AUTOMATIC TRANSMISSION (DIAGNOSTICS)

1. Basic Diagnostic Procedure

A: PROCEDURE

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

Step		Check	Yes	No
6	**PERFORM DIAGNOSIS.** 1) Inspect using “Diagnostic Procedure with Diagnostic Trouble Code (DTC)”. <Ref. to 4AT(diag)-31, Diagnostic Procedure with Diagnostic Trouble Code (DTC).> NOTE: For DTC table, refer to “List of Diagnostic Trouble Code (DTC)”. <Ref. to 4AT(diag)-29, List of Diagnostic Trouble Code (DTC).> 2) Repair the trouble cause. 3) Perform the Clear Memory Mode. 4) Perform the Inspection Mode. <Ref. to 4AT(diag)-20, Inspection Mode.> 5) Display DTC.	Is DTC displayed?	Inspect using “Diagnostic Procedure with Diagnostic Trouble Code (DTC)”. <Ref. to 4AT(diag)-31, Diagnostic Procedure with Diagnostic Trouble Code (DTC).>	Finish the diagnosis.

2. Check List for Interview

A: CHECK

Check the following item when problem has occurred.

NOTE:
Use copies of this page for interviewing customers.

Customer's name			
Date of purchase			
Date of repair			
Transmission model	Transmission	V.I.N.	
Odometer reading	km (miles)		
Frequency	❑ Continuous ❑ Intermittent (times a day)		
Weather	❑ Fine ❑ Cloudy ❑ Rainy ❑ Snowy ❑ Others ( )		
Place	❑ Highland ❑ Suburbs ❑ Inner city ❑ Uphill ❑ Rough road ❑ Others ( )		
Ambient air temperature	❑ Hot ❑ Warm ❑ Cool ❑ Cold		
Vehicle speed	km/h (MPH)		
AT warning light (ATF temperature warning light)	❑ Blinks continuously	❑ Does not blink	
Select lever position	❑ P ❑ R ❑ N ❑ D ❑ SPORT mode		
Driving condition	❑ Not affected ❑ At racing ❑ While decelerating	❑ At starting ❑ While accelerating ❑ While turning (❑ RH/❑ LH)	❑ While idling ❑ While cruising
SPORT mode	❑ ON ❑ OFF		
Symptom	❑ 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

1. SUPPLEMENTAL RESTRAINT SYSTEM "AIRBAG"

The airbag system wiring harness is routed near the TCM.

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

2. MEASUREMENT

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

B: INSPECTION

1. BATTERY

Measure the battery voltage and specific gravity of the electrolyte.

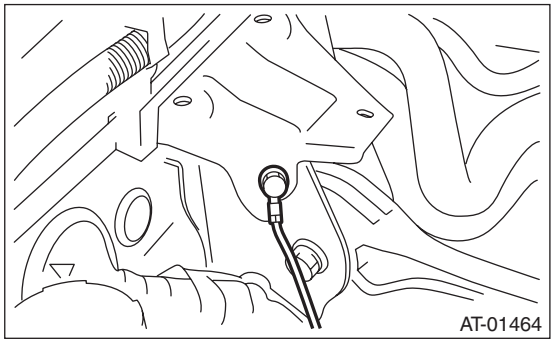
Standard voltage: 12 V or more

Specific gravity: 1.260 or more

2. TRANSMISSION GROUND

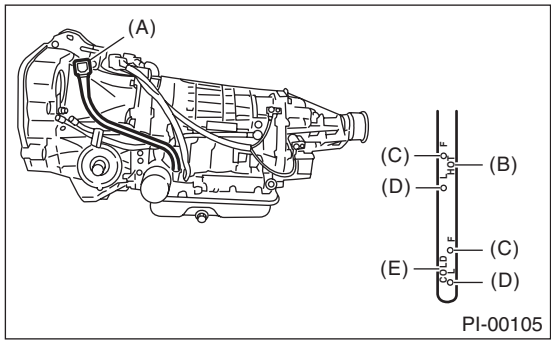
Make sure that the ground terminal bolt is tightened securely.
Chassis side

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



3. ATF LEVEL

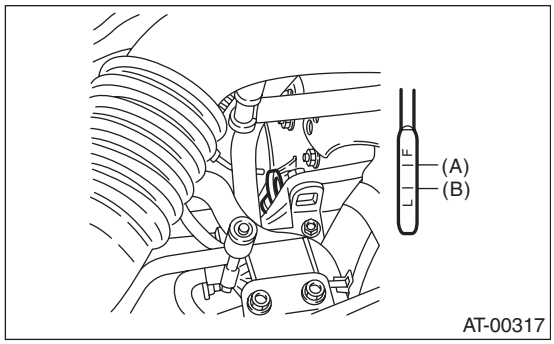
Make sure that ATF level is the specified amount. <Ref. to 4AT-26, INSPECTION, Automatic Transmission Fluid.>



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

4. FRONT DIFFERENTIAL OIL LEVEL

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



(A) Upper level
(B) Lower level

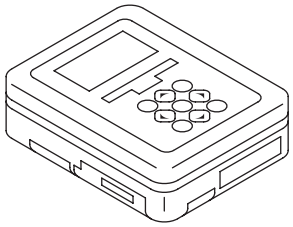
5. OPERATION OF SELECT LEVER

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

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

C: PREPARATION TOOL

1. SPECIAL TOOL

ILLUSTRATION	TOOL NUMBER	TOOL NAME	REMARKS
 ST1B021XU0	1B021XU0	SUBARU SELECT MONITOR III KIT	Used for troubleshooting for electrical system.

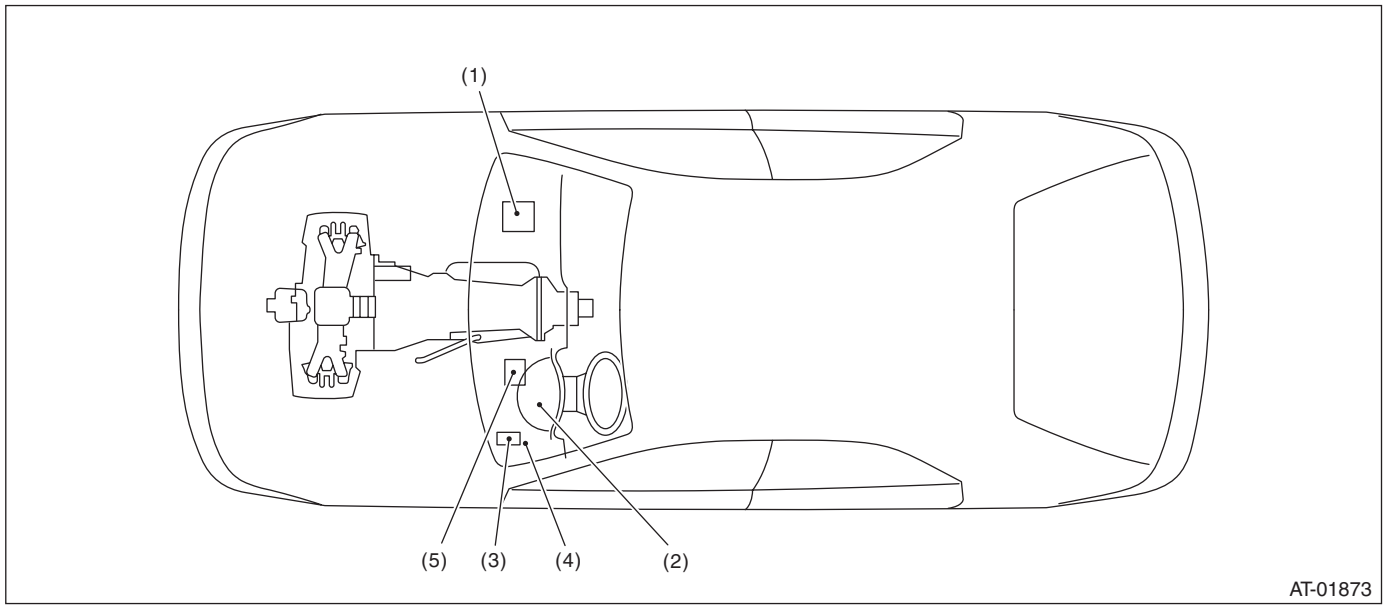
2. GENERAL TOOL

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

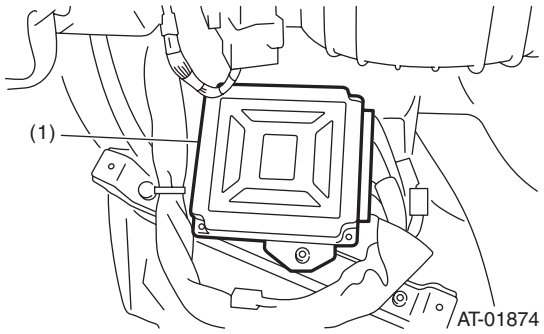
4. Electrical Component Location

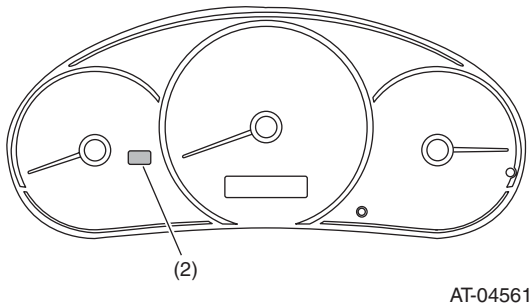
A: LOCATION

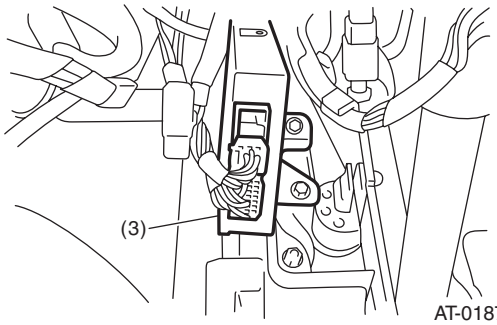
1. CONTROL MODULE

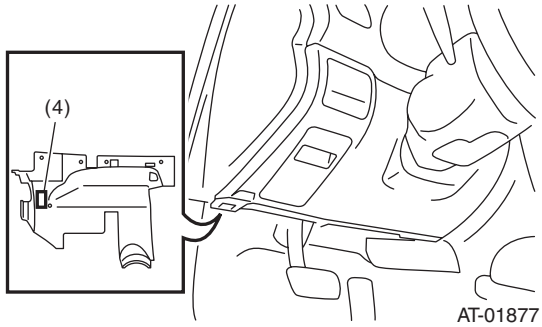


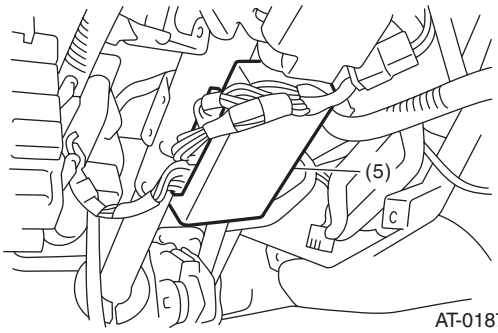
(1) Engine control module (ECM)
(2) ATF temperature warning light (AT temperature warning light)
(3) Transmission control module (TCM)
(4) Data link connector
(5) Body integrated unit



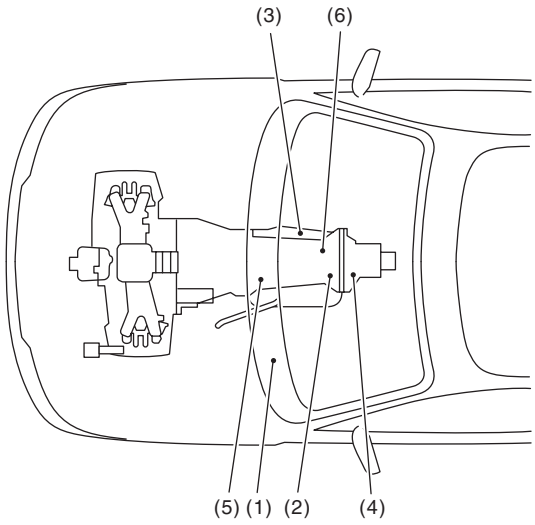






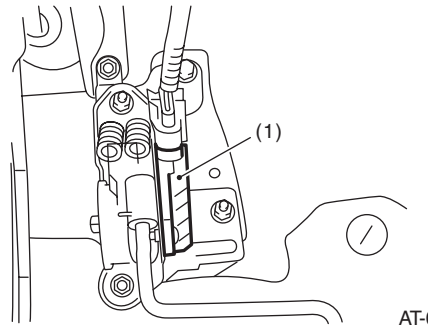


2. SENSOR

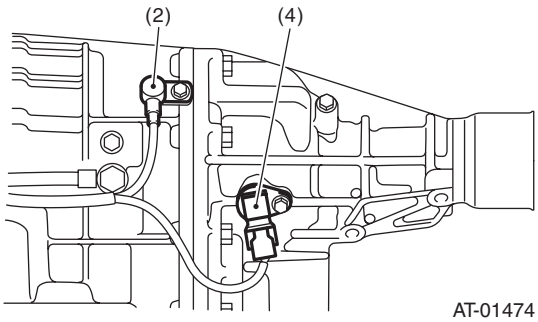


AT-02979

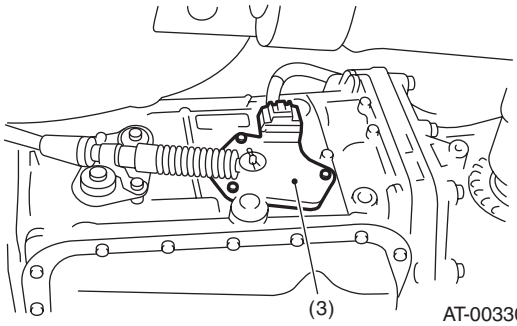
(1) Accelerator pedal position sensor
(2) Front vehicle speed sensor
(3) Inhibitor switch
(4) Rear vehicle speed sensor
(5) Torque converter turbine speed sensor
(6) ATF temperature sensor



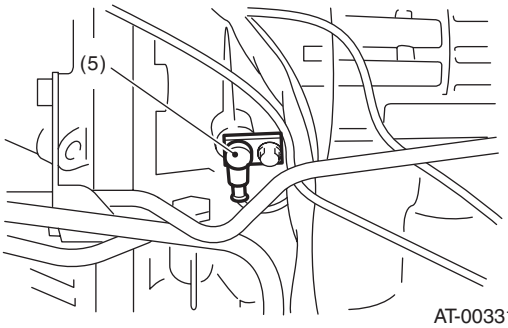
AT-00375



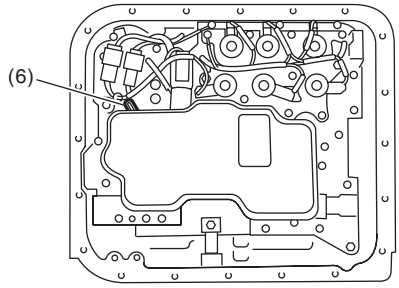
AT-01474



AT-00330

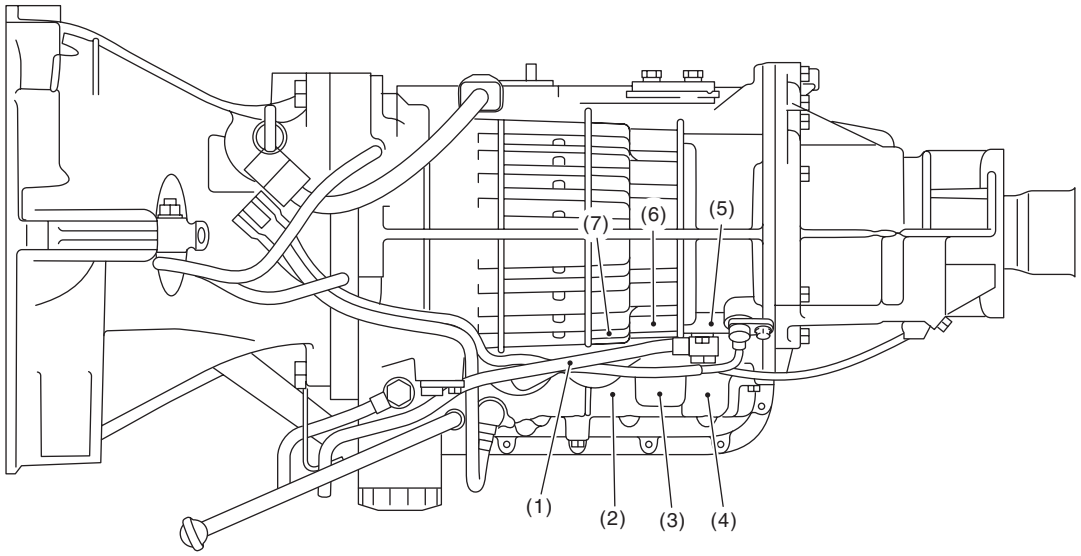


AT-00331

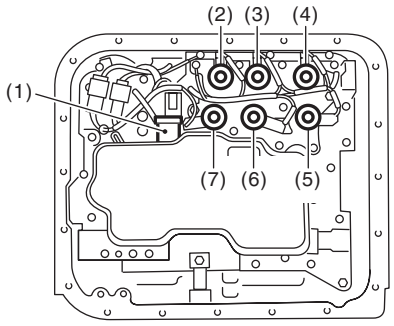


AT-00378

3. SOLENOID

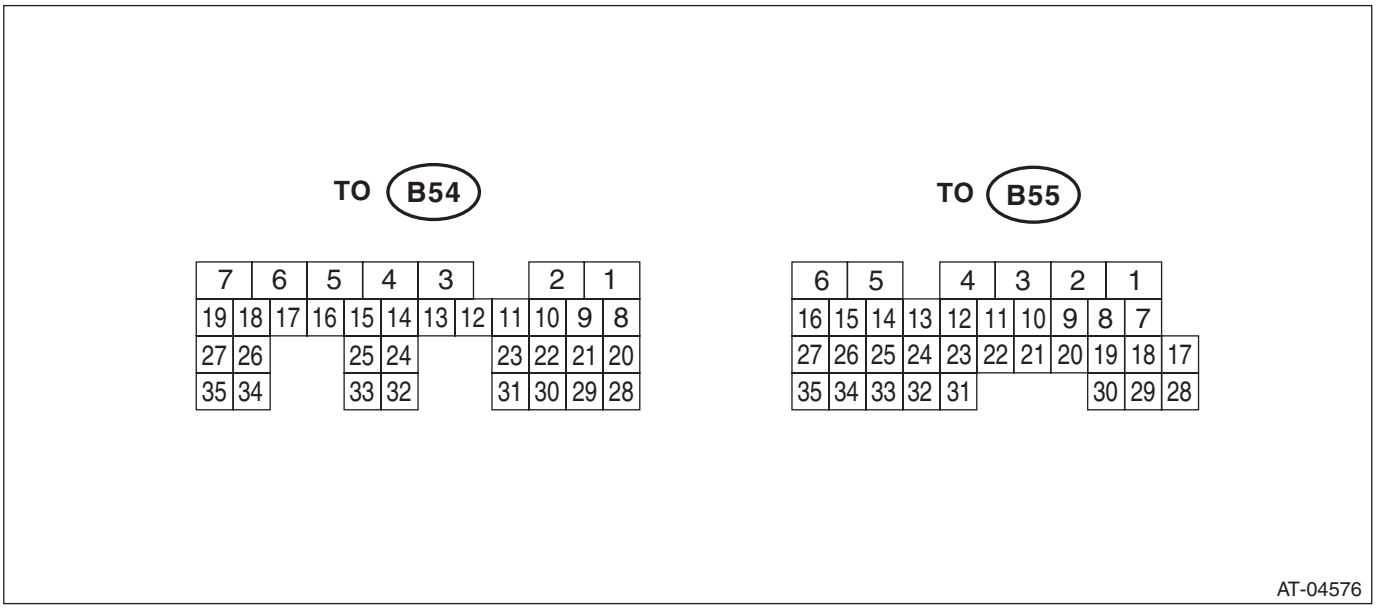


(1) Line pressure linear solenoid
(2) High clutch duty solenoid
(3) 2-4 brake duty solenoid
(4) Low & reverse duty solenoid
(5) Low clutch duty solenoid
(6) Transfer duty solenoid
(7) Lock-up duty solenoid



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

A: ELECTRICAL SPECIFICATION



Check with ignition switch ON.						
Contents		Measured terminal (Connector & Terminal No.)		Measuring condition	Voltage (V)	Resistance (Ω)
		Positive terminal	Ground terminal			
Backup power supply		(B54) No. 27	Chassis ground	—	10 — 13	—
		(B54) No. 26	Chassis ground			
		(B54) No. 25	Chassis ground			
Ignition power supply		(B54) No. 1	Chassis ground	Ignition Switch ON	10 — 13	—
		(B54) No. 2	Chassis ground			
Inhibitor switch	“P” range switch	(B55) No. 14	Chassis ground	Select lever “P” range	Less than 1	—
				Select lever Except “P” range	8 or more	—
	“N” range switch	(B55) No. 11	Chassis ground	Select lever “N” range	Less than 1	—
				Select lever Except “N” range	8 or more	—
	“R” range switch	(B55) No. 13	Chassis ground	Select lever “R” range	Less than 1	—
				Select lever Except “R” range	8 or more	—
	“D” range switch	(B55) No. 10	Chassis ground	Select lever “D” range	Less than 1	—
				Select lever Except “D” range	8 or more	—
ATF temperature sensor		(B55) No. 23	(B55) No. 12	ATF temperature 20°C (68°F)	3.5 — 4.3	2.5k — 7.0 k
				ATF temperature 80°C (176°F)	1.0 — 2.2	300 — 800

Check with ignition switch ON.					
Contents	Measured terminal (Connector & Terminal No.)		Measuring condition	Voltage (V)	Resistance (Ω)
	Positive terminal	Ground terminal			
ATF temperature sensor ground	(B55) No. 12	Chassis ground	—	0	Less than 1 (When inserting connector) ∞ (When disconnecting connector)
Rear vehicle speed sensor	(B55) No. 26	(B55) No. 15	20 km/h (12 MPH) Vehicle speed at least	2 or more (AC range)	—
Rear vehicle speed sensor ground	(B55) No. 15	Chassis ground	—	0	Less than 1 (When inserting connector) ∞ (When disconnecting connector)
Front vehicle speed sensor	(B55) No. 27	(B55) No. 16	—	—	450 — 650
Front vehicle speed sensor ground	(B55) No. 16	Chassis ground	—	—	—
Torque converter turbine speed sensor	(B55) No. 1	(B55) No. 2	Engine idling after warm-up (“D” range)	0	450 — 650
			Engine idling after warm-up (“N” range)	1 or more (AC range)	
Torque converter turbine speed sensor ground	(B55) No. 2	Chassis ground	—	—	—
Line pressure linear solenoid	(B55) No. 4	(B55) No. 3	Ignition switch ON, throttle fully closed in “R” range after warm-up.	3.7 — 7.7	4.0 — 6.0
			Ignition switch ON, throttle fully open in “R” range after warm-up.	1.1 — 5.1	
Line pressure linear solenoid ground	(B55) No. 3	Chassis ground	—	Less than 1	Less than 1
Lock-up duty solenoid	(B55) No. 6	Chassis ground	When lock up occurs.	10.5 or more	2.0 — 4.5
			When lock up is released.	Less than 1	
Transfer duty solenoid	(B55) No. 5	Chassis ground	With fuse installed to FWD switch	Less than 1	2.0 — 4.5
			With fuse removed from FWD switch (1st gear)	2.0 — 3.0	
2-4 brake duty solenoid	(B54) No. 4	Chassis ground	“P” or “N” range	5.0 or more	2.0 — 4.5
			2nd or 4th gear	Less than 1	
High clutch duty solenoid	(B54) No. 6	Chassis ground	3rd or 4th gear	Less than 1	2.0 — 4.5
			“P” or “N” range	5.0 or more	
Low clutch duty solenoid	(B54) No. 7	Chassis ground	1st or 2nd gear	Less than 1	2.0 — 4.5
			“P” or “N” range	5.0 or more	

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

6. Subaru Select Monitor

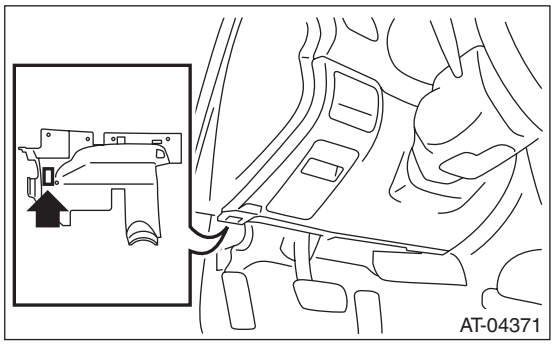
A: OPERATION

1. READ DIAGNOSTIC TROUBLE CODE (DTC)

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

NOTE:
Port exclusively for Subaru Select Monitor refers to the USB port used when installing Subaru Select Monitor.

4) Connect the diagnosis cable to the SDI.
5) Connect the SDI to data link connector located in the lower portion of the instrument panel (on the driver's side).



CAUTION:
Do not connect scan tools other than the Subaru Select Monitor.

6) Start the PC.
7) Turn the ignition switch to ON.
8) Run the "PC application for Subaru Select Monitor".
9) On the «Main Menu», select {Each System Check}.
10) On the «System Selection Menu», select {Transmission}.
11) After transmission type information pops up, select [OK].
12) On the «Transmission Diagnosis», select {DTC Display}.
13) On the «DTC Display», select {Temporary Code} or {Memory Code}.

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

2. READ CURRENT DATA

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

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
Automatic transmission fluid temperature signal	ATF Temp.	°C or °F
Gear position	Gear Position	—
Line pressure control duty ratio	Line Pressure Duty Ratio	%
Lock up clutch control duty ratio	Lock up Duty Ratio	%
Transfer clutch control duty ratio	Transfer Duty Ratio	%
Torque converter turbine speed signal	Turbine Revolution Speed	rpm
2 — 4 brake timing pressure control duty ratio	Brake Clutch Duty Ratio	%
Low clutch duty ratio	L/C Duty	%
High clutch duty ratio	H/C Duty	%
Low & reverse brake duty ratio	L&R/B Duty	%
Accelerator position	Acceleration Opening Angle	%
FWD switch signal	FWD SW	ON or OFF
Stop light switch signal	Stop light SW	ON or OFF
Anti lock brake system 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
AT diagnosis light output signal	Diagnosis Light	ON or OFF
Cruise control signal	Cruise Control Signal	ON or OFF
ATF temperature light	ATF temperature light	ON or OFF
Up shift signal	Up SW	ON or OFF
Down shift signal	Down SW	ON or OFF
SPORT mode signal	Tiptronic Mode Switch	ON or OFF

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

3. CLEAR MEMORY MODE

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

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

4. FACILITATION OF LEARNING CONTROL

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

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

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

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

11) Perform the procedures according to the message displayed on the Subaru Select Monitor.

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

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

Message	Primary cause of abnormal end
"AT learning ended abnormally."	• Fault is detected during AT learning. • The accelerator pedal is depressed during AT learning. • Operation which is not directed is performed during AT learning. • The brake pedal is not depressed fully. • The parking brake is not applied fully. • Abnormal idle rise occurs. Other similar causes are probable.

• For details concerning the operation procedure, refer to the "PC application help for Subaru Select Monitor".

7. Read Diagnostic Trouble Code (DTC)

A: OPERATION

Refer to “Subaru Select Monitor” for information on how to display a DTC. <Ref. to 4AT(diag)-15, OPERATION, Subaru Select Monitor.>
For details concerning DTCs, refer to “List of Diagnostic Trouble Code (DTC)”. <Ref. to 4AT(diag)-29, List of Diagnostic Trouble Code (DTC).>

8. Inspection Mode

A: PROCEDURE

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

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

9. Clear Memory Mode

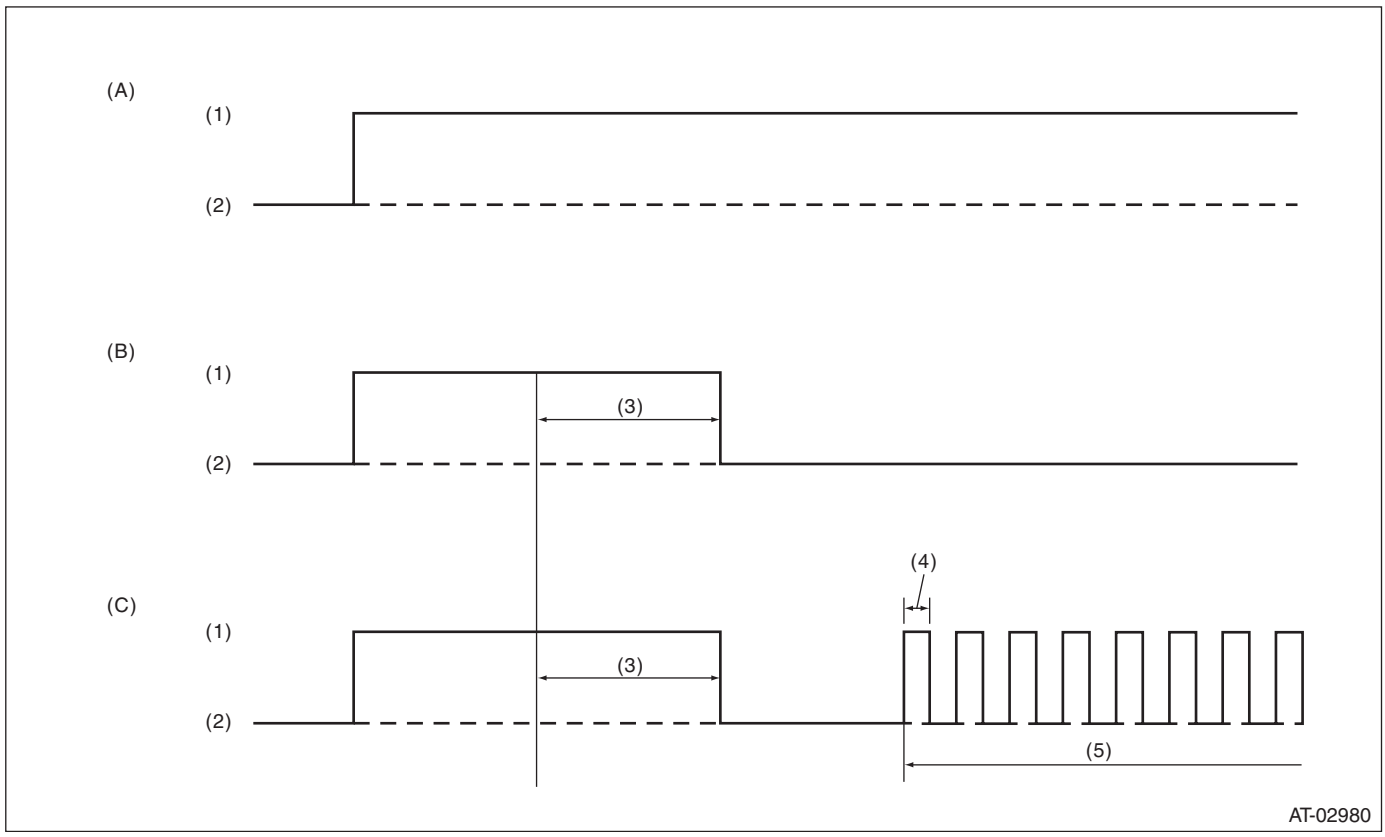
A: OPERATION

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

10.AT Oil Temp Warning Light Display

A: OPERATION

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

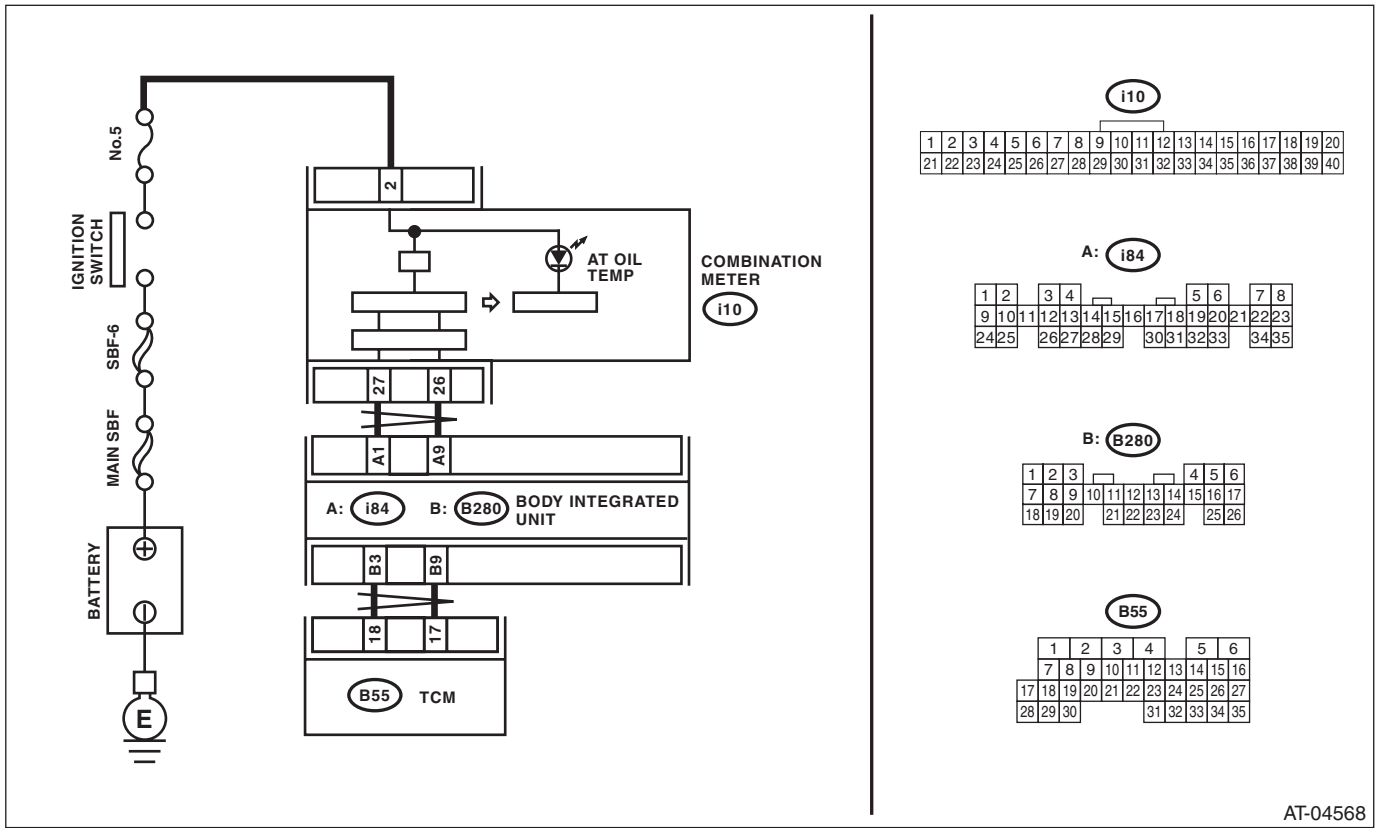


(A)	Ignition switch ON (engine OFF)	(B)	Normal (engine ON)	(C)	Faulty (engine ON)
(1)	ON	(3)	2 seconds	(5)	Blink
(2)	OFF	(4)	0.25 seconds		

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

B: INSPECTION

DIAGNOSIS:
ATF temperature warning light circuit is open or shorted.
TROUBLE SYMPTOM:
When the ignition switch is turned to ON, the ATF temperature warning light does not illuminate.
WIRING DIAGRAM:

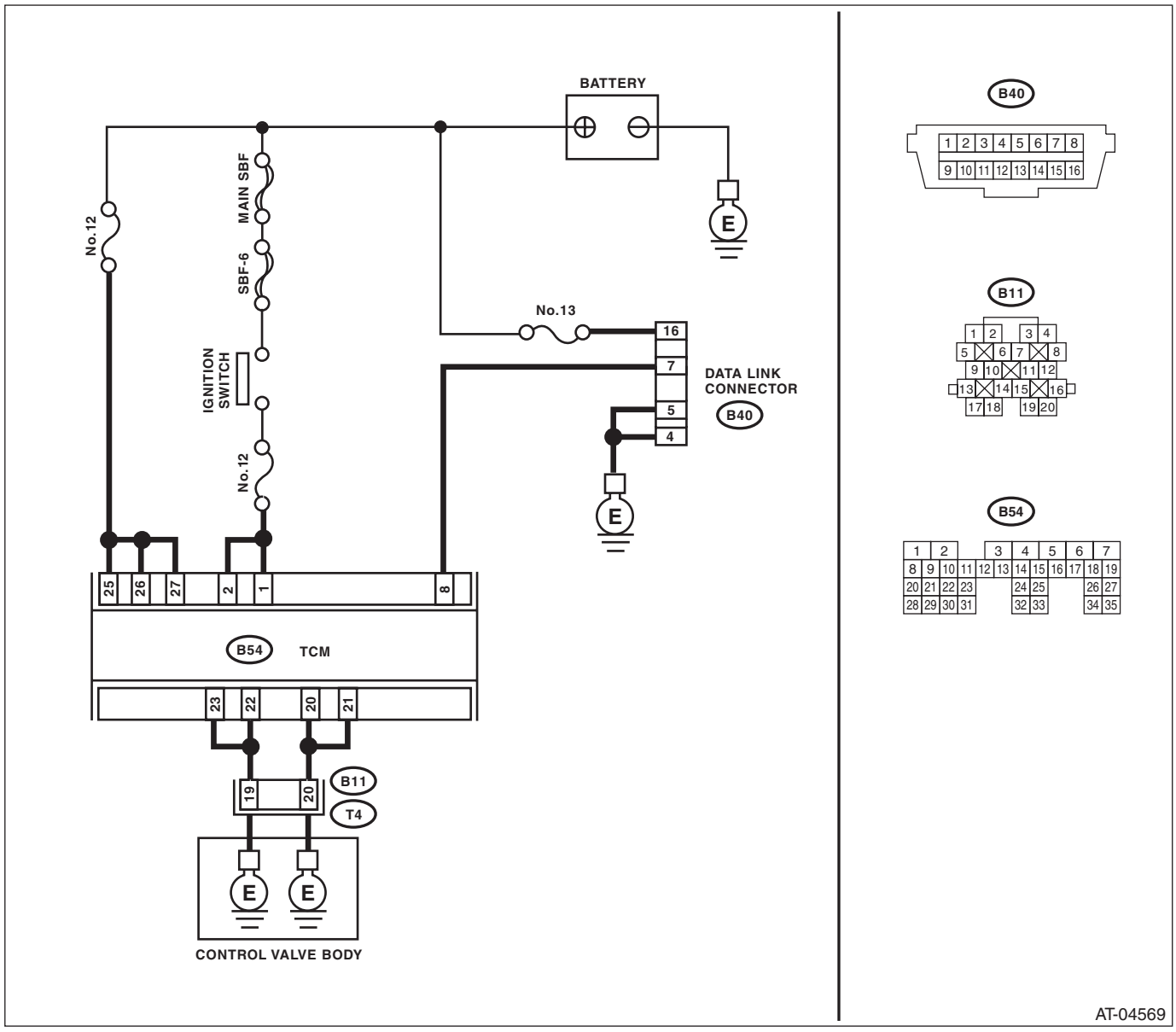


	Step	Check	Yes	No
1	**ATF TEMPERATURE WARNING LIGHT INSPECTION.** Turn the ignition switch to ON.	Does the ATF temperature warning light illuminate?	Go to step **2**.	Perform the self-diagnosis of combination meter.
2	**ATF TEMPERATURE WARNING LIGHT INSPECTION.** After the ignition switch is ON, wait for at least 2 seconds.	Does the ATF temperature warning light illuminate?	Go to step **3**.	Go to step **4**.
3	**ATF TEMPERATURE WARNING LIGHT INSPECTION.** Start the engine.	Does the ATF temperature warning light go off?	Normal. Go back to Basic Diagnostic Procedure. <Ref. to 4AT(diag)-2, Basic Diagnostic Procedure.>	Go to step **7**.
4	**CHECK SUBARU SELECT MONITOR COMMUNICATION.** Connect the Subaru Select Monitor to the data link connector.	Is the communication between Subaru Select Monitor and TCM normal?	Go to step **5**.	Check the power supply ground circuit of TCM and Subaru Select Monitor communication. <Ref. to 4AT(diag)-25, Diagnostic Procedure for Subaru Select Monitor Communication.>
5	**CHECK TCM.** 1) Display the current data of TCM using Subaru Select Monitor. <Ref. to 4AT(diag)-15, OPERATION, Subaru Select Monitor.> 2) Read the data of “Diagnosis Light”.	Is ON displayed?	Go to step **6**.	Replace the TCM. <Ref. to 4AT-64, Transmission Control Module (TCM).>
6	**CHECK BODY INTEGRATED UNIT.** 1) Display the current data of body integrated unit using Subaru Select Monitor. <Ref. to LAN(diag)-14, OPERATION, Subaru Select Monitor.> 2) Read the data of “ATF Temperature Light”.	Is “ON” displayed?	Replace the combination meter assembly. <Ref. to IDI-14, Combination Meter.>	Check DTC of body integrated unit. <Ref. to LAN(diag)-14, OPERATION, Subaru Select Monitor.>
7	**CHECK TCM.** 1) Display the current data of TCM using Subaru Select Monitor. 2) Read the data of “Diagnosis Light”.	Is ON displayed?	Replace the TCM. <Ref. to 4AT-64, Transmission Control Module (TCM).>	Go to step **8**.
8	**CHECK BODY INTEGRATED UNIT.** 1) Display the current data of body integrated unit using Subaru Select Monitor. 2) Read the data of “ATF Temperature Light”.	Is “ON” displayed?	Check DTC of body integrated unit. Perform the diagnosis according to DTC. <Ref. to LAN(diag)-14, OPERATION, Subaru Select Monitor.>	Perform the self-diagnosis of combination meter. <Ref. to IDI-4, INSPECTION, Combination Meter System.>

11.Diagnostic Procedure for Subaru Select Monitor Communication

A: COMMUNICATION FOR INITIALIZING IMPOSSIBLE

DIAGNOSIS:
Defective harness connector
TROUBLE SYMPTOM:
Subaru Select Monitor communication failure
WIRING DIAGRAM:



	Step	Check	Yes	No
1	**CHECK INSTALLATION OF TCM CONNECTOR.** Turn the ignition switch to OFF.	Is TCM connector connected to TCM?	Go to step **2**.	Connect the TCM connector to TCM.
2	**CHECK SUBARU SELECT MONITOR POWER SUPPLY CIRCUIT.** Measure the voltage between data link connector and chassis ground. ***Connector & terminal*** ***(B40) No. 16 (+) — Chassis ground (–):***	Is the voltage 10 V or more?	Go to step **3**.	Repair harness connector between the battery and data link connector, and poor contact of the connector.
3	**CHECK SUBARU SELECT MONITOR GROUND CIRCUIT.** Measure the resistance of harness between data link connector and chassis ground. ***Connector & terminal*** ***(B40) No. 4 — Chassis ground:*** ***(B40) No. 5 — Chassis ground:***	Is the resistance 1 MΩ or more?	Go to step **4**.	Repair the short circuit of harness between data link connector and ground terminals.
4	**CHECK ENGINE GROUND CIRCUIT.** Check the engine ground circuit.	Is the engine ground circuit normal?	Go to step **5**.	Repair ground circuit of ECM.
5	**CHECK COMMUNICATION OF SUBARU SELECT MONITOR.** 1) Turn the ignition switch to ON. 2) Using the Subaru Select Monitor, check whether communication to transmission system can be executed normally.	Is the name of system displayed on Subaru Select Monitor?	Go to step **10**.	Go to step **6**.
6	**CHECK COMMUNICATION OF SUBARU SELECT MONITOR.** 1) Turn the ignition switch to OFF. 2) Disconnect the TCM connector. 3) Check whether communication to engine system can be executed normally.	Is the name of system displayed on Subaru Select Monitor?	Go to step **8**.	Go to step **7**.
7	**CHECK COMMUNICATION OF SUBARU SELECT MONITOR.** 1) Turn the ignition switch to OFF. 2) Connect the TCM connector. 3) Disconnect the connectors of TPM control module, airbag control module, body integrated unit, and ABSCM&H/U. **CAUTION:** **When disconnecting the connector from airbag control module, always follow the precautions on AB section. <Ref. to AB-5, CAUTION, General Description.>** 4) Turn the ignition switch to ON. 5) Check whether communication to transmission system can be executed normally.	Is the name of system displayed on Subaru Select Monitor?	Check each control module.	Go to step **8**.
8	**CHECK HARNESS CONNECTOR BETWEEN EACH CONTROL MODULE AND DATA LINK CONNECTOR.** 1) Turn the ignition switch to OFF. 2) Disconnect the connectors of TCM, ECM, TPM control module, airbag control module, body integrated unit, and ABSCM&H/U. 3) Measure the resistance between TCM connector and chassis ground. ***Connector & terminal*** ***(B40) No. 7 — Chassis ground:***	Is the resistance 1 MΩ or more?	Go to step **9**.	Check harness and connector between each control module and data link connector.

	Step	Check	Yes	No
9	**CHECK OUTPUT SIGNAL OF TCM.** 1) Turn the ignition switch to ON. 2) Measure the voltage between TCM and chassis ground. ***Connector & terminal*** ***(B40) No. 7 (+) — Chassis ground (–):***	Is the voltage 1 V or more?	Check harness and connector between each control module and data link connector.	Go to step **10**.
10	**CHECK HARNESS CONNECTOR BETWEEN TCM AND DATA LINK CONNECTOR.** Measure the resistance between TCM connector and data link connector. ***Connector & terminal*** ***(B54) No. 8 — (B40) No. 7:***	Is resistance less than 1 Ω?	Go to step **11**.	Repair the harness and connector between TCM and data link connector.
11	**CHECK INSTALLATION OF TRANSMISSION HARNESS CONNECTOR.**	Is the transmission harness connector connected to bulkhead harness connector?	Go to step **12**.	Connect the bulkhead harness connector to transmission harness connector.
12	**CHECK POOR CONTACT IN CONNECTORS.**	Is there poor contact in control module power supply and data link connector?	Repair the poor contact.	Go to step **13**.
13	**CHECK POWER SUPPLY OF TCM.** 1) Disconnect the connector from TCM. 2) Turn the ignition switch to ON. 3) Measure the voltage between TCM connector and chassis ground. ***Connector & terminal*** ***(B54) No. 27 (+) — Chassis ground (–):*** ***(B54) No. 26 (+) — Chassis ground (–):*** ***(B54) No. 25 (+) — Chassis ground (–):***	Is the voltage 10 — 13 V?	Go to step **15**.	Go to step **14**.
14	**CHECK FUSE (NO. 12).** 1) Turn the ignition switch to OFF. 2) Remove the fuse (M/B No. 12).	Is the fuse (No. 12) blown out?	Replace the fuse (No. 12). If the replaced fuse (No. 12) blows out easily, repair the short circuit of harness between fuse (No. 12) and TCM.	Repair the open circuit of harness between fuse (No. 12) and TCM, or fuse (No. 12) and battery, and poor contact of the connector.
15	**CHECK IGNITION POWER SUPPLY CIRCUIT.** 1) Turn the ignition switch to ON. 2) Measure the ignition power supply voltage between TCM connector and chassis ground. ***Connector & terminal*** ***(B54) No. 1 (+) — Chassis ground (–):*** ***(B54) No. 2 (+) — Chassis ground (–):***	Is the voltage 10 — 13 V?	Go to step **17**.	Go to step **16**.
16	**CHECK FUSE (NO. 12).** Remove the fuse (F/B No. 12).	Is the fuse (No. 12) blown out?	Replace the fuse (No. 12). If the replaced fuse (No. 12) blows out easily, repair the short circuit of harness between fuse (No. 12) and TCM.	Repair the open circuit of harness between fuse (No. 12) and TCM, or fuse (No. 12) and battery, and poor contact of the connector.

	Step	Check	Yes	No
17	**CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.** 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from TCM and transmission. 3) Measure the resistance of harness between TCM and transmission connector. ***Connector & terminal*** ***(B54) No. 20 — (B11) No. 20:*** ***(B54) No. 21 — (B11) No. 20:*** ***(B54) No. 22 — (B11) No. 19:*** ***(B54) No. 23 — (B11) No. 19:***	Is resistance less than 1 Ω?	Go to step **18**.	Repair the open circuit of harness between TCM and transmission harness connector, and poor contact of connector.
18	**CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND TRANSMISSION GROUND.** Measure the resistance of the harness between transmission and transmission ground. ***Connector & terminal*** ***(T4) No. 19 — Transmission ground:*** ***(T4) No. 20 — Transmission ground:***	Is resistance less than 1 Ω?	Go to step **19**.	Repair the open circuit of the harness between transmission and transmission ground.
19	**CHECK POOR CONTACT IN CONNECTORS.**	Is there poor contact in TCM power supply, ground and data link connector?	Repair the connector.	Replace the TCM. <Ref. to 4AT-64, Transmission Control Module (TCM).>

12.List of Diagnostic Trouble Code (DTC)

A: LIST

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

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

13.Diagnostic Procedure with Diagnostic Trouble Code (DTC)

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

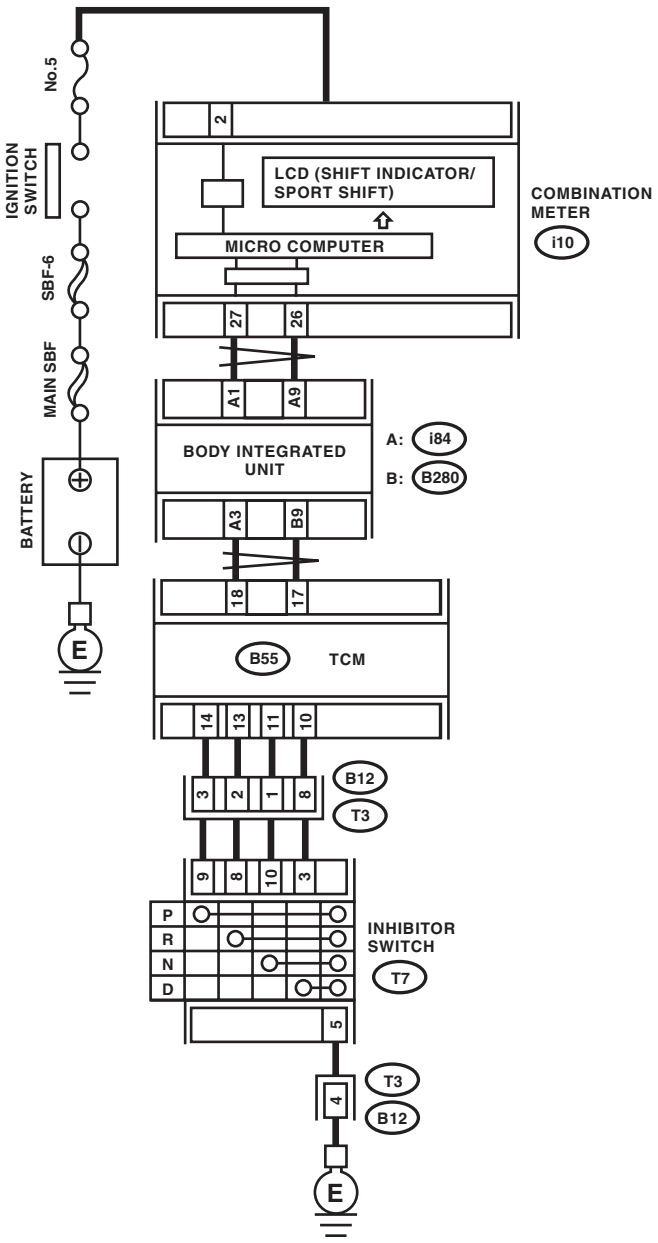
DTC DETECTING CONDITION:

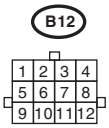
- Inhibitor switch is faulty.
- At least 2 range signal is input.

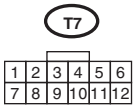
TROUBLE SYMPTOM:

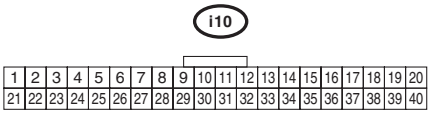
- Shift characteristics are erroneous.
- The range position of the select lever and the AT select lever position indicator light on the combination meter do not match.

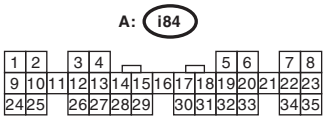
WIRING DIAGRAM:

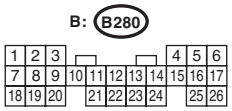


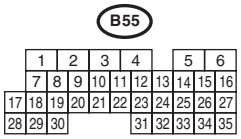












AT-04575

	Step	Check	Yes	No
1	**CHECK INDICATOR LIGHT.** 1) Turn the ignition switch to ON. 2) Move the select lever to "P" range.	Does the "P" range indicator light on combination meter illuminate?	Go to step **2**.	Go to step **12**.
2	**CHECK INDICATOR LIGHT.**	Does the "R" range indicator light on combination meter illuminate?	Go to step **26**.	Go to step **3**.
3	**CHECK INDICATOR LIGHT.**	Does the "N" range indicator light on combination meter illuminate?	Go to step **33**.	Go to step **4**.
4	**CHECK INDICATOR LIGHT.**	Does the "D" range indicator light on combination meter illuminate?	Go to step **40**.	Go to step **5**.
5	**CHECK "P" RANGE SWITCH.** Read the data of "P range" using Subaru Select Monitor.	Is ON displayed?	Go to step **19**.	Go to step **6**.
6	**CHECK INDICATOR LIGHT.** Set the select lever to "R" range.	Does the "R" range indicator light on combination meter illuminate?	Go to step **8**.	Go to step **7**.
7	**CHECK "R" RANGE SWITCH.** Read the data of "R range" using Subaru Select Monitor.	Is ON displayed?	Go to step **23**.	Go to step **20**.
8	**CHECK INDICATOR LIGHT.** Set the select lever to "N" range.	Does the "P" range indicator light on combination meter illuminate?	Go to step **10**.	Go to step **9**.
9	**CHECK "N" RANGE SWITCH.** Read the data of "N range" using Subaru Select Monitor.	Is ON displayed?	Go to step **30**.	Go to step **27**.
10	**CHECK INDICATOR LIGHT.** Set the select lever to the "D" range.	Does the "D" range indicator light on combination meter illuminate?	Even if the ATF temperature warning light blinks, the circuit is in normal condition at this time. A temporary poor contact of connector or harness may be the cause. Repair the harness or connector in TCM and transmission.	Go to step **11**.
11	**CHECK "D" RANGE SWITCH.** Read the data of "D range" using Subaru Select Monitor.	Is ON displayed?	Go to step **37**.	Go to step **34**.
12	**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 **13**.	Repair the open circuit of harness between inhibitor switch and chassis ground, and poor contact of the connector.

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

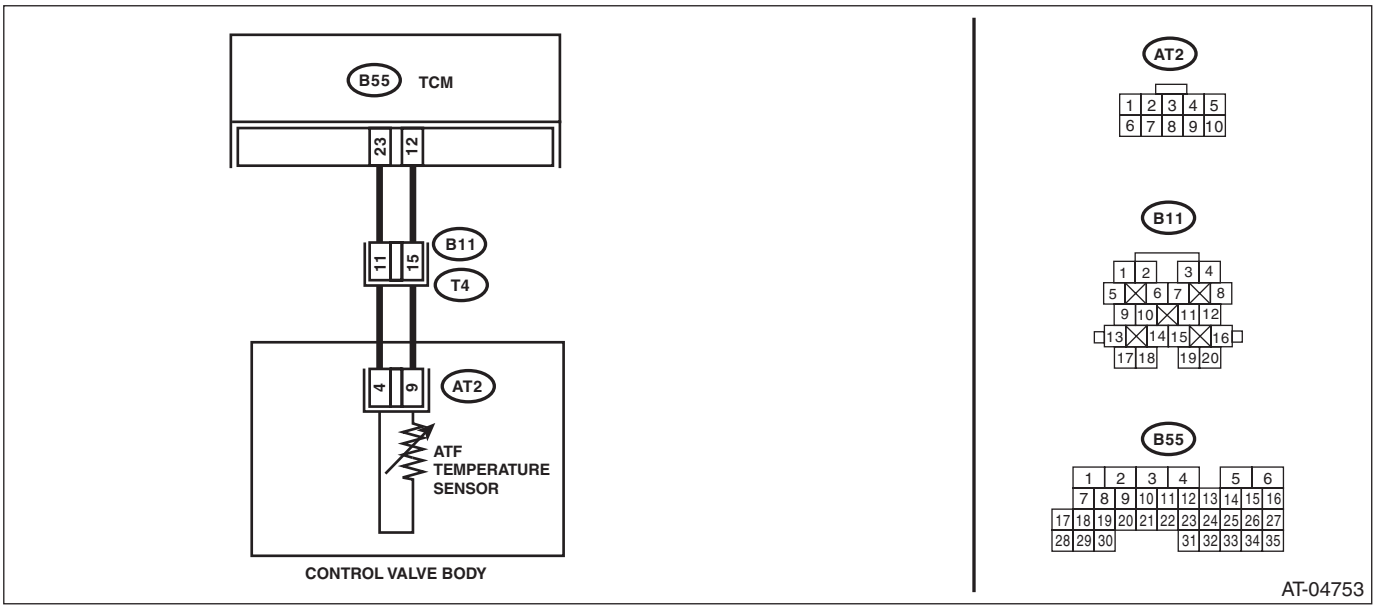
Step		Check	Yes	No
21	**CHECK INPUT SIGNAL FOR TCM.** 1) Turn the ignition switch to OFF. 2) Connect the connector to TCM and inhibitor switch. 3) Turn the ignition switch to ON. 4) Shift the select lever to "R" range. 5) Measure the voltage between TCM and chassis ground. ***Connector & terminal*** ***(B55) No. 13 (+) — Chassis ground (–):***	Is the voltage less than 1 V?	Go to step **22**.	Go to step **41**.
22	**CHECK INPUT SIGNAL FOR TCM.** 1) Shift the select lever to any range other than "R". 2) Measure the voltage between TCM and chassis ground. ***Connector & terminal*** ***(B55) No. 13 (+) — Chassis ground (–):***	Is the voltage 8 V or more?	Go to step **41**.	Replace the TCM. <Ref. to 4AT-64, Transmission Control Module (TCM).>
23	**CHECK BODY INTEGRATED UNIT.** Read the shift position data using Subaru Select Monitor. <Ref. to LAN(diag)-14, OPERATION, Subaru Select Monitor.>	Is "6" displayed?	Go to step **24**.	Check the body integrated unit.
24	**CHECK BODY INTEGRATED UNIT.** Check DTC of body integrated unit.	Is DTC of CAN communication displayed?	Perform the diagnosis according to DTC.	Go to step **25**.
25	**CHECK COMBINATION METER.** Check the "R" range indicator light. <Ref. to IDI-4, INSPECTION, Combination Meter System.>	Is the "R" range indicator light OK?	Go to step **41**.	Replace the combination meter assembly. <Ref. to IDI-14, Combination Meter.>
26	**CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.** 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from TCM, inhibitor switch and combination meter. 3) Measure the resistance of harness between TCM connector and chassis ground. ***Connector & terminal*** ***(B55) No. 13 — Chassis ground:***	Is the resistance 1 MΩ or more?	Go to step **41**.	Repair ground short circuit in "R" range circuit.
27	**CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.** 1) Turn the ignition switch to OFF. 2) Disconnect the connector from TCM and inhibitor switch. 3) Measure the resistance of the harness between TCM and inhibitor switch connector. ***Connector & terminal*** ***(B55) No. 11 — (T7) No. 10:***	Is resistance less than 1 Ω?	Go to step **28**.	Repair the open circuit of harness between TCM and inhibitor switch connector, and poor contact of the connector.
28	**CHECK INPUT SIGNAL FOR TCM.** 1) Turn the ignition switch to OFF. 2) Connect the connector to TCM and inhibitor switch. 3) Turn the ignition switch to ON. 4) Shift the select lever to "N" range. 5) Measure the voltage between TCM and chassis ground. ***Connector & terminal*** ***(B55) No. 11 (+) — Chassis ground (–):***	Is the voltage less than 1 V?	Go to step **29**.	Go to step **41**.

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

Step		Check	Yes	No
38	**CHECK BODY INTEGRATED UNIT.** Check DTC of body integrated unit.	Is DTC of CAN communication displayed?	Perform the diagnosis according to DTC.	Go to step **39**.
39	**CHECK COMBINATION METER.** Check the “D” range indicator light. <Ref. to IDI-4, INSPECTION, Combination Meter System.>	Is the “D” range indicator light OK?	Go to step **41**.	Replace the combination meter assembly. <Ref. to IDI-14, Combination Meter.>
40	**CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.** 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from TCM, inhibitor switch and combination meter. 3) Measure the resistance of harness between TCM connector and chassis ground. ***Connector & terminal*** ***(B55) No. 10 — Chassis ground:***	Is the resistance 1 MΩ or more?	Go to step **41**.	Repair ground short circuit in “D” range circuit.
41	**CHECK POOR CONTACT.**	Is there poor contact in the inhibitor switch circuit?	Repair the poor contact.	Go to step **42**.
42	**CHECK INHIBITOR SWITCH.**	Is the inhibitor switch in the normal position?	Replace the TCM. <Ref. to 4AT-64, Transmission Control Module (TCM).>	Adjust inhibitor switch and select cable. <Ref. to 4AT-47, Inhibitor Switch.> <Ref. to CS-29, Select Cable.>

B: DTC P0712 TRANSMISSION FLUID TEMPERATURE SENSOR CIRCUIT LOW INPUT

DTC DETECTING CONDITION:
Input signal circuit to ATF temperature sensor is open or shorted.
TROUBLE SYMPTOM:
Excessive shift shock
WIRING DIAGRAM:

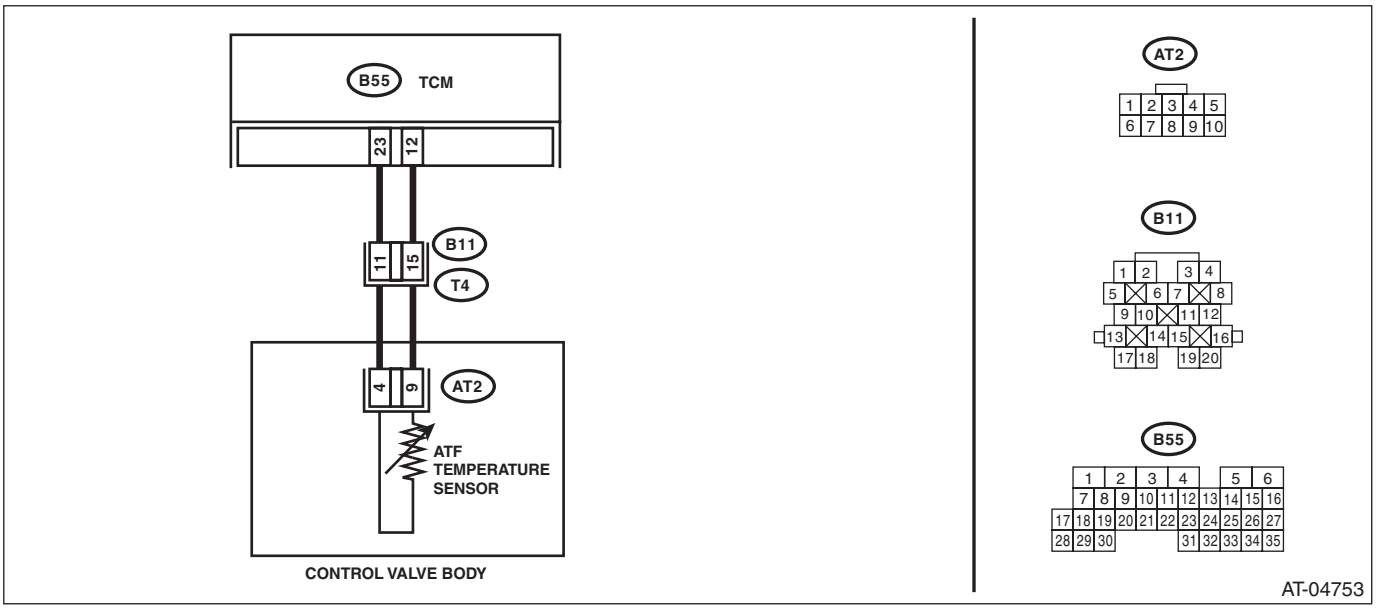


	Step	Check	Yes	No
1	**CHECK HARNESS CONNECTOR BETWEEN TCM AND ATF TEMPERATURE SENSOR.** 1) Turn the ignition switch to OFF. 2) Disconnect the connector from transmission and TCM. 3) Measure the resistance of harness between TCM and transmission connector. ***Connector & terminal*** ***(B55) No. 23 —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

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. 5) Drain the automatic transmission fluid. **CAUTION:** **Do not drain ATF until it cools down.** 6) Remove the oil pan, and disconnect the control valve connector. 7) Measure the resistance of harness between ATF temperature sensor and transmission connector. ***Connector & terminal*** ***(T4) No. 11 — (AT2) No. 4:***	Is resistance less than 1 Ω?	Go to step **8**.	Repair the open circuit of harness between ATF temperature sensor and transmission connector.
8	**CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND ATF TEMPERATURE SENSOR.** Measure the resistance of harness between ATF temperature sensor and transmission connector. ***Connector & terminal*** ***(T4) No. 15 — (AT2) No. 9:***	Is resistance less than 1 Ω?	Go to step **9**.	Repair the open circuit of harness between ATF temperature sensor and transmission connector.
9	**CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND ATF TEMPERATURE SENSOR.** Measure the resistance of harness between transmission connector and transmission ground. ***Connector & terminal*** ***(T4) No. 11 — Transmission ground:***	Is the resistance 1 MΩ or more?	Go to step **10**.	Repair the short circuit of harness between ATF temperature sensor and transmission connector.
10	**CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND ATF TEMPERATURE SENSOR.** Measure the resistance of harness between transmission connector and transmission ground. ***Connector & terminal*** ***(T4) No. 15 — Transmission ground:***	Is the resistance 1 MΩ or more?	Replace the control valve body. <Ref. to 4AT-58, Control Valve Body.>	Repair the short circuit of harness between ATF temperature sensor and transmission connector.

C: DTC P0713 TRANSMISSION FLUID TEMPERATURE SENSOR CIRCUIT HIGH INPUT

DTC DETECTING CONDITION:
Input signal circuit to ATF temperature sensor is shorted.
TROUBLE SYMPTOM:
Excessive shift shock
WIRING DIAGRAM:

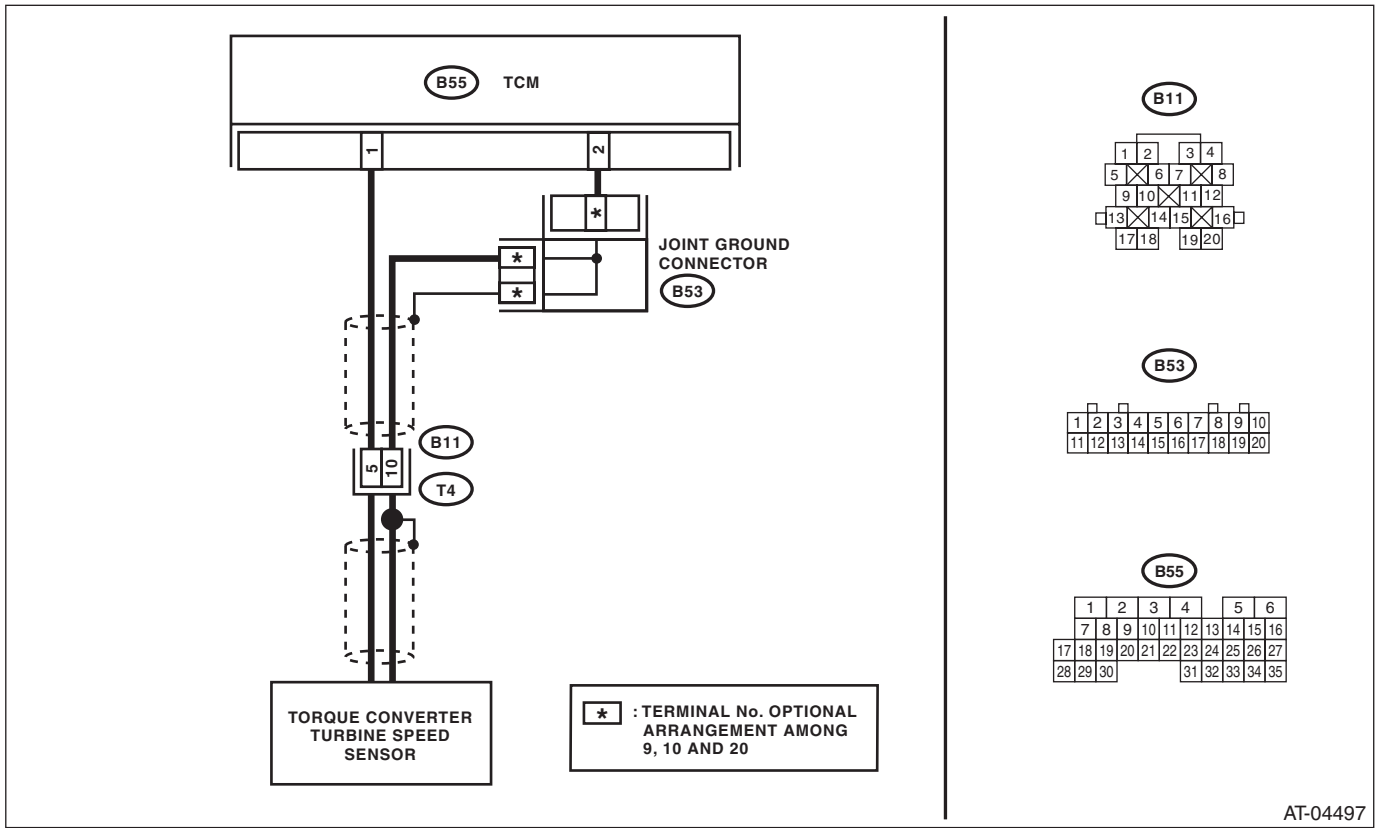


	Step	Check	Yes	No
1	**CHECK HARNESS CONNECTOR BETWEEN TCM AND ATF TEMPERATURE SENSOR.** 1) Turn the ignition switch to OFF. 2) Disconnect the connector from TCM. 3) Measure the resistance between TCM connector terminals. ***Connector & terminal*** ***(B55) No. 23 — No. 12:***	Is the resistance 500 Ω or more?	Go to step **2**.	Go to step **4**.
2	**CHECK HARNESS CONNECTOR BETWEEN TCM AND ATF TEMPERATURE SENSOR.** Measure the resistance of harness between TCM connector and chassis ground. ***Connector & terminal*** ***(B55) No. 23 — Chassis ground:***	Is the resistance 1 MΩ or more?	Go to step **3**.	Go to step **4**.
3	**CHECK HARNESS.** Measure the resistance between TCM connector terminals while shaking the harness. ***Connector & terminal*** ***(B55) No. 23 — No. 12:***	Does the resistance change?	Go to step **4**.	Replace the TCM. <Ref. to 4AT-64, Transmission Control Module (TCM).>
4	**CHECK HARNESS CONNECTOR BETWEEN TCM AND ATF TEMPERATURE SENSOR.** 1) Turn the ignition switch to OFF. 2) Disconnect the connector from transmission. 3) Measure the resistance of harness between TCM connector and chassis ground. ***Connector & terminal*** ***(B55) No. 23 — Chassis ground:***	Is the resistance 1 MΩ or more?	Go to step **5**.	Repair the short circuit of harness between TCM and transmission harness.

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

D: DTC P0715 INPUT/TURBINE SPEED SENSOR CIRCUIT

DTC DETECTING CONDITION:
Input signal circuit of TCM is open or shorted.
TROUBLE SYMPTOM:
Excessive shift shock
WIRING DIAGRAM:



	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 between 450 — 650 Ω?	Go to step **2**.	Replace the torque converter turbine speed sensor. <Ref. to 4AT-55, 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 connector and transmission connector. ***Connector & terminal*** ***(B55) No. 1 — (B11) No. 5:***	Is resistance less than 1 Ω?	Go to step **3**.	Repair the open circuit of harness between TCM and transmission connector.
3	**CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.** Measure the resistance of harness between TCM connector and transmission connector. ***Connector & terminal*** ***(B55) No. 2 — (B11) No. 10:***	Is resistance less than 1 Ω?	Go to step **4**.	Repair the open circuit of harness between TCM and transmission connector, and poor contact of the connector.
4	**CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.** Measure the resistance of harness between TCM connector and chassis ground. ***Connector & terminal*** ***(B55) No. 2 — Chassis ground:***	Is the resistance 1 MΩ or more?	Go to step **5**.	Repair the short circuit of harness between TCM and transmission connector.
5	**CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.** Measure the resistance of harness between TCM connector and chassis ground. ***Connector & terminal*** ***(B55) No. 1 — Chassis ground:***	Is the resistance 1 MΩ or more?	Go to step **6**.	Repair the short circuit of the harness between TCM and transmission connector, and poor contact of connector.
6	**CHECK INPUT SIGNAL FOR TCM USING SUBARU SELECT MONITOR.** 1) Connect the connectors to TCM and transmission. 2) Connect the Subaru Select Monitor to the data link connector. 3) Turn the ignition switch to ON. 4) Start up the Subaru Select Monitor. 5) Start the engine. 6) Place the select lever in "P" or "N" range. 7) Read the data of "Turbine Revolution Speed" using Subaru Select Monitor. 8) Compare the tachometer with Subaru Select Monitor indications.	Is the revolution value same as the tachometer reading shown on the combination meter?	Even if the ATF temperature warning light blinks, the circuit is in normal condition at this time. A temporary poor contact of connector or harness may be the cause. Repair the harness or connector in TCM and transmission.	Go to step **7**.
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-64, Transmission Control Module (TCM).>

E: DTC P0719 BRAKE SWITCH CIRCUIT LOW

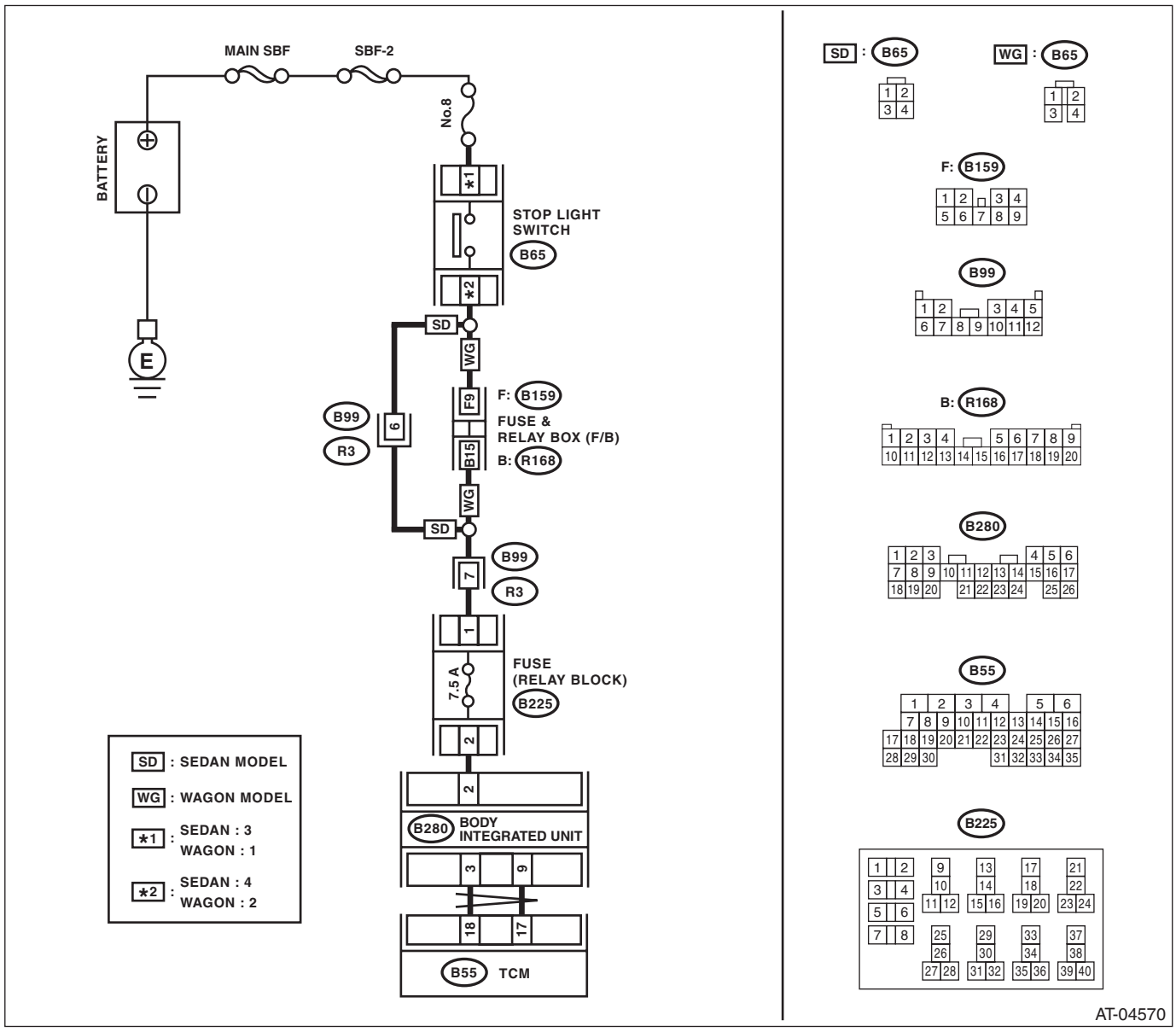
DTC DETECTING CONDITION:

Brake switch malfunction, open input signal circuit

Trouble symptom:

Gear is not shifted down when driving a down hill.

WIRING DIAGRAM:



	Step	Check	Yes	No
1	**CHECK DTC.**	Is DTC of CAN communication displayed?	Perform the diagnosis according to DTC.	Go to step **2**.
2	**CHECK FUSE (NO. 8).** 1) Turn the ignition switch to OFF. 2) Remove the fuse (No. 8).	Is the fuse (No. 8) blown out?	Replace the fuse (No. 8). If the replaced fuse (No. 8) has blown out easily, repair the short circuit of harness between fuse (No. 8) and stop light switch.	Go to step **3**.
3	**CHECK FUSE (RELAY BLOCK) (7.5A).** Remove the fuse (relay block) (7.5 A).	Is the fuse (7.5A) blown out?	Replace the fuse (7.5A). If the replaced fuse (7.5A) blows out easily, repair the short circuit of harness between fuse (7.5A) and TCM.	Go to step **4**.
4	**CHECK BODY INTEGRATED UNIT.** 1) Turn the ignition switch to OFF. 2) Connect the Subaru Select Monitor to the data link connector. 3) Turn the ignition switch to ON. 4) Run the Subaru Select Monitor. 5) Depress the brake pedal. 6) Read the data of “Stop Light Switch” using Subaru Select Monitor. <Ref. to LAN(diag)-14, OPERATION, Subaru Select Monitor.>	Is ON displayed?	Go to step **5**.	Go to step **6**.
5	**CHECK TCM.** Read the data of “Stop Light Switch” using Subaru Select Monitor. <Ref. to 4AT(diag)-15, OPERATION, Subaru Select Monitor.>	Is ON displayed?	A temporary poor contact of connector or harness may be the cause. Check the poor contact.	Replace the TCM. <Ref. to 4AT-64, Transmission Control Module (TCM).>
6	**CHECK BODY INTEGRATED UNIT INPUT SIGNAL.** 1) Disconnect the connector from body integrated unit. 2) Depress the brake pedal. 3) Measure the voltage of harness between the body integrated unit and chassis ground. ***Connector & terminal*** ***(B280) No. 2 (+) — Chassis ground (–):***	Is the voltage 10 V or more?	Go to step **9**.	Go to step **7**.
7	**CHECK HARNESS CONNECTOR BETWEEN BODY INTEGRATED UNIT AND STOP LIGHT SWITCH.** 1) Turn the ignition switch to OFF. 2) Disconnect the connector from stop light switch. 3) Measure the resistance of harness between body integrated unit and stop light switch. ***Connector & terminal*** ***SEDAN MODEL*** ***(B280) No. 2 — (B65) No. 4:*** ***WAGON MODEL*** ***(B280) No. 2 — (B65) No. 2:***	Is resistance less than 1 Ω?	Go to step **8**.	Repair the open circuit of harness between body integrated unit and stop light switch.

Step		Check	Yes	No
8	**CHECK HARNESS CONNECTOR BETWEEN BODY INTEGRATED UNIT AND STOP LIGHT SWITCH.** Measure the resistance of harness between body integrated unit and stop light switch. ***Connector & terminal*** ***(B280) No. 2 — Chassis ground:***	Is the resistance 1 MΩ or more?	Go to step **9**.	Repair the short circuit of harness between body integrated unit and stop light switch.
9	**CHECK POOR CONTACT.**	Is there poor contact in input signal of brake switch?	Repair the poor contact.	Check the body integrated unit.

F: DTC P0720 OUTPUT SPEED SENSOR CIRCUIT

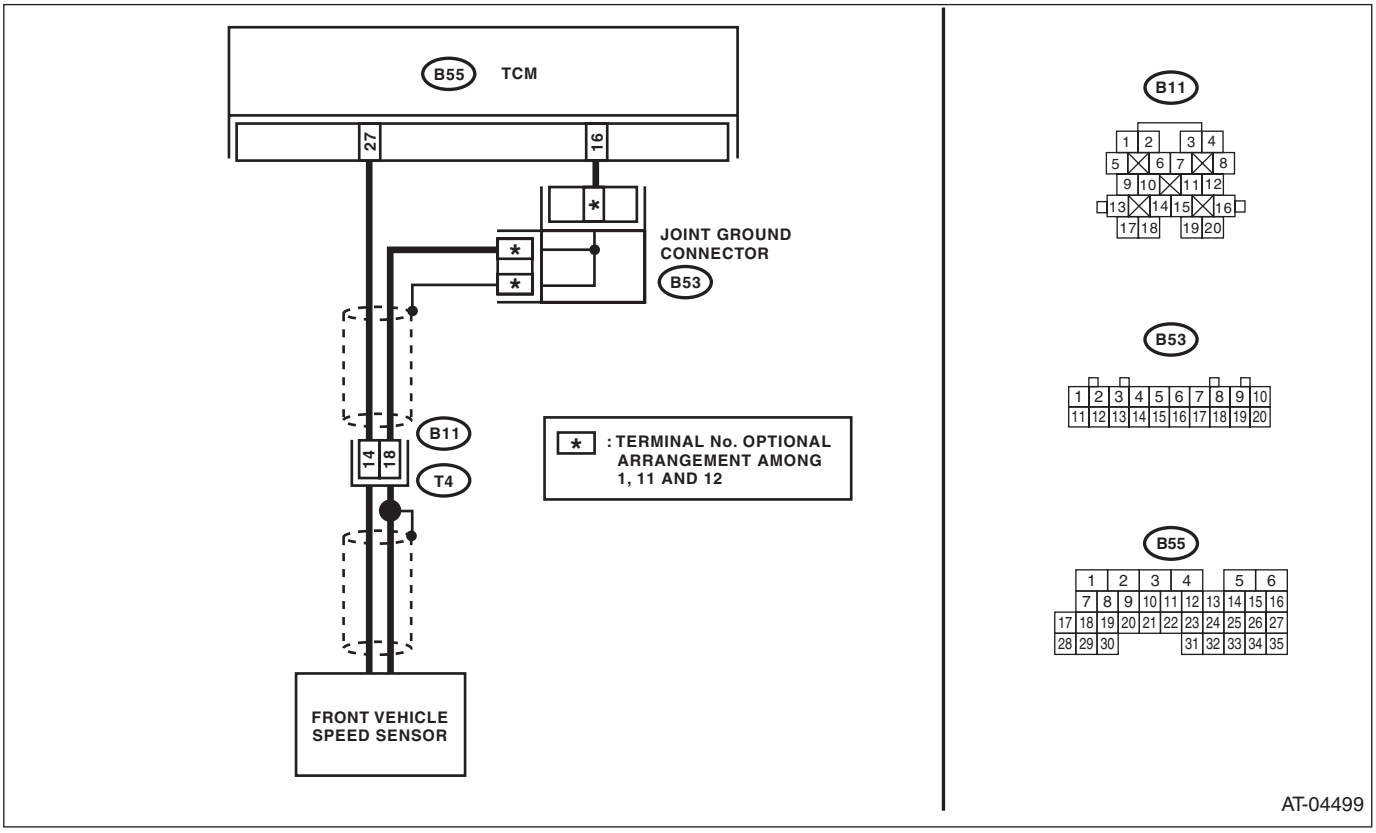
DTC DETECTING CONDITION:

- The vehicle speed signal is abnormal.
- The harness connector between TCM and front vehicle speed sensor is shorted or open.

TROUBLE SYMPTOM:

Driving performance is poor.

WIRING DIAGRAM:

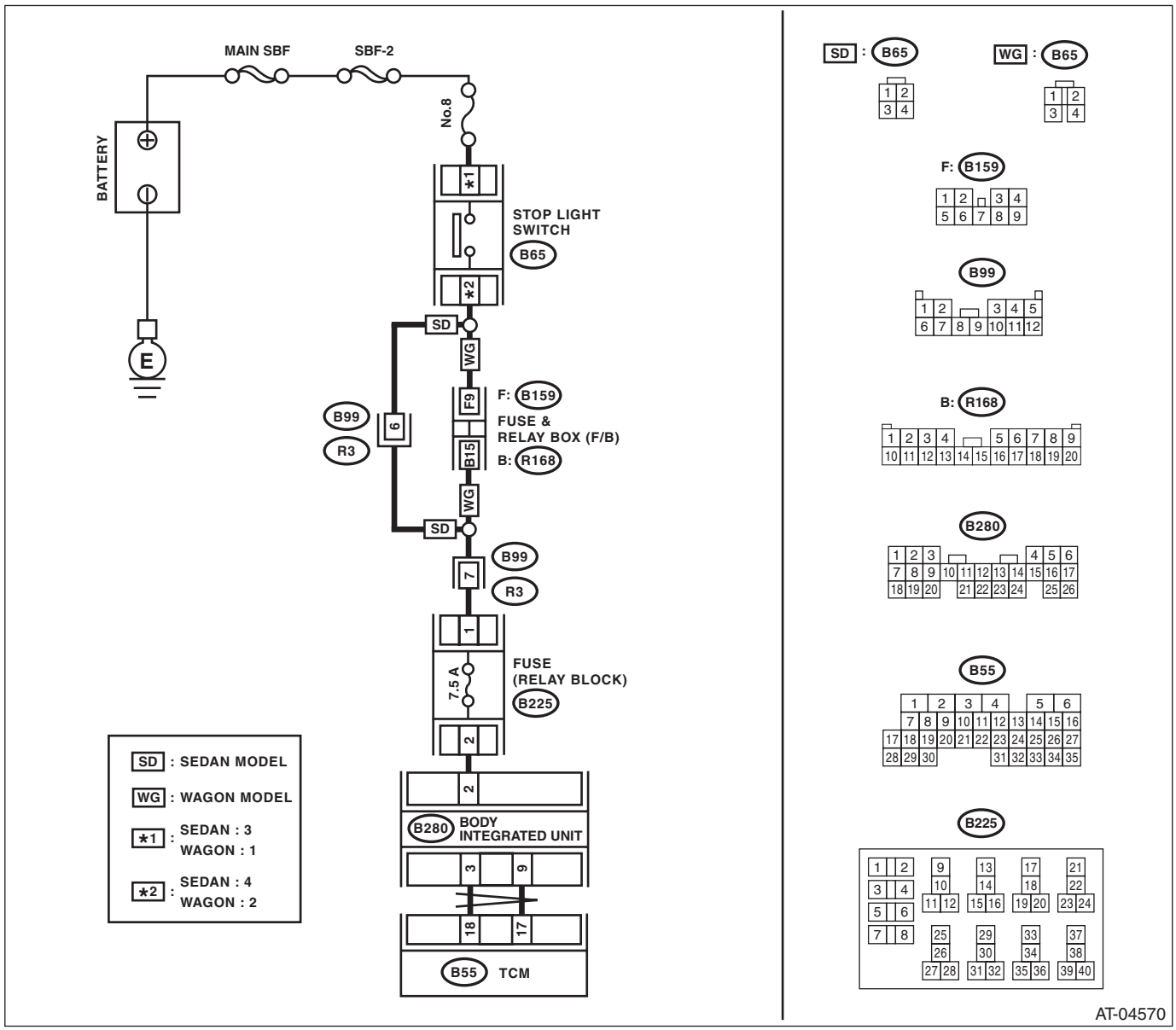


Step		Check	Yes	No
1	**CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.** 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from TCM and transmission. 3) Measure the resistance of harness between TCM connector and transmission connector. ***Connector & terminal*** ***(B55) No. 27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

	Step	Check	Yes	No
4	**CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.** Measure the resistance of harness between TCM connector and transmission connector. ***Connector & terminal*** ***(B55) No. 16 — Chassis ground:***	Is the resistance 1 MΩ or more?	Go to step **5**.	Repair the short circuit of the harness between TCM and transmission connector, and poor contact of connector.
5	**CHECK FRONT VEHICLE SPEED SENSOR.** Measure the resistance between transmission connector receptacle's terminals. ***Connector & terminal*** ***(T4) No. 14 — No. 18:***	Is the resistance between 450 — 650 Ω?	Go to step **6**.	Replace the front vehicle speed sensor. <Ref. to 4AT-51, Front Vehicle Speed Sensor.>
6	**CHECK INPUT SIGNAL FOR TCM USING SUBARU SELECT MONITOR.** 1) Connect all connectors. 2) Connect the Subaru Select Monitor to the data link connector. 3) Lift up the vehicle. 4) Turn the ignition switch to ON. 5) Start up the Subaru Select Monitor. 6) Start the engine. 7) Read the data of "front wheel speed" using Subaru Select Monitor. 8) Compare the speedometer with Subaru Select Monitor indications. 9) Slowly increase the vehicle speed to 60 km/h (37 MPH). NOTE: The speed difference between front and rear wheels may illuminate the ABS warning light, but this does not indicate a malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to ABS(diag)-23, Clear Memory Mode.>	Does the speedometer indication increase as the Subaru Select Monitor front wheel speed data increases?	Even if the ATF temperature warning light blinks, the circuit is in normal condition at this time. A temporary poor contact of connector or harness may be the cause. Repair the harness in of front vehicle speed sensor circuit.	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-64, Transmission Control Module (TCM).>

G: DTC P0724 BRAKE SWITCH CIRCUIT HIGH

DTC DETECTING CONDITION:
Brake switch malfunction, open input signal circuit
Trouble symptom:
Gear is not shifted down when driving a down hill.
WIRING DIAGRAM:



	Step	Check	Yes	No
1	**CHECK DTC.**	Is DTC of CAN communication displayed?	Perform the diagnosis according to DTC.	Go to step **2**.
2	**CHECK BODY INTEGRATED UNIT.** 1) Turn the ignition switch to OFF. 2) Connect the Subaru Select Monitor to the data link connector. 3) Turn the ignition switch to ON. 4) Start up the Subaru Select Monitor. 5) Read the data of “Stop Light Switch” using Subaru Select Monitor. <Ref. to LAN(diag)-14, OPERATION, Subaru Select Monitor.>	Is OFF displayed?	Go to step **3**.	Go to step **4**.
3	**CHECK TCM.** Read the data of “Stop Light Switch” using Subaru Select Monitor. <Ref. to 4AT(diag)-15, OPERATION, Subaru Select Monitor.>	Is OFF displayed?	A temporary poor contact of connector or harness may be the cause. Check the poor contact.	Replace the TCM. <Ref. to 4AT-64, Transmission Control Module (TCM).>
4	**CHECK BODY INTEGRATED UNIT INPUT SIGNAL.** 1) Disconnect the harness connector of body integrated unit. 2) Measure the voltage of harness between body integrated unit and stop light switch. ***Connector & terminal*** ***(B280) No. 2 (+) — Chassis ground (–):***	Is the voltage 10 V or more?	Go to step **5**.	Go to step **7**.
5	**CHECK STOP LIGHT SWITCH.** 1) Turn the ignition switch to OFF. 2) Disconnect the connector from stop light switch. 3) Measure the resistance of harness between stop light switch connectors. ***Connector & terminal*** ***SEDAN MODEL*** ***(B65) No. 3 — No. 4:*** ***WAGON MODEL*** ***(B65) No. 1 — No. 2:***	Is the resistance 1 MΩ or more?	Go to step **6**.	Replace the stop light switch.
6	**CHECK HARNESS CONNECTOR BETWEEN BODY INTEGRATED UNIT AND STOP LIGHT SWITCH.** 1) Turn the ignition switch to ON. 2) Measure the voltage of harness between the body integrated unit and chassis ground. ***Connector & terminal*** ***(B280) No. 2 (+) — Chassis ground (–):***	Is the voltage less than 1 V?	Go to step **7**.	Repair the short circuit of harness between TCM and stop light switch.
7	**CHECK POOR CONTACT.**	Is there poor contact in input signal of brake switch?	Repair the poor contact.	Check the body integrated unit.

H: DTC P0731 GEAR 1 INCORRECT RATIO

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

I: DTC P0732 GEAR 2 INCORRECT RATIO

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

J: DTC P0733 GEAR 3 INCORRECT RATIO

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

K: DTC P0734 GEAR 4 INCORRECT RATIO

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

L: DTC P0736 REVERSE INCORRECT RATIO

DTC DETECTING CONDITION:
Vehicle sensor, torque converter turbine speed sensor or control valve malfunction
TROUBLE SYMPTOM:
- Shift point is too high or too low.
- Excessive shift shock
- Tight corner braking phenomenon occurs.
- Gear is not shifted to reverse.
- Gear position is held by fail safe function.

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

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

DTC DETECTING CONDITION:

- Lock up clutch malfunction
- Sticky valve

TROUBLE SYMPTOM:

No lock-up occurs.

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

N: DTC P0743 TORQUE CONVERTER CLUTCH CIRCUIT ELECTRICAL

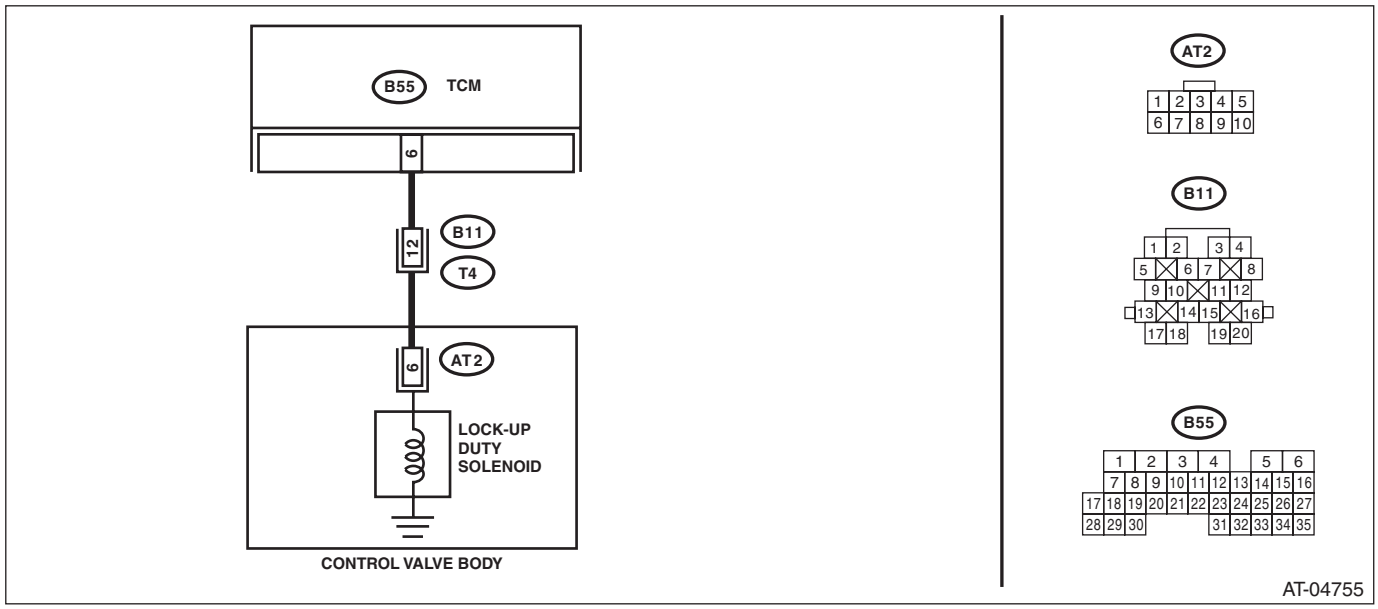
DTC DETECTING CONDITION:

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

TROUBLE SYMPTOM:

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

WIRING DIAGRAM:

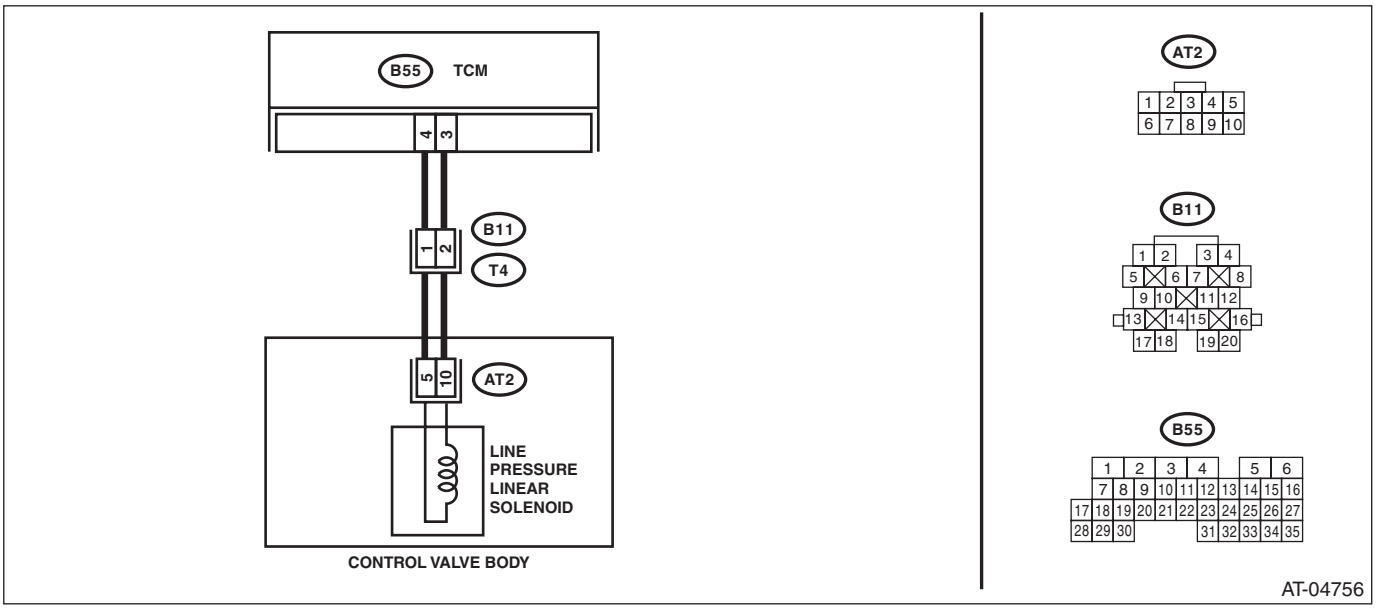


	Step	Check	Yes	No
1	**CHECK DTC.**	Are multiple DTCs displayed?	Go to other DTC.	Go to step **2**.
2	**CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.** 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from TCM and transmission. 3) Measure the resistance of harness between TCM connector and transmission connector. ***Connector & terminal*** ***(B55) No. 6 — (B11) No. 12:***	Is resistance less than 1 Ω?	Go to step **3**.	Repair the open circuit of harness between TCM and transmission connector.
3	**CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.** Measure the resistance of the harness connector between TCM connector and chassis ground. ***Connector & terminal*** ***(B55) No. 6 — Chassis ground:***	Is the resistance 1 MΩ or more?	Go to step **4**.	Repair the short circuit of harness between TCM and transmission connector.
4	**CHECK LOCK-UP DUTY SOLENOID.** Measure the resistance between transmission connector receptacle's terminals. ***Connector & terminal*** ***(T4) No. 12 — No. 20:***	Is the resistance between 2.0 — 6.0 Ω?	Go to step **5**.	Go to step **8**.
5	**CHECK OUTPUT SIGNAL FROM TCM USING SUBARU SELECT MONITOR.** 1) Connect the connectors to TCM and transmission. 2) Lift up the vehicle. 3) Connect the Subaru Select Monitor to the data link connector. 4) Start the engine. 5) Start up the Subaru Select Monitor. 6) Warm-up the engine until the ATF temperature exceeds 80°C (176°F). NOTE: If the ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature. 7) Read the data of "Lock Up Duty Ratio" using Subaru Select Monitor. 8) Shift the select lever to "D", and slowly increase vehicle speed to 60 km/h (37 MPH). NOTE: The speed difference between front and rear wheels illuminates the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to ABS(diag)-23, Clear Memory Mode.>	Is the measured value 95%?	Go to step **6**.	Go to step **7**.

Step		Check	Yes	No
6	**CHECK OUTPUT SIGNAL FROM TCM USING SUBARU SELECT MONITOR.** Return the engine to idling speed, shift the select lever to "N" range and read the data. NOTE: The speed difference between front and rear wheels illuminates the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to ABS(diag)-23, Clear Memory Mode.>	Is the measured value 0%?	Even if the ATF temperature warning light blinks, the circuit is in normal condition at this time. A temporary poor contact of connector or harness may be the cause. Repair the harness or connector in TCM and transmission.	Go to step **7**.
7	**CHECK POOR CONTACT.**	Is there poor contact in lock-up duty solenoid circuit?	Repair the poor contact.	Replace the TCM. <Ref. to 4AT-64, Transmission Control Module (TCM).>
8	**CHECK LOCK-UP DUTY SOLENOID (IN TRANSMISSION).** 1) Disconnect the transmission connector. 2) Drain the automatic transmission fluid. **CAUTION:** **Do not drain ATF until it cools down.** 3) Remove the oil pan, and disconnect the connector from control valve body. 4) Measure the resistance between lock-up duty solenoid and transmission ground. ***Connector & terminal*** ***(AT2) No. 6 — Transmission ground:***	Is the resistance between 2.0 — 6.0 Ω?	Go to step **9**.	Replace the control valve body. <Ref. to 4AT-58, Control Valve Body.>
9	**CHECK HARNESS CONNECTOR BETWEEN LOCK-UP DUTY SOLENOID AND TRANSMISSION.** Measure the resistance of harness between lock-up duty solenoid and transmission connector. ***Connector & terminal*** ***(T4) No. 12 — (AT2) No. 6:***	Is resistance less than 1 Ω?	Go to step **10**.	Repair the open circuit of harness between TCM and transmission connector.
10	**CHECK HARNESS CONNECTOR BETWEEN LOCK-UP DUTY SOLENOID AND TRANSMISSION.** Measure the resistance of harness between transmission connector and transmission ground. ***Connector & terminal*** ***(T4) No. 12 — Transmission ground:***	Is the resistance 1 MΩ or more?	Even if the ATF temperature warning light blinks, the circuit is in normal condition at this time. A temporary poor contact of connector or harness may be the cause. Repair the harness or connector in lock-up duty solenoid and transmission.	Repair the short circuit of harness between lock-up duty solenoid and transmission connector.

O: DTC P0748 PRESSURE CONTROL SOLENOID "A" ELECTRICAL

DTC DETECTING CONDITION:
Output signal circuit of line pressure linear solenoid is open or shorted.
TROUBLE SYMPTOM:
Excessive shift shock
WIRING DIAGRAM:

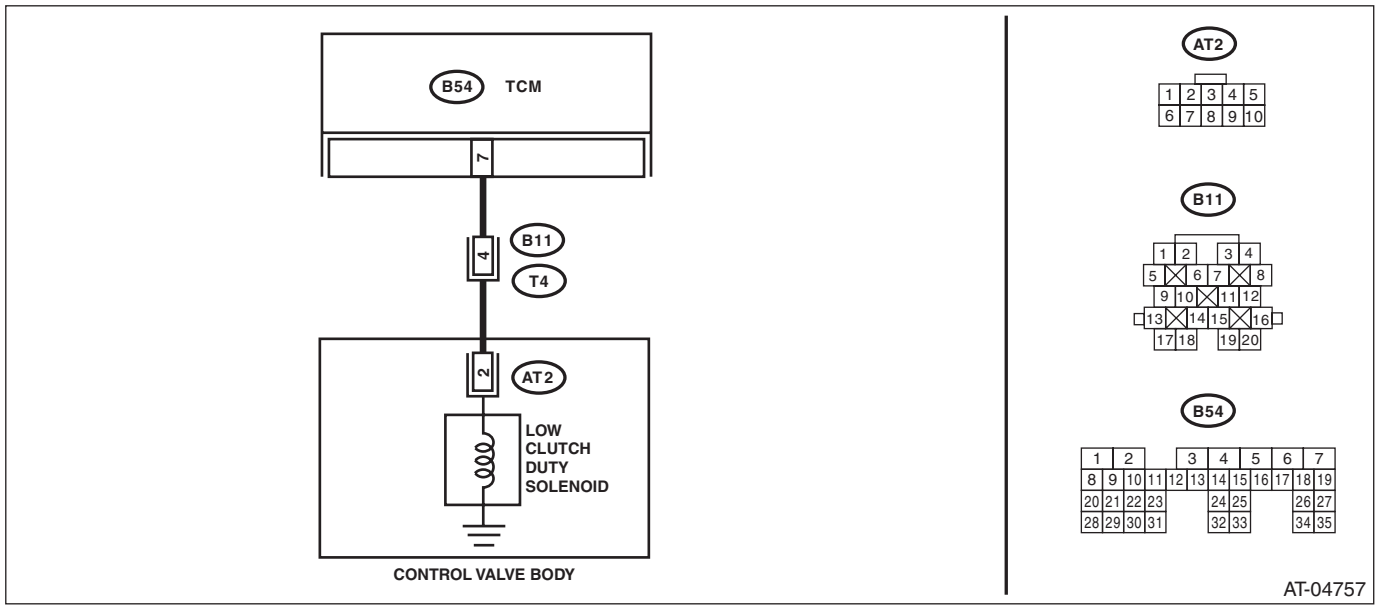


	Step	Check	Yes	No
1	**CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.** 1) Turn the ignition switch to OFF. 2) Disconnect the connector from transmission and TCM. 3) Measure the resistance of harness between TCM connector and transmission connector. ***Connector & terminal*** ***(B55) No. 3 — (B11)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

Step		Check	Yes	No
4	**CHECK LINE PRESSURE LINEAR SOLENOID (IN TRANSMISSION).** 1) Remove the transmission connector from bracket. 2) Drain the automatic transmission fluid. **CAUTION:** **Do not drain ATF until it cools down.** 3) Remove the oil pan, and disconnect the connector from control valve body. 4) Measure the resistance of line pressure linear solenoid connector terminals. ***Connector & terminal*** ***(AT2) No. 5 — No. 10:***	Is the resistance between 4 — 8 Ω?	Go to step **5**.	Replace the control valve body. <Ref. to 4AT-58, Control Valve Body.>
5	**CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND LINE PRESSURE LINEAR SOLENOID.** Measure the resistance of harness between line pressure linear solenoid and transmission connector. ***Connector & terminal*** ***(T4) No. 2 — (AT2) No. 10:*** ***(T4) No. 1 — (AT2) No. 5:***	Is resistance less than 1 Ω?	Go to step **6**.	Repair the open circuit of harness between line pressure linear solenoid and transmission connector.
6	**CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND LINE PRESSURE LINEAR SOLENOID.** Measure the resistance of harness between transmission connector and transmission ground. ***Connector & terminal*** ***(T4) No. 1 — Transmission ground:*** ***(T4) No. 2 — Transmission ground:***	Is the resistance 1 MΩ or more?	Even if the ATF temperature warning light blinks, the circuit is in normal condition at this time. A temporary poor contact of connector or harness may be the cause. Repair the harness or connector in line pressure linear solenoid and transmission.	Repair the short circuit of harness between line pressure linear solenoid and transmission connector.

P: DTC P0753 SHIFT SOLENOID "A" ELECTRICAL

DTC DETECTING CONDITION:
Output signal circuit of low clutch duty solenoid is open or shorted.
TROUBLE SYMPTOM:
Excessive shift shock
WIRING DIAGRAM:

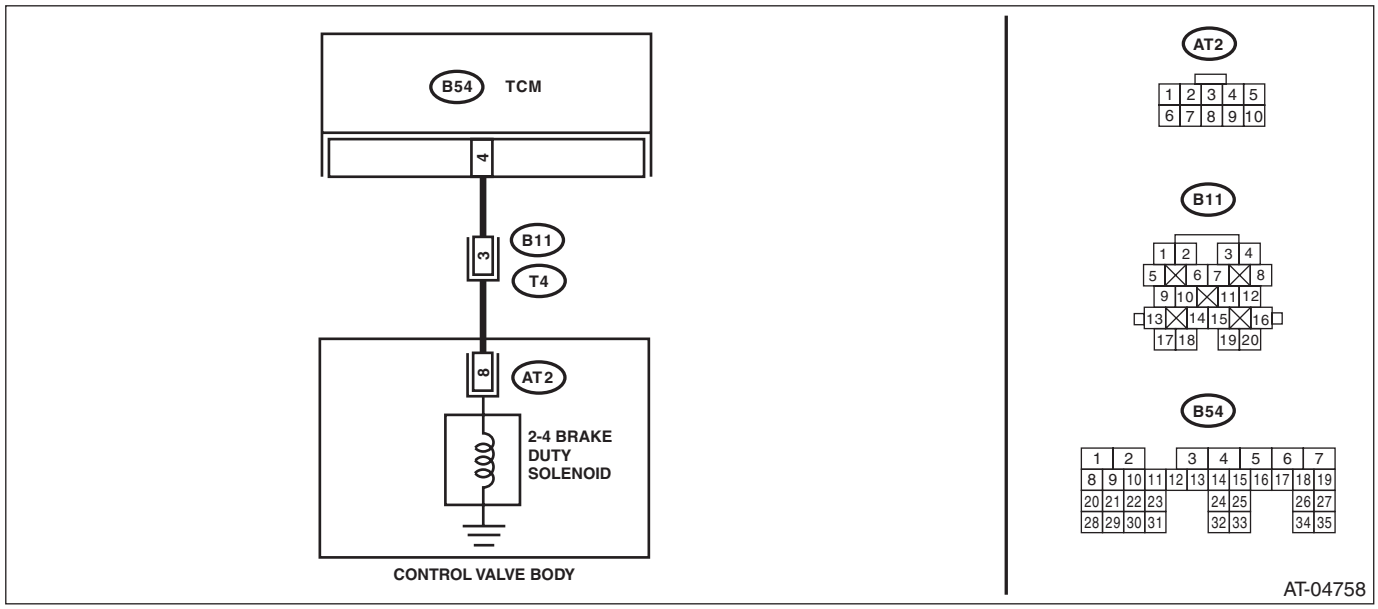


	Step	Check	Yes	No
1	**CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.** 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from TCM and transmission. 3) Measure the resistance of harness between TCM and transmission connector. ***Connector & terminal*** ***(B54) No. 7 — (B11) No. 4:***	Is resistance less than 1 Ω?	Go to step **2**.	Repair the open circuit of harness between TCM and transmission connector.
2	**CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.** Measure the resistance of harness between TCM connector and transmission ground. ***Connector & terminal*** ***(B54) No. 7 — Chassis ground:***	Is the resistance 1 MΩ or more?	Go to step **3**.	Repair the short circuit of harness between TCM and transmission connector.
3	**CHECK LOW CLUTCH DUTY SOLENOID.** Measure the resistance between transmission connector terminals. ***Connector & terminal*** ***(T4) No. 4 — No. 20:***	Is the resistance between 2.0 — 6.0 Ω?	Go to step **4**.	Go to step **7**.
4	**CHECK OUTPUT SIGNAL FROM TCM USING SUBARU SELECT MONITOR.** 1) Connect the connectors to TCM and transmission. 2) Connect the Subaru Select Monitor to the data link connector. 3) Start the engine. 4) Start up the Subaru Select Monitor. 5) Warm-up the transmission until the ATF temperature exceeds approximately 80°C (176°F). NOTE: If the ambient temperature falls below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature. 6) Stop the engine. 7) Turn the ignition switch to ON. 8) Shift the select lever to “P” or “N” range, and depress the accelerator pedal. 9) Read the data of “Low Clutch Duty Ratio” using Subaru Select Monitor.	Is the measured 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. 2) Set the select lever to the “D” range. 3) Read the data of “Low Clutch Duty Ratio”.	Is the measured value 0%?	Even if the ATF temperature warning light blinks, the circuit is in normal condition at this time. A temporary poor contact of connector or harness may be the cause. Repair the harness or connector in transmission.	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-64, 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 automatic transmission fluid. **CAUTION:** **Do not drain ATF until it cools down.** 3) Remove the oil pan, and disconnect the connector from control valve body. 4) Measure the resistance between low clutch duty solenoid connector and transmission ground. ***Connector & terminal*** ***(AT2) No. 2 — Transmission ground:***	Is the resistance between 2.0 — 6.0 Ω?	Go to step **8**.	Replace the control valve body. <Ref. to 4AT-58, Control Valve Body.>
8	**CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND LOW CLUTCH DUTY SOLENOID.** Measure the resistance of harness between low clutch duty solenoid and transmission connector. ***Connector & terminal*** ***(T4) No. 4 — (AT2) No. 2:***	Is resistance less than 1 Ω?	Go to step **9**.	Repair the open circuit of harness between low clutch duty solenoid and transmission connector.
9	**CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND LOW CLUTCH DUTY SOLENOID.** Measure the resistance of harness between transmission connector and transmission ground. ***Connector & terminal*** ***(T4) No. 4 — Transmission ground:***	Is the resistance 1 MΩ or more?	Even if the ATF temperature warning light blinks, the circuit is in normal condition at this time. A temporary poor contact of connector or harness may be the cause. Repair the harness or connector of the low clutch duty solenoid and transmission.	Repair the short circuit of harness between low clutch duty solenoid and transmission connector.

Q: DTC P0758 SHIFT SOLENOID "B" ELECTRICAL

DTC DETECTING CONDITION:
Output signal circuit of 2-4 brake duty solenoid is open or shorted.
TROUBLE SYMPTOM:
Excessive shift shock
WIRING DIAGRAM:

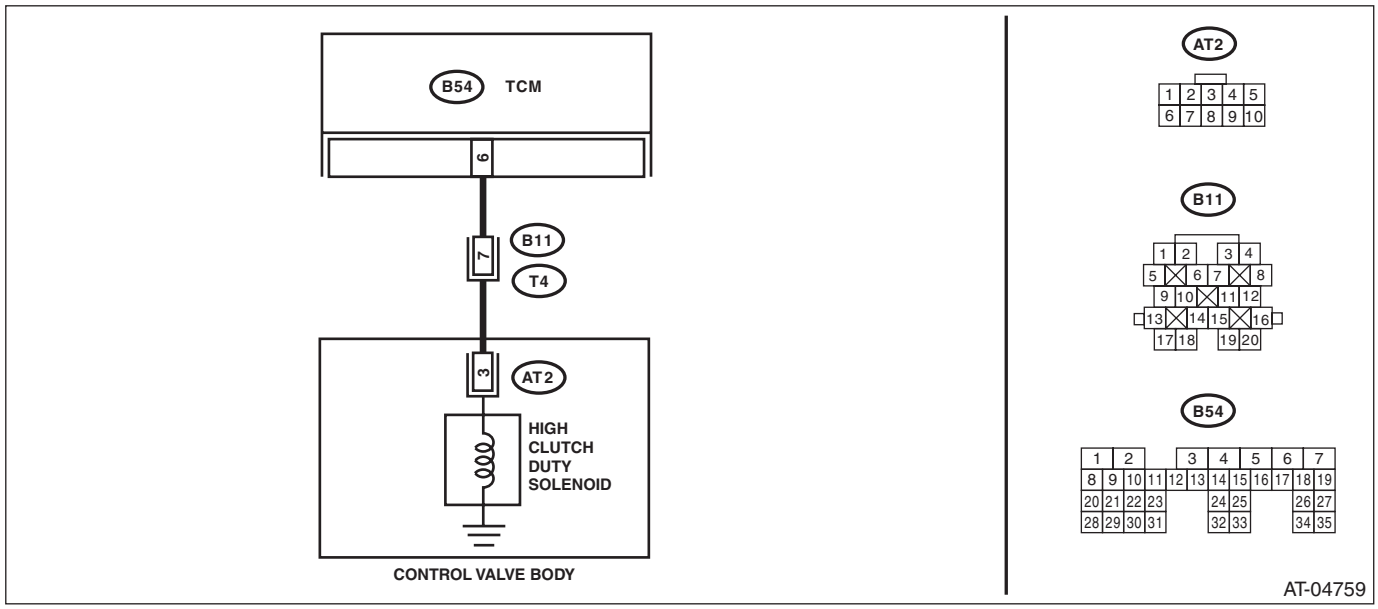


	Step	Check	Yes	No
1	**CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.** 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from TCM and transmission. 3) Measure the resistance of harness between TCM connector and transmission connector. ***Connector & terminal*** ***(B54) No. 4 —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

Step		Check	Yes	No
7	**CHECK 2-4 BRAKE DUTY SOLENOID (IN TRANSMISSION).** 1) Remove the transmission connector from bracket. 2) Drain the automatic transmission fluid. **CAUTION:** **Do not drain ATF until it cools down.** 3) Remove the oil pan, and disconnect the connector from 2-4 brake duty solenoid. 4) Measure the resistance of harness between 2-4 brake duty solenoid connector and transmission ground. ***Connector & terminal*** ***(AT2) No. 8 — Transmission ground:***	Is the resistance between 2.0 — 6.0 Ω?	Go to step **8**.	Replace the control valve body. <Ref. to 4AT-58, Control Valve Body.>
8	**CHECK HARNESS CONNECTOR BETWEEN 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 — (AT2) No. 8:***	Is resistance less than 1 Ω?	Go to step **9**.	Repair the open circuit of harness between 2-4 brake duty solenoid and transmission connector.
9	**CHECK HARNESS CONNECTOR BETWEEN 2-4 BRAKE DUTY SOLENOID AND TRANSMISSION.** Measure the resistance of harness between transmission connector and transmission ground. ***Connector & terminal*** ***(T4) No. 3 — Transmission ground:***	Is the resistance 1 MΩ or more?	Even if the ATF temperature warning light blinks, the circuit is in normal condition at this time. A temporary poor contact of connector or harness may be the cause. Repair the harness or connector in 2-4 brake duty solenoid and transmission.	Repair the short circuit of harness between 2-4 brake duty solenoid and transmission connector.

R: DTC P0763 SHIFT SOLENOID "C" ELECTRICAL

DTC DETECTING CONDITION:
Output signal circuit of high clutch duty solenoid is open or shorted.
TROUBLE SYMPTOM:
Excessive shift shock
WIRING DIAGRAM:



	Step	Check	Yes	No
1	**CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.** 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from TCM and transmission. 3) Measure the resistance of harness between TCM connector and transmission connector. ***Connector & terminal*** ***(B54) No. 6 — (B11) No. 7:***	Is resistance less than 1 Ω?	Go to step **2**.	Repair the open circuit of harness between TCM and transmission connector.
2	**CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.** Measure the resistance of the harness connector between TCM connector and chassis ground. ***Connector & terminal*** ***(B54) No. 6 — Chassis ground:***	Is the resistance 1 MΩ or more?	Go to step **3**.	Repair the short circuit of harness between TCM and transmission connector.
3	**CHECK HIGH CLUTCH DUTY SOLENOID.** Measure the resistance between transmission connector receptacle's terminals. ***Connector & terminal*** ***(T4) No. 7 — No. 20:***	Is the resistance between 2.0 — 6.0 Ω?	Go to step **4**.	Go to step **7**.
4	**CHECK OUTPUT SIGNAL FROM TCM USING SUBARU SELECT MONITOR.** 1) Connect the connectors to TCM and transmission. 2) Lift up the vehicle. 3) Connect the Subaru Select Monitor to the data link connector. 4) Start the engine. 5) Start up the Subaru Select Monitor. 6) Warm-up the engine until the ATF temperature exceeds 80°C (176°F). NOTE: If the ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature. 7) Read the data of "High Clutch Duty Ratio" using Subaru Select Monitor. 8) Shift the select lever to "D", and slowly increase vehicle speed to measure at 3rd or 4th. NOTE: The speed difference between front and rear wheels illuminates the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to ABS(diag)-23, Clear Memory Mode.>	Is the measured value 0%?	Go to step **5**.	Go to step **6**.

	Step	Check	Yes	No
5	**CHECK OUTPUT SIGNAL FROM TCM USING SUBARU SELECT MONITOR.** 1) Return the engine to idling speed. 2) Set the select lever to "N" range. NOTE: The speed difference between front and rear wheels illuminates the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to ABS(diag)-23, Clear Memory Mode.>	Is the measured value 100%?	Even if the ATF temperature warning light blinks, the circuit is in normal condition at this time. A temporary poor contact of connector or harness may be the cause. Repair the harness or connector in TCM and transmission.	Go to step **6**.
6	**CHECK POOR CONTACT.**	Is there poor contact in high clutch duty solenoid circuit?	Repair the poor contact.	Replace the TCM. <Ref. to 4AT-64, Transmission Control Module (TCM).>
7	**CHECK HIGH CLUTCH DUTY SOLENOID (IN TRANSMISSION).** 1) Remove the transmission connector from bracket. 2) Drain the automatic transmission fluid. **CAUTION:** **Do not drain ATF until it cools down.** 3) Remove the oil pan, and disconnect the control valve body connector. 4) Measure the resistance between high clutch duty solenoid connector and transmission ground. ***Connector & terminal*** ***(AT2) No. 3 — Transmission ground:***	Is the resistance between 2.0 — 6.0 Ω?	Go to step **8**.	Replace the control valve body. <Ref. to 4AT-58, Control Valve Body.>
8	**CHECK HARNESS CONNECTOR BETWEEN HIGH CLUTCH DUTY SOLENOID AND TRANSMISSION.** Measure the resistance of harness between high clutch duty solenoid and transmission connector. ***Connector & terminal*** ***(T4) No. 7 — (AT2) No. 3:***	Is resistance less than 1 Ω?	Go to step **9**.	Repair the open circuit of harness between TCM and transmission connector.
9	**CHECK HARNESS CONNECTOR BETWEEN HIGH CLUTCH DUTY SOLENOID AND TRANSMISSION.** Measure the resistance of harness between transmission connector and transmission ground. ***Connector & terminal*** ***(T4) No. 7 — Transmission ground:***	Is the resistance 1 MΩ or more?	Even if the ATF temperature warning light blinks, the circuit is in normal condition at this time. A temporary poor contact of connector or harness may be the cause. Repair the harness or connector in high clutch duty solenoid and transmission.	Repair the short circuit of harness between high clutch duty solenoid and transmission connector.

S: DTC P0768 SHIFT SOLENOID "D" ELECTRICAL

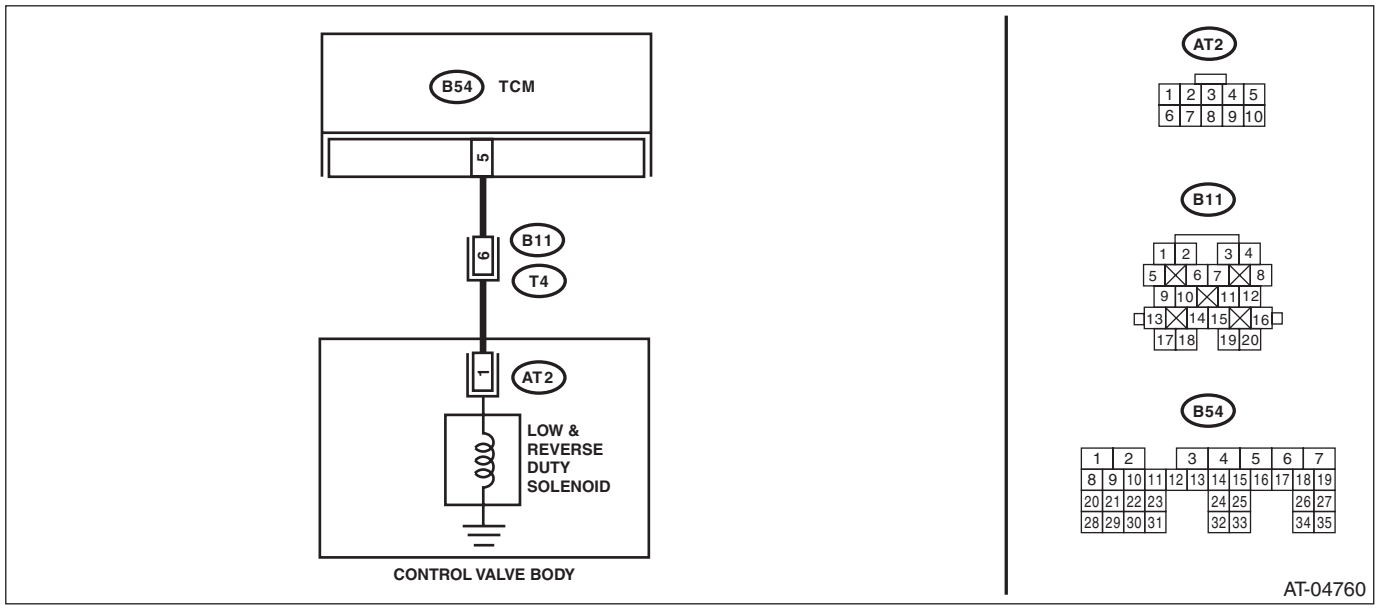
DTC DETECTING CONDITION:

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

TROUBLE SYMPTOM:

Gear is not changed.

WIRING DIAGRAM:



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

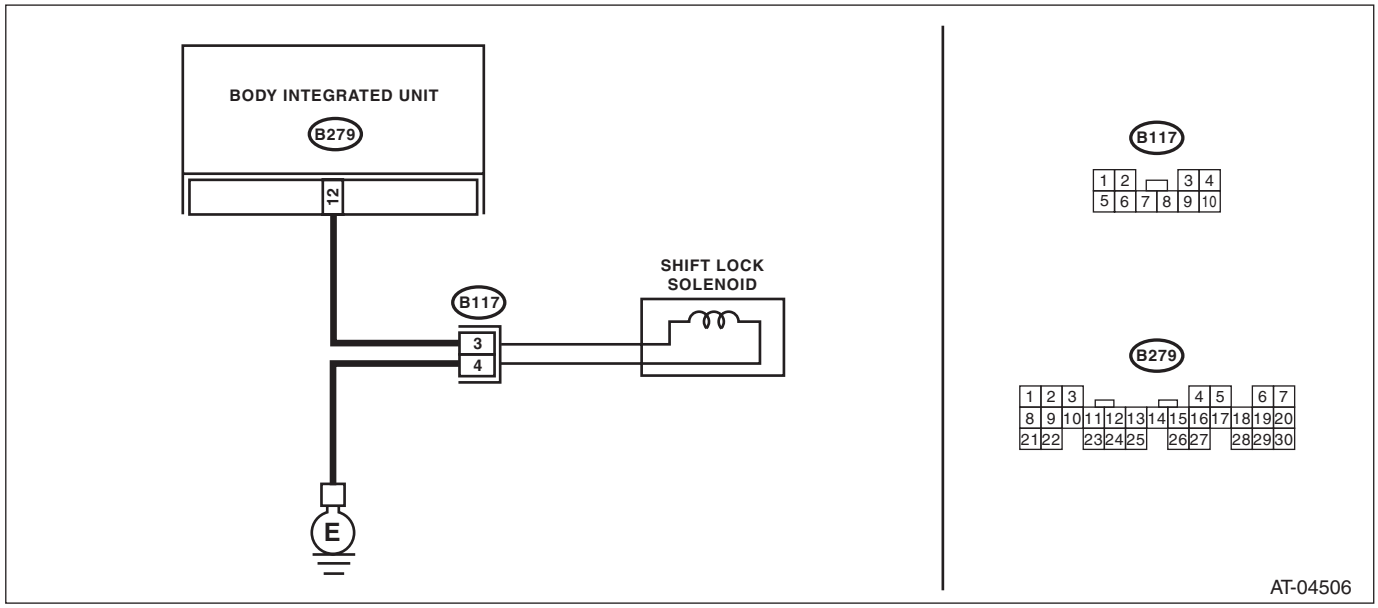
	Step	Check	Yes	No
6	**CHECK POOR CONTACT.**	Is there poor contact in the low & reverse duty solenoid circuit?	Repair the poor contact.	Replace the TCM. <Ref. to 4AT-64, Transmission Control Module (TCM).>
7	**CHECK LOW & REVERSE BRAKE DUTY SOLENOID (IN TRANSMISSION).** 1) Remove the transmission connector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

T: DTC P0801 REVERSE INHIBIT CONTROL CIRCUIT

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

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

WIRING DIAGRAM:

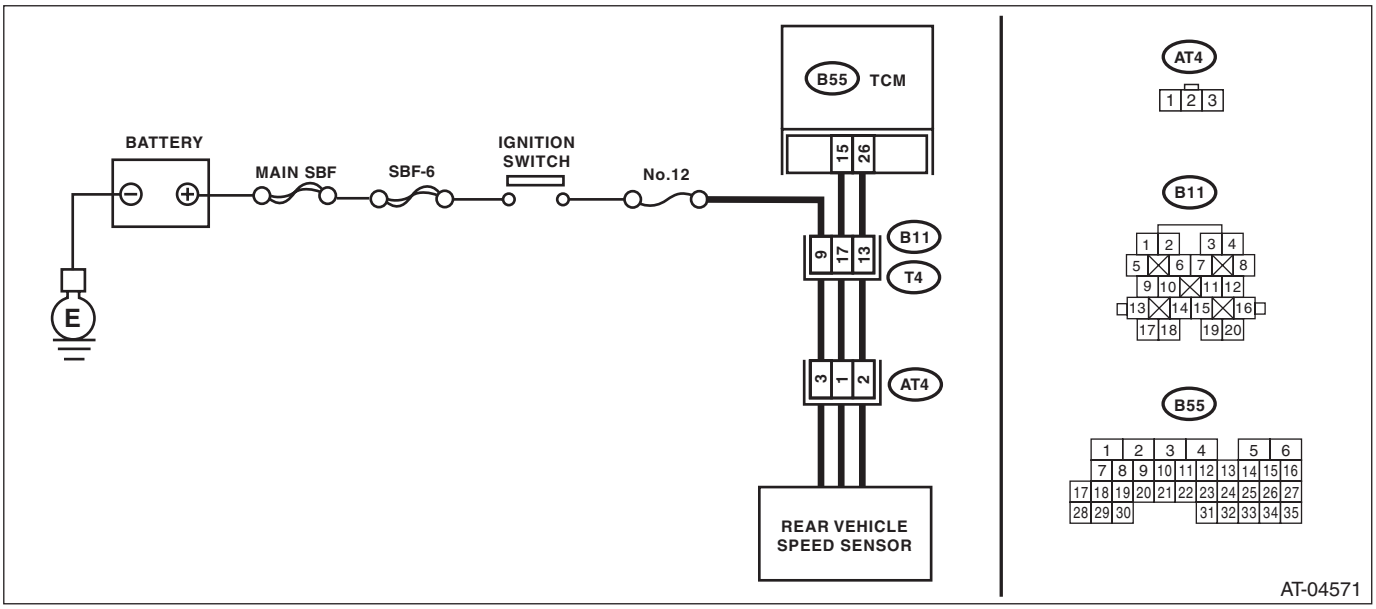


Step		Check	Yes	No
1	**CHECK SHIFT LOCK SOLENOID.** 1) Start the integrated unit by force, and check the operation of shift lock solenoid. <Ref. to LAN(diag)-14, READ DIAGNOSTIC TROUBLE CODE (DTC), OPERATION, Subaru Select Monitor.> 2) Operate the select lever without depressing the brake pedal.	Does the select lever operate?	Go to step **2**.	Go to step **3**.
2	**CHECK OUTPUT SIGNAL OF INTEGRATED UNIT.** 1) Display the following items using Subaru Select Monitor. • Key warning SW • Shift position • P SW • Stop light switch 2) Step on the brake and shift the select lever to “P” range.	Do the units of measure of items displayed change?	Go to step **3**.	Check the circuits of the items whose values do not change.
3	**CHECK HARNESS CONNECTOR BETWEEN BODY INTEGRATED UNIT AND SHIFT LOCK SOLENOID.** Measure the harness resistance between the body integrated unit and chassis ground. ***Connector & terminal*** ***(B279) No. 12 — Chassis ground:***	Is the resistance 1 MΩ or more?	Go to step **4**.	Repair the short circuit of harness between body integrated unit and shift lock solenoid connector.

Step		Check	Yes	No
4	**CHECK HARNESS BETWEEN SHIFT LOCK SOLENOID AND CHASSIS GROUND TERMINAL.** Measure the resistance of harness between shift lock solenoid and chassis ground. ***Connector & terminal*** ***(B117) No. 4 — Chassis ground:***	Is the resistance less than 1 Ω?	Go to step **5**.	Repair the open circuit of harness between chassis ground and shift lock solenoid connector.
5	**CHECK SHIFT LOCK SOLENOID.** Measure the resistance of shift lock solenoid terminals. ***Connector & terminal*** ***(B117) No. 3 — No. 4:***	Is the resistance between 12 — 18 Ω?	Go to step **6**.	Replace the shift lock solenoid.
6	**CHECK OUTPUT SIGNAL OF BODY INTEGRATED UNIT.** 1) Connect all connectors. 2) Turn the ignition switch to ON. 3) Set the select lever to the "D" range. 4) Measure the voltage between body integrated unit and chassis ground. ***Connector & terminal*** ***(B279) No. 12 (+) — Chassis ground (–):***	Is the voltage 10.5 V or more?	Go to step **7**.	Go to step **8**.
7	**CHECK OUTPUT SIGNAL OF BODY INTEGRATED UNIT.** 1) Lift up the vehicle. 2) Start the engine. 3) Shift the select lever to "D" range and slowly increase vehicle speed to over 20 km/h (12 MPH). NOTE: The speed difference between front and rear wheels illuminates the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to ABS(diag)-23, Clear Memory Mode.> 4) Measure the voltage between body integrated unit and chassis ground. ***Connector & terminal*** ***(B279) No. 12 (+) — Chassis ground (–):***	Is the voltage less than 1 V?	Even if the ATF temperature warning light blinks, the circuit is in normal condition at this time. A temporary poor contact of connector or harness may be the cause. Repair the harness or connector in the reverse inhibitor control circuit.	Go to step **8**.
8	**CHECK POOR CONTACT.**	Is there poor contact in the reverse inhibitor control circuit?	Repair the poor contact.	Replace the body integrated unit. <Ref. to SL-53, Body Integrated Unit.>

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

DTC DETECTING CONDITION:
Input signal circuit of TCM is open or shorted.
TROUBLE SYMPTOM:
No lock up or tight corner braking phenomenon is occurred.
WIRING DIAGRAM:



	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) Turn the ignition switch to ON. 4) Measure the ignition power supply voltage between rear vehicle speed sensor connector and transmission ground. ***Connector & terminal*** ***(AT4) No. 3 (+) — Transmission ground (–):***	Is the voltage 10 V or more?	Go to step **2**.	Check harness between rear vehicle speed sensor and battery for open circuit, short or poor contact. Repair the harness if required.
2	**CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.** 1) Turn the ignition switch to OFF. 2) Measure the resistance of harness between TCM connector and rear vehicle speed sensor connector. ***Connector & terminal*** ***(B55) No. 15 — (AT4) No. 1:***	Is resistance less than 1 Ω?	Go to step **3**.	Repair the open circuit or poor contact of the connector in harness between TCM and rear vehicle speed sensor connector.
3	**CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.** Measure the resistance of harness between TCM connector and rear vehicle speed sensor connector. ***Connector & terminal*** ***(B55) No. 26 — (AT4) No. 2:***	Is resistance less than 1 Ω?	Go to step **4**.	Repair the open circuit or poor contact of the connector in harness between TCM and rear vehicle speed sensor connector.

	Step	Check	Yes	No
4	**CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.** Measure the resistance of harness between TCM connector and chassis ground. ***Connector & terminal*** ***(B55) No. 15 — Chassis ground:***	Is the resistance 1 MΩ or more?	Go to step **5**.	Repair the short circuit of harness between TCM and rear vehicle speed sensor connector.
5	**CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.** Measure the resistance of harness between TCM connector and chassis ground. ***Connector & terminal*** ***(B55) No. 26 — Chassis ground:***	Is the resistance 1 MΩ or more?	Go to step **6**.	Repair the short circuit of harness between TCM and rear vehicle speed sensor connector.
6	**PREPARE OSCILLOSCOPE.**	Do you have an oscilloscope?	Go to step **8**.	Go to step **7**.
7	**CHECK INPUT SIGNAL FOR TCM.** 1) Connect the connectors to TCM and transmission. 2) Lift up the vehicle. 3) Start the engine and set vehicle in 20 km/h (12 MPH) condition. NOTE: The speed difference between front and rear wheels illuminates the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to ABS(diag)-23, Clear Memory Mode.> 4) Measure the AC voltage between TCM connector terminals. ***Connector & terminal*** ***(B55) No. 26 (+) — No. 15 (–):***	Is the voltage approx. 2 V or more?	Go to step **9**.	Replace the rear vehicle speed sensor.
8	**CHECK INPUT SIGNAL FOR TCM USING OSCILLOSCOPE.** 1) Connect the connectors to TCM and transmission. 2) Lift up the vehicle. 3) Set the oscilloscope to TCM connector terminals. ***Connector & terminal*** ***Positive probe; (B55) No. 26:*** ***Ground lead; (B55) No. 15:*** 4) Start the engine and set vehicle in 20 km/h (12 MPH) condition. NOTE: The speed difference between front and rear wheels illuminates the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to ABS(diag)-23, Clear Memory Mode.> 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-64, Transmission Control Module (TCM).>

V: DTC P1707 AT AWD SOLENOID VALVE CIRCUIT MALFUNCTION

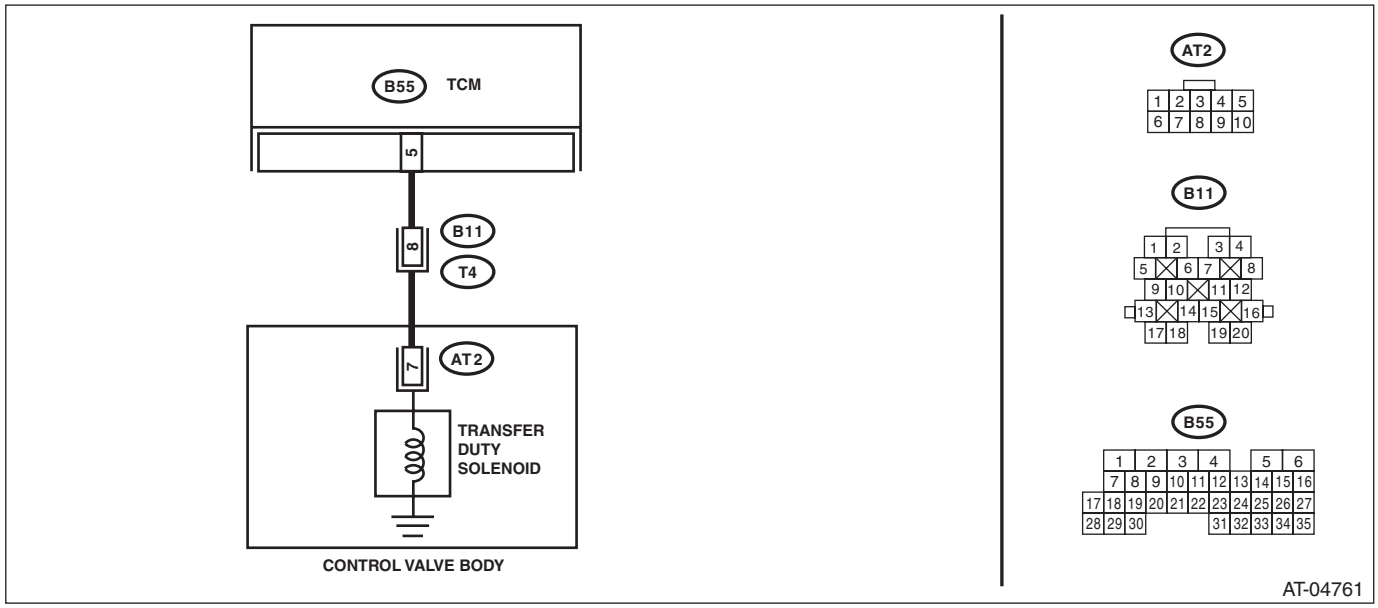
DTC DETECTING CONDITION:

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

TROUBLE SYMPTOM:

- Tight corner braking phenomenon occurs.
- Front wheel slips on the slippery road.

WIRING DIAGRAM:



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

	Step	Check	Yes	No
7	**CHECK TRANSFER DUTY SOLENOID (IN TRANSMISSION).** 1) Lift up the vehicle. 2) Drain the automatic transmission fluid. **CAUTION:** **Do not drain ATF until it cools down.** 3) Remove the extension case, and disconnect the connector from transfer duty solenoid. 4) Measure the resistance between transfer duty solenoid connector and transmission ground. ***Connector & terminal*** ***(AT2) No. 7 — Transmission ground:***	Is the resistance between 2.0 — 6.0 Ω?	Go to step **8**.	Replace the control valve body. <Ref. to 4AT-58, Control Valve Body.>
8	**CHECK HARNESS CONNECTOR BETWEEN TRANSFER DUTY SOLENOID AND TRANSMISSION.** Measure the resistance of harness between transfer duty solenoid and transmission connector. ***Connector & terminal*** ***(T4) No. 8 — (AT2) No. 7:***	Is resistance less than 1 Ω?	Go to step **9**.	Repair the open circuit of harness between transfer duty solenoid and transmission connector.
9	**CHECK HARNESS CONNECTOR BETWEEN TRANSFER DUTY SOLENOID AND TRANSMISSION.** Measure the resistance of harness between transmission connector and transmission ground. ***Connector & terminal*** ***(T4) No. 8 — Transmission ground:***	Is the resistance 1 MΩ or more?	Even if the ATF temperature warning light blinks, the circuit is in normal condition at this time. A temporary poor contact of connector or harness may be the cause. Repair the harness or poor contact in the transfer duty solenoid and transmission.	Repair short circuit of the harness between the transfer duty solenoid and transmission connector.

W: DTC P1718 CAN COMMUNICATION CIRCUIT

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

X: DTC P1817 SPORT MODE SWITCH CIRCUIT

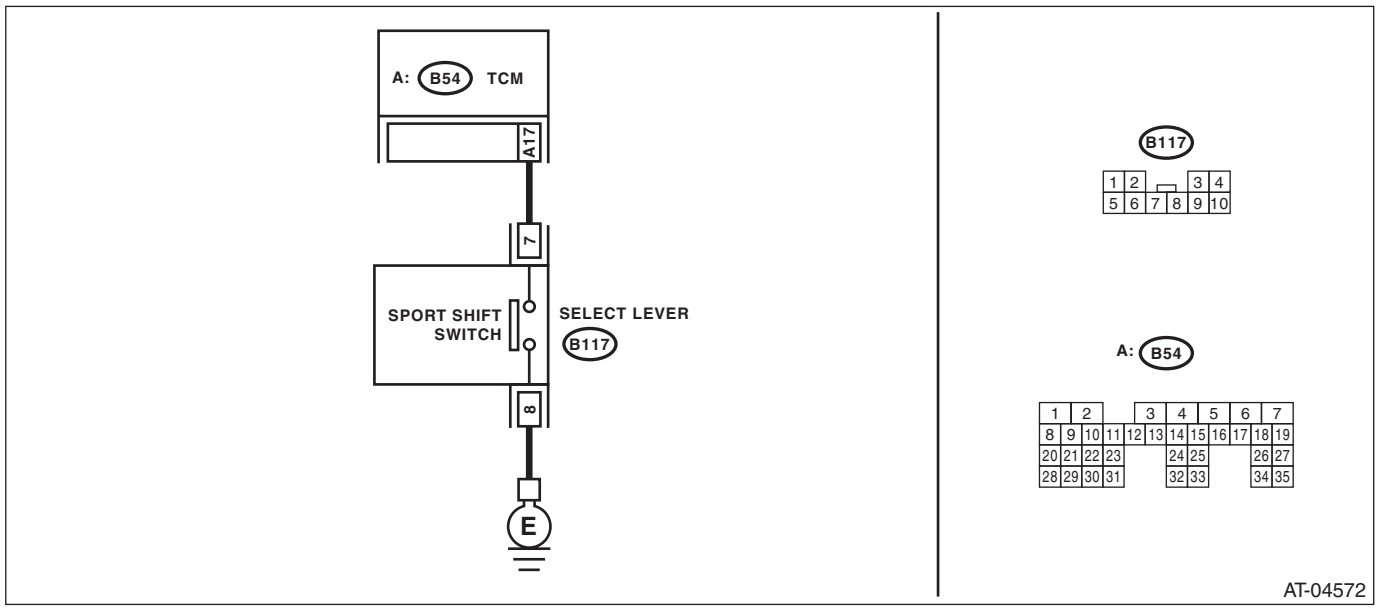
DTC DETECTING CONDITION:

Input signal circuit of SPORT/manual mode switch is shorted.

TROUBLE SYMPTOM:

- Manual mode can not be set.
- The SPORT indicator light does not illuminate.
- No SPORT mode occurs.

WIRING DIAGRAM:



	Step	Check	Yes	No
1	**CHECK GROUND CIRCUIT OF SPORT SHIFT SWITCH.** 1) Turn the ignition switch to OFF. 2) Disconnect the connector from SPORT shift switch. 3) Measure the resistance of harness between the SPORT shift switch connector and chassis ground. ***Connector & terminal*** ***(B117) No. 8 — Chassis ground:***	Is the resistance less than 1 Ω?	Go to step **2**.	Repair the open circuit of harness between SPORT shift switch and chassis ground.
2	**CHECK SPORT SHIFT SWITCH.** Measure the resistance between SPORT shift switch terminals. ***Connector & terminal*** ***(B117) No. 7 — No. 8:***	Is the resistance 1 MΩ or more?	Go to step **3**.	Replace the lever plate assembly.
3	**CHECK SPORT SHIFT SWITCH.** 1) Move the select lever to SPORT shift mode. 2) Measure the resistance between SPORT shift switch terminals. ***Connector & terminal*** ***(B117) No. 7 — No. 8:***	Is the resistance less than 1 Ω?	Go to step **4**.	Replace the lever plate assembly.
4	**CHECK HARNESS CONNECTOR BETWEEN TCM AND SPORT SHIFT SWITCH.** 1) Disconnect the connector from TCM. 2) Measure the resistance of harness between TCM connector and SPORT shift switch connector. ***Connector & terminal*** ***(B117) No. 7 — (B54) No. 17:***	Is the resistance less than 1 Ω?	Go to step **5**.	Repair the open circuit of harness between SPORT shift switch connector and TCM connector, and the poor contact of the connector.
5	**CHECK HARNESS CONNECTOR BETWEEN TCM AND SPORT SHIFT SWITCH.** 1) Disconnect the connector from TCM. 2) Measure the resistance of harness between the SPORT shift switch connector and chassis ground. ***Connector & terminal*** ***(B117) No. 7 — Chassis ground:***	Is the resistance 1 MΩ or more?	Go to step **6**.	Repair the short circuit of harness between SPORT shift switch connector and TCM connector.
6	**CHECK INPUT SIGNAL TO TCM.** 1) Connect the connectors to TCM and SPORT shift switch. 2) Turn the ignition switch to ON. 3) Return the select lever to the normal mode. 4) Measure the signal voltage for the TCM. ***Connector & terminal*** ***(B54) No. 17 (+) — Chassis ground (–):***	Is the voltage 9 V or more?	Go to step **7**.	Replace the TCM. <Ref. to 4AT-64, Transmission Control Module (TCM).>
7	**CHECK POOR CONTACT.**	Is there poor contact in the SPORT shift switch circuit?	Repair the poor contact.	Replace the TCM. <Ref. to 4AT-64, Transmission Control Module (TCM).>

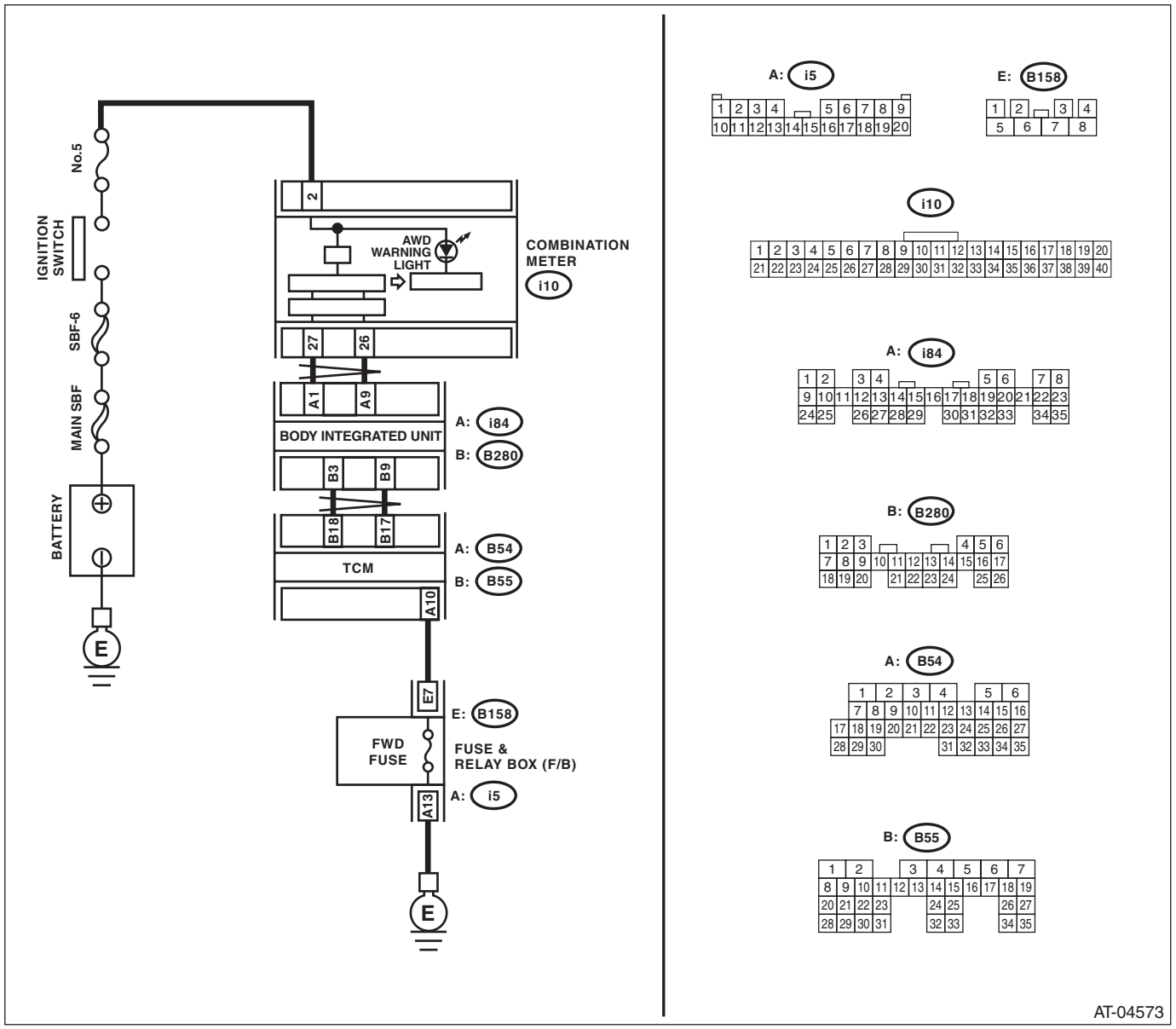
14.Diagnostic Procedure without Diagnostic Trouble Code (DTC)

A: CHECK FWD SWITCH

DIAGNOSIS:

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

WIRING DIAGRAM:

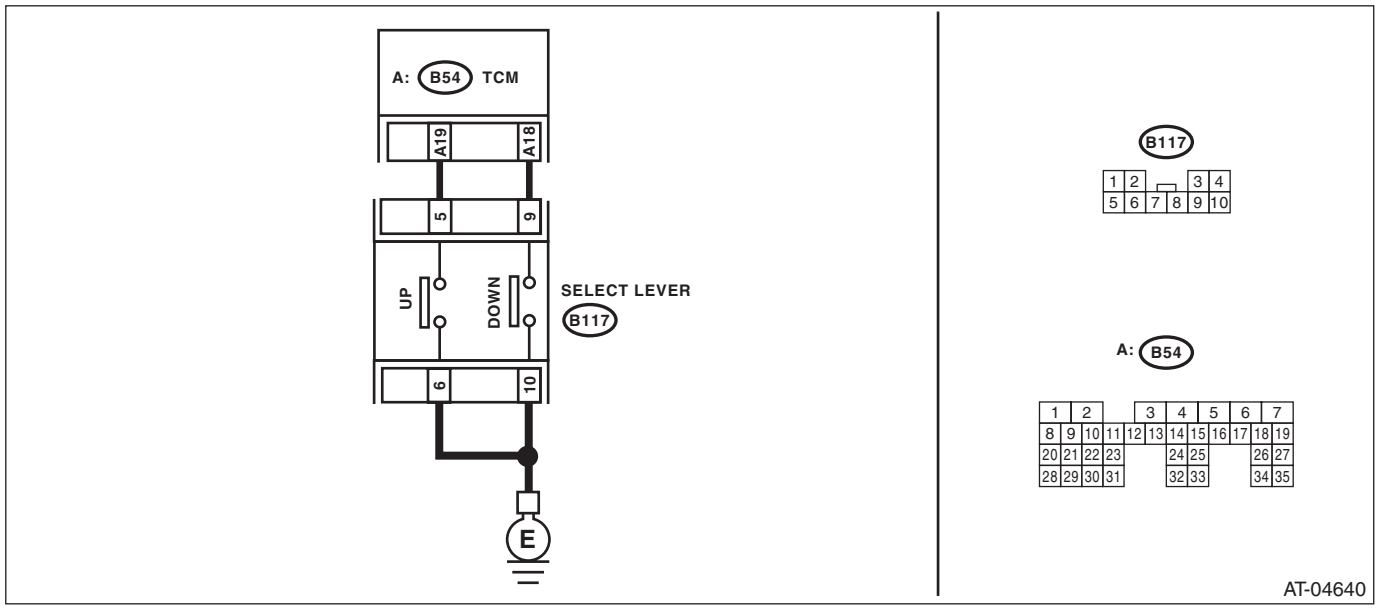


Step		Check	Yes	No
1	**CHECK SPARE FUSE.**	Is the spare fuse OK?	Go to step **2**.	Replace the fuse.
2	**CHECK FWD FUSE HOLDER.** Connect the Subaru Select Monitor to the data link connector.	When the fuse is inserted to FWD fuse holder, does the LED illuminate?	Go to step **3**.	Go to step **4**.

	Step	Check	Yes	No
3	**CHECK COMBINATION METER.**	Does the AWD warning light illuminate?	Go to INSPECTION FOR SPORT/MANUAL MODE SWITCH. <Ref. to 4AT(diag)-83, CHECK SPORT SHIFT SWITCH, Diagnostic Procedure without Diagnostic Trouble Code (DTC).>	Go to step **9**.
4	**CHECK HARNESS CONNECTOR BETWEEN TCM AND FWD FUSE HOLDER.** 1) Turn the ignition switch to OFF. 2) Disconnect the connector from TCM. 3) Measure the resistance of harness between TCM and FWD fuse holder. ***Connector & terminal*** ***(B55) No. 10 — (B158) No. 7:***	Is resistance less than 1 Ω?	Go to step **5**.	Repair the open circuit of harness between TCM and FWD fuse holder.
5	**CHECK HARNESS CONNECTOR BETWEEN FWD FUSE HOLDER AND CHASSIS GROUND.** Measure the resistance of harness between FWD fuse holder and chassis ground. ***Connector & terminal*** ***(i5) No. 13 — Chassis ground:***	Is resistance less than 1 Ω?	Go to step **6**.	Repair the open circuit of harness between FWD fuse holder and chassis ground.
6	**CHECK HARNESS CONNECTOR BETWEEN TCM AND FWD FUSE HOLDER.** Measure the resistance of harness connector between TCM and body to make sure that circuit does not short. ***Connector & terminal*** ***(B55) No. 10 — Chassis ground:***	Is the resistance 1 MΩ or more?	Go to step **7**.	Repair the short circuit of harness between TCM and FWD fuse holder.
7	**CHECK INPUT SIGNAL FOR TCM.** 1) Turn the ignition switch to OFF. 2) Connect the connector to TCM. 3) Turn the ignition switch to ON. 4) Measure the signal voltage for TCM with the fuse installed to FWD fuse holder. ***Connector & terminal*** ***(B55) No. 10 (+) — Chassis ground (–):***	Is the voltage less than 1 V?	Go to step **8**.	Go to step **10**.
8	**CHECK INPUT SIGNAL FOR TCM.** Measure the signal voltage for TCM with the fuse removed from FWD fuse holder. ***Connector & terminal*** ***(B55) No. 10 (+) — Chassis ground (–):***	Is the voltage 10.5 V or more?	Go to step **9**.	Replace the TCM. <Ref. to 4AT-64, Transmission Control Module (TCM).>
9	**CHECK BODY INTEGRATED UNIT.** Check DTC of body integrated unit.	Is DTC of CAN communication displayed?	Perform the diagnosis according to DTC.	Go to step **10**.
10	**CHECK COMBINATION METER.** Check the AWD warning light. <Ref. to IDI-4, INSPECTION, Combination Meter System.>	Is the AWD warning light OK?	Go to step **11**.	Replace the combination meter assembly. <Ref. to IDI-14, Combination Meter.>
11	**CHECK POOR CONTACT.**	Is there poor contact in FWD switch circuit?	Repair the poor contact.	Replace the TCM. <Ref. to 4AT-64, Transmission Control Module (TCM).>

B: CHECK SPORT SHIFT SWITCH

DIAGNOSIS:
Input signal circuit of SPORT shift switch is open or shorted.
TROUBLE SYMPTOM:
Does not shift on manual mode.
WIRING DIAGRAM:



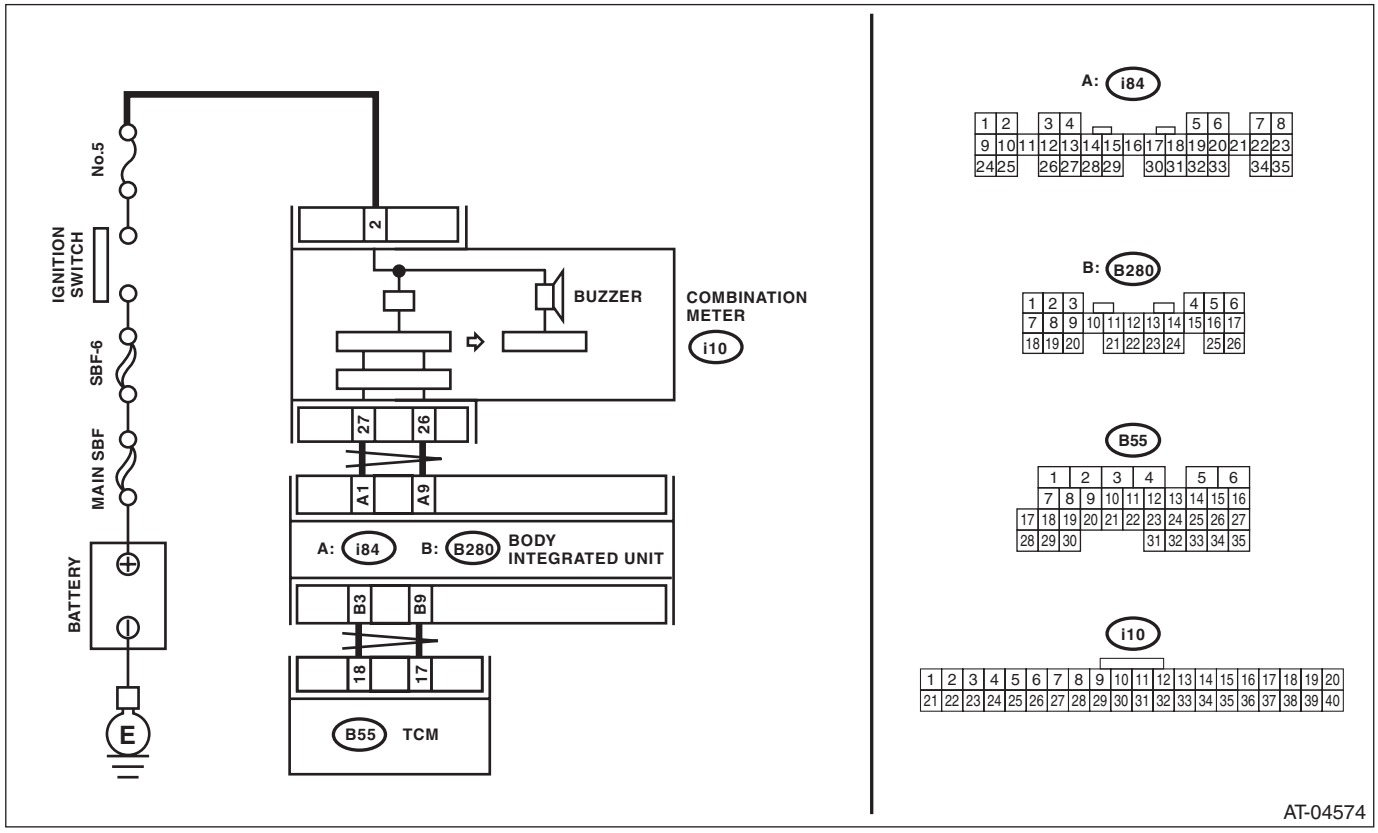
	Step	Check	Yes	No
1	**CHECK SPORT SHIFT SWITCH.** 1) Shift the select lever to the SPORT shift mode. 2) Shift and hold the select lever to shift up side.	Does the LED light illuminate?	Go to step **2**.	Go to step **3**.
2	**CHECK SPORT SHIFT SWITCH.** Shift and hold the select lever to shift down side.	Does the LED light illuminate?	Go to step **3**.	Go to step **10**.
3	**CHECK SPORT SHIFT SWITCH GROUND CIRCUIT.** 1) Turn the ignition switch to OFF. 2) Disconnect the connector from SPORT shift switch. 3) Measure the resistance of harness between the SPORT shift switch connector and chassis ground. ***Connector & terminal*** ***(B117) No. 6 — Chassis ground:***	Is the resistance less than 1 Ω?	Go to step **4**.	Repair the open circuit of harness between SPORT shift switch and chassis ground.
4	**CHECK SPORT SHIFT SWITCH.** Measure the resistance between SPORT shift switch terminals. ***Connector & terminal*** ***(B117) No. 6 — No. 2:***	Is the resistance 1 MΩ or more?	Go to step **5**.	Replace the guide plate assembly.
5	**CHECK SPORT SHIFT SWITCH.** 1) Shift the select lever to the SPORT shift mode side. 2) Shift and hold the select lever to shift up side, and measure the resistance between SPORT shift switch terminals. ***Connector & terminal*** ***(B117) No. 6 — No. 5:***	Is resistance less than 1 Ω?	Go to step **6**.	Replace the guide plate assembly.
6	**CHECK HARNESS CONNECTOR BETWEEN TCM AND SPORT SHIFT SWITCH.** 1) Disconnect the connector from TCM. 2) Measure the resistance of harness between TCM connector and SPORT shift switch connector. ***Connector & terminal*** ***(B117) No. 5 — (B54) No. 19:***	Is the resistance less than 1 Ω?	Go to step **7**.	Repair the open circuit of harness between SPORT shift switch connector and TCM connector, and the poor contact of the connector.
7	**CHECK HARNESS CONNECTOR BETWEEN TCM AND SPORT SHIFT SWITCH.** Measure the resistance of harness between the SPORT shift switch connector and chassis ground. ***Connector & terminal*** ***(B117) No. 5 — Chassis ground:***	Is the resistance 1 MΩ or more?	Go to step **8**.	Repair the short circuit of harness between SPORT shift switch connector and TCM connector.
8	**CHECK INPUT SIGNAL TO TCM.** 1) Connect all connectors. 2) Turn the ignition switch to ON. 3) Measure the signal voltage for the TCM. ***Connector & terminal*** ***(B54) No. 19 (+) — Chassis ground (–):***	Is the voltage 9 V or more?	Go to step **9**.	Replace the TCM. <Ref. to 4AT-64, Transmission Control Module (TCM).>
9	**CHECK INPUT SIGNAL TO TCM.** 1) Hold the select lever to shift up side. 2) Measure the signal voltage for the TCM. ***Connector & terminal*** ***(B54) No. 19 (+) — Chassis ground (–):***	Is the voltage less than 1 V?	Go to step **17**.	Replace the TCM. <Ref. to 4AT-64, Transmission Control Module (TCM).>

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

C: CHECK SPORT SHIFT INDICATOR

DIAGNOSIS:
Output signal circuit of SPORT shift indicator is open or shorted.
TROUBLE SYMPTOM:
- SPORT shift indicator does not display or remains displayed.
- SPORT shift indicator display does not change.

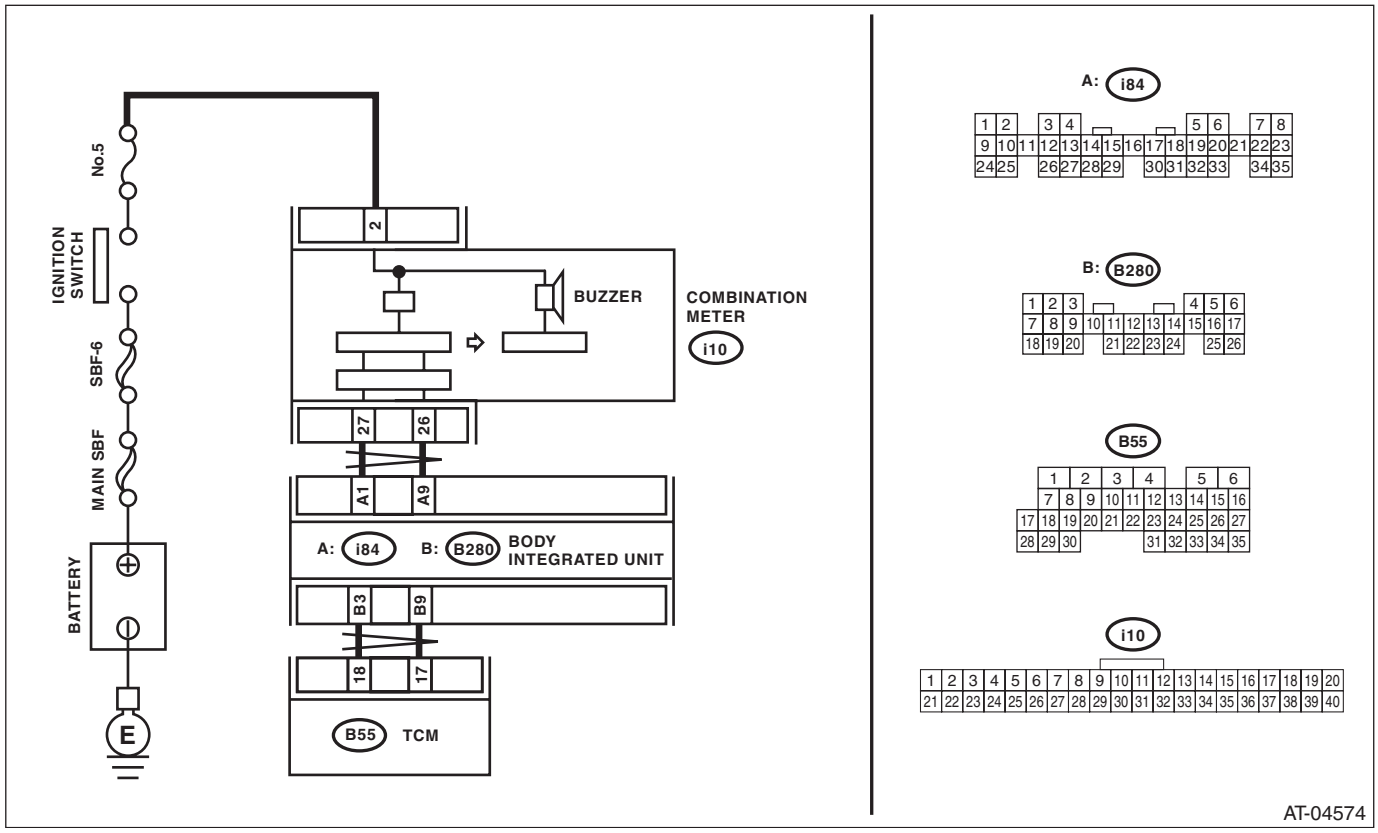
WIRING DIAGRAM:



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

D: CHECK BUZZER

DIAGNOSIS:
Output signal circuit of buzzer is open or shorted.
TROUBLE SYMPTOM:
Buzzer remains beeping.
WIRING DIAGRAM:



Step		Check	Yes	No
1	**CHECK BODY INTEGRATED UNIT.** 1) Turn the ignition switch to OFF. 2) Connect the Subaru Select Monitor to the data link connector. 3) Turn the ignition switch to ON. 4) Run the Subaru Select Monitor. 5) Read the data of “SPORT shift (buzzer)” of body integrated unit using Subaru Select Monitor.	Is ON displayed?	Replace the TCM. <Ref. to 4AT-64, Transmission Control Module (TCM).>	Go to step **2**.
2	**CHECK COMBINATION METER.** <Ref. to IDI-4, INSPECTION, Combination Meter System.>	Is the buzzer OK?	Refer to “Diagnostics by Phenomenon”. <Ref. to 4AT(diag)-89, Diagnostics with Phenomenon.>	Replace the combination meter assembly. <Ref. to IDI-14, Combination Meter.>

15.Diagnostics with Phenomenon

A: INSPECTION

Symptom	Problem parts
Starter does not operate when select lever is in “P” or “N” range. Starter operates when select lever is in “R” or “D” range.	• Inhibitor switch • Select cable • AT select lever • Starter motor and harness
Abnormal noise when select lever is in “P” or “N”.	• Strainer • Transfer duty solenoid • Oil pump • Drive plate • ATF level too high or too low
Hissing noise occurs during standing start.	• Strainer • ATF level too high or too low
Noise occurs while driving in “D1”.	• Final gear • Planetary gear • Reduction gear • Differential gear oil level too high or too low
Noise occurs while driving in “D2”.	
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
Vehicle moves when select lever is in “N” range.	• Select cable • Inhibitor switch • TCM • Low clutch
Shock occurs when select lever is shifted from “N” to “D” range.	• Accelerator pedal position sensor • ATF temperature sensor • Line pressure linear solenoid • Low clutch duty solenoid • Low clutch • TCM • Harness • Control valve • ATF deterioration
Excessive time lag occurs when select lever is shifted from “N” to “D” range.	• Control valve • Low clutch • Line pressure linear solenoid • Seal ring • Front gasket of transmission case
Shock occurs when select lever is shifted from “N” to “R” range.	• Accelerator pedal position sensor • ATF temperature sensor • Line pressure linear solenoid • TCM • Harness • Control valve • ATF deterioration
Excessive time lag occurs when select lever is shifted from “N” to “R” range.	• Control valve • Low & reverse clutch • Reverse clutch • Line pressure linear solenoid • Seal ring • Front gasket of transmission case

Symptom	Problem parts
Vehicle does not start in any shift range. (Engine stalls)	• Parking brake mechanism • Planetary gear
Vehicle does not start in any shift range. (Engine operates)	• Strainer • Line pressure linear solenoid • Control valve • Drive pinion • Hypoid gear • Axle shaft • Differential gear • Oil pump • Input shaft • Output shaft • Planetary gear • Drive plate • ATF level is too low • Front gasket of transmission case
Vehicle does not start in “R” range only. (Engine operates)	• Select cable • AT 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” range. (Engine operates)	• Low clutch • One-way clutch
Vehicle does not start in “D” range. (Engine stalls)	Reverse clutch
Vehicle does not start in “R” range only. (Engine operates)	Control valve
Acceleration during standing start is poor. (High rpm stall)	• Control valve • Low clutch • Reverse clutch • ATF level is too low • ATF deterioration • Front gasket of transmission case • Differential gear oil level too high or too low
Acceleration during standing start is poor. (Low rpm stall)	• Oil pump • Torque converter one-way clutch • Engine performance
Acceleration is poor when select lever is in “D” range. (Normal rpm stall)	• TCM • Control valve • High clutch • 2-4 brake • Planetary gear
Acceleration is poor when select lever is in “R” range. (Normal rpm stall)	• Control valve • High clutch • 2-4 brake • Planetary gear
No shift occurs from 1st to 2nd gear.	• TCM • Rear vehicle speed sensor • Front vehicle speed sensor • Accelerator pedal position sensor • Control valve • 2-4 brake
No shift occurs from 2nd to 3rd gear.	• TCM • Control valve • High clutch

Symptom	Problem parts
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 shifted from 4th gear to 3rd gear.	• Inhibitor switch • TCM • Accelerator pedal position sensor • Control valve
Engine brake is not effected when select lever is shifted from 3rd gear to 2nd gear.	Control valve
Engine brake is not effected when select lever is shifted from 2nd gear to 1st gear.	• 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
No lock-up occurs.	• TCM • Accelerator pedal position sensor • ATF temperature sensor • Control valve • Lock-up facing • Engine speed signal
Parking brake does not function.	• Select cable • AT 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 level 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 when shifting 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
Slippage occurs when shifting from 1st to 2nd gear.	• TCM • Acceleration pedal position sensor • 2-4 brake duty solenoid • ATF temperature sensor • Line pressure linear solenoid • Control valve • 2-4 brake

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

Symptom	Problem parts
Shock occurs when accelerator pedal is released from medium speed.	• 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
It is not set in FWD mode.	• TCM • Transfer clutch • Transfer valve • Transfer duty solenoid • Fuse
Select lever is hard to move.	• Select cable • AT select lever • Detent spring • Manual plate
Select lever is excessively hard to move. (Unreasonable resistance)	• Detent spring • Manual plate
Select lever slips out of selected shift position during acceleration or while driving on rough terrain.	• Select cable • AT select lever • Detent spring • Manual plate
Manual mode can not be set.	• SPORT/manual mode switch • TCM • Body integrated unit
Gear does not change though the select lever is operated in manual mode.	• Up shift switch • Down shift switch • TCM • Body integrated unit
AWD warning light remains blinking or illuminated.	• Tire size • Tire pressure • TCM • FWD fuse holder • Harness