AUTOMATIC TRANSMISSION (DIAGNOS-TICS) 4AT(H4SO)

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16.	Symptom Related Diagnostic	

1. Basic Diagnostic Procedure

A: PROCEDURE

	Step	Check	Yes	No
1	CHECK PRE-INSPECTION.	Is the unit that might influence	Go to step 2.	Repair or replace
	1) Ask the customer when and how trouble	AT problem normal?		each item.
	occurred using interview checklist. <ref. td="" to<=""><td></td><td></td><td></td></ref.>			
	4AT(H4SO)-4, Check List for Interview.>			
	2) Before performing the diagnosis, inspect			
	following items which might influence the			
	AT problems.			
	•General inspection <ref. 4at(h4so)-5,<="" td="" to=""><td></td><td></td><td></td></ref.>			
	INSPECTION, General Description.>			
	•Make sure that each harness connector con-			
	nections are tight.			
	•Visually inspect the harness and check for any damage.			
	Oil leak			
	•Stall speed test <ref. 4at-34,="" stall="" test.="" to=""></ref.>			
	•Line pressure test <ref. 4at-36,="" line="" pres-<="" td="" to=""><td></td><td></td><td></td></ref.>			
	sure Test.>			
	•Transfer clutch pressure test <ref. 4at-38,<="" td="" to=""><td></td><td></td><td></td></ref.>			
	Transfer Clutch Pressure Test.>			
	•Time lag test <ref. 4at-35,="" lag<="" td="" time="" to=""><td></td><td></td><td></td></ref.>			
	Test.>			
	•Road test <ref. 4at-33,="" road="" test.="" to=""></ref.>			
	•Inhibitor switch <ref. 4at-51,="" inhibitor<="" td="" to=""><td></td><td></td><td></td></ref.>			
	Switch.>			
2	CHECK AT OIL TEMP WARNING LIGHT.	Does the AT OIL TEMP warn-	Go to step 4.	Go to step 3.
	Turn the ignition switch to ON.	ing light illuminate?		
3	CHECK AT OIL TEMP WARNING LIGHT.	Is the AT OIL TEMP warning	Go to step 4.	Go to step 5.
	1) Turn the ignition switch to OFF.	light illuminate?		
	2) Repair the AT OIL TEMP warning light cir-			
	cuit or power supply and ground line circuit.			
	<ref. 4at(h4so)-37,="" at="" diagnostic="" for="" light<="" oil="" procedure="" td="" temp="" to="" worning=""><td></td><td></td><td></td></ref.>			
	dure for AT OIL TEMP Warning Light.> 3) Turn the ignition switch to ON.			
	•	la de a DTO discalar a do	0 - 44 6	Ca ta atau F
4	CHECK INDICATION OF DTC.	Is the DTC displayed?	Go to step 6.	Go to step 5.
	Calling up the DTC. Without Subaru Select Monitor		NOTE:	
	<ref. 4at(h4so)-30,="" p="" subaru<="" to="" without=""></ref.>		Record all DTC.	
	SELECT MONITOR, OPERATION, Read			
	Diagnostic Trouble Code (DTC).>			
	With Subaru Select Monitor			
	<ref. 4at(h4so)-31,="" subaru<="" td="" to="" with=""><td></td><td></td><td></td></ref.>			
	SELECT MONITOR, OPERATION, Read			
	Diagnostic Trouble Code (DTC).>			
	NOTE:			
	If the communication function of select monitor			
	cannot be executed normally, check the com-			
	munication circuit. <ref. 4at(h4so)-46,<="" td="" to=""><td></td><td></td><td></td></ref.>			
	COMMUNICATION FOR INITIALIZING IM-			
	POSSIBLE, Diagnostic Procedure for Select			
	Monitor Communication.>			

	Step	Check	Yes	No
5	PERFORM THE GENERAL DIAGNOSTICS. 1) Inspect using "Diagnostic Procedure without DTC". <ref. (dtc).="" 4at(h4so)-142,="" code="" diagnostic="" procedure="" to="" trouble="" without=""> 2) Inspect using "Symptom Related Diagnostic". <ref. 4at(h4so)-174,="" diagnostic.="" related="" symptom="" to=""> 3) Perform the clear memory mode. Without Subaru Select Monitor <ref. 4at(h4so)-33,="" clear="" memory="" mode.="" monitor,="" operation,="" select="" subaru="" to="" with=""> With Subaru Select Monitor <ref. 4at(h4so)-33,="" clear="" memory="" mode.="" monitor,="" operation,="" select="" subaru="" to="" without=""> 4) Perform the inspection mode. <ref. 4at(h4so)-32,="" inspection="" mode.="" to=""> 5) Calling up the DTC. Without Subaru Select Monitor <ref. (dtc).="" 4at(h4so)-30,="" code="" diagnostic="" monitor,="" operation,="" read="" select="" subaru="" to="" trouble="" without=""> With Subaru Select Monitor <ref. (dtc).="" 4at(h4so)-31,="" code="" diagnostic="" monitor,="" operation,="" read="" select="" subaru="" to="" trouble="" with=""></ref.></ref.></ref.></ref.></ref.></ref.></ref.>	Is the DTC displayed?	Complete the diagnosis.	Go to step 6.
6	PERFORM THE DIAGNOSIS. 1) Inspect using "Diagnostics Chart with DTC". <ref. (dtc).="" 4at(h4so)-50,="" code="" diagnostic="" procedure="" to="" trouble="" with=""> NOTE: For DTC table, refer to "List of Diagnostic Trouble Code (DTC)". <ref. (dtc).="" 4at(h4so)-35,="" code="" diagnostic="" list="" of="" to="" trouble=""> 2) Repair the trouble Code (DTC).> 2) Repair the trouble cause. 3) Perform the clear memory mode. Without Subaru Select Monitor <ref. 4at(h4so)-33,="" clear="" memory="" mode.="" monitor,="" operation,="" select="" subaru="" to="" with=""> With Subaru Select Monitor <ref. 4at(h4so)-33,="" clear="" memory="" mode.="" monitor,="" operation,="" select="" subaru="" to="" without=""> 4) Perform the inspection mode. <ref. 4at(h4so)-32,="" inspection="" mode.="" to=""> 5) Calling up the DTC. Without Subaru Select Monitor <ref. (dtc).="" 4at(h4so)-30,="" code="" diagnostic="" monitor,="" operation,="" read="" select="" subaru="" to="" trouble="" without=""> With Subaru Select Monitor <ref. (dtc).="" 4at(h4so)-31,="" code="" diagnostic="" monitor,="" operation,="" read="" select="" subaru="" to="" trouble="" with=""></ref.></ref.></ref.></ref.></ref.></ref.></ref.>		Complete the diagnosis.	Inspect using "Diagnostics Procedure with Diagnostic Trouble Code (DTC)". <ref. (dtc).="" 4at(h4so)-50,="" code="" diagnostic="" procedure="" to="" trouble="" with=""></ref.>

CHECK LIST FOR INTERVIEW

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

2. Check List for Interview

A: CHECK

Check the following items when problem has occurred.

NOTE:

Use copies of this page for interviewing customers.

Customer's name					
Date of purchase					
Date of repair					
Trans. model	TRANSMISSION		VIN		
Odometer reading				km/h or miles	
Frequency	☐ Continuous ☐ Intermittent (times a day)				
Weather	□ Fine □ Cloudy □ Rainy □ Snowy □ Various/Others ()				
Place	☐ High ☐ Suburbs ☐ Inner city ☐ Uphill ☐ Rough road ☐ Others ()				
Outdoor temperature	☐ Hot ☐ Warm ☐ Cool ☐ Cold				
Vehicle speed	km/h (MPH)				
AT diagnostic indicator light (AT OIL TEMP warning light)	☐ Continuously lit		□ Not lit		
Select lever position	OP OR ON OD O	3 🗓 2 🗓 1	☐ Sport shift r	node	
Driving condition	□ Not affected□ At racing□ While decelerating	☐ At starting☐ While accele☐ While turning	•	☐ While idling☐ While cruising	
Symptoms	☐ No up-shift				
	☐ No down-shift				
	☐ No kick down				
	☐ Vehicle does not move (☐ /	Any position	Particular pos	tion)	
	□ Lock-up malfunction				
	☐ Noise or vibration				
	☐ Shift shock or slip				
	☐ Select lever does not move)			
	Others ()				

3. General Description

A: CAUTION

Supplemental Restraint System "Airbag"

The airbag system wiring harness is routed near the transmission control module (TCM).

CAUTION:

- All airbag system wiring harness and connectors are colored yellow. Do not use an electrical test equipment on these circuit.
- Be careful not to damage the airbag system wiring harness when performing diagnostics and servicing the TCM.
- Measurement

When measuring the voltage and resistance of ECM, TCM or each sensor, use a tapered pin with diameter of less than 0.64 mm (0.025 in) in order to avoid poor contact. Do not insert the pin more than 0.65 mm (0.256 in).

B: INSPECTION

1. BATTERY

Measure the battery voltage and specific gravity of electrolyte.

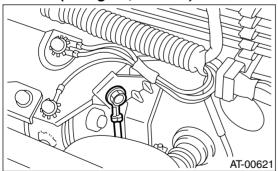
Standard voltage: 12 V or more Specific gravity: Above 1.260 2. TRANSMISSION GROUND

Make sure that the ground terminal bolt is tightened securely.

Chassis side

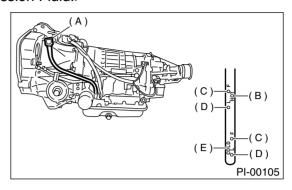
Tightening torque:

13 N·m (1.3 kgf-m, 9.4 ft-lb)



3. ATF LEVEL

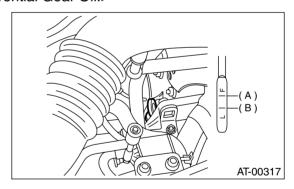
Make sure that ATF level is in the specification. <Ref. to 4AT-31, INSPECTION, Automatic Transmission Fluid.>



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

4. FRONT DIFFERENTIAL OIL LEVEL

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



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

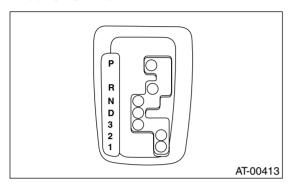
5. OPERATION OF SHIFT SELECT LEVER

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

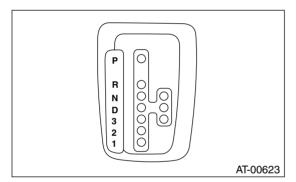
WARNING:

Stop the engine while checking operation of selector lever.

• Without SPORT shift



• With SPORT shift



GENERAL DESCRIPTION

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

C: PREPARATION TOOL

1. SPECIAL TOOLS

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
ST24082AA230	24082AA230	CARTRIDGE	Troubleshooting for electrical systems.
ST22771AA030	22771AA030	SELECT MONITOR KIT	Troubleshooting for electrical systems.

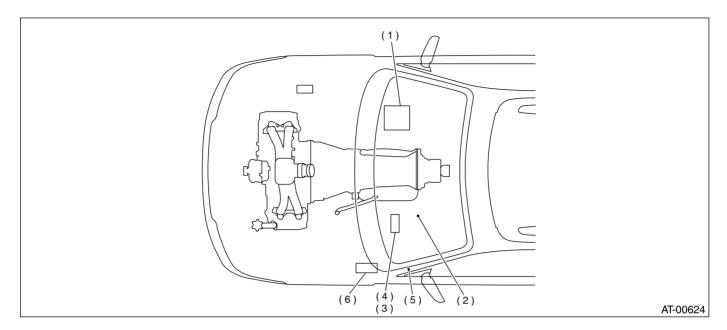
2. GENERAL PURPOSE TOOLS

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

4. Electrical Components Location

A: LOCATION

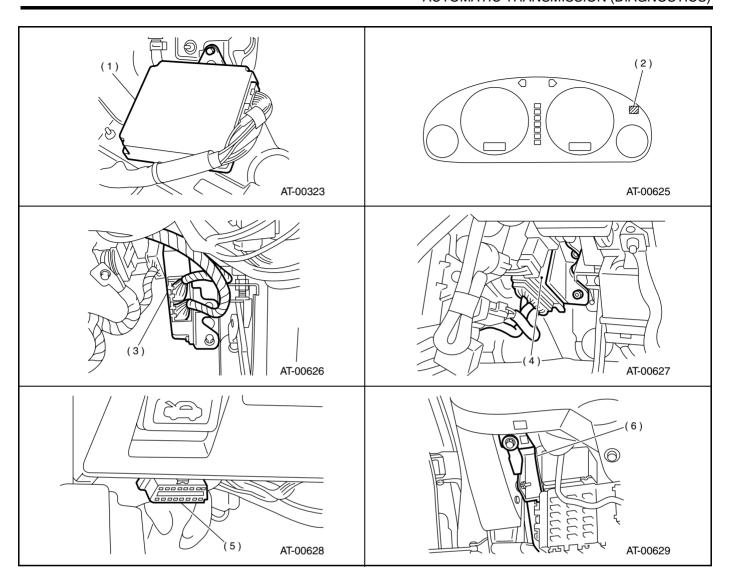
1. CONTROL MODULE



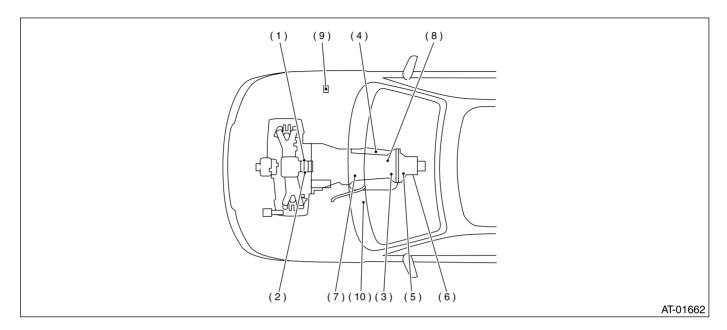
- (1) Engine control module (ECM)
- (2) AT OIL TEMP warning light (AT diagnostic indicator light)
- (3) Transmission control module (TCM) (Without VDC system and SPORT shift)
- (4) Transmission control module (TCM) (With VDC system or SPORT shift)
- (5) Data link connector
- (6) Vehicle dynamic control module (With VDC system)

ELECTRICAL COMPONENTS LOCATION

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

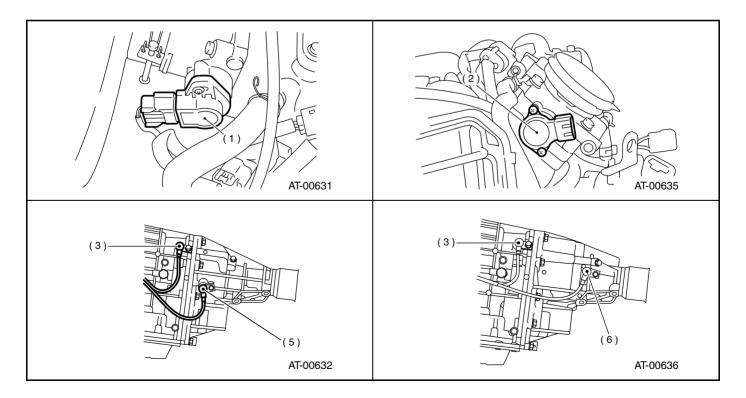


2. SENSOR



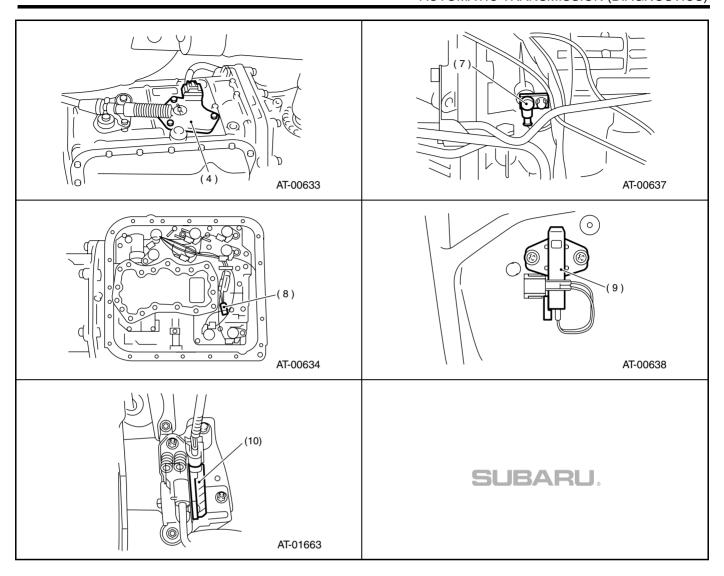
- (1) Throttle position sensor (Except 2.5 L U5 model)
- (2) Throttle position sensor (3.0 L model)
- (3) Front vehicle speed sensor
- (4) Inhibitor switch

- (5) Rear vehicle speed sensor (Without VDC system and SPORT shift)
- (6) Rear vehicle system sensor (With VDC system or SPORT shift)
- (7) Torque converter turbine speed signal
- 8) ATF temperature sensor (Non-TURBO model)
- (9) Dropping resistor (With VDC system or SPORT shift)
- (10) Accelerator pedal position sensor(2.5 L U5 model)

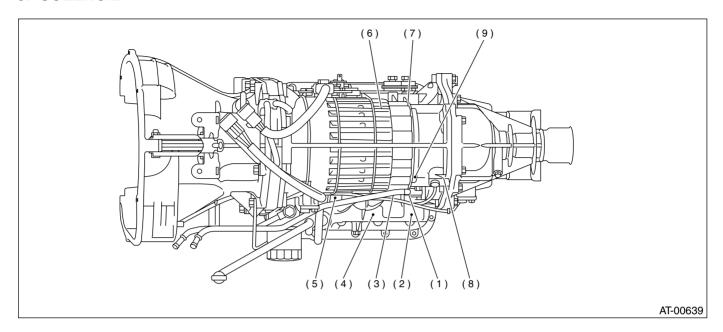


ELECTRICAL COMPONENTS LOCATION

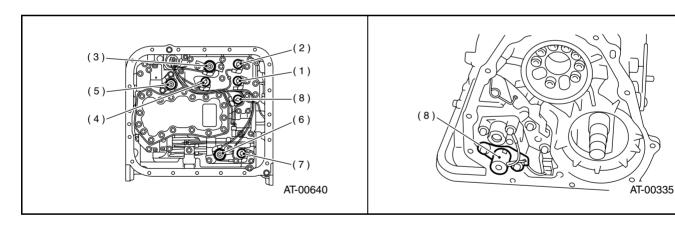
AUTOMATIC TRANSMISSION (DIAGNOSTICS)



3. SOLENOID



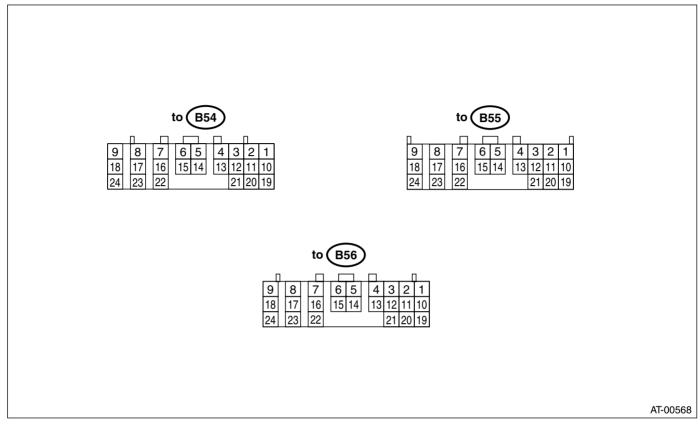
- (1) Solenoid 1
- (2) Solenoid 2
- (3) Line pressure duty solenoid
- (4) Low clutch timing solenoid
- (5) Lock-up duty solenoid
- (6) 2-4 brake duty solenoid
- (7) 2-4 brake timing solenoid
- (8) Transfer duty solenoid
- (9) SPORT shift solenoid (With SPORT shift)



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

A: ELECTRICAL SPECIFICATION

1. WITH VDC SYSTEM OR SPORT SHIFT



			Ch	eck with ignition switch ON.		
Content		Connector No.	Terminal No.	Measuring conditions	Voltage (V)	Resistance to body (ohms)
Back-up p	ower supply	B56	1	Ignition switch OFF	10 — 13	_
Ignition no	war auanh	B54	23	Ignition quitab ON (with angine OFF)	10 — 13	
ignition po	wer supply	B54	24	Ignition switch ON (with engine OFF)	10 — 13	_
	"P" range			Select lever in "P" range	Less than 1	
	switch	- Baa	1	Select lever in any other than "P" range (except "N" range)	More than 8	-
	"N" range	B55	14	Select lever in "N" range	Less than 1	_
	"N" range switch			Select lever in any other than "N" range (except "P" range)	More than 8	
	"R" range switch	B55	3	Select lever in "R" range	Less than 1	_
Inhibitor				Select lever in any other than "R" range	More than 8	
switch	"D" range	B55	4	Select lever in "D" range	Less than 1	
	switch			Select lever in any other than "D" range	More than 8	
	"3" range	B55	5	Select lever in "3" range	Less than 1	
	switch	D33	ວ	Select lever in any other than "3" range	More than 8	_
	"2" range	B55	6	Select lever in "2" range	Less than 1	
	switch	D33	0	Select lever in any other than "2" range	More than 8	1 –
	"1" range	B55	7	Select lever in "1" range	Less than 1	
	switch	D33	,	Select lever in any other than "1" range	More than 8	
Brake swit		B55	12	Brake pedal depressed.	More than 10.5	
DIAKE SWIL	OI I	B55	12	Brake pedal released.	Less than 1	1 -

TRANSMISSION CONTROL MODULE (TCM) I/O SIGNAL AUTOMATIC TRANSMISSION (DIAGNOSTICS)

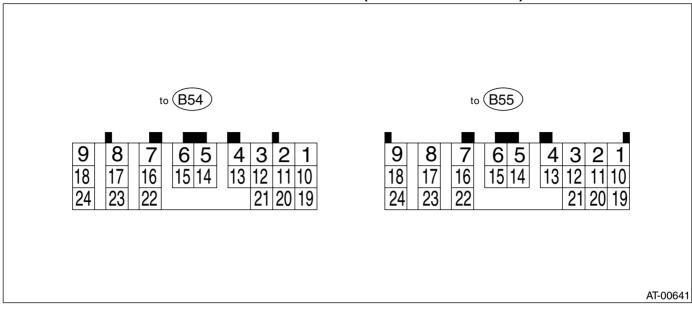
		Ch	eck with ignition switch ON.		
Content	Connector No.	Terminal No.	Measuring conditions	Voltage (V)	Resistance to body (ohms)
AT OIL TEMP warning	DEC	10	Light ON	Less than 1	
light	B56	10	Light OFF	More than 9	1 –
Throttle position sen-	DE4	c	Throttle fully closed.	0.2 — 1.0	
sor (Except U5 model)	B54	3	Throttle fully open.	4.2 — 4.7	1 –
Throttle position sen- sor power supply (Except U5 model)	B54	2	Ignition switch ON (with engine OFF)	4.8 — 5.3	_
Accelerator pedal position sensor (U5 model)	B54	3	Throttle fully closed Throttle fully open.	0.2 — 1.0 4.2 — 4.7	
Accelerator pedal position sensor supply (U5 model)	B54	2	Ignition switch ON	4.2 — 4.7	_
ATF temperature sen-			ATF temperature 20°C (68°F)	1.6 — 2.0	2.1 k — 2.9 k
sor	B54	11	ATF temperature 80°C (176°F)	0.4 — 0.9	275 — 375
			Vehicle stopped.	0 0.0	2.0 0.0
Rear vehicle speed sensor	B55	24	Vehicle speed at least 20 km/h (12 MPH)	More than 1 (AC range)	450 — 650
Front vobials assed			Vehicle stopped.	0	
Front vehicle speed sensor	B55	18	Vehicle speed at least 20 km/h (12 MPH)	More than 1 (AC range)	450 — 650
Torque convertor tur			Engine idling after warm-up. (D range)	0	
Torque converter tur- bine speed sensor	B55	8	Engine idling after warm-up. (N range)	More than 1 (AC range)	450 — 650
Vehicle speed output signal	B56	17	Vehicle speed at most 10 km/h (6 MPH)	Less than $1 \leftarrow$ \rightarrow More than 4	_
Engine speed signal	DEE	17	Ignition switch ON (with engine OFF)	More than 10.5	
(Except U5 model)	B55	17	Ignition switch ON (with engine ON)	8 — 11] —
Cruise set signal	B55	22	When cruise control is set. (SET lamp ON)	Less than 1	_
J	200		When cruise control is not set. (SET lamp OFF)	More than 6.5	
Torque control signal 1 (Except U5 model)	B56	5	Ignition switch ON (with engine ON)	More than 4	_
Torque control signal 2 (Except U5 model)	B56	14	Ignition switch ON (with engine ON)	More than 4	_
Torque control cut sig- nal (Except U5 model)	B55	10	Ignition switch ON	8	_
Mass air flow signal (Except U5 model)	B54	1	Engine idling after warm-up.	0.9 — 1.4	_
Shift solenoid 1	B54	22	1st or 4th gear	More than 9	10 — 16
Same obtained 1	D07		2nd or 3rd gear	Less than 1	10
Shift solenoid 2	B54	5	1st or 2nd gear	More than 9	10 — 16
2		,	3rd or 4th gear	Less than 1	
Line pressure duty	B54	9	Ignition switch ON (with engine OFF). Throttle fully closed after warm-up.	1.5 — 4.0	2.0 — 4.5
solenoid		9	Ignition switch ON (with engine OFF). Throttle fully open after warm-up.	Less than 0.5	2.0 1.0
Lock-up duty solenoid	B54	7	When lock up occurs.	More than 8.5	10 — 17
ap aary coloniola	25 '	•	When lock up is released.	Less than 0.5	' ' ' '

TRANSMISSION CONTROL MODULE (TCM) I/O SIGNAL AUTOMATIC TRANSMISSION (DIAGNOSTICS)

		Ch	eck with ignition switch ON.		
Content	Connector No.	Terminal No.	Measuring conditions	Voltage (V)	Resistance to body (ohms)
VDC communication signal + (With VDC)	B56	9	Ignition quitab ON	(+) — (–) Pulse signal	_
VDC communication signal – (With VDC)	B56	18	Ignition switch ON	(+) — (–) Pulse signal	_
CAN communication signal + (U5 model)	B56	9	1 11 21	Pulse signal	_
CAN communication signal – (U5 model)	B56	18	- Ignition switch ON	Pulse signal	_
Transfer duty solenoid	B54	6	Throttle fully closed. Throttle fully open.	More than 8.5 Less than 0.5	10 — 17
			Throttle fully closed (with engine OFF) after warm-up.	1.5 — 5.0	
2-4 brake duty solenoid	B54	18	Throttle fully open (with engine OFF) after warm-up.	Less than 0.5	2.0 — 4.5
2-4 brake timing sole-	B54	16	1st gear	Less than 1	10 — 16
noid	D04	10	3rd gear	More than 9	10 — 16
Low clutch timing sole-	DEA	15	2nd gear	Less than 1	10 16
noid	B54	15	4th gear	More than 9	10 — 16
ABS signal			ABS switch ON	Less than 1	_
(Without VDC system)	B55	21	ABS switch OFF	6.5 — 15	
Sensor ground line 1	B54	20	_	0	Less than 1
Sensor ground line 2	B55	9	_	0	Less than 1
Concor ground line 2	B56	19		Ŭ	Loos man i
System ground line	B54	21	-	0	Less than 1
Sensor ground line 3	B54	10	_	0	Less than 1
Sensor ground line 4	B54	19		0	Less than 1
AT diagnosis signal	B56	21	Ignition switch ON	Less than 1 ← → More than 4	
Data link signal (Subaru Select Monitor)	B56	15	_	_	_
SPORT shift solenoid	DE4	4.4	SPORT shift activated	More than 8	10 17
(with SPORT shift)	B54	14	SPORT shift deactivated	Less than 1	10 — 17
SPORT shift mode			SPORT shift mode switch ON	Less than 1	
switch (with SPORT shift)	B55	15	SPORT shift mode switch OFF	More than 8	1 –
Shift up switch	DEE	10	Shift up switch ON	Less than 1	
(with SPORT shift)	B55	13	Shift up switch OFF	More than 8	1 –
Shift down switch	5	_	Shift down switch ON	Less than 1	
(with SPORT shift)	B55	2	Shift down switch OFF	More than 8	1 —
Buzzer	_		ON	Less than 1	
(with SPORT shift)	B56	21	OFF	More than 8	1 —
SPORT shift indicator			SPORT shift mode OFF	More than 4	†
(with SPORT shift)	B56	12	Shift down indicator ON	Less than 1	
SPORT shift indicator			SPORT shift mode OFF	More than 4	
(with SPORT shift)	B56	13	SPORT shift mode with 4th gear	Less than 1	
,			SPORT shift mode OFF	More than 4	
SPORT shift indicator (with SPORT shift)	B56	3	SPORT shift mode of F SPORT shift mode with 2nd and 3rd gear	Less than 1	_
SPORT shift indicator			SPORT shift mode OFF	More than 4	
(with SPORT shift)	B56	4	SPORT shift mode with 1st and 3rd gear	Less than 1	
(or orth shift mode with 1st and sid year	Less man i	

TRANSMISSION CONTROL MODULE (TCM) I/O SIGNAL AUTOMATIC TRANSMISSION (DIAGNOSTICS)

2. WITHOUT VDC SYSTEM AND SPORT SHIFT (EXCEPT U5 MODEL)



			Ch	eck with ignition switch ON.		
Content		Connector No.	Terminal No.	Measuring conditions	Voltage (V)	Resistance to body (ohms)
Back-up power supply		B55	6	Ignition switch OFF	10 — 13	_
Ignition pov	wor cupply	B54	23	Ignition switch ON (with engine OFF)	10 — 13	
I Igrillion pol	wei suppiy	B54	24		10 — 13	_
	"P" range			Select lever in "P" range	Less than 1	
	switch	B55	23	Select lever in any other than "P" range (except "N" range)	More than 8	_
	"N" range			Select lever in "N" range	Less than 1	
	switch	B55	22	Select lever in any other than "N" range (except "P" range)	More than 8	_
	"R" range	B55	17	Select lever in "R" range	Less than 1	
Inhibitor	switch	D00	17	Select lever in any other than "R" range	More than 8	-
switch	"D" range	B55	8	Select lever in "D" range	Less than 1	
	switch	D00	8	Select lever in any other than "D" range	More than 8	_
	"3" range B55 switch B55	B55	18	Select lever in "3" range	Less than 1	
				Select lever in any other than "3" range	More than 8	
		10	Select lever in "2" range	Less than 1		
	switch	201		Select lever in any other than "2" range	More than 8	
	"1" range	B54	1	Select lever in "1" range	Less than 1	_
	switch	201		Select lever in any other than "1" range	More than 8	
Brake swite	ch.	B55	24	Brake pedal depressed.	More than 10.5	_
Drake owik			L -T	Brake pedal released.	Less than 1	
ABS signal		B54	19	ABS switch ON	Less than 1	
		201		ABS switch OFF	More than 6.5	
	MP warning	B54	3	Light ON	Less than 1	
light				Light OFF	More than 9	
Throttle po	sition sensor	B55	2	Throttle fully closed.	0.2 — 1.0	_
·			_	Throttle fully open.	4.2 — 4.7	
Throttle po		B55	1	Ignition switch ON (With engine OFF)	4.8 — 5.3	_
ATF tempe	rature sen-	B55	11	ATF temperature 20°C (68°F)	1.6 — 2.0	2.1 k — 2.9 k
sor		טטט	11	ATF temperature 80°C (176°F)	0.4 — 0.9	275 — 375

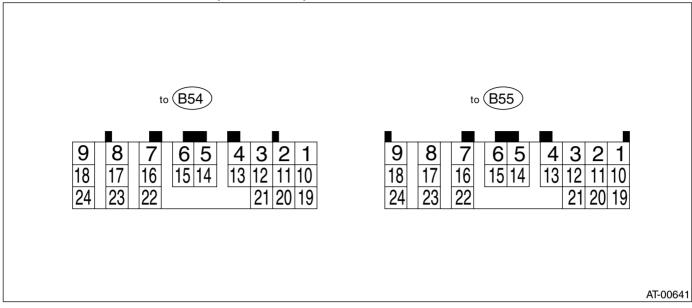
TRANSMISSION CONTROL MODULE (TCM) I/O SIGNAL AUTOMATIC TRANSMISSION (DIAGNOSTICS)

		Ch	eck with ignition switch ON.		_
Content	Connector No.	Terminal No.	Measuring conditions	Voltage (V)	Resistance to body (ohms)
Poor vohiolo spood			Vehicle stopped.	0	
Rear vehicle speed sensor	B55	3	Vehicle speed at least 20 km/h (12 MPH)	More than 1 (AC range)	450 — 650
Front vehicle speed			Vehicle stopped	0	
sensor	B55	5	Vehicle speed at least 20 km/h (12 MPH)	More than 1 (AC range)	450 — 650
Torque converter tur-			Engine idling after warm-up ("D" range)	0	
bine speed sensor	B55	12	Engine idling after warm-up ("N" range)	More than 1 (AC range)	450 — 650
Vehicle speed output signal	B55	13	Vehicle speed at most 10 km/h (6 MPH)	Less than 1 \leftarrow \rightarrow More than 4	_
Engine speed signal	B55	4	Ignition switch ON (with engine OFF)	0	_
		-	Ignition switch ON (with engine ON)	0 — 13 or more	
Cruina ant sizza	D. 4	44	When cruise control is set (SET light ON)	Less than 1	4
Cruise set signal	B54	11	When cruise control is not set (SET light OFF)	More than 6.5	_
Torque control signal 1	B54	13	Ignition switch ON (with engine ON)	More than 4.0	_
Torque control signal 2	B54	21	Ignition switch ON (with engine ON)	More than 4.0	_
Torque control cut sig- nal	B54	2	Ignition switch ON	8	_
Intake manifold pres- sure signal	B55	20	Engine idling after warm-up.	0.4 — 1.6	_
Shift solenoid 1	B54	7	1st or 4th gear	More than 9	10 — 16
	_		2nd or 3rd gear	Less than 1	
Shift solenoid 2	B54	6	1st or 2nd gear	More than 9	10 — 16
			3rd or 4th gear	Less than 1	
Line pressure duty	B54	9	Ignition switch ON (with engine OFF). Throttle fully closed after warm-up.	1.5 — 4.0	2.0 — 4.5
solenoid	B04		Ignition switch ON (with engine OFF). Throttle fully open after warm-up.	Less than 1	2.0 4.0
Dranning register	B54	10	Throttle fully closed (with engine OFF) after warm-up.	More than 8.5	9 — 15
Dropping resistor	D04	18	Throttle fully open (with engine OFF) after warm-up.	Less than 0.5	9 — 15
Lock-up duty solenoid	B54	16	When lock up occurs.	More than 8.5	10 — 17
Lock-up duty solelloid	D04	10	When lock up is released.	Less than 0.5	10 — 17
			Fuse on FWD switch	More than 8.5	
Transfer duty solenoid	B54	15	Fuse removed from FWD switch (with throttle fully open and with select lever in 1st gear).	Less than 0.5	10 — 17
			Throttle fully closed (with engine OFF) after warm-up.	1.5 — 5.0	
2-4 brake duty solenoid	B54	8	Throttle fully open (with engine OFF) after warm-up.	Less than 0.5	2.0 — 4.5
2-4 brake dropping	DE 4	47	Throttle fully closed (with engine OFF) after warm-up.	More than 8.5	0 45
resistor	B54	17	Throttle fully open (with engine OFF) after warm-up.	Less than 0.5	9 — 15
2-4 brake timing sole-	DEA	_	1st gear	Less than 1	10 10
noid	B54	5	3rd gear	More than 9	10 — 16
Low clutch timing sole-	B54	14	2nd gear	Less than 1	10 — 16
noid	554	'-	4th gear	More than 9	10 = 10

TRANSMISSION CONTROL MODULE (TCM) I/O SIGNAL AUTOMATIC TRANSMISSION (DIAGNOSTICS)

	Check with ignition switch ON.							
Content	Connector No.	Terminal No.	Measuring conditions	Voltage (V)	Resistance to body (ohms)			
Sensor ground line 1	B55	10	_	0	Less than 1			
Sensor ground line 2	B55	21	_	0	Less than 1			
System ground line	B55	9 19	_	0	Less than 1			
FWD switch	B55	14	Fuse removed.	More than 9	_			
1 VVD SWIIGH	D55	14	Fuse installed.	Less than 1]			
FWD indicator light	B54	12	Fuse ONFWD switch	Less than 1				
FWD indicator light	B54	12	Fuse removed from FWD switch	More than 9	1 -			
AT diagnosis signal (Pulse signal)	B54	4	Ignition switch ON	Less than 1 \leftarrow \rightarrow More than 4	_			
Data link signal (Subaru Select Monitor)	B55	7	_	_	_			

3. WITHOUT SPORT SHIFT (U5 MODEL)



			Ch	eck with ignition switch ON.			
Content		Connector No.	Terminal No.	Measuring conditions	Voltage (V)	Resistance to body (ohms)	
Back-up power supply		B55	24	Ignition switch OFF	10 — 13	_	
Ignition power supply		B54 B54	23 24	Ignition switch ON (with engine OFF)	10 — 13	_	
		201		Select lever in "P" range	Less than 1		
	"P" range switch	B55	3	Select lever in any other than "P" range (except "N" range)	More than 8	_	
	"NI"			Select lever in "N" range	Less than 1		
	"N" range switch	B55	2	Select lever in any other than "N" range (except "P" range)	More than 8	<u> </u>	
	"R" range	B55	13	Select lever in "R" range	Less than 1		
Inhibitor	switch	DOO		Select lever in any other than "R" range	More than 8	<u> </u>	
switch	"D" range switch	B55	4	Select lever in "D" range	Less than 1	_	
				Select lever in any other than "D" range	More than 8		
	"3" range switch	B55	14	Select lever in "3" range	Less than 1		
				Select lever in any other than "3" range	More than 8		
	"2" range switch	e B55	6	Select lever in "2" range	Less than 1		
				Select lever in any other than "2" range	More than 8		
	"1" range switch	9 I Khh	22	Select lever in "1" range	Less than 1		
				Select lever in any other than "1" range	More than 8		
Brake swite	- l-	B55	5	Brake pedal depressed.	More than 10.5		
Drake Switt	CH			Brake pedal released.	Less than 1	<u> </u>	
ADC simes	1	255	45	ABS switch ON	Less than 1		
ABS signal		B55 1	15	ABS switch OFF	More than 6.5	<u> </u>	
AT OIL TEMP warning light		warning B54 5	-	Light ON	Less than 1		
		B54	5	Light OFF	More than 9	1 –	
Accelerator pedal posi-		B54	4	Throttle fully closed.	0.2 — 1.0		
tion sensor				Throttle fully open. 4.2 — 4.7		1 -	
Accelerator pedal position sensor power supply		B54	3	Ignition switch ON (With engine OFF)	4.8 — 5.3	_	

TRANSMISSION CONTROL MODULE (TCM) I/O SIGNAL AUTOMATIC TRANSMISSION (DIAGNOSTICS)

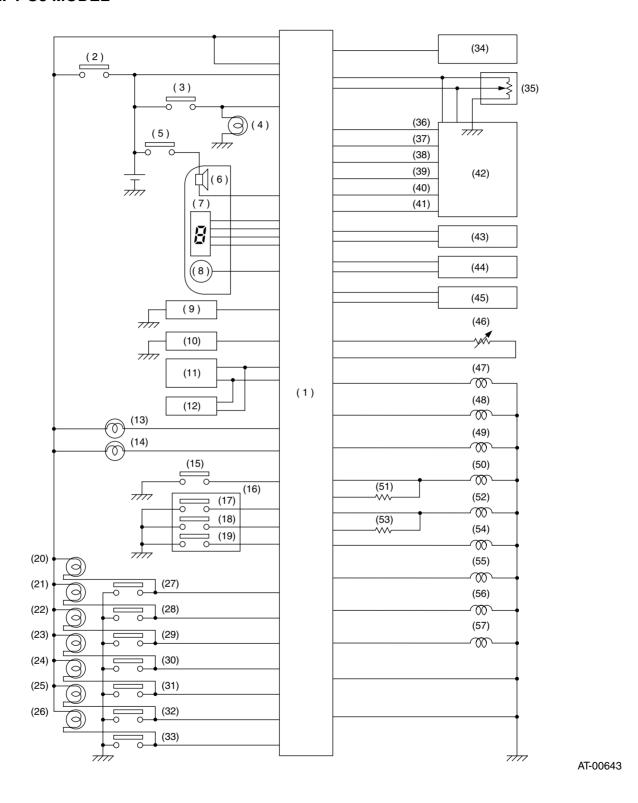
			eck with ignition switch ON.			
Content	Connector No.	Terminal No.	Measuring conditions	Voltage (V)	Resistance to body (ohms)	
ATF temperature sen-	B54	12	ATF temperature 20°C (68°F)	1.6 — 2.0	2.1 k — 2.9 k	
sor B34		12	ATF temperature 80°C (176°F)	0.4 - 0.9	275 — 375	
Rear vehicle speed			Vehicle stopped.	0		
sensor	B54	2	Vehicle speed at least 20 km/h (12 MPH)	More than 1 (AC range)	450 — 650	
Front vehicle speed		11	Vehicle stopped	0		
sensor	B55		Vehicle speed at least 20 km/h (12 MPH)	More than 1 (AC range)	450 — 650	
Torque converter tur-			Engine idling after warm-up ("D" range)	0		
bine speed sensor	B54	1	Engine idling after warm-up ("N" range)	More than 1 (AC range)	450 — 650	
Vehicle speed output signal	B55	8	Vehicle speed at most 10 km/h (6 MPH)	Less than $1 \leftarrow \rightarrow$ More than 4	_	
Shift solenoid 1	B54	7	1st or 4th gear	More than 9	10 — 16	
OTHER SOLICITION I	D04		2nd or 3rd gear	Less than 1	10 — 10	
Shift solenoid 2	B54	6	1st or 2nd gear	More than 9	10 — 16	
OTHER SOIGHOID Z	554	U	3rd or 4th gear	Less than 1] 10 — 16	
Line pressure duty	B54	0	Ignition switch ON (with engine OFF). Throttle fully closed after warm-up.	1.5 — 4.0	2.0 — 4.5	
solenoid		9	Ignition switch ON (with engine OFF). Throttle fully open after warm-up.	Less than 1	2.0 — 4.5	
Look up duty colonoid	B54	10	When lock up occurs.	More than 8.5	10 — 17	
Lock-up duty solenoid	D34	18	When lock up is released.	Less than 0.5	10 — 17	
			Fuse on FWD switch	More than 8.5		
(with throttle fully		Fuse removed from FWD switch (with throttle fully open and with select lever in 1st gear).	Less than 0.5	10 — 17		
	B54	8	Throttle fully closed (with engine OFF) after warm-up.	1.5 — 5.0	0.0 4.5	
2-4 brake duty solenoid			Throttle fully open (with engine OFF) after warm-up.	Less than 0.5	2.0 — 4.5	
2-4 brake timing sole-		10	1st gear	Less than 1	10 10	
noid B54 16		3rd gear	More than 9	10 — 16		
Low clutch timing sole-	DE4	15	2nd gear	Less than 1	10 — 16	
noid	B54	15	4th gear	More than 9	10 — 16	
Sensor ground line 1	B54	11	_	0	Less than 1	
Sensor ground line 2	B54	10	_	0	Less than 1	
Sensor ground line 3	B55	21	_	0	Less than 1	
Sensor ground line 4	B55	10	_	0	Less than 1	
System ground line	B55	9 19	_	0	Less than 1	
EMD	B5.4	0.1	Fuse removed.	More than 9		
FWD switch	B54	21	Fuse installed.	Less than 1	1 —	
FWD indicator light	B55	17	Fuse ONFWD switch Fuse removed from FWD switch	Less than 1 More than 9	_	
CAN communication signal (+)	B54	14	— — — — — — — — — — — — — — — — — — —	Pulse signal	_	
CAN communication signal (–)	B54	13	_	Pulse signal	_	
AT diagnosis signal	B54	22	Ignition switch ON	Less than 1 ← → More than 4	_	

TRANSMISSION CONTROL MODULE (TCM) I/O SIGNAL AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Check with ignition switch ON.					
Content	Connector No.	Terminal No.	Measuring conditions	Voltage (V)	Resistance to body (ohms)
Data link signal (Subaru Select Monitor)	B55	7	_	_	_

B: SCHEMATIC

1. EXCEPT U5 MODEL



TRANSMISSION CONTROL MODULE (TCM) I/O SIGNAL

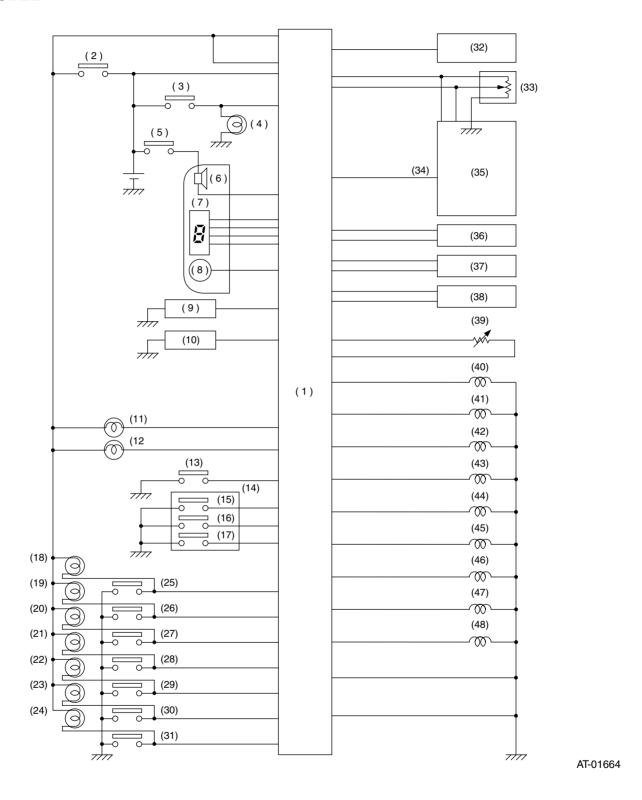
AUTOMATIC TRANSMISSION (DIAGNOSTICS)

- (1) Transmission control module
- (2) Ignition switch
- (3) Brake switch
- (4) Brake light
- (5) Ignition relay
- (6) Buzzer (with SPORT shift)
- (7) SPORT shift indicator (with SPORT shift)
- (8) Speedometer
- (9) Cruise control module
- (10) ABS control module (without VDC system)
- (11) VDC control module (with VDC system)
- (12) Steering angle sensor (with VDC system)
- (13) FWD indicator light (without VDC system and SPORT shift)
- (14) "AT OIL TEMP" warning light
- (15) FWD switch (without VDC system and SPORT shift)
- (16) SPORT shift (with SPORT shift)
- (17) SPORT shift mode switch
- (18) Up switch
- (19) Down switch

- "P" range indicator light (20)
- (21) "R" range indicator light
- (22)"N" range indicator light
- (23) "D" range indicator light
- "3" range indicator light (24)(25) "2" range indicator light
- "1" range indicator light (26)
- (27)"P" range switch
- (28)"R" range switch
- (29)"N" range switch
- (30)"D" range switch
- (31)"3" range switch
- (32)"2" range switch
- (33)"1" range switch
- (34) Data link connector
- Throttle position sensor (35)
- (36) Engine speed signal
- (37)Torque control cut signal
- (38) Torque control signal 2
- (39)Torque control signal 1
- (40) Intake manifold pressure signal
- (41)AT diagnosis signal
- (42)Engine control module
- (43) Front vehicle speed sensor
- (44) Rear vehicle speed sensor

- (45) Torque converter turbine speed sensor
- (46) ATF temperature sensor
- (47) Shift solenoid 1
- (48) Shift solenoid 2
- (49) 2-4 brake timing solenoid
- (50) 2-4 brake duty solenoid
- (51) 2-4 brake dropping resistor (without VDC system and SPORT shift)
- (52) Line pressure duty solenoid
- Line pressure dropping resistor (without VDC system and SPORT shift)
- (54) Lock-up duty solenoid
- (55) Low clutch timing solenoid
- (56) Transfer duty solenoid
- (57) SPORT shift solenoid (with SPORT shift)

2. U5 MODEL



TRANSMISSION CONTROL MODULE (TCM) I/O SIGNAL AUTOMATIC TRANSMISSION (DIAGNOSTICS)

(1)	Transmission control module	(17)	Down switch	(35)	Engine control module
(2)	,		"P" range indicator light	(36)	Front vehicle speed sensor
(3)	Brake switch	(19)	"R" range indicator light	(37)	Rear vehicle speed sensor
(4)	Brake light	(20)	"N" range indicator light	(38)	Torque converter turbine speed
(5)	Ignition relay	(21)	"D" range indicator light		sensor
(6)	Buzzer (with SPORT shift)	(22)	"3" range indicator light	(39)	ATF temperature sensor
(7)	SPORT shift indicator (with	(23)	"2" range indicator light	(40)	Shift solenoid 1
	SPORT shift)	(24)	"1" range indicator light	(41)	Shift solenoid 2
(8)	Speedometer	(25)	"P" range switch	(42)	2-4 brake timing solenoid
(9)	Cruise control module	(26)	"R" range switch	(43)	2-4 brake duty solenoid
(10)	ABS control module	(27)	"N" range switch	(44)	Line pressure duty solenoid
(11)	FWD indicator light (without	(28)	"D" range switch	(45)	Lock-up duty solenoid
	SPORT shift)	(29)	"3" range switch	(46)	Low clutch timing solenoid
(12)	"AT OIL TEMP" warning light	(30)	"2" range switch	(47)	Transfer duty solenoid
(13)	FWD switch (without SPORT shift)	(31)	"1" range switch	(48)	SPORT shift solenoid (with
(14)	SPORT shift (with SPORT shift)	(32)	Data link connector		SPORT shift)
(15)	SPORT shift mode switch	(33)	Accelerator pedal position sensor		

(34) CAN communication signal

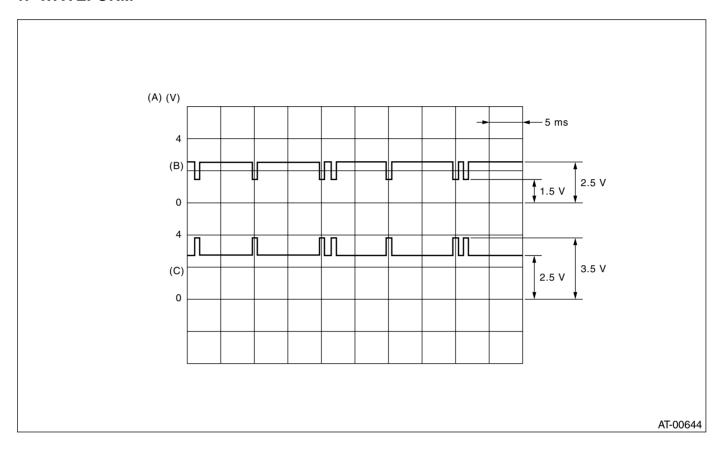
(16) Up switch

TRANSMISSION CONTROL MODULE (TCM) I/O SIGNAL AUTOMATIC TRANSMISSION (DIAGNOSTICS)

C: MEASUREMENT

Only for models with VDC system, measure input/output signal voltage.

1. WAVEFORM



- (A) Can communication line
- (B) Terminal No.: (B56) No. 9 — (B55) No. 9
- (C) Terminal No.: (B56) No. 18 — (B55) No. 9

6. Subaru Select Monitor

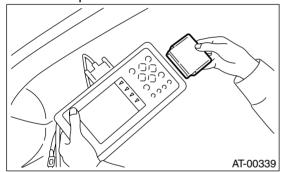
A: OPERATION

1. READ DIAGNOSTIC TROUBLE CODE (DTC)

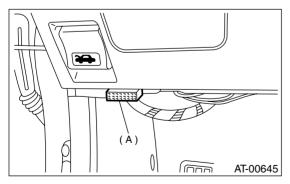
1) Prepare the Subaru Select Monitor kit.



- 2) Connect the diagnosis cable to Subaru Select Monitor.
- 3) Insert the cartridge into Subaru Select Monitor. <Ref. to 4AT(H4SO)-7, PREPARATION TOOL, General Description.>



- 4) Connect the Subaru Select Monitor to data link connector.
 - (1) Data link connector located in the lower portion of instrument panel (on driver's side).

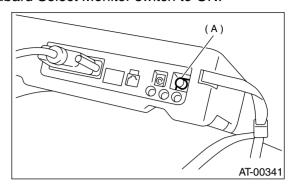


(2) Connect the diagnosis cable to data link connector.

NOTE:

Do not connect scan tools except for Subaru Select Monitor and OBD-II general scan tool.

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



(A) POWER switch

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

NOTE:

- For detailed operation procedure, refer to the Subaru Select Monitor OPERATION MANUAL.
- For details concerning the DTC, refer to the List of Diagnostic Trouble Code (DTC). <Ref. to 4AT(H4SO)-35, List of Diagnostic Trouble Code (DTC).>

2. READ CURRENT DATA

- 1) On the «Main Menu» display screen, select the {Each System Check} and press the [YES] key.
- 2) On the «System Selection Menu» display screen, select the {Transmission Control System} and press the [YES] key.
- 3) Press the [YES] key after the information of transmission type is displayed.
- 4) On the «Transmission Diagnosis» display screen, select the {Current Data Display & Save} and press the [YES] key.
- 5) On the «Data Display Menu» display screen, select the {Data Display} and press the [YES] key.

SUBARU SELECT MONITOR

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

- 6) Using the scroll key, move the display screen up or down until desired data is shown.
- A list of the support data is shown in the following table.

Contents	Display	Unit of measure
Battery voltage	Battery Voltage	V
Rear vehicle speed sensor signal	Rear Wheel Speed	km/h or MPH
Front vehicle speed sensor signal	Front Wheel Speed	km/h or MPH
Engine speed signal	Engine Speed	rpm
Automatic transmission fluid temperature signal	ATF Temp.	°C or °F
Throttle position sensor	Throttle Sensor Voltage	V
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 (AWD model)	Transfer Duty Ratio	%
Power supply for throttle position sensor	Throttle Sensor Power	V
Torque converter turbine speed signal	Turbine Revolution Speed	rpm
2-4 brake timing pressure control duty ratio	Brake Clutch Duty Ratio	%
Intake manifold pressure sensor voltage	Mani. Pressure Voltage	V
Throttle position	Throttle Opening Angle	%
Up shift signal (With SPORT Shift)	Up switch	ON or OFF
Down shift signal (With SPORT Shift)	Down switch	ON or OFF
SPORT shift mode signal (With SPORT Shift)	Tip mode switch	ON or OFF
2 wheel drive switch signal	FWD Switch	ON or OFF
Stop light switch signal	Stop Light Switch	ON or OFF
Anti lock brake system signal	ABS Signal	ON or OFF
Cruise control system signal	Cruise Control Signal	ON or OFF
Parking range signal	P Range Signal	ON or OFF
Neutral range signal	N Range Signal	ON or OFF
Reverse range signal	R Range Signal	ON or OFF
Drive range signal	D Range Signal	ON or OFF
3rd range signal	3rd Range Signal	ON or OFF
2nd range signal	2nd Range Signal	ON or OFF
1st range signal	1st Range Signal	ON or OFF
Shift control solenoid 1	Shift Solenoid #1	ON or OFF
Shift control solenoid 2	Shift Solenoid #2	ON or OFF
Torque control output signal #1 (Except U5)	Torque Control Signal 1	ON or OFF
Torque control output signal #2 (Except U5)	Torque Control Signal 2	ON or OFF
Torque control cut signal (Except U5)	Torque Control Cut Sig.	ON or OFF
2-4 brake timing control solenoid valve	2-4 Brake Timing Sol.	ON or OFF
Low clutch timing control solenoid valve	Low Clutch Timing Sol.	ON or OFF
Automatic transmission diagnosis indicator lamp	Diagnosis Lamp	ON or OFF
Automatic transmission fluid temperature lamp	ATF Temperature Lamp	ON or OFF

NOTE:

For detailed operation procedure, refer to the Subaru Select Monitor OPERATION MANUAL.

SUBARU SELECT MONITOR

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

3. CLEAR MEMORY MODE

- 1) On the «Main Menu» display screen, select the
- {2. Each System Check} and press the [YES] key.
- 2) On the «System Selection Menu» display screen, select the {Transmission Control System} and press the [YES] key.
- 3) Press the [YES] key after the information of transmission type is displayed.
- 4) On the «Transmission Diagnosis» display screen, select the {Clear Memory} and press the [YES] key.
- 5) When the "Done" and "Turn Ignition Switch OFF" are shown on display screen, turn the Subaru Select Monitor and ignition switch to OFF.

NOTE:

For detailed operation procedure, refer to the Subaru Select Monitor OPERATION MANUAL.

READ DIAGNOSTIC TROUBLE CODE (DTC) AUTOMATIC TRANSMISSION (DIAGNOSTICS)

7. Read Diagnostic Trouble Code (DTC)

A: OPERATION

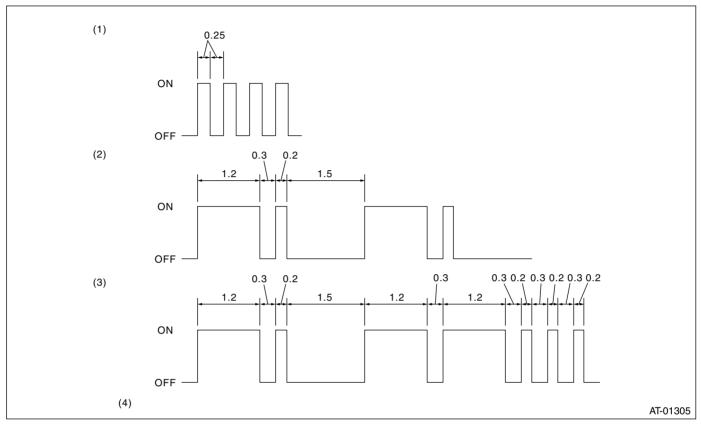
1. WITHOUT SUBARU SELECT MONITOR

	Step	Check	Yes	No
1	PERFORM READ DTC. 1) Warm-up the engine. 2) Turn the ignition switch to OFF. 3) Turn the ignition switch to ON. 4) Start the engine. 5) Drive the vehicle at speeds greater than 20 km/h (12 MPH). 6) Stop the vehicle. 7) The brake pedal depressed and move select lever to 1 range. 8) Turn the ignition switch to OFF. 9) Turn the ignition switch to ON. 10)Move the select lever "2" range. 11)Move the select lever "2" range. 12)Move the select lever "2" range. 13)Move the select lever "3" range. 14)Move the select lever "D" range.	Does the AT OIL TEMP warning light blink at 4 Hz intervals? NOTE: Blinks every 0.125 (1/8) seconds (until the ignition switch is turned OFF).	Repair the power supply and ground circuit. <ref. 4at(h4so)-42,="" and="" at="" check="" diagnostic="" for="" ground="" light.="" line,="" oil="" power="" procedure="" supply="" temp="" to="" warning=""></ref.>	Go to step 2.
2	CHECK AT OIL TEMP WARNING LIGHT.	Does the AT OIL TEMP warning light blink at 2 Hz intervals? NOTE: Blinks every 0.25 (1/4) seconds (until ignition switch is turned to OFF).	The AT system is normal.	Go to step 3.
3	CHECK AT OIL TEMP WARNING LIGHT.	Is the DTC outputted by the blink of AT OIL TEMP warning light?	Inspect the prob- lem correspond- ing with DTC. NOTE: Record all DTCs.	Go to step 4.
4	CHECK AT OIL TEMP WARNING LIGHT.	Does the AT OIL TEMP warning light remain illuminated?	Repair the AT OIL TEMP warning light circuit <ref. to 4AT(H4SO)-37, Diagnostic Proce- dure for AT OIL TEMP Warning Light.>, or Inspect inhibitor switch, wiring, TCM, etc.</ref. 	Calling up the DTC again.

• The way of reading DTC

The AT OIL TEMP warning light flashes the code corresponding to faulty part.

The long segment (1.2 sec on) indicates a "ten", and the short segment (0.2 sec on) signifies a "one".



(1) Normal code

(2) DTC 11

(3) DTC 11 and 23

(4) Unit: Seconds

2. WITH SUBARU SELECT MONITOR

Refer to Subaru Select Monitor for information about how to obtain and understand DTC. <Ref. to 4AT(H4SO)-27, OPERATION, Subaru Select Monitor.>

INSPECTION MODE

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

8. Inspection Mode

A: OPERATION

Shift the select lever to D range, and drive continuously for 10 seconds or more at 60 km/h (37 MPH).

WARNING:

Observe the road traffic law.

9. Clear Memory Mode

A: OPERATION

1. WITHOUT SUBARU SELECT MONITOR

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

CLEAR MEMORY:

Without VDC system and SPORT shift Remove the TCM connector (B55) for at least two minutes.

With VDC system or SPORT shift Remove the TCM connector (B56) for at least two minutes.

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

2. WITH SUBARU SELECT MONITOR

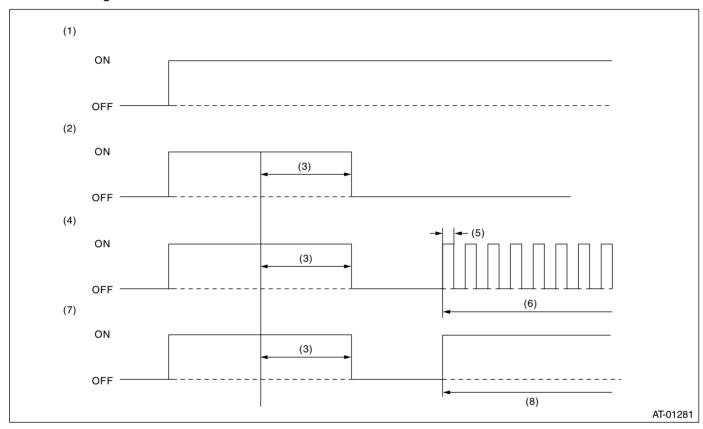
Refer to Subaru Select Monitor for information about how to clear DTC.

<Ref. to 4AT(H4SO)-29, CLEAR MEMORY MODE, OPERATION, Subaru Select Monitor.>

10.AT OIL TEMP Warning Light Display

A: INSPECTION

When any on-board diagnostics item is malfunctioning, the display on AT OIL TEMP warning light blinks from the time malfunction is detected after starting the engine until ignition switch is turned to OFF. The malfunctioning part or unit can be determined by a DTC during on-board diagnostics operation. Problems which occurred previously can also be identified through the memory function. If the AT OIL TEMP warning light does not show a problem (although a problem is occurring), the problem can be determined by checking the performance characteristics of each sensor using select monitor. The AT OIL TEMP warning light signal is as shown in the figure.



- (1) Ignition switch (engine OFF)
- (2) Normal
- (3) 2 secs

- (4) Abnormal (Trouble occurs)
- (5) 0.25 secs
- (6) Blink

- (7) Normal (ATF temperature is low)
- (8) ATF temperature is high

11.List of Diagnostic Trouble Code (DTC)

A: LIST

DTC	Item	Content of diagnosis	Index	
11	Engine speed signal	Detects open or shorted input signal circuit.	<ref. (dtc).="" 11="" 4at(h4so)-50,="" code="" diagnostic="" dtc="" engine="" procedure="" signal,="" speed="" to="" trouble="" with=""></ref.>	
27	ATF temperature sensor	Detects open or shorted input signal circuit.	<ref. 27="" 4at(h4so)-54,="" atf="" dtc="" tempera-<br="" to="">TURE SENSOR, Diagnostic Procedure with Diag- nostic Trouble Code (DTC).></ref.>	
31	Throttle position sensor (Except U5 model)	Detects open or shorted input	<ref. 31="" 4at(h4so)-60,="" diagnostic="" dtc="" position="" procedure="" sensor,="" td="" throttle="" to="" with<=""></ref.>	
	Accelerator pedal position sensor (U5 model)	signal circuit.	Diagnostic Trouble Code (DTC).>	
33	Front vehicle speed sensor	Detects open or shorted input signal circuit.	<ref. 33="" 4at(h4so)-70,="" dtc="" front="" to="" vehi-<br="">CLE SPEED SENSOR, Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>	
36	Torque converter tur- bine speed sensor	Detects open or shorted input signal circuit.	<ref. 36="" 4at(h4so)-76,="" con-<br="" dtc="" to="" torque="">VERTER TURBINE SPEED SENSOR, Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>	
38	Torque control signal	Detects open or shorted input signal circuit.	<ref. 38="" 4at(h4so)-80,="" con-<br="" dtc="" to="" torque="">TROL SIGNAL, Diagnostic Procedure with Diag- nostic Trouble Code (DTC).></ref.>	
45	Intake manifold pressure signal	Detects open or shorted input signal circuit.	<ref. 45="" 4at(h4so)-84,="" dtc="" intake="" mani-<br="" to="">FOLD PRESSURE SIGNAL, Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>	
71	Shift solenoid 1	Detects open or shorted output signal circuit.	<ref. 4at(h4so)-86,="" 71="" dtc="" shift="" sole-<br="" to="">NOID 1, Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>	
72	Shift solenoid 2	Detects open or shorted output signal circuit.	<ref. 4at(h4so)-90,="" 72="" dtc="" shift="" sole-<br="" to="">NOID 2, Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>	
73	Low clutch timing sole- noid	Detects open or shorted output signal circuit.	<ref. 4at(h4so)-94,="" 73="" clutch<br="" dtc="" low="" to="">TIMING SOLENOID, Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>	
74	2-4 brake timing sole- noid	Detects open or shorted output signal circuit.	<ref. 2-4="" 4at(h4so)-98,="" 74="" brake="" dtc="" tim-<br="" to="">ING SOLENOID, Diagnostic Procedure with Diag- nostic Trouble Code (DTC).></ref.>	
75	Line pressure duty sole- noid	Detects open or shorted output signal circuit.	<ref. 4at(h4so)-102,="" 75="" dtc="" line="" pres-<br="" to="">SURE DUTY SOLENOID, Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>	
76	2-4 brake duty solenoid	Detects open or shorted output signal circuit.	<ref. 2-4="" 4at(h4so)-108,="" 76="" brake<br="" dtc="" to="">DUTY SOLENOID, Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>	
77	Lock-up duty solenoid	Detects open or shorted output signal circuit.	<ref. 4at(h4so)-114,="" 77="" dtc="" lock-up<br="" to="">DUTY SOLENOID, Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>	
78	SPORT shift solenoid	Detects open or shorted input signal circuit.	<ref. 4at(h4so)-120,="" 78="" dtc="" shift<br="" sport="" to="">SOLENOID, Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>	
79	Transfer duty solenoid	Detects open or shorted output signal circuit.	<ref. 4at(h4so)-124,="" 79="" dtc="" to="" transfer<br="">DUTY SOLENOID, Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>	
86	CAN communication signal	Detects open or shorted input signal circuit.	<ref. 4at(h4so)-130,="" 86="" can="" commu-<br="" dtc="" to="">NICATION SIGNAL, Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>	

LIST OF DIAGNOSTIC TROUBLE CODE (DTC) AUTOMATIC TRANSMISSION (DIAGNOSTICS)

DTC	Item	Content of diagnosis	Index	
93	Rear vehicle speed sensor	I Signal circuit	<ref. 4at(h4so)-136,="" 93="" dtc="" rear="" to="" vehi-<br="">CLE SPEED SENSOR, Diagnostic Procedure with Diagnostic Trouble Code (DTC).></ref.>	

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

12. Diagnostic Procedure for AT OIL TEMP Warning Light A: AT OIL TEMP WARNING LIGHT DOES NOT COME ON OR GO OFF DIAGNOSIS:

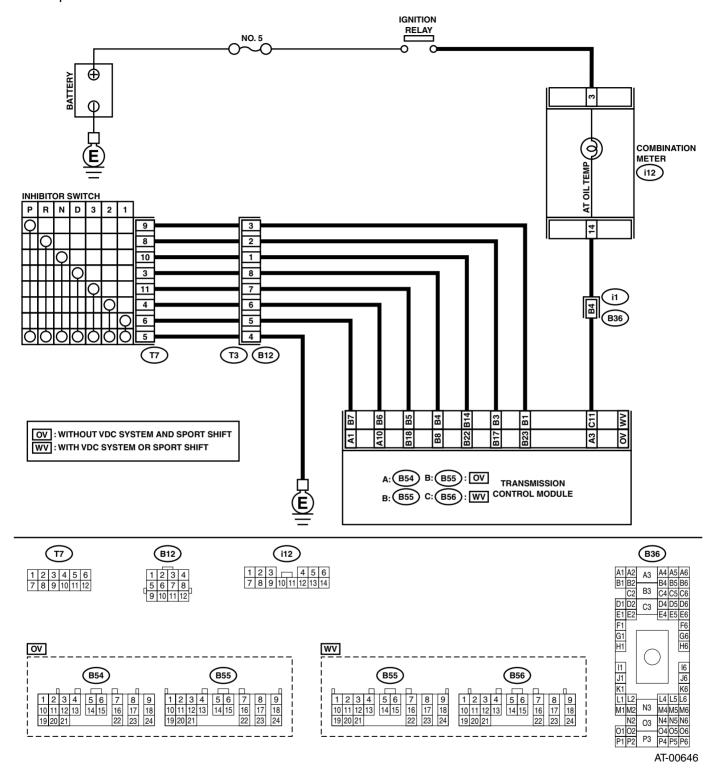
The AT OIL TEMP warning light circuit is open or shorted.

TROUBLE SYMPTOM:

- When the ignition switch is turned to ON (engine OFF), AT OIL TEMP warning light does not illuminate.
- When the on-board diagnostics is performed, AT OIL TEMP warning light remains illuminated.

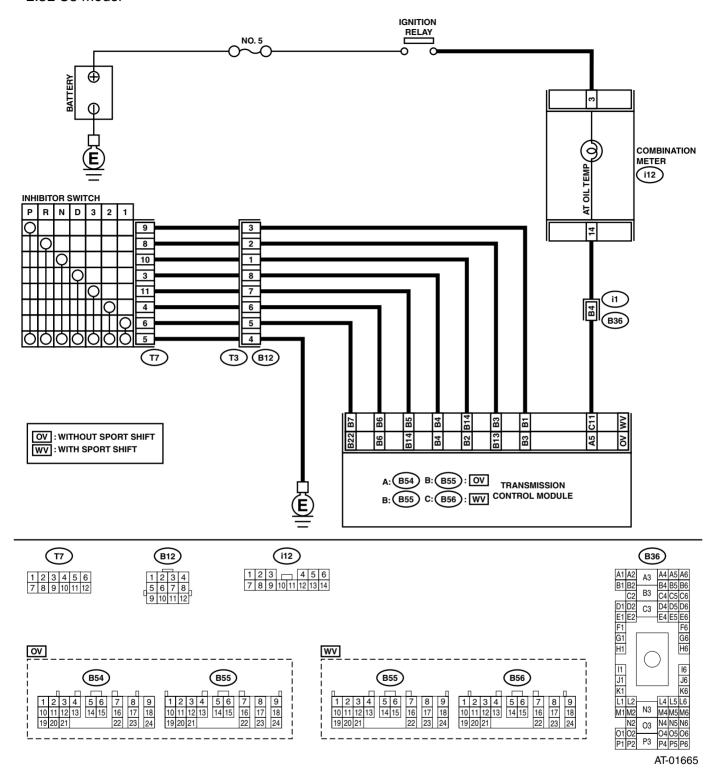
WIRING DIAGRAM:

• Except 2.5L U5 model and 3.0L model



AUTOMATIC TRANSMISSION (DIAGNOSTICS)

2.5L U5 model



AUTOMATIC TRANSMISSION (DIAGNOSTICS)

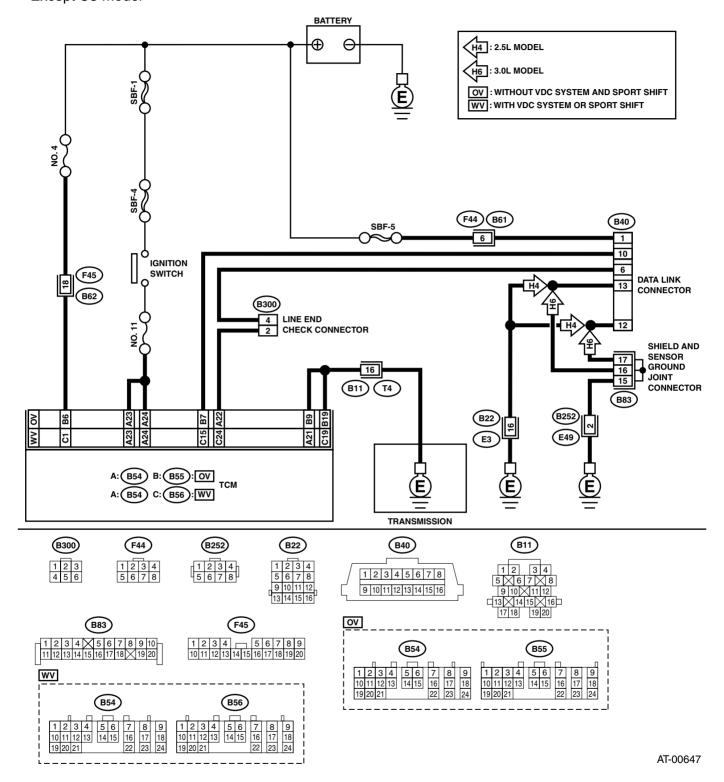
	0			
	Step	Check	Yes	No
1	CHECK AT OIL TEMP WARNING LIGHT. Turn the ignition switch to ON (engine OFF).	Does the AT OIL TEMP warning light illuminate?	Go to step 3.	Go to step 2.
2	CHECK AT OIL TEMP WARNING LIGHT. 1) Turn the ignition switch to OFF. 2) Remove the combination meter.	Is the AT OIL TEMP warning light bulb OK?	Go to step 4.	Check the combination meter.
3	CHECK AT OIL TEMP WARNING LIGHT. Perform "Read Diagnostic Trouble Code (DTC)". <ref. (dtc).="" 4at(h4so)-30,="" code="" diagnostic="" read="" to="" trouble=""></ref.>	Does the AT OIL TEMP warning light blink?	A temporary poor contact of the connector or harness may be the cause. Repair the harness or connector in TCM, inhibitor switch and combination meter.	Go to step 9.
4	CHECK FUSE (No. 5). Remove the fuse (No. 5).	Is the fuse (No. 5) blown out?	Replace the fuse (No. 5). If replaced fuse (No. 5) is blown out easily, repair short circuit in harness between fuse (No. 5) and combination meter.	Go to step 5.
5	CHECK HARNESS CONNECTOR BETWEEN COMBINATION METER AND IGNITION SWITCH. 1) Turn the ignition switch to ON (engine OFF). 2) Measure the voltage between combination meter connector and chassis ground. Connector & terminal (i12) No. 3 (+) — Chassis ground (-):	Is the voltage more than 9 V?	Go to step 6.	Repair the open circuit in harness between combination meter and battery.
6	CHECK COMBINATION METER. Measure the voltage between combination meter connector and chassis ground. Connector & terminal (i12) No. 14 (+) — Chassis ground (-):	Is the voltage less than 9 V?	Repair the combination meter. <ref. assembly.="" combination="" idi-13,="" meter="" to=""></ref.>	Go to step 7.
7	CHECK OPEN CIRCUIT OF HARNESS. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from combination meter connector. 3) Measure the resistance of harness between combination meter. Connector & terminal With VDC system or SPORT shift (B56) No. 11 — (i12) No. 14: Without SPORT shift (Except U5 model) (B54) No. 3 — (i12) No. 14: Without SPORT shift (U5 model) (B54) No. 5 — (i12) No. 14:	Is the resistance less than 1 Ω ?	Go to step 8.	Repair the open circuit in harness between TCM and combination meter, and poor contact in coupling connector.

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

	Step	Check	Yes	No
8	CHECK INPUT SIGNAL FOR TCM. 1) Connect the connector to TCM and combination meter. 2) Turn the ignition switch to ON (engine OFF). 3) Measure the voltage between TCM connector and chassis ground. Connector & terminal Without SPORT shift (Except U5 model) (B54) No. 3 (+) — Chassis ground (-): Without SPORT shift (Except U5 model) (B54) No. 5 (+) — Chassis ground (-): With VDC system or SPORT shift (B56) No. 11 (+) — Chassis ground (-):	Is the voltage less than 1 V?	Even if the AT OIL TEMP warning light illuminates, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair the harness or connector in TCM.	Replace the TCM. <ref. 4at-79,<br="" to="">Transmission Con- trol Module (TCM).></ref.>
9	 CHECK INHIBITOR SWITCH. 1) Connect the Subaru Select Monitor to data link connector. 2) Turn the ignition switch to ON. 3) Turn the Subaru Select Monitor to ON. 4) Read the data of range switch using Subaru Select Monitor. •Range switch is indicated in ON ←→ OFF. 	When each range is selected, does the LED of Subaru Select Monitor light up?	Go to step 10.	Check the inhibitor switch circuit. <ref. (dtc).="" 4at(h4so)-148,="" check="" code="" diagnostic="" inhibitor="" procedure="" switch,="" to="" trouble="" without=""></ref.>
10	 CHECK SHORT CIRCUIT OF HARNESS. Disconnect the connector from TCM. Remove the combination meter. Disconnect the connector from combination meter. Measure the resistance of harness connector between TCM and chassis ground. Connector & terminal Without SPORT shift (Except U5 model) (B54) No. 13 — Chassis ground: Without SPORT shift (U5 model) (B54) No. 5 — Chassis ground: With VDC system or SPORT shift (B56) No. 11 — Chassis ground: 	Is the resistance less than 1 $\mbox{M}\Omega ?$	Check the TCM power supply and ground line. <ref. 4at(h4so)-42,="" and="" at="" check="" diagnostic="" for="" ground="" light.="" line,="" oil="" power="" procedure="" supply="" temp="" to="" warning=""></ref.>	Repair the short circuit in harness between combination meter connector and TCM connector.

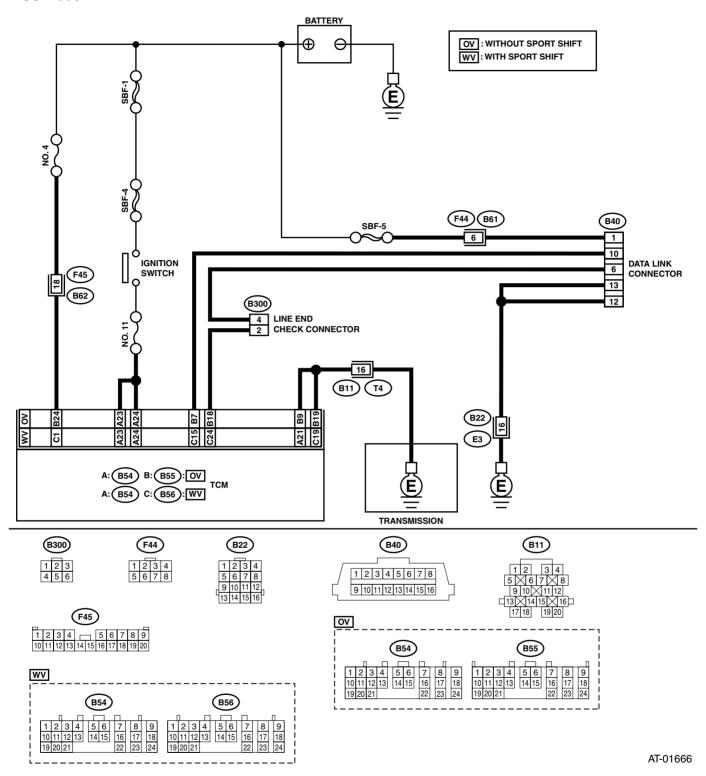
B: CHECK POWER SUPPLY AND GROUND LINE WIRING DIAGRAM:

• Except U5 model



AUTOMATIC TRANSMISSION (DIAGNOSTICS)

U5 model



AUTOMATIC TRANSMISSION (DIAGNOSTICS)

	Step	Check	Yes	No
1	CHECK BATTERY TERMINAL. Turn the ignition switch to OFF.	Is there poor contact at battery terminal?	Repair or tighten the battery terminal.	Go to step 2.
2	CHECK POWER SUPPLY OF TCM. 1) Disconnect the connector from TCM. 2) Turn the ignition switch to ON. 3) Measure the voltage between TCM connector and chassis ground. Connector & terminal Without SPORT shift (Except U5 model) (B55) No. 6 (+) — Chassis ground (-): With SPORT shift for (U5 model) (B55) No. 24 (+) — Chassis ground (-): With VDC system or SPORT shift (B56) No. 1 (+) — Chassis ground (-):	Is the voltage 10 — 13 V?	Go to step 4.	Go to step 3.
3	CHECK FUSE (NO. 4). Remove the fuse (No. 4).	Is the fuse (No. 4) blown out?	fuse (No. 4) has blown out easily,	Repair the open circuit in harness between fuse (No. 4) and TCM, or fuse (No. 4) and battery, and poor contact in coupling connector.
4	 CHECK IGNITION POWER SUPPLY CIRCUIT. 1) Turn the ignition switch to ON (engine OFF). 2) Measure the ignition power supply voltage between TCM connector and chassis ground. Connector & terminal (B54) No. 23 (+) — Chassis ground (-): (B54) No. 24 (+) — Chassis ground (-): 	Is the voltage 10 — 13 V?	Go to step 6.	Go to step 5.
5	CHECK FUSE (NO. 11). Remove the fuse (No. 11).	Is the fuse (No. 11) blown out?	•	Repair the open circuit in harness between fuse (No. 4) and TCM, or fuse (No. 4) and battery, and poor contact in coupling connector.
6	CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from TCM and transmission. 3) Measure the resistance of harness between TCM and transmission connector. Connector & terminal Without SPORT shift (Except U5 model) (B54) No. 21 — (B11) No. 16: (B56) No. 19 — (B11) No. 16: Without SPORT shift (U5 model) (B55) No. 9 — (B11) No. 16: (B55) No. 19 — (B11) No. 16: With VDC system or SPORT shift (B56) No. 19 — (B11) No. 16: (B54) No. 21 — (B11) No. 16:	Is the resistance less than 1 Ω ?	Go to step 7.	Repair the open circuit in harness between TCM, transmission harness connector, and poor contact in coupling connector.

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

	Step	Check	Yes	No
7	CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND TRANSMISSION GROUND. Measure the resistance of harness between transmission and transmission ground. Connector & terminal (T4) No. 16 — Transmission ground:	Is the resistance less than 1 Ω ?	Go to step 8.	Repair the open circuit in harness between transmission and transmission ground.
8	CHECK POOR CONTACT IN CONNECTORS.		nector.	Replace the TCM. <ref. 4at-79,<br="" to="">Transmission Con- trol Module (TCM).></ref.>

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

13. Diagnostic Procedure for Select Monitor Communication

A: COMMUNICATION FOR INITIALIZING IMPOSSIBLE

DIAGNOSIS:

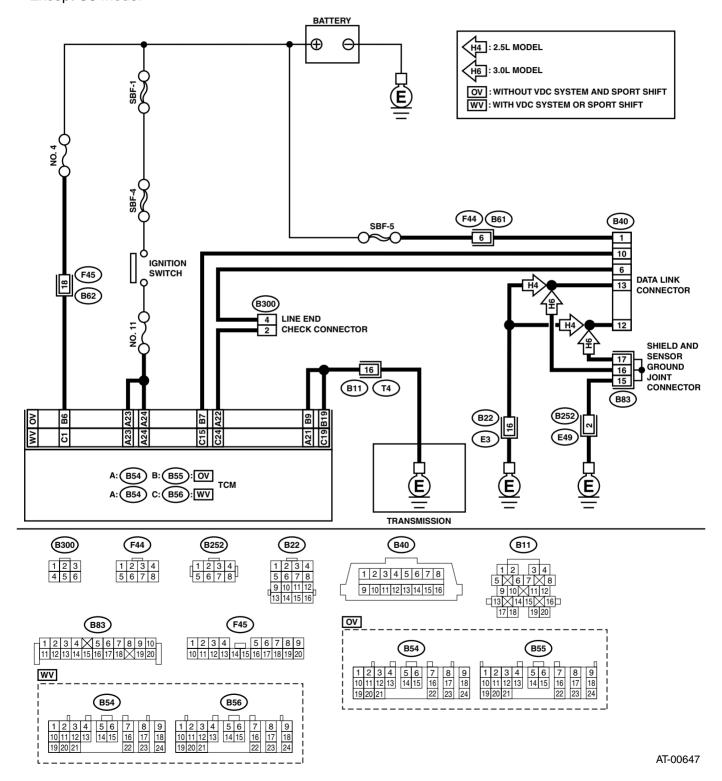
· Faulty harness connector

TROUBLE SYMPTOM:

· Select monitor communication failure

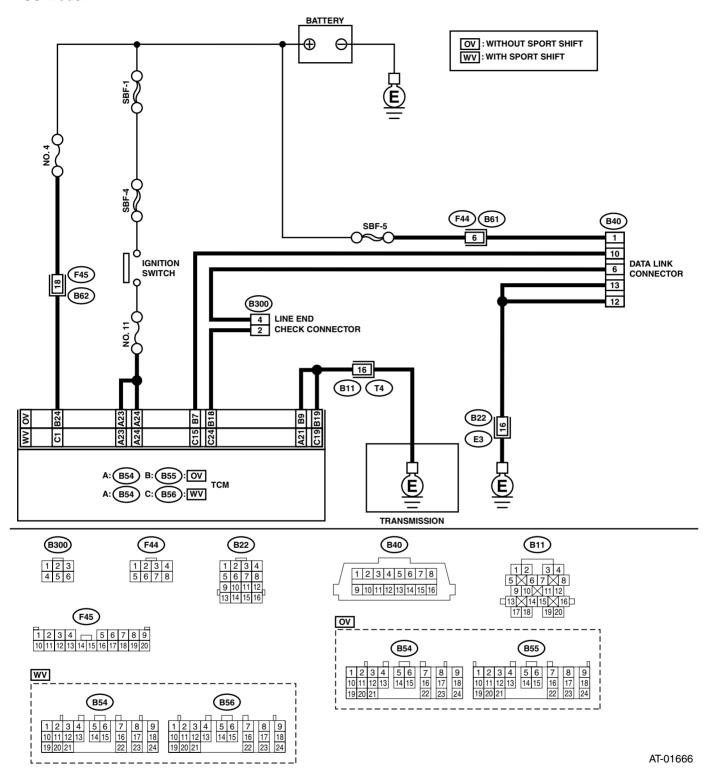
WIRING DIAGRAM:

· Except U5 model



AUTOMATIC TRANSMISSION (DIAGNOSTICS)

U5 model



AUTOMATIC TRANSMISSION (DIAGNOSTICS)

	Step	Check	Yes	No
1	CHECK SUBARU SELECT MONITOR POW- ER SUPPLY CIRCUIT. Measure the voltage between data link con- nector and chassis ground. Connector & terminal (B40) No. 1 (+) — Chassis ground (-):	Is the voltage more than 10 V?	Go to step 2.	Repair the har- ness and connec- tor between battery and data link connector, and poor contact in coupling connec- tor.
2	CHECK SUBARU SELECT MONITOR GROUND CIRCUIT. Measure the resistance of harness between data link connector and chassis ground. Connector & terminal (B40) No. 12 — Chassis ground: (B40) No. 13 — Chassis ground:	Is the resistance less than 1 Ω ?	Go to step 3.	Repair the open circuit in harness between data link connector and ground terminal, and poor contact in coupling connector.
3	CHECK COMMUNICATION OF SELECT MONITOR. 1) Turn the ignition switch to ON. 2) Using the Subaru Select Monitor, check whether communication to engine systems can be executed normally.	Are the name and year of system displayed on Subaru Select Monitor?	Go to step 8.	Go to step 4.
4	CHECK COMMUNICATION OF SELECT MONITOR. 1) Turn the ignition switch to OFF. 2) Disconnect the TCM connector. 3) Check whether communication to engine systems can be executed normally.	Are the name and year of system displayed on Subaru Select Monitor?	Go to step 6.	Go to step 5.
5	CHECK COMMUNICATION OF SELECT MONITOR. 1) Turn the ignition switch to OFF. 2) Connect the TCM connector. 3) Disconnect the ECM connector. 4) Check whether communication to transmission systems can be executed normally.	Are the name and year of system displayed on Subaru Select Monitor?	Inspect the ECM.	Go to step 6.
6	CHECK HARNESS CONNECTOR BETWEEN EACH CONTROL MODULE AND DATA LINK CONNECTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the TCM, ECM, ABSCM&H/U, cruise control module and immobilizer control module connectors. 3) Measure the resistance between TCM connector and chassis ground. Connector & terminal (B40) No. 10 — Chassis ground: (B40) No. 6 — Chassis ground:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Go to step 7.	Repair the har- ness and connec- tor between each control module and data link con- nector.
7	CHECK OUTPUT SIGNAL FOR TCM. 1) Turn the ignition switch to ON. 2) Measure the voltage between TCM and chassis ground. Connector & terminal (B40) No. 10 (+) — Chassis ground (-): (B40) No. 6 (+) — Chassis ground (-):	Is the voltage more than 1 V?	Repair the har- ness and connec- tor between each control module and data link con- nector.	Go to step 8.

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

	Step	Check	Yes	No
8	CHECK HARNESS/CONNECTOR BETWEEN TCM AND DATA LINK CONNECTOR. Measure the resistance between TCM connector and data link connector. Connector & terminal Without VDC system and SPORT shift (B55) No. 7 — (B40) No. 10: With VDC system or SPORT shift (B56) No. 15 — (B40) No. 10:	Ω?	Go to step 9.	Repair the har- ness and connec- tor between TCM and data link con- nector.
9	CHECK HARNESS/CONNECTOR BETWEEN TCM AND DATA LINK CONNECTOR. Measure the resistance between TCM and data link connector. Connector & terminal Without SPORT shift (Except U5 model) (B54) No. 22 — (B40) No. 6: Without SPORT shift (U5 model) (B55) No. 8 — (B40) No. 6: With VDC system or SPORT shift (B56) No. 24 — (B40) No. 6:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Go to step 10.	Repair the har- ness and connec- tor between TCM and data link con- nector.
10	CHECK INSTALLATION OF TCM CONNECTOR. Turn the ignition switch to OFF.	Is the TCM connector inserted into TCM?	Go to step 11.	Insert the TCM connector into TCM.
11	CHECK POOR CONTACT IN CONNECTORS.	Is there poor contact in control module and data link connector?	Repair the poor contact.	Replace the TCM. <ref. 4at-79,<br="" to="">Transmission Con- trol Module (TCM).></ref.>

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

14. Diagnostic Procedure with Diagnostic Trouble Code (DTC)

A: DTC 11 ENGINE SPEED SIGNAL

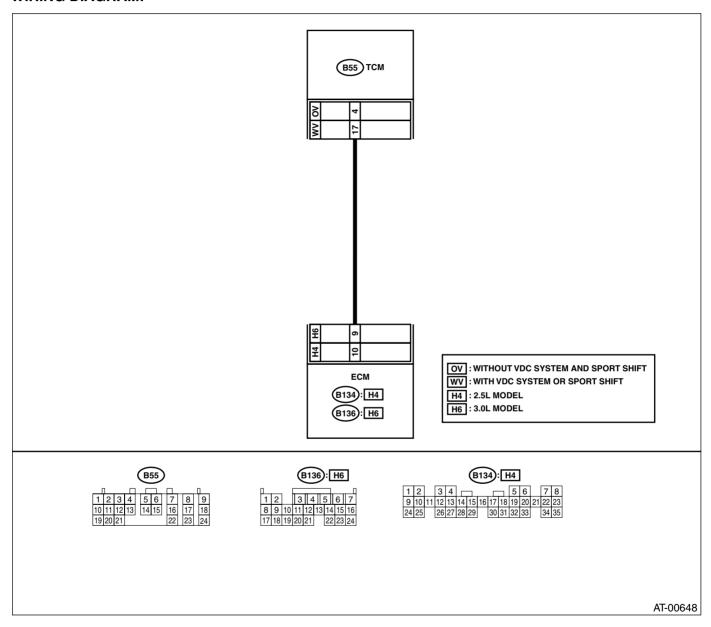
DIAGNOSIS:

The engine speed input signal circuit is open or shorted.

TROUBLE SYMPTOM:

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

WIRING DIAGRAM:



	Step	Check	Yes	No
TCM	CK HARNESS CONNECTOR BETWEEN AND ECM. urn the ignition switch to OFF.	Is the resistance less than 1 Ω ?	Go to step 2.	Repair the open circuit in harness between TCM and
2) D	Disconnect the connectors from TCM and CCM.			ECM connector.
be	Measure the resistance of harness etween TCM and ECM connector.			
2.	nnector & terminal .5 L model without SPORT shift (B55) No. 4 — (B134) No. 10:			
	.5 L model with SPORT shift (B55) No. 17 — (B135) No. 10:			
3.	.0 L model without VDC system (B55) No. 4 — (B136) No. 9: .0 L model with VDC system (B55) No. 17 — (B137) No. 9:			
TCM	AND ECM.	Is the resistance more than 1 $\mbox{M}\Omega\mbox{?}$	Go to step 3.	Repair the short circuit in harness
TCM Con	sure the resistance of harness between connector and chassis ground. nnector & terminal			between TCM and ECM connector.
W	/ithout VDC system and SPORT shift (B55) No. 4 — Chassis ground: /ith VDC system or SPORT shift			
	(B55) No. 17 — Chassis ground: PARE SUBARU SELECT MONITOR.	Do you have a Subaru Select	Go to step 5.	Go to step 4.
		Monitor?		
1) C 2) T	CK INPUT SIGNAL FOR TCM. Connect the connectors to TCM and ECM. Furn the ignition switch to ON (engine OFF).	Is the voltage more than 10.5 V?	Even if the AT OIL TEMP warning light illuminates, the circuit has	Go to step 6.
ne	Measure the voltage between TCM conector and chassis ground. **Rector & terminal**		returned to a nor- mal condition at this time. A tempo-	
	/ithout VDC system and SPORT shift (B55) No. 4 (+) — Chassis ground (–): /ith VDC system or SPORT shift		rary poor contact of the connector or harness may be	
	(B55) No. 17 (+) — Chassis ground (–):		the cause. Repair the harness or connector in TCM and ECM.	
SUB . 1) C	CK INPUT SIGNAL FOR TCM USING ARU SELECT MONITOR. Connect the connectors to TCM and ECM. Connect the Subaru Select Monitor to data	Is the revolution value same as tachometer reading shown on combination meter?	Even if the AT OIL TEMP warning light illuminates, the circuit has	Go to step 6.
lir 3) S	nk connector. Start the engine and turn Subaru Select Monitor switch to ON.		returned to a nor- mal condition at this time. A tempo-	
4) W	Varm-up the engine until engine coolant emperature is above 80°C (176°F).		rary poor contact of the connector or	
6) R	dle the engine. Read the data of engine speed using Subaru Select Monitor.		harness may be the cause. Repair the harness or	
•Disp	play shows the engine speed signal value from ECM.		connector in TCM and ECM.	
	CK POOR CONTACT.	Is there poor contact in engine speed signal circuit?	Repair the poor contact.	Go to step 7.

	Step	Check	Yes	No
7	CONFIRM DTC 11.	Replace the ECM with a new	Replace the TCM.	Replace the ECM.
		one. Does the DTC appear	<ref. 4at-79,<="" th="" to=""><th></th></ref.>	
		again, after memory has been	Transmission Con-	
		cleared?	trol Module	
			(TCM).>	

MEMO:

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

B: DTC 27 ATF TEMPERATURE SENSOR

DIAGNOSIS:

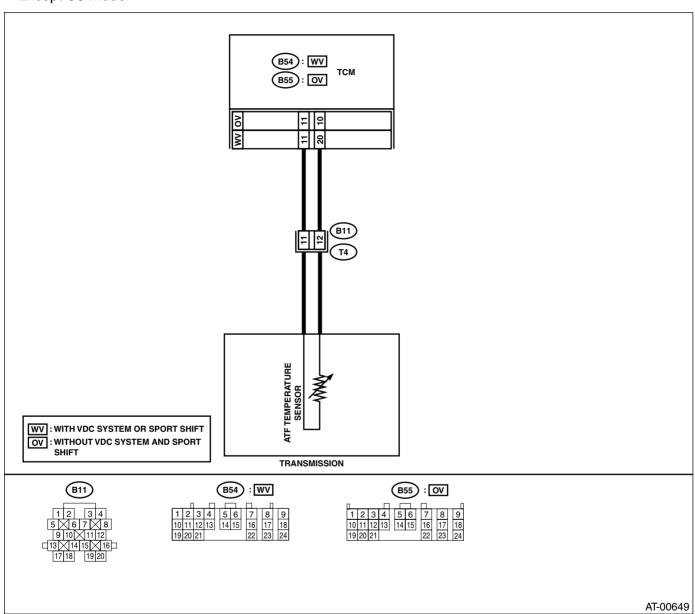
The input signal circuit of TCM to ATF temperature sensor is open or shorted.

TROUBLE SYMPTOM:

Excessive shift shock.

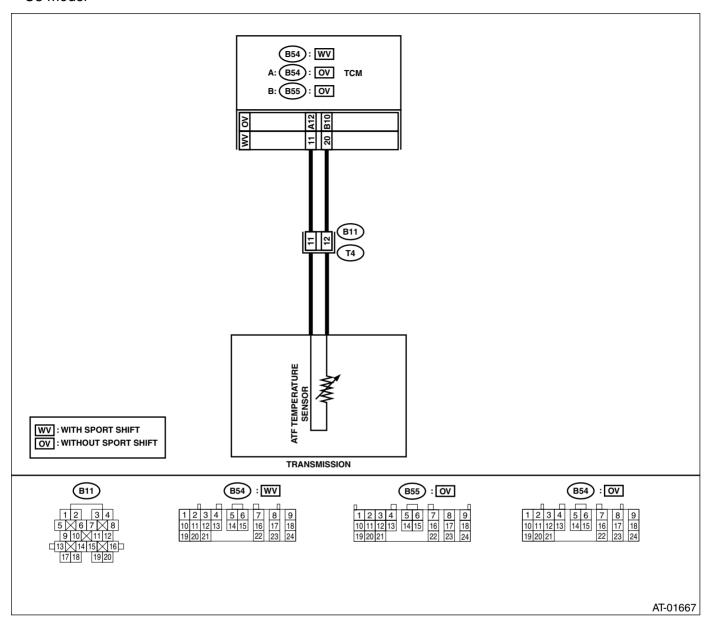
WIRING DIAGRAM:

Except U5 model



AUTOMATIC TRANSMISSION (DIAGNOSTICS)

U5 model



	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 Without VDC system and SPORT shift (B55) No. 10 — (B11) No. 12: With VDC system or SPORT shift (B54) No. 20 — (B11) No. 12: 	Is the resistance less than 1 Ω ?	Go to step 2.	Repair the open circuit in harness between TCM and transmission connector.
2	CHECK HARNESS CONNECTOR BETWEEN TCM AND ATF TEMPERATURE SENSOR. Measure the resistance of harness between TCM and transmission connector. Connector & terminal Without SPORT shift (Except U5 model) (B55) No. 11 — (B11) No. 11: Without SPORT shift (U5 model) (B54) No. 12 — (B11) No. 12: With VDC system or SPORT shift (B54) No. 11 — (B11) No. 11:	Is the resistance less than 1 Ω ?	Go to step 3.	Repair the open circuit in harness between TCM and transmission connector.
3	CHECK HARNESS CONNECTOR BETWEEN TCM AND ATF TEMPERATURE SENSOR. Measure the resistance of harness between TCM connector and chassis ground. Connector & terminal Without VDC system and SPORT shift (B55) No. 10 — Chassis ground: With VDC system or SPORT shift (B54) No. 20 — Chassis ground:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Go to step 4.	Repair the short circuit in harness between TCM and transmission connector.
4	CHECK HARNESS CONNECTOR BETWEEN TCM AND ATF TEMPERATURE SENSOR. Measure the resistance of harness between TCM connector and chassis ground. Connector & terminal Without SPORT shift (Except U5 model) (B55) No. 11 — Chassis ground: Without SPORT shift (Except U5 model) (B54) No. 12 — Chassis ground: With VDC system or SPORT shift (B54) No. 11 — Chassis ground:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Go to step 5.	Repair the short circuit in harness between TCM and transmission con- nector.

	Step	Check	Yes	No
5	CHECK ATF TEMPERATURE SENSOR.	Is the resistance 275 — 375	Go to step 6.	Replace the ATF
		Ω?		temperature sen- sor. <ref. 4at-<br="" to="">72, Shift Sole- noids, Duty Sole- noids and ATF Temperature Sen- sor.></ref.>
	sion connector terminals. Connector & terminal (T4) No. 11 — No. 12:			
6	 CHECK ATF TEMPERATURE SENSOR. 1) Turn the ignition switch to ON (engine OFF). 2) Measure the resistance between transmission connector terminals. Connector & terminal (T4) No. 11 — No. 12: 	Does the resistance value increase while ATF temperature decreases?	Go to step 7.	Replace the ATF temperature sen- sor. <ref. 4at-<br="" to="">72, Shift Sole- noids, Duty Sole- noids and ATF Temperature Sen- sor.></ref.>
7	PREPARE SUBARU SELECT MONITOR.	Do you have a Subaru Select Monitor?	Go to step 9.	Go to step 8.
8	CHECK INPUT SIGNAL FOR TCM. 1) Connect the connector to transmission. 2) Warm-up the transmission until ATF temperature is about 80°C (176°F). NOTE: If ambient temperature is below 0°C (32°F), drive the vehicle until ATF reaches its operating temperature. 3) Measure the voltage between TCM connector terminal. Connector & terminal Without SPORT shift (Except U5 model) (B55) No. 11 (+) — No. 10 (-): Without SPORT shift (U5 model) (B54) No. 12 (+) — (B55) No. 10 (-): With VDC system or SPORT shift (B54) No. 11 (+) — No. 20 (-):	Is the voltage 0.4 — 0.9 V?	Even if the AT OIL TEMP warning light illuminates, the circuit has returned to a normal condition at this time. Temporary poor contact of the connector or harness may be the cause. Repair the harness or contact in ATF temperature sensor and transmission connector.	Go to step 10.

	Step	Check	Yes	No
9	CHECK INPUT SIGNAL FOR TCM USING SUBARU SELECT MONITOR. 1) Connect the connector to transmission. 2) Turn the ignition switch to ON (engine OFF).	Does the ATF temperature gradually decrease?	TEMP warning light illuminates, the circuit has returned to a normal condition at this time. Temporary poor contact of the connector or harness may be the cause. Repair the harness or contact in ATF temperature sensor and transmission connector.	Go to step 10.
10	CHECK POOR CONTACT.	Is there poor contact in ATF temperature sensor circuit?	Repair the poor contact.	Replace the TCM. <ref. 4at-79,<br="" to="">Transmission Con- trol Module (TCM).></ref.>

MEMO:

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

C: DTC 31 THROTTLE POSITION SENSOR

DIAGNOSIS:

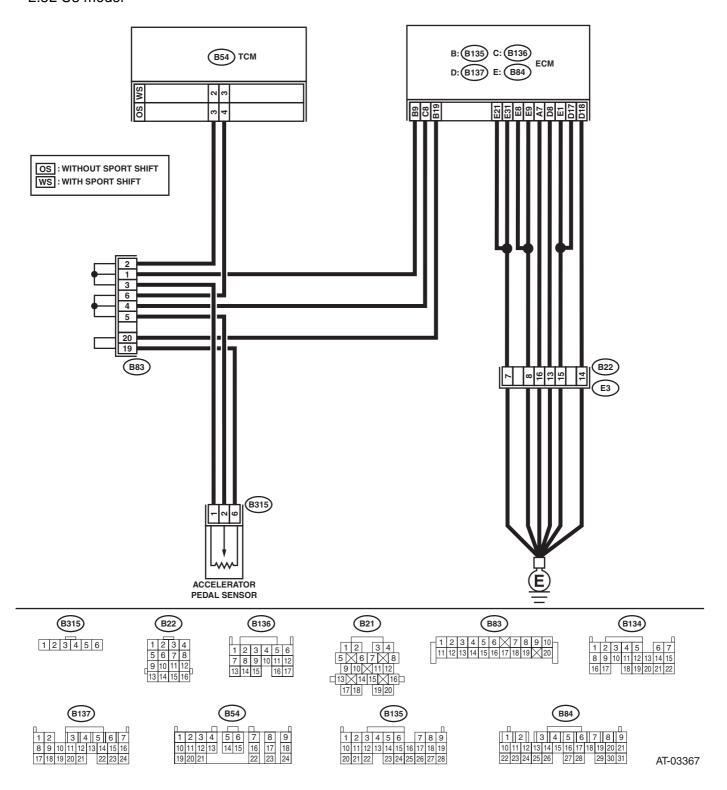
The input signal circuit of throttle position sensor is open or shorted.

TROUBLE SYMPTOM:

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

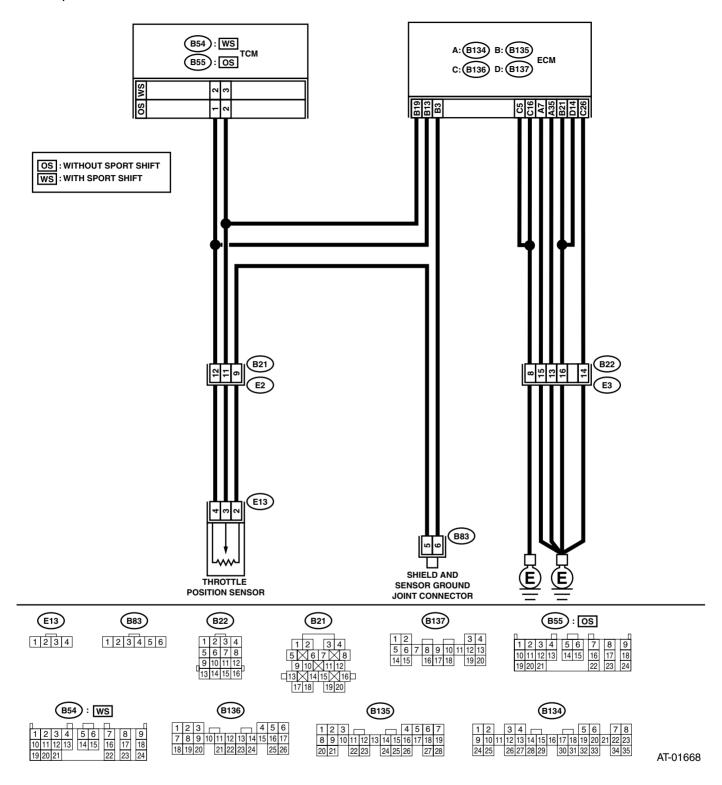
WIRING DIAGRAM:

2.5L U5 model



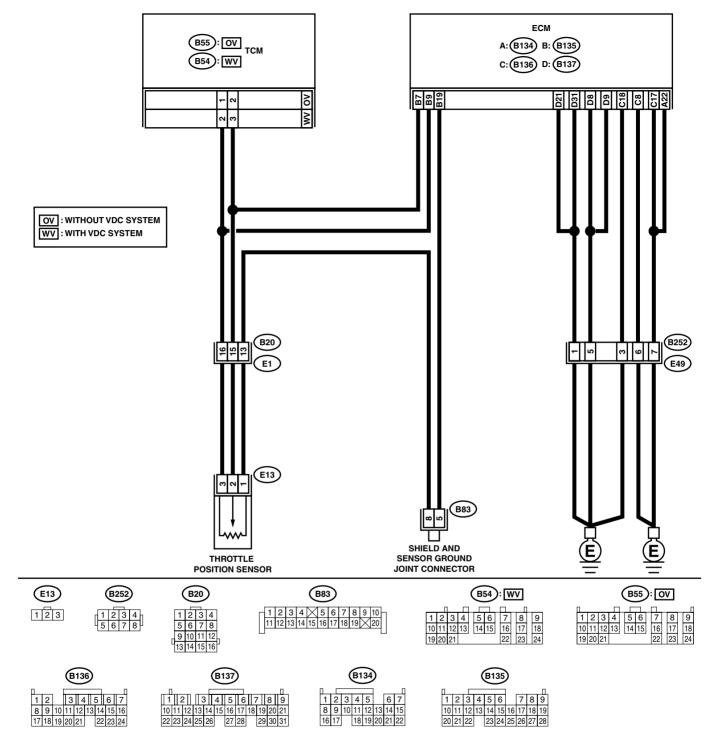
AUTOMATIC TRANSMISSION (DIÀGNOSTICS)

Except 2.5L U5 model



AUTOMATIC TRANSMISSION (DIAGNOSTICS)

3.0 L model



AT-00651

	Step	Check	Yes	No
1	CHECK VEHICLE.	Is vehicle being diagnosed for U5 model?	Go to step 20.	Tighten the engine ground terminals.
2	CHECK ENGINE GROUND TERMINALS.	Have engine ground terminals been tightened?	Go to step 3.	Tighten the engine ground terminals.
3	CHECK GROUND CIRCUIT OF ECM. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance of harness between ECM and engine ground. Connector & terminal EXCEPT 3.0 L MODEL (B134) No. 7 — Engine ground: (B136) No. 5 — Engine ground: (B136) No. 16 — Engine ground: (B136) No. 26 — Engine ground: (B137) No. 21 — Engine ground: (B137) No. 14 — Engine ground: (B134) No. 22 — Engine ground: (B136) No. 8 — Engine ground: (B136) No. 17 — Engine ground: (B136) No. 18 — Engine ground: (B137) No. 8 — Engine ground: (B137) No. 9 — Engine ground: (B137) No. 9 — Engine ground: (B137) No. 21 — Engine ground:	Is the resistance less than 5 Ω?	Go to step 4.	Repair the open circuit in harness between ECM connector and engine grounding terminal.
4	 CHECK THROTTLE POSITION SENSOR. 1) Disconnect the connector from throttle position sensor. 2) Measure the resistance between throttle position sensor connector receptacle's terminals. Terminals 2.5 L MODEL No. 4 — No. 2: 3.0 L MODEL No. 1 — No. 2: 	Is the resistance 3.0 — 4.2 k Ω ?	Go to step 5.	Replace the throt- tle position sensor.
5	CHECK THROTTLE POSITION SENSOR. Measure the resistance between throttle position sensor connector receptacle's terminals. Terminals 2.5 L MODEL No. 2 — No. 3: 3.0 L MODEL No. 1 — No. 2:	Is the resistance 0.35 — 0.5 $k\Omega$?	Go to step 6.	Replace the throt- tle position sensor.

	Step	Check	Yes	No
6	CHECK HARNESS CONNECTOR BETWEEN	Is the resistance less than 1	Go to step 7.	Repair the open
	TCM AND THROTTLE POSITION SENSOR.	Ω ?		circuit in harness
	 Disconnect the connector from TCM. 			between TCM and
	2) Measure the resistance of harness			throttle position
	between TCM and throttle position sensor			sensor connector,
	connector.			and poor contact
	Connector & terminal			in coupling con-
	2.5 L MODEL without SPORT shift			nector.
	(B55) No. 2 — (E13) No. 3:			
	2.5 L MODEL with SPORT shift			
	(B54) No. 3 — (E13) No. 3:			
	3.0 L MODEL without VDC system			
	(B55) No. 2 — (E13) No. 2:			
	3.0 L MODEL with VDC system			
	(B54) No. 3 — (E13) No. 2:			
7	CHECK HARNESS CONNECTOR BETWEEN	Is the resistance less than 1	Go to step 8.	Repair the open
	TCM AND THROTTLE POSITION SENSOR.	Ω ?		circuit in harness
	Measure the resistance of harness between			between TCM and
	TCM and throttle position sensor connector.			throttle position
	Connector & terminal			sensor connector,
	2.5 L MODEL without SPORT shift			and poor contact
	(B55) No. 1 — (E13) No. 4:			in coupling con-
	2.5 L MODEL with SPORT shift			nector.
	(B54) No. 2 — (E13) No. 4:			
	3.0 L MODEL without VDC system			
	(B55) No. 1 — (E13) No. 3:			
	3.0 L MODEL with VDC system			
	(B54) No. 2 — (E13) No. 3:		0 1 1 2	D : !! ! .
8	CHECK HARNESS CONNECTOR BETWEEN	Is the resistance more than 1	Go to step 9.	Repair the short
	TCM AND THROTTLE POSITION SENSOR. Measure the resistance of harness between	ΜΩ?		circuit in harness between TCM and
				throttle position
	TCM connector and chassis ground. Connector & terminal			sensor connector.
	Without VDC system and SPORT shift			Serisor connector.
	(B55) No. 2 — Chassis ground:			
	With VDC system or SPORT shift			
	(B54) No. 3 — Chassis ground:			
9	CHECK HARNESS CONNECTOR BETWEEN	Is the resistance more than 1	Go to step 10.	Repair the short
	TCM AND THROTTLE POSITION SENSOR.	$M\Omega$?	Go to stop 101	circuit in harness
	Measure the resistance of harness between			between TCM and
	TCM connector and chassis ground.			throttle position
	Connector & terminal			sensor connector.
	With VDC system or SPORT shift			
	(B54) No. 2 — Chassis ground:			
	Without VDC system and SPORT shift			
	(B55) No. 1 — Chassis ground:			
10	CHECK HARNESS CONNECTOR BETWEEN	Is the resistance less than 1	Go to step 11.	Repair the open
	TCM AND ECM.	Ω?		circuit in harness
	Measure the resistance of harness between			between TCM and
	TCM and ECM connector.			ECM connector.
	Connector & terminal			
	2.5 L MODEL without SPORT shift			
	(B55) No. 2 — (B135) No. 19:			
	2.5 L MODEL with SPORT shift			
	(B54) No. 3 — (B135) No. 19:			
	3.0 L MODEL with VDC system			
	(B54) No. 3 — (B135) No. 7:			
	3.0 L MODEL without VDC system			
	(B55) No. 2 — (B135) No. 7:			

	Step	Check	Yes	No
11	CHECK HARNESS CONNECTOR BETWEEN TCM AND ECM. Measure the resistance of harness between TCM and ECM connector. Connector & terminal 2.5 L MODEL without SPORT shift (B55) No. 1 — (B135) No. 13: 2.5 L MODEL with SPORT shift (B54) No. 2 — (B135) No. 13: 3.0 L MODEL with VDC system (B54) No. 2 — (B135) No. 9: 3.0 L MODEL without VDC system (B55) No. 1 — (B135) No. 9:	Is the resistance less than 1 Ω ?	Go to step 12.	Repair the open circuit in harness between TCM and ECM connector.
12	PREPARE SUBARU SELECT MONITOR.	Do you have a Subaru Select Monitor?	Go to step 15.	Go to step 13.
13	 CHECK INPUT SIGNAL FOR TCM. Connect the connectors to TCM, throttle position sensor and ECM. Turn the ignition switch to ON (engine OFF). Close the throttle completely. Measure the voltage between TCM connector and chassis ground. Connector & terminal Without VDC system and SPORT shift (B55) No. 2 (+) — Chassis ground (-): With VDC system or SPORT shift (B54) No. 3 (+) — Chassis ground (-): 	Is the voltage 0.2 — 1.0 V?	Go to step 14.	Go to step 19.
14	CHECK INPUT SIGNAL FOR TCM. 1) Open the throttle completely and hold it. 2) Measure the voltage between TCM connector and chassis ground. Connector & terminal Without VDC system and SPORT shift (B55) No. 2 (+) — Chassis ground (-): With VDC system or SPORT shift (B54) No. 3 (+) — Chassis ground (-):	Is the voltage 4.2 — 4.7 V?	Go to step 19.	Go to step 19.
15	CHECK INPUT SIGNAL FOR TCM USING SUBARU SELECT MONITOR. 1) Connect the connectors to TCM, throttle position sensor and ECM. 2) Connect the Subaru Select Monitor to data link connector. 3) Turn the ignition switch to ON (engine OFF). 4) Turn the Subaru Select Monitor switch to ON. 5) Throttle fully closed. 6) Read the data of throttle position sensor using Subaru Select Monitor. •Throttle position sensor input signal is indicated.	Is the value voltage 0.2 — 1.0 V?	Go to step 16.	Go to step 19.
16	CHECK INPUT SIGNAL FOR TCM USING SUBARU SELECT MONITOR. Throttle fully open. NOTE: Must be changed correspondingly with the accelerator pedal operation (from "released" to "depressed" position).		Go to step 17.	Go to step 18.

	Step	Check	Yes	No
17	CHECK INPUT SIGNAL FOR TCM (THROT- TLE POSITION SENSOR POWER SUPPLY). Measure the voltage between TCM connector and chassis ground. Connector & terminal Without VDC system and SPORT shift (B55) No. 1 (+) — Chassis ground (-): With VDC system or SPORT shift (B54) No. 2 (+) — Chassis ground (-):	Is the voltage 4.8 — 5.3 V?	Even if the AT OIL TEMP warning light illuminates, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair the harness or connector in throttle position sensor circuit.	Go to step 19.
18	CHECK INPUT SIGNAL FOR TCM USING SUBARU SELECT MONITOR (THROTTLE POSITION SENSOR POWER SUPPLY). Read the data of throttle position sensor power supply using Subaru Select Monitor. •Throttle position sensor power supply voltage is indicated.	Is the value voltage 4.8 — 5.3 V?	Even if the AT OIL TEMP warning light illuminates, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair the harness or connector in throttle position sensor circuit.	Go to step 19.
19	CHECK POOR CONTACT.	Is there poor contact in throttle position sensor circuit?	Repair the poor contact.	Replace the TCM. <ref. 4at-79,<br="" to="">Transmission Con- trol Module (TCM).></ref.>
20	CHECK ENGINE GROUND TERMINALS.	Are engine ground terminals tightened?	Go to step 21.	Tighten the engine terminals.
21	CHECK GROUND TERMINAL OF ECM. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from ECM. 3) Measure the resistance of harness between ECM and engine ground. Connector & terminal (B134) No. 7 — Engine ground: (B136) No. 8 — Engine ground: (B136) No. 17 — Engine ground: (B136) No. 18 — Engine ground: (B84) No. 1 — Engine ground: (B84) No. 9 — Engine ground: (B84) No. 9 — Engine ground: (B84) No. 21 — Engine ground: (B84) No. 31 — Engine ground:	Is the resistance less than 5 Ω ?	Go to step 22.	Repair open circuit in harness between ECM connector and engine grounding terminal.
22	 CHECK ACCELERATOR PEDAL POSITION SENSOR. 1) Disconnect connector from accelerator pedal position sensor. 2) Measure the resistance between accelerator pedal position sensor connectors. Connector & terminal No. 1 — No. 6: 	Is the resistance within 0.75 to 3.15 k Ω ?	Go to step 23.	Replace the accelerator position sensor.

i	Step	Check	Yes	No
23	CHECK ACCELERATOR POSITION SEN-	Is the resistance within 0.15 to	Go to step 24.	Replace the accel-
	SOR.	0.63 kΩ?		erator position
	Measure the resistance between accelerator			sensor.
	pedal position sensor connector receptacle's			
	terminals.			
	Connector & terminal			
	No. 2 — No. 6:			
24	CHECK HARNESS CONNECTOR BETWEEN	Is the resistance less than 1	Go to step 25.	Repair open circuit
	TCM AND ACCELERATOR PEDAL POSI-	Ω?		in harness
	TION SENSOR.			between TCM and
	Disconnect connector from TCM.			throttle position
	2) Measure the resistance of harness			sensor connector,
	between TCM and accelerator pedal posi-			and poor contact
	tion sensor connector. Connector & terminal			in coupling con- nector.
	Without SPORT shift			TICOLOI.
	(B54) No. 3 — (B315) No. 1:			
	(B54) No. 4 — (B315) No. 2:			
	With SPORT shift			
	(B54) No. 2 — (B315) No. 1:			
	(B54) No. 3 — (B315) No. 2:			
25	CHECK HARNESS CONNECTOR BETWEEN	Is the resistance more than 1	Go to step 26.	Repair short circuit
	TCM AND ACCELERATOR PEDAL POSI-	$M\Omega$?		in harness
	TION SENSOR.			between TCM
	Measure the resistance of harness between			connector and
	TCM and chassis ground.			throttle sensor
	Connector & terminal			connector.
	Without SPORT shift			
	(B54) No. 3 — Chassis ground:			
	(B54) No. 4 — Chassis ground:			
	With SPORT shift			
	(B54) No. 2 — Chassis ground:			
	(B54) No. 3 — Chassis ground:			
26		Is the resistance less than 1	Go to step 27.	Repair open circuit
	TCM AND ECM.	Ω ?		in harness
	Disconnect connector from ECM.			between TCM and
	2) Measure the resistance between TCM con-			ECM connector,
	nector and ECU connector.			and poor contact
	Connector & terminal Without SPORT shift			in coupling con- nector.
	(B54) No. 3 — (B136) No. 8:			HECIOI.
	(B54) No. 3 — (B136) No. 6: (B54) No. 4 — (B136) No. 9:			
	With SPORT shift			
	(B54) No. 2 — (B135) No. 9:			
	(B54) No. 3 — (B136) No. 8:			
27	PREPARE SUBARU SELECT MONITOR.	Do you have a Subaru Select	Go to step 30.	Go to step 28.
	I HEFARL SUDARU SELECT MUMITUR.	i Do vou liave a Subalu Select	144 14 9167 34.	I GO IO SIGD 40.

	Step	Check	Yes	No
28	CHECK INPUT SIGNAL FOR TCM.	Is the voltage within 0.2 to 1.0	Go to step 29.	Go to step 34.
	 Connect all connectors. 	V?		
	Turn the ignition switch to ON (engine			
	OFF).			
	3) Close the throttle completely.			
	4) Measure the voltage between TCM con-			
	nector and chassis ground.			
	Connector & terminal Without SPORT shift			
	(B54) No. 3 (+) — Chassis ground (–):			
	(B54) No. 3 (+) — Chassis ground (-):			
	With SPORT shift			
	(B54) No. 2 (+) — Chassis ground (–):			
	(B54) No. 3 (+) — Chassis ground (–):			
29	CHECK INPUT SIGNAL FOR TCM.	Is the voltage within 4.2 to 4.7	Go to step 32.	Go to step 34.
	1) Open the throttle completely and hold it.	V?	'	'
	2) Measure the voltage between TCM con-			
	nector and chassis ground.			
	Connector & terminal			
	Without SPORT shift			
	(B54) No. 3 (+) — Chassis ground (-):			
	(B54) No. 4 (+) — Chassis ground (–):			
	With SPORT shift			
	(B54) No. 2 (+) — Chassis ground (-):			
00	(B54) No. 3 (+) — Chassis ground (-):	La than and the same with its O O to 1 O	0 - 11 01	0-1101
30	CHECK TCM INPUT SIGNAL USING SUBA-	Is the voltage within 0.2 to 1.0 V?	Go to step 31.	Go to step 34.
	RU SELECT MONITOR. 1) Connect all connector.	V ?		
	2) Connect Subaru Select Monitor to data link			
	connector.			
	3) Turn the ignition to ON (engine OFF).			
	4) Turn the Subaru Select Monitor switch to			
	ON.			
	Accelerator pedal fully closed.			
	6) Read the data of accelerator pedal position			
	sensor using Subaru Select Monitor.			
	•Accelerator pedal position sensor input signal			
	is indicated.			
31		<u> </u>	Go to step 34.	Go to step 33.
	RU SELECT MONITOR.	V?		
	Accelerator pedal fully open.			
	2) Read the data of accelerator pedal position			
	sensor using Subaru Select Monitor.			
	 Accelerator pedal position sensor input signal is indicated. 			
32		le the voltage within 4.9 to 5.9	Even if the AT OIL	Go to eten 24
3 2	CHECK INPUT SIGNAL FOR TCM (ACCEL- ERATOR PEDAL POSITION SENSOR SUP-	Is the voltage within 4.8 to 5.3 V?	TEMP warning	Go to step 34.
	PLY).	v :	light illuminates,	
	Measure the voltage between TCM connector		the circuit has	
	and chassis ground.		returned to a nor-	
	Connector & terminal		mal condition at	
	Without SPORT shift		this time. A tempo-	
	(B54) No. 3 (+) — Chassis ground (–):		rary poor contact	
	(B54) No. 4 (+) — Chassis ground (–):		of the connector or	
	With SPORT shift		harness maybe	
	(B54) No. 2 (+) — Chassis ground (–):		the cause. Repair	
	(B54) No. 3 (+) — Chassis ground (–):		the harness or	
			connector in accel-	
			erator pedal posi-	
			tion sensor circuit.	

	Step	Check	Yes	No
33	CHECK TCM INPUT SIGNAL USING SUBARU SELECT MONITOR (ACCELERATOR PEDAL POSITION SENSOR POWER SUPPLY). Read the data of accelerator pedal position sensor using Subaru Select Monitor. •Accelerator pedal position sensor power supply voltage is indicated.	Is the voltage within 4.8 to 5.3 V?	Even if the AT OIL TEMP warning light illuminates, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness maybe the cause. Repair the harness or connector in accelerator pedal position sensor circuit.	Go to step 34.
34	CHECK POOR CONTACT.	Is there poor contact in accelerator pedal position sensor circuit?	Repair the poor contact.	Replace the TCM. <ref. 4at-79,<br="" to="">Transmission Con- trol Module (TCM).></ref.>

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

D: DTC 33 FRONT VEHICLE SPEED SENSOR

DIAGNOSIS:

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

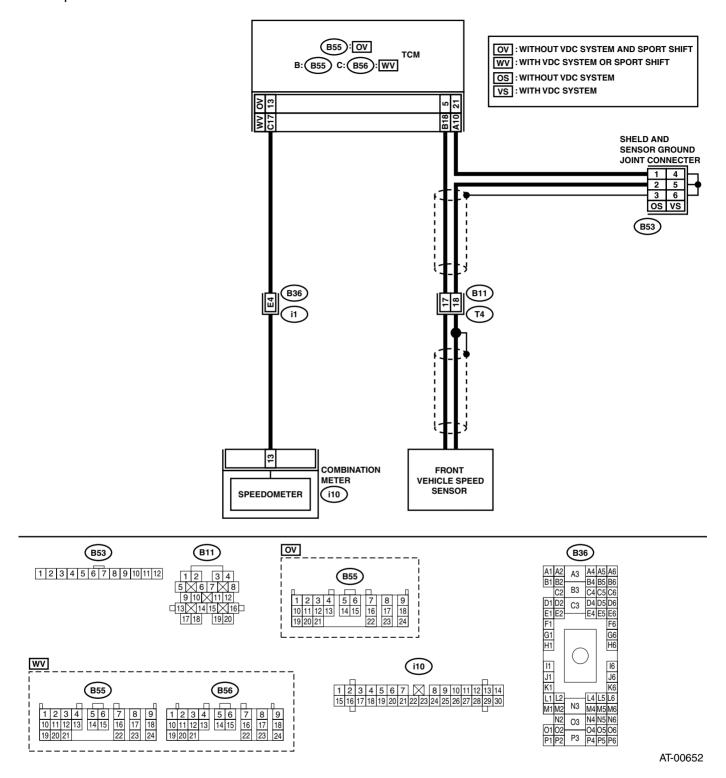
TROUBLE SYMPTOM:

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

AUTOMATIC TRANSMISSION (DIÀGNOSTICS)

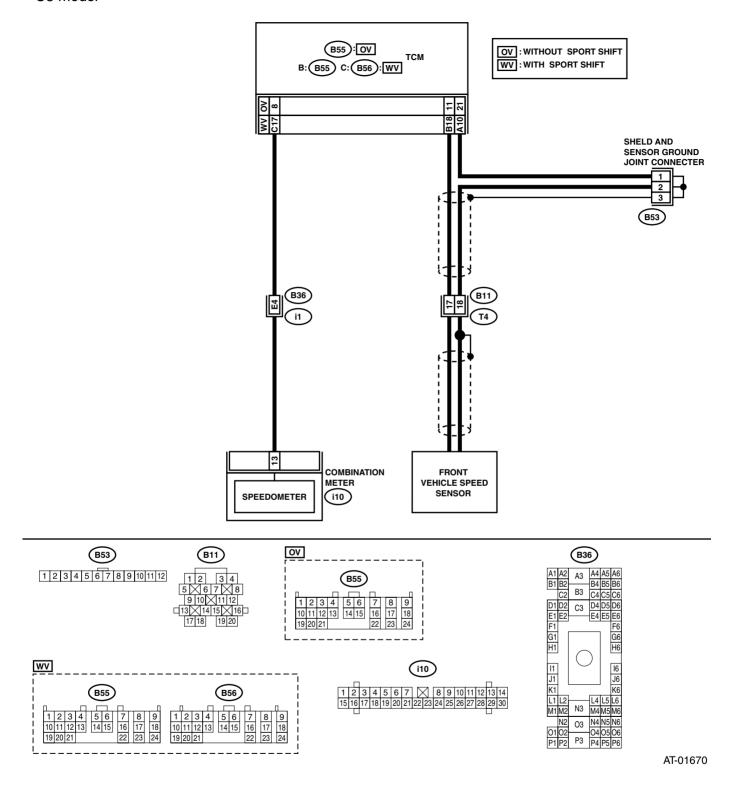
WIRING DIAGRAM:

Except U5 model



AUTOMATIC TRANSMISSION (DIAGNOSTICS)

U5 model



	Step	Check	Yes	No
1	CHECK HARNESS CONNECTOR BETWEEN	Is the resistance less than 1	Go to step 2.	Repair the open
	TCM AND TRANSMISSION.	Ω ?		circuit in harness
	 Turn the ignition switch to OFF. 			between TCM and
	Disconnect the connector from TCM and			transmission con-
	transmission.			nector.
	Measure the resistance of harness			
	between TCM and transmission connector.			
	Connector & terminal			
	Without VDC system and SPORT shift			
	(Except U5 model)			
	(B55) No. 5 — (B11) No. 17:			
	Without SPORT shift (U5 model)			
	(B55) No. 11 — (B11) No. 17:			
	With VDC system or SPORT shift			
	(B55) No. 18 — (B11) No. 17:			
2	CHECK HARNESS CONNECTOR BETWEEN	Is the resistance less than 1	Go to step 3.	Repair the open
	TCM AND TRANSMISSION.	Ω?		circuit in harness
	Measure the resistance of harness between			between TCM and
	TCM and transmission connector.			transmission con-
	Connector & terminal			nector, and poor
	Without VDC system and SPORT shift			contact in cou-
	(B55) No. 21 — (B11) No. 18: With VDC system or SPORT shift			pling connector.
	(B54) No. 10 — (B11) No. 18:			
			0 1 1	5 ' 11 1 1
3	CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.	Is the resistance more than 1 $M\Omega$?	Go to step 4.	Repair the short circuit in harness
	Measure the resistance of harness between	IVIZ2 :		between TCM and
	TCM and transmission connector.			transmission con-
	Connector & terminal			nector.
	Without VDC system and SPORT shift			nootor.
	(B55) No. 21 — Chassis ground:			
	With VDC system or SPORT shift			
	(B54) No. 10 — Chassis ground:			
4	CHECK HARNESS CONNECTOR BETWEEN	Is the resistance more than 1	Go to step 5.	Repair the short
	TCM AND TRANSMISSION.	ΜΩ?	'	circuit in harness
	Measure the resistance of harness between			between TCM and
	TCM and transmission connector.			transmission con-
	Connector & terminal			nector, and poor
	Without VDC system and SPORT shift			contact in cou-
	(Except U5 model)			pling connector.
	(B55) No. 5 — Chassis ground:			
	Without SPORT shift (U5 model)			
	(B55) No. 11 — Chassis ground:			
	With VDC system or SPORT shift			
	(B55) No. 18 — Chassis ground:			
5	CHECK FRONT VEHICLE SPEED SENSOR.	Is the resistance 450 — 650	Go to step 6.	Replace the front
	Measure the resistance between transmission	Ω ?		vehicle speed sen-
	connector receptacle's terminals.			sor. <ref. 4at-<="" td="" to=""></ref.>
	Connector & terminal			55, Front Vehicle
	(T4) No. 17 — No. 18:			Speed Sensor.>
6	PREPARE OSCILLOSCOPE.	Do you have an oscilloscope?	Go to step 9.	Go to step 7.
7	PREPARE SUBARU SELECT MONITOR.	Do you have a Subaru Select	Go to step 10.	Go to step 8.
		Monitor?		

	Step	Check	Yes	No
8	CHECK INPUT SIGNAL FOR TCM. 1) Connect all connectors. 2) Lift-up or raise the vehicle and place safety stands. NOTE: Raise all wheels off floor. 3) Start the engine and set vehicle in 20 km/h (12 MPH) condition. NOTE: The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <ref. abs-22,="" clear="" memory="" mode.="" to=""> 4) Measure the voltage between TCM connector terminals. Connector & terminal Without VDC system and SPORT shift (Except U5 model) (B55) No. 5 (+) — (B55) No. 21 (-): Without SPORT shift (U5 model) (B55) No. 11 (+) — (B55) No. 21 (-): With VDC system or SPORT shift</ref.>	Is the voltage more than AC 1 V?	Even if the AT OIL TEMP warning light illuminates, the circuit has returned to a normal condition at this time. A temporary poor contact or harness may be the cause. Repair the harness or connector in the front vehicle speed sensor circuit.	Go to step 11.
9	(B55) No. 18 (+) — (B54) No. 10 (-): CHECK FRONT VEHICLE SPEED SENSOR USING OSCILLOSCOPE. 1) Connect all connectors. 2) Lift-up the vehicle and place safety stand. NOTE: Raise all wheels off ground. 3) Set the oscilloscope to TCM connector terminals. Connector & terminal Without VDC system and SPORT shift (Except U5 model) Positive probe; (B55) No. 5: Without SPORT shift (U5 model) Positive probe; (B55) No. 11: Ground lead; (B55) No. 21: With VDC system or SPORT shift Positive probe; (B55) No. 18: Ground lead; (B54) No. 10: 4) Start the engine, and drive the wheels slowly. NOTE: The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunctions. When AT control diagnosis is finished, perform the ABS memory clearance procedure of self-diagnosis system. <ref. abs-22,="" clear="" memory="" mode.="" to=""> 5) Measure the signal voltage indicated on oscilloscope.</ref.>	Is the voltage more than AC 4 V?	Even if the AT OIL TEMP warning light illuminates, the circuit has returned to a normal condition at this time. A temporary poor contact or harness may be the cause. Repair the harness or connector in front vehicle speed sensor circuit.	Go to step 11.

	Step	Check	Yes	No
10	CHECK INPUT SIGNAL FOR TCM USING SUBARU SELECT MONITOR. 1) Connect all connectors. 2) Connect the Subaru Select Monitor to data link connector. 3) Lift-up or raise the vehicle and place safety stands. NOTE: Raise all wheels off floor. 4) Turn the ignition switch to ON and turn Subaru Select Monitor switch to ON. 5) Start the engine. 6) Read the data of vehicle speed using Subaru Select Monitor. •Compare the speedometer with Subaru Select Monitor indications. •Vehicle speed is indicated in "km/h" or "MPH". 7) Slowly increase the vehicle speed to 60 km/h or 37 MPH. NOTE: The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <ref. abs-22,="" clear="" memory="" mode.="" to=""></ref.>		Even if the AT OIL TEMP warning light illuminates, the circuit has returned to a normal condition at this time. A temporary poor connector or harness may be the cause. Repair the harness or connector in front vehicle speed sensor circuit.	Go to step 11.
11	CHECK POOR CONTACT.	Is there poor contact in front vehicle speed sensor circuit?	Repair the poor contact.	Replace the TCM. <ref. 4at-79,<br="" to="">Transmission Con- trol Module (TCM).></ref.>

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

E: DTC 36 TORQUE CONVERTER TURBINE SPEED SENSOR

DIAGNOSIS:

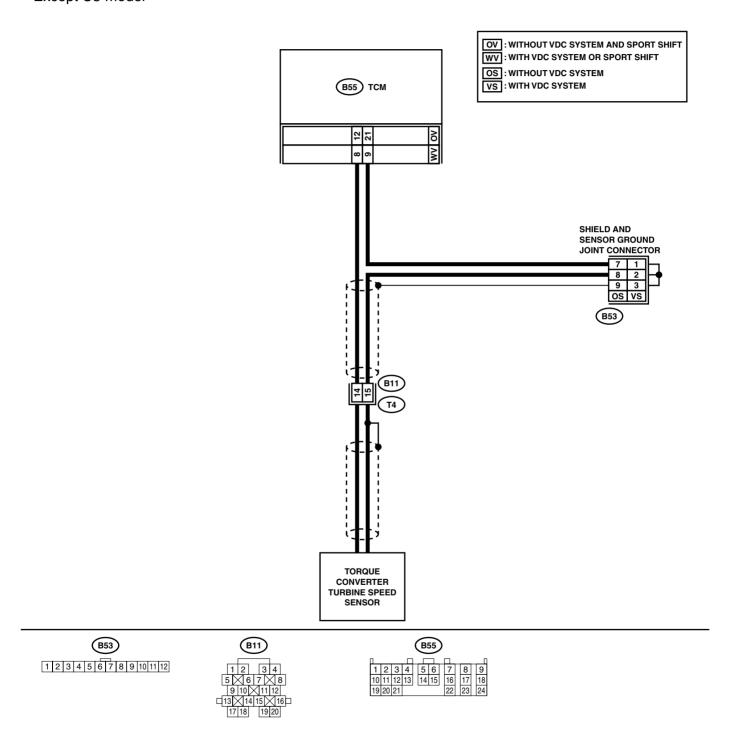
The input signal circuit of TCM is open or shorted.

TROUBLE SYMPTOM:

Excessive shift shock.

WIRING DIAGRAM:

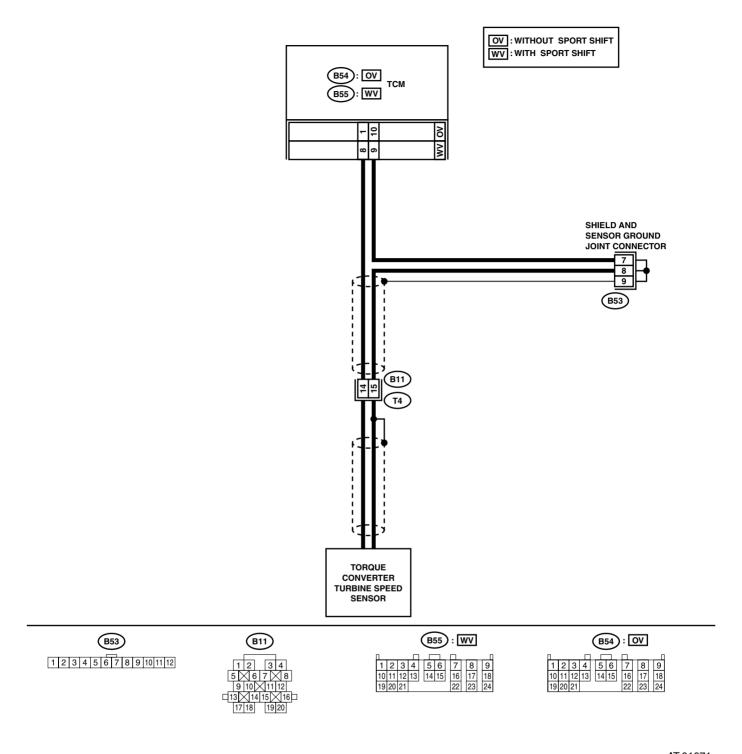
• Except U5 model



AT-00653

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

U5 model



AT-01671

	Step	Check	Yes	No
1	CHECK TORQUE CONVERTER TURBINE SPEED SENSOR.	Is the resistance 450 — 650 Ω?	Go to step 2.	Replace the tur- bine speed sen-
	Turn the ignition switch to OFF.	22 :		sor. <ref. 4at-<="" th="" to=""></ref.>
	Disconnect the connector from transmis-			61, Torque Con-
	sion.			verter Turbine
	Measure the resistance between transmis-			Speed Sensor.>
	sion connector receptacle's terminals.			
	Connector & terminal			
	(T4) No. 14 — No. 15:			
2	CHECK HARNESS CONNECTOR BETWEEN	Is the resistance less than 1	Go to step 3.	Repair the open
	TCM AND TRANSMISSION.	Ω?		circuit in harness
	 Disconnect the connector from TCM. 			between TCM and
	Measure the resistance of harness			transmission con-
	between TCM and transmission connector.			nector.
	Connector & terminal			
	Without VDC system and SPORT shift			
	(Except U5 model)			
	(B55) No. 12 — (B11) No. 14:			
	Without SPORT shift (U5 model)			
	(B54) No. 1 — (B11) No. 14: With VDC system or SPORT shift			
	(B55) No. 8 — (B11) No. 14:			
3		Is the resistance less than 1	Co to stop 4	Danair the anen
l ³	TCM AND TRANSMISSION.	Ω ?	Go to step 4.	Repair the open circuit in harness
	Measure the resistance of harness between	72 !		between TCM and
	TCM and transmission connector.			transmission con-
	Connector & terminal			nector, and poor
	Without VDC system and SPORT shift			contact in cou-
	(Except U5 model)			pling connector.
	(B55) No. 21 — (B11) No. 15:			F9
	Without SPORT shift (U5 model)			
	(B54) No. 10 — (B11) No. 15:			
	With VDC system or SPORT shift			
	(B55) No. 9 — (B11) No. 15:			
4	CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.	Is the resistance more than 1	Go to step 5.	Repair the short
	Measure the resistance of harness between	ΜΩ?		circuit in harness between TCM and
	TCM and chassis ground.			transmission con-
	Connector & terminal			nector.
	Without VDC system and SPORT shift			
	(Except U5 model)			
	(B55) No. 21 — Chassis ground:			
	Without SPORT shift (U5 model)			
	(B54) No. 10 — Chassis ground:			
	With VDC system or SPORT shift			
	(B55) No. 9 — Chassis ground:			
5	CHECK HARNESS CONNECTOR BETWEEN	Is the resistance more than 1	Go to step 6.	Repair the short
	TCM AND TRANSMISSION.	ΜΩ?		circuit in harness
	Measure the resistance of harness between			between TCM and
	TCM and chassis ground.			transmission con-
	Connector & terminal			nector, and poor
	Without VDC system and SPORT shift			contact in cou-
	(Except U5 model)			pling connector.
	(B55) No. 12 — Chassis ground:			
	With VDC system or SPORT shift			
	(B54) No. 1 — Chassis ground:			
	With VDC system or SPORT shift (B55) No. 8 — Chassis ground:			
<u></u>		De ven bene er een ''	0.4.5	Codo star 7
6	PREPARE OSCILLOSCOPE.	Do you have an oscilloscope?	Go to step 10.	Go to step 7.

	Step	Check	Yes	No
7	PREPARE SUBARU SELECT MONITOR.	Do you have a Subaru Select Monitor?	Go to step 9.	Go to step 8.
8	 CHECK INPUT SIGNAL FOR TCM. Connect the connectors to TCM and transmission. Start the engine and move select lever to "P" or "N" range. Measure the voltage between TCM connector terminals. Connector & terminal Without VDC system and SPORT shift (Except U5 model) (B55) No. 12 (+) — No. 21 (-): Without SPORT shift (U5 model) (B55) No. 1 (+) — (B54) No. 1 (-): With VDC system or SPORT shift (B55) No. 8 (+) — No. 9 (-): 	Is the voltage more than AC 1 V?	Even if the AT OIL TEMP warning light illuminates, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair the harness or connector in TCM and transmission.	Go to step 11.
9	CHECK INPUT SIGNAL FOR TCM USING SUBARU SELECT MONITOR. 1) Connect the connectors to TCM and transmission. 2) Connect the Subaru Select Monitor to data link connector. 3) Turn the ignition switch to ON and turn Subaru Select Monitor switch to ON. 4) Start the engine. 5) Move the select lever to "P" or "N" range. 6) Read the data of turbine speed using Subaru Select Monitor. •Compare the tachometer with Subaru Select Monitor indications.	Is the revolution value same as the tachometer reading shown on the combination meter?	Even if the AT OIL TEMP warning light illuminates, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair the harness or connector in TCM and transmission.	Go to step 11.
10	CHECK INPUT SIGNAL FOR TCM USING OSCILLOSCOPE. 1) Connect the connectors to TCM and transmission. 2) Set the oscilloscope to TCM connector terminals. Connector & terminal Without VDC system and SPORT shift (Except U5 model) Positive probe; (B55) No. 12: Ground lead; (B55) No. 21: Without SPORT shift (U5 model) Positive probe; (B55) No. 1: Ground lead; (B55) No. 10: With VDC system or SPORT shift Positive probe; (B55) No. 8: Ground lead; (B55) No. 9: 3) Start the engine and move select lever to "P" or "N" range.	Is the signal voltage more than AC 1 V?	Even if the AT OIL TEMP warning light illuminates, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair the harness or connector in TCM and transmission.	Go to step 11.
11	CHECK POOR CONTACT.	Is there poor contact in torque converter turbine speed sensor circuit?	Repair the poor contact.	Replace the TCM. <ref. 4at-79,<br="" to="">Transmission Con- trol Module (TCM).></ref.>

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

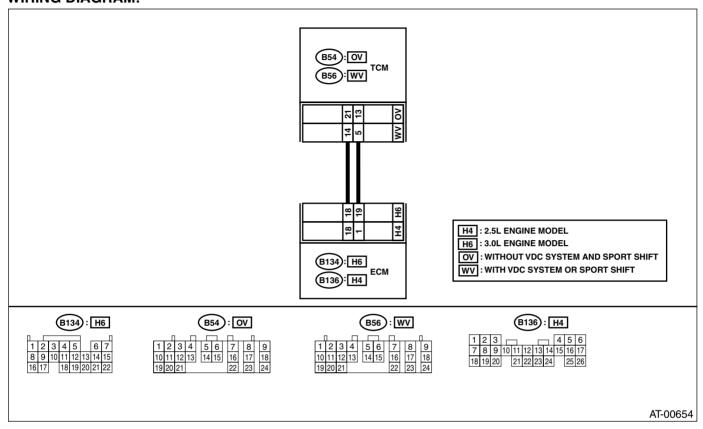
F: DTC 38 TORQUE CONTROL SIGNAL

DIAGNOSIS:

• The signal circuit is open or shorted.

TROUBLE SYMPTOM:

Excessive shift shock.



TCM AND ECM. Ω ? circ bet	epair the open cuit in harness tween TCM and CM connector.
1) Turn the ignition switch to OFF. 2) Disconnect the connectors from TCM and ECM. 3) Measure the resistance of harness between TCM and ECM connector. Connector & terminal 2.5 L model without SPORT shift (B54) No. 21 — (B136) No. 18: (B54) No. 13 — (B136) No. 1: 2.5 L model with SPORT shift (B56) No. 14 — (B136) No. 18: (B56) No. 5 — (B136) No. 1: 3.0 L model without VDC system (B54) No. 21 — (B134) No. 18: (B54) No. 13 — (B134) No. 19:	tween TCM and
2) Disconnect the connectors from TCM and ECM. 3) Measure the resistance of harness between TCM and ECM connector. Connector & terminal 2.5 L model without SPORT shift (B54) No. 21 — (B136) No. 18: (B54) No. 13 — (B136) No. 1: 2.5 L model with SPORT shift (B56) No. 14 — (B136) No. 18: (B56) No. 5 — (B136) No. 1: 3.0 L model without VDC system (B54) No. 21 — (B134) No. 18: (B54) No. 13 — (B134) No. 19:	
ECM. 3) Measure the resistance of harness between TCM and ECM connector. Connector & terminal 2.5 L model without SPORT shift (B54) No. 21 — (B136) No. 18: (B54) No. 13 — (B136) No. 1: 2.5 L model with SPORT shift (B56) No. 14 — (B136) No. 18: (B56) No. 5 — (B136) No. 1: 3.0 L model without VDC system (B54) No. 21 — (B134) No. 18: (B54) No. 13 — (B134) No. 19:	CM connector.
3) Measure the resistance of harness between TCM and ECM connector. Connector & terminal 2.5 L model without SPORT shift (B54) No. 21 — (B136) No. 18: (B54) No. 13 — (B136) No. 1: 2.5 L model with SPORT shift (B56) No. 14 — (B136) No. 18: (B56) No. 5 — (B136) No. 1: 3.0 L model without VDC system (B54) No. 21 — (B134) No. 18: (B54) No. 13 — (B134) No. 19:	
between TCM and ECM connector. Connector & terminal 2.5 L model without SPORT shift (B54) No. 21 — (B136) No. 18: (B54) No. 13 — (B136) No. 1: 2.5 L model with SPORT shift (B56) No. 14 — (B136) No. 18: (B56) No. 5 — (B136) No. 1: 3.0 L model without VDC system (B54) No. 21 — (B134) No. 18: (B54) No. 13 — (B134) No. 19:	
Connector & terminal 2.5 L model without SPORT shift (B54) No. 21 — (B136) No. 18: (B54) No. 13 — (B136) No. 1: 2.5 L model with SPORT shift (B56) No. 14 — (B136) No. 18: (B56) No. 5 — (B136) No. 1: 3.0 L model without VDC system (B54) No. 21 — (B134) No. 18: (B54) No. 13 — (B134) No. 19:	
2.5 L model without SPORT shift (B54) No. 21 — (B136) No. 18: (B54) No. 13 — (B136) No. 1: 2.5 L model with SPORT shift (B56) No. 14 — (B136) No. 18: (B56) No. 5 — (B136) No. 1: 3.0 L model without VDC system (B54) No. 21 — (B134) No. 18: (B54) No. 13 — (B134) No. 19:	
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(B54) No. 13 — (B136) No. 1: 2.5 L model with SPORT shift (B56) No. 14 — (B136) No. 18: (B56) No. 5 — (B136) No. 1: 3.0 L model without VDC system (B54) No. 21 — (B134) No. 18: (B54) No. 13 — (B134) No. 19:	
2.5 L model with SPORT shift (B56) No. 14 — (B136) No. 18: (B56) No. 5 — (B136) No. 1: 3.0 L model without VDC system (B54) No. 21 — (B134) No. 18: (B54) No. 13 — (B134) No. 19:	
(B56) No. 14 — (B136) No. 18: (B56) No. 5 — (B136) No. 1: 3.0 L model without VDC system (B54) No. 21 — (B134) No. 18: (B54) No. 13 — (B134) No. 19:	
(B56) No. 5 — (B136) No. 1: 3.0 L model without VDC system (B54) No. 21 — (B134) No. 18: (B54) No. 13 — (B134) No. 19:	
3.0 L model without VDC system (B54) No. 21 — (B134) No. 18: (B54) No. 13 — (B134) No. 19:	
(B54) No. 21 — (B134) No. 18: (B54) No. 13 — (B134) No. 19:	
(B54) No. 13 — (B134) No. 19:	
3 II I MODELWITH VIJC SYSTEM	
(B56) No. 14 — (B134) No. 18: (B56) No. 5 — (B134) No. 19:	
	pair the short
	cuit in harness tween TCM and
TCM connector and chassis ground. Connector & terminal	CM connector.
Without VDC system and SPORT shift	
(B54) No. 21 — Chassis ground:	
(B54) No. 13 — Chassis ground:	
With VDC system or SPORT shift	
(B56) No. 14 — Chassis ground:	
(B56) No. 5 — Chassis ground:	
	to step 4.
TCM. TEMP warning	io step 4.
1) Connect the connectors to TCM and ECM.	
2) Turn the ignition switch to ON (engine the circuit has	
OFF).	
3) Measure the voltage between TCM con-	
nector terminals. this time. A tempo-	
Connector & terminal rary poor contact	
Without VDC system and SPORT shift of the connector or	
(B54) No. 21 (+) — Chassis ground (-): harness may be	
(B54) No. 13 (+) — Chassis ground (-): the cause. Repair	
With VDC system or SPORT shift the harness or	
(B56) No. 14 (+) — Chassis ground (-):	
(B56) No. 5 (+) — Chassis ground (-):	
4 CHECK POOR CONTACT. Is there poor contact in torque Repair the poor Go	to step 5.
control signal circuit? contact.	
5 CHECK GROUND LINE BETWEEN TRANS- Is there any dirt or rust at the Remove dirt and Go	to step 6.
MISSION AND BODY. ground line installing point? rust.	
Check installing condition of the ground line in	
transmission and body.	
6 CHECK GROUND LINE BETWEEN TRANS- Is the tightening torque value Go to step 7. Tig	ghten to the
	ecified torque.
Check installing condition of the ground line in	•
transmission and body.	
Tightening torque:	
10 — 16 N·m (1.0 — 1.6 kgf-m, 7.2 —	
11.6 ft-lb)	

	Step	Check	Yes	No
7	 CHECK GROUND LINE INSIDE TRANSMISSION. 1) Drain the ATF and remove oil pan. 2) Check the tightening torque value of ground line installing bolt. Tightening torque: 7 — 9 N·m (0.7 — 0.9 kgf-m, 5.1 — 6.5 ft-lb) 	Is the tightening torque value within specification?	Go to step 9.	Tighten to the specified torque.
8	CHECK GROUND CIRCUIT OF ECM. <ref. (dtc).="" 31="" 4at(h4so)-60,="" code="" diagnostic="" dtc="" position="" procedure="" sensor,="" throttle="" to="" trouble="" with=""></ref.>	Is there any trouble?	Repair the ground terminal and/or ground circuit of ECM.	Go to step 9.
9	RECHECK OUTPUT SIGNAL EMITTED FROM TCM. Measure the voltage between TCM connector and chassis ground. Connector & terminal Without VDC system and SPORT shift (B54) No. 21 (+) — Chassis ground (-): (B54) No. 13 (+) — Chassis ground (-): With VDC system or SPORT shift (B56) No. 14 (+) — Chassis ground (-): (B56) No. 5 (+) — Chassis ground (-):	Is each voltage more than 4 V?	Replace the TCM. <ref. 4at-79,<br="" to="">Transmission Con- trol Module (TCM).></ref.>	Replace the ECM.

MEMO:

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

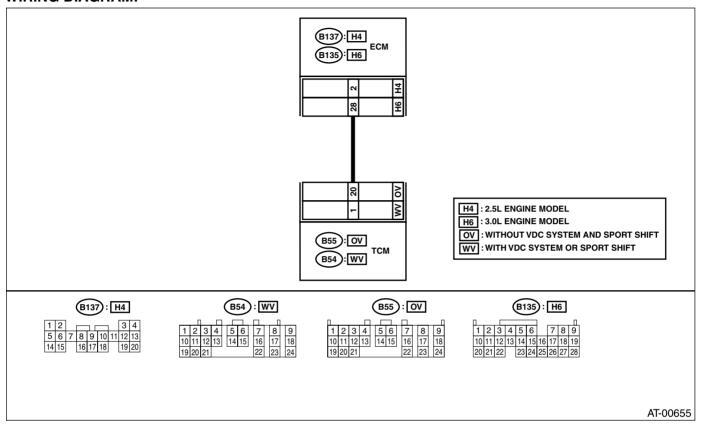
G: DTC 45 INTAKE MANIFOLD PRESSURE SIGNAL

DIAGNOSIS:

The input signal circuit of TCM from ECM is open or shorted.

TROUBLE SYMPTOM:

Excessive shift shock.



Step	Check	Yes	No
1 CHECK ENGINE GROUND TERMINALS AND GROUND CIRCUIT OF ECM <ref. (dtc).="" 31="" 4at(h4so)-60,="" code="" diagnostic="" dtc="" position="" procedure="" sensor,="" throttle="" to="" trouble="" with=""></ref.>	Is there any trouble?	Repair the ground terminal and/or ground circuit of ECM.	Go to step 2.
2 CHECK HARNESS CONNECTOR BETWEEN TCM AND ECM. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from TCM and ECM. 3) Measure the resistance of harness between TCM and ECM connector. Connector & terminal 3.0 L model with VDC system (B54) No. 1 - (B135) No. 28: 3.0 L model without VDC system (B54) No. 20 - (B135) No. 28: 2.5 L model with SPORT shift (B54) No. 1 - (B135) No. 2: 2.5 L model without SPORT shift (B54) No. 20 - (B135) No. 2:	Is the resistance less than 1 Ω ?	Go to step 3.	Repair the open circuit in harness between TCM and ECM connector.

	Step	Check	Yes	No
3	CHECK HARNESS CONNECTOR BETWEEN TCM AND ECM. Measure the resistance of harness between TCM connector and chassis ground. Connector & terminal With VDC system or SPORT shift (B54) No. 1 - Chassis ground: Without VDC system and SPORT shift (B54) No. 20 - Chassis ground:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Go to step 4.	Repair the short circuit in harness between TCM and ECM connector.
4	PREPARE SUBARU SELECT MONITOR.	Do you have a Subaru Select Monitor?	Go to step 6.	Go to step 5.
5	CHECK INPUT SIGNAL FOR TCM. 1) Connect the connectors to TCM and ECM. 2) Start the engine, and warm-up the transmission until ATF temperature is above 80°C (176°F). NOTE: If ambient temperature is below 0°C (32°F), drive the vehicle until ATF reaches its operating temperature. 3) Idle the engine. 4) Measure the voltage between TCM connector and chassis ground. Connector & terminal With VDC system or SPORT shift (B54) No. 1 (+) - Chassis ground (-): Without VDC system and SPORT shift (B54) No. 20 (+) - Chassis ground (-):		TEMP warning light illuminates, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair the harness or connector in TCM and ECM.	Go to step 7.
6	 CHECK INPUT SIGNAL FOR TCM USING SUBARU SELECT MONITOR. 1) Connect the connectors to TCM and ECM. 2) Connect the Subaru Select Monitor to data link connector. 3) Start the engine, and turn Subaru Select Monitor switch to ON. 4) Warm-up the engine until engine coolant temperature is above 80°C (176°F). 5) Idle the engine. 6) Read the data of intake manifold pressure signal using Subaru Select Monitor. •Display shows the intake manifold pressure signal value sent from ECM. 	Is the value voltage 0.4 — 1.6 V?	Even if the AT OIL TEMP warning light illuminates, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair the harness or connector in TCM and ECM.	Go to step 7.
7	CHECK POOR CONTACT.	Is there poor contact in intake manifold pressure signal cir- cuit?	Repair the poor contact.	Replace the TCM. <ref. 4at-79,<br="" to="">Transmission Con- trol Module (TCM).></ref.>

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

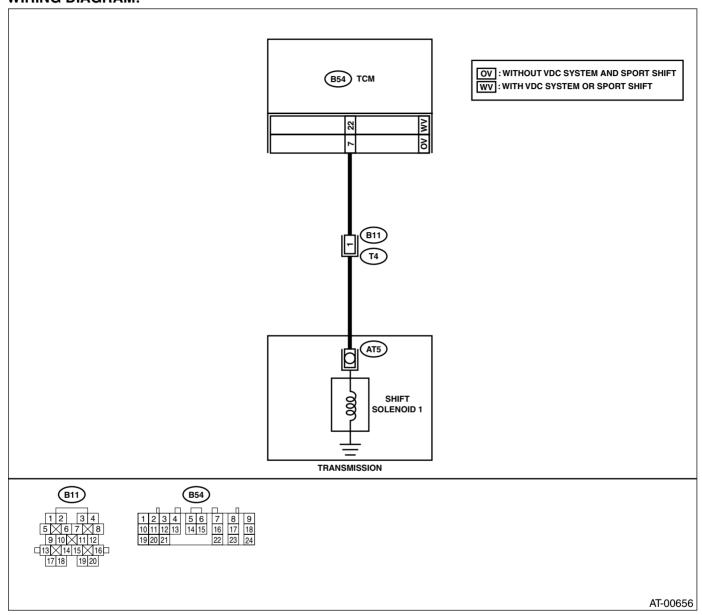
H: DTC 71 SHIFT SOLENOID 1

DIAGNOSIS:

The output signal circuit of shift solenoid 1 is open or shorted.

TROUBLE SYMPTOM:

Does not shift.



	Step	Check	Yes	No
1	CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from TCM and transmission. 3) Measure the resistance of harness between TCM and shift solenoid 1 connector. Connector & terminal Without VDC system and SPORT shift (B54) No. 7 — (B11) No. 1: With VDC system or SPORT shift	Is the resistance less than 1 Ω ?	Go to step 2.	Repair the open circuit in harness between TCM and transmission connector.
2	(B54) No. 22 — (B11) No. 1: CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. Measure the resistance of harness between TCM connector and chassis ground. Connector & terminal Without VDC system and SPORT shift (B54) No. 7 — Chassis ground: With VDC system or SPORT shift (B54) No. 22 — Chassis ground:	Is the resistance more than 1 $\mbox{M}\Omega\mbox{?}$	Go to step 3.	Repair the short circuit in harness between TCM and transmission connector.
3	CHECK SHIFT SOLENOID 1. Measure the resistance between transmission connector terminals. Connector & terminal (T4) No. 1 — No. 16:	Is the resistance 10 — 16 Ω ?	Go to step 4.	Go to step 7.
4	 CHECK OUTPUT SIGNAL EMITTED FROM TCM. 1) Connect the connectors to TCM and transmission. 2) Turn the ignition switch to ON (engine OFF). 3) Move the select lever to "D" range. 4) Measure the voltage between TCM connector and chassis ground. Connector & terminal Without VDC system and SPORT shift (B54) No. 7 (+) — Chassis ground (-): With VDC system or SPORT shift (B54) No. 22 (+) — Chassis ground (-): 	Is the voltage more than 9 V?	Go to step 5.	Go to step 6.
5	CHECK OUTPUT SIGNAL EMITTED FROM TCM. 1) Move the select lever to "2" range. 2) Measure the voltage between TCM connector and chassis ground. Connector & terminal Without VDC system and SPORT shift (B54) No. 7 (+) — Chassis ground (-): With VDC system or SPORT shift (B54) No. 22 (+) — Chassis ground (-):	Is the voltage less than 1 V?	Even if the AT OIL TEMP warning light illuminates, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair the harness or contact in TCM.	Go to step 6.
6	CHECK POOR CONTACT.	Is there poor contact in shift solenoid 1 circuit?	Repair poor contact.	Replace the TCM. <ref. 4at-79,<br="" to="">Transmission Con- trol Module (TCM).></ref.>

	Step	Check	Yes	No
7	CHECK SHIFT SOLENOID 1 (IN TRANSMISSION). 1) Remove the transmission connector from bracket. 2) Lift-up or raise the vehicle and support with safety stand. NOTE: Raise all wheels off ground. 3) Drain the ATF. CAUTION: Do not drain the ATF until it cools down. 4) Remove the oil pan, and disconnect connector from shift solenoid 1. 5) Measure the resistance between shift solenoid 1 connector and transmission ground. Terminals No. 1 — Transmission ground:	Is the resistance 10 — 16 Ω ?	Go to step 8.	Replace the shift solenoid 1. <ref. to 4AT-72, Shift Solenoids, Duty Solenoids and ATF Temperature Sensor.></ref.
8	CHECK HARNESS CONNECTOR BETWEEN SHIFT SOLENOID 1 AND TRANSMISSION. Measure the resistance of harness between shift solenoid 1 and transmission connector. Connector & terminal (T4) No. 1 — (AT5) No. 1:	Is the resistance less than 1 Ω ?	Go to step 9.	Repair the open circuit in harness between shift sole- noid 1 and trans- mission connector.
9	CHECK HARNESS CONNECTOR BETWEEN SHIFT SOLENOID 1 AND TRANSMISSION. Measure the resistance of harness between shift solenoid 1 connector and transmission ground. Connector & terminal (T4) No. 1 — Transmission ground:	Is the resistance more than 1 $M\Omega$?	Even if the AT OIL TEMP warning light illuminates, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair the harness or connector in shift solenoid 1 and transmission.	Repair the short circuit harness between shift sole-noid 1 and transmission connector.

MEMO:

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

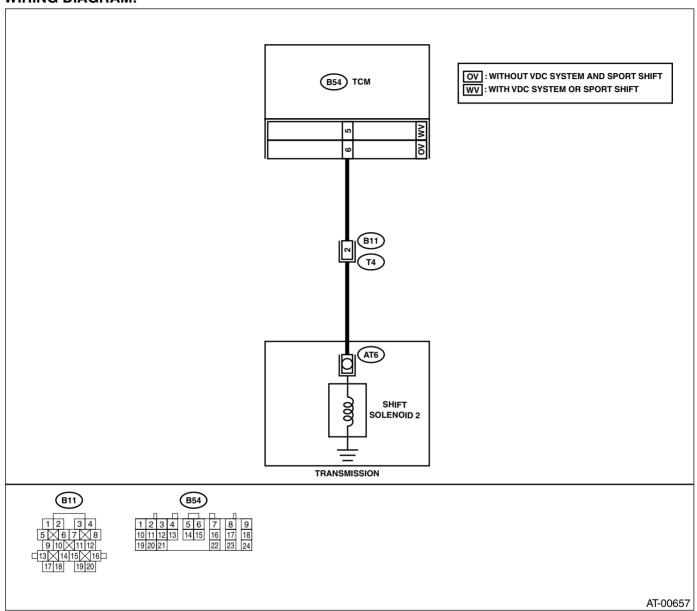
I: DTC 72 SHIFT SOLENOID 2

DIAGNOSIS:

The output signal circuit of shift solenoid 2 is open or shorted.

TROUBLE SYMPTOM:

Does not shift.



	Step	Check	Yes	No
1	CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from TCM and transmission. 3) Measure the resistance of harness between TCM and shift solenoid 2 connector. Connector & terminal Without VDC system and SPORT shift (B54) No. 6 — (B11) No. 2: With VDC system or SPORT shift (B54) No. 5 — (B11) No. 2:	Is the resistance less than 1 Ω ?	Go to step 2.	Repair the open circuit in harness between TCM and transmission connector.
2	CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. Measure the resistance of harness between TCM connector and transmission ground. Connector & terminal Without VDC system and SPORT shift (B54) No. 6 — Chassis ground: With VDC system or SPORT shift (B54) No. 5 — Chassis ground:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Go to step 3.	Repair the short circuit in harness between TCM and transmission con- nector.
3	CHECK SHIFT SOLENOID 2. Measure the resistance between transmission connector terminals. Connector & terminal (T4) No. 2 — No. 16:	Is the resistance 10 — 16 Ω ?	Go to step 4.	Go to step 6.

	Step	Check	Yes	No
4	CHECK OUTPUT SIGNAL EMITTED FROM	Is the voltage less than 1 V?	Even if the AT OIL	Go to step 5.
	TCM.1) Connect the connectors to TCM and transmission.2) Lift-up or raise the vehicle and support with		TEMP warning light illuminates, the circuit has returned to a nor-	
	safety stand. NOTE:		mal condition at this time. A tempo-	
	Raise all wheels off ground.		rary poor contact	
	 Start the engine and warm-up the transmission until ATF temperature is above 80°C (176°F). 		of the connector or harness may be the cause. Repair the harness or	
	NOTE: If ambient temperature is below 0°C (32°F), drive the vehicle until ATF reaches its operating temperature.		connector in TCM and transmission.	
	 Move the selector lever to "D" range, and slowly increase vehicle speed to 50 km/h (31 MPH). 			
	NOTE: The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <ref. abs-22,="" clear="" memory<="" td="" to=""><td></td><td></td><td></td></ref.>			
	Mode.>			
	5) Measure the voltage between TCM connector and chassis ground. Connector & terminal			
	Without VDC system and SPORT shift (B54) No. 6 (+) — Chassis ground (–): With VDC system or SPORT shift (B54) No. 5 (+) — Chassis ground (–):			
5	CHECK POOR CONTACT.	Is there poor contact in shift	Repair the poor	Replace the TCM.
		solenoid 2 circuit?	contact.	<ref. 4at-79,<br="" to="">Transmission Con- trol Module (TCM).></ref.>
6	 CHECK SHIFT SOLENOID 2 (IN TRANSMISSION). 1) Remove the transmission connector from bracket. 2) Drain the ATF. 	Is the resistance 10 — 16 Ω ?	Go to step 7.	Replace the shift solenoid 2. <ref. to 4AT-72, Shift Solenoids, Duty Solenoids and</ref.
	CAUTION: Do not drain the ATF until it cools down.			ATF Temperature Sensor.>
	Remove the oil pan, and disconnect con- nector from shift solenoid 2.			
	Measure the resistance between shift sole- noid 2 connector and transmission ground. Tamerica I.			
	Terminals No. 1 — Transmission ground:			
7	_	Is the resistance less than 1 Ω ?	Go to step 8.	Repair the open circuit in harness
	Measure the resistance of harness between shift solenoid 2 and transmission connector. Connector & terminal			between shift sole- noid 2 and trans- mission connector.
	(AT6) No. 1 — (T4) No. 2:			mission connector.

	Step	Check	Yes	No
8	CHECK HARNESS CONNECTOR BETWEEN	Is the resistance more than 1	Even if the AT OIL	Repair the short
	SHIFT SOLENOID 2 AND TRANSMISSION.	ΜΩ?	TEMP warning	circuit harness
	Measure the resistance of harness between		light illuminates,	between shift sole-
	shift solenoid 2 connector and transmission		the circuit has	noid 2 and trans-
	ground.		returned to a nor-	mission connector.
	Connector & terminal		mal condition at	
	(T4) No. 2 — Transmission ground:		this time. A tempo-	
			rary poor contact	
			of the connector or	
			harness may be	
			the cause. Repair	
			the harness or	
			connector in shift	
			solenoid 2 and	
			transmission.	

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

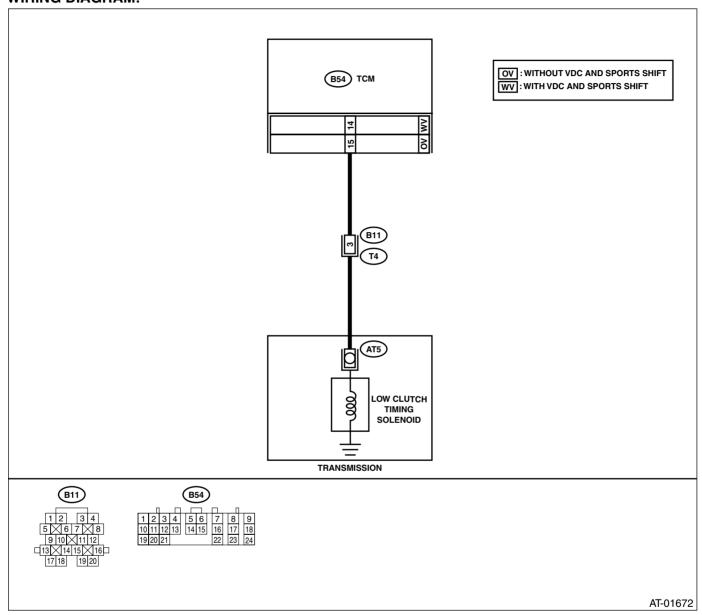
J: DTC 73 LOW CLUTCH TIMING SOLENOID

DIAGNOSIS:

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

TROUBLE SYMPTOM:

Excessive shift shock.



	Step	Check	Yes	No
1	 CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from TCM and transmission. 3) Measure the resistance of harness between TCM and transmission connector. Connector & terminal Without VDC system and SPORT shift (Except U5 model) (B54) No. 14 — (B11) No. 3: U5 model and with VDC system or SPORT shift (B54) No. 15 — (B11) No. 3: 	Is the resistance less than 1 Ω ?	Go to step 2.	Repair the open circuit in harness between TCM and transmission connector.
2	CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. Measure the resistance of harness between TCM connector and transmission ground. Connector & terminal Without VDC system and SPORT shift (Except U5 model) (B54) No. 14 — Chassis ground: U5 model and with VDC system or SPORT shift (B54) No. 15 — Chassis ground:	Is the resistance more than 1 $\mbox{M}\Omega\mbox{?}$	Go to step 3.	Repair the short circuit in harness between TCM and transmission connector.
3	CHECK LOW CLUTCH TIMING SOLENOID. Measure the resistance between transmission connector terminals. Connector & terminal (T4) No. 3 — No. 16:	Is the resistance 10 — 16 Ω ?	Go to step 4.	Go to step 7.
4	CHECK OUTPUT SIGNAL EMITTED FROM TCM. 1) Connect the connectors to TCM and transmission. 2) Turn the ignition switch to ON (engine OFF). 3) Move the select lever to "D" range. 4) Measure the voltage between TCM connector and chassis ground. Connector & terminal Without VDC system and SPORT shift (Except U5 model) (B54) No. 14 (+) — Chassis ground (-): U5 model and with VDC system or SPORT shift (B54) No. 15 (+) — Chassis ground (-):	Is the voltage more than 9 V?	Go to step 5.	Go to step 6.
5	CHECK OUTPUT SIGNAL EMITTED FROM TCM. 1) Set the select lever to "2" range. 2) Measure the voltage between TCM connector and chassis ground. Connector & terminal Without VDC system and SPORT shift (Except U5 model) (B54) No. 14 (+) — Chassis ground (-): U5 model and with VDC system or SPORT shift (B54) No. 15 (+) — Chassis ground (-):	Is the voltage less than 1 V?	Even if the AT OIL TEMP warning light illuminates, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair the harness or contact in TCM and transmission.	Go to step 6.

	Cton	Chask	Vec	No
	Step	Check	Yes	No TOM
6	CHECK POOR CONTACT.	Is there poor contact in low clutch timing solenoid circuit?	Repair the poor contact.	Replace the TCM. <ref. 4at-79,<br="" to="">Transmission Con- trol Module (TCM).></ref.>
7	CHECK LOW CLUTCH TIMING SOLENOID (IN TRANSMISSION). 1) Remove the transmission connector from bracket. 2) Lift-up or raise the vehicle and support with safety stand. NOTE: Raise all wheels off ground. 3) Drain the ATF. CAUTION: Do not drain the ATF until it cools down. 4) Remove the oil pan, and disconnect connector from low clutch timing solenoid. 5) Measure the resistance between low clutch timing solenoid connector and transmission ground. Terminals No. 1 — Transmission ground:	Is the resistance 10 — 16 Ω ?	Go to step 8.	Replace the low clutch timing sole- noid. <ref. 4at-<br="" to="">72, Shift Sole- noids, Duty Sole- noids and ATF Temperature Sen- sor.></ref.>
8	CHECK HARNESS CONNECTOR BETWEEN LOW CLUTCH TIMING SOLENOID AND TRANSMISSION. Measure the resistance of harness between low clutch timing solenoid and transmission connector. Connector & terminal (AT9) No. 1 — (T4) No. 3:	Is the resistance less than 1 Ω ?	Go to step 9.	Repair the open circuit in harness between low clutch timing solenoid and transmission connector.
9	CHECK HARNESS CONNECTOR BETWEEN LOW CLUTCH TIMING SOLENOID AND TRANSMISSION. Measure the resistance of harness between low clutch timing solenoid connector and transmission ground. Connector & terminal (T4) No. 3 — Transmission ground:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Even if the AT OIL TEMP warning light illuminates, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair the harness or connector in low clutch timing solenoid and transmission.	Repair the short circuit harness between low clutch timing solenoid and transmission connector.

MEMO:

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

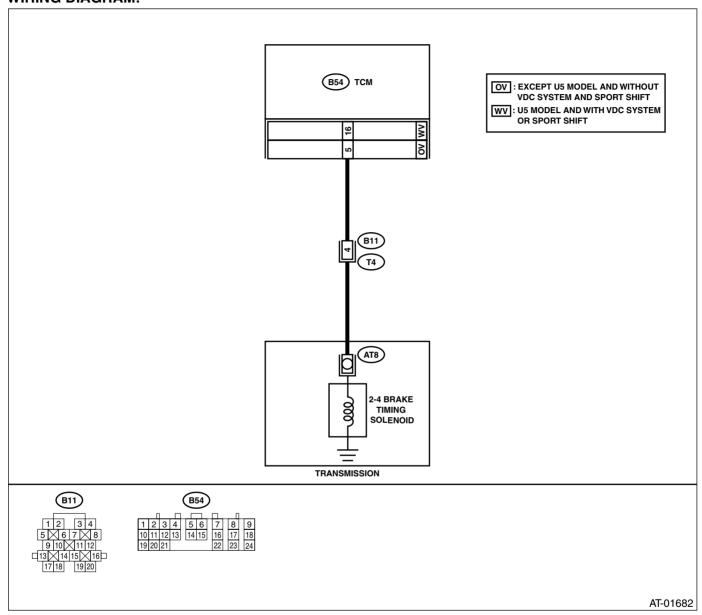
K: DTC 74 2-4 BRAKE TIMING SOLENOID

DIAGNOSIS:

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

TROUBLE SYMPTOM:

Excessive shift shock.



	Step	Check	Yes	No
1	CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from TCM and transmission. 3) Measure the resistance of harness between TCM and transmission connector. Connector & terminal Without VDC system and SPORT shift (Except U5 model) (B54) No. 5 — (B11) No. 4: U5 model and With VDC system or SPORT shift (B54) No. 16 — (B11) No. 4:	Is the resistance less than 1 Ω ?	Go to step 2.	Repair the open circuit in harness between TCM and transmission connector.
2	CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. Measure the resistance of harness between TCM connector and chassis ground. Connector & terminal Except U5 model, without VDC system and SPORT shift (B54) No. 5 — Chassis ground: U5 model and with VDC system or SPORT shift (B54) No. 16 — Chassis ground:	Is the resistance more than 1 $\mbox{M}\Omega\mbox{?}$	Go to step 3.	Repair the short circuit in harness between TCM and transmission connector.
3	CHECK 2-4 BRAKE TIMING SOLENOID. Measure the resistance between transmission connector terminals. Connector & terminal (T4) No. 4 — No. 16:	Is the resistance 10 — 16 Ω ?	Go to step 4.	Go to step 7.

	Step	Check	Yes	No
4	CHECK OUTPUT SIGNAL EMITTED FROM	Is the voltage less than 1 V?	Go to step 5.	Go to step 6.
	TCM.1) Connect the connectors to TCM and transmission.2) Lift-up or raise the vehicle and support with			
	 2) Lift-up or raise the vehicle and support with safety stand. NOTE: Raise all wheels off ground. 3) Start the engine and warm-up the transmission until ATF temperature is above 80°C (176°F). NOTE: If ambient temperature is below 0°C (32°F), drive the vehicle until ATF reaches its operating temperature. 4) Move the selector lever to "1" range, and slowly increase vehicle speed to 10 km/h (6 MPH). NOTE: The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics 			
	system. <ref. abs-22,="" clear="" memory="" mode.="" to=""> 5) Measure the voltage between TCM connector and chassis ground. Connector & terminal Without VDC system and SPORT shift (Except U5 model) (B54) No. 5 (+) — Chassis ground (-): U5 model and with VDC system or SPORT shift (B54) No. 16 (+) — Chassis ground (-):</ref.>			
5	CHECK OUTPUT SIGNAL EMITTED FROM TCM. 1) Move the selector lever to "D" range, and slowly increase vehicle speed to 65 km/h (40 MPH). NOTE: The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <ref. abs-22,="" clear="" memory="" mode.="" to=""> 2) Measure the voltage between TCM connector and chassis ground. Connector & terminal Without VDC system and SPORT shift (Except U5 model) (B54) No. 5 (+) — Chassis ground (-): U5 model and with VDC system or SPORT shift (B54) No. 16 (+) — Chassis ground (-):</ref.>	Is the voltage more than 9 V?	Even if the AT OIL TEMP warning light illuminates, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair the harness or contact in transmission.	Go to step 6.

	Step	Check	Yes	No
6	CHECK POOR CONTACT.	Is there poor contact in 2-4 brake timing solenoid circuit?	Repair the poor contact.	Replace the TCM. <ref. 4at-79,<br="" to="">Transmission Con- trol Module (TCM).></ref.>
7	CHECK 2-4 BRAKE TIMING SOLENOID (IN TRANSMISSION). 1) Remove the transmission connector from bracket. 2) Lift-up or raise the vehicle and support with safety stand. NOTE: Raise all wheels off ground. 3) Drain the ATF. CAUTION: Do not drain the ATF until it cools down. 4) Remove the oil pan, and disconnect connector from 2-4 brake timing solenoid. 5) Measure the resistance between 2-4 brake timing solenoid connector and transmission ground. Terminals No. 1 — Transmission ground:	Is the resistance 10 $-$ 16 Ω ?	Go to step 8.	Replace the 2-4 brake timing sole- noid. <ref. 4at-<br="" to="">72, Shift Sole- noids, Duty Sole- noids and ATF Temperature Sen- sor.></ref.>
8	CHECK HARNESS CONNECTOR BETWEEN 2-4 BRAKE TIMING SOLENOID AND TRANSMISSION. Measure the resistance of harness between 2-4 brake timing solenoid and transmission connector. Connector & terminal (AT8) No. 1 — (T4) No. 4:	Is the resistance less than 1 Ω ?	Go to step 9.	Repair the open circuit in harness between 2-4 brake timing solenoid and transmission connector.
9	CHECK HARNESS CONNECTOR BETWEEN 2-4 BRAKE TIMING SOLENOID AND TRANSMISSION. Measure the resistance of harness between 2-4 brake timing solenoid connector and transmission ground. Connector & terminal (T4) No. 4 — Transmission ground:	Is the resistance more than 1 $\mbox{M}\Omega\mbox{?}$	Even if the AT OIL TEMP warning light illuminates, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair the harness or connector in 2-4 brake timing solenoid and transmission.	Repair the short circuit harness between 2-4 brake timing solenoid and transmission connector.

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

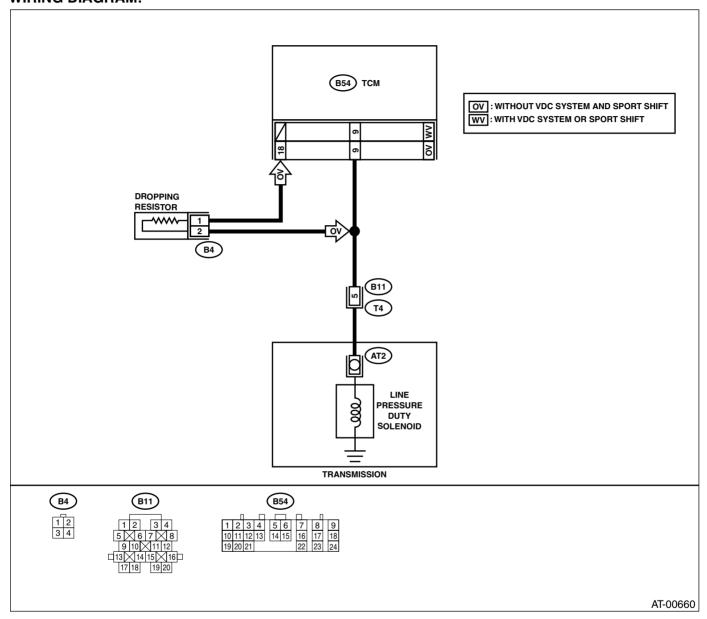
L: DTC 75 LINE PRESSURE DUTY SOLENOID

DIAGNOSIS:

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

TROUBLE SYMPTOM:

Excessive shift shock.



Step	Check	Yes	No
1 CHECK VEHICLE.	Is vehicle being diagnosed for U5 model and models with VDC system or SPORT shift?	Go to step 7.	Go to step 2.
 CHECK RESISTOR. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from dropping resistor. 3) Measure the resistance between dropping resistor terminal. Terminals No. 1 — No. 2: 	Is the resistance 9 — 15 Ω ?	Go to step 3.	Replace the drop- ping resistor. <ref. to 4AT-81, Drop- ping Resistor.></ref.
	Is the resistance less than 1 Ω ?	Go to step 4.	Repair open circuit in harness between TCM and dropping resistor connector.
	Is the resistance more than 1 $\mbox{M}\Omega\mbox{?}$	Go to step 5.	Repair short circuit in harness between TCM and dropping resistor connector.
 5 CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND DROPPING RESISTOR. 1) Disconnect the connector from transmission. 2) Measure the resistance of harness between transmission and dropping resistor connector. Connector & terminal (B4) No. 2 — (B11) No. 5: 	Is the resistance less than 1 Ω ?	Go to step 6.	Repair open circuit in harness between dropping resistor and trans- mission connector.
6 CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND DROPPING RESISTOR. Measure the resistance of harness between dropping resistor connector and chassis ground. Connector & terminal (B4) No. 2 — Chassis ground:	Is the resistance more than 1 $\mbox{M}\Omega\mbox{?}$	Go to step 7.	Repair short circuit in harness between dropping resistor and trans- mission connector.
	Is the resistance less than 1 Ω ?	Go to step 8.	Repair the open circuit in harness between TCM and transmission connector.
8 CHECK HARNESS CONNECTOR BETWEEN TCM AND CHASSIS GROUND. Measure the resistance of harness between TCM and chassis ground. Connector & terminal (B54) No. 9 — Chassis ground:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Go to step 9.	Repair the short circuit in harness between TCM and transmission connector.

	Step	Check	Yes	No
9	CHECK LINE PRESSURE DUTY SOLENOID. Measure the resistance between transmission connector receptacle's terminals. Terminals (T4) No. 5 — No. 16:	Is the resistance between 2.0 and 4.5 Ω ?	Go to step 10.	Go to step 16.
10	PREPARE SUBARU SELECT MONITOR.	Do you have a Subaru Select Monitor?	Go to step 13.	Go to step 11.
11	CHECK OUTPUT SIGNAL EMITTED FROM TCM. 1) Connect all connectors. 2) Start the engine and warm-up the transmission until ATF temperature is above 80°C (176°F). NOTE: If ambient temperature is below 0°C (32°F), drive the vehicle until ATF reaches its operating temperature. 3) Turn the ignition switch to ON (engine OFF). 4) Move the select lever to "N" range. 5) Throttle fully closed. 6) Measure the voltage between TCM connector and chassis ground. Connector & terminal (B54) No. 9 (+) — Chassis ground (-):		Go to step 12.	Go to step 15.
12	CHECK OUTPUT SIGNAL EMITTED FROM TCM. 1) Throttle fully open and hold it. 2) Measure the voltage between TCM connector and chassis ground. Connector & terminal (B54) No. 9 (+) — Chassis ground (-):	Is the voltage less than 1 V?	Even if the AT OIL TEMP warning light illuminates, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair the harness or connector in transmission.	Go to step 15.

	Step	Check	Yes	No
13	 CHECK OUTPUT SIGNAL EMITTED FROM TCM USING SUBARU SELECT MONITOR. 1) Connect the connectors to TCM and transmission. 2) Connect the Subaru Select Monitor to data link connector. 3) Start the engine and turn Subaru Select Monitor switch to ON. 4) Warm-up the transmission until ATF temperature is above 80°C (176°F). NOTE: If ambient temperature is below 0°C (32°F), drive the vehicle until ATF reaches its operating temperature. 5) Stop the engine and turn ignition switch to ON (engine OFF). 6) Move the select lever to "N" range. 7) Throttle is fully closed. Line pressure duty solenoid is indicated in "%". 8) Read the data of line pressure duty solenoid using Subaru Select Monitor. 	Is the value 100%?	Go to step 14.	Go to step 15.
14	CHECK OUTPUT SIGNAL EMITTED FROM TCM USING SUBARU SELECT MONITOR. 1) Turn the ignition switch to ON (engine OFF). 2) Throttle is fully open.	Is the value less than 25%?	Even if the AT OIL TEMP warning light illuminates, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair the harness or connector in transmission.	Go to step 15.
15	CHECK POOR CONTACT.	Is there poor contact in line pressure duty solenoid circuit?	Repair the poor contact.	Replace the TCM. <ref. 4at-79,<br="" to="">Transmission Con- trol Module (TCM).></ref.>
16	 CHECK LINE PRESSURE DUTY SOLENOID (IN TRANSMISSION). 1) Remove the transmission connector from bracket. 2) Drain the ATF. CAUTION: Do not drain the ATF until it cools down. 3) Remove the oil pan, and disconnect connector from line pressure duty solenoid. 4) Measure the resistance between line pressure duty solenoid connector and transmission ground. Terminals No. 1 — Transmission ground: 	Is the resistance 2.0 — 4.5 Ω ?	Go to step 17.	Replace the line pressure duty solenoid. <ref. 4at-72,="" and="" atf="" duty="" sensor.="" shift="" solenoids="" solenoids,="" temperature="" to=""></ref.>

Step	Check	Yes	No
	Is the resistance less than 1 Ω ?		Repair the open circuit in harness between line pressure duty solenoid and transmission connector.
	Is the resistance more than 1 $M\Omega$?	light illuminates, the circuit has returned to a nor-	Repair the short circuit in harness between line pressure duty solenoid and transmission connector.

MEMO:

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

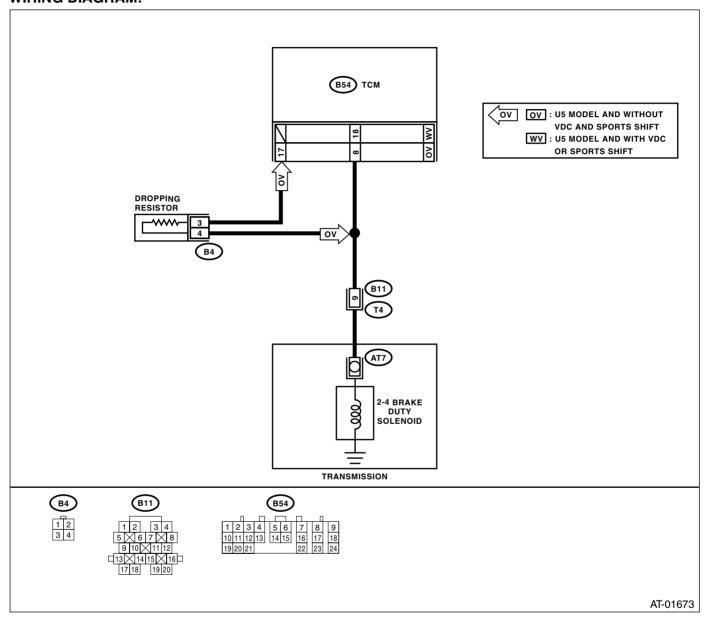
M: DTC 76 2-4 BRAKE DUTY SOLENOID

DIAGNOSIS:

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

TROUBLE SYMPTOM:

Excessive shift shock.



	Step	Check	Yes	No
1	CHECK VEHICLE.	Is vehicle being diagnosed for U5 model and models with VDC system or SPORT shift?	Go to step 2.	Go to step 7.
2	 CHECK RESISTOR. Turn the ignition switch to OFF. Disconnect the connector from dropping resistor. Measure the resistance between dropping resistor terminal. Terminals No. 3 — No. 4: 	Is the resistance 9 — 15 Ω ?	Go to step 3.	Replace the drop- ping resistor. <ref. to 4AT-81, Drop- ping Resistor.></ref.
3	CHECK HARNESS CONNECTOR BETWEEN TCM AND DROPPING RESISTOR. 1) Disconnect the connector from TCM. 2) Measure the resistance of harness between TCM connector and dropping resistor connector. Connector & terminal (B54) No. 17 — (B4) No. 3:	Is the resistance less than 1 Ω ?	Go to step 4.	Repair open circuit in harness between TCM and dropping resistor connector.
4	CHECK HARNESS CONNECTOR BETWEEN TCM AND DROPPING RESISTOR. Measure the resistance of harness between dropping resistor connector and chassis ground. Connector & terminal (B4) No. 3 — Chassis ground:	Is the resistance more than 1 $\mbox{M}\Omega\mbox{?}$	Go to step 5.	Repair short circuit in harness between TCM and dropping resistor connector.
5	 CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND DROPPING RESISTOR. 1) Disconnect the connector from transmission. 2) Measure the resistance of harness between transmission and dropping resistor connector. Connector & terminal (B4) No. 4 — (B11) No. 9: 	Is the resistance less than 1 Ω ?	Go to step 6.	Repair open circuit in harness between dropping resistor and trans- mission connector.
6	CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND DROPPING RESISTOR. Measure the resistance of harness between dropping resistor connector and chassis ground. Connector & terminal (B4) No. 4 — Chassis ground:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Go to step 7.	Repair short circuit in harness between dropping resistor and trans- mission connector.
7	CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from transmission and TCM. 3) Measure the resistance of harness between TCM and transmission connector. Connector & terminal Without VDC system and SPORT shift (Except U5 model) (B54) No. 8 — (B11) No. 9: U5 model and with VDC system or SPORT shift (B54) No. 18 — (B11) No. 9:	Is the resistance less than 1 Ω ?	Go to step 8.	Repair the open circuit in harness between TCM and transmission connector.

	Step	Check	Yes	No
8	TCM AND CHASSIS GROUND.	Is the resistance more than 1 $\mbox{M}\Omega ?$	Go to step 9.	Repair the short circuit in harness
	Measure the resistance of harness between			between TCM and
	TCM and chassis ground. Connector & terminal			transmission con-
	Without VDC system and SPORT shift			nector.
	(Except U5 model)			
	(B54) No. 8 — Chassis ground:			
	Without SPORT shift (U5 model)			
	(B54) No. 8 — Chassis ground:			
	With VDC system or SPORT shift			
	(B54) No. 18 — Chassis ground:			
9	CHECK 2-4 BRAKE DUTY SOLENOID.	Is the resistance $2.0 - 4.5 \Omega$?	Go to step 10.	Go to step 16.
	Measure the resistance between transmission			
	connector receptacle's terminals. Terminals			
	(T4) No. 16 — No. 9:			
10	PREPARE SUBARU SELECT MONITOR.	Do you have a Subaru Select	Go to step 13.	Go to step 11.
	THE AIL OUDAIN CELEST MONITORI	Monitor?	do to stop 10:	do to stop 111
11	CHECK OUTPUT SIGNAL EMITTED FROM TCM.	Is the voltage 1.5 — 5.0 V?	Go to step 12.	Go to step 15.
	Connect all connectors.			
	2) Start the engine and warm-up the transmis-			
	sion until ATF temperature is above 80°C (176°F).			
	NOTE:			
	If ambient temperature is below 0°C (32°F),			
	drive the vehicle until ATF reaches its operating temperature.			
	 Turn the ignition switch to ON (engine OFF). 			
	4) Move the select lever to "N" range.			
	5) Throttle fully closed.6) Measure the voltage between TCM con-			
	nector and chassis ground.			
	Connector & terminal			
	Without VDC system and SPORT shift			
	(Except U5 model)			
	(B54) No. 8 (+) — Chassis ground (-):			
	U5 model and with VDC system or			
	SPORT shift (B54) No. 18 (+) — Chassis ground (–):			
12	CHECK OUTPUT SIGNAL EMITTED FROM	Is the voltage less than 1 V?	Even if the AT OIL	Go to step 15.
-	TCM.	is the voltage loss than i v :	TEMP warning	GO 10 310p 10.
	Throttle fully open and hold it.		light illuminates,	
	2) Measure the voltage between TCM con-		the circuit has	
	nector and chassis ground.		returned to a nor-	
	Connector & terminal		mal condition at	
	Without VDC system and SPORT shift		this time. A tempo-	
	(Except U5 model) (B54) No. 8 (+) — Chassis ground (–):		rary poor contact of the connector or	
	U5 model and with VDC system or		harness may be	
	SPORT shift		the cause. Repair	
	(B54) No. 18 (+) — Chassis ground (–):		the harness or	
			connector in TCM	
			and transmission.	

	Step	Check	Yes	No
13	 CHECK OUTPUT SIGNAL EMITTED FROM TCM USING SUBARU SELECT MONITOR. 1) Connect all connectors. 2) Connect the Subaru Select Monitor to data link connector. 3) Start the engine and turn Subaru Select Monitor switch to ON. 4) Warm-up the transmission until ATF temperature is above 80°C (176°F). NOTE: If ambient temperature is below 0°C (32°F), drive the vehicle until ATF reaches its operating temperature. 5) Stop the engine and turn ignition switch to ON (engine OFF). 6) Move the select lever to "N" range. 7) Throttle is fully closed. •2-4 brake duty solenoid is indicated in "%". 8) Read the data of 2-4 brake duty solenoid using Subaru Select Monitor. 	Is the value 100%?	Go to step 14.	Go to step 15.
14	CHECK OUTPUT SIGNAL EMITTED FROM TCM USING SUBARU SELECT MONITOR. 1) Turn the ignition switch to ON (engine OFF). 2) Throttle is fully open.	Is the value less than 25%?	Even if the AT OIL TEMP warning light illuminates, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair the harness or connector in TCM and transmission.	Go to step 15.
15	CHECK POOR CONTACT.	Is there poor contact in 2-4 brake duty solenoid circuit?	Repair the poor contact.	Replace the TCM. <ref. 4at-79,<br="" to="">Transmission Con- trol Module (TCM).></ref.>
16	 CHECK 2-4 BRAKE DUTY SOLENOID (IN TRANSMISSION). 1) Remove the transmission connector from bracket. 2) Drain the ATF. CAUTION: Do not drain the ATF until it cools down. 3) Remove the oil pan, and disconnect connector from 2-4 brake duty solenoid. 4) Measure the resistance between 2-4 brake duty solenoid connector and transmission ground. Terminals No. 1 — Transmission ground: 	Is the resistance 2.0 — 4.5 Ω ?	Go to step 17.	Replace the 2-4 brake duty sole- noid. <ref. 4at-<br="" to="">72, Shift Sole- noids, Duty Sole- noids and ATF Temperature Sen- sor.></ref.>

	Step	Check	Yes	No
17	CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND 2-4 BRAKE DUTY SO-LENOID. Measure the resistance of harness between 2-4 brake duty solenoid and transmission connector. Connector & terminal (T4) No. 9 — (AT7) No. 1:		Go to step 18.	Repair the open circuit in harness between 2-4 brake duty solenoid and transmission connector.
18	CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND 2-4 BRAKE DUTY SO- LENOID. Measure the resistance of harness between transmission connector and transmission ground. Connector & terminal (T4) No. 9 — Transmission ground:	To this recipitation into the thinking	Even if the AT OIL TEMP warning light illuminates, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair the harness or connector in line pressure duty solenoid and transmission.	Repair the short circuit in harness between 2-4 brake duty solenoid and transmission connector.

MEMO:

DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

N: DTC 77 LOCK-UP DUTY SOLENOID

DIAGNOSIS:

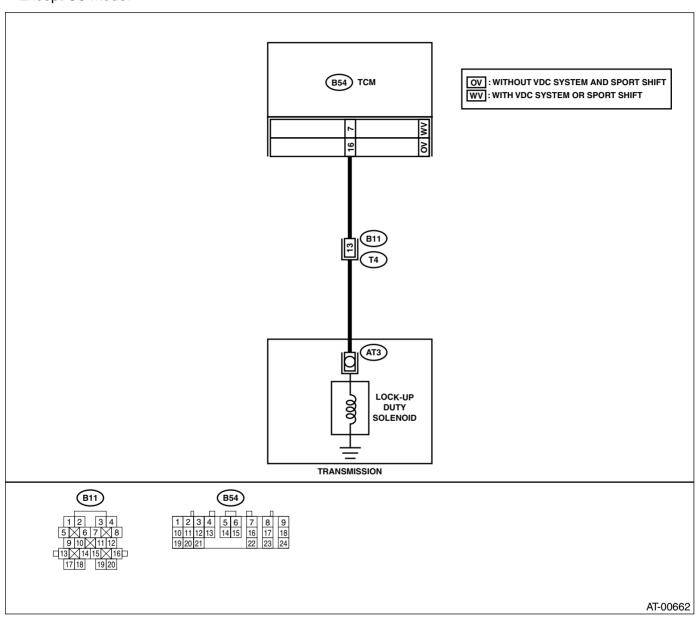
The output signal circuit of lock-up duty solenoid is open or shorted.

TROUBLE SYMPTOM:

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

WIRING DIAGRAM:

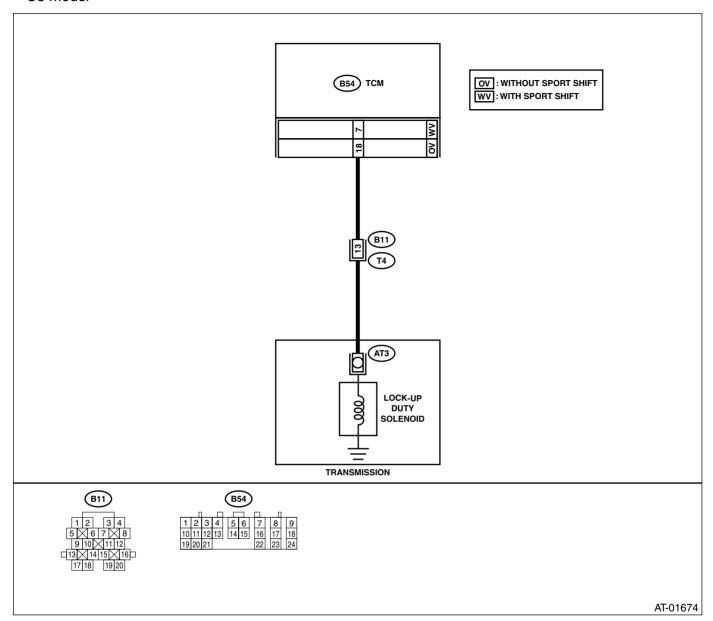
· Except U5 model



DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

• U5 model



	Step	Check	Yes	No
1	CHECK DTC.	Do multiple DTCs appear in the on-board diagnostics test mode?	Go to another DTC.	Go to step 2.
2	CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from TCM and transmission. 3) Measure the resistance of harness between TCM and transmission connector. Connector & terminal Without VDC system and SPORT shift (Except U5 model) (B54) No. 16 — (B11) No. 13: Without SPORT shift (U5 model) (B54) No. 18 — (B11) No. 13: With VDC system or SPORT shift (B54) No. 7 — (B11) No. 13:	Is the resistance less than 1 Ω ?	Go to step 3.	Repair the open circuit in harness between TCM and transmission connector.
3	CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. Measure the resistance of harness connector between TCM and chassis ground. Connector & terminal Without VDC system and SPORT shift (Except U5 model) (B54) No. 16 — Chassis ground: Without SPORT shift (U5 model) (B54) No. 18 — Chassis ground: With VDC system or SPORT shift (B54) No. 7 — Chassis ground:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Go to step 4.	Repair the short circuit in harness between TCM and transmission connector.
4	CHECK LOCK-UP DUTY SOLENOID. Measure the resistance between transmission connector receptacle's terminals. Connector & terminal (T4) No. 13 — No. 16:	Is the resistance 10 — 17 Ω ?	Go to step 5.	Go to step 11.
5	PREPARE SUBARU SELECT MONITOR.	Do you have a Subaru Select Monitor?	Go to step 8.	Go to step 6.

	Step	Check	Yes	No
6	CHECK OUTPUT SIGNAL EMITTED FROM	Is the voltage more than 8.5 V?	Go to step 7.	Go to step 10.
	TCM.		•	·
	1) Connect the connectors to TCM and trans-			
	mission.			
	Lift-up the vehicle and place safety stand.			
	NOTE:			
	Raise all wheels off ground.			
	3) Start the engine and warm-up the transmission until ATF temperature is above 80°C			
	(176°F).			
	NOTE: If ambient temperature is below 0°C (32°F),			
	drive the vehicle until ATF reaches its operating temperature.			
	4) Move the selector lever to "D" range and			
	slowly increase vehicle speed to 75 km/h (47 MPH). Wheels will lock-up.			
	NOTE:			
	The speed difference between front and rear			
	wheels may light the ABS warning light, but this			
	indicates no malfunction. When AT control di-			
	agnosis is finished, perform the ABS memory			
	clearance procedure of on-board diagnostics			
	system. <ref. abs-22,="" clear="" memory<="" td="" to=""><td></td><td></td><td></td></ref.>			
	Mode.>			
	Measure the voltage between TCM con- nector and chassis ground.			
	Connector & terminal			
	Without VDC system and SPORT shift (Except U5 model)			
	(B54) No. 16 (+) — Chassis ground (-):			
	Without SPORT shift (U5 model)			
	(B54) No. 18 (+) — Chassis ground (–):			
	With VDC system or SPORT shift			
	(B54) No. 7 (+) — Chassis ground (–):			
7	CHECK OUTPUT SIGNAL EMITTED FROM TCM.	Is the voltage less than 0.5 V?	Even if the AT OIL TEMP warning	Go to step 10.
	1) Return the engine to idling speed and move		light illuminates,	
	select lever to "N" range.		the circuit has	
	Measure the voltage between TCM con-		returned to a nor-	
	nector and chassis ground.		mal condition at	
	Connector & terminal		this time. A tempo-	
	Without VDC system and SPORT shift		rary poor contact	
	(Except U5 model)		of the connector or	
	(B54) No. 16 (+) — Chassis ground (-):		harness may be	
	Without SPORT shift (U5 model)		the cause. Repair	
	(B54) No. 18 (+) — Chassis ground (-):		the harness or	
	With VDC system or SPORT shift		connector in TCM	
	(B54) No. 7 (+) — Chassis ground (–):		and transmission.	

	Step	Check	Yes	No
8	CHECK OUTPUT SIGNAL EMITTED FROM	Is the value 95%?	Go to step 9.	Go to step 10.
8	 CHECK OUTPUT SIGNAL EMITTED FROM TCM USING SUBARU SELECT MONITOR. 1) Connect the connectors to TCM and transmission. 2) Lift-up the vehicle and place safety stand. NOTE: Raise all wheels off ground. 3) Connect the Subaru Select Monitor to data link connector. 4) Start the engine and turn Subaru Select Monitor switch to ON. 5) Start the engine and warm-up the transmission until ATF temperature is above 80°C (176°F). NOTE: If ambient temperature is below 0°C (32°F), drive the vehicle until ATF reaches its operating temperature. 6) Read the data of lock-up duty solenoid using Subaru Select Monitor. Lock-up duty solenoid is indicated in "%". 7) Move the selector lever to "D" range and 			
	slowly increase vehicle speed to 75 km/h (47 MPH). Wheels will lock-up. NOTE: The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <ref. abs-22,="" clear="" memory="" mode.="" to=""></ref.>			
9	CHECK OUTPUT SIGNAL EMITTED FROM TCM USING SUBARU SELECT MONITOR. Return the engine to idling speed and move selector lever to "N" range. NOTE: The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <ref. abs-22,="" clear="" memory="" mode.="" to=""></ref.>	Is the value 5%?	Even if the AT OIL TEMP warning light illuminates, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair the harness or connector in TCM and transmission.	Go to step 10.
10	CHECK POOR CONTACT.	Is there poor contact in lock-up duty solenoid circuit?	Repair poor contact.	Replace the TCM. <ref. 4at-79,<br="" to="">Transmission Con- trol Module (TCM).></ref.>

	Step	Check	Yes	No
11	CHECK LOCK-UP DUTY SOLENOID (IN TRANSMISSION). 1) Remove the transmission connector from bracket. 2) Drain the ATF. CAUTION: Do not drain the ATF until it cools down. 3) Remove the oil pan and disconnect connector from lock-up duty solenoid. 4) Measure the resistance between lock-up duty solenoid connector and transmission ground. Terminals No. 1 — Transmission ground:	Is the resistance 10 — 17 Ω ?	Go to step 12.	Replace the lock- up duty solenoid. <ref. 4at-72,<br="" to="">Shift Solenoids, Duty Solenoids and ATF Temper- ature Sensor.></ref.>
12	CHECK HARNESS CONNECTOR BETWEEN LOCK-UP DUTY SOLENOID AND TRANS-MISSION. Measure the resistance of harness between lock-up duty solenoid and transmission connector. Connector & terminal (T4) No. 13 — (AT3) No. 1:	Is the resistance less than 1 Ω ?	Go to step 13.	Repair the open circuit in harness between TCM and transmission connector.
13	CHECK HARNESS CONNECTOR BETWEEN LOCK-UP DUTY SOLENOID AND TRANS-MISSION. Measure the resistance of harness between transmission connector and transmission ground. Connector & terminal (T4) No. 13 — Transmission ground:	Is the resistance more than 1 $\mbox{M}\Omega\mbox{?}$	Even if the AT OIL TEMP warning light illuminates, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair the harness or connector in lock-up duty solenoid and transmission.	Repair the short circuit in harness between lock-up duty solenoid and transmission connector.

DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

O: DTC 78 SPORT SHIFT SOLENOID

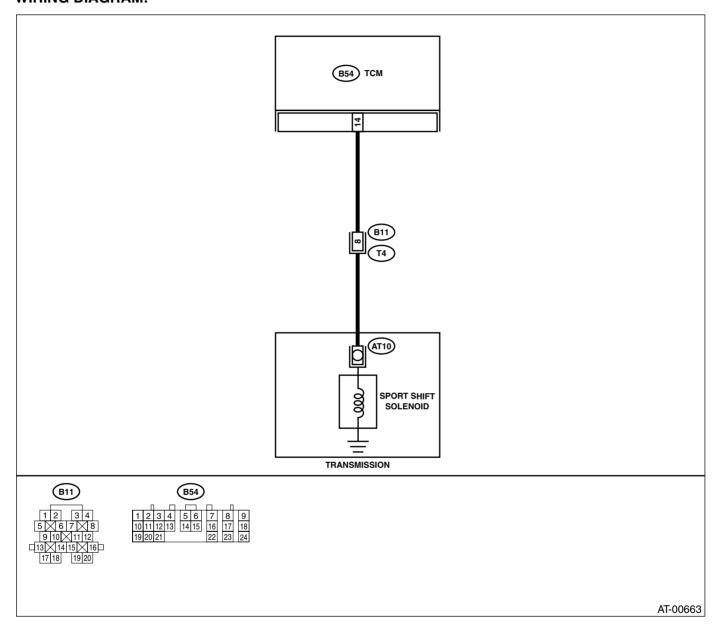
DIAGNOSIS:

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

TROUBLE SYMPTOM:

Engine brake is effected when select lever is in "D" or "3" range with 1st gear.

WIRING DIAGRAM:



	Step	Check	Yes	No
1	CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. 1) Turn ignition switch to OFF. 2) Disconnect connector from TCM and transmission. 3) Measure resistance of harness between TCM and SPORT shift solenoid connector. Connector & terminal (B54) No. 14 — (B11) No. 8:	Is the resistance less than 1 Ω ?	Go to step 2.	Repair open circuit in harness between TCM and transmission con- nector.
2	CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. Measure resistance of harness between TCM connector and chassis ground. Connector & terminal (B54) No. 14 — Chassis ground:	Is the resistance more than 1 $\mbox{M}\Omega\mbox{?}$	Go to step 3.	Repair short circuit in harness between TCM and transmission con- nector.
3	CHECK SHIFT SOLENOID 1. Measure resistance between transmission connector terminals. Connector & terminal (T4) No. 8 — No. 16:	Is the resistance 10 - 16 Ω ?	Go to step 4.	Go to step 7.
4	 CHECK OUTPUT SIGNAL EMITTED FROM TCM. 1) Connect connectors to TCM and transmission. 2) Turn ignition switch to ON (engine OFF). 3) Measure voltage between TCM connector and chassis ground. Connector & terminal (B54) No. 14 (+) — Chassis ground (-): 	Is the voltage more than 9 V?	Go to step 5.	Go to step 6.
5	CHECK OUTPUT SIGNAL EMITTED FROM TCM. 1) Move select lever to SPORT shift mode. 2) Measure voltage between TCM connector and chassis ground. Connector & terminal (B54) No. 14 (+) — Chassis ground (-):	Is the voltage less than 1 V?	Even if AT OIL TEMP warning light lights up, the circuit has returned to a nor- mal condition at this time. A tempo- rary poor contact of the connector or harness may be the cause. Repair harness or con- tact in the TCM.	Go to step 6.
6	CHECK POOR CONTACT.	Is there poor contact in SPORT shift solenoid circuit?	Repair poor contact.	Replace TCM. <ref. 4at-79,<br="" to="">Transmission Con- trol Module (TCM).></ref.>

	Step	Check	Yes	No
8	CHECK SPORT SHIFT SOLENOID (IN TRANSMISSION). 1) Remove transmission connector from bracket. 2) Lift-up or raise the vehicle and support with safety stand. NOTE: On AWD models, raise all wheels off ground. 3) Drain automatic transmission fluid. CAUTION: Do not drain the automatic transmission fluid until it cools down. 4) Remove oil pan, and disconnect connector from SPORT shift solenoid. 5) Measure resistance between SPORT shift solenoid connector and transmission ground. Terminal No. 1 — Transmission ground: CHECK HARNESS CONNECTOR BETWEEN	Is the resistance 10 - 16 Ω?	Go to step 8. Go to step 9.	Replace SPORT shift solenoid. <ref. 4at-72,="" and="" atf="" duty="" sensor.="" shift="" solenoids="" solenoids,="" temperature="" to=""> Repair open circuit in harness between SPORT shift solenoid and transmission connector.</ref.>
9	CHECK HARNESS CONNECTOR BETWEEN SPORT SHIFT SOLENOID AND TRANSMISSION. Measure resistance of harness between SPORT shift solenoid connector and transmission ground. Connector & terminal (T4) No. 8 — Transmission ground:	Is the resistance more than 1 $\mbox{M}\Omega\mbox{?}$	Even if AT OIL TEMP warning light lights up, the circuit has returned to a nor- mal condition at this time. A tempo- rary poor contact of the connector or harness may be the cause. Repair harness or con- nector in SPORT shift solenoid and transmission.	Repair short circuit harness between SPORT shift sole- noid and transmis- sion connector.

MEMO:

DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

P: DTC 79 TRANSFER DUTY SOLENOID

DIAGNOSIS:

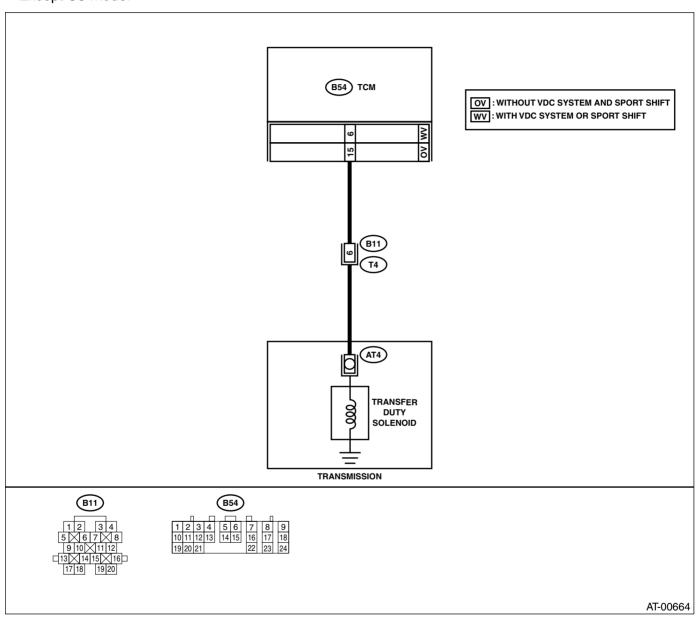
The output signal circuit of transfer duty solenoid is open or shorted.

TROUBLE SYMPTOM:

Excessive "braking" in tight corners.

WIRING DIAGRAM:

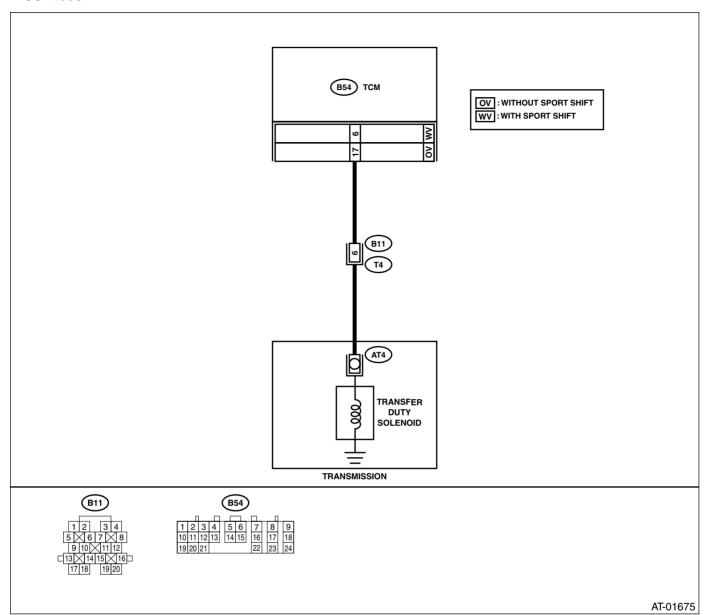
· Except U5 model



DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

• U5 model



	Step	Check	Yes	No
_	CHECK HARNESS CONNECTOR BETWEEN			-
•	TCM AND TRANSMISSION.	Ω ?	Go to step 2.	Repair the open circuit in harness
	Turn the ignition switch to OFF.	22 !		between TCM and
	2) Disconnect the connector from TCM and			transmission con-
	transmission.			nector.
	Measure the resistance of harness			nector.
	between TCM and transmission connector.			
	Connector & terminal			
	Without VDC system and SPORT shift			
	(Except U5 model)			
	(B54) No. 15 — (B11) No. 6:			
	Without SPORT shift (U5 model)			
	(B54) No. 17 — (B11) No. 6:			
	With VDC system or SPORT shift			
	(B54) No. 6 — (B11) No. 6:			
2	CHECK HARNESS CONNECTOR BETWEEN	Is the resistance more than 1	Go to step 3.	Repair the short
	TCM AND TRANSMISSION.	ΜΩ?		circuit in harness
	Measure the resistance harness connector			between TCM and
	between TCM and chassis ground.			transmission con-
	Connector & terminal			nector.
	Without VDC system and SPORT shift			
	(Except U5 model)			
	(B54) No. 15 — Chassis ground:			
	Without SPORT shift (U5 model)			
	(B54) No. 17 — Chassis ground:			
	With VDC system or SPORT shift			
	(B54) No. 6 — Chassis ground:	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	0 1 1	0 1 10
3	CHECK TRANSFER DUTY SOLENOID.	Is the resistance 10 — 17 Ω ?	Go to step 4.	Go to step 10.
	Measure the resistance between transmission			
	connector and transmission terminals. Connector & terminal			
	(T4) No. 6 — No. 16:			
4	PREPARE SUBARU SELECT MONITOR.	Do you have a Cubaru Calast	Co to oton 7	Co to stop E
4	PREPARE SUBARU SELECT MUNITUR.	Do you have a Subaru Select Monitor?	Go to step 7.	Go to step 5.
5	CHECK OUTPUT SIGNAL EMITTED FROM		Co to oton 6	Co to oton 0
3	TCM.	Is the voltage less than 1 V?	Go to step 6.	Go to step 9.
	Connect the connectors to TCM and trans-			
	mission.			
	Turn the ignition switch to ON (engine)			
	OFF).			
	3) Throttle is fully closed.			
	Move the select lever to "P" range.			
	5) Measure the voltage between TCM con-			
	nector and chassis ground.			
	Connector & terminal			
	Without VDC system and SPORT shift			
	(Except U5 model)			
	(B54) No. 15 (+) — Chassis ground (-):			
	Without SPORT shift (U5 model)			
	(B54) No. 17 (+) — Chassis ground (–):			
	With VDC system or SPORT shift			
	(B54) No. 6 (+) — Chassis ground (–):			

	Step	Check	Yes	No
6	CHECK OUTPUT SIGNAL EMITTED FROM	Is the voltage more than 8.5 V?	Even if the AT OIL	Go to step 9.
	TCM.	-	TEMP warning	
	 Move the select lever to "D" range. 		light illuminates,	
	Measure the voltage between TCM con-		the circuit has	
	nector and chassis ground.		returned to a nor-	
	Connector & terminal		mal condition at	
	Without VDC system and SPORT shift		this time. A tempo-	
	(Except U5 model)		rary poor contact	
	(B54) No. 15 (+) — Chassis ground (–):		of the connector or	
	Without SPORT shift (U5 model)		harness may be	
	(B54) No. 17 (+) — Chassis ground (–):		the cause. Repair	
	With VDC system or SPORT shift		the harness or	
	(B54) No. 6 (+) — Chassis ground (–):		connector in TCM	
			and transmission.	
7	CHECK OUTPUT SIGNAL EMITTED FROM	Is the value 80 — 95%?	Go to step 8.	Go to step 9.
	TCM USING SUBARU SELECT MONITOR.			
	 Connect the connectors to TCM and trans- 			
	mission.			
	2) Connect the Subaru Select Monitor to data			
	link connector.			
	3) Turn the ignition switch to ON (engine OFF)			
	and turn Subaru Select Monitor switch to			
	ON.			
	4) Move the select lever to "D" range with			
	throttle fully open (vehicle speed 0 km/h or			
	0 MPH).			
	5) Read the data of transfer duty solenoid			
	using Subaru Select Monitor.			
_	•Transfer duty solenoid is indicated in "%".			_
8	CHECK OUTPUT SIGNAL EMITTED FROM	Is the value approx. 5 — 10%?		Go to step 9.
	TCM USING SUBARU SELECT MONITOR.		TEMP warning	
	1) Move the select lever to "N" range with		light illuminates,	
	throttle fully close (vehicle speed 0 km/h or		the circuit has	
	0 MPH).		returned to a nor-	
	Read the data of transfer duty solenoid		mal condition at	
	using Subaru Select Monitor.		this time. A tempo-	
	Transfer duty solenoid is indicated in "%".		rary poor contact	
			of the connector or	
			harness may be	
			the cause. Repair the harness or	
			connector in trans- fer duty solenoid	
			and TCM connec-	
			tor.	
	CHECK BOOD CONTACT	lo thoro poor contact in the set in		Donlood the TOM
9	CHECK POOR CONTACT.	Is there poor contact in transfer	Repair the poor contact.	Replace the TCM. < Ref. to 4AT-79,
		duty solenoid circuit?	COIIIaCt.	Transmission Con-
				trol Module
				(TCM).>
				(TOIVI).>

	Step	Check	Yes	No
10	CHECK TRANSFER DUTY SOLENOID (IN TRANSMISSION). 1) Lift-up the vehicle and place safety stand. NOTE: Raise all wheels off ground. 2) Drain the automatic transmission fluid. CAUTION: Do not drain the automatic transmission fluid until it cools down. 3) Remove the extension case and disconnect connector from transfer duty solenoid. 4) Measure the resistance between transfer duty solenoid connector and transmission ground. Connector & terminal (AT4) No. 1 — Transmission ground:	Is the resistance 10 — 17 Ω ?	Go to step 11.	Replace the transfer duty solenoid.
11	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. 6 — (AT4) No. 1:	Is the resistance less than 1 Ω ?	Go to step 12.	Repair the open circuit in harness between transfer duty solenoid and transmission connector.
12	CHECK HARNESS CONNECTOR BETWEEN TRANSFER DUTY SOLENOID AND TRANSMISSION. Measure the resistance of harness between transmission connector and transmission ground. Connector & terminal (T4) No. 6 — Transmission ground:	Is the resistance more than 1 $\mbox{M}\Omega\mbox{?}$	Even if the AT OIL TEMP warning light illuminates, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair the harness or contact in transfer duty solenoid and transmission.	Repair the short circuit in harness between transfer duty solenoid and transmission connector.

MEMO:

DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

Q: DTC 86 CAN COMMUNICATION SIGNAL

(B56)

1 2 3 4 5 6 10 11 12 13 14 15

DIAGNOSIS:

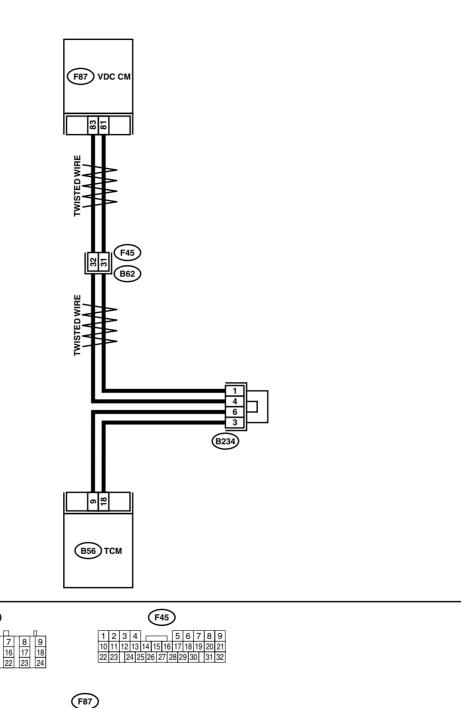
B234

1 2 3 4 5 6

Input signal circuit of TCM is open or shorted.

WIRING DIAGRAM:

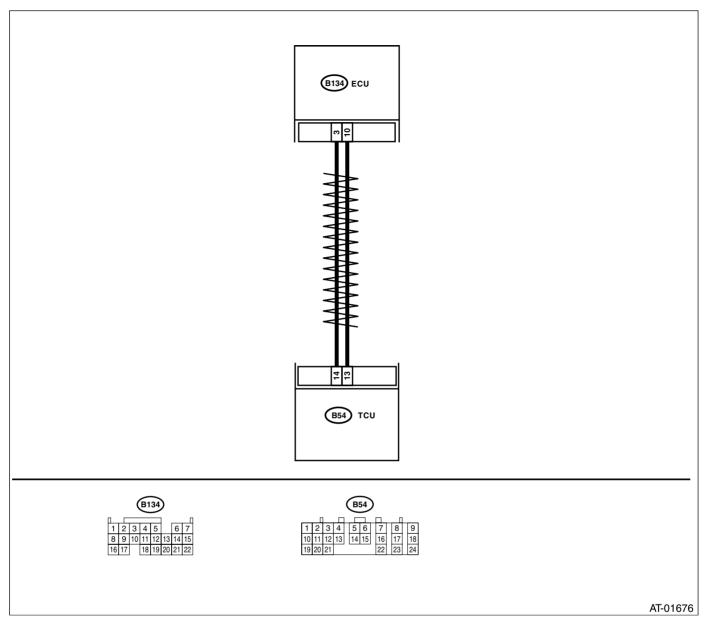
With VDC system



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 50 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83

AT-00665

• U5 model



	Step	Check	Yes	No
1	CHECK VEHICLE.	Is vehicle being diagnosed for	Go to step 2.	Go to step 12.
		models with VDC system?	·	·
2	CHECK TROUBLE CODE.	DTC indicated.	Go to another trou-	Go to step 2.
	Do multiple trouble codes appear in the on-		ble code.	
	board diagnostics test mode?	1.0	0 - 11 - 0	Danish and a street
3	CHECK HARNESS CONNECTOR BETWEEN TCM AND VDCCM.	1 52	Go to step 3.	Repair open circuit in harness
	Turn ignition switch to OFF.			between TCM and
	Disconnect connector from TCM and			VDCCM, and poor
	VDCCM.			contact in cou-
	3) Measure resistance of harness between			pling connector.
	TCM and VDCCM connector.			
	Connector & terminal			
	(B56) No. 18 — (F87) No. 81:			
	Is the measured value less than the speci- fied value?			
4	CHECK HARNESS CONNECTOR BETWEEN	1 Ω	Go to step 4.	Repair open circuit
	TCM AND VDCCM.			in harness
	Measure resistance of harness between TCM and VDCCM connector.			between TCM and
	Connector & terminal			VDCCM, and poor contact in cou-
	(B56) No. 9 — (F87) No. 83:			pling connector.
	Is the measured value less than the specified			
	value?			
5	CHECK HARNESS CONNECTOR BETWEEN TCM AND VDCCM.	1 ΜΩ	Go to step 5.	Repair short circuit in harness
	Measure resistance of harness between TCM			between TCM and
	and VDCCM connector.			VDCCM connec-
	Connector & terminal			tor.
	(B56) No. 18 — Chassis ground:			
	Does the measured value exceed the specified			
	value?		0	
6	CHECK HARNESS CONNECTOR BETWEEN TCM AND VDCCM.	1 ΜΩ	Go to step 6.	Repair short circuit in harness
	Measure resistance of harness between TCM			between TCM and
	and VDCCM connector.			VDCCM connec-
	Connector & terminal			tor.
	(B56) No. 9 — Chassis ground:			
	Is the measured value less than the specified value?			
7	PREPARE OSCILLOSCOPE.	Oscilloscope is available.	Go to step 8.	Go to step 7.
	Do you have oscilloscope?			
8	CHECK INPUT SIGNAL FOR TCM.	Input voltage value changes.	Go to step 10.	Repair poor con-
	1) Connect connectors to TCM and VDCCM.			tact in VDCCM.
	2) Turn ignition switch to ON (engine OFF).3) Measure voltage between TCM connector			
	and chassis ground.			
	Connector & terminal			
	(B56) No. 9 (+) — Chassis ground (–):			
	(B56) No. 18 (+) — Chassis ground (–):			
	Does input voltage value change?			

	Step	Check	Yes	No
9	CHECK INPUT SIGNAL FOR TCM USING OSCILLOSCOPE. 1) Set oscilloscope to TCM connector termi-	Waveform pattern is same as that shown in the figure.	Go to step 9.	Repair poor contact in VDCCM.
	nals. Connector & terminal Positive probe; (B56) No. 9 Ground; (B55) No. 9			
	2) Turn ignition switch to ON (engine OFF). Check signal waveform pattern on oscilloscope. <ref. (tcm)="" 4at(h4so)-26,="" control="" i="" measurement,="" module="" o="" signal.="" to="" transmission="" wave-form,=""> Is waveform pattern same as that shown in the figure?</ref.>			
10	CHECK INPUT SIGNAL FOR TCM USING OSCILLOSCOPE. 1) Set oscilloscope to TCM connector terminals. Connector & terminal Positive probe; (B56) No. 18 Ground; (B55) No. 9	Waveform pattern is same as that shown in the figure.	Go to step 10.	Repair poor contact in VDCCM.
	2) Turn ignition switch to ON (engine OFF). Check signal waveform pattern on oscilloscope. <ref. (tcm)="" 4at(h4so)-26,="" control="" i="" measurement,="" module="" o="" signal.="" to="" transmission="" wave-form,=""> Is waveform pattern same as that shown in the figure?</ref.>			
11	CHECK POOR CONTACT. Is there poor contact in TCM?	There is poor contact.	Repair poor contact.	Replace TCM. <ref. 4at-79,<br="" to="">Transmission Con- trol Module (TCM).></ref.>
12	CHECK DIAGNOSIS CODE. Connect connectors to TCM and VDCCM.	Any other diagnosis trouble code is indicated.	Go on other diag- nosis trouble code.	Go to step 13.
13	CHECK HARNESS CONNECTOR BETWEEN TCM AND ECM. 1) Turn the ignition switch to OFF. 2) Disconnect connector from TCM and ECM. 3) Measure the resistance of harness between TCM and ECM. Connector & terminal Without SPORT shift (B54) No. 13 — (B134) No. 10: With SPORT shift (B56) No. 18 — (B134) No. 10:	Is the resistance less than 1 Ω ?	Go to step 14.	Repair open circuit in harness between TCM and ECM, and poor contact in connect connector.
14	CHECK HARNESS CONNECTOR BETWEEN TCM AND ECM. Measure the resistance of harness between TCM and ECM. Connector & terminal Without SPORT shift (B54) No. 14 — (B134) No. 3: With SPORT shift (B56) No. 9 — (B134) No. 3:	Is the resistance less than 1 Ω ?	Go to step 15.	Repair open circuit in harness between TCM and ECM, and poor contact in connect connector.

	Step	Check	Yes	No
15	CHECK HARNESS CONNECTOR BETWEEN TCM AND ECM. Measure the resistance of harness between TCM and chassis ground. Connector & terminal Without SPORT shift (B54) No. 13 — Chassis ground: (B54) No. 14 — Chassis ground: With SPORT shift (B56) No. 9 — Chassis ground: (B56) No. 18 — Chassis ground:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Abnormal of TCM and ECM is possi- ble (replace and check again).	Repair the open circuit in harness between TCM and ECM connector.

MEMO:

DIAGNOSTIC PROCEDURE WITH DIAGNOSTIC TROUBLE CODE (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

R: DTC 93 REAR VEHICLE SPEED SENSOR

DIAGNOSIS:

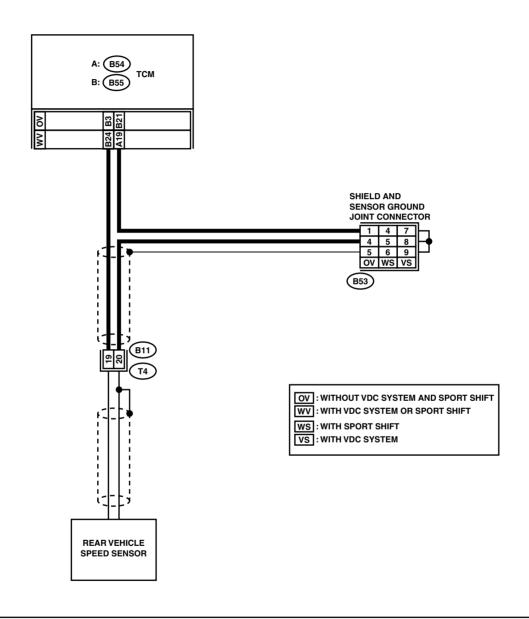
The input signal circuit of TCM is open or shorted.

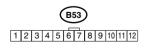
TROUBLE SYMPTOM:

No lock-up or excessive tight corner "braking".

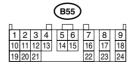
WIRING DIAGRAM:

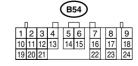
· Except U5 model





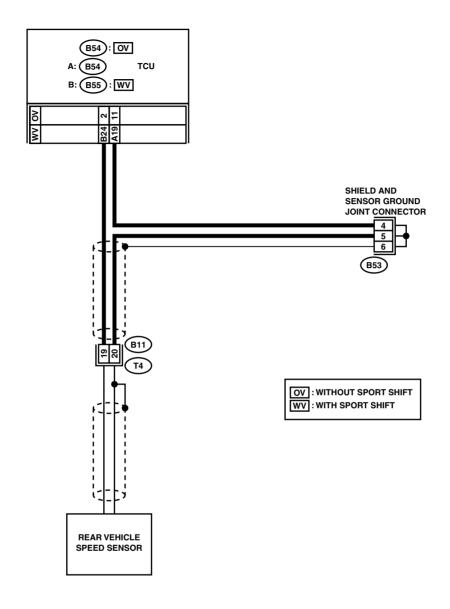


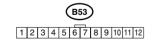




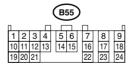
AT-00666

• U5 model











AT-01677

	Step	Check	Yes	No
	CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION. 1) Turn the ignition quitable CEE	Is the resistance less than 1 Ω ?	Go to step 2.	Repair the open circuit in harness
	Turn the ignition switch to OFF. Disconnect the connector from TCM and transmission.			between TCM and transmission connector.
	3) Measure the resistance of harness between TCM and transmission connector.			modor.
	Connector & terminal			
	Without VDC system and SPORT shift (Except U5 model)			
	(B55) No. 3 — (B11) No. 19: Without SPORT shift (U5 model)			
	(B55) No. 11 — (B11) No. 19: With VDC system or SPORT shift			
_	(B55) No. 24 — (B11) No. 19:			
	CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.	Is the resistance less than 1 Ω ?	Go to step 3.	Repair the open circuit in harness
	Measure the resistance of harness between	25:		between TCM and
	TCM and transmission connector. Connector & terminal			transmission, and poor contact in
	Without VDC system and SPORT shift			coupling connec-
	(Except U5 model)			tor.
	(B55) No. 21 — (B11) No. 20: Without SPORT shift (U5 model)			
	(B54) No. 11 — (B11) No. 20:			
	With VDC system or SPORT shift (B54) No. 19 — (B11) No. 20:			
	CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.	Is the resistance more than 1 $M\Omega$?	Go to step 4.	Repair the short circuit in harness
	Measure the resistance of harness between			between TCM and
	TCM and chassis ground.			transmission con-
	Connector & terminal Without VDC system and SPORT shift			nector.
	(Except U5 model)			
	(B55) No. 3 — Chassis ground:			
	Without SPORT shift (U5 model) (B55) No. 11 — Chassis ground:			
	With VDC system or SPORT shift			
	(B55) No. 24 — Chassis ground:			
	CHECK HARNESS CONNECTOR BETWEEN		Go to step 5.	Repair the short
	TCM AND TRANSMISSION. Measure the resistance of harness between	ΜΩ?		circuit in harness between TCM and
	TCM and chassis ground.			transmission con-
	Connector & terminal			nector.
	Without VDC system and SPORT shift			
	(Except U5 model) (B55) No. 21 — Chassis ground:			
	Without SPORT shift (U5 model)			
	(B54) No. 11 — Chassis ground:			
	With VDC system or SPORT shift			
5	(B54) No. 19 — Chassis ground: CHECK REAR VEHICLE SPEED SENSOR.	Is the resistance 450 — 650	Go to step 6.	Replace the rear
		Ω ?		vehicle speed sen-
	connector receptacle's terminals.			sor. <ref. 4at-<="" th="" to=""></ref.>
	Connector & terminal (T4) No. 19 — No. 20:			60, Rear Vehicle Speed Sensor.>
6	PREPARE OSCILLOSCOPE.	Do you have an oscilloscope?	Go to step 10.	Go to step 7.
	PREPARE SUBARU SELECT MONITOR.	Do you have a Subaru Select	Go to step 10.	Go to step 8.
=		Monitor?		

	Step	Check	Yes	No
8	 CHECK INPUT SIGNAL FOR TCM. 1) Connect the connectors to TCM and transmission. 2) Lift-up or raise the vehicle and place safety stands. NOTE: Raise all wheels off floor. 3) Start the engine and set vehicle in 20 km/h 	Is the voltage more than AC 1 V?	TEMP warning light illuminates, the circuit has returned to a normal condition at this time. A temporary poor contact	Go to step 11.
	(12 MPH) condition. NOTE: The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <ref. abs-22,="" clear="" memory="" mode.="" to=""></ref.>		of the connector or harness may be the cause. Repair the harness or connector in TCM and transmission.	
	4) Measure the voltage between TCM connector terminals. Connector & terminal Without VDC system and SPORT shift (Except U5 model) (B55) No. 3 (+) — (B55) No. 21 (-): Without SPORT shift (U5 model) (B55) No. 11 (+) — (B54) No. 11 (-): With VDC system or SPORT shift (B55) No. 24 (+) — (B54) No. 19 (-):			
9	CHECK INPUT SIGNAL FOR TCM USING SUBARU SELECT MONITOR. 1) Connect the connectors to TCM and transmission. 2) Connect the Subaru Select Monitor to data link connector. 3) Lift-up or raise the vehicle and place safety stands. NOTE: Raise all wheels off floor. 4) Turn the ignition switch to ON and turn Subaru Select Monitor switch to ON. 5) Start the engine. 6) Read the data of vehicle speed using Subaru Select Monitor. •Compare the speedometer with Subaru Select Monitor indications. •Vehicle speed is indicated in "km/h" or "MPH". 7) Slowly increase the vehicle speed to 60 km/h or 37 MPH. NOTE: The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <ref. abs-22,="" clear="" memory<="" td="" to=""><td></td><td>Even if the AT OIL TEMP warning light illuminates, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair the harness or connector in TCM and transmission.</td><td>Go to step 11.</td></ref.>		Even if the AT OIL TEMP warning light illuminates, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair the harness or connector in TCM and transmission.	Go to step 11.

	Step	Check	Yes	No
0	CHECK INPUT SIGNAL FOR TCM USING OSCILLOSCOPE. 1) Connect the connectors to TCM and transmission. 2) Lift-up or raise the vehicle and place safety stands. NOTE: Raise all wheels off floor. 3) Set the oscilloscope to TCM connector terminals. Connector & terminal Without VDC system and SPORT shift (Except U5 model) Positive probe; (B55) No. 3: Ground lead; (B55) No. 21: Without SPORT shift (U5 model) Positive probe; (B55) No. 11: Ground lead; (B54) No. 11: With VDC system or SPORT shift Positive probe; (B55) No. 24: Ground lead; (B54) No. 19: 4) Start the engine and set vehicle in 20 km/h (12 MPH) condition. NOTE: The speed difference between front and rear	Is the signal voltage more than AC 1 V?	Even if the AT OIL TEMP warning light illuminates, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair the harness or connector in TCM and transmission.	Go to step 11.
	wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <ref. abs-22,="" clear="" memory="" mode.="" to=""></ref.>			
	Measure the signal voltage indicated on oscilloscope.			
1	CHECK POOR CONTACT.	Is there poor contact in rear vehicle speed sensor circuit?	Repair the poor contact.	Replace the TCN <ref. 4at-79,<br="" to="">Transmission Co trol Module (TCM).></ref.>

MEMO:

DIAGNOSTIC PROCEDURE WITHOUT DIAGNOSTIC TROUBLE CODE (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

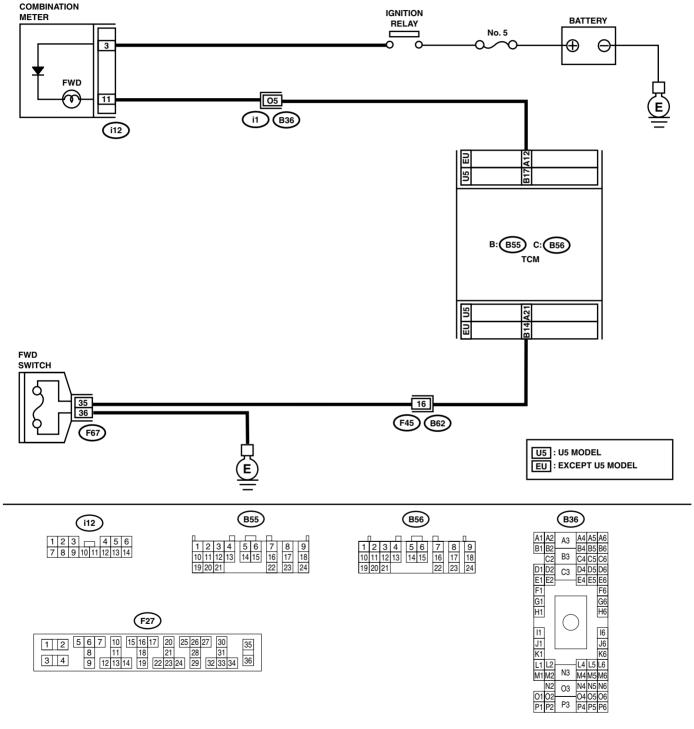
15. Diagnostic Procedure without Diagnostic Trouble Code (DTC)

A: CHECK FWD SWITCH

DIAGNOSIS:

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

WIRING DIAGRAM:



AT-01678

	Step	Check	Yes	No
1	CHECK VEHICLE.	Is vehicle being diagnosed for models with VDC system or SPORTS shift?	Go to step CHECK BRAKE SWITCH. <ref. to<br="">4AT(H4SO)-146, CHECK BRAKE SWITCH, Diag- nostic Procedure without Diagnostic Trouble Code (DTC).></ref.>	Go to step 2.
2	CHECK FWD SWITCH. Connect Select Monitor to data link connector, and display the LED monitor.	When the fuse is inserted to FWD switch, does LED light up?	Go to step CHECK BRAKE SWITCH. <ref. to<br="">4AT(H4SO)-146, CHECK BRAKE SWITCH, Diag- nostic Procedure without Diagnostic Trouble Code (DTC).></ref.>	Go to step 3.
3	CHECK FWD INDICATOR LIGHT. 1) Turn the ignition switch to OFF. 2) Remove the combination meter.	Is the FWD indicator light bulb OK?	Go to step 4.	Check the FWD indicator light bulb. <ref. assembly.="" combination="" idi-13,="" meter="" to=""></ref.>
4	CHECK HARNESS CONNECTOR BETWEEN TCM AND FWD SWITCH. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from TCM. 3) Measure the resistance of harness between TCM and FWD switch connector. Connector & terminal Except U5 model (B55) No. 14 — (F27) No. 36: U5 model (B54) No. 21 — (F27) No. 36:	Is the resistance less than 1 Ω ?	Go to step 5.	Repair the open circuit in harness between TCM and FWD switch connector.
5	CHECK HARNESS CONNECTOR BETWEEN	Is the resistance less than 1 Ω ?	Go to step 6.	Repair the open circuit in harness between FWD switch connector and chassis ground.
6	CHECK HARNESS CONNECTOR BETWEEN TCM AND FWD SWITCH. Measure the resistance of harness connector between TCM and body to make sure that circuit does not short. Connector & terminal Except U5 model (B55) No. 14 — Chassis ground: U5 model (B54) No. 21 — Chassis ground:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Go to step 7.	Repair the short circuit in harness between TCM and FWD switch con- nector.

DIAGNOSTIC PROCEDURE WITHOUT DIAGNOSTIC TROUBLE CODE (DTC)

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

	Step	Check	Yes	No
7	CHECK INPUT SIGNAL FOR TCM.	Is the voltage less than 1 V?	Go to step 8.	Go to step 12.
[Turn the ignition switch to OFF.	lo are venage rees aran i v.	Go to stop G.	G0 10 010p 121
	2) Connect the connector to TCM.			
	3) Turn the ignition switch to ON.			
	4) Measure the signal voltage for TCM while			
	,			
	installing the fuse to FWD switch connec-			
	tor.			
	Connector & terminal			
	Except U5 model			
	(B55) No. 14 (+) — Chassis ground (–):			
	U5 model			
	(B55) No. 21 (+) — Chassis ground (–):			
8	CHECK INPUT SIGNAL FOR TCM.	Is the voltage 6 — 9.1 V?	Go to step 9.	Replace the TCM.
	Measure the signal voltage for TCM while			<ref. 4at-79,<="" td="" to=""></ref.>
	removing the fuse from FWD switch connector.			Transmission Con-
	Connector & terminal			trol Module
	Except U5 model			(TCM).>
	(B55) No. 14 (+) — Chassis ground (–):			. ,
	U5 model			
	(B54) No. 21 (+) — Chassis ground (–):			
9	CHECK HARNESS CONNECTOR BETWEEN	Is the resistance less than 1	Go to step 10.	Repair the open
ľ	TCM AND COMBINATION METER.	Ω ?	GO 10 310p 10.	circuit in harness
	Turn the ignition switch to OFF.	22 :		between TCM and
	2) Disconnect the connector from TCM and			combination meter
	combination meter.			
				and poor contact
	Measure the resistance of harness Heavis TCM and discussing approach.			in connector.
	between TCM and diagnosis connector.			
	Connector & terminal			
	Except U5 model			
	(B54) No. 12 — (i12) No. 11:			
	U5 model			
	(B55) No. 17 — (i12) No. 11:			
10	CHECK HARNESS CONNECTOR BETWEEN	Is the resistance more than 1	Go to step 11.	Repair the short
	TCM AND COMBINATION METER.	ΜΩ?		circuit in harness
	Measure the resistance of harness connector			between TCM and
	between TCM and chassis ground to make			combination meter
	sure that circuit does not short.			connector.
	Connector & terminal			
	Except U5 model			
	(B54) No. 12 — Chassis ground:			
	U5 model			
	(B55) No. 17 — Chassis ground:			
11	CHECK OUTPUT SIGNAL EMITTED FROM	Is the voltage less than 1 V?	Go to step 12.	Go to step 13.
	TCM.			
	 Turn the ignition switch to OFF. 			
	2) Connect the connector to TCM and combi-			
	nation meter.			
	3) Turn the ignition switch to ON.			
	4) Measure the signal voltage for TCM while			
	installing the fuse to FWD switch connec-			
	tor.			
	Connector & terminal			
	Except U5 model			
	(B54) No. 12 (+) — Chassis ground (–):			
	(554) No. 12 (+) — Chassis ground (-). U5 model			
	(B55) No. 17 (+) — Chassis ground (–):			
	(Doo) No. 11 (τ) — Chassis ground $(-)$:			

	Step	Check	Yes	No
12	CHECK OUTPUT SIGNAL EMITTED FROM TCM. Measure the signal voltage for TCM while removing the fuse from FWD switch connector. Connector & terminal Except U5 model (B54) No. 12 (+) — Chassis ground (-): U5 model (B55) No. 17 (+) — Chassis ground (-):	Is the voltage 6 — 9.1 V?	Go to step 13.	Replace the TCM. <ref. 4at-79,<br="" to="">Transmission Con- trol Module (TCM).></ref.>
13	CHECK POOR CONTACT.	Is there poor contact in FWD switch circuit?	Repair the poor contact.	Replace the TCM. <ref. 4at-79,<br="" to="">Transmission Con- trol Module (TCM).></ref.>

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

B: CHECK BRAKE SWITCH

Step	Check	Yes	No
1 CHECK BRAKE SWITCH.	When the brake pedal is	Go to step CHECK	Check the brake
	depressed, does LED light up?	CRUISE CON-	switch circuit.
		TROL SWITCH.	
		<ref. th="" to<=""><th></th></ref.>	
		4AT(H4SO)-147,	
		CHECK CRUISE	
		CONTROL	
		SWITCH, Diag-	
		nostic Procedure	
		without Diagnostic	
		Trouble Code	
		(DTC).>	

C: CHECK CRUISE CONTROL SWITCH

Step	Check	Yes	No
1 CHECK CRUISE CONTROL SWITCH.	When the cruise control is set,	Go to step CHECK	Check the cruise
	does LED light up?	INHIBITOR	control. Turbo and
		SWITCH. <ref. th="" to<=""><th>U5 model <ref. th="" to<=""></ref.></th></ref.>	U5 model <ref. th="" to<=""></ref.>
		4AT(H4SO)-148,	CC(H4DOTC)-2,
		CHECK INHIBI-	Basic Diagnostic
		TOR SWITCH,	Procedure.>
		Diagnostic Proce-	Except turbo and
		dure without Diag-	U5 model <ref. th="" to<=""></ref.>
		nostic Trouble	CC(H4SO)-2,
			Basic Diagnostic
		, ,	Procedure.>

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

D: CHECK INHIBITOR SWITCH

DIAGNOSIS:

The input signal circuit of inhibitor switch is open or shorted.

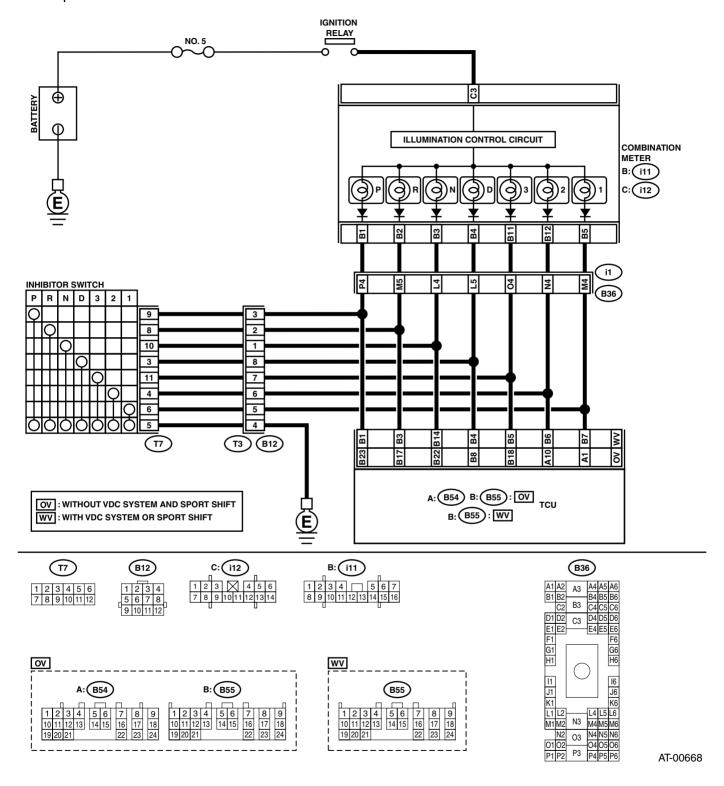
TROUBLE SYMPTOM:

- Shift characteristics are erroneous.
- Engine brake is not effected when selector lever is in "3" range.
 Engine brake is not effected when selector lever is in "2" range.
- Engine brake is not effected when selector lever is in "1" range.

AUTOMATIC TRANSMISSION (DIAGNOSTIĆS)

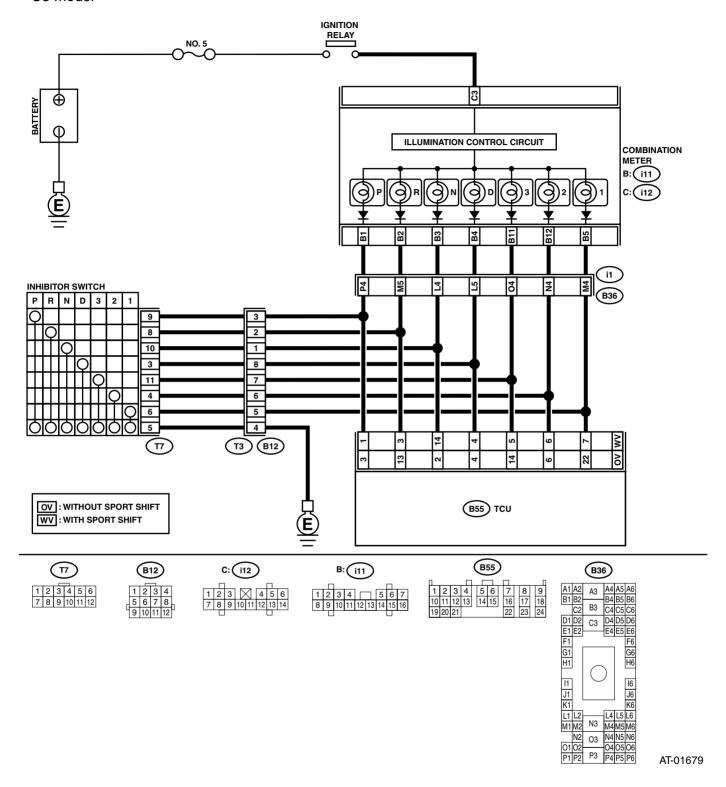
WIRING DIAGRAM:

Except U5 model



AUTOMATIC TRANSMISSION (DIAGNOSTICS)

U5 model



	Step	Check	Yes	No
1	CHECK "P" RANGE SWITCH.	When the "P" range is selected, does LED light up?	Go to step 2.	Go to step 22.
2	CHECK INDICATOR LIGHT.	Does the combination meter "P" range indicator illuminate?	Go to step 3.	Go to step 26.
3	CHECK "P" RANGE SWITCH.	When the "R" range is selected, does "P" range LED light up?	Go to step 28.	Go to step 4.
4	CHECK "R" RANGE SWITCH.	When the "R" range is selected, does LED light up?	Go to step 5.	Go to step 29.
5	CHECK INDICATOR LIGHT.	Does the combination meter "R" range indicator illuminate?	Go to step 6.	Go to step 32.
6	CHECK "R" RANGE SWITCH.	When the "N" range is selected, does "R" range LED light up?	Go to step 34.	Go to step 7.
7	CHECK "N" RANGE SWITCH.	When the "N" range is selected, does LED light up?	Go to step 8.	Go to step 35.
8	CHECK INDICATOR LIGHT.	Does the combination meter "N" range indicator illuminate?	Go to step 9.	Go to step 38.
9	CHECK "N" RANGE SWITCH.	When the "D" range is selected, does "N" range LED light up?	Go to step 40.	Go to step 10.
10	CHECK "D" RANGE SWITCH.	When the "D" range is selected, does LED light up?	Go to step 11.	Go to step 41.
11	CHECK INDICATOR LIGHT.	Does the combination meter "D" range indicator illuminate?	Go to step 12.	Go to step 44.
12	CHECK "D" RANGE SWITCH.	When the "3" range is selected, does "D" range LED light up?	Go to step 46.	Go to step 13.
13	CHECK "3" RANGE SWITCH.	When the "3" range is selected, does LED light up?	Go to step 14.	Go to step 47.
14	CHECK INDICATOR LIGHT.	Does the combination meter "3" range indicator illuminate?	Go to step 15.	Go to step 50.
15	CHECK "3" RANGE SWITCH.	When the "2" range is selected, does "3" range LED light up?	Go to step 52.	Go to step 16.
16	CHECK "2" RANGE SWITCH.	When the "2" range is selected, does LED light up?	Go to step 17.	Go to step 53.
17	CHECK INDICATOR LIGHT.	Does the combination meter "2" range indicator illuminate?	Go to step 18.	Go to step 56.
18	CHECK "2" RANGE SWITCH.	When the "1" range is selected, does "2" range LED light up?	Go to step 58.	Go to step 19.
19	CHECK "1" RANGE SWITCH.	When the "1" range is selected, does LED light up?	Go to step 20.	Go to step 59.
20	CHECK INDICATOR LIGHT.	Does the combination meter "1" range indicator illuminate?	Go to step 21.	Go to step 62.
21	CHECK "1" RANGE SWITCH.	When the "2" range is selected, does "1" range LED light UP?	Go to step 64.	Go to step Check SPORT SHIFT SWITCH. <ref. to<br="">4AT(H4SO)-164, CHECK SPORT SHIFT SWITCH., Diagnostic Proce- dure without Diag- nostic Trouble Code (DTC).></ref.>

	Step	Check	Yes	No
22	CHECK HARNESS CONNECTOR BETWEEN INHIBITOR SWITCH AND CHASSIS	Is the resistance less than 1 Ω ?	Go to step 23.	Repair the open circuit in harness
	GROUND.			between inhibitor
	 Turn the ignition switch to OFF. 			switch connector
	Disconnect the connector from inhibitor			and chassis
	switch.			ground, and poor
	Measure the resistance of harness			contact in cou-
	between inhibitor switch and chassis			pling connector.
	ground.			
	Connector & terminal			
	(T7) No. 5 — Chassis ground:			
23		Is the resistance less than 1	Go to step 24.	Repair the open
	TCM AND INHIBITOR SWITCH.	Ω?		circuit in harness
	1) Turn the ignition switch to OFF.			between TCM and
	2) Disconnect the connectors from TCM and			inhibitor switch
	inhibitor switch.			connector, and
	3) Measure the resistance of harness			poor contact in
	between TCM and inhibitor switch connec-			coupling connec-
	tor.			tor.
	Connector & terminal			
	Without VDC system and SPORT shift			
	(Except U5 model)			
	(B55) No. 23 — (T7) No. 9: Without SPORT shift (U5 model)			
	(B55) No. 3 — (T7) No. 9:			
	With VDC system or SPORT shift			
	(B55) No. 1 — (T7) No. 9:			
24	CHECK INPUT SIGNAL FOR TCM.	Is the voltage less than 1 V?	Go to step 25.	Go to step 65.
24	Turn the ignition switch to OFF.	is the voltage less than i v !	Go to step 23.	Go to step 65.
	2) Connect the connector to TCM and inhibitor			
	switch.			
	3) Turn the ignition switch to ON.			
	4) Move the select lever to "P" range.			
	5) Measure the voltage between TCM and			
	chassis ground.			
	Connector & terminal			
	Without VDC system and SPORT shift			
	(Except U5 model)			
	(B55) No. 23 (+) — Chassis ground (-):			
	Without SPORT shift (U5 model)			
	(B55) No. 3 (+) — Chassis ground (–):			
	With VDC system or SPORT shift			
	(B55) No. 1 (+) — Chassis ground (–):			
25	CHECK INPUT SIGNAL FOR TCM.	Is the voltage more than 8 V?	Go to step 65.	Replace the TCM.
	1) Position the select lever to any other than			<ref. 4at-79,<="" td="" to=""></ref.>
	"P" range.			Transmission Con-
	Measure the voltage between TCM and			trol Module
	chassis ground.			(TCM).>
	Connector & terminal			
	Without VDC system and SPORT shift			
	(Except U5 model)			
	(B55) No. 23 (+) — Chassis ground (-):			
	Without SPORT shift (U5 model)			
	(B55) No. 3 (+) — Chassis ground (-):			
	With VDC system or SPORT shift			
	(B55) No. 1 (+) — Chassis ground (–):			

	Step	Check	Yes	No
26	CHECK "P" RANGE INDICATOR LIGHT BULB. 1) Turn the ignition switch to OFF. 2) Remove the combination meter. 3) Remove the "P" range indicator light bulb from combination meter.	Is the "P" range indicator light bulb OK?	Go to step 27.	Replace the "P" range indicator light bulb. <ref. to<br="">IDI-13, Combina- tion Meter Assem- bly.></ref.>
27	CHECK HARNESS CONNECTOR BETWEEN TCM AND COMBINATION METER. 1) Disconnect the connectors from TCM and combination meter. 2) Measure the resistance of harness between TCM and combination meter. Connector & terminal Without VDC system and SPORT shift (Except U5 model) (B55) No. 23 — (i12) No. 14: Without SPORT shift (U5 model) (B55) No. 3 — (i11) No. 1: With VDC system or SPORT shift (B55) No. 1 — (i12) No. 14:	Is the resistance more than 1 Ω ?	Go to step 65.	Repair the open circuit in harness between TCM connector and combination meter, and poor contact in coupling connector.
28	CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from TCM, inhibitor switch and combination meter. 3) Measure the resistance of harness between TCM and chassis ground. Connector & terminal Without VDC system and SPORT shift (Except U5 model) (B55) No. 23 — Chassis ground: Without SPORT shift (U5 model) (B55) No. 3 — Chassis ground: With VDC system or SPORT shift (B55) No. 1 — Chassis ground:	Is the resistance less than 1 $\mbox{M}\Omega ?$	Go to step 29.	Repair the ground short circuit in "P" range circuit.
29		Is the resistance less than 1 Ω ?	Go to step 30.	Repair the open circuit in harness between TCM and inhibitor switch connector, and poor contact in coupling connector.

30	Step CHECK INPUT SIGNAL FOR TCM.	Check	Yes	No
		Is the voltage less than 1 V?	Go to step 31.	Go to step 65.
	Turn the ignition switch to OFF.		5.5 to 5.5p 5 11	old to disp co.
	2) Connect the connector to TCM and inhibitor			
	switch.			
	3) Turn the ignition switch to ON.			
	4) Move the select lever to "R" range.			
	5) Measure the voltage between TCM and			
	chassis ground. Connector & terminal			
	Without VDC system and SPORT shift			
	(Except U5 model)			
	(B55) No. 17 (+) — Chassis ground (–):			
	Without SPORT shift (U5 model)			
	(B55) No. 13 (+) — Chassis ground (–):			
	With VDC system or SPORT shift			
	(B55) No. 3 (+) — Chassis ground (–):			
31	CHECK INPUT SIGNAL FOR TCM.	Is the voltage more than 8 V?	Go to step 65.	Replace the TCM.
	Position the select lever to any other than			<ref. 4at-79,<="" td="" to=""></ref.>
	"R" range.			Transmission Con-
	Measure the voltage between TCM and shape is ground.			trol Module
	chassis ground. Connector & terminal			(TCM).>
	Without VDC system and SPORT shift			
	(Except U5 model)			
	(B55) No. 17 (+) — Chassis ground (–):			
	Without SPORT shift (U5 model)			
	(B55) No. 13 (+) — Chassis ground (–):			
	With VDC system or SPORT shift			
	(B55) No. 3 (+) — Chassis ground (–):		_	
32	CHECK "R" RANGE INDICATOR LIGHT	Is "R" range indicator light bulb	Go to step 33.	Replace the "R"
	BULB.	OK?		range indicator
	 Turn the ignition switch to OFF. Remove the combination meter. 			light bulb. <ref. combina-<="" idi-13,="" td="" to=""></ref.>
	3) Remove the "R" range indicator light bulb			tion Meter Assem-
	from combination meter.			bly.>
33	CHECK HARNESS CONNECTOR BETWEEN	Is the resistance less than 1	Go to step 65.	Repair the open
	TCM AND COMBINATION METER.	Ω?	•	circuit in harness
	1) Disconnect the connectors from TCM and			between TCM
	combination meter.			connector and
	2) Measure the resistance of harness			combination
	between TCM and combination meter.			meter, and poor
	Connector & terminal			contact in TCM
	Without VDC system and SPORT shift			connector.
	(Except U5 model) (B55) No. 17 — (i11) No. 2:			
	Without SPORT shift (U5 model)			
	(B55) No. 13 — (i11) No. 2:			
	With VDC system or SPORT shift			
	(B55) No. 3 — (i11) No. 2:			

	Step	Check	Yes	No
34	CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.	Is the resistance more than 1 $M\Omega$?	Go to step 35.	Repair the ground short circuit in "R"
	Turn the ignition switch to OFF.			range circuit.
	2) Disconnect the connectors from TCM,			J :
	inhibitor switch and combination meter.			
	Measure the resistance of harness			
	between TCM and chassis ground.			
	Connector & terminal			
	Without VDC system and SPORT shift			
	(Except U5 model)			
	(B55) No. 17 — Chassis ground:			
	Without SPORT shift (U5 model)			
	(B55) No. 13 — Chassis ground:			
	With VDC system or SPORT shift			
	(B55) No. 3 — Chassis ground:			
35	CHECK HARNESS CONNECTOR BETWEEN	Is the resistance less than 1	Go to step 36.	Repair the open
	TCM AND INHIBITOR SWITCH.	Ω ?		circuit in harness
	Turn the ignition switch to OFF.			between TCM and
	Disconnect the connectors from TCM and			inhibitor switch
	inhibitor switch.			connector, and
	3) Measure the resistance of harness			poor contact in
	between TCM and inhibitor switch connec-			coupling connec-
	tor.			tor.
	Connector & terminal			
	Without VDC system and SPORT shift			
	(Except U5 model)			
	(B55) No. 22 — (T7) No. 10:			
	Without SPORT shift (U5 model)			
	(B55) No. 2 — (T7) No. 10:			
	With VDC system or SPORT shift			
	(B55) No. 14 — (T7) No. 10:			
36	CHECK INPUT SIGNAL FOR TCM.	Is the voltage less than 1 V?	Go to step 37.	Go to step 65.
	 Turn the ignition switch to OFF. 			
	2) Connect the connector to TCM and inhibitor			
	switch.			
	3) Turn the ignition switch to ON.			
	4) Move the select lever to "N" range.			
	5) Measure the voltage between TCM and			
	chassis ground.			
	Connector & terminal			
	Without VDC system and SPORT shift			
	(Except U5 model)			
	(B55) No. 22 (+) — Chassis ground (-):			
	Without SPORT shift (U5 model)			
	(B55) No. 2 (+) — Chassis ground (−): With VDC system or SPORT shift			
	(B55) No. 14 (+) — Chassis ground (–):			
27	CHECK INPUT SIGNAL FOR TCM.	le the voltage more than 9 1/2	Go to stop 65	Poplace the TCM
37		Is the voltage more than 8 V?	Go to step 65.	Replace the TCM.
	Position the select lever to any other than "N" range			<ref. 4at-79,<br="" to="">Transmission Con-</ref.>
	"N" range. 2) Measure the voltage between TCM and			trol Module
	chassis ground.			(TCM).>
	Connector & terminal			(i Oivij. >
	Without VDC system and SPORT shift			
	(Except U5 model)			
	(B55) No. 22 (+) — Chassis ground (–):			
	Without SPORT shift (U5 model)			
	(B55) No. 2 (+) — Chassis ground (–):			
	With VDC system or SPORT shift			
	(B55) No. 14 (+) — Chassis ground (–):			
	(600) No. 14 $(+)$ — Chassis ground $(-)$:			

	Step	Check	Yes	No
38	CHECK "N" RANGE INDICATOR LIGHT BULB.	Is the "N" range indicator light bulb OK?	Go to step 39.	Replace the "N" range indicator
		buib OK!		light bulb. <ref. td="" to<=""></ref.>
	 Turn the ignition switch to OFF. Remove the combination meter. 			IDI-13, Combina-
	Remove the combination meter. Remove the "N" range indicator light bulb			tion Meter Assem-
	from combination meter.			bly.>
39	CHECK HARNESS CONNECTOR BETWEEN	Is the resistance less than 1	Go to step 65.	Repair the open
	TCM AND COMBINATION METER.	Ω ?	Go to stop GG.	circuit in harness
	Disconnect the connectors from TCM and			between TCM
	combination meter.			connector and
	Measure the resistance of harness			combination
	between TCM and combination meter.			meter, and poor
	Connector & terminal			contact in TCM
	Without VDC system and SPORT shift			connector.
	(Except U5 model)			
	(B55) No. 22 — (i12) No. 12:			
	Without SPORT shift (U5 model)			
	(B39) No. 2 — (i11) No. 3:			
	With VDC system or SPORT shift			
	(B55) No. 14 — (i1) No. 3:			
40	CHECK HARNESS CONNECTOR BETWEEN	Is the resistance more than 1	Go to step 41.	Repair the ground
	TCM AND INHIBITOR SWITCH.	ΜΩ?	'	short circuit in "N"
	1) Turn the ignition switch to OFF.			range circuit.
	2) Disconnect the connectors from TCM,			
	inhibitor switch and combination meter.			
	3) Measure the resistance of harness			
	between TCM and chassis ground.			
	Connector & terminal			
	Without VDC system and SPORT shift			
	(Except U5 model)			
	(B55) No. 22 — Chassis ground:			
	Without SPORT shift (U5 model)			
	(B55) No. 2 — Chassis ground:			
	With VDC system or SPORT shift			
	(B55) No. 14 — Chassis ground:			
41	CHECK HARNESS CONNECTOR BETWEEN	Is the resistance less than 1	Go to step 42.	Repair the open
	TCM AND INHIBITOR SWITCH.	Ω ?		circuit in harness
	 Turn the ignition switch to OFF. 			between TCM and
	Disconnect the connectors from TCM and			inhibitor switch
	inhibitor switch.			connector, and
	3) Measure the resistance of harness			poor contact in
	between TCM and inhibitor switch connec-			coupling connec-
	tor.			tor.
	Connector & terminal			
	Without VDC system and SPORT shift			
	(Except U5 model)			
	(B55) No. 8 — (T7) No. 3:			
	U5 model and with VDC system or			
	SPORT shift			
	(B55) No. 4 — (T7) No. 3:			

CHECK INPUT SIGNAL FOR TCM. 1) Turn the ignition switch to OFF. 2) Connect the connector to TCM and inhibitor switch. 3) Turn the ignition switch to ON. 4) Move the select lever to "D" range. 5) Measure the voltage between TCM and chassis ground. Connector & terminal Without VDC system and SPORT shift (Except U5 model) (B55) No. 8 (+) — Chassis ground (-): U5 model and with VDC system or SPORT shift (B55) No. 4 (+) — Chassis ground (-): U5 model and with VDC system or SPORT shift (B55) No. 4 (+) — Chassis ground (-): U5 model and with VDC system or SPORT shift (Except U5 model) (B55) No. 4 (+) — Chassis ground (-): U5 model and with VDC system or SPORT shift (Except U5 model) (B55) No. 8 (+) — Chassis ground (-): U5 model and with VDC system or SPORT shift (Except U5 model) (B55) No. 8 (+) — Chassis ground (-): U5 model and with VDC system or SPORT shift (B55) No. 4 (+) — Chassis ground (-): U5 model and with VDC system or SPORT shift (B55) No. 4 (+) — Chassis ground (-): U5 model and with VDC system or SPORT shift (B55) No. 4 (+) — Chassis ground (-): U5 model and with VDC system or SPORT shift (B55) No. 4 (+) — Chassis ground (-): U5 model and with VDC system or SPORT shift (B55) No. 4 (+) — Chassis ground (-): U5 model and with VDC system or SPORT shift (B55) No. 4 (+) — Chassis ground (-): U5 model and with VDC system or SPORT shift (B55) No. 4 (+) — Chassis ground (-): U5 model and with VDC system or SPORT shift (B55) No. 4 (+) — Chassis ground (-): U5 model and with VDC system or SPORT shift (B55) No. 4 (+) — Chassis ground (-): U5 model and with VDC system or SPORT shift (B55) No. 4 (+) — Chassis ground (-): U5 model and with VDC system or SPORT shift (B55) No. 4 (+) — Chassis ground (-): U5 model and with VDC system or SPORT shift (B55) No. 4 (+) — Chassis ground (-): U5 model and with VDC system or SPORT shift (B55) No. 4 (+) — Chassis ground (-): U5 model and with VDC system or SPORT shift (B55) No. 4 (+) — Chassis ground (-): U5 model and with VDC system or SPORT shift (B55) No. 4 (+)	
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### U5 model and with VDC system or SPORT shift ### (B55) No. 4 (+) — Chassis ground (-): ### CHECK INPUT SIGNAL FOR TCM. 1) Position select lever to any other than "D" range. 2) Measure the voltage between TCM and chassis ground. ### Connector & terminal ### Without VDC system and SPORT shift ### (Except U5 model) ### (B55) No. 8 (+) — Chassis ground (-): ### U5 model and with VDC system or SPORT shift ### (B55) No. 4 (+) — Chassis ground (-): ### CHECK "D" RANGE INDICATOR LIGHT ### BULB. 1) Turn the ignition switch to OFF. 2) Remove the combination meter. 3) Remove the "D" range indicator light bulb from combination meter. 45 CHECK HARNESS CONNECTOR BETWEEN TCM AND COMBINATION METER. 1) Disconnect the connectors from TCM and combination meter. 2) Measure the resistance of harness	
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 CHECK "D" RANGE INDICATOR LIGHT BULB. 1) Turn the ignition switch to OFF. 2) Remove the combination meter. 3) Remove the "D" range indicator light bulb from combination meter. CHECK HARNESS CONNECTOR BETWEEN TCM AND COMBINATION METER. 1) Disconnect the connectors from TCM and combination meter. B the "D" range indicator light bulb bulb bulb is the resistance less than 1 Ω? Go to step 45. Go to step 45. 	
 BULB. Turn the ignition switch to OFF. Remove the combination meter. Remove the "D" range indicator light bulb from combination meter. CHECK HARNESS CONNECTOR BETWEEN TCM AND COMBINATION METER. Disconnect the connectors from TCM and combination meter. Measure the resistance of harness bulb OK? bulb OK? 	Replace the "D"
 2) Remove the combination meter. 3) Remove the "D" range indicator light bulb from combination meter. 45 CHECK HARNESS CONNECTOR BETWEEN TCM AND COMBINATION METER. 1) Disconnect the connectors from TCM and combination meter. 2) Measure the resistance of harness 	range indicator
 3) Remove the "D" range indicator light bulb from combination meter. 45 CHECK HARNESS CONNECTOR BETWEEN TCM AND COMBINATION METER. 1) Disconnect the connectors from TCM and combination meter. 2) Measure the resistance of harness 	light bulb. <ref. td="" to<=""></ref.>
from combination meter. 45 CHECK HARNESS CONNECTOR BETWEEN TCM AND COMBINATION METER. 1) Disconnect the connectors from TCM and combination meter. 2) Measure the resistance of harness	IDI-13, Combina-
 45 CHECK HARNESS CONNECTOR BETWEEN TCM AND COMBINATION METER. 1) Disconnect the connectors from TCM and combination meter. 2) Measure the resistance of harness 	tion Meter Assem-
 TCM AND COMBINATION METER. 1) Disconnect the connectors from TCM and combination meter. 2) Measure the resistance of harness 	bly.>
Disconnect the connectors from TCM and combination meter. Measure the resistance of harness	· ·
combination meter. 2) Measure the resistance of harness	circuit in harness
2) Measure the resistance of harness	between TCM
· ·	connector and
between 1 CW and combination meter.	combination
Connector & terminal	meter, and TCM connector.
Without VDC system and SPORT shift	connector.
(Except U5 model)	
(B55) No. 8 — (i11) No. 4:	
U5 model and with VDC system or	
SPORT shift	
(B55) No. 4 — (i11) No. 4:	
46 CHECK HARNESS CONNECTOR BETWEEN Is the resistance more than 1 Go to step 47.	
TCM AND INHIBITOR SWITCH. $M\Omega$?	short circuit in "D"
1) Turn the ignition switch to OFF.	range circuit.
2) Disconnect the connectors from TCM, inhibitor switch and combination mater	
inhibitor switch and combination meter. 3) Measure the resistance of harness	
between TCM and chassis ground.	
Connector & terminal	
Without VDC system and SPORT shift	
(Except U5 model)	1
(B55) No. 8 — Chassis ground:	
U5 model and with VDC system or	
SPORT shift	
(B55) No. 4 — Chassis ground:	

	Step	Check	Yes	No
47	CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from TCM and inhibitor switch. 3) Measure the resistance of harness between TCM and inhibitor switch connector. Connector & terminal Without VDC system and SPORT shift (Except U5 model) (B55) No. 18 — (T7) No. 11: Without SPORT shift (U5 model) (B55) No. 14 — (T7) No. 11: With VDC system or SPORT shift	Check Is the resistance less than 1 Ω?	Yes Go to step 48.	No Repair the open circuit in harness between TCM and inhibitor switch connector, and poor contact in coupling connector.
48	 (B55) No. 5 — (T7) No. 11: CHECK INPUT SIGNAL FOR TCM. 1) Turn the ignition switch to OFF. 2) Connect the connector to TCM and inhibitor switch. 3) Turn the ignition switch to ON. 4) Move the select lever to "3" range. 5) Measure the voltage between TCM and chassis ground. Connector & terminal Without VDC system and SPORT shift (Except U5 model) (B55) No. 18 (+) — Chassis ground (-): Without SPORT shift (U5 model) (B55) No. 14 (+) — Chassis ground (-): With VDC system or SPORT shift (B55) No. 5 (+) — Chassis ground (-): 	Is the voltage less than 1 V?	Go to step 49.	Go to step 65.
49	CHECK INPUT SIGNAL FOR TCM. 1) Position the select lever to any other than "3" range. 2) Measure the voltage between TCM and chassis ground. Connector & terminal Without VDC system and SPORT shift (Except U5 model) (B55) No. 18 (+) — Chassis ground (-): Without SPORT shift (U5 model) (B55) No. 14 (+) — Chassis ground (-): With VDC system or SPORT shift (B55) No. 5 (+) — Chassis ground (-):	Is the voltage more than 8 V?	Go to step 65.	Replace the TCM. <ref. 4at-79,<br="" to="">Transmission Con- trol Module (TCM).></ref.>
50	CHECK "3" RANGE INDICATOR LIGHT BULB. 1) Turn the ignition switch to OFF. 2) Remove the combination meter. 3) Remove the "3" range indicator light bulb from combination meter.	Is the "3" range indicator light bulb OK?	Go to step 51.	Replace the "3" range indicator light bulb. <ref. to<br="">IDI-13, Combina- tion Meter Assem- bly.></ref.>

	Step	Check	Yes	No
51	TCM AND COMBINATION METER.	Is the resistance more than 1 Ω ?	Go to step 65.	Repair the open circuit in harness
	Disconnect the connectors from TCM and application mater			between TCM
	combination meter. 2) Measure the resistance of harness			connector and combination
	between TCM and combination meter.			meter, and poor
	Connector & terminal			contact in TCM
	Without VDC system and SPORT shift			connector.
	(Except U5 model)			connector.
	(B55) No. 18 — (i11) No. 11:			
	Without SPORT shift (U5 model)			
	(B55) No. 14 — (i11) No. 11:			
	With VDC system or SPORT shift			
	(B55) No. 5 — (i11) No. 11:			
52		Is the resistance more than 1	Go to step 53.	Repair the ground
	TCM AND INHIBITOR SWITCH.	ΜΩ?		short circuit in "3"
	Turn the ignition switch to OFF. Discourage the appropriate from TCM.			range circuit.
	Disconnect the connectors from TCM, inhibitor switch and combination meter.			
	Measure the resistance of harness between TCM and chassis ground.			
	Connector & terminal			
	Without VDC system and SPORT shift			
	(Except U5 model)			
	(B55) No. 18 — Chassis ground:			
	Without SPORT shift (U5 model)			
	(B55) No. 14 — Chassis ground:			
	With VDC system or SPORT shift			
	(B55) No. 5 — Chassis ground:			
53	CHECK HARNESS CONNECTOR BETWEEN	Is the resistance less than 1	Go to step 54.	Repair the open
	TCM AND INHIBITOR SWITCH.	Ω?		circuit in harness
	 Turn the ignition switch to OFF. 			between TCM and
	Disconnect the connector from TCM and			inhibitor switch
	inhibitor switch.			connector, and
	3) Measure the resistance of harness			poor contact in
	between TCM and inhibitor switch connec-			coupling connec-
	tor.			tor.
	Connector & terminal			
	Without VDC system and SPORT shift			
	(Except U5 model) (B54) No. 10 — (T7) No. 4:			
	U5 model and with VDC system or			
	SPORT shift			
	(B55) No. 6 — (T7) No. 4:			
54	CHECK INPUT SIGNAL FOR TCM.	Is the voltage less than 1 V?	Go to step 55.	Go to step 65.
	Turn the ignition switch to OFF.			
	2) Connect the connector to TCM and inhibitor			
	switch.			
	3) Turn the ignition switch to ON.			
	4) Move the select lever to "2" range.			
	5) Measure the voltage between TCM and			
	chassis ground.			
	Connector & terminal			
	Without VDC system and SPORT shift			
	(Except U5 model)			
	(B54) No. 10 (+) — Chassis ground (–):			
	U5 model and with VDC system or			
	SPORT shift			
	(B55) No. 6 (+) — Chassis ground (–):			

	Step	Check	Yes	No
55	CHECK INPUT SIGNAL FOR TCM.	Is the voltage more than 8 V?	Go to step 65.	Replace the TCM.
	Position the select lever to any other than	le me remage mere man e v		<ref. 4at-79,<="" td="" to=""></ref.>
	"2" range.			Transmission Con-
	2) Measure the voltage between TCM and			trol Module
	chassis ground.			(TCM).>
	Connector & terminal			,
	Without VDC system and SPORT shift			
	(Except U5 model)			
	(B54) No. 10 (+) — Chassis ground (-):			
	U5 model and with VDC system or			
	SPORT shift			
	(B55) No. 6 (+) — Chassis ground (–):			
56	CHECK "2" RANGE INDICATOR LIGHT	Is the "2" range indicator light	Go to step 57.	Replace the "2"
	BULB.	bulb OK?		range indicator
	1) Turn the ignition switch to OFF.			light bulb. <ref. td="" to<=""></ref.>
	2) Remove the combination meter.			IDI-13, Combina-
	3) Remove the "2" range indicator light bulb			tion Meter Assem-
	from combination meter.			bly.>
57	CHECK HARNESS CONNECTOR BETWEEN	Is the resistance less than 1	Go to step 65.	Repair the open
	TCM AND COMBINATION METER.	Ω ?		circuit in harness
	 Disconnect the connectors from TCM and 			between TCM and
	combination meter.			combination
	Measure the resistance of harness			meter, and poor
	between TCM and combination meter.			contact in TCM
	Connector & terminal			connector.
	Without VDC system and SPORT shift			
	(Except U5 model)			
	(B54) No. 10 — (i11) No. 12:			
	U5 model and with VDC system or			
	SPORT shift			
	(B55) No. 6 — (i11) No. 12:			
58		Is the resistance more than 1	Go to step 59.	Repair the ground
	TCM AND INHIBITOR SWITCH.	ΜΩ?		short circuit in "2"
	1) Turn the ignition switch to OFF.			range circuit.
	2) Disconnect the connectors from TCM,			
	inhibitor switch and combination meter.			
	Measure the resistance of harness hetween TCM and chaosis ground			
	between TCM and chassis ground. Connector & terminal			
	Without VDC system and SPORT shift			
	(Except U5 model)			
	(B54) No. 10 — Chassis ground:			
	U5 model and with VDC system or			
	SPORT shift			
	(B55) No. 6 — Chassis ground:			
	(DOO) No. $O - O(assis ground.)$		ĺ	1

	Step	Check	Yes	No
59	-	Is the resistance less than 1	Go to step 60.	Repair the open
39	TCM AND INHIBITOR SWITCH.	Ω ?	do to step oo.	circuit in harness
	Turn the ignition switch to OFF.	22:		between TCM and
	2) Disconnect the connectors from TCM and			inhibitor switch
	inhibitor switch.			connector, and
	Measure the resistance of harness			poor contact in
	between TCM and inhibitor switch connec-			coupling connec-
	tor.			
				tor.
	Connector & terminal			
	Without VDC system and SPORT shift			
	(Except U5 model)			
	(B54) No. 1 — (T7) No. 6:			
	Without SPORT shift (U5 model)			
	(B55) No. 22 — (T7) No. 6:			
	With VDC system or SPORT shift			
	(B55) No. 7 — (T7) No. 6:			
60	CHECK INPUT SIGNAL FOR TCM.	Is the voltage less than 1 V?	Go to step 61.	Go to step 65.
	 Turn the ignition switch to OFF. 			
	2) Connect the connector to TCM and inhibitor			
	switch.			
	Turn the ignition switch to ON.			
	Move the select lever to "1" range.			
	Measure the voltage between TCM and			
	chassis ground.			
	Connector & terminal			
	Without VDC system and SPORT shift			
	(Except U5 model)			
	(B54) No. 1 (+) — Chassis ground (–):			
	Without SPORT shift (U5 model)			
	(B55) No. 22 (+) — Chassis ground (-):			
	With VDC system or SPORT shift			
	(B55) No. 7 (+) — Chassis ground (–):			
61	CHECK INPUT SIGNAL FOR TCM.	Is the voltage more than 8 V?	Go to step 65.	Replace the TCM.
	Position the select lever to any other than	and total go there are a re-		<ref. 4at-79,<="" td="" to=""></ref.>
	"1" range.			Transmission Con-
	Measure the voltage between TCM and			trol Module
	chassis ground.			(TCM).>
	Connector & terminal			(1011).2
	Without VDC system and SPORT shift			
	(Except U5 model)			
	(B54) No. 1 (+) — Chassis ground (–):			
	Without SPORT shift (U5 model)			
	(B55) No. 22 (+) — Chassis ground (–):			
	With VDC system or SPORT shift			
	(B55) No. 7 (+) — Chassis ground (–):	1-1-647	0-1100	D
62	CHECK "1" RANGE INDICATOR LIGHT	Is the "1" range indicator light	Go to step 63.	Replace the "1"
	BULB.	bulb OK?		range indicator
	Turn the ignition switch to OFF.			light bulb. <ref. td="" to<=""></ref.>
	2) Remove the combination meter.			IDI-13, Combina-
	3) Remove the "1" range indicator light bulb			tion Meter Assem-
	from combination meter.			bly.>

	Step	Check	Yes	No
63	CHECK HARNESS CONNECTOR BETWEEN TCM AND COMBINATION METER. 1) Disconnect the connectors from TCM and combination meter. 2) Measure the resistance of harness between TCM and combination meter. Connector & terminal Without VDC system and SPORT shift (Except U5 model) (B54) No. 1 — (i11) No. 5: Without SPORT shift (U5 model) (B55) No. 22 — (i11) No. 5: With VDC system or SPORT shift (B55) No. 7 — (i11) No. 5:	Is the resistance less than 1Ω ?	Go to step 65 .	Repair the open circuit in harness between TCM and combination meter, poor contact in TCM connector.
64	CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH. 1) Turn the ignition switch to OFF. 2) Disconnect the connectors from TCM, inhibitor switch and combination meter. 3) Measure the resistance of harness between TCM and chassis ground. Connector & terminal Without VDC system and SPORT shift (Except U5 model) (B54) No. 1 — Chassis ground: Without SPORT shift (U5 model) (B55) No. 22 — Chassis ground: With VDC system or SPORT shift (B55) No. 7 — Chassis ground:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Go to step 65.	Repair the ground short circuit in "1" range circuit.
65	CHECK POOR CONTACT.	Is there poor contact in inhibitor switch circuit?	Repair the poor contact.	Adjust the inhibitor switch and select cable. <ref. 4at-51,="" adjustment,="" inhibitor="" switch.="" to=""> and <ref. cable.="" cs-31,="" select="" to=""></ref.></ref.>

MEMO:

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

E: CHECK SPORT SHIFT SWITCH.

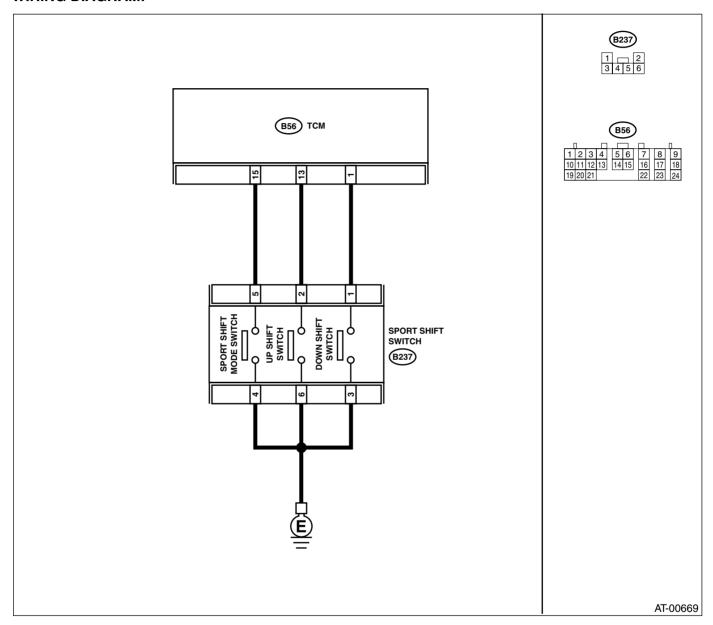
DIAGNOSIS:

SPORT shift switch input signal circuit is open or shorted.

TROUBLE SYMPTOM:

- · No SPORT shift mode occurs.
- · Does not shift gears in SPORT shift mode.

WIRING DIAGRAM:



	Step	Check	Yes	No
1	CHECK VEHICLE.	Is the target model equipped with SPORT shift?	Go to step 2.	Go to step SYMP- TOM RELATED DIAGNOSTIC. <ref. to<br="">4AT(H4SO)-174, Symptom Related Diagnostic.></ref.>
2	CHECK SPORT SHIFT SWITCH.	Does LED light up when select lever is moved to SPORT shift mode?	Go to step 3.	Go to step 5.
3	CHECK SPORT SHIFT SWITCH.	Does LED light up when select lever is moved to shift up side?	Go to step 4.	Go to step 12.
4	CHECK SPORT SHIFT SWITCH.	Does LED light up when select lever is moved to shift down side?	Go to step CHECK SPORT SHIFT INDICATOR. <ref. to<br="">4AT(H4SO)-170, CHECK SPORT SHIFT INDICA- TOR., Diagnostic Procedure without Diagnostic Trou- ble Code (DTC).></ref.>	Go to step 19.
5	CHECK SPORT SHIFT SWITCH GROUND LINE. 1) Turn ignition switch to OFF. 2) Disconnect connector from SPORT shift switch. 3) Measure resistance of harness between SPORT shift switch connector and chassis ground. Connector & terminal (B237) No. 4 — Chassis ground:	Is the resistance less than 1 Ω ?	Go to step 6.	Repair open circuit in harness between SPORT shift switch and chassis ground.
6	CHECK SPORT SHIFT SWITCH. Measure resistance between SPORT shift switch terminals. Connector & terminal (B237) No. 4 — No. 5:	Is the resistance less than 1 $\mbox{M}\Omega ?$	Go to step 7.	Replace lever plate assembly.
7	 CHECK SPORT SHIFT SWITCH. 1) Move select lever to SPORT shift mode. 2) Measure resistance between SPORT shift switch terminals. Connector & terminal (B237) No. 4 — No. 5: 	Is the resistance less than 1 Ω ?	Go to step 8.	Replace lever plate assembly.
8	CHECK HARNESS CONNECTOR BETWEEN TCM AND SPORT SHIFT SWITCH. 1) Disconnect connector from TCM. 2) Measure resistance of harness between TCM connector and SPORT shift switch connector. Connector & terminal (B237) No. 5 — (B56) No. 15:	Is the resistance less than 1 Ω ?	Go to step 9.	Repair open circuit in harness between SPORT shift switch connector and TCM connector and poor contact in coupling connector.

	Step	Check	Yes	No
9	CHECK HARNESS CONNECTOR BETWEEN TCM AND SPORT SHIFT SWITCH.	Is the resistance more than 1 $M\Omega$?	Go to step 10.	Repair short circuit in harness
	 Disconnect connector from TCM. 			between SPORT
	Measure resistance of harness between			shift switch con-
	SPORT shift switch connector and chassis			nector and TCM
	ground. Connector & terminal			connector.
	(B237) No. 5 — Chassis ground:			
10	CHECK INPUT SIGNAL FOR TCM.	Is the voltage more than 9 V?	Go to step 11.	Replace TCM.
	Connect connector to TCM and SPORT			<ref. 4at-79,<="" td="" to=""></ref.>
	shift switch. 2) Turn ignition switch to ON. (Engine is			Transmission Control Module
	stopped.)			(TCM).>
	Move select lever to normal mode.			(10111).5
	4) Measure signal voltage for TCM.			
	Connector & terminal			
	(B56) No. 15 (+) — Chassis ground (–):			
11	CHECK INPUT SIGNAL FOR TCM.	Is the voltage less than 1 V?	Go to step 26.	Replace TCM.
	Move select lever to SPORT shift mode. Move select lever to SPORT shift mode.			<ref. 4at-79,<="" td="" to=""></ref.>
	 Measure signal voltage for TCM. Connector & terminal 			Transmission Con- trol Module
	(B56) No. 15 (+) — Chassis ground (–):			(TCM).>
12	CHECK SPORT SHIFT SWITCH GROUND	Is the resistance less than 1	Go to step 13.	Repair open circuit
	LINE.	Ω ?		in harness
	1) Turn ignition switch to OFF.			between SPORT
	Disconnect connector from SPORT shift			shift switch and
	switch.			chassis ground.
	3) Measure resistance of harness between			
	SPORT shift switch connector and chassis			
	ground. Connector & terminal			
	(B237) No. 6 — Chassis ground:			
13	CHECK SPORT SHIFT SWITCH.	Is the resistance more than 1	Go to step 14.	Replace guide
	1) Measure resistance between SPORT shift	$M\Omega$?		plate assembly.
	switch terminals.			
	Connector & terminal			
14	(B237) No. 6 — No. 2: CHECK SPORT SHIFT SWITCH.	Is the resistance less than 1	Go to step 15.	Replace guide
14	Move select lever to SPORT shift mode.	Ω ?	Go to step 15.	plate assembly.
	Measure resistance between SPORT shift	52:		plate assembly.
	switch terminals.			
	Connector & terminal			
	(B237) No. 6 — No. 2:			
15		Is the resistance less than 1	Go to step 16.	Repair open circuit
	TCM AND SPORT SHIFT SWITCH.	Ω ?		in harness
	 Disconnect connector from TCM. Measure resistance of harness between 			between SPORT shift switch con-
	TCM connector and SPORT shift switch			nector and TCM
	connector.			connector and
	Connector & terminal			poor contact in
	(B237) No. 2 — (B56) No. 13:			coupling connec-
				tor.
16		Is the resistance less than 1	Go to step 17.	Repair short circuit
	TCM AND SPORT SHIFT SWITCH.	ΜΩ?		in harness
	 Disconnect connector from TCM. Measure resistance of harness between 			between SPORT shift switch con-
	SPORT shift switch connector and chassis			nector and TCM
	ground.			connector.
	Connector & terminal			
	(B237) No. 2 — Chassis ground:			

	Step	Check	Yes	No
17	 CHECK INPUT SIGNAL FOR TCM. 1) Connect connector to TCM and SPORT shift switch. 2) Turn ignition switch to ON. (Engine is stopped.) 3) Measure signal voltage for TCM. Connector & terminal (B56) No. 13 (+) — Chassis ground (-): 	Is the voltage more than 9 V?	Go to step 18.	Replace TCM. <ref. 4at-79,<br="" to="">Transmission Con- trol Module (TCM).></ref.>
18	CHECK INPUT SIGNAL FOR TCM. 1) Move select lever to shift up side. 2) Measure signal voltage for TCM. Connector & terminal (B56) No. 13 (+) — Chassis ground (-):	Is the voltage less than 1 V?	Go to step 26.	Replace TCM. <ref. 4at-79,<br="" to="">Transmission Con- trol Module (TCM).></ref.>
19	CHECK SPORT SHIFT SWITCH GROUND LINE. 1) Turn ignition switch to OFF. 2) Disconnect connector from SPORT shift switch. 3) Measure resistance of harness between SPORT shift switch connector and chassis ground. Connector & terminal (B237) No. 3 — Chassis ground:	Is the resistance less than 1 Ω ?	Go to step 20.	Repair open circuit in harness between SPORT shift switch and chassis ground.
20	CHECK SPORT SHIFT SWITCH. Measure resistance between SPORT shift switch terminals. Connector & terminal (B237) No. 3 — No. 1:	Is the resistance more than 1 $\mbox{M}\Omega\mbox{?}$	Go to step 21.	Replace guide plate assembly.
21	 CHECK SPORT SHIFT SWITCH. 1) Move select lever to SPORT shift mode. 2) Measure resistance between SPORT shift switch terminals. Connector & terminal (B237) No. 3 — No. 1: 	Is the resistance less than 1 Ω ?	Go to step 22.	Replace guide plate assembly.
22	CHECK HARNESS CONNECTOR BETWEEN TCM AND SPORT SHIFT SWITCH. 1) Disconnect connector from TCM. 2) Measure resistance of harness between TCM connector and SPORT shift switch connector. Connector & terminal (B237) No. 1 — (B56) No. 2:	Is the resistance less than 1 Ω ?	Go to step 23.	Repair open circuit in harness between SPORT shift switch connector and TCM connector and poor contact in coupling connector.
23	CHECK HARNESS CONNECTOR BETWEEN TCM AND SPORT SHIFT SWITCH. 1) Disconnect connector from TCM. 2) Measure resistance of harness between SPORT shift switch connector and chassis ground. Connector & terminal (B237) No. 1 — Chassis ground:	Is the resistance less than 1 $\mbox{M}\Omega\mbox{?}$	Go to step 24.	Repair short circuit in harness between SPORT shift switch con- nector and TCM connector.
24	CHECK INPUT SIGNAL FOR TCM. 1) Connect connector to TCM and SPORT shift switch. 2) Turn ignition switch to ON. (Engine is stopped.) 3) Measure signal voltage for TCM. Connector & terminal (B56) No. 2 (+) — Chassis ground (-):	Is the voltage more than 9 V?	Go to step 25.	Replace TCM. <ref. 4at-79,<br="" to="">Transmission Con- trol Module (TCM).></ref.>

	Step	Check	Yes	No
25	CHECK INPUT SIGNAL FOR TCM. 1) Move select lever to shift up side. 2) Measure signal voltage for TCM. Connector & terminal (B56) No. 2 (+) — Chassis ground (-):	Is the voltage less than 1 V?	Go to step 26.	Replace TCM. <ref. 4at-79,<br="" to="">Transmission Con- trol Module (TCM).></ref.>
26	CHECK POOR CONTACT. Is there poor contact in SPORT shift switch circuit?	There is poor contact.	Repair poor contact.	Intermittent poor contact in SPORT shift switch circuit connector or har- ness

MEMO:

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

F: CHECK SPORT SHIFT INDICATOR.

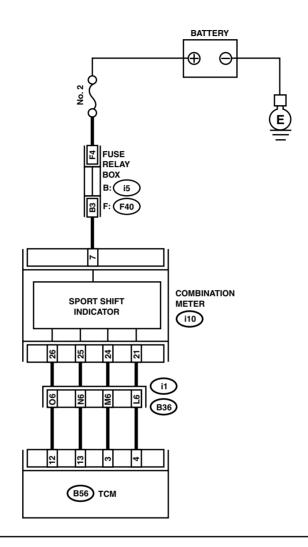
DIAGNOSIS:

SPORT shift indicator output signal circuit is open or shorted.

TROUBLE SYMPTOM:

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

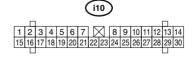
WIRING DIAGRAM:

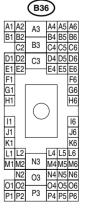












AT-01680

	Step	Check	Yes	No
1	CHECK SPORT SHIFT INDICATOR.	Does SPORT shift indicator operate normally when driving in SPORT shift mode?	<ref. to<br="">4AT(H4SO)-172, CHECK BUZZER., Diagnostic Proce- dure without Diag- nostic Trouble Code (DTC).></ref.>	Go to step 2.
2	CHECK COMBINATION METER.	Do meters and indicators other than SPORT shift indicator operate normally?	Go to step 3.	Check combina- tion meter.
3	 CHECK HARNESS CONNECTOR BETWEEN TCM AND COMBINATION METER. 1) Turn ignition switch to OFF. 2) Disconnect connector from TCM and combination meter. 3) Measure resistance of harness between TCM and combination meter. Connector & terminal (B56) No. 3 — (i10) No. 24: (B56) No. 4 — (i10) No. 21: (B56) No. 12 — (i10) No. 26: (B56) No. 13 — (i10) No. 25: 	Is the resistance less than 1 Ω ?	Go to step 4.	Repair open circuit in harness between TCM and combination meter connector and poor contact in coupling connector.
4	CHECK HARNESS CONNECTOR BETWEEN TCM AND COMBINATION METER. Measure resistance between TCM and chassis ground. Connector & terminal (B56) No. 3 — Chassis ground: (B56) No. 4 — Chassis ground: (B56) No. 12 — Chassis ground: (B56) No. 13 — Chassis ground:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Go to step 5.	Repair short circuit in harness between TCM and combination meter connector.
5	 CHECK OUTPUT SIGNAL EMITTED FROM TCM. 1) Connect connector to TCM and combination meter. 2) Turn ignition switch to ON. (Engine is stopped.) 3) Measure voltage between TCM and chassis ground. Connector & terminal (B56) No. 3 (+) — Chassis ground (-): (B56) No. 12 (+) — Chassis ground (-): (B56) No. 13 (+) — Chassis ground (-): 	Is the voltage more than 4 V?	Go to step 6.	Replace combination meter.
6	CHECK POOR CONTACT. Is there poor contact in SPORT shift indicator circuit?	There is poor contact.	Repair poor contact.	Replace TCM.

AUTOMATIC TRANSMISSION (DIAGNOSTICS)

G: CHECK BUZZER.

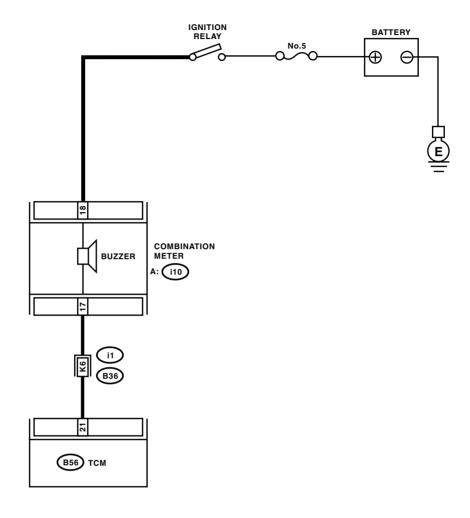
DIAGNOSIS:

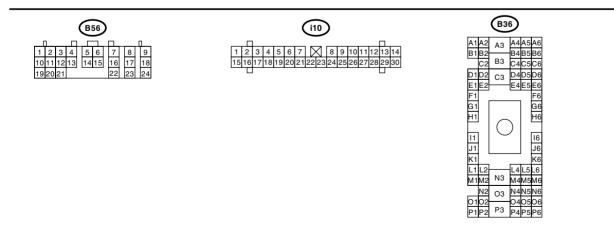
Buzzer output signal circuit is open or shorted.

TROUBLE SYMPTOM:

Buzzer remains sounded.

WIRING DIAGRAM:





AT-01681

	Step	Check	Yes	No
1	CHECK HARNESS BETWEEN TCM AND COMBINATION METER. 1) Turn the ignition switch to OFF. 2) Disconnect the connector from combination meter and TCM. 3) Measure the resistance between TCM connector and chassis ground. Connector & terminal (B56) No. 21 — Chassis ground:	Is the resistance more than 1 $\mbox{M}\Omega ?$	Go to step 2.	Repair the short circuit in harness between TCM and combination meter connector.
2	CHECK COMBINATION METER. 1) Connect the connector to combination meter. 2) Turn the ignition switch to ON. (Engine is stopped.)	Does the buzzer sound?	Replace the combination meter.	Go to step 3.
3	CHECK POOR CONTACT.	Is there poor contact in buzzer circuit?	Repair the poor contact.	Replace the TCM.

16.Symptom Related Diagnostic

A: INSPECTION

Symptom	Problem parts
Starter does not rotate when select lever is in "P" or "N" range; starter rotates when select lever is in "R", "D", "3" or "2" range.	Inhibitor switchSelect cableSelect leverStarter motor and harness
Abnormal noise when select lever is in "P" or "N" range.	 Strainer Transfer duty solenoid Oil pump Drive plate ATF level too high or too low
Hissing noise occurs during standing start.	Strainer ATF level too high or too low
Noise occurs while driving in "D1".	Final gear
Noise occurs while driving in "D2".	Planetary gearReduction gearDifferential gear oil level too high or too low
Noise occurs while driving in "D3".	 Final gear Low & reverse brake Reduction gear Differential gear oil level too high or too low
Noise occurs while driving in "D4".	 Final gear Low & reverse brake Planetary gear Reduction gear Differential gear oil level too high or too low
Engine stalls while shifting from one range to another.	Control valveLock-up damperEngine performanceInput shaft
Vehicle moves when select lever is in "N" range.	TCM Low clutch
Shock occurs when select lever is moved from "N" to "D" range.	TCM Harness Control valve ATF deterioration
Excessive time lag occurs when select lever is moved from "N" to "D" range.	 Control valve Low clutch Line pressure duty solenoid Seal ring Front gasket transmission case
Shock occurs when select lever is moved from "N" to "R" range.	TCM Harness Control valve ATF deterioration
Excessive time lag occurs when select lever is moved from "N" to "R" range.	 Control valve Low & reverse clutch Reverse clutch Line pressure duty solenoid Seal ring Front gasket transmission case
Vehicle does not start in any shift range (engine stalls).	Parking brake mechanism Planetary gear

SYMPTOM RELATED DIAGNOSTIC

Symptom	Problem parts
Vehicle does not start in any shift range (engine revving up).	 Strainer Line pressure duty solenoid Control valve Drive pinion Hypoid gear Axle shaft Differential gear Oil pump Input shaft Output shaft Planetary gear Drive plate ATF level too low Front gasket transmission case
Vehicle does not start in "R" range only (engine revving up).	 Select cable Select lever Control valve Low & reverse clutch Reverse clutch
Vehicle does not start in "R" range only (engine stalls).	Low clutch2-4 brakePlanetary gearParking brake mechanism
Vehicle does not start in "D", "3" range only (engine revving up).	Low clutch One-way clutch
Vehicle does not start in "D", "3" or "2" range only (engine rev- ving up).	Low clutch
Vehicle does not start in "D", "3" or "2" range only (engine stalls).	Reverse clutch
Vehicle starts in "R" range only (engine revving up).	Control valve
Acceleration during standing starts is poor (high stall rpm).	 Control valve Low clutch Reverse clutch ATF level too low Front gasket transmission case Differential gear oil level too high or too low
Acceleration during standing starts is poor (low stall rpm).	Oil pump Torque converter one-way clutch Engine performance
Acceleration is poor when select lever is in "D", "3" or "2" range (normal stall rpm).	TCM Control valve High clutch 2-4 brake Planetary gear
Acceleration is poor when select lever is in "R" (normal stall rpm).	Control valveHigh clutch2-4 brakePlanetary gear
No shift occurs from 1st to 2nd gear.	TCM Rear vehicle speed sensor Front vehicle speed sensor Throttle position sensor Shift solenoid 1 Control valve 2-4 brake
No shift occurs from 2nd to 3rd gear.	TCMControl valveHigh clutchShift solenoid 2

SYMPTOM RELATED DIAGNOSTIC

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

SYMPTOM RELATED DIAGNOSTIC

Symptom	Problem parts
Shock occurs from 2nd to 3rd gear.	 TCM Throttle position sensor 2-4 brake duty solenoid ATF temperature sensor Line pressure duty solenoid Control valve High clutch 2-4 brake ATF deterioration Engine performance 2-4 brake timing solenoid
Slippage occurs from 2nd to 3rd gear.	 TCM Throttle position sensor 2-4 brake duty solenoid ATF temperature sensor Line pressure duty solenoid Control valve High clutch 2-4 brake 2-4 brake timing solenoid
Shock occurs from 3rd to 4th gear.	 TCM Throttle position sensor 2-4 brake duty solenoid ATF temperature sensor Line pressure duty solenoid Control valve 2-4 brake timing solenoid 2-4 brake ATF deterioration Engine performance Low clutch timing solenoid Low clutch
Slippage occurs from 3rd to 4th gear.	TCM Throttle position sensor 2-4 brake duty solenoid ATF temperature sensor Line pressure duty solenoid Control valve 2-4 brake 2-4 brake timing solenoid
Shock occurs when select lever is moved from "3" to "2" range.	 TCM Throttle position sensor ATF temperature sensor Line pressure duty solenoid Control valve 2-4 brake duty solenoid 2-4 brake ATF deterioration 2-4 brake timing solenoid
Shock occurs when select lever is moved from "D" to "1" range.	 TCM Throttle position sensor ATF temperature sensor Line pressure duty solenoid Control valve ATF deterioration 2-4 brake duty solenoid 2-4 brake timing solenoid Low clutch timing solenoid

Symptom	Problem parts
Shock occurs when select lever is moved from "2" to "1" range.	 TCM Throttle position sensor ATF temperature sensor Line pressure duty solenoid Control valve Low & reverse clutch ATF deterioration 2-4 brake duty solenoid 2-4 brake timing solenoid Low clutch timing solenoid
Shock occurs when accelerator pedal is released at medium speeds.	 TCM Throttle position sensor ATF temperature sensor Line pressure duty solenoid Control valve Lock-up damper Engine performance 2-4 brake duty solenoid 2-4 brake timing solenoid Low clutch timing solenoid
Vibration occurs during straight-forward operation.	TCMLock-up duty solenoidLock-up facingLock-up damper
Vibration occurs during turns (tight corner "braking" phenomenon).	 TCM Front vehicle speed sensor Rear vehicle speed sensor Throttle 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 FWD switch Throttle position sensor ATF temperature sensor Control valve Transfer clutch Transfer valve Transfer pipe Transfer duty solenoid
Vehicle is not set in FWD mode.	TCM FWD switch Transfer clutch Transfer valve Transfer duty solenoid
Select lever is hard to move.	Select cableSelect leverDetente springManual plate
Select lever is too high to move (unreasonable resistance).	Detente springManual plate
Select lever slips out of operation during acceleration or while driving on rough terrain.	Select cableSelect leverDetente springManual plate