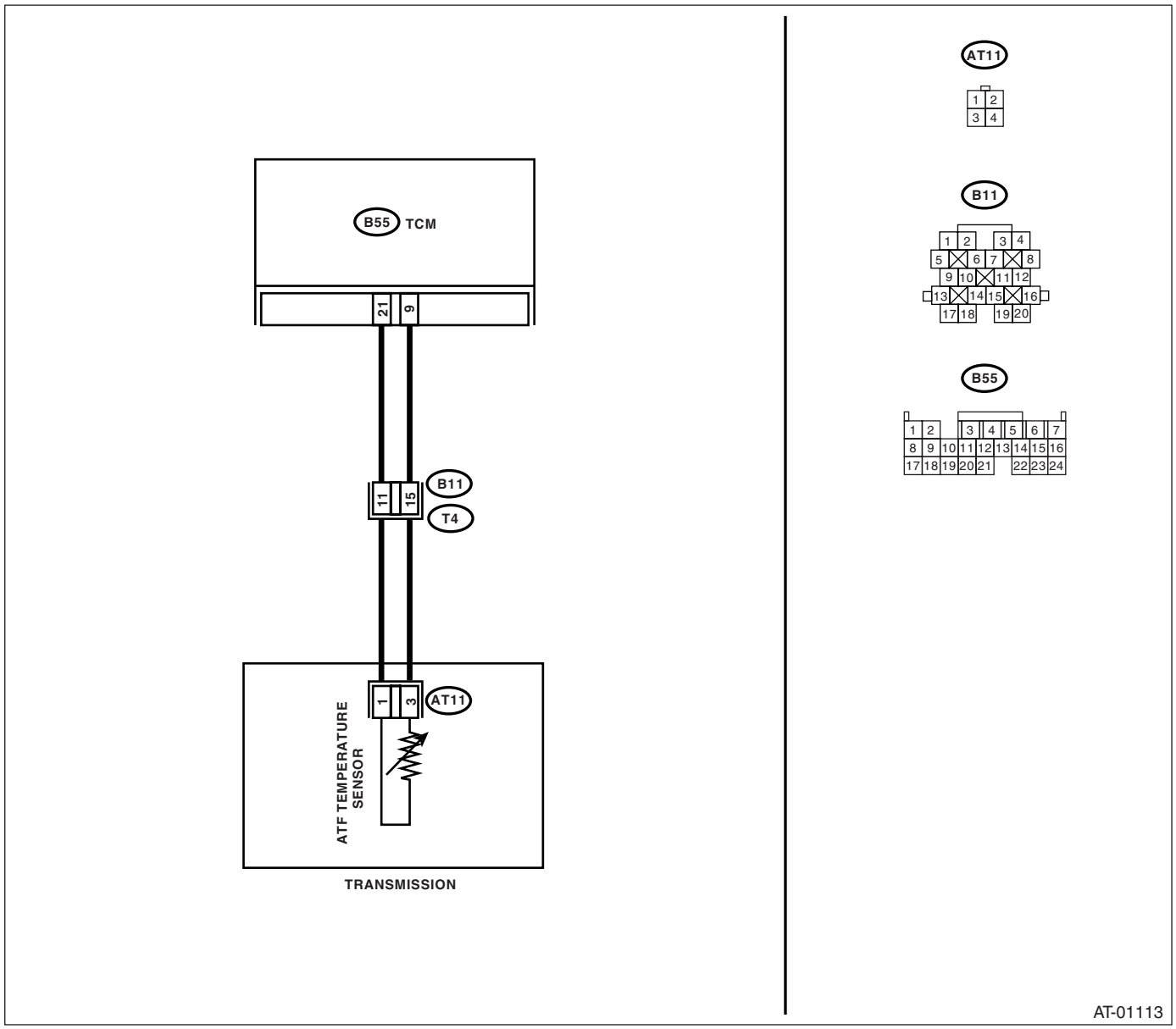
DIAGNOSIS:

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

TROUBLE SYMPTOM:

Excessive shift shock.

WIRING DIAGRAM:



	Step	Check	Yes	No
1	**CHECK HARNESS CONNECTOR BETWEEN TCM AND ATF TEMPERATURE SENSOR.** 1) Turn the ignition switch 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. 21 — (B11) No. 11:***	Is the resistance less than 1 Ω?	Go to step **2.**	Repair the open circuit in 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. 9 — (B11) No. 15:***	Is the resistance less than 1 Ω?	Go to step **3.**	Repair the open circuit in 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 ATF temperature reaches to 80°C (176°F). NOTE: If ambient temperature is below 0°C (32°F), drive the vehicle until 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 **7.**
4	**CHECK ATF TEMPERATURE SENSOR.** Measure the resistance between transmission connector terminals. ***Connector & terminal*** ***(T4) No. 11 — No. 15:***	Does the resistance value increase when ATF temperature decreases?	Go to step **5.**	Go to step **7.**
5	**CHECK INPUT SIGNAL FOR TCM USING SUBARU SELECT MONITOR.** 1) Connect the connector to transmission. 2) Turn the ignition switch to ON (engine OFF).	Does the ATF temperature gradually decrease?	Even if the AT OIL TEMP warning light blinks, the circuit has returned to a normal condition at this time. Temporary poor contact of the connector or harness may be the cause. Repair the harness or contact in ATF temperature sensor and transmission connector.	Go to step **6.**
6	**CHECK POOR CONTACT.**	Is there poor contact in ATF temperature sensor circuit?	Repair the poor contact.	Replace the TCM. <Ref. to 4AT-78, Transmission Control Module (TCM).>

	Step	Check	Yes	No
7	**CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND ATF TEMPERATURE SENSOR.** 1) Turn the ignition switch to OFF. 2) Disconnect the connector from transmission. 3) Remove the transmission connector from bracket. 4) Lift-up the vehicle and place safety stand. NOTE: Raise all wheels off floor. 5) Drain the ATF. **CAUTION:** **Do not drain the ATF until it cools down.** 6) Remove the oil pan, and disconnect the connector from ATF temperature sensor connector. 7) Measure the resistance of harness between ATF temperature sensor and transmission connector. ***Connector & terminal*** ***(T4) No. 11 — (AT11) No. 1:***	Is the resistance less than 1 Ω?	Go to step **8.**	Repair the open circuit in harness between ATF temperature sensor and transmission connector.
8	**CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND ATF TEMPERATURE SENSOR.** Measure the resistance of harness between ATF temperature sensor and transmission connector. ***Connector & terminal*** ***(T4) No. 15 — (AT11) No. 3:***	Is the resistance less than 1 Ω?	Go to step **9.**	Repair the open circuit in harness between ATF temperature sensor and transmission connector.
9	**CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND ATF TEMPERATURE SENSOR.** Measure the resistance of harness between transmission connector and transmission ground. ***Connector & terminal*** ***(T4) No. 11 — Transmission ground:***	Is the resistance more than 1 MΩ?	Go to step **10.**	Repair the short circuit in harness between ATF temperature sensor and transmission connector.
10	**CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND ATF TEMPERATURE SENSOR.** Measure the resistance of harness between transmission connector and transmission ground. ***Connector & terminal*** ***(T4) No. 15 — Transmission ground:***	Is the resistance more than 1 MΩ?	Replace the control valve body. <Ref. to 4AT-62, Control Valve Body.>	Repair the short circuit in harness between ATF temperature sensor and transmission connector.

MEMO:

C: DTC P0713 — TRANSMISSION FLUID TEMPERATURE SENSOR CIRCUIT HIGH INPUT —

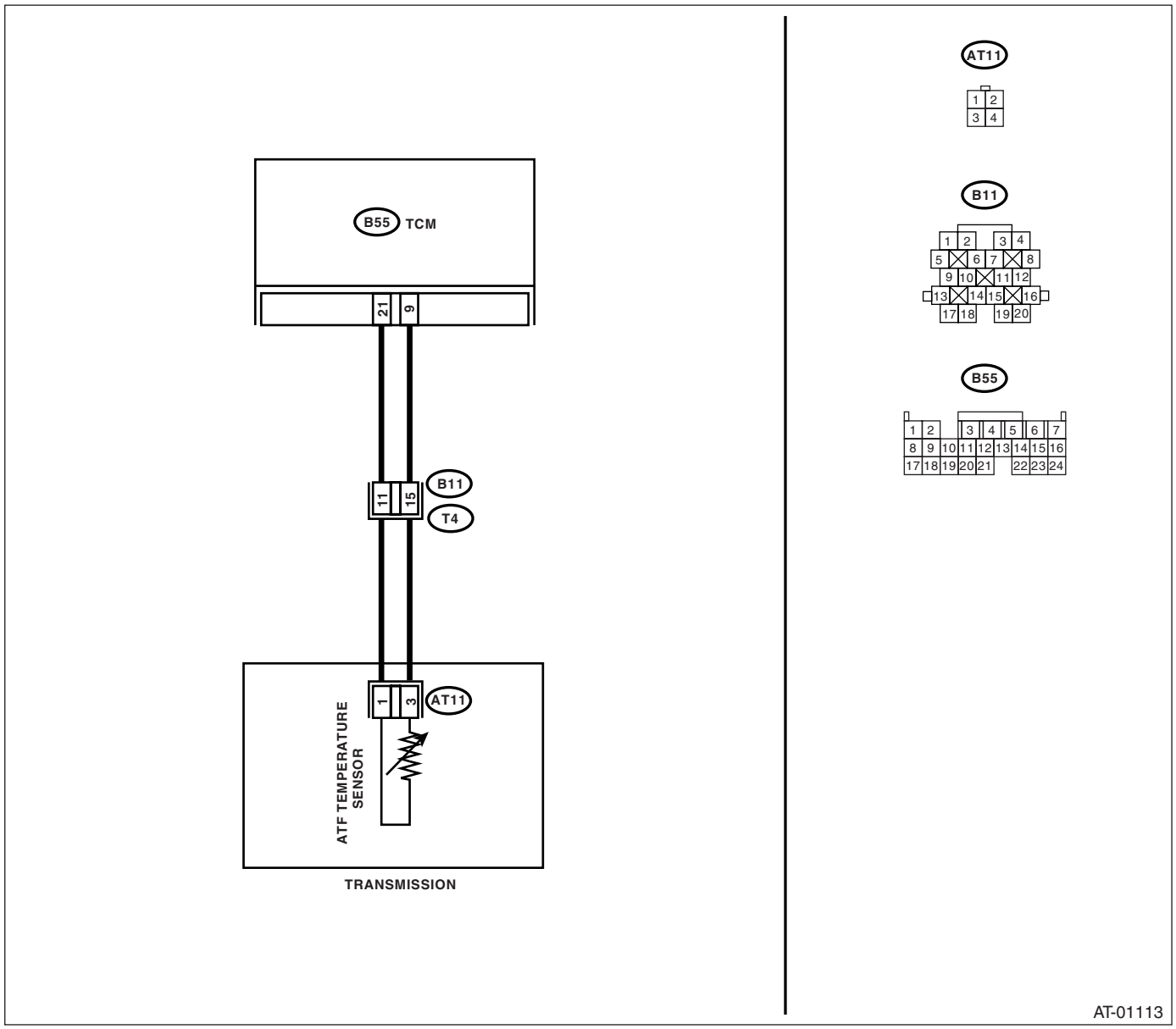
DIAGNOSIS:

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

TROUBLE SYMPTOM:

Excessive shift shock.

WIRING DIAGRAM:



	Step	Check	Yes	No
1	**CHECK HARNESS CONNECTOR BETWEEN TCM AND ATF TEMPERATURE SENSOR.** 1) Turn the ignition switch to OFF. 2) Disconnect the connector from transmission and TCM. 3) Turn the ignition switch to ON. 4) Measure the voltage of harness between TCM connector and chassis ground. ***Connector & terminal*** ***(B55) No. 21 (+) — Chassis ground (–):***	Is the voltage less than 1 V?	Go to step **2.**	Repair the short circuit in harness between TCM and transmission connector.
2	**CHECK HARNESS CONNECTOR BETWEEN TCM AND ATF TEMPERATURE SENSOR.** Measure the voltage of harness between TCM connector and chassis ground. ***Connector & terminal*** ***(B55) No. 9 (+) — Chassis ground (–):***	Is the voltage less than 1 V?	Go to step **3.**	Repair the short circuit in 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 ATF temperature reaches to 80°C (176°F). NOTE: If ambient temperature is below 0°C (32°F), drive the vehicle until 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 500 — 600 Ω?	Go to step **4.**	Replace control valve body.
4	**CHECK ATF TEMPERATURE SENSOR.** Measure the resistance between transmission connector terminals. ***Connector & terminal*** ***(T4) No. 11 — No. 15:***	Does the resistance value increase when ATF temperature decreases?	Go to step **7.**	Replace control valve body.
5	**PREPARE SUBARU SELECT MONITOR.**	Do you have a Subaru Select Monitor?	Go to step **7.**	Go to step **6.**
6	**CHECK INPUT SIGNAL FOR TCM.** 1) Connect the connector to transmission. 2) Warm-up the transmission until ATF temperature is about 80°C (176°F). NOTE: If ambient temperature is below 0°C (32°F), drive the vehicle until ATF reaches its operating temperature. 3) Measure the voltage between TCM connector terminal. ***Connector & terminal*** ***(B55) No. 9 (+) — No. 21 (–):***	Is the voltage 1.5 — 1.9 V?	Even if the AT OIL TEMP warning light turns on, the circuit has returned to a normal condition at this time. Temporary poor contact of the connector or harness may be the cause. Repair the harness or contact in ATF temperature sensor and transmission connector.	Go to step **8.**

	Step	Check	Yes	No
7	**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 AT OIL TEMP warning light turns on, the circuit has returned to a normal condition at this time. Temporary poor contact of the connector or harness may be the cause. Repair the harness or contact in ATF temperature sensor and transmission connector.	Go to step **8.**
8	**CHECK POOR CONTACT.**	Is there poor contact in ATF temperature sensor circuit?	Repair the poor contact.	Replace the TCM. <Ref. to 4AT-78, Transmission Control Module (TCM).>

MEMO:

D: DTC P0715 — INPUT/TURBINE SPEED SENSOR CIRCUIT —

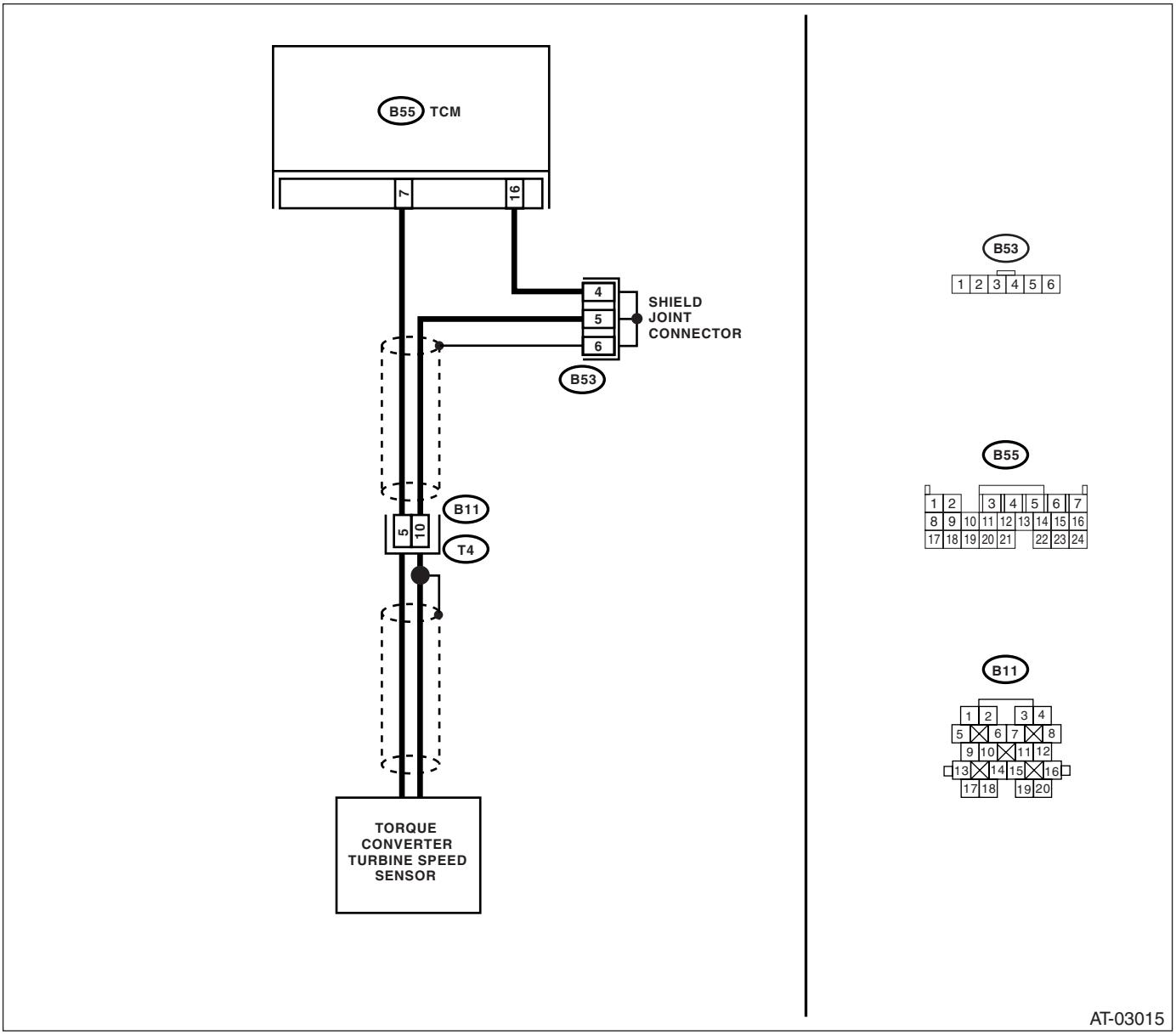
DIAGNOSIS:

The input signal circuit of TCM is open or shorted.

TROUBLE SYMPTOM:

Excessive shift shock.

WIRING DIAGRAM:



	Step	Check	Yes	No
1	**CHECK TORQUE CONVERTER TURBINE SPEED SENSOR.** 1) Turn the ignition switch to OFF. 2) Disconnect the connector from transmission. 3) Measure the resistance between transmission connector receptacle's terminals. ***Connector & terminal*** ***(T4) No. 5 — No. 10:***	Is the resistance 450 — 650 Ω?	Go to step **2.**	Replace the turbine speed sensor. <Ref. to 4AT-61, Torque Converter Turbine Speed Sensor.>
2	**CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.** 1) Disconnect the connector from TCM. 2) Measure the resistance of harness between TCM and transmission connector. ***Connector & terminal*** ***(B55) No. 7 — (B11) No. 5:***	Is the resistance less than 1 Ω?	Go to step **3.**	Repair the open circuit in harness between TCM and transmission connector.
3	**CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.** Measure the resistance of harness between TCM and transmission connector. ***Connector & terminal*** ***(B55) No. 16 — (B11) No. 10:***	Is the resistance less than 1 Ω?	Go to step **4.**	Repair the open circuit in harness between TCM and transmission connector, and poor contact in coupling connector.
4	**CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.** Measure the resistance of harness between TCM and chassis ground. ***Connector & terminal*** ***(B55) No. 16 — Chassis ground:***	Is the resistance more than 1 MΩ?	Go to step **5.**	Repair the short circuit in harness between TCM and transmission connector.
5	**CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.** Measure the resistance of harness between TCM and chassis ground. ***Connector & terminal*** ***(B55) No. 7 — Chassis ground:***	Is the resistance more than 1 MΩ?	Go to step **6.**	Repair the short circuit in harness between TCM and transmission connector, and poor contact in coupling connector.
6	**CHECK INPUT SIGNAL FOR TCM USING SUBARU SELECT MONITOR.** 1) Connect the connectors to TCM and transmission. 2) Connect the Subaru Select Monitor to data link connector. 3) Turn the ignition switch to ON and turn Subaru Select Monitor switch to ON. 4) Start the engine. 5) Move the select lever to "P" or "N" range. 6) Read the data of turbine speed using Subaru Select Monitor. • Compare the tachometer with Subaru Select Monitor indications.	Is the revolution value same as the tachometer reading shown on the combination meter?	Even if the AT OIL TEMP warning light blinks, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair the harness or connector in TCM and transmission.	Go to step **7.**
7	**CHECK POOR CONTACT.**	Is there poor contact in torque converter turbine speed sensor circuit?	Repair the poor contact.	Replace the TCM. <Ref. to 4AT-78, Transmission Control Module (TCM).>

E: DTC P0719 — TORQUE CONVERTER/BRAKE SWITCH “B” CIRCUIT LOW —

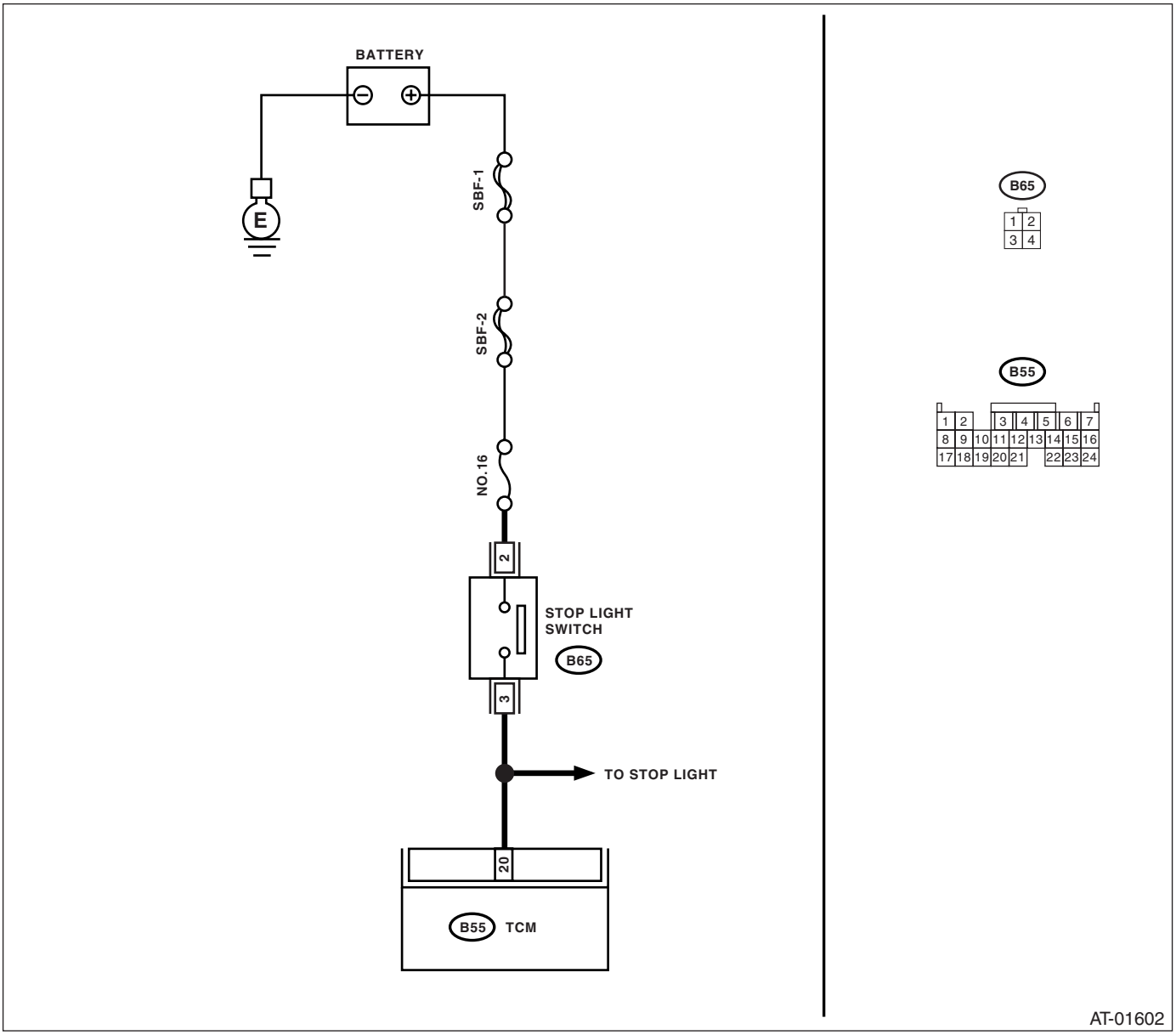
DIAGNOSIS:

Brake switch malfunction or input signal open circuit.

TROUBLE SYMPTOM:

Gear is not shifted down when climbing hill.

WIRING DIAGRAM:



	Step	Check	Yes	No
1	**CHECK OPERATION OF BRAKE LIGHT.** Depress the brake pedal.	Does the brake light illuminate?	Go to step **2.**	Check the brake light circuit.
2	**CHECK TCM INPUT SIGNAL.** 1) Depress the brake pedal. 2) Measure the voltage of harness between TCM and stop light switch. ***Connector & terminal*** ***(B55) No. 20 (+) — Chassis ground (–):***	Is the voltage more than 10 V?	Go to step **5.**	Go to step **3.**
3	**HECK HARNESS CONNECTOR BETWEEN TCM AND BRAKE LIGKT SWITCH.** 1) Turn the ignition switch to OFF. 2) Disconnect the connector from TCM and stop light switch. 3) Measure the resistance between TCM and stop light switch. ***Connector & terminal*** ***(B55) No. 20 — (B65) No. 3:***	Is the resistance less than 1 Ω?	Go to step **4.**	Repair the open harness between TCM and stop light switch.
4	**CHECK HARNESS CONNECTOR BETWEEN TCM AND BRAKE LIGKT SWITCH.** Measure the resistance between TCM and stop light switch. ***Connector & terminal*** ***(B55) No. 20 — (B65) No. 3:***	Is the resistance more than 1 MΩ?	Go to step **5.**	Repair the short harness between TCM and stop light switch.
5	**INSPECT POOR CONTACT.**	Is there poor contact in the brake switch input signal circuit?	Repair poor contact.	Replace the TCM. <Ref. to 4AT-78, Transmission Control Module (TCM).>

F: DTC P0720 — AT VEHICLE SPEED SENSOR CIRCUIT —

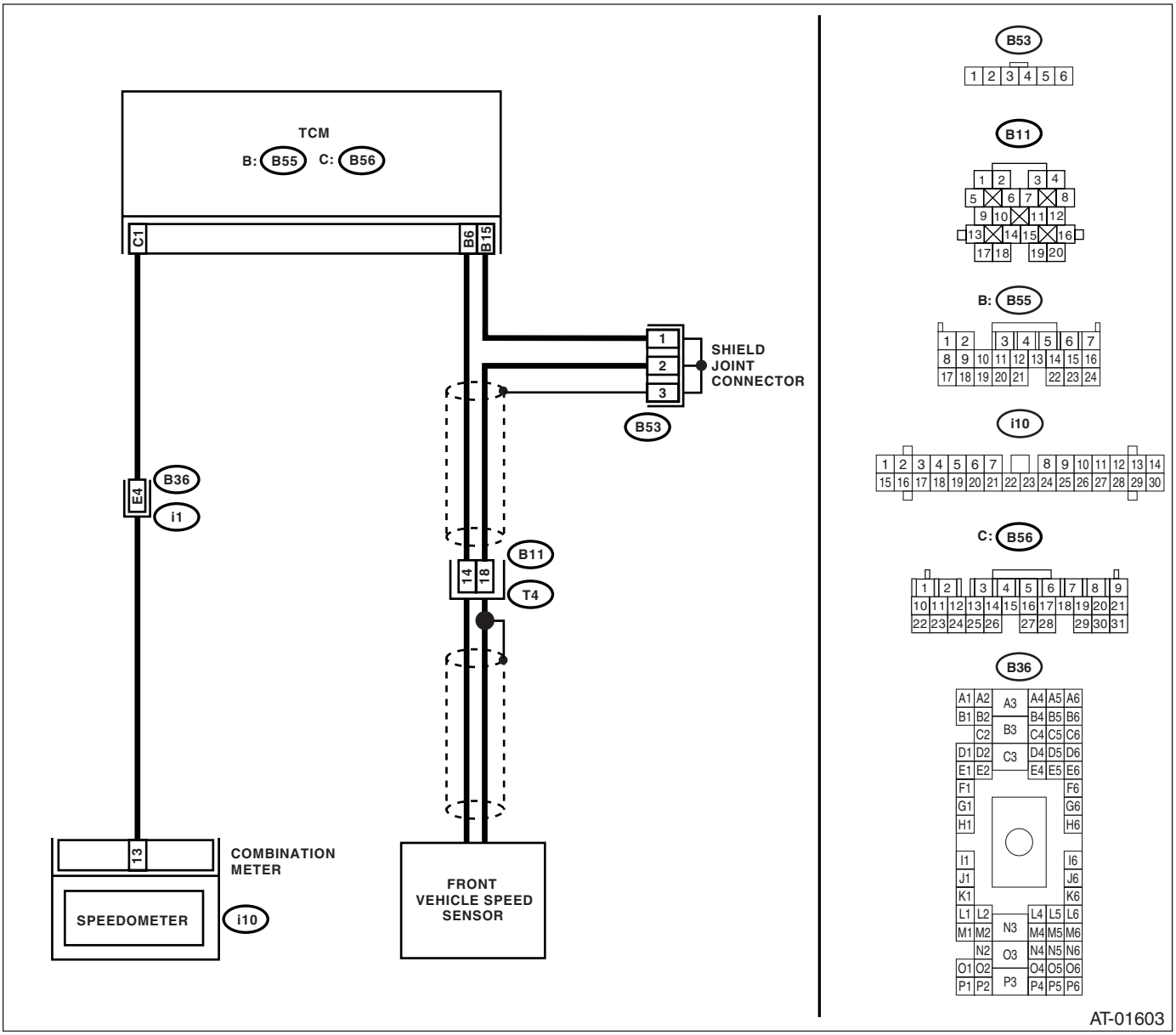
DIAGNOSIS:

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

TROUBLE SYMPTOM:

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

WIRING DIAGRAM:



	Step	Check	Yes	No
1	**CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.** 1) Turn the ignition switch to OFF. 2) Disconnect the connector from TCM and transmission. 3) Measure the resistance of harness between TCM and transmission connector. ***Connector & terminal*** ***(B55) No. 6 — (B11) No. 14:***	Is the resistance less than 1 Ω?	Go to step **2.**	Repair the open circuit in harness between TCM and transmission connector.
2	**CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.** Measure the resistance of harness between TCM and transmission connector. ***Connector & terminal*** ***(B55) No. 15 — (B11) No. 18:***	Is the resistance less than 1 Ω?	Go to step **3.**	Repair the open circuit in harness between TCM and transmission connector, and poor contact in coupling connector.
3	**CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.** Measure the resistance of harness between TCM and transmission connector. ***Connector & terminal*** ***(B55) No. 6 — Chassis ground:***	Is the resistance more than 1 MΩ?	Go to step **4.**	Repair the short circuit in harness between TCM and transmission connector.
4	**CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.** Measure the resistance of harness between TCM and transmission connector. ***Connector & terminal*** ***(B55) No. 15 — Chassis ground:***	Is the resistance more than 1 MΩ?	Go to step **5.**	Repair the short circuit in harness between TCM and transmission connector, and poor contact in coupling connector.
5	**CHECK FRONT VEHICLE SPEED SENSOR.** Measure the resistance between transmission connector receptacle's terminals. ***Connector & terminal*** ***(T4) No. 14 — No. 18:***	Is the resistance 450 — 650 Ω?	Go to step **6.**	Replace the front vehicle speed sensor. <Ref. to 4AT-55, Front Vehicle Speed Sensor.>

	Step	Check	Yes	No
6	**CHECK INPUT SIGNAL FOR TCM USING SUBARU SELECT MONITOR.** 1) Connect all connectors. 2) Connect the Subaru Select Monitor to data link connector. 3) Lift-up the vehicle and place safety stands. NOTE: Raise all wheels off floor. 4) Turn the ignition switch to ON and turn Subaru Select Monitor switch to ON. 5) Start the engine. 6) Read the data of vehicle speed using Subaru Select Monitor. • 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 light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to ABS-21, Clear Memory Mode.>	Does the speedometer indication increase as Subaru Select Monitor front wheel speed data increases?	Even if the AT OIL TEMP warning light blinks, the circuit has returned to a normal condition at this time. A temporary poor connector or harness may be the cause. Repair the harness or connector in front vehicle speed sensor circuit.	Go to step **7.**
7	**CHECK POOR CONTACT.**	Is there poor contact in front vehicle speed sensor circuit?	Repair the poor contact.	Replace the TCM. <Ref. to 4AT-78, Transmission Control Module (TCM).>

MEMO:

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

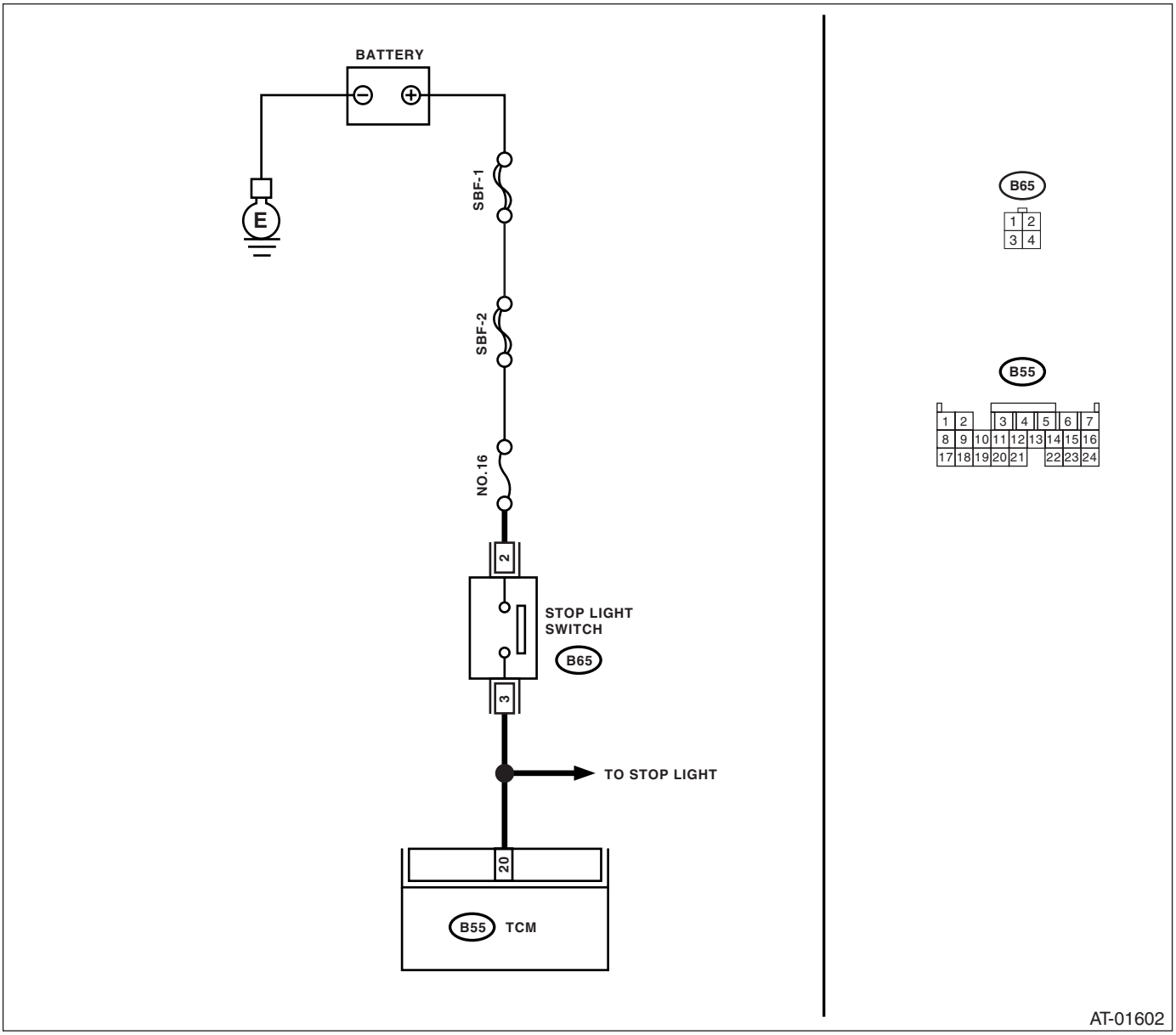
DIAGNOSIS:

Brake switch malfunction or open brake switch input signal circuit.

TROUBLE SYMPTOM:

Gear is not shifted down when climbing hill.

WIRING DIAGRAM:



	Step	Check	Yes	No
1	**CHECK TCM INPUT SIGNAL.** 1) Disconnect the harness connector from TCM. 2) Measure the voltage of harness between TCM and stop light switch. ***Connector & terminal*** ***(B55) No. 20 (+) — Chassis ground (–):***	Is the voltage more than 10 V?	Go to step **2.**	Go to step **4.**
2	**CHECK STOP LIGHT SWITCH.** 1) Turn the ignition switch OFF. 2) Disconnect the connector from stop light switch. 3) Measure the resistance between stop light switch connector. ***Connector & terminal*** ***No. 2 — No. 3:***	Is the resistance more than 1 MΩ?	Go to step **3.**	Replace the stop light switch.
3	**CHECK HARNESS CONNECTOR BETWEEN TCM AND STOP LIGHT SWITCH.** 1) Turn the ignition switch ON. 2) Measure the voltage between TCM and chassis ground. ***Connector & terminal*** ***(B55) No. 20 (+) — Chassis ground (–):***	Is the voltage less than 1 V?	Go to step **4.**	Repair the short in power supply circuit to harness between TCM and stop light switch.
4	**INSPECT POOR CONTACT.**	Is there poor contact in the brake switch input signal circuit?	Repair poor contact.	Replace the TCM. <Ref. to 4AT-78, Transmission Control Module (TCM).>

H: DTC P0725 — ENGINE SPEED INPUT CIRCUIT —

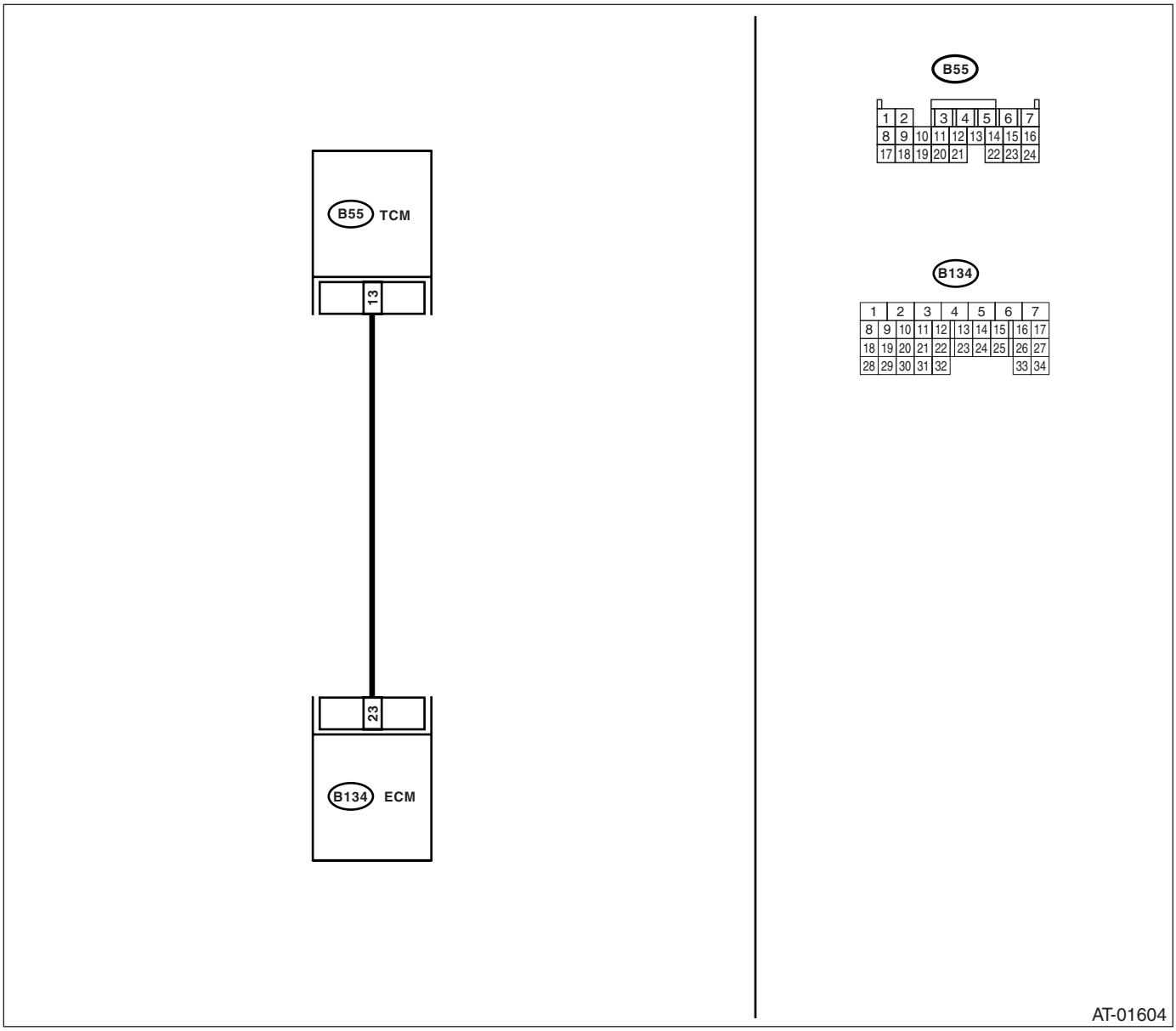
DIAGNOSIS:

The engine speed input signal circuit is open or shorted.

TROUBLE SYMPTOM:

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

WIRING DIAGRAM:



	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 connector. ***Connector & terminal*** ***(B55) No. 13 — (B134) No. 23:***	Is the resistance less than 1 Ω?	Go to step **2.**	Repair the open circuit in 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. ***Connector & terminal*** ***(B55) No. 13 — Chassis ground:***	Is the resistance more than 1 MΩ?	Go to step **3.**	Repair the short circuit in 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 data link connector. 3) Start the engine and turn Subaru Select Monitor switch to ON. 4) Idle the engine. 5) Read the data of engine speed using Subaru Select Monitor. • Display shows the engine speed signal value sent from ECM.	Is the revolution value same as tachometer reading shown on combination meter?	Even if the AT OIL TEMP warning light blinks, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair the harness or connector in 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 one.	Does the DTC appear again, after memory has been cleared?	Replace the TCM. <Ref. to 4AT-78, 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)-65, DTC P0736 — REVERSE INCORRECT RATIO —.>

J: DTC P0732 — GEAR 2 INCORRECT RATIO —

NOTE:
Refer to DTC P0736 for diagnostic procedure. <Ref. to 4AT(D)-65, DTC P0736 — REVERSE INCORRECT RATIO —.>

K: DTC P0733 — GEAR 3 INCORRECT RATIO —

NOTE:
Refer to DTC P0736 for diagnostic procedure. <Ref. to 4AT(D)-65, DTC P0736 — REVERSE INCORRECT RATIO —.>

L: DTC P0734 — GEAR 4 INCORRECT RATIO —

NOTE:
Refer to DTC P0736 for diagnostic procedure. <Ref. to 4AT(D)-65, DTC P0736 — REVERSE INCORRECT RATIO —.>

M: DTC P0736 — REVERSE INCORRECT RATIO —

DIAGNOSIS:

Vehicle speed sensor malfunction and torque converter turbine speed sensor malfunction, etc. or control valve malfunction.

TROUBLE SYMPTOM:

- Shift point is too high or too low.
- Excessive shift shock.
- Tight cornering condition is occurred.
- 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 data link connector. 2) Turn the ignition switch to ON. 3) Read the value of accelerator pedal position sensor.	Does the value of accelerator pedal position sensor change from 0% to 100% smoothly when throttle position sensor was operated from fully closing to fully opening?	Go to step **2.**	Check accelerator pedal position sensor. <Ref. to 4AT(D)-100, DTC P1708 — THROTTLE POSITION SENSOR CIRCUIT LOW INPUT —.>
2	**FRONT VEHICLE SPEED SENSOR.** 1) Lift-up the vehicle and place safety stand. 2) Start the engine. 3) Move the select lever “D” range and slowly increase vehicle speed. NOTE: The speed difference between front and rear wheels may light 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 almost correspond with vehicle speed indicated by combination meter?	Go to step **3.**	Check the front vehicle speed sensor.
3	**CHECK TORQUE CONVERTER TURBINE SPEED SENSOR.** 1) Move the select lever to “P” or “N” range. 2) Idle the engine.	Does the turbine speed sensor revolution displayed by Subaru Select Monitor almost correspond with engine revolution indicated by tachometer?	There are malfunctions in TCM, TCM connector poor contact, or transmission assembly mechanical malfunction.	Check the torque converter turbine speed sensor circuit.

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

DIAGNOSIS:

- Lock up clutch malfunction
- Locking of valve

TROUBLE SYMPTOM:

Lock up is not operated.

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

MEMO:

O: DTC P0743 — TORQUE CONVERTER CLUTCH CIRCUIT ELECTRICAL —

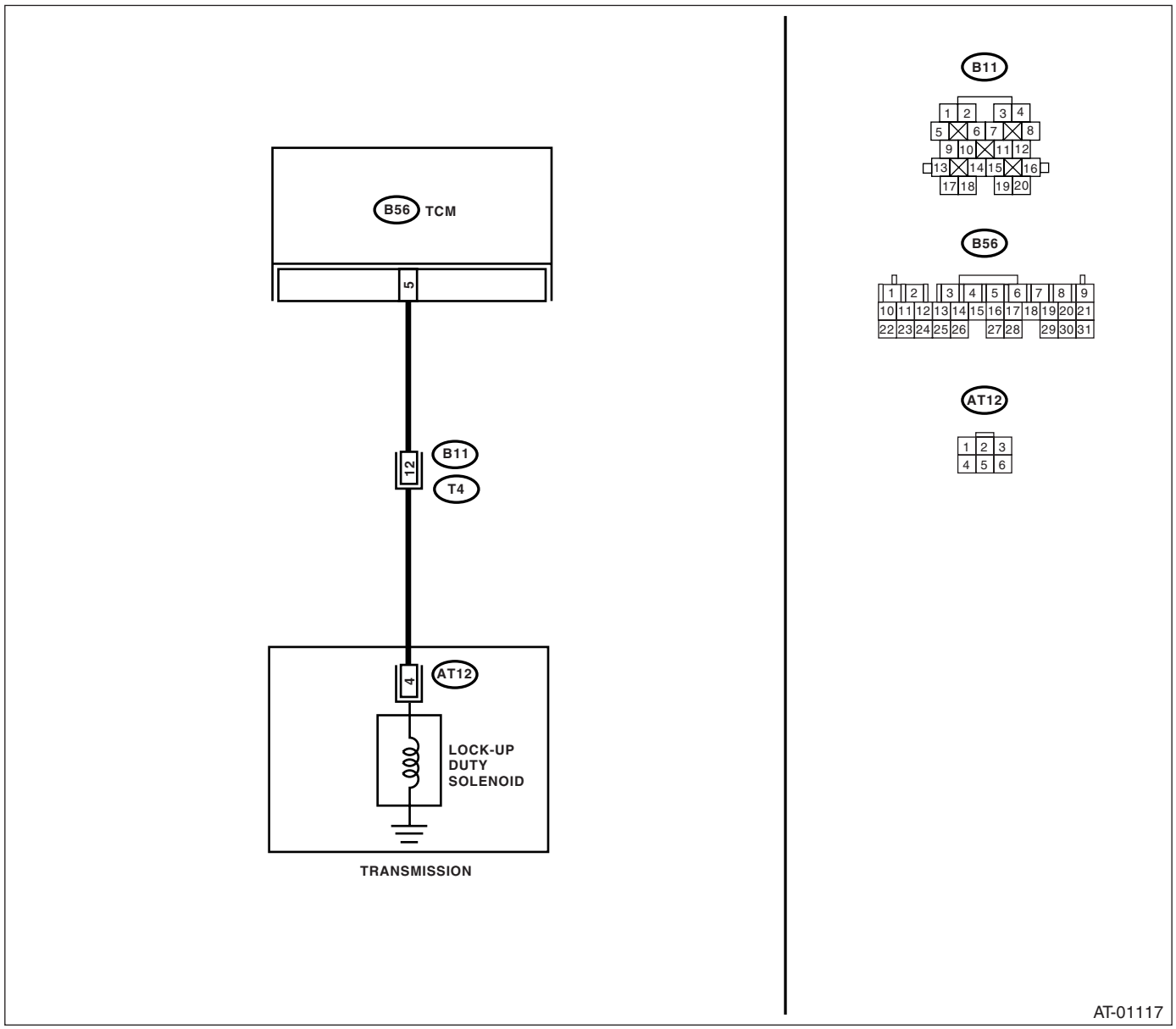
DIAGNOSIS:

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

TROUBLE SYMPTOM:

No “lock-up” (after engine warm-up).

WIRING DIAGRAM:



	Step	Check	Yes	No
1	**CHECK DTC.**	Do multiple DTCs appear in the on-board diagnostics test mode?	Go to another DTC.	Go to step **2.**
2	**CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.** 1) Turn the ignition switch to OFF. 2) Disconnect the connector from TCM and transmission. 3) Measure the resistance of harness between TCM and transmission connector. ***Connector & terminal*** ***(B56) No. 5 — (B11) No. 12:***	Is the resistance less than 1 Ω?	Go to step **3.**	Repair the open circuit in harness between TCM and transmission connector.
3	**CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.** Measure the resistance of harness connector between TCM and chassis ground. ***Connector & terminal*** ***(B56) No. 5 — Chassis ground:***	Is the resistance more than 1 MΩ?	Go to step **4.**	Repair the short circuit in 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 — 4.5 Ω?	Go to step **6.**	Go to step **5.**
5	**CHECK LOCK-UP DUTY SOLENOID (IN TRANSMISSION).** 1) Disconnect the transmission connector. 2) Drain the ATF. **CAUTION:** **Do not drain the ATF until it cools down.** 3) Remove the oil pan and disconnect connector from lock-up duty solenoid. 4) Measure the resistance between lock-up duty solenoid and transmission ground. ***Connector & terminal*** ***(AT12) No. 4 — Transmission ground:***	Is the resistance 2.0 — 4.5 Ω?	Go to step **6.**	Replace the control valve body. <Ref. to 4AT-62, Control Valve Body.>
6	**CHECK HARNESS CONNECTOR BETWEEN LOCK-UP DUTY SOLENOID AND TRANSMISSION.** Measure the resistance of harness between lock-up duty solenoid and transmission connector. ***Connector & terminal*** ***(T4) No. 12 — (AT12) No. 4:***	Is the resistance less than 1 Ω?	Go to step **7.**	Repair the open circuit in harness between TCM and transmission connector.
7	**CHECK HARNESS CONNECTOR BETWEEN LOCK-UP DUTY SOLENOID AND TRANSMISSION.** Measure the resistance of harness between transmission connector and transmission ground. ***Connector & terminal*** ***(T4) No. 12 — Transmission ground:***	Is the resistance more than 1 MΩ?	Even if the AT OIL TEMP warning light blinks, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair the harness or connector in lock-up duty solenoid and transmission.	Repair the short circuit in harness between lock-up duty solenoid and transmission connector.

P: DTC P0748 — PRESSURE CONTROL SOLENOID "A" ELECTRICAL —

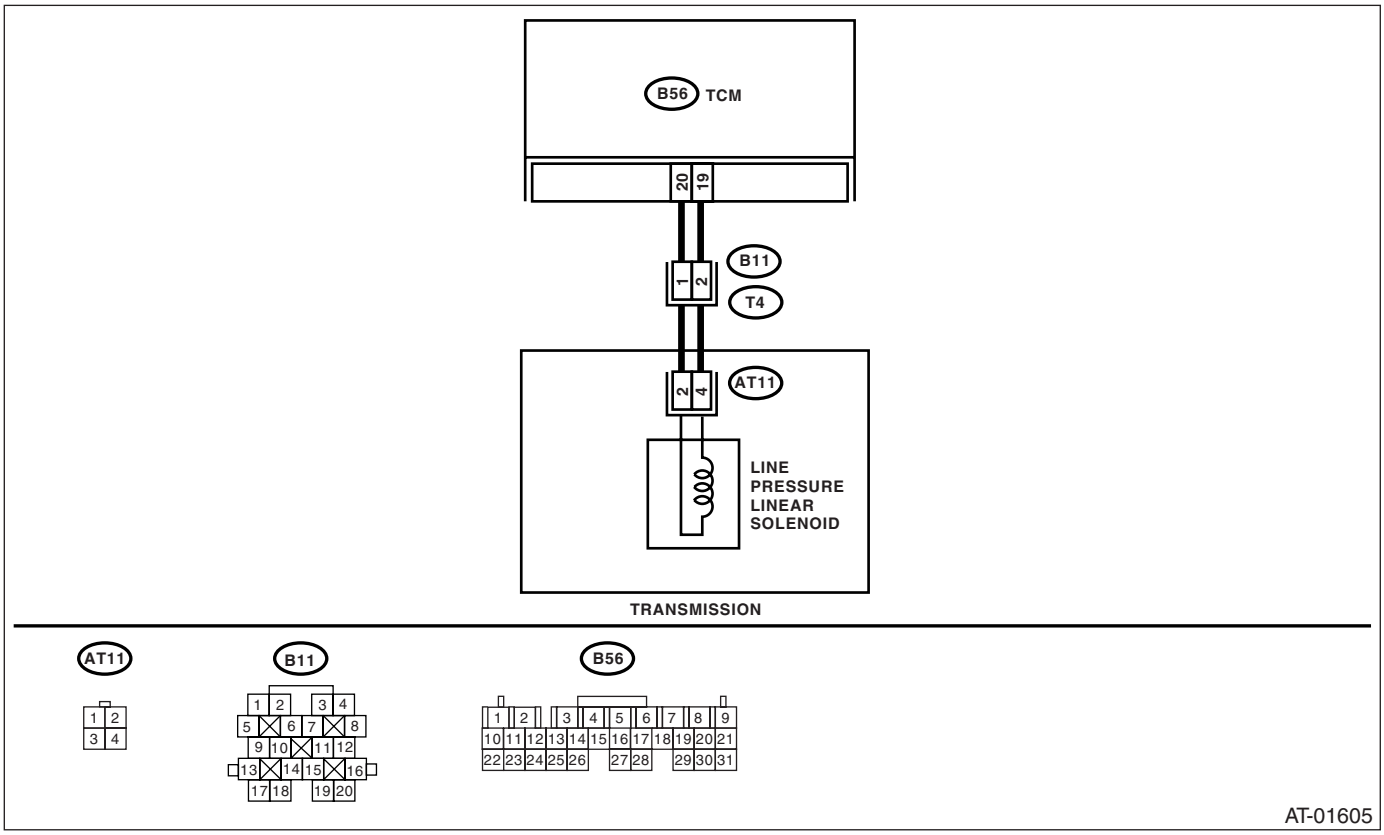
DIAGNOSIS:

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

TROUBLE SYMPTOM:

Excessive shift shock.

WIRING DIAGRAM:



	Step	Check	Yes	No
1	**CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.** 1) Turn the ignition switch to OFF. 2) Disconnect the connector from transmission and TCM. 3) Measure the resistance of harness between TCM and transmission connector. ***Connector & terminal*** ***(B56) No. 19 — (B11) No. 2:*** ***(B56) No. 20 — (B11) No. 1:***	Is the resistance less than 1 Ω?	Go to step **2.**	Repair the open circuit in harness between TCM and transmission connector.
2	**CHECK HARNESS CONNECTOR BETWEEN TCM AND CHASSIS GROUND.** Measure the resistance of harness between TCM and chassis ground. ***Connector & terminal*** ***(B56) No. 19 — Chassis ground:*** ***(B56) No. 20 — Chassis ground:***	Is the resistance more than 1 MΩ?	Go to step **3.**	Repair the short circuit in harness between TCM and transmission connector.
3	**CHECK LINE PRESSURE LINEAR SOLENOID.** Measure the resistance between transmission connector receptacle's terminals. ***Connector & terminal*** ***(T4) No. 1 — No. 2:***	Is the resistance 4 — 6 Ω?	Go to step **5.**	Go to step **4.**
4	**CHECK LINE PRESSURE LINEAR SOLENOID (IN TRANSMISSION).** 1) Remove the transmission connector from bracket. 2) Drain the ATF. **CAUTION:** **Do not drain the ATF until it cools down.** 3) Remove the oil pan, and disconnect connector from line pressure linear solenoid. 4) Measure the resistance between line pressure linear solenoid connector and transmission ground. ***Connector & terminal*** ***(AT11) No. 2 — No. 4:***	Is the resistance 2.0 — 4.5 Ω?	Go to step **5.**	Replace the control valve body. <Ref. to 4AT-62, Control Valve Body.>
5	**CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND LINE PRESSURE LINEAR SOLENOID.** Measure the resistance of harness between line pressure linear solenoid and transmission connector. ***Connector & terminal*** ***(T4) No. 2 — (AT11) No. 4:*** ***(T4) No. 1 — (AT11) No. 2:***	Is the resistance less than 1 Ω?	Go to step **6.**	Repair the open circuit in harness between line pressure linear solenoid and transmission connector.

	Step	Check	Yes	No
6	**CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND LINE PRESSURE LINEAR SOLENOID.** Measure the resistance of harness between transmission connector and transmission ground. ***Connector & terminal*** ***(T4) No. 1 — Transmission ground:*** ***(T4) No. 2 — Transmission ground:***	Is the resistance more than 1 MΩ?	Even if the AT OIL TEMP warning light blinks, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair the harness or connector in line pressure linear solenoid and transmission.	Repair the short circuit in harness between line pressure linear solenoid and transmission connector.

MEMO:

Q: DTC P0753 — SHIFT SOLENOID “A” ELECTRICAL —

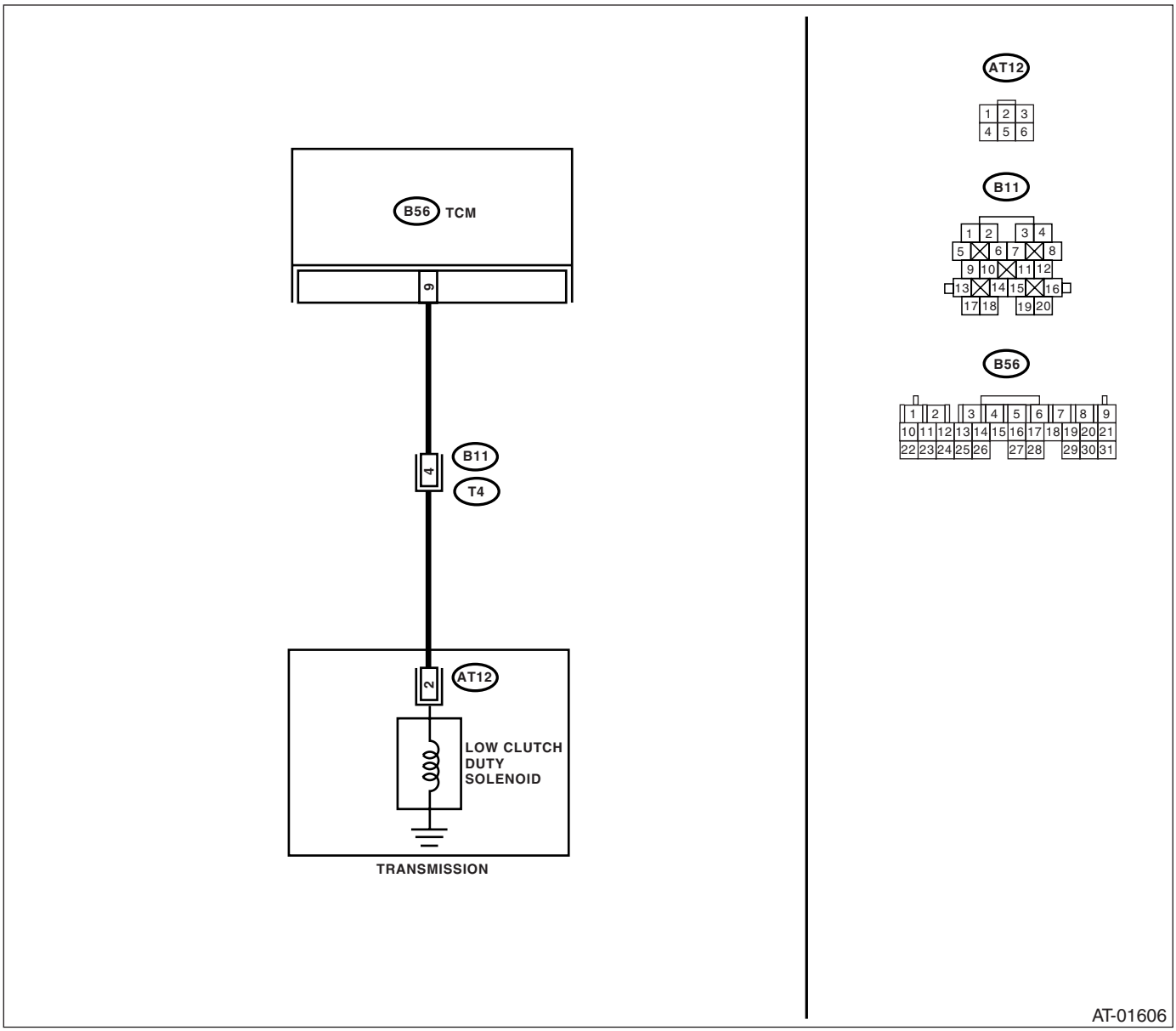
DIAGNOSIS:

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

TROUBLE SYMPTOM:

Excessive shift shock.

WIRING DIAGRAM:



	Step	Check	Yes	No
1	**CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.** 1) Turn the ignition switch to OFF. 2) Disconnect the connector from TCM and transmission. 3) Measure the resistance of harness between TCM and shift solenoid 1 connector. ***Connector & terminal*** ***(B56) No. 9 — (B11) No. 4:***	Is the resistance less than 1 Ω?	Go to step **2.**	Repair the open circuit in harness between TCM and transmission connector.
2	**CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.** Measure the resistance of harness between TCM connector and chassis ground. ***Connector & terminal*** ***(B56) No. 9 — Chassis ground:***	Is the resistance more than 1 MΩ?	Go to step **3.**	Repair the short circuit in harness between TCM and transmission connector.
3	**CHECK LOW CLUTCH DUTY SOLENOID.** Measure the resistance between transmission connector terminals. ***Connector & terminal*** ***(T4) No. 4 — No. 20:***	Is the resistance 2.0 — 6.0 Ω?	Go to step **4.**	Go to step **7.**
4	**CHECK OUTPUT SIGNAL FROM TCM USING SUBARU SELECT MONITOR.** 1) Connect the connectors to TCM and transmission. 2) Connect the Subaru Select Monitor to data link connector. 3) Start the engine and turn Subaru Select Monitor switch to ON. 4) Warm-up the transmission until ATF temperature is above 80°C (176°F). NOTE: If ambient temperature is below 0°C (32°F), drive the vehicle until ATF reaches its operating temperature. 5) Stop the engine and turn ignition switch to ON (engine OFF). 6) Move the select lever to “P” or “N” range and depress accelerator pedal. 7) Read the data of low clutch duty solenoid using Subaru Select Monitor. • Low clutch duty solenoid is indicated in “%”.	Is the value 100%?	Go to step **5.**	Go to step **6.**
5	**CHECK OUTPUT SIGNAL FROM TCM USING SUBARU SELECT MONITOR.** 1) Turn the ignition switch to ON (engine OFF). 2) Move the select lever to “D” range. 3) Read the data of low clutch duty solenoid.	Is the value 0%?	Even if the AT OIL TEMP warning light blinks, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair the harness or connector in transmission.	Go to step **6.**
6	**CHECK POOR CONTACT.**	Is there poor contact in low clutch duty solenoid circuit?	Repair the poor contact.	Replace the TCM. <Ref. to 4AT-78, Transmission Control Module (TCM).>

	Step	Check	Yes	No
7	**CHECK LOW CLUTCH DUTY SOLENOID (IN TRANSMISSION).** 1) Remove the transmission connector from bracket. 2) Drain the ATF. **CAUTION:** **Do not drain the ATF until it cools down.** 3) Remove the oil pan, and disconnect connector from low clutch duty solenoid. 4) Measure the resistance between low clutch duty solenoid connector and transmission ground. ***Connector & terminal*** ***(AT12) No. 2 — Transmission ground:***	Is the resistance 2.0 — 6.0 Ω?	Go to step **8.**	Replace the control valve body. <Ref. to 4AT-62, Control Valve Body.>
8	**CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND LOW CLUTCH DUTY SOLENOID.** Measure the resistance of harness between low clutch duty solenoid and transmission connector. ***Connector & terminal*** ***(T4) No. 4 — (AT12) No. 2:***	Is the resistance less than 1 Ω?	Go to step **9.**	Repair the open circuit in harness between low clutch duty solenoid and transmission connector.
9	**CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND LOW CLUTCH DUTY SOLENOID.** Measure the resistance of harness between transmission connector and transmission ground. ***Connector & terminal*** ***(T4) No. 4 — Transmission ground:***	Is the resistance more than 1 MΩ?	Even if the AT OIL TEMP warning light blinks, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair the harness or connector in low clutch duty solenoid and transmission.	Repair the short circuit in harness between low clutch duty solenoid and transmission connector.

MEMO:

R: DTC P0758 — SHIFT SOLENOID “B” ELECTRICAL —

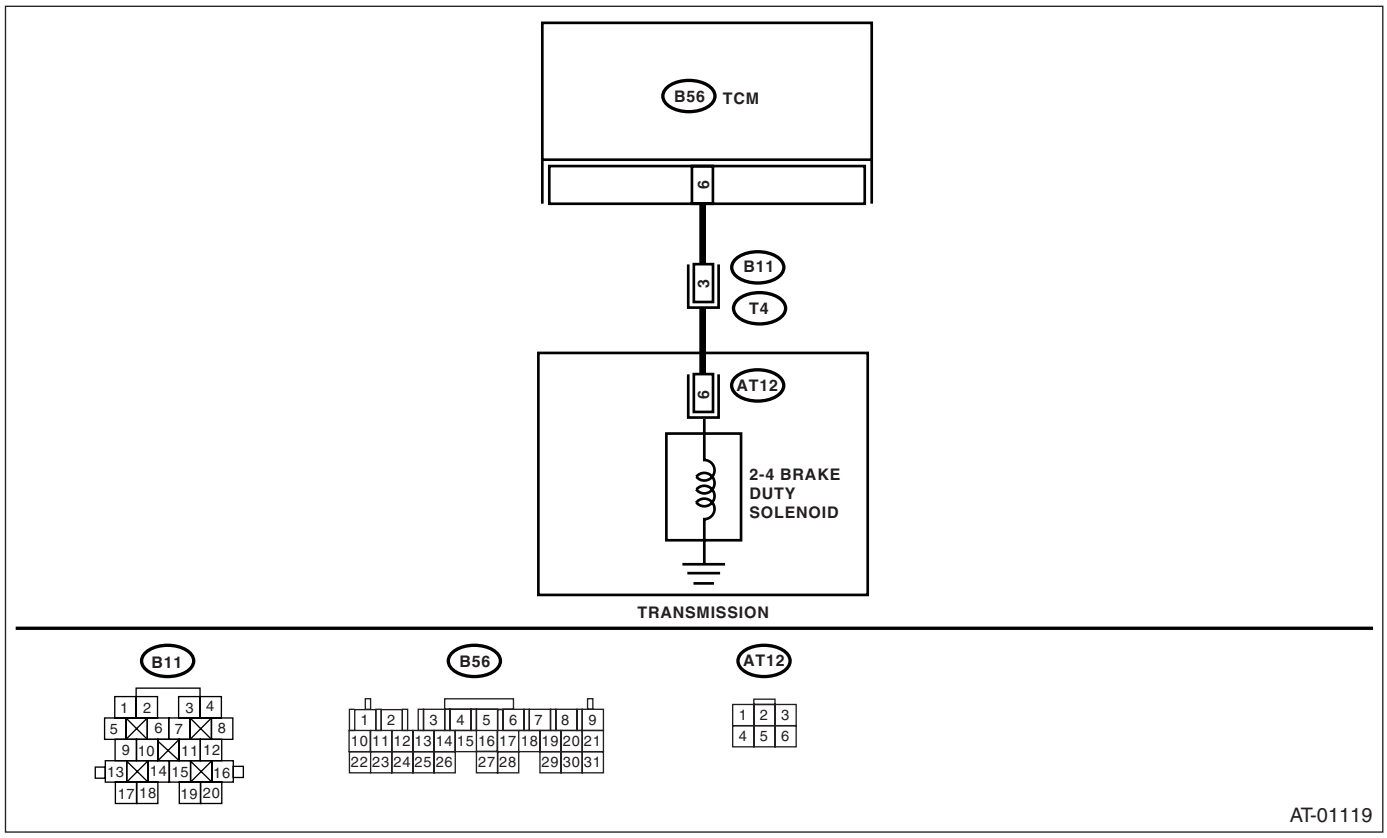
DIAGNOSIS:

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

TROUBLE SYMPTOM:

Excessive shift shock.

WIRING DIAGRAM:



	Step	Check	Yes	No
1	**CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.** 1) Turn the ignition switch to OFF. 2) Disconnect the connector from TCM and transmission. 3) Measure the resistance of harness between TCM and shift transmission connector. ***Connector & terminal*** ***(B56) No. 6 — (B11) No. 3:***	Is the resistance less than 1 Ω?	Go to step **2.**	Repair the open circuit in 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*** ***(B56) No. 6 — Chassis ground:***	Is the resistance more than 1 MΩ?	Go to step **3.**	Repair the short circuit in 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 **7.**
4	**CHECK OUTPUT SIGNAL FROM TCM USING SUBARU SELECT MONITOR.** 1) Connect all connectors. 2) Connect the Subaru Select Monitor to data link connector. 3) Start the engine and turn Subaru Select Monitor switch to ON. 4) Warm-up the transmission until ATF temperature is above 80°C (176°F). NOTE: If ambient temperature is below 0°C (32°F), drive the vehicle until ATF reaches its operating temperature. 5) Stop the engine and turn ignition switch to ON (engine OFF). 6) Move the select lever to “N” range. 7) Read the data of 2-4 brake duty solenoid using Subaru Select Monitor. • 2-4 brake duty solenoid is indicated in “%”.	Is the value 100%?	Go to step **5.**	Go to step **6.**
5	**CHECK OUTPUT SIGNAL FROM TCM USING SUBARU SELECT MONITOR.** Move the select lever to “2” range.	Is the value 0%?	Even if the AT OIL TEMP warning light blinks, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair the harness or connector in TCM and transmission.	Go to step **6.**
6	**CHECK POOR CONTACT.**	Is there poor contact in 2-4 brake duty solenoid circuit?	Repair the poor contact.	Replace the TCM. <Ref. to 4AT-78, Transmission Control Module (TCM).>

	Step	Check	Yes	No
7	**CHECK 2-4 BRAKE DUTY SOLENOID (IN TRANSMISSION).** 1) Remove the transmission connector from bracket. 2) Drain the ATF. **CAUTION:** **Do not drain the ATF until it cools down.** 3) Remove the oil pan, and disconnect connector from 2-4 brake duty solenoid. 4) Measure the resistance between 2-4 brake duty solenoid connector and transmission ground. ***Connector & terminal*** ***(AT12) No. 6 — Transmission ground:***	Is the resistance 2.0 — 6.0 Ω?	Go to step **8.**	Replace control valve body. <Ref. to 4AT-62, Control Valve Body.>
8	**CHECK HARNESS CONNECTOR BETWEEN 2-4 BRAKE DUTY SOLENOID AND TRANSMISSION.** Measure the resistance of harness between 2-4 brake duty solenoid and transmission connector. ***Connector & terminal*** ***(T4) No. 3 — (AT12) No. 6:***	Is the resistance less than 1 Ω?	Go to step **9.**	Repair open circuit in harness between 2-4 brake duty solenoid and transmission connector.
9	**CHECK HARNESS CONNECTOR BETWEEN 2-4 BRAKE DUTY SOLENOID AND TRANSMISSION.** Measure the resistance of harness between transmission connector and transmission ground. ***Connector & terminal*** ***(T4) No. 3 — Transmission ground:***	Is the resistance more than 1 MΩ?	Even if the AT OIL TEMP warning light blinks, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair the harness or connector in high clutch duty solenoid and transmission.	Repair short circuit in harness between 2-4 brake duty solenoid and transmission connector.

MEMO:

S: DTC P0763 — SHIFT SOLENOID “C” ELECTRICAL —

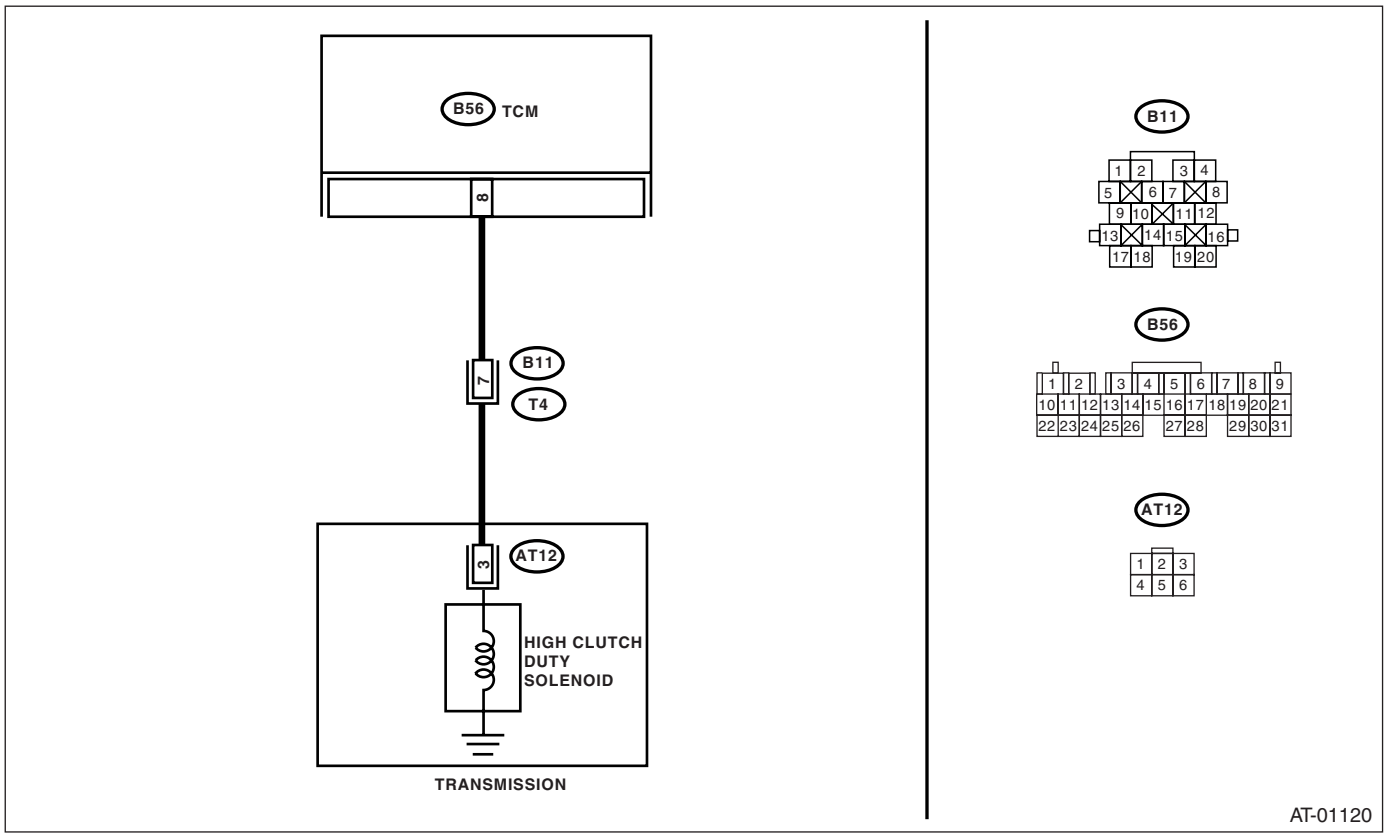
DIAGNOSIS:

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

TROUBLE SYMPTOM:

Excessive shift shock.

WIRING DIAGRAM:



	Step	Check	Yes	No
1	**CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.** 1) Turn the ignition switch to OFF. 2) Disconnect the connector from TCM and transmission. 3) Measure the resistance of harness between TCM and transmission connector. ***Connector & terminal*** ***(B56) No. 8 — (B11) No. 7:***	Is the resistance less than 1 Ω?	Go to step **2.**	Repair the open circuit in 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*** ***(B56) No. 8 — Chassis ground:***	Is the resistance more than 1 MΩ?	Go to step **3.**	Repair the short circuit in 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 **7.**
4	**CHECK OUTPUT SIGNAL FROM TCM USING SUBARU SELECT MONITOR.** 1) Connect the connectors to TCM and transmission. 2) Lift-up the vehicle and place safety stand. NOTE: Raise all wheels off ground. 3) Connect the Subaru Select Monitor to data link connector. 4) Start the engine and turn Subaru Select Monitor switch to ON. 5) Start the engine and warm-up the transmission until ATF temperature is above 80°C (176°F). NOTE: If ambient temperature is below 0°C (32°F), drive the vehicle until 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) Move the select lever to "D" range and slowly increase vehicle speed and measure at 3rd or 4th gear. NOTE: The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to ABS-21, Clear Memory Mode.>	Is the value 0%?	Go to step **5.**	Go to step **6.**

	Step	Check	Yes	No
5	**CHECK OUTPUT SIGNAL FROM TCM USING SUBARU SELECT MONITOR.** Return the engine to idling speed and move select lever to "N" range. NOTE: The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to ABS-21, Clear Memory Mode.>	Is the value 100%?	Even if the AT OIL TEMP warning light blinks, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair the harness or connector in TCM and transmission.	Go to step **6.**
6	**CHECK POOR CONTACT.**	Is there poor contact in high clutch duty circuit?	Repair poor contact.	Replace the TCM. <Ref. to 4AT-78, Transmission Control Module (TCM).>
7	**CHECK HIGH CLUTCH DUTY SOLENOID (IN TRANSMISSION).** 1) Remove the transmission connector from bracket. 2) Drain the ATF. **CAUTION:** **Do not drain the ATF until it cools down.** 3) Remove the oil pan and disconnect connector from high clutch duty solenoid. 4) Measure the resistance between high clutch duty solenoid connector and transmission ground. ***Connector & terminal*** ***(AT12) No. 3 — Transmission ground:***	Is the resistance 2.0 — 6.0 Ω?	Go to step **8.**	Replace the control valve body. <Ref. to 4AT-62, Control Valve Body.>
8	**CHECK HARNESS CONNECTOR BETWEEN HIGH CLUTCH DUTY SOLENOID AND TRANSMISSION.** Measure the resistance of harness between high clutch duty solenoid and transmission connector. ***Connector & terminal*** ***(T4) No. 7 — (AT12) No. 3:***	Is the resistance less than 1 Ω?	Go to step **9.**	Repair the open circuit in harness between TCM and transmission connector.
9	**CHECK HARNESS CONNECTOR BETWEEN HIGH CLUTCH DUTY SOLENOID AND TRANSMISSION.** Measure the resistance of harness between transmission connector and transmission ground. ***Connector & terminal*** ***(T4) No. 7 — Transmission ground:***	Is the resistance more than 1 MΩ?	Even if the AT OIL TEMP warning light blinks, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair the harness or connector in high clutch duty solenoid and transmission.	Repair the short circuit in harness between high clutch duty solenoid and transmission connector.

MEMO:

T: DTC P0768 — SHIFT SOLENOID “D” ELECTRICAL —

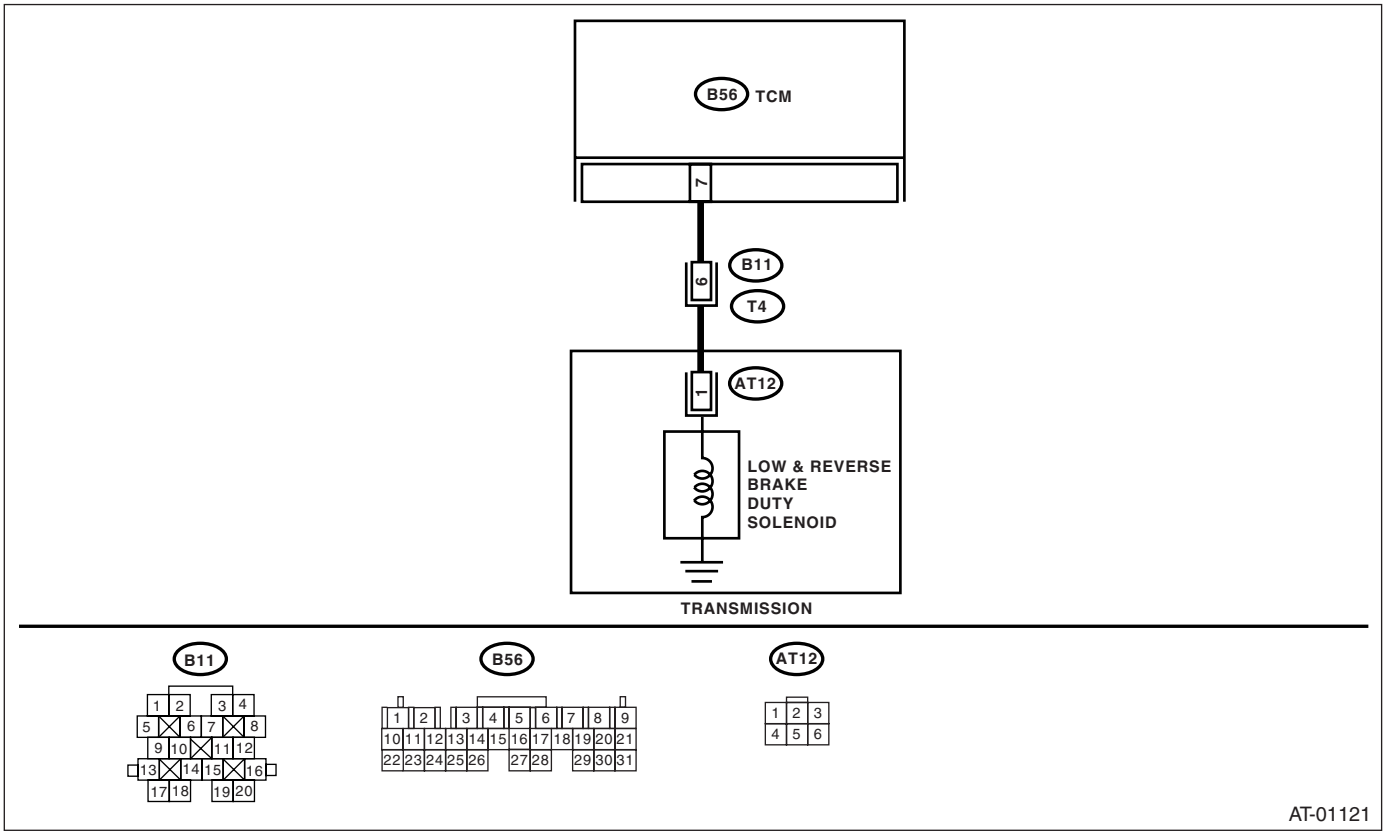
DIAGNOSIS:

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

TROUBLE SYMPTOM:

Gear is not changed.

WIRING DIAGRAM:



	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 and transmission connector. ***Connector & terminal*** ***(B56) No. 7 — (B11) No. 6:***	Is the resistance less than 1 Ω?	Go to step **2.**	Repair the open circuit in harness between TCM and transmission connector.
2	**CHECK HARNESS CONNECTOR BETWEEN TCM AND CHASSIS GROUND.** Measure the resistance of harness between TCM and chassis ground. ***Connector & terminal*** ***(B56) No. 7 — Chassis ground:***	Is the resistance more than 1 MΩ?	Go to step **3.**	Repair the short circuit in harness between TCM and transmission connector.
3	**CHECK LOW & REVERSE BRAKE DUTY SOLENOID.** Measure the resistance between transmission connector receptacle's terminals. ***Connector & terminal*** ***(T4) No. 6 — No. 20:***	Is the resistance 2.0 — 6.0 Ω?	Go to step **4.**	Go to step **7.**
4	**CHECK OUTPUT SIGNAL FROM TCM USING SUBARU SELECT MONITOR.** 1) Connect all connectors. 2) Connect the Subaru Select Monitor to data link connector. 3) Start the engine and turn Subaru Select Monitor switch to ON. 4) Warm-up the transmission until ATF temperature is above 80°C (176°F). NOTE: If ambient temperature is below 0°C (32°F), drive the vehicle until ATF reaches its operating temperature. 5) Stop the engine and turn ignition switch to ON (engine OFF). 6) Move the select lever to "N" range. 7) Read the data of low & reverse duty solenoid using Subaru Select Monitor. • Low & reverse duty solenoid is indicated in "%".	Is the value 100%?	Go to step **5.**	Go to step **6.**
5	**CHECK OUTPUT SIGNAL FROM TCM USING SUBARU SELECT MONITOR.** 1) Move the select lever to "1" range. 2) Read the data of low & reverse duty solenoid.	Is the value 61.5%?	Even if the AT OIL TEMP warning light blinks, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair the harness or connector in TCM and transmission.	Go to step **6.**
6	**CHECK POOR CONTACT.**	Is there poor contact in low & reverse duty solenoid circuit?	Repair the poor contact.	Replace the TCM. <Ref. to 4AT-78, Transmission Control Module (TCM).>

	Step	Check	Yes	No
7	**CHECK LOW & REVERSE BRAKE DUTY SOLENOID (IN TRANSMISSION).** 1) Remove the transmission connector from bracket. 2) Drain the ATF. **CAUTION:** **Do not drain the ATF until it cools down.** 3) Remove the oil pan, and disconnect connector from low & reverse duty solenoid. 4) Measure the resistance between low & reverse duty solenoid connector and transmission ground. ***Connector & terminal*** ***(AT12) No. 1 — Transmission ground:***	Is the resistance 2.0 — 6.0 Ω?	Go to step **8.**	Replace the control valve body. <Ref. to 4AT-62, Control Valve Body.>
8	**CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND LOW & REVERSE DUTY SOLENOID.** Measure the resistance of harness between low & reverse duty solenoid and transmission connector. ***Connector & terminal*** ***(T4) No. 6 — (AT12) No. 1:***	Is the resistance less than 1 Ω?	Go to step **9.**	Repair the open circuit in harness between low & reverse brake duty solenoid and transmission connector.
9	**CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND LOW & REVERSE BRAKE DUTY SOLENOID.** Measure the resistance of harness between transmission connector and transmission ground. ***Connector & terminal*** ***(T4) No. 6 — Transmission ground:***	Is the resistance more than 1 MΩ?	Even if the AT OIL TEMP warning light blinks, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair the harness or connector in low & reverse brake duty solenoid and transmission.	Repair the short circuit in harness between low & reverse brake duty solenoid and transmission connector.

MEMO:

U: DTC P0801 — REVERSE INHIBITOR CONTROL CIRCUIT —

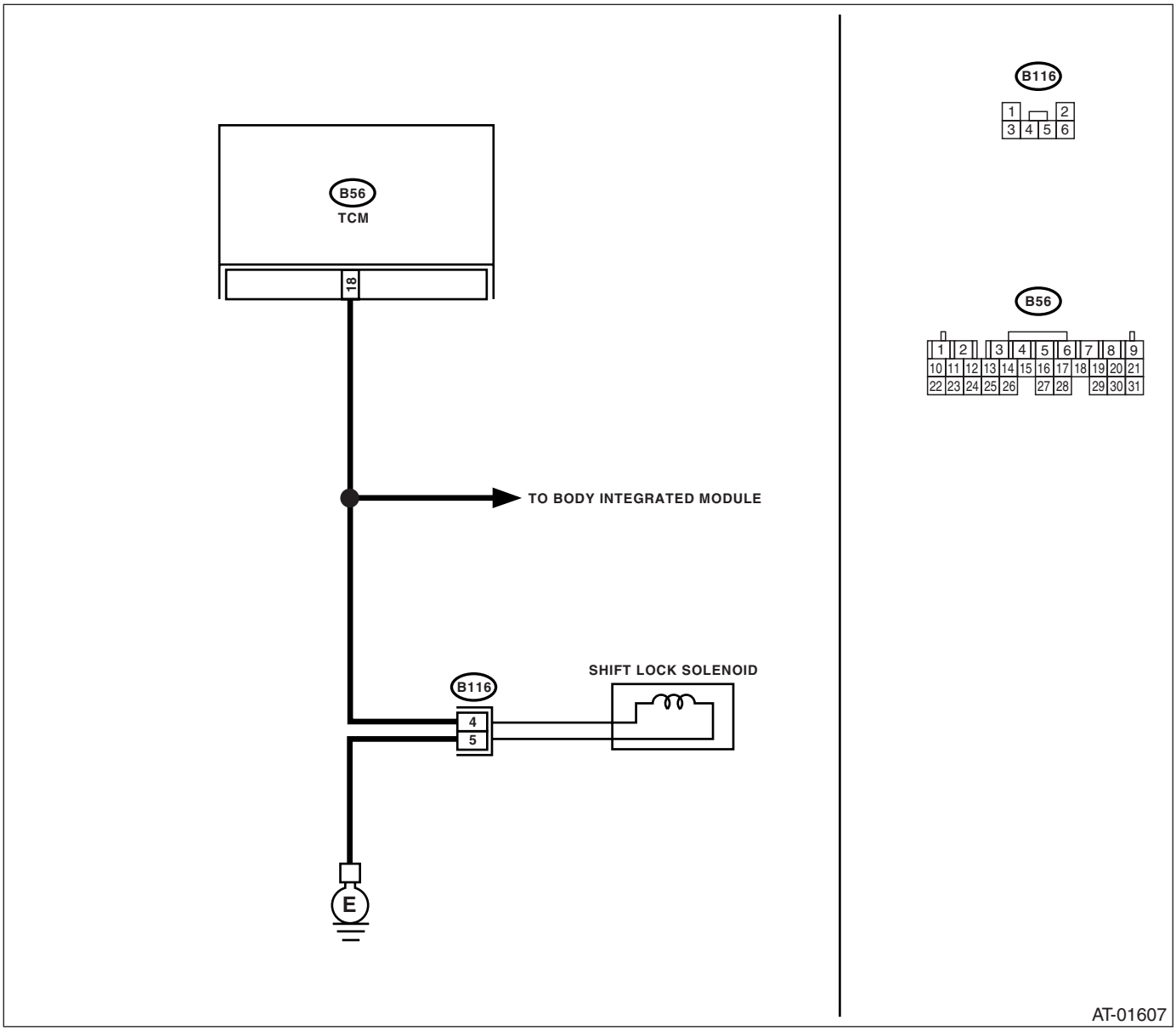
DIAGNOSIS:

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 can not be shifted from “N” range to “R” range.

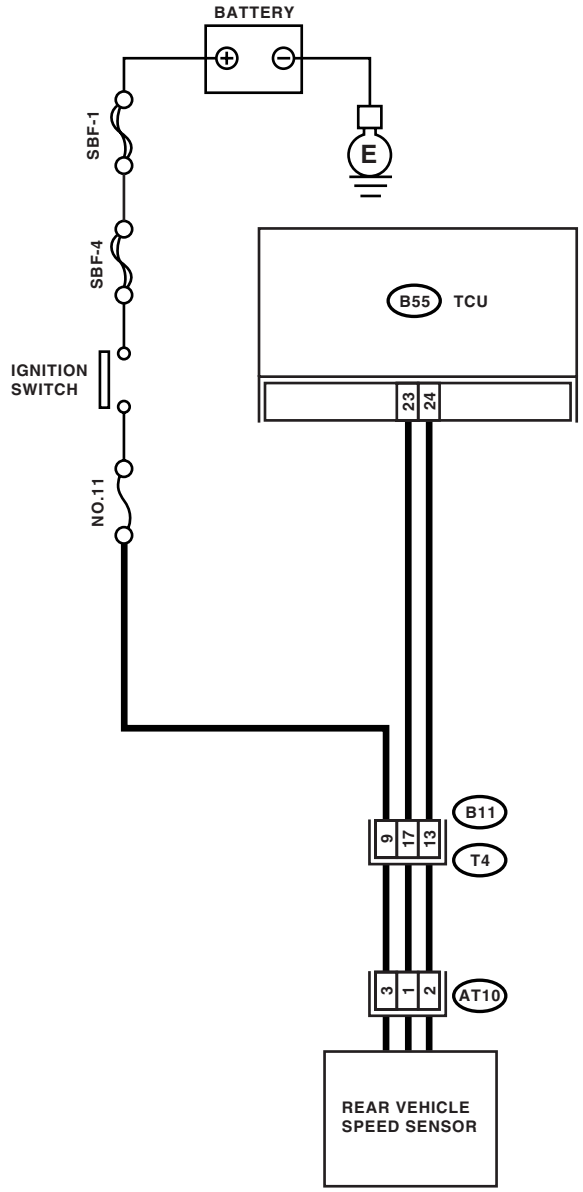
WIRING DIAGRAM:

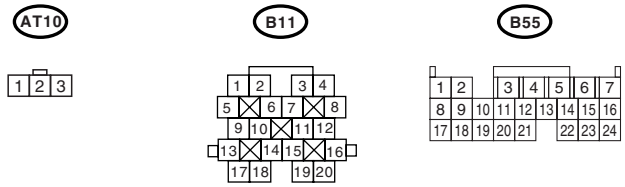


	Step	Check	Yes	No
1	**CHECK HARNESS CONNECTOR BETWEEN TCM AND SHIFT LOCK SOLENOID.** 1) Turn the ignition switch to OFF. 2) Disconnect the connector from TCM and shift lock solenoid. 3) Measure the resistance harness between TCM and shift lock solenoid connector. ***Connector & terminal*** ***(B56) No. 18 — (B116) No. 4:***	Is the resistance less than 1 Ω?	Go to step **2.**	Repair the open circuit in harness between TCM and shift lock solenoid connector.
2	**CHECK HARNESS CONNECTOR BETWEEN TCM AND SHIFT LOCK SOLENOID.** Measure the resistance of harness between TCM and chassis ground. ***Connector & terminal*** ***(B56) No. 18 — Chassis ground:***	Is the resistance more than 1 MΩ?	Go to step **3.**	Repair the short circuit in harness between TCM and shift lock solenoid connector.
3	**CHECK HARNESS CONNECTOR BETWEEN SHIFT LOCK SOLENOID AND CHASSIS GROUND.** Measure the resistance of harness between shift lock solenoid and chassis ground. ***Connector & terminal*** ***(B116) No. 5 — Chassis ground:***	Is the resistance less than 1 Ω?	Go to step **4.**	Repair the open circuit in harness between chassis ground terminal and shift lock solenoid connector.
4	**CHECK SHIFT LOCK SOLENOID.** Measure the resistance between shift lock solenoid. ***Connector & terminal*** ***(B116) No. 5 — No. 4:***	Is the resistance 20 — 40 Ω?	Go to step **5.**	Replace the shift lock solenoid.
5	**CHECK TCM OUTPUT SIGNAL.** 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*** ***(B56) No. 18 (+) — Chassis ground (–):***	Is the voltage more than 10.5 V?	Go to step **6.**	Go to step **7.**
6	**CHECK OUTPUT SIGNAL FROM TCM.** 1) Lift-up the vehicle and place safety stand. NOTE: Raise all wheels off ground. 2) Start the engine. 3) Move the select lever “D” range and slowly increase vehicle speed to 20 km/h (12 MPH). NOTE: The speed difference between front and rear wheels may light 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. 4) Measure the voltage between TCM and chassis ground. ***Connector & terminal*** ***(B56) No. 18 (+) — Chassis ground (–):***	Is the voltage less than 1 V?	Even if the AT OIL TEMP warning light blinks, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be cause. Repair the harness or connector in reverse inhibitor control circuit.	Go to step **7.**
7	**CHECK POOR CONTACT.**	Is there poor contact in the reverse inhibitor control circuit?	Repair the poor contact.	Replace the TCM. <Ref. to 4AT-78, Transmission Control Module (TCM).>

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

DIAGNOSIS:
The input signal circuit of TCM is open or shorted.
TROUBLE SYMPTOM:
No lock-up or excessive tight corner “braking”.
WIRING DIAGRAM:





AT-03016

	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. 3) Measure the ignition power supply between rear vehicle speed sensor connector and transmission ground. ***Connector & terminal*** ***(AT10) No. 3 (+) — Transmission ground (–):***	Is the voltage more than 10 V?	Go to step **2.**	Check harness between rear vehicle speed sensor and battery for open circuit, short or poor contact. Repair the harness if required.
2	**CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.** 1) Turn the ignition switch to OFF. 2) Measure the resistance of harness between TCM and transmission connector. ***Connector & terminal*** ***(B55) No. 23 — (AT10) No. 1:***	Is the resistance less than 1 Ω?	Go to step **3.**	Repair the open circuit or poor contact of 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 and transmission connector. ***Connector & terminal*** ***(B55) No. 24 — (AT10) No. 2:***	Is the resistance less than 1 Ω?	Go to step **4.**	Repair the open circuit or poor contact of 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 and chassis ground. ***Connector & terminal*** ***(B55) No. 23 — Chassis ground:***	Is the resistance more than 1 MΩ?	Go to step **5.**	Repair the short circuit in harness between TCM and rear vehicle speed sensor connector.
5	**CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.** Measure the resistance of harness between TCM and chassis ground. ***Connector & terminal*** ***(B55) No. 24 — Chassis ground:***	Is the resistance more than 1 MΩ?	Go to step **7.**	Repair the short circuit in 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 and place safety stands. NOTE: Raise all wheels off ground. 3) Start the engine and set vehicle in 20 km/h (12 MPH) condition. NOTE: The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to ABS-21, Clear Memory Mode.> 4) Measure the AC voltage between TCM connector terminals. ***Connector & terminal*** ***(B55) No. 24 (+) — No. 23 (–):***	Is the voltage more than AC 2 V?	Go to step **9.**	Replace the rear vehicle speed sensor.

	Step	Check	Yes	No
8	**CHECK INPUT SIGNAL FOR TCM USING OSCILLOSCOPE.** 1) Connect the connectors to TCM and transmission. 2) Lift-up the vehicle and place safety stands. NOTE: Raise all wheels off ground. 3) Set the oscilloscope to TCM connector terminals. ***Connector & terminal*** ***Positive probe; (B55) No. 24:*** ***Earth lead; (B55) No. 23:*** 4) Start the engine and set vehicle in 20 km/h (12 MPH) condition. NOTE: The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to ABS-21, Clear Memory Mode.> 5) Measure the signal voltage indicated on oscilloscope.	Is the pulse voltage approx. 5 V?	Go to step **9.**	Replace the rear vehicle speed sensor.
9	**CHECK POOR CONTACT.**	Is there poor contact in rear vehicle speed sensor circuit?	Repair the poor contact.	Replace the TCM. <Ref. to 4AT-78, Transmission Control Module (TCM).>

MEMO:

W: DTC P1707 — AT AWD SOLENOID VALVE CIRCUIT MALFUNCTION —

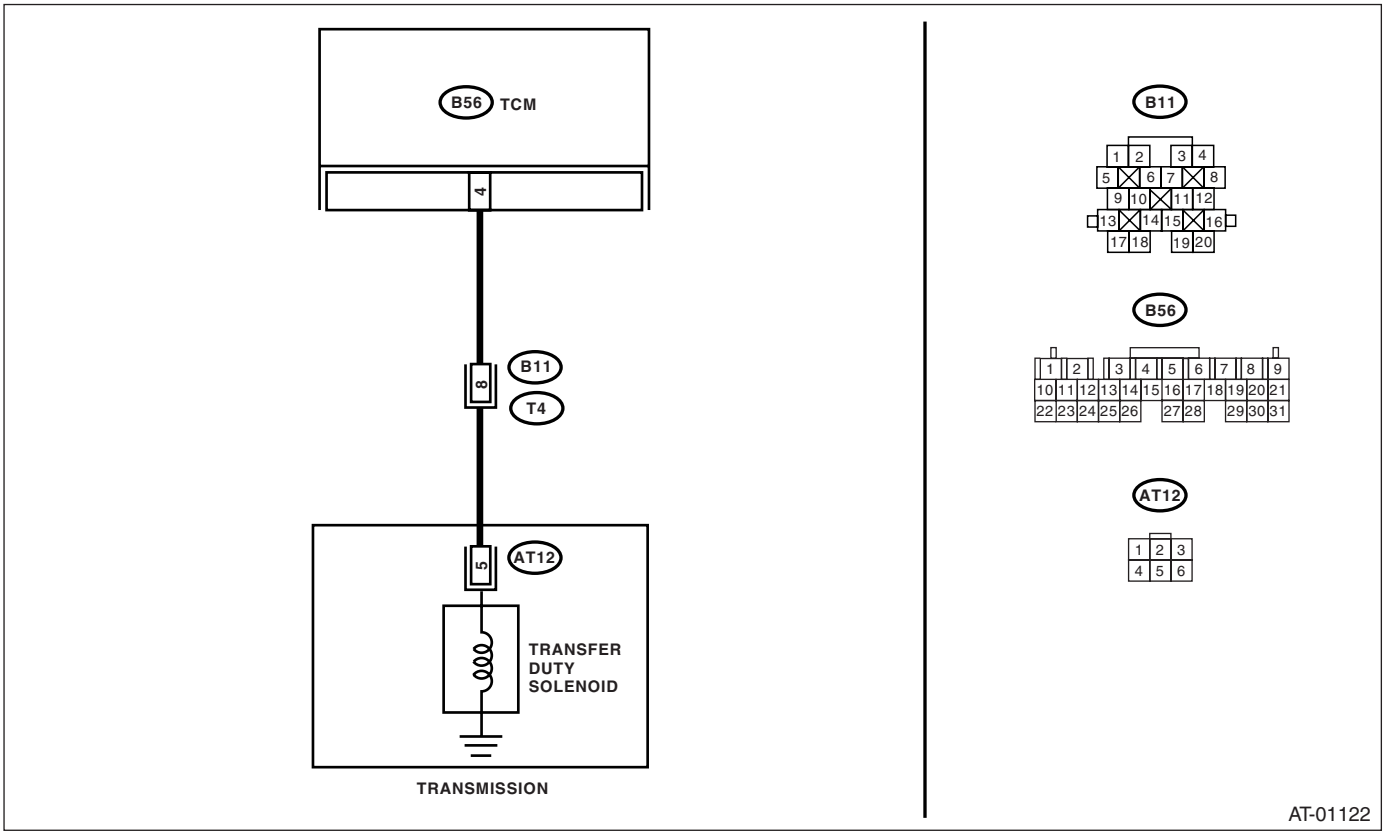
DIAGNOSIS:

The output signal circuit of transfer duty solenoid is open or shorted.

TROUBLE SYMPTOM:

Excessive tight corner “braking”.

WIRING DIAGRAM:



	Step	Check	Yes	No
1	**CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.** 1) Turn the ignition switch to OFF. 2) Disconnect the connector from TCM and transmission. 3) Measure the resistance of harness between TCM and transmission connector. ***Connector & terminal*** ***(B56) No. 4 — (B11) No. 8:***	Is the resistance less than 1 Ω	Go to step **2.**	Repair the open circuit in harness between TCM and transmission connector.
2	**CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.** Measure the resistance harness connector between TCM and chassis ground. ***Connector & terminal*** ***(B56) No. 4 — Chassis ground:***	Is the resistance more than 1 MΩ?	Go to step **3.**	Repair the short circuit in 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 — 4.5 Ω?	Go to step **4.**	Go to step **6.**
4	**CHECK OUTPUT SIGNAL FROM TCM USING SUBARU SELECT MONITOR.** 1) Move the select lever to “D” range with throttle fully open (vehicle speed 0 km/h or 0 MPH). 2) Read the data of transfer duty solenoid using Subaru Select Monitor. • Transfer duty solenoid is indicated in “%”.	Is the value 90 — 95%?	Even if the AT OIL TEMP warning light blinks, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair the harness or connector in TCM and transmission.	Go to step **5.**
5	**CHECK POOR CONTACT.**	Is there poor contact in transfer duty solenoid circuit?	Repair the poor contact.	Replace the TCM. <Ref. to 4AT-78, Transmission Control Module (TCM).>
6	**CHECK TRANSFER DUTY SOLENOID (IN TRANSMISSION).** 1) Lift-up the vehicle and place safety stand. NOTE: Raise all wheels off ground. 2) Drain the automatic transmission fluid. **CAUTION:** **Do not drain the automatic transmission fluid until it cools down.** 3) Remove the extension case and disconnect 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 **7.**	Replace the control valve body. <Ref. to 4AT-62, Control Valve Body.>

Step		Check	Yes	No
7	**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 the resistance less than 1 Ω?	Go to step **8.**	Repair the open circuit in harness between transfer duty solenoid and transmission connector.
8	**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 more than 1 MΩ?	Even if the AT OIL TEMP warning light blinks, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair the harness or contact in transfer duty solenoid and transmission.	Repair the short circuit in harness between transfer duty solenoid and transmission connector.

MEMO:

X: DTC P1708 — THROTTLE POSITION SENSOR CIRCUIT LOW INPUT —

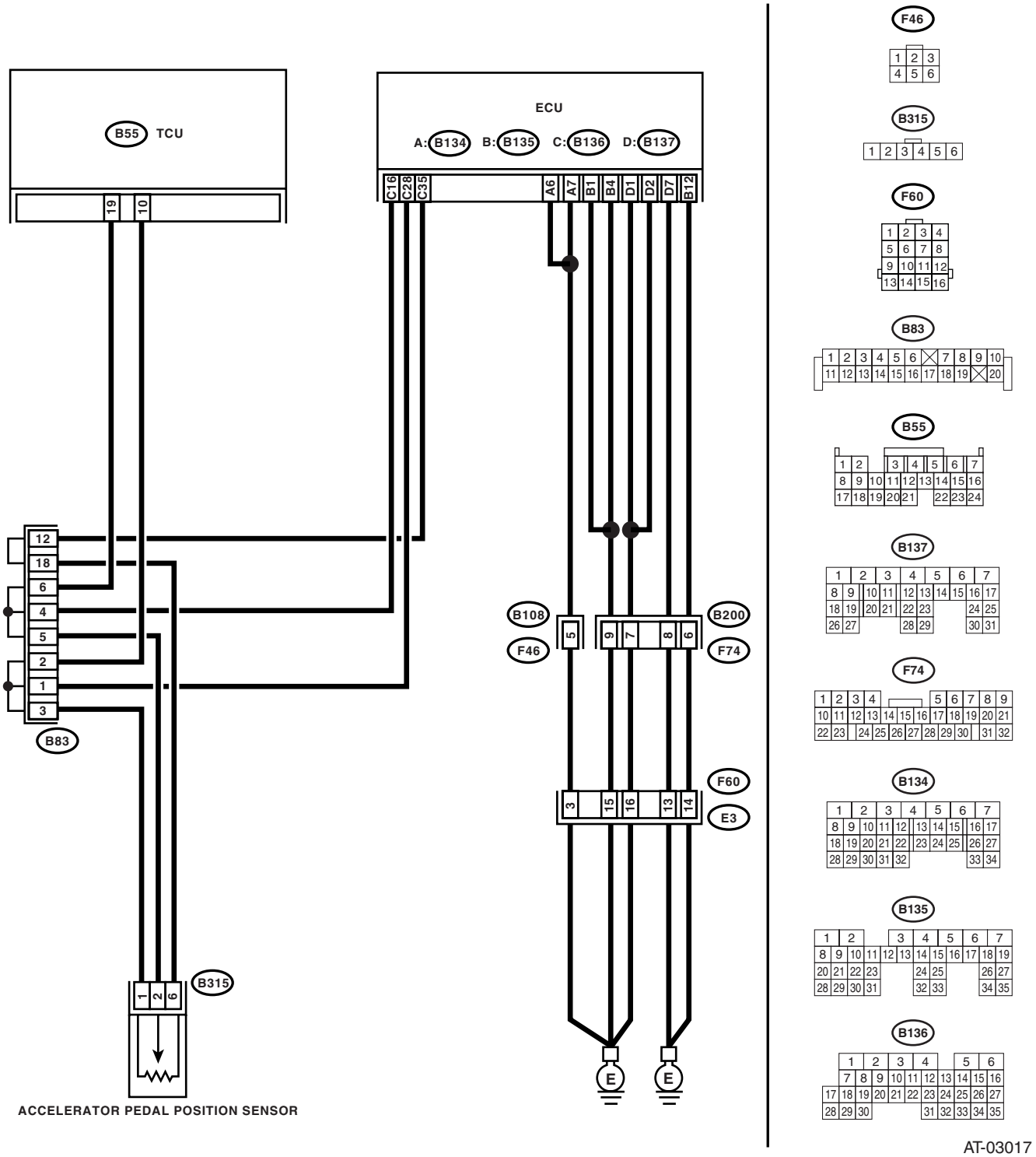
DIAGNOSIS:

The input signal circuit of accelerator pedal position sensor is open or shorted.

TROUBLE SYMPTOM:

- Shift point too high or too low.
- Excessive shift shock.
- Excessive tight corner “braking”.

WIRING DIAGRAM:



AT-03017

	Step	Check	Yes	No
1	**CHECK ENGINE GROUND TERMINALS.**	Have engine ground terminals been tightened?	Go to step **2.**	Tighten the engine ground terminals.
2	**CHECK GROUND CIRCUIT OF ECM.** 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance of harness between ECM and engine ground. ***Connector & terminal*** ***(B134) No. 7 — Engine ground:*** ***(B134) No. 6 — Engine ground:*** ***(B135) No. 1 — Engine ground:*** ***(B135) No. 4 — Engine ground:*** ***(B135) No. 12 — Engine ground:*** ***(B137) No. 2 — Engine ground:*** ***(B137) No. 1 — Engine ground:*** ***(B137) No. 7 — Engine ground:***	Is the resistance less than 5 Ω?	Go to step **3.**	Repair the open circuit in harness between ECM connector and engine grounding terminal.
3	**CHECK ACCELERATOR PEDAL POSITION SENSOR.** 1) Disconnect the connector from accelerator pedal position sensor. 2) Measure the resistance between accelerator pedal position sensor connector receptacle's terminals. ***Connector & terminal*** ***No. 1 — No. 6:***	Is the resistance 0.75 — 3.15 kΩ?	Go to step **4.**	Replace the accelerator pedal position sensor.
4	**CHECK ACCELERATOR PEDAL POSITION SENSOR.** Measure the resistance between accelerator pedal position sensor connector receptacle's terminals. ***Connector & terminal*** ***No. 6 — No. 2:***	Is the resistance 0.15 — 0.63 kΩ?	Go to step **5.**	Replace the accelerator pedal position sensor.
5	**CHECK HARNESS CONNECTOR BETWEEN TCM AND ACCELERATOR PEDAL POSITION SENSOR.** 1) Disconnect the connector from TCM. 2) Measure the resistance of harness between TCM and accelerator pedal position sensor connector. ***Connector & terminal*** ***(B55) No. 19 — (B315) No. 2:***	Is the resistance less than 1 Ω?	Go to step **6.**	Repair the open circuit in harness between TCM and accelerator pedal position sensor connector, and poor contact in coupling connector.
6	**CHECK HARNESS CONNECTOR BETWEEN TCM AND ACCELERATOR PEDAL POSITION SENSOR.** Measure the resistance of harness between TCM connector and chassis ground. ***Connector & terminal*** ***(B55) No. 19 — Chassis ground:***	Is the resistance more than 1 MΩ?	Go to step **7.**	Repair the short circuit in harness between TCM and accelerator pedal position sensor connector.
7	**CHECK HARNESS CONNECTOR BETWEEN ECM AND ACCELERATOR PEDAL POSITION SENSOR.** 1) Disconnect the connector from ECM. 2) Measure the resistance of harness between accelerator pedal position sensor and chassis ground. ***Connector & terminal*** ***(B315) No. 6 — Chassis ground:***	Is the resistance more than 1 MΩ?	Go to step **8.**	Repair the short circuit in harness between ECM and accelerator pedal position sensor.

	Step	Check	Yes	No
8	**CHECK INPUT SIGNAL FOR TCM USING SUBARU SELECT MONITOR.** 1) Connect the connectors to TCM, accelerator pedal position sensor and ECM. 2) Connect the Subaru Select Monitor to data link connector. 3) Turn the ignition switch to ON (engine OFF). 4) Turn the Subaru Select Monitor switch to ON. 5) Throttle fully closed. 6) Read the data of accelerator pedal position sensor using Subaru Select Monitor. • Accelerator pedal position sensor input signal is indicated.	Is the voltage more than 0.4 V?	Even if the AT OIL TEMP warning light blinks, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair the harness or connector in accelerator pedal position sensor circuit.	Go to step **9.**
9	**CHECK POOR CONTACT.**	Is there poor contact in accelerator pedal position sensor circuit?	Repair the poor contact.	Replace the TCM. <Ref. to 4AT-78, Transmission Control Module (TCM).>

MEMO:

Y: DTC P1709 — THROTTLE POSITION SENSOR CIRCUIT HIGH INPUT —

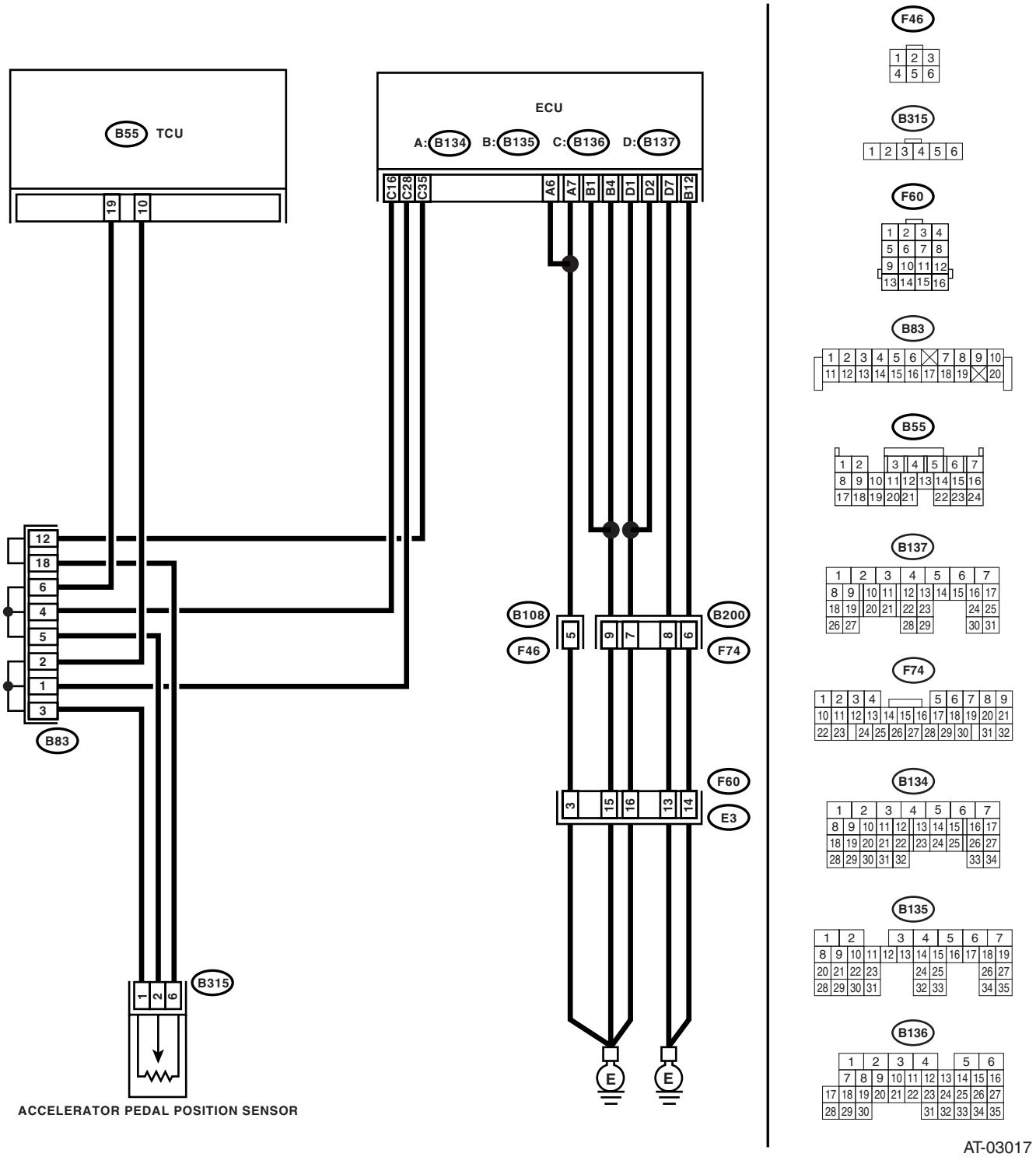
DIAGNOSIS:

The input signal circuit of accelerator pedal position sensor is shorted.

TROUBLE SYMPTOM:

- Shift point too high or too low.
- Excessive shift shock.
- Excessive tight corner “braking”.

WIRING DIAGRAM:



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	Step	Check	Yes	No
1	**CHECK ENGINE GROUND TERMINALS.**	Have engine ground terminals been tightened securely?	Go to step **2.**	Tighten the engine ground terminals.
2	**CHECK GROUND CIRCUIT OF ECM.** 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance of harness between ECM and engine ground. ***Connector & terminal*** ***(B134) No. 6 — Engine ground:*** ***(B134) No. 7 — Engine ground:*** ***(B135) No. 1 — Engine ground:*** ***(B135) No. 4 — Engine ground:*** ***(B135) No. 12 — Engine ground:*** ***(B137) No. 1 — Engine ground:*** ***(B137) No. 2 — Engine ground:*** ***(B137) No. 7 — Engine ground:***	Is the resistance less than 5 Ω?	Go to step **3.**	Repair the open circuit in harness between ECM connector and engine grounding terminal.
3	**CHECK ACCELERATOR PEDAL POSITION SENSOR.** 1) Disconnect the connector from accelerator pedal position sensor. 2) Measure the resistance between accelerator pedal position sensor connector receptacle's terminals. ***Connector & terminal*** ***No. 1 — No. 6:***	Is the resistance 0.75 — 3.15 kΩ?	Go to step **4.**	Replace the accelerator pedal position sensor.
4	**CHECK ACCELERATOR PEDAL POSITION SENSOR.** Measure the resistance between accelerator pedal position sensor connector receptacle's terminals. ***Connector & terminal*** ***No. 2 — No. 6:***	Is the resistance 0.15 — 0.63 kΩ?	Go to step **5.**	Replace the accelerator pedal position sensor.
5	**CHECK HARNESS CONNECTOR BETWEEN TCM AND ACCELERATOR PEDAL POSITION SENSOR.** 1) Disconnect the connector from TCM. 2) Measure the resistance of harness between TCM connector and chassis ground. ***Connector & terminal*** ***(B55) No. 19 — Chassis ground:***	Is the resistance more than 1 MΩ?	Go to step **6.**	Repair the short circuit in harness between TCM and accelerator pedal position sensor connector.
6	**CHECK HARNESS CONNECTOR BETWEEN ECM AND ACCELERATOR PEDAL POSITION SENSOR.** 1) Disconnect the connector from ECM. 2) Measure the resistance of harness between ECM connector and accelerator pedal position sensor connector. ***Connector & terminal*** ***(B315) No. 6 — (B136) No. 35:***	Is the resistance less than 1 Ω?	Go to step **7.**	Repair the short circuit in harness between ECM and accelerator pedal position sensor connector.

	Step	Check	Yes	No
7	**CHECK INPUT SIGNAL FOR TCM USING SUBARU SELECT MONITOR.** 1) Connect the connectors to TCM, accelerator pedal position sensor and ECM. 2) Connect the Subaru Select Monitor to data link connector. 3) Turn the ignition switch to ON (engine OFF). 4) Turn the Subaru Select Monitor switch to ON. 5) Throttle fully opened. 6) Read the data of accelerator pedal position sensor using Subaru Select Monitor. • Accelerator pedal position sensor input signal is indicated.	Is the voltage more than 4.6 V?	Go to step **8.**	Even if the AT OIL TEMP warning light blinks, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair the harness or connector in accelerator pedal position sensor circuit.
8	**CHECK POOR CONTACT.**	Is there poor contact in accelerator pedal position sensor circuit?	Repair the poor contact.	Replace the TCM. <Ref. to 4AT-78, Transmission Control Module (TCM).>

MEMO:

Z: DTC P1714 — THROTTLE POSITION SENSOR POWER SUPPLY CIRCUIT —

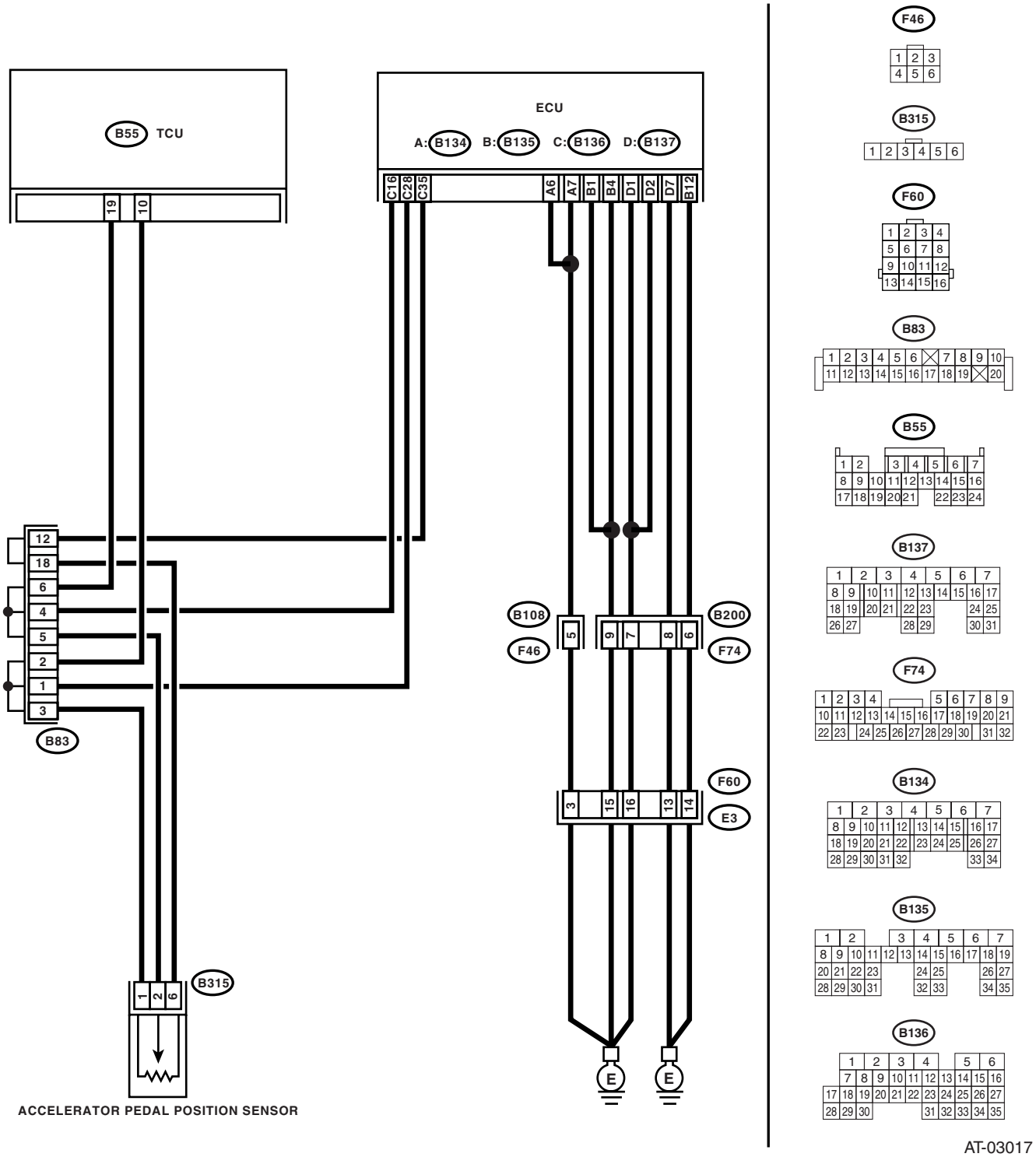
DIAGNOSIS:

The power supply circuit of accelerator pedal position sensor is open or shorted.

TROUBLE SYMPTOM:

- Shift point too high or too low.
- Excessive shift shock.
- Excessive tight corner “braking”.

WIRING DIAGRAM:



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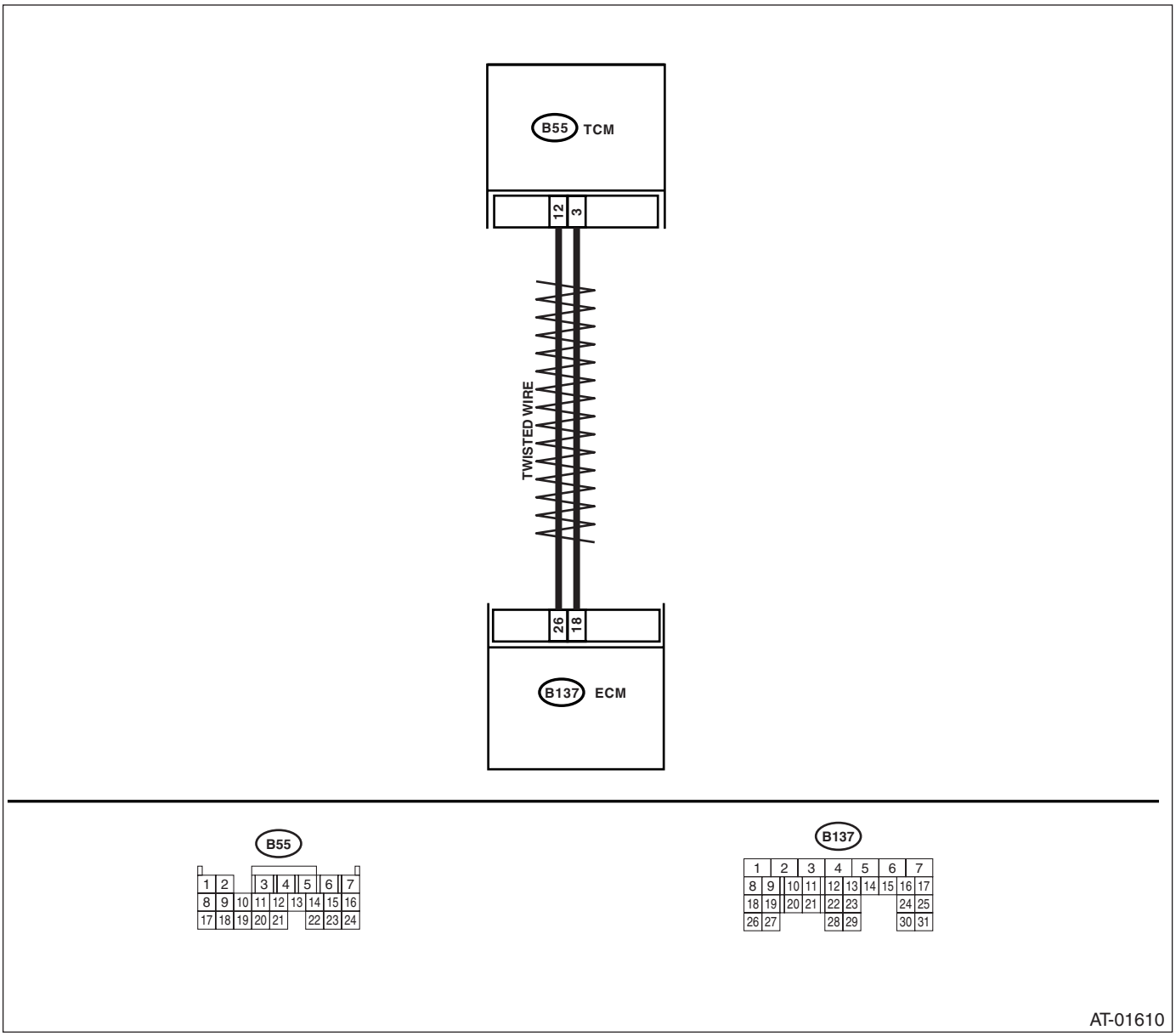
	Step	Check	Yes	No
1	**CHECK HARNESS CONNECTOR BETWEEN TCM AND ACCELERATOR PEDAL POSITION SENSOR.** 1) Disconnect the connector from TCM. 2) Measure the resistance of harness between TCM and accelerator pedal position sensor connector. ***Connector & terminal*** ***(B55) No. 10 — (B315) No. 1:***	Is the resistance less than 1 Ω?	Go to step **2.**	Repair the open circuit in harness between TCM and accelerator pedal position sensor connector, and poor contact in coupling connector.
2	**CHECK HARNESS CONNECTOR BETWEEN TCM AND ACCELERATOR PEDAL POSITION SENSOR.** Measure the resistance of harness between TCM connector and chassis ground. ***Connector & terminal*** ***(B55) No. 10 — Chassis ground:***	Is the resistance more than 1 MΩ?	Go to step **3.**	Repair the short circuit in harness between TCM and accelerator pedal position sensor connector.
3	**CHECK HARNESS CONNECTOR BETWEEN TCM AND ECM.** 1) Connect all connectors. 2) Turn the ignition switch to ON. 3) Measure the voltage between TCM and chassis ground. ***Connector & terminal*** ***(B55) No. 10 (+) — Chassis ground (–):***	Is the voltage approx. 5 V?	Go to step **4.**	Even if the AT OIL TEMP warning light blinks, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair the harness or connector in accelerator pedal position sensor circuit.
4	**CHECK POOR CONTACT.**	Is there poor contact in accelerator pedal position sensor circuit?	Repair the poor contact.	Replace the TCM. <Ref. to 4AT-78, Transmission Control Module (TCM).>

AA:DTC P1718 — CAN COMMUNICATION CIRCUIT MALFUNCTION —

DIAGNOSIS:

Input signal circuit of TCM is open or shorted.

WIRING DIAGRAM:



	Step	Check	Yes	No
1	**CHECK DTC.** Check if multiple trouble codes appear in the on-board diagnostics test mode.	Are multiple DTCs displayed?	Go to other DTC.	Go to step **2.**
2	**CHECK HERNESS CONNECTOR BETWEEN TCM AND ECM.** 1) Turn the ignition switch to OFF. 2) Disconnect TCM and ECM connectors. 3) Measure resistance of harness between ECM and TCM connector. ***Connector & Terminal*** ***(B55) No. 3 — (B137) No. 18:***	Is the measured value less than 1 Ω?	Go to step **3.**	Repair open circuit in harness between TCM and ECM, or poor contact in coupling connector.
3	**CHECK HERNESS CONNECTOR BETWEEN TCM AND ECM.** Measure resistance of harness between ECM and TCM connector. ***Connector & Terminal*** ***(B55) No. 12 — (B137) No. 26:***	Is the measured value less than 1 Ω?	Go to step **4.**	Repair open circuit in harness between TCM and ECM, or poor contact in coupling connector.
4	**CHECK HERNESS CONNECTOR BETWEEN TCM AND ECM.** Measure resistance of harness between TCM and chassis ground. ***Connector & Terminal*** ***(B55) No. 3 — Chassis ground:*** ***(B55) No. 12 — Chassis ground:***	Is the measured value more than 1 MΩ?	There is failure in the TCM or ECM. (Replace and check again)	Repair short circuit in harness between TCM and ECM.

AB:DTC P1817 — SPORT MODE SWITCH CIRCUIT (MANUAL SWITCH) —

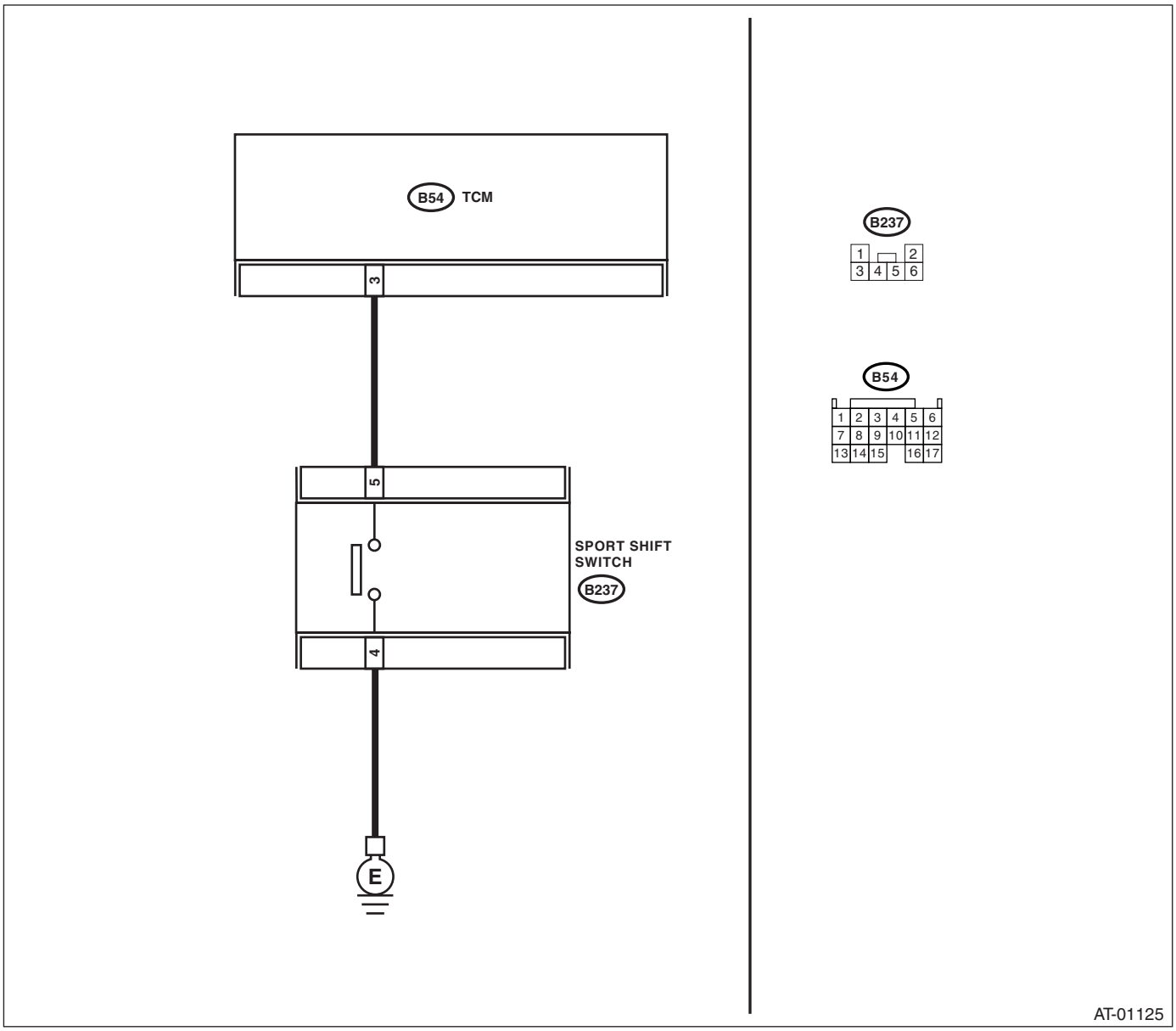
DIAGNOSIS:

The SPORT shift switch input signal circuit is open or shorted.

TROUBLE SYMPTOM:

- No SPORT shift mode occurs.

WIRING DIAGRAM:



	Step	Check	Yes	No
1	**CHECK SPORT SHIFT SWITCH GROUND LINE.** 1) Turn the ignition switch to OFF. 2) Disconnect the connector from SPORT shift switch. 3) Measure the resistance of harness between SPORT shift switch connector and chassis ground. ***Connector & terminal*** ***(B237) No. 4 —- Chassis ground:***	Is the resistance less than 1 Ω?	Go to step **2.**	Repair open circuit in harness between SPORT shift switch and chassis ground.
2	**CHECK SPORT SHIFT SWITCH.** Measure the resistance between SPORT shift switch terminals. ***Connector & terminal*** ***(B237) No. 4 —- No. 5:***	Is the resistance more than 1 MΩ?	Go to step **3.**	Replace the lever plate assembly.
3	**CHECK SPORT SHIFT SWITCH.** 1) Move the select lever to SPORT shift mode. 2) Measure the resistance between SPORT shift switch terminals. ***Connector & terminal*** ***(B237) No. 4 — No. 5:***	Is the resistance less than 1 Ω?	Go to step **4.**	Replace the lever plate assembly.
4	**CHECK HARNESS CONNECTOR BETWEEN TCM AND SPORT SHIFT SWITCH.** 1) Disconnect the connector from TCM. 2) Measure the resistance of harness between TCM connector and SPORT shift switch connector. ***Connector & terminal*** ***(B237) No. 5 — (B54) No. 3:***	Is the resistance less than 1 Ω?	Go to step **5.**	Repair the open circuit in harness between SPORT shift switch connector and TCM connector and poor contact in coupling connector.
5	**CHECK HARNESS CONNECTOR BETWEEN TCM AND SPORT SHIFT SWITCH.** 1) Disconnect the connector from TCM. 2) Measure the resistance of harness between SPORT shift switch connector and chassis ground. ***Connector & terminal*** ***(B237) No. 5 — Chassis ground:***	Is the resistance more than 1 MΩ?	Go to step **6.**	Repair the short circuit in harness between SPORT shift switch connector and TCM connector.
6	**CHECK INPUT SIGNAL FOR TCM.** 1) Connect the connector to TCM and SPORT shift switch. 2) Turn ignition switch to ON. (Engine is stopped.) 3) Move the select lever to normal mode. 4) Measure the signal voltage for TCM. ***Connector & terminal*** ***(B54) No. 3 (+) — Chassis ground (–):***	Is the voltage more than 9 V?	Go to step **7.**	Replace the TCM. <Ref. to 4AT-78, Transmission Control Module (TCM).>

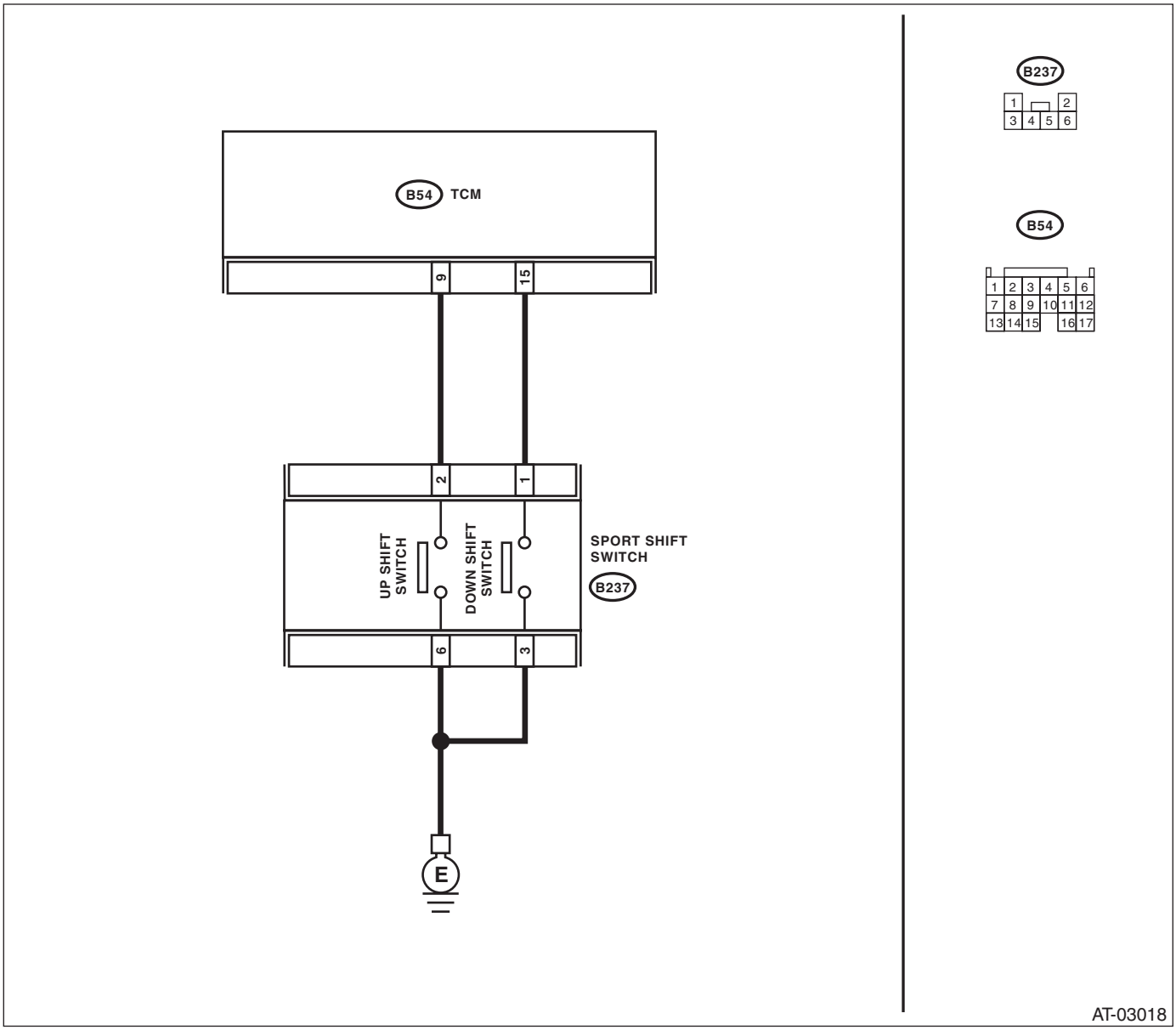
Step		Check	Yes	No
7	**CHECK INPUT SIGNAL FOR TCM.** 1) Move the select lever to SPORT shift mode. 2) Measure the signal voltage for TCM. ***Connector & terminal*** ***(B55) No. 15 (+) — Chassis ground (–):***	Is the voltage less than 1 V?	Even if the AT OIL TEMP warning light blinks, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair the connector or harness in SPORT shift switch circuit.	Go to step **8.**
8	**CHECK POOR CONTACT.**	Is there poor contact in SPORT shift switch circuit?	Repair the poor the contact.	Replace the TCM. <Ref. to 4AT-78, Transmission Control Module (TCM).>

MEMO:

15.Diagnostic Procedure without Diagnostic Trouble Code (DTC)

A: CHECK SPORT SHIFT SWITCH

DIAGNOSIS:
SPORT shift switch input signal circuit is open or shorted.
TROUBLE SYMPTOM:
Does not shift gears in SPORT shift mode.
WIRING DIAGRAM:



	Step	Check	Yes	No
1	**CHECK SPORT SHIFT SWITCH.** 1) Connect the Subaru Select Monitor to vehicle and turn the ignition switch ON and Subaru Select Monitor ON. 2) Subaru Select Monitor is set with LED display screen. 3) Move the select lever to sport shift mode. 4) Move and hold the select lever to up side.	Does the up switch LED of Subaru Select Monitor light up?	Go to step **2.**	Go to step **3.**
2	**CHECK SPORT SHIFT SWITCH.** Move and hold the select lever to down side.	Does the down switch LED of Subaru Select Monitor light up?	Go to "Inspection of SPORT shift indicator" procedures. <Ref. to 4AT(D)-120, CHECK SPORT SHIFT INDICATOR, Diagnostic Procedure without Diagnostic Trouble Code (DTC).>	Go to step **12.**
3	**CHECK SPORT SHIFT SWITCH GROUND LINE.** 1) Turn the ignition switch to OFF. 2) Disconnect the connector from SPORT shift switch. 3) Measure the resistance of harness between SPORT shift switch connector and chassis ground. ***Connector & terminal*** ***(B237) No. 6 — Chassis ground:***	Is the resistance less than 1 Ω?	Go to step **4.**	Repair the open circuit in harness between SPORT shift switch and chassis ground.
4	**CHECK SPORT SHIFT SWITCH.** Measure the resistance between SPORT shift switch terminals. ***Connector & terminal*** ***(B237) No. 6 — No. 2:***	Is the resistance more than 1 MΩ?	Go to step **5.**	Replace the guide plate assembly.
5	**CHECK SPORT SHIFT SWITCH.** 1) Move the select lever to SPORT shift mode. 2) Measure the resistance between SPORT shift switch terminals. ***Connector & terminal*** ***(B237) No. 6 — No. 2:***	Is the resistance less than 1 Ω?	Go to step **6.**	Replace the guide plate assembly.
6	**CHECK HARNESS CONNECTOR BETWEEN TCM AND SPORT SHIFT SWITCH.** 1) Disconnect the connector from TCM. 2) Measure the resistance of harness between TCM connector and SPORT shift switch connector. ***Connector & terminal*** ***(B237) No. 2 — (B54) No. 9:***	Is the resistance less than 1 Ω?	Go to step **7.**	Repair the open circuit in harness between SPORT shift switch connector and TCM connector and poor contact in coupling connector.
7	**CHECK HARNESS CONNECTOR BETWEEN TCM AND SPORT SHIFT SWITCH.** 1) Disconnect the connector from steering roll connector. 2) Measure the resistance of harness between SPORT shift switch connector and chassis ground. ***Connector & terminal*** ***(B237) No. 2 — Chassis ground:***	Is the resistance more than 1 MΩ?	Go to step **8.**	Repair the short circuit in harness between SPORT shift switch connector and TCM connector.

	Step	Check	Yes	No
8	**CHECK INPUT SIGNAL FOR TCM.** 1) Connect all connectors. 2) Turn the ignition switch to ON. (Engine is stopped.) 3) Measure the signal voltage for TCM. ***Connector & terminal*** ***(B54) No. 9 (+) — Chassis ground (–):***	Is the voltage mode than 9 V?	Go to step **9.**	Replace the TCM. <Ref. to 4AT-78, Transmission Control Module (TCM).>
9	**CHECK INPUT SIGNAL FOR TCM.** 1) Move select lever to shift up side. 2) Measure the signal voltage for TCM. ***Connector & terminal*** ***(B54) No. 9 (+) — Chassis ground (–):***	Is the voltage less than 1 V?	Go to step **10.**	Replace the TCM. <Ref. to 4AT-78, Transmission Control Module (TCM).>
10	**CHECK SPORT SHIFT SWITCH GROUND LINE.** 1) Turn the ignition switch to OFF. 2) Disconnect the connector from SPORT shift switch. 3) Measure the resistance of harness between SPORT shift switch connector and chassis ground. ***Connector & terminal*** ***(B237) No. 3 — Chassis ground:***	Is the resistance less than 1 Ω?	Go to step **11.**	Repair the open circuit in harness between SPORT shift switch and chassis ground.
11	**CHECK SPORT SHIFT SWITCH.** Measure the resistance between SPORT shift switch terminals. ***Connector & terminal*** ***(B237) No. 3 — No. 1:***	Is the resistance more than 1 MΩ?	Go to step **12.**	Replace the guide plate assembly.
12	**CHECK SPORT SHIFT SWITCH.** 1) Move the select lever to SPORT shift mode. 2) Measure the resistance between SPORT shift switch terminals. ***Connector & terminal*** ***(B237) No. 3 — No. 1:***	Is the resistance less than 1 Ω?	Go to step **13.**	Replace the guide plate assembly.
13	**CHECK HARNESS CONNECTOR BETWEEN TCM AND SPORT SHIFT SWITCH.** 1) Disconnect the connector from TCM. 2) Measure the resistance of harness between TCM connector and SPORT shift switch connector. ***Connector & terminal*** ***(B237) No. 1 — (B54) No. 15:***	Is the resistance less than 1 Ω?	Go to step **14.**	Repair the open circuit in harness between SPORT shift switch connector and TCM connector and poor contact in coupling connector.
14	**CHECK HARNESS CONNECTOR BETWEEN TCM AND SPORT SHIFT SWITCH.** 1) Disconnect the steering roll connector. 2) Measure the resistance of harness between SPORT shift switch connector and chassis ground. ***Connector & terminal*** ***(B237) No. 1 — Chassis ground:***	Is the resistance more than 1 MΩ?	Go to step **15.**	Repair the short circuit in harness between SPORT shift switch connector and TCM connector.
15	**CHECK INPUT SIGNAL FOR TCM.** 1) Connect all connectors. 2) Turn the ignition switch to ON. (Engine is stopped.) 3) Measure the signal voltage for TCM. ***Connector & terminal*** ***(B54) No. 15 (+) — Chassis ground (–):***	Is the voltage more than 9 V?	Go to step **16.**	Replace the TCM. <Ref. to 4AT-78, Transmission Control Module (TCM).>

Step		Check	Yes	No
16	**CHECK INPUT SIGNAL FOR TCM.** 1) Move the select lever to shift down side. 2) Measure the signal voltage for TCM. ***Connector & terminal*** ***(B54) No. 15 (+) — Chassis ground (–):***	Is the voltage less than 1 V?	Go to step **17.**	Replace the TCM. <Ref. to 4AT-78, Transmission Control Module (TCM).>
17	**CHECK POOR CONTACT.**	Is there poor contact in SPORT shift switch circuit?	Repair the poor contact.	Intermittent poor contact in SPORT shift switch circuit connector or harness

B: CHECK SPORT SHIFT INDICATOR

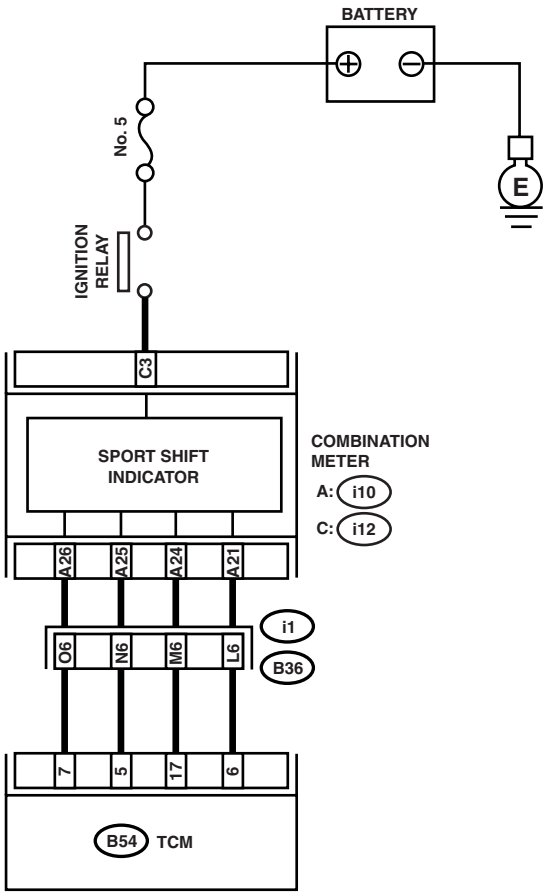
DIAGNOSIS:

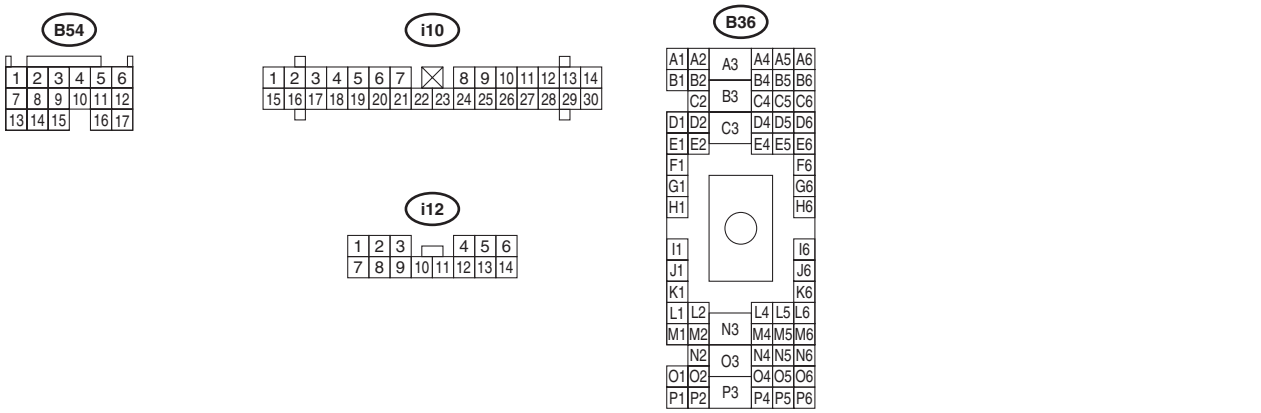
The SPORT shift indicator output signal circuit is open or shorted.

TROUBLE SYMPTOM:

- SPORT shift indicator does not illuminate or remains illuminated.
- SPORT shift indicator display does not change.

WIRING DIAGRAM:





AT-01612

	Step	Check	Yes	No
1	**CHECK SPORT SHIFT INDICATOR.**	Does SPORT shift indicator operate normally when driving in SPORT shift mode?	Go to "CHECK BUZZER". <Ref. to 4AT(D)-122, CHECK BUZZER, Diagnostic Procedure without Diagnostic Trouble Code (DTC).>	Go to step **2.**
2	**CHECK COMBINATION METER.**	Do meters and indicators other than SPORT shift indicator operate normally?	Go to step **3.**	Check the combination meter.
3	**CHECK HARNESS CONNECTOR BETWEEN TCM AND COMBINATION METER.** 1) Turn the ignition switch to OFF. 2) Disconnect the connector from TCM and combination meter. 3) Measure the resistance of harness between TCM and combination meter. ***Connector & terminal*** ***(B54) No. 6 — (i10) No. 21:*** ***(B54) No. 17 — (i10) No. 24:*** ***(B54) No. 5 — (i10) No. 25:*** ***(B54) No. 7 — (i10) No. 26:***	Is the resistance less than 1 Ω?	Go to step **4.**	Repair the open circuit in harness between TCM and combination meter connector and poor contact in coupling connector.
4	**CHECK HARNESS CONNECTOR BETWEEN TCM AND COMBINATION METER.** Measure the resistance between TCM and chassis ground. ***Connector & terminal*** ***(B54) No. 6 — Chassis ground:*** ***(B54) No. 17 — Chassis ground:*** ***(B54) No. 5 — Chassis ground:*** ***(B54) No. 7 — Chassis ground:***	Is the resistance more than 1 MΩ?	Go to step **5.**	Repair the short circuit in harness between TCM and combination meter connector.
5	**CHECK OUTPUT SIGNAL EMITTED FROM TCM.** 1) Connect the connector to TCM and combination meter. 2) Turn the ignition switch to ON. (Engine is stopped.) 3) Measure the voltage between TCM and chassis ground. ***Connector & terminal*** ***(B54) No. 6 (+) — Chassis ground (–):*** ***(B54) No. 17 (+) — Chassis ground (–):*** ***(B54) No. 7 (+) — Chassis ground (–):*** ***(B54) No. 5 (+) — Chassis ground (–):***	Is the voltage more than 4 V?	Go to step **6.**	Replace the combination meter.
6	**CHECK POOR CONTACT.**	Is there poor contact in SPORT shift indicator circuit?	Repair the poor contact.	Replace the TCM.

C: CHECK BUZZER

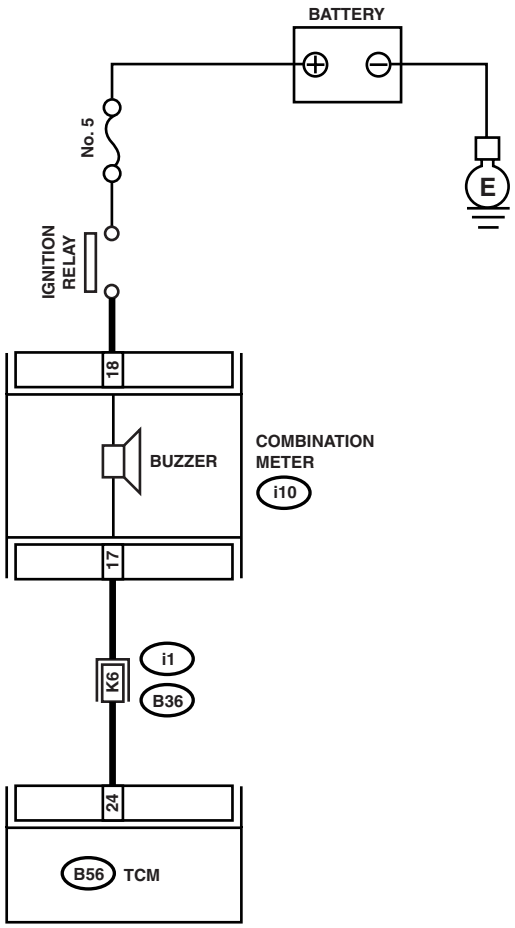
DIAGNOSIS:

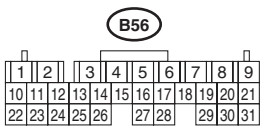
Buzzer output signal circuit is open or shorted.

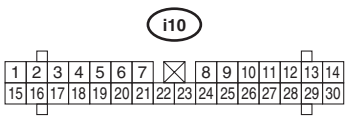
TROUBLE SYMPTOM:

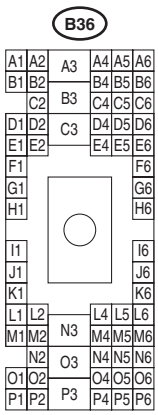
Buzzer remains sounded.

WIRING DIAGRAM:









AT-01613

	Step	Check	Yes	No
1	**CHECK HARNESS BETWEEN TCM AND COMBINATION METER.** 1) Turn ignition switch to OFF. 2) Disconnect connector from combination meter and TCM. 3) Measure the resistance between TCM connector and chassis ground. ***Connector & terminal*** ***(B56) No. 24 — (i10) No. 17:***	Is the resistance less than 1 Ω?	Go to step **2.**	Repair the open or short circuit between TCM and combination meter.
2	**CHECK HARNESS BETWEEN TCM AND COMBINATION METER.** 1) Turn ignition switch to OFF. 2) Disconnect connector from combination meter and TCM. 3) Measure the resistance between TCM connector and chassis ground. ***Connector & terminal*** ***(B56) No. 24 — Chassis ground:***	Is the resistance more than 1 MΩ?	Go to step **3.**	Repair the short circuit in harness between TCM and combination meter connector.
3	**CHECK COMBINATION METER.** 1) Connect connector to combination meter. 2) Turn ignition switch to ON. (Engine is stopped.)	Does buzzer sound?	Replace the combination meter.	Go to step **4.**
4	**CHECK POOR CONTACT.**	Is there poor contact in buzzer circuit?	Repair the poor contact.	Replace the TCM.

16.Symptom and Related Malfunction

A: INSPECTION

Symptom	Problem parts
Starter does not rotate when select lever is in “P” or “N” range, starter rotates when select lever is in “R”, “D”, “3” or “2” range.	• Inhibitor switch • Select cable • Select lever • Starter motor and harness
Abnormal noise when select lever is in “P” or “N” range.	• Strainer • Transfer duty solenoid • Oil pump • Drive plate • ATF level too high or too low
Hissing noise occurs during standing start.	• Strainer • ATF level too high or too low
Noise occurs while driving in “D1”.	• Final gear • Planetary gear • Reduction gear • Differential gear oil level too high or too low
Noise occurs while driving in “D2”.	
Noise occurs while driving in “D3”.	• Final gear • Low & reverse brake • Reduction gear • Differential gear oil level too high or too low
Noise occurs while driving in “D4”.	• Final gear • Low & reverse brake • Planetary gear • Reduction gear • Differential gear oil level too high or too low
Engine stalls while shifting from “1” range to another.	• Control valve • Lock-up damper • Engine performance • Input shaft
Vehicle moves when select lever is in “N” range.	• Select cable • Inhibitor switch • TCM • Low clutch
Shock occurs when select lever is moved from “N” to “D” range.	• Accelerator pedal position sensor • ATF temperature sensor • Line pressure linear solenoid • Low clutch duty solenoid • Low clutch • TCM • Harness • Control valve • ATF deterioration
Excessive time lag occurs when select lever is moved from “N” to “D” range.	• Control valve • Low clutch • Line pressure linear solenoid • Seal ring • Front gasket of transmission case
Shock occurs when select lever is moved from “N” to “R” range.	• Accelerator pedal position sensor • ATF temperature sensor • Line pressure linear solenoid • TCM • Harness • Control valve • ATF deterioration

Symptom	Problem parts
Excessive time lag occurs when select lever is moved from “N” to “R” range.	• 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).	• Parking brake mechanism • Planetary gear
Vehicle does not start in any shift range (engine revving up).	• 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 too low • Front gasket of transmission case
Vehicle does not start in “R” range only (engine revving up).	• 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).	• Low clutch • 2-4 brake • Planetary gear • Parking brake mechanism
Vehicle does not start in “D”, “3” range only (engine revving up).	• Low clutch • One-way clutch
Vehicle does not start in “D”, “3” or “2” range only (engine revving up).	• Low clutch
Vehicle does not start in “D”, “3” or “2” range only (engine stalls).	• Reverse clutch
Vehicle starts in “R” range only (engine revving up).	• Control valve
Acceleration during standing starts is poor (high stall rpm).	• Control valve • Low clutch • Reverse clutch • ATF level too low • ATF deterioration • Front gasket of transmission case • Differential gear oil level too high or too low
Acceleration during standing starts is poor (low stall rpm).	• Oil pump • Torque converter one-way clutch • Engine performance
Acceleration is poor when select lever is in “D”, “3” or “2” range (normal stall rpm).	• TCM • Control valve • High clutch • 2-4 brake • Planetary gear
Acceleration is poor when select lever is in “R” (normal stall rpm).	• Control valve • High clutch • 2-4 brake • Planetary gear

Symptom	Problem parts
No shift occurs from 1st to 2nd gear.	• TCM • Rear vehicle speed sensor • Front vehicle speed sensor • Throttle position sensor • Control valve • 2-4 brake
No shift occurs from 2nd to 3rd gear.	• TCM • Control valve • High clutch
No shift occurs from 3rd to 4th gear.	• TCM • ATF temperature sensor • Control valve • 2-4 brake
Engine brake is not effected when select lever is in “3” range.	• Inhibitor switch • TCM • Accelerator pedal position sensor • Control valve
Engine brake is not effected when select lever is in “3” or “2” range.	• Control valve
Engine brake is not effected when select lever is in “1” range.	• Control valve • Low & reverse brake
Shift characteristics are erroneous.	• Inhibitor switch • TCM • Front vehicle speed sensor • Rear vehicle speed sensor • Accelerator pedal position sensor • Control valve • Ground earth
No lock-up occurs.	• TCM • Throttle position sensor • ATF temperature sensor • Control valve • Lock-up facing • Engine speed signal
Parking brake is not effected.	• Select cable • Select lever • Parking mechanism
Shift lever cannot be moved or is hard to move from “P” range.	
ATF spurts out.	• ATF level too high
Differential oil spurts out.	• Differential gear oil too high
Differential oil level changes excessively.	• Seal pipe • Double oil seal
Odor is produced from ATF supply pipe.	• High clutch • 2-4 brake • Low & reverse clutch • Reverse clutch • Lock-up facing • ATF deterioration
Shock occurs from 1st to 2nd gear.	• TCM • Torque converter turbine speed sensor • Accelerator pedal position sensor • 2-4 brake duty solenoid • ATF temperature sensor • Line pressure linear solenoid • Control valve • 2-4 brake • ATF deterioration • Engine performance • Low & reverse duty solenoid

Symptom	Problem parts
Slippage occurs from 1st to 2nd gear.	• TCM • Accelerator pedal position sensor • 2-4 brake duty solenoid • ATF temperature sensor • Line pressure linear solenoid • Control valve • 2-4 brake
Shock occurs from 2nd to 3rd gear.	• TCM • Torque converter turbine speed sensor • Accelerator pedal position sensor • 2-4 brake duty solenoid • ATF temperature sensor • Line pressure linear solenoid • Low & reverse duty solenoid • Control valve • High clutch • 2-4 brake • ATF deterioration • Engine performance • High clutch duty solenoid
Slippage occurs from 2nd to 3rd gear.	• TCM • Accelerator pedal position sensor • 2-4 brake duty solenoid • ATF temperature sensor • Line pressure linear solenoid • Control valve • High clutch • 2-4 brake • Low & reverse duty solenoid
Shock occurs from 3rd to 4th gear.	• TCM • Torque converter turbine speed sensor • Accelerator pedal position sensor • 2-4 brake duty solenoid • ATF temperature sensor • Line pressure linear solenoid • Control valve • Low clutch duty solenoid • 2-4 brake • ATF deterioration • Engine performance
Slippage occurs from 3rd to 4th gear.	• 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 select lever is moved from “3” to “2” range.	• 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

Symptom	Problem parts
Shock occurs when select lever is moved from “D” to “1” range.	• 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 solenoid
Shock occurs when select lever is moved from “2” to “1” range.	• 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 at medium speeds.	• 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.	• TCM • Lock-up duty solenoid • Lock-up facing • Lock-up damper
Vibration occurs during turns (tight corner “braking” phenomenon).	• 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.	• TCM • Front vehicle speed sensor • Accelerator pedal position sensor • ATF temperature sensor • Control valve • Transfer clutch • Transfer valve • Transfer pipe • Transfer duty solenoid
Vehicle is not set in FWD mode.	• TCM • Transfer clutch • Transfer valve • Transfer duty solenoid
Select lever is hard to move.	• Select cable • Select lever • Detente spring • Manual plate
Select lever is too high to move (unreasonable resistance).	• Detente spring • Manual plate

Symptom	Problem parts
Select lever slips out of operation during acceleration or while driving on rough terrain.	• Select cable • Select lever • Detente spring • Manual plate
System does not shift to SPORT shift mode.	• SPORT shift switch

MEMO: