AUTOMATIC TRANSMISSION AND DIFFERENTIAL 3-2

1. Precaution

A: SUPPLEMENTAL RESTRAINT SYSTEM “AIRBAG”

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 electrical test equipment on these circuit.**
- **Be careful not to damage Airbag system wiring harness when performing diagnostics and servicing the TCM.**

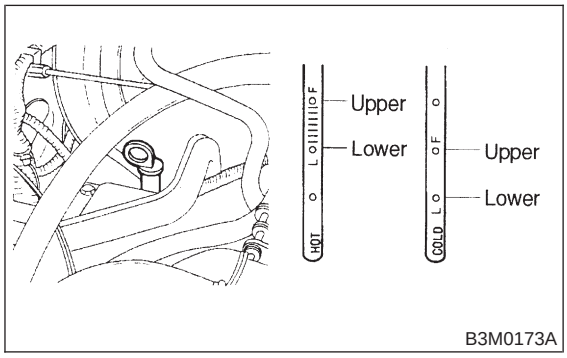
B: MEASUREMENT

When measuring voltage and resistance of the ECM, TCM or each sensor, use a tapered pin with a diameter of less than 0.64 mm (0.025 in) in order to avoid poor contact. Do not insert the pin more than 5 mm (0.20 in).

2. Pre-inspection

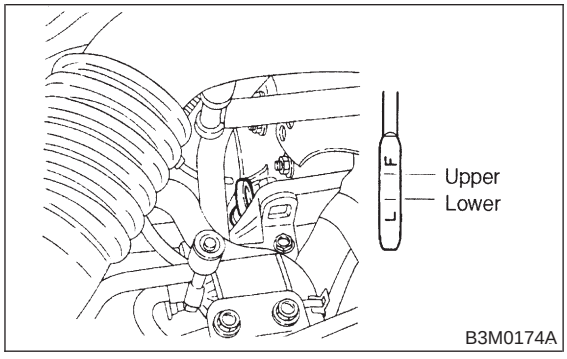
A: ATF LEVEL

Make sure that ATF level is in the specification.



B: FRONT DIFFERENTIAL OIL LEVEL

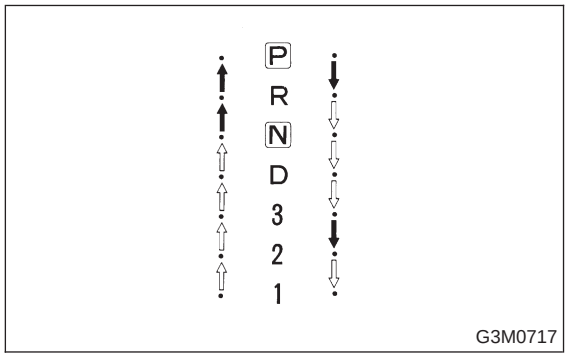
Make sure that front differential oil level is in the specification.



C: OPERATION OF SHIFT SELECTOR LEVER

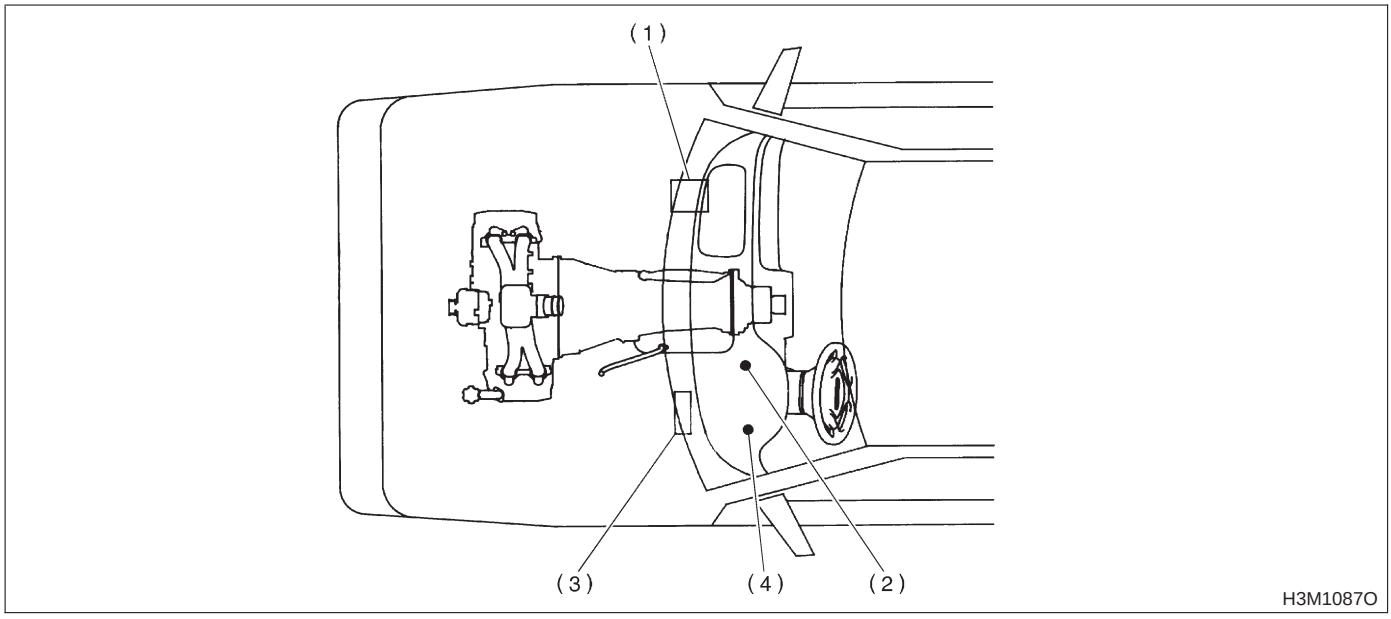
WARNING:
Stop the engine while checking operation of selector lever.

1) Check that selector lever does not move from “N” to “R” without pushing the button.
2) Check that selector lever does not move from “R” to “P” without pushing the button.
3) Check that selector lever does not move from “P” to “R” without pushing the button.
4) Check that selector lever does not move from “3” to “2” without pushing the button.

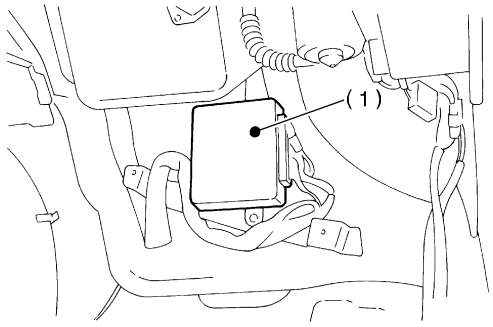


3. Electrical Components Location

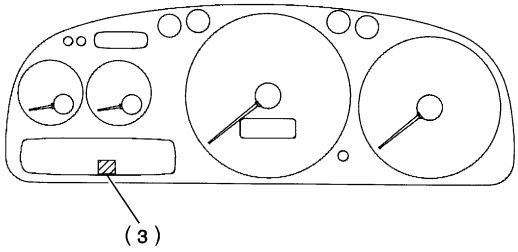
A: MODULE



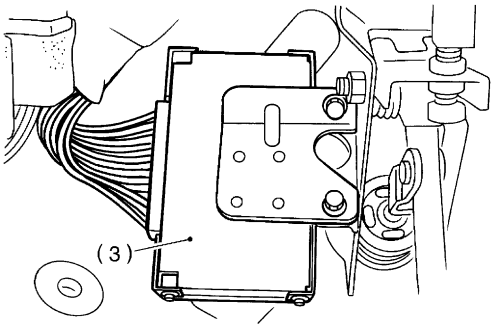
(1) ECM
(2) AT OIL TEMP indicator light (AT diagnostic indicator light)
(3) TCM
(4) Data link connector (for Subaru select monitor and OBD-II general scan tool)



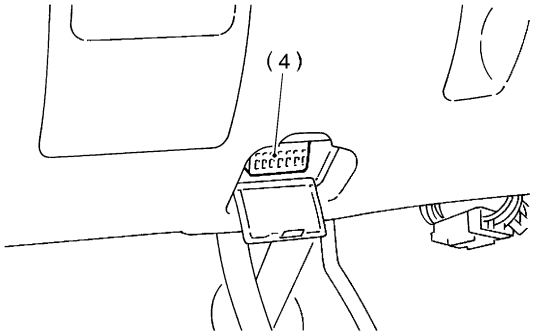
B3M0183E



H3M1675B

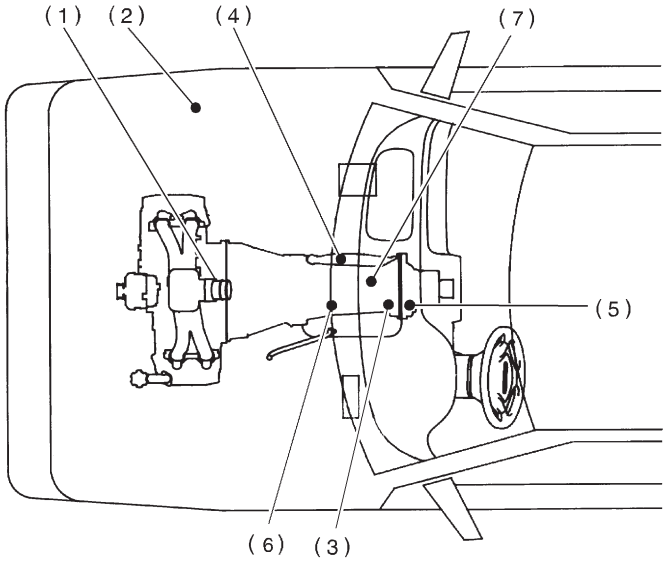


S3M0056D



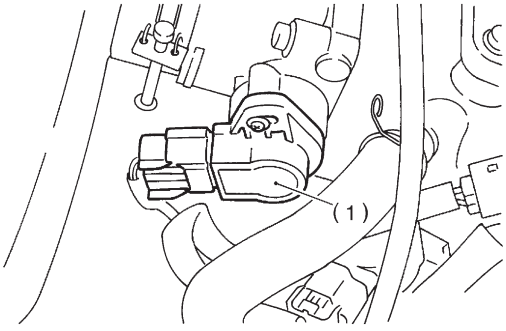
S2M0258C

B: SENSOR

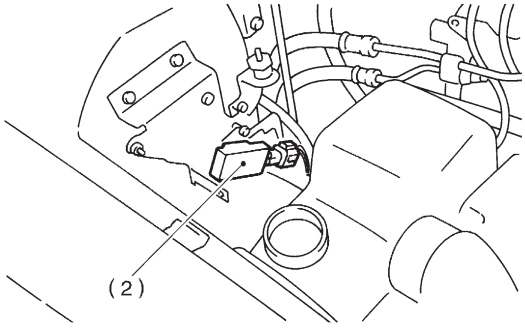


H3M1087P

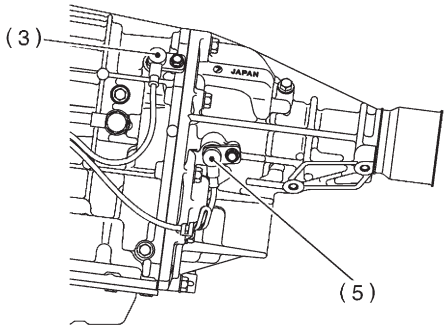
(1) Throttle position sensor
(2) Dropping resistor
(3) Vehicle speed sensor 2 (Front)
(4) Inhibitor switch
(5) Vehicle speed sensor 1 (Rear)
(6) Torque converter turbine speed sensor
(7) ATF temperature sensor



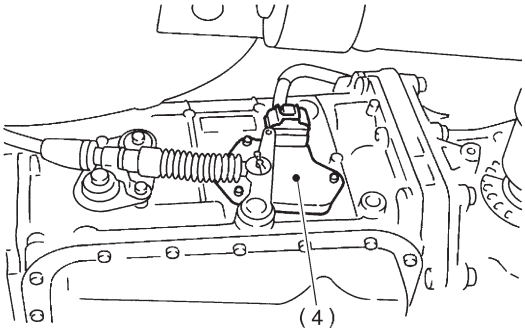
S2M0262B



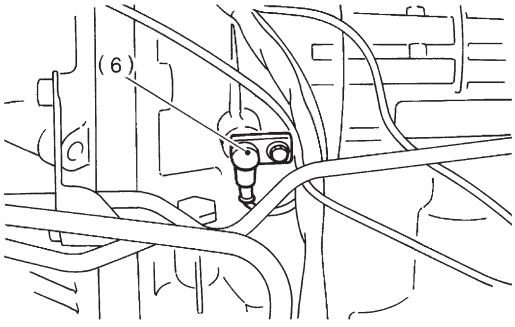
B2M2262C



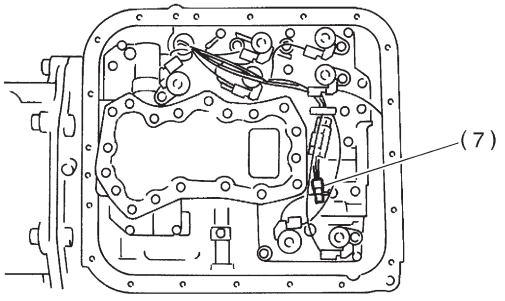
B2M2258C



B2M2246D

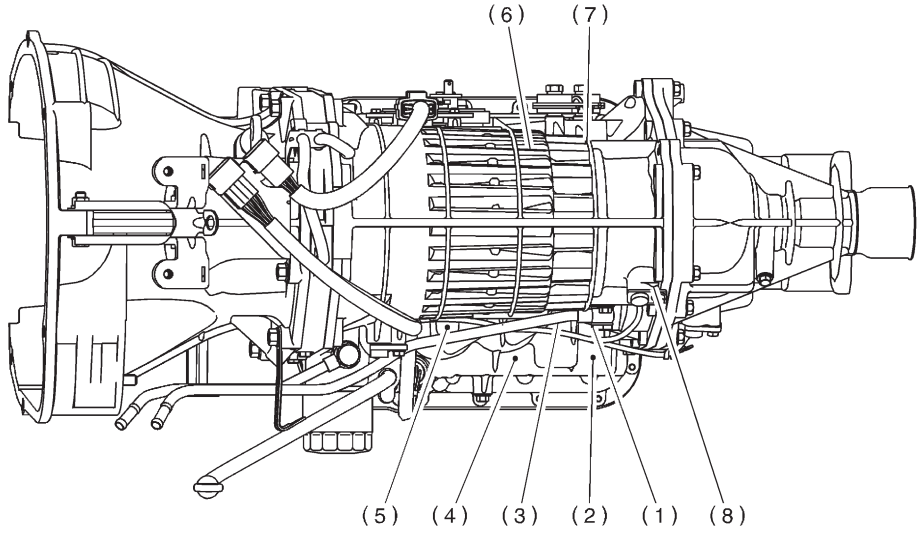


B2M2260C



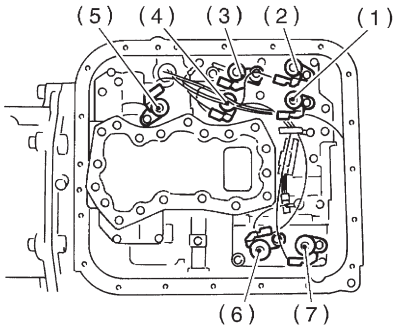
B2M2261C

C: SOLENOID



B3M1186A

(1) Solenoid 1
(2) Solenoid 2
(3) Duty solenoid A
(4) Low clutch timing solenoid
(5) Duty solenoid B
(6) Duty solenoid D
(7) 2-4 brake timing solenoid
(8) Duty solenoid C



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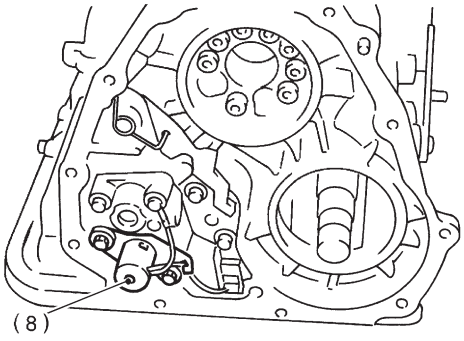
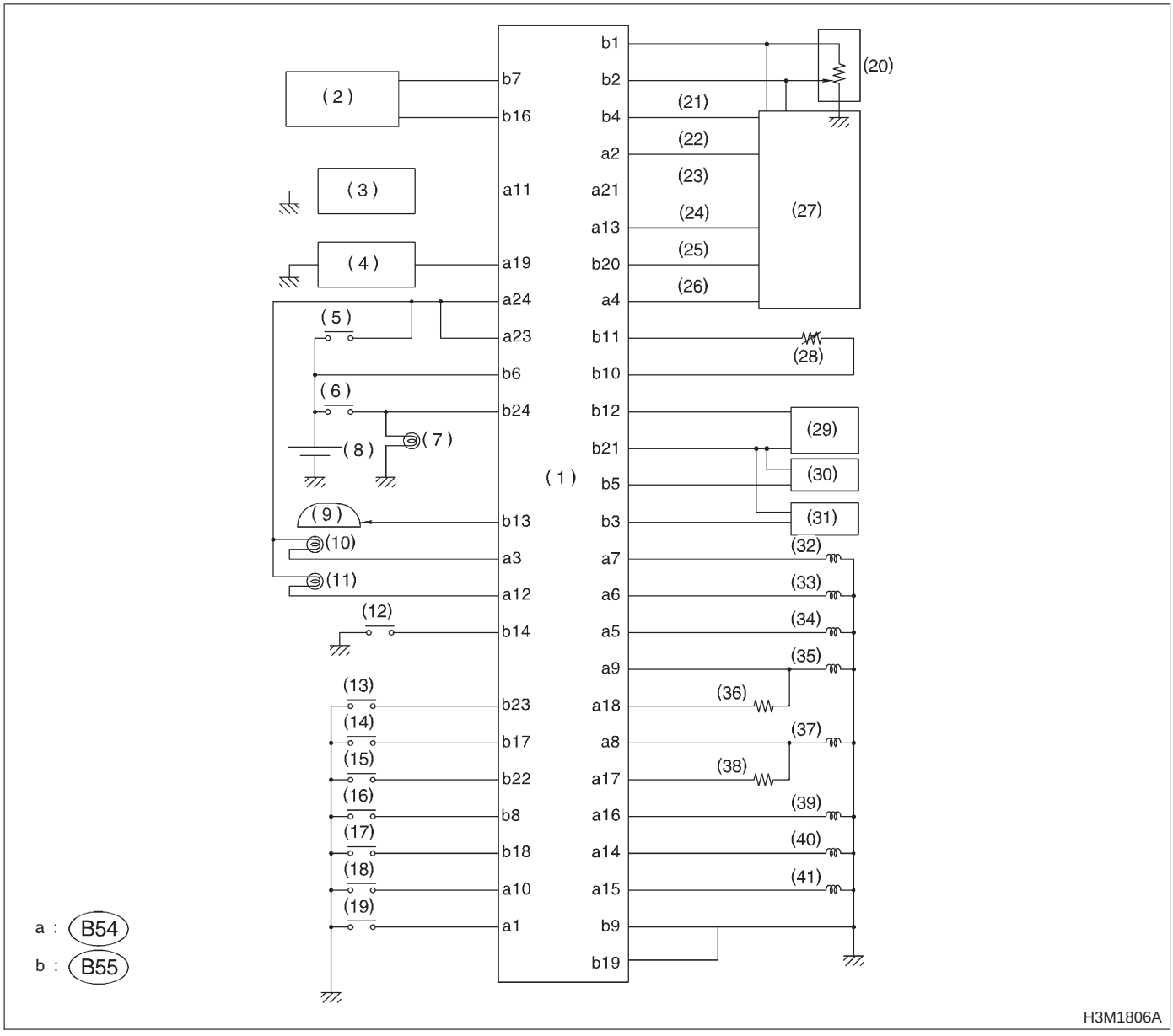


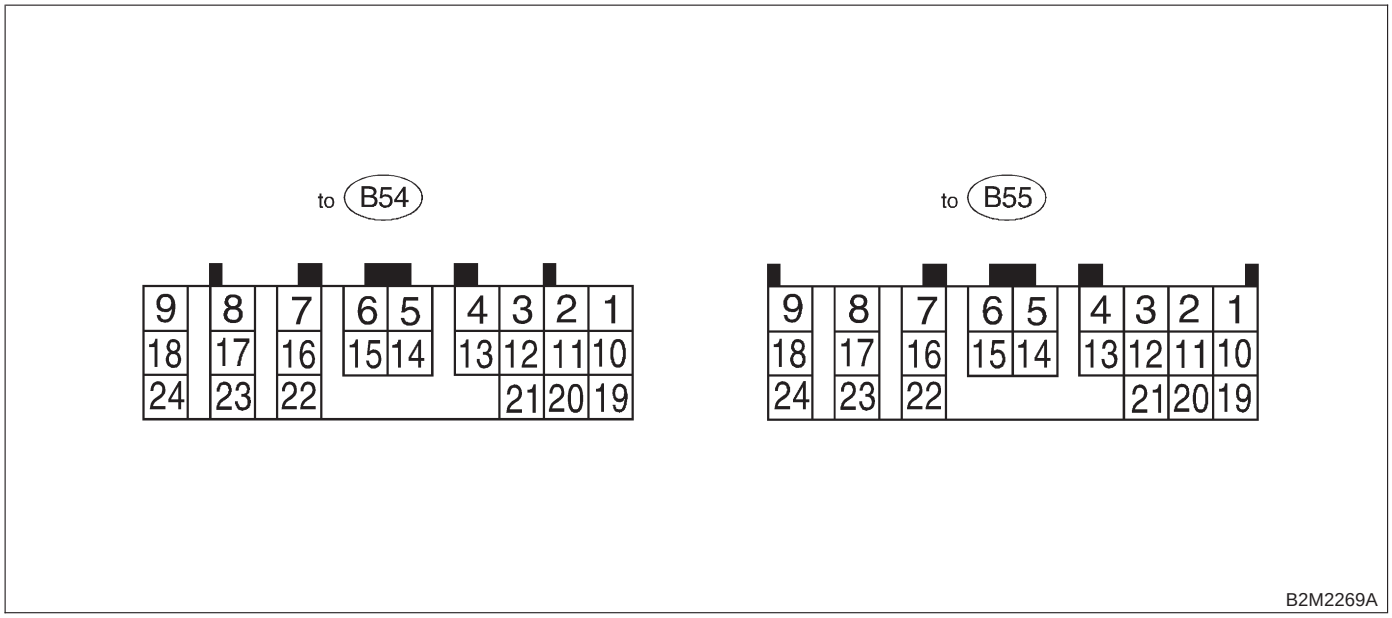
B2M2264E

4. Schematic



(1) Transmission control module
(2) Data link connector
(3) Cruise set switch
(4) ABS control module
(5) Ignition switch
(6) Brake switch
(7) Brake light
(8) Battery
(9) Combination meter
(10) AT OIL TEMP indicator light
(11) FWD indicator light
(12) FWD switch
(13) “P” range switch
(14) “R” range switch
(15) “N” range switch
(16) “D” range switch
(17) “3” range switch
(18) “2” range switch
(19) “1” range switch
(20) Throttle position sensor
(21) Engine speed signal
(22) Torque control cut signal
(23) Torque control signal 2
(24) Torque control signal 1
(25) AT load signal
(26) AT diagnostics signal
(27) Engine control module
(28) ATF temperature sensor
(29) Torque converter turbine speed sensor
(30) Vehicle speed sensor 2 (Front)
(31) Vehicle speed sensor 1 (Rear)
(32) Shift solenoid 1
(33) Shift solenoid 2
(34) 2-4 brake timing solenoid
(35) Duty solenoid A
(36) Line pressure dropping resistor
(37) Duty solenoid D
(38) 2-4 brake dropping resistor
(39) Duty solenoid B
(40) Low clutch timing solenoid
(41) Duty solenoid C

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



Check 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 — 16	—
Ignition power supply		B54	23	Ignition switch ON (with engine OFF)	10 — 16	—
		B54	24			
Inhibitor switch	“P” range switch	B55	23	Select lever in “P” range	Less than 1	—
				Select lever in any other than “P” range (except “N” range)	More than 8	
	“N” range switch	B55	22	Select lever in “N” range	Less than 1	—
				Select lever in any other than “N” range (except “P” range)	More than 8	
	“R” range switch	B55	17	Select lever in “R” range	Less than 1	—
				Select lever in any other than “R” range	More than 9.5	
	“D” range switch	B55	8	Select lever in “D” range	Less than 1	—
				Select lever in any other than “D” range	More than 9.5	
	“3” range switch	B55	18	Select lever in “3” range	Less than 1	—
				Select lever in any other than “3” range	More than 9.5	
	“2” range switch	B54	10	Select lever in “2” range	Less than 1	—
				Select lever in any other than “2” range	More than 9.5	
	“1” range switch	B54	1	Select lever in “1” range	Less than 1	—
				Select lever in any other than “1” range	More than 9.5	
Brake switch		B55	24	Brake pedal depressed.	More than 10.5	—
				Brake pedal released.	Less than 1	
ABS signal		B54	19	ABS switch ON	Less than 1	—
				ABS switch OFF	6.5 — 15	

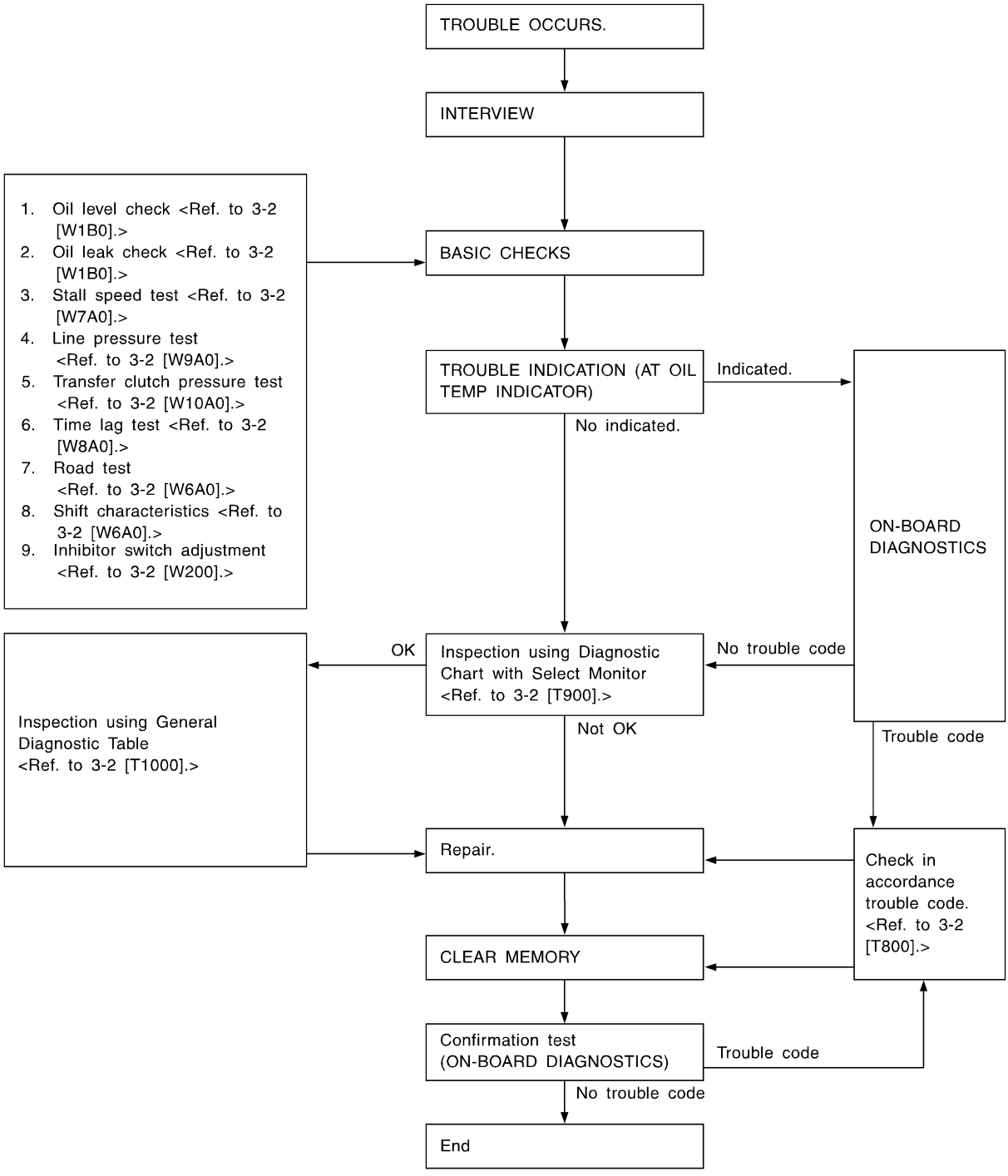
Check with ignition switch ON.					
Content	Connector No.	Terminal No.	Measuring conditions	Voltage (V)	Resistance to body (ohms)
AT OIL TEMP LAMP	B54	3	Lamp ON	Less than 1	—
			Lamp OFF	More than 9	
Throttle position sensor	B55	2	Throttle fully closed.	0.5±0.2	—
			Throttle fully open.	4.6±0.3	
Throttle position sensor power supply	B55	1	Ignition switch ON (With engine OFF)	5.05±0.25	—
ATF temperature sensor	B55	11	ATF temperature 20°C (68°F)	3.45±0.55	2.1 — 2.9 k
			ATF temperature 80°C (176°F)	1.2±0.2	272 — 374
Vehicle speed sensor 1 (Rear)	B55	3	Vehicle stopped.	0	450 — 650
			Vehicle speed at least 20 km/h (12 MPH)	More than 1 (AC range)	
Vehicle speed sensor 2 (Front)	B55	5	Vehicle speed at least 20 km/h (12 MPH)	More than 1 (AC range) 4	450 — 650
Torque converter turbine speed sensor	B55	12	Vehicle stopped	0	450 — 650
			Vehicle speed at least 20 km/h (12 MPH)	More than 1 (AC range)	
Vehicle speed output signal	B55	13	Vehicle speed at most 10 km/h (6 MPH)	Less than 1← →More than 4	—
Engine speed signal	B55	4	Ignition switch ON (with engine OFF)	More than 10.5	—
			Ignition switch ON (with engine ON)	8 — 11	
Cruise set signal	B54	11	When cruise control is set (SET lamp ON)	Less than 1	—
			When cruise control is not set (SET lamp OFF)	More than 6.5	
Torque control signal 1	B54	13	Ignition switch ON (with engine ON)	5±1	—
Torque control signal 2	B54	21	Ignition switch ON (with engine ON)	More than 9	—
Torque control cut signal	B54	2	Ignition switch ON	8	—
AT load signal	B55	20	Engine idling after warm-up.	1.2 — 1.8*1	—
				0.5 — 1.2*2	
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	
Duty solenoid A	B54	9	Throttle fully closed (with engine OFF) after warm-up.	1.5 — 4.0	2.0 — 4.5
			Throttle fully open (with engine OFF) after warm-up.	Less than 0.5	
Dropping resistor	B54	18	Throttle fully closed (with engine OFF) after warm-up.	More than 8.5	9 — 15
			Throttle fully open (with engine OFF) after warm-up.	Less than 0.5	
Duty solenoid B	B54	16	When lock up occurs.	More than 8.5	10 — 17
			When lock up is released.	Less than 0.5	

Check with ignition switch ON.					
Content	Connector No.	Terminal No.	Measuring conditions	Voltage (V)	Resistance to body (ohms)
Duty solenoid C	B54	15	Fuse on FWD switch	More than 8.5	10 — 17
			Fuse removed from FWD switch (with throttle fully open and with select lever in 1st gear).	Less than 0.5	
Duty solenoid D	B54	8	Throttle fully closed (with engine OFF) after warm-up.	1.5 — 4.0	2.0 — 4.5
			Throttle fully open (with engine OFF) after warm-up.	Less than 0.5	
2-4 brake dropping resistor	B54	17	Throttle fully closed (with engine OFF) after warm-up.	More than 8.5	9 — 15
			Throttle fully open (with engine OFF) after warm-up.	Less than 0.5	
2-4 brake timing solenoid	B54	5	1st gear	Less than 1	10 — 16
			3rd gear	More than 9	
Low clutch timing solenoid	B54	14	2nd gear	Less than 1	10 — 16
			4th gear	More than 9	
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	—	0	Less than 1
		19			
FWD switch	B55	14	Fuse removed.	6 — 9.1	—
			Fuse installed.	Less than 1	
FWD indicator lamp	B54	12	Fuse ON FWD switch	Less than 1	—
			Fuse removed from FWD switch	More than 9	
AT diagnosis signal	B54	4	Ignition switch ON	Less than 1← →More than 4	—
Data link signal (Subaru Select Monitor)	B55	7	—	—	—
		16	—	—	

*1: 2200 cc California spec. vehicles
*2: Except 2200 cc California spec. vehicles

6. Diagnostic Chart for On-board Diagnostics System

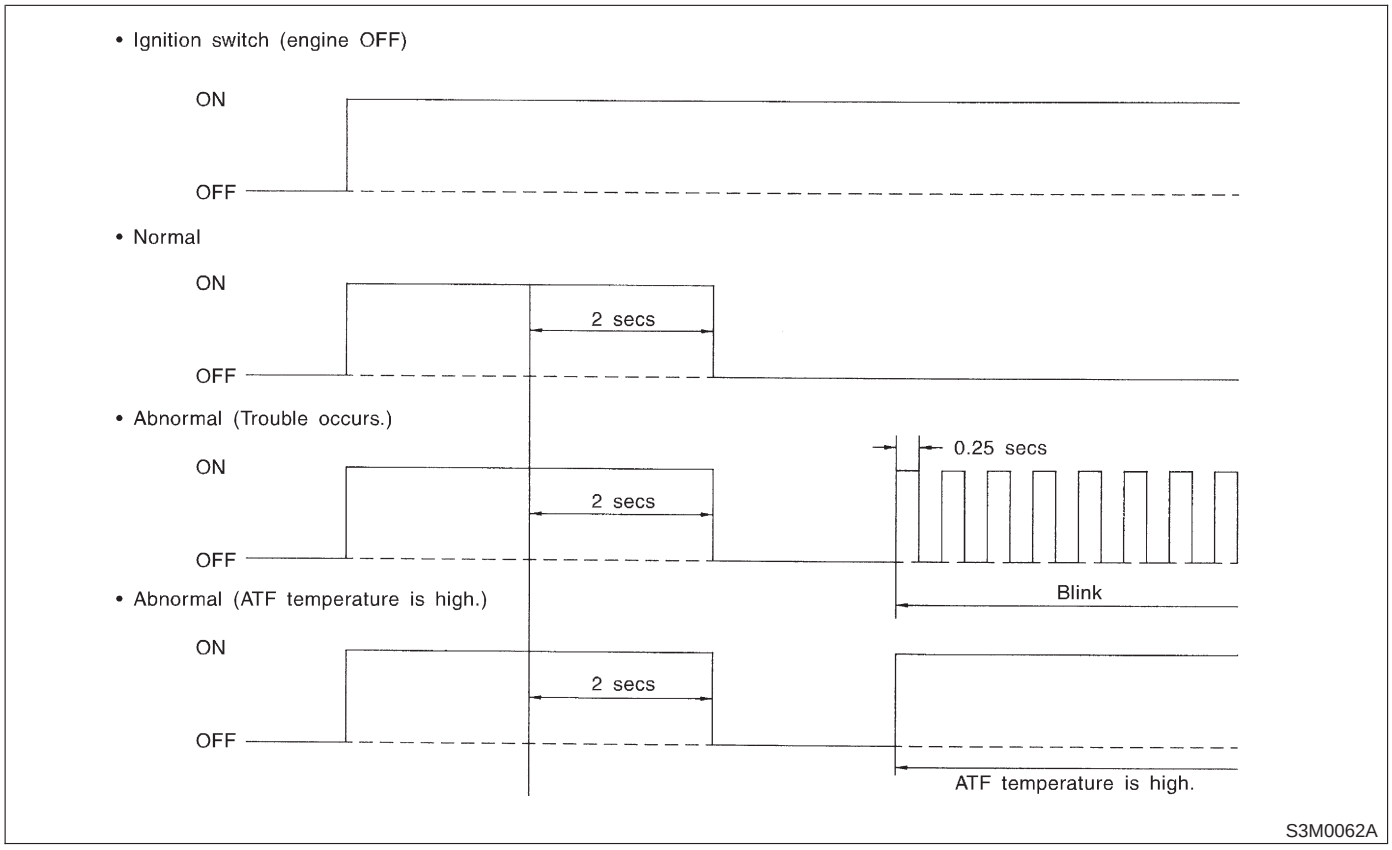
A: BASIC DIAGNOSTICS PROCEDURE



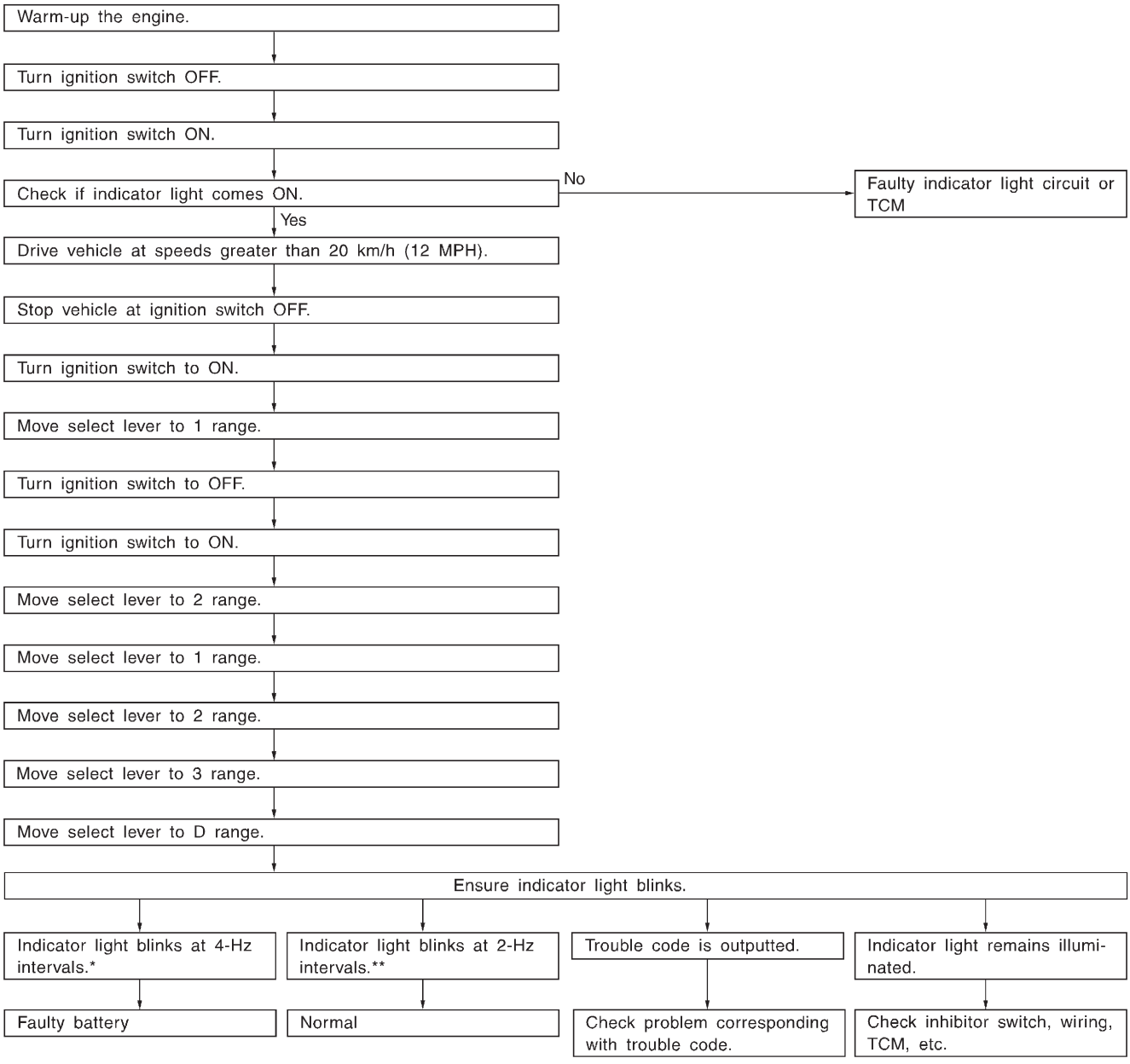
H3M1672G

B: ABNORMAL DISPLAY ON AT OIL TEMP INDICATOR

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



C: ON-BOARD DIAGNOSTICS



* : Blinks every 0.125 (1/8) seconds (until ignition switch is turned OFF).
** : Blinks every 0.25 (1/4) seconds (until ignition switch is turned OFF).

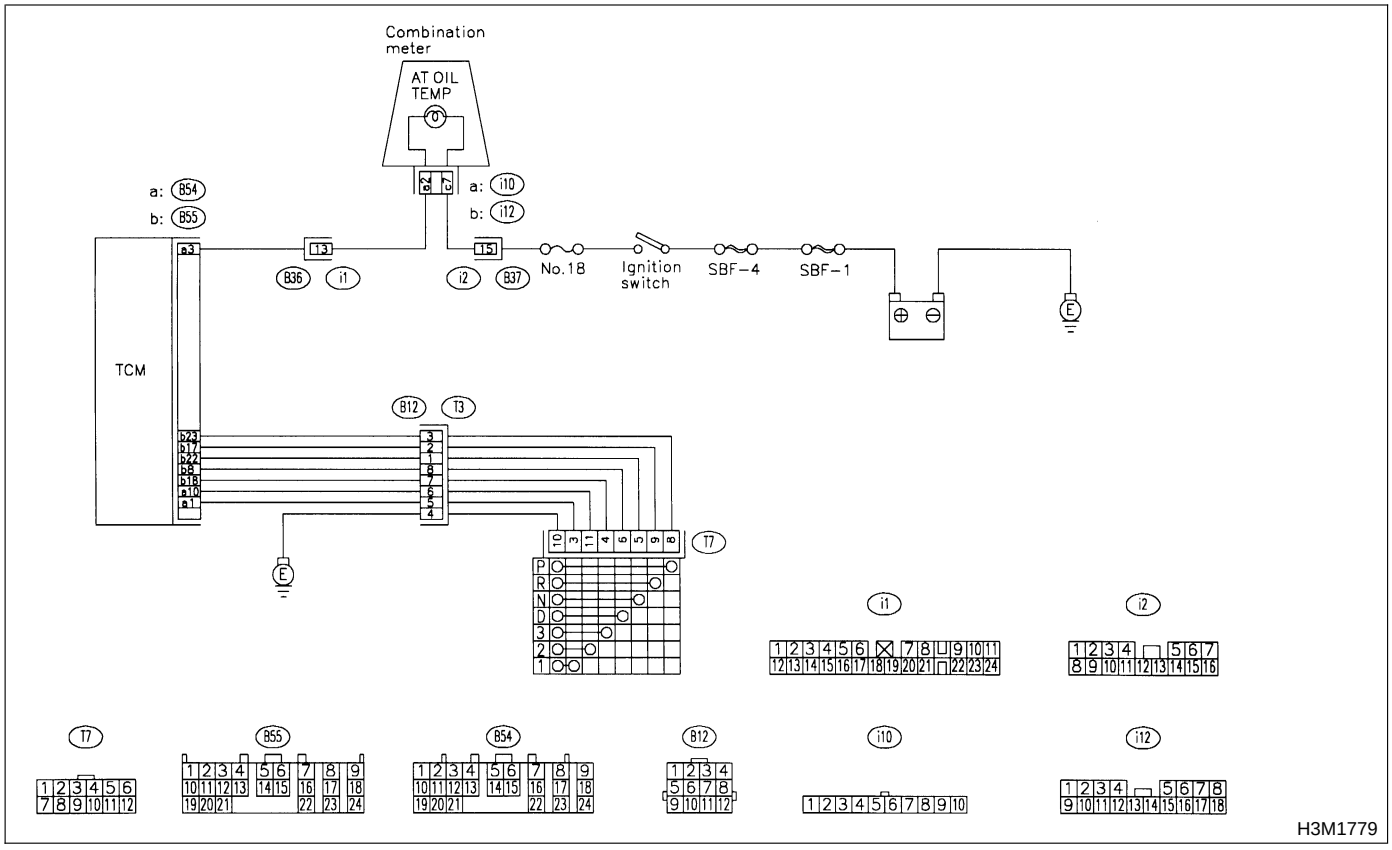
S3M0063A

7. Diagnostics for On-board Diagnostics Failed

A: AT OIL TEMP INDICATOR LIGHT

DIAGNOSIS:
The AT OIL TEMP indicator light circuit is open or shorted.
TROUBLE SYMPTOM:
- When ignition switch is turned to ON (engine OFF), AT OIL TEMP indicator light does not illuminate.
- When on-board diagnostics is performed, AT OIL TEMP indicator light remains illuminated.

WIRING DIAGRAM:



7A1 : CHECK AT OIL TEMP INDICATOR LIGHT.

Turn ignition switch to ON (engine OFF).

CHECK : ***Does AT OIL TEMP indicator light illuminate?***

YES : Go to step **7A2**.

NO : Go to step **7A3**.

7A2 : CHECK AT OIL TEMP INDICATOR LIGHT.

Perform on-board diagnostics. <Ref. to 3-2 [T6C0].>

CHECK : ***Does AT OIL TEMP indicator light blink?***

YES : A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in TCM, inhibitor switch and combination meter.

NO : Go to step **7A8**.

7A3 : CHECK FUSE (NO. 18).

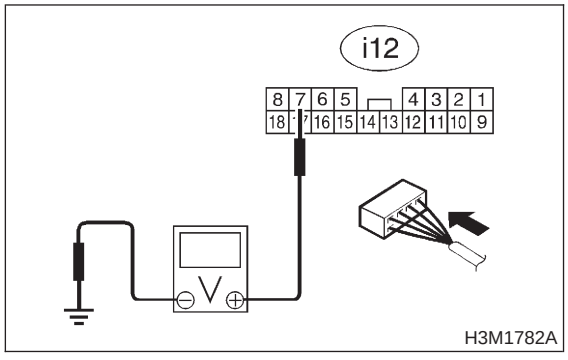
Remove fuse (No. 18).

CHECK : ***Is the fuse (No. 18) blown out?***
YES : Replace fuse (No. 18). If replaced fuse (No. 18) is blown out easily, repair short circuit in harness between fuse (No. 18) and combination meter.
NO : Go to step **7A4**.

7A4 : CHECK HARNESS CONNECTOR BETWEEN COMBINATION METER AND IGNITION SWITCH.

1) Turn ignition switch to ON (engine OFF).
2) Measure voltage between combination meter connector and chassis ground.

Connector & terminal
(i12) No. 7 (+) — Chassis ground (−):

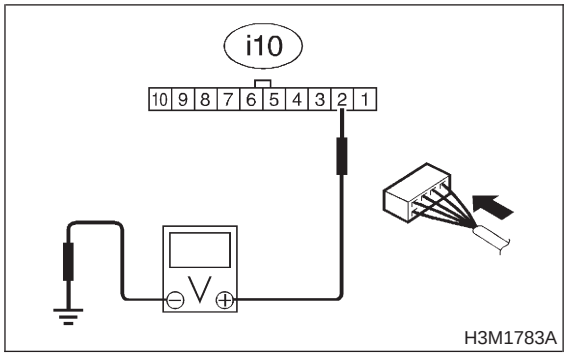


CHECK : ***Is voltage more than 10 V?***
YES : Go to step **7A5**.
NO : Repair open circuit in harness between combination meter and fuse, and poor contact in coupling connector.

7A5 : CHECK COMBINATION METER.

Measure voltage between combination meter connector and chassis ground.

Connector & terminal
(i10) No. 2 (+) — Chassis ground (−):

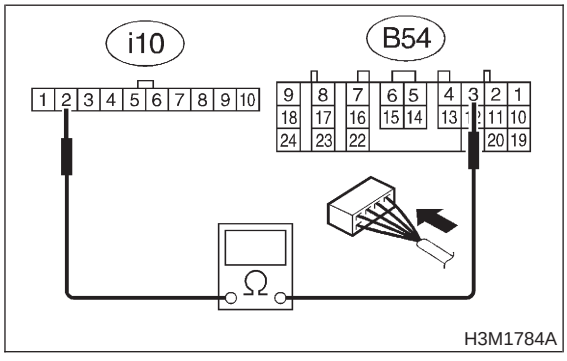


CHECK : ***Is voltage less than 1 V?***
YES : Go to step **7A6**.
NO : Replace combination meter. <Ref. to 6-2 [W800].>

7A6 : CHECK OPEN CIRCUIT OF HARNESS.

1) Disconnect connector from combination meter connector.
2) Measure resistance of harness between combination meter.

Connector & terminal
(B54) No. 3 — (i10) No. 2:

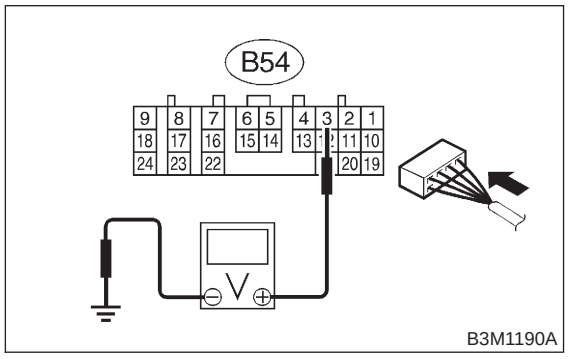


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **7A7**.
NO : Repair open circuit in harness between TCM and combination meter, and poor contact in coupling connector.

7A7 : CHECK INPUT SIGNAL FOR TCM.

1) Connect connector to TCM and combination meter.
2) Turn ignition switch to ON (engine OFF).
3) Measure voltage between TCM connector and chassis ground.

Connector & terminal
(B54) No. 3 (+) — Chassis ground (−):



CHECK : ***Is the voltage less than 1 V?***
YES : Even if AT OIL TEMP indicator lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in TCM.
NO : Replace TCM. <Ref. to 3-2 [W22A0].>

7A8 : CHECK INHIBITOR SWITCH.

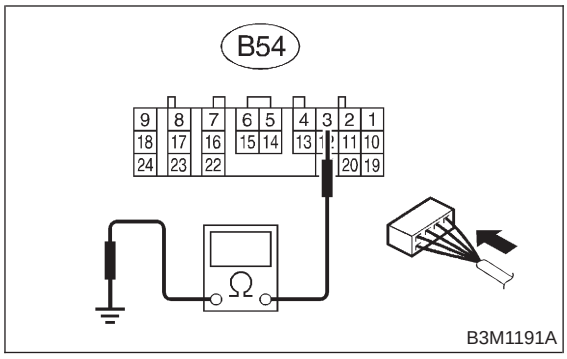
1) Connect Subaru Select Monitor to data link connector.
2) Turn ignition switch to ON.
3) Subaru Select Monitor to ON.
4) Read data of range switch using Subaru Select Monitor.
● Range switch is indicated in ON ⇔ OFF.

CHECK : ***When each range is selected, does LED of Subaru Select Monitor light up?***
YES : Go to step **7A9**.
NO : Check inhibitor switch circuit. <Ref. to 3-2 [T9T0].>

7A9 : CHECK SHORT CIRCUIT OF HARNESS.

1) Disconnect connector from TCM.
2) Remove combination meter.
3) Disconnect connector from combination meter.
4) Measure resistance of harness connector between TCM and combination meter.

Connector & terminal/specified resistance
(B54) No. 3 — Chassis ground:

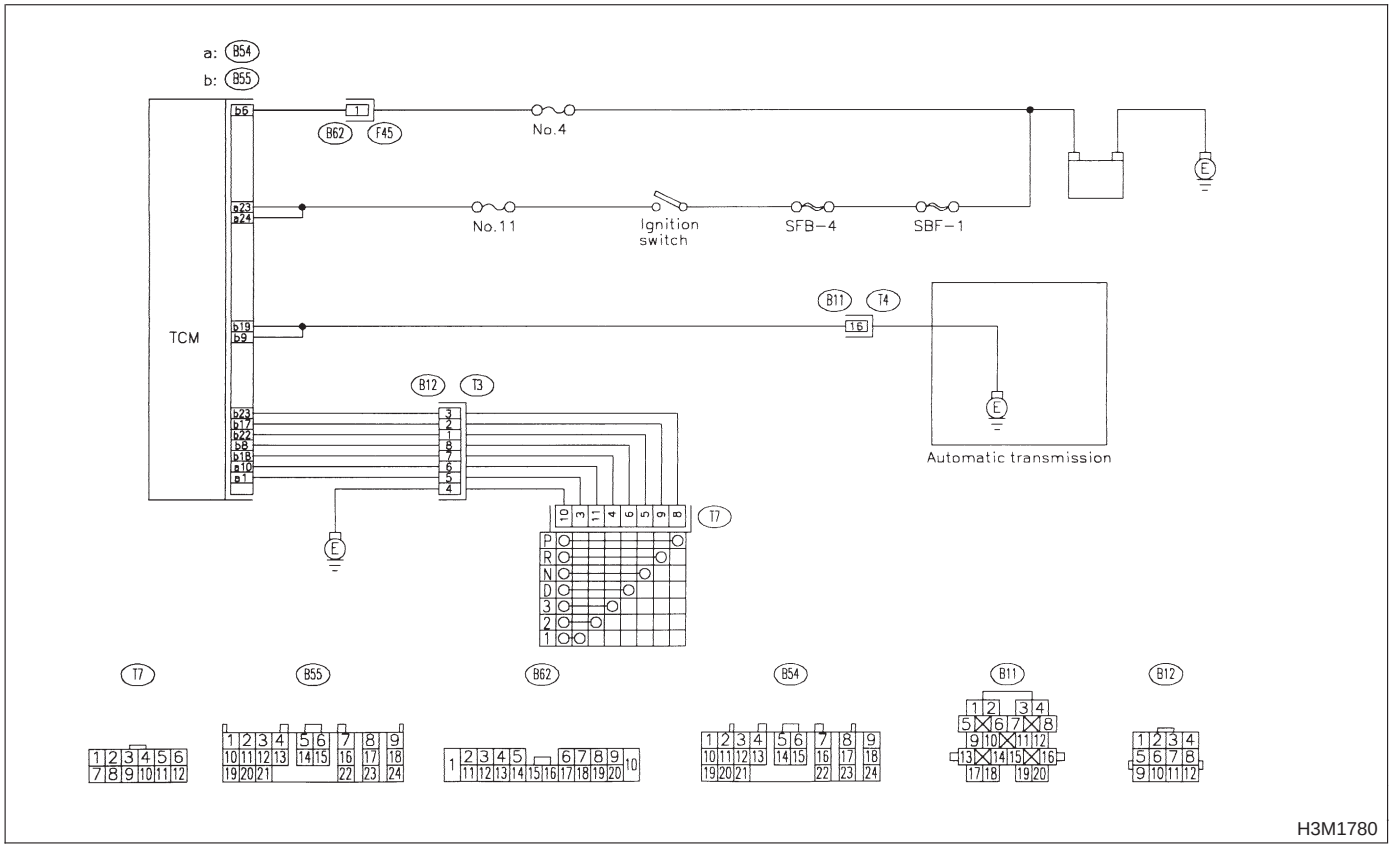


CHECK : ***Is the resistance less than 1 MΩ?***
YES : Replace TCM. <Ref. to 3-2 [W22A0].>
NO : Repair short circuit in harness between combination meter connector and TCM connector.

MEMO:

B: CONTROL MODULE POWER SUPPLY AND GROUND LINE

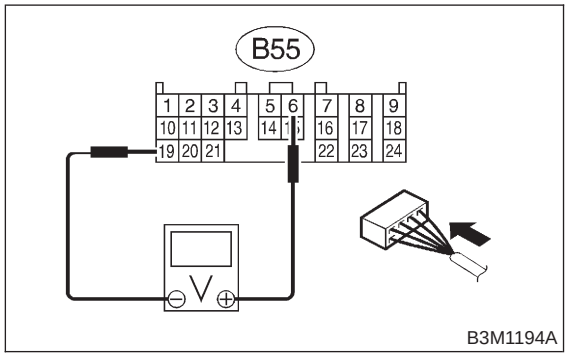
WIRING DIAGRAM:



7B1 : CHECK BACK-UP POWER SUPPLY CIRCUIT.

1) Turn ignition switch to ON.
2) Measure back-up power supply voltage between TCM connector terminal.

Connector & terminal
(B55) No. 6 (+) — No. 19 (−):



CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **7B3**.
NO : Go to step **7B2**.

7B2 : CHECK FUSE (NO. 4).

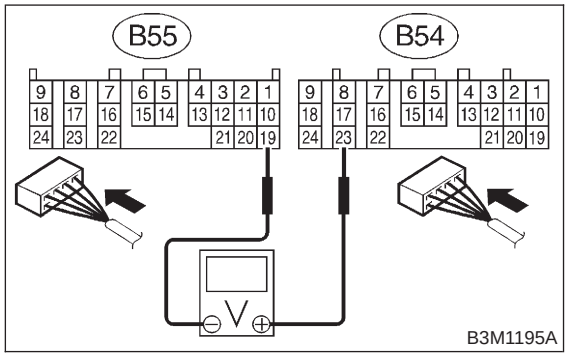
Remove fuse (No. 4).

CHECK : ***Is the fuse (No. 4) blown out?***
YES : Replace fuse (No. 4). If replaced fuse (No. 4) has blown out easily, repair short circuit in harness between fuse (No. 4) and TCM.
NO : Repair open circuit in harness between fuse (No. 4) and TCM, and poor contact in coupling connector.

7B3 : CHECK IGNITION POWER SUPPLY CIRCUIT.

1) Turn ignition switch to ON (engine OFF).
2) Measure ignition power supply voltage between TCM connector terminal.

Connector & terminal
(B54) No. 23 (+) — (B55) No. 19 (−):

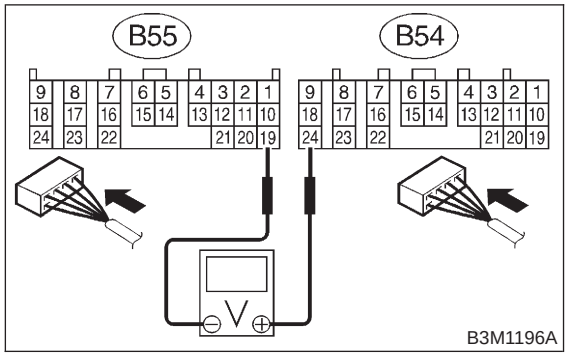


CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **7B4**.
NO : Go to step **7B5**.

7B4 : CHECK IGNITION POWER SUPPLY CIRCUIT.

1) Turn ignition switch to ON (engine OFF).
2) Measure ignition power supply voltage between TCM connector terminal.

Connector & terminal
(B54) No. 24 (+) — (B55) No. 19:



CHECK : ***Is the voltage more than 10 V?***
YES : Go to step **7B6**.
NO : Go to step **7B5**.

7B5 : CHECK FUSE (NO. 11).

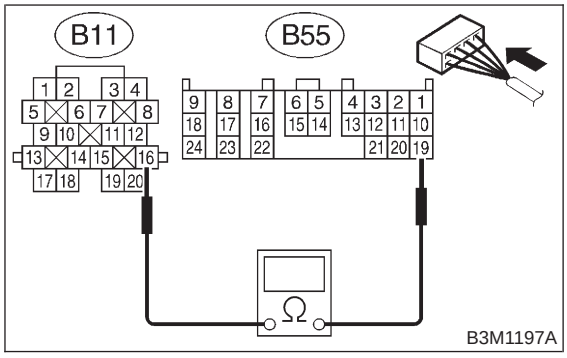
Remove fuse (No. 11).

CHECK : ***Is the fuse (No. 11) blown out?***
YES : Replace fuse (No. 11). If replaced fuse (No. 11) has blown out easily, repair short circuit in harness between fuse (No. 11) and TCM.
NO : Repair open circuit in harness between fuse (No. 11) and TCM, and poor contact in coupling connector.

7B6 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

1) Turn ignition switch to OFF.
2) Disconnect connector from TCM and transmission.
3) Measure resistance of harness between TCM and transmission connector.

Connector & terminal
(B55) No. 19 — (B11) No. 16:

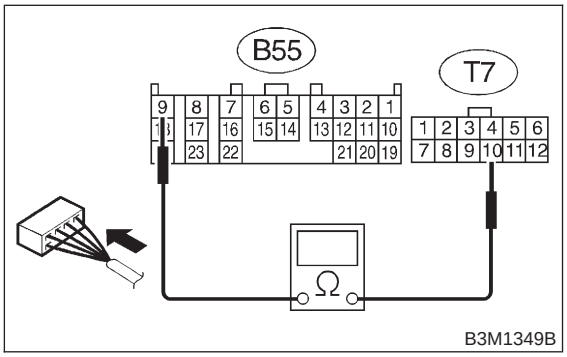


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **7B7**.
NO : Repair open circuit in harness between TCM and transmission harness connector.

7B7 : CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.

1) Turn ignition switch to OFF.
2) Disconnect connector from inhibitor switch.
3) Measure resistance of harness between inhibitor switch side connector and chassis ground.

Connector & terminal
(T7) No. 10 — (B55) No. 9:

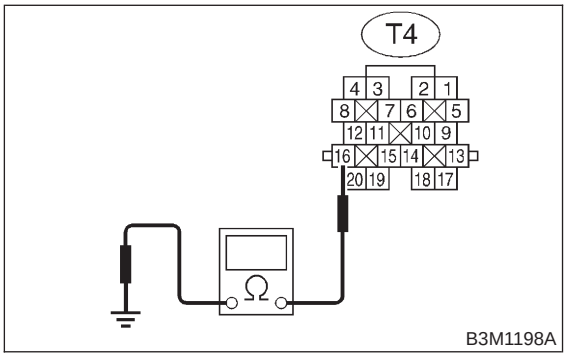


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **7B8**.
NO : Repair open circuit in harness between TCM and inhibitor side connector, and poor contact in coupling connector.

7B8 : CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND TRANSMISSION GROUND.

Measure resistance of harness between transmission and transmission ground.

Connector & terminal
(T4) No. 16 — Transmission ground:



CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **7B9**.
NO : Repair open circuit in harness between transmission and transmission ground.

7B9 : CHECK POOR CONTACT.

CHECK : ***Is there poor contact in control module power supply and ground line?***
YES : Repair poor contact and ground terminal.
NO : Replace TCM. <Ref. to 3-2 [W22A0].>

8. Diagnostic Chart with Trouble Code

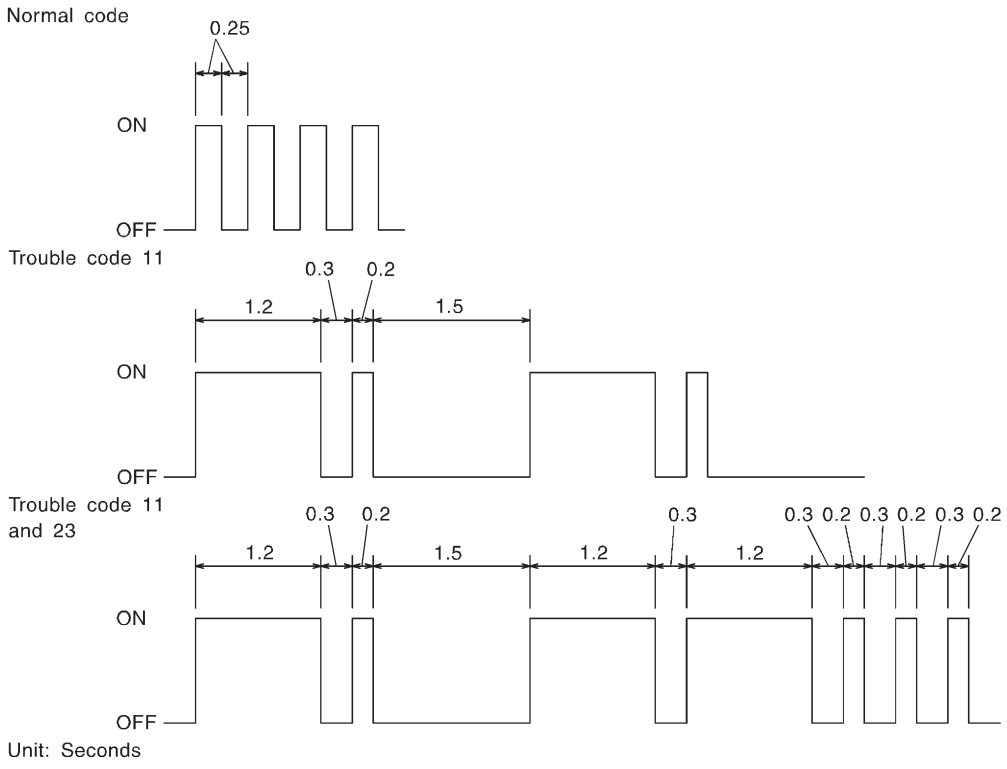
A: LIST OF TROUBLE CODE

1. TROUBLE CODE

Trouble code	Item	Content of diagnosis	Title index No.
11	Engine speed signal	Detects open or shorted input signal circuit.	<Ref. to 3-2 [T8C0].>
23	AT load signal (Except 2200 cc California spec. vehicles)	Detects open or shorted input signal circuit.	<Ref. to 3-2 [T8D0].>
27	ATF temperature sensor	Detects open or shorted input signal circuit.	<Ref. to 3-2 [T8E0].>
31	Throttle position sensor	Detects open or shorted input signal circuit.	<Ref. to 3-2 [T8F0].>
33	Vehicle speed sensor 2 (Front)	Detects open or shorted input signal circuit.	<Ref. to 3-2 [T8G0].>
36	Torque converter turbine speed sensor	Detects open or shorted input signal circuit.	<Ref. to 3-2 [T8H0].>
38	Torque control signal	Detects open or shorted input signal circuit.	<Ref. to 3-2 [T8I0].>
45	AT load signal (2200 cc California spec. vehicles)	Detects open or shorted input signal circuit.	<Ref. to 3-2 [T8J0].>
71	Shift solenoid 1	Detects open or shorted drive circuit, as well as solenoid seizure.	<Ref. to 3-2 [T8K0].>
72	Shift solenoid 2	Detects open or shorted drive circuit, as well as solenoid seizure.	<Ref. to 3-2 [T8L0].>
73	Low clutch timing solenoid	Detects open or shorted drive circuit, as well as solenoid seizure.	<Ref. to 3-2 [T8M0].>
74	2-4 brake timing solenoid	Detects open or shorted drive circuit, as well as solenoid seizure.	<Ref. to 3-2 [T8N0].>
75	Duty solenoid A	Detects open or shorted drive circuit, as well as solenoid seizure.	<Ref. to 3-2 [T8O0].>
76	Duty solenoid D	Detects open or shorted drive circuit, as well as solenoid seizure.	<Ref. to 3-2 [T8P0].>
77	Duty solenoid B	Detects open or shorted drive circuit, as well as solenoid seizure.	<Ref. to 3-2 [T8Q0].>
79	Duty solenoid C	Detects open or shorted drive circuit, as well as solenoid seizure.	<Ref. to 3-2 [T8R0].>
93	Vehicle speed sensor 1 (Rear)	Detects open or shorted input signal circuit.	<Ref. to 3-2 [T8S0].>

2. HOW TO READ TROUBLE CODE OF INDICATOR LIGHT

The AT OIL TEMP indicator light flashes the code corresponding to the faulty part.
The long segment (1.2 sec on) indicates a “ten”, and the short segment (0.2 sec on) signifies a “one”.



B: CLEAR MEMORY

Current trouble codes shown on the display are cleared by turning the ignition switch OFF after conducting on-board diagnostics operation. Previous trouble codes, however, cannot be cleared since they are stored in the TCM memory which is operating on the back-up power supply. These trouble codes can be cleared by removing the specified fuse (located under the light or left lower position of the instrument panel).

CLEAR MEMORY:

Removal of No. 4 fuse (for at least one minute)

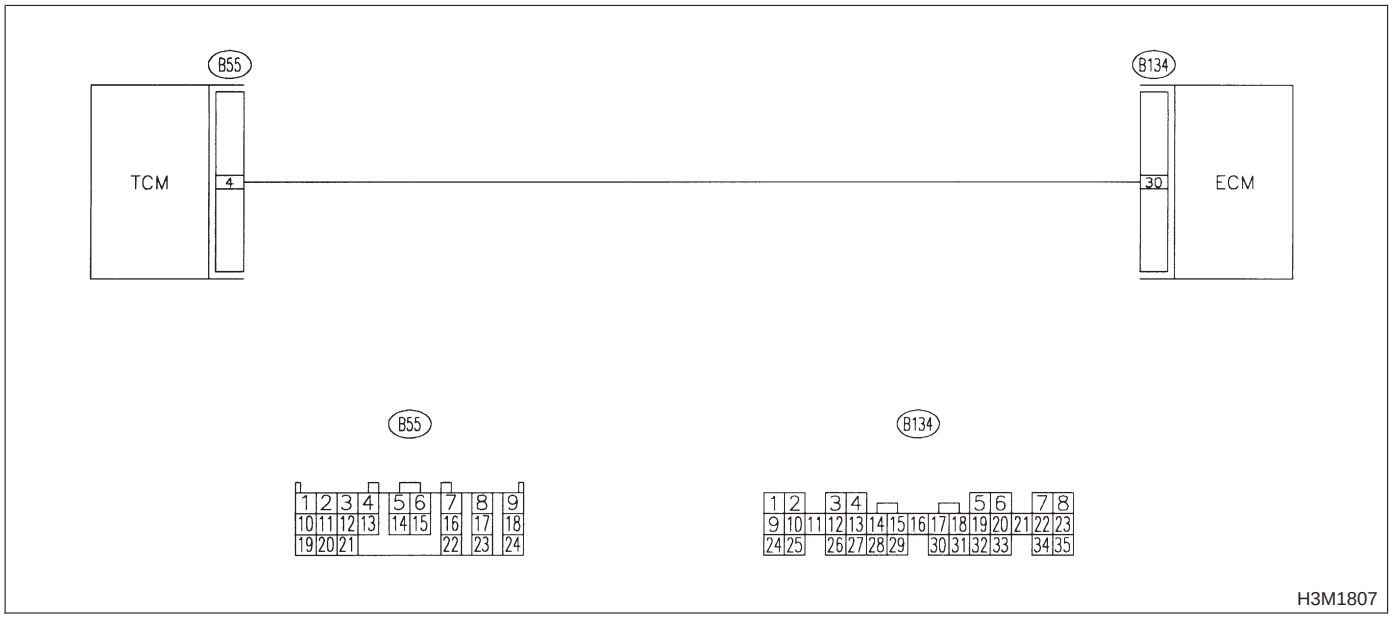
- The No. 4 fuse is located in the line to the memory back-up power supply of the TCM. Removal of this fuse clears the previous trouble codes stored in the TCM memory.
- Be sure to remove the No. 4 fuse for at least the specified length of time. Otherwise, trouble codes may not be cleared.

MEMO:

C: TROUBLE CODE 11 — ENGINE SPEED SIGNAL —

DIAGNOSIS:
Engine speed input signal circuit is open or shorted.
TROUBLE SYMPTOM:
- No lock-up (after engine warm-up).
- AT OIL TEMP indicator remains on when vehicle speed is “0”.

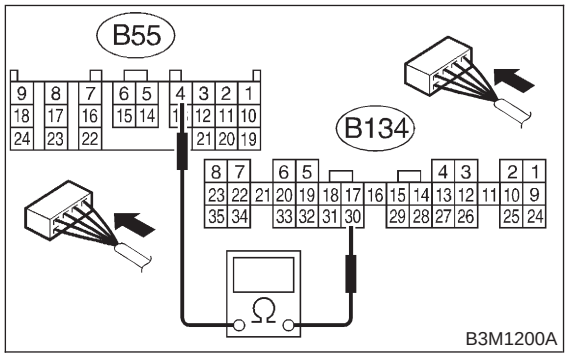
WIRING DIAGRAM:



8C1 : CHECK HARNESS CONNECTOR BETWEEN TCM AND ECM.

1) Turn ignition switch to OFF.
2) Disconnect connectors from TCM and ECM.
3) Measure resistance of harness between TCM and ECM connector.

Connector & terminal
(B55) No. 4 — (B134) No. 30:

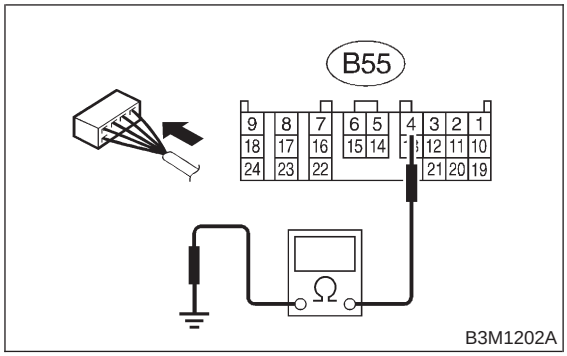


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8C2**.
NO : Repair open circuit in harness between TCM and ECM connector.

8C2 : CHECK HARNESS CONNECTOR BETWEEN TCM AND ECM.

Measure resistance of harness between TCM connector and chassis ground.

Connector & terminal
(B55) No. 4 — Chassis ground:



CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8C3**.
NO : Repair short circuit in harness between TCM and ECM connector.

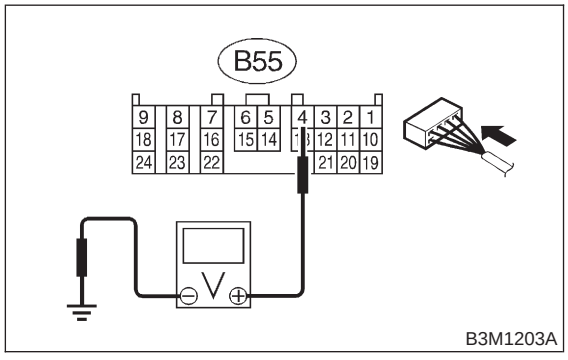
8C3 : PREPARE SUBARU SELECT MONITOR.

CHECK : ***Do you have a Subaru Select Monitor?***
YES : Go to step **8C5**.
NO : Go to step **8C4**.

8C4 : CHECK INPUT SIGNAL FOR TCM.

1) Connect connectors to TCM and ECM.
2) Turn ignition switch to ON (engine OFF).
3) Measure voltage between TCM connector and chassis ground.

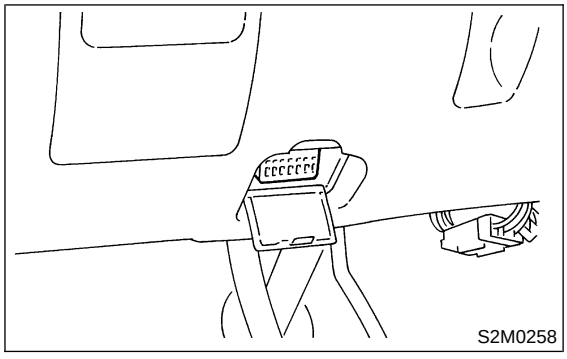
Connector & terminal
(B55) No. 4 (+) — Chassis ground (−):



CHECK : ***Is the voltage more than 10.5 V?***
YES : Even if “AT OIL TEMP” lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM and ECM.
NO : Go to step **8C6**.

8C5 : CHECK INPUT SIGNAL FOR TCM USING SUBARU SELECT MONITOR.

1) Connect connectors to TCM and ECM.
2) Connect Subaru Select Monitor to data link connector.



3) Start the engine, and turn Subaru Select Monitor switch to ON.
4) Warm-up the engine until engine coolant temperature is above 80°C (176°F).
5) Engine idling.
6) Read data of engine speed using Subaru Select Monitor.
● Display shows engine speed signal value sent from ECM.

CHECK : ***Is the revolution value the same as the tachometer reading shown on the combination meter?***
YES : Even if “AT OIL TEMP” lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM and ECM.
NO : Go to step **8C6**.

8C6 : CHECK POOR CONTACT.

CHECK : ***Is there poor contact in engine speed signal circuit?***
YES : Repair poor contact.
NO : Go to step **8C7**.

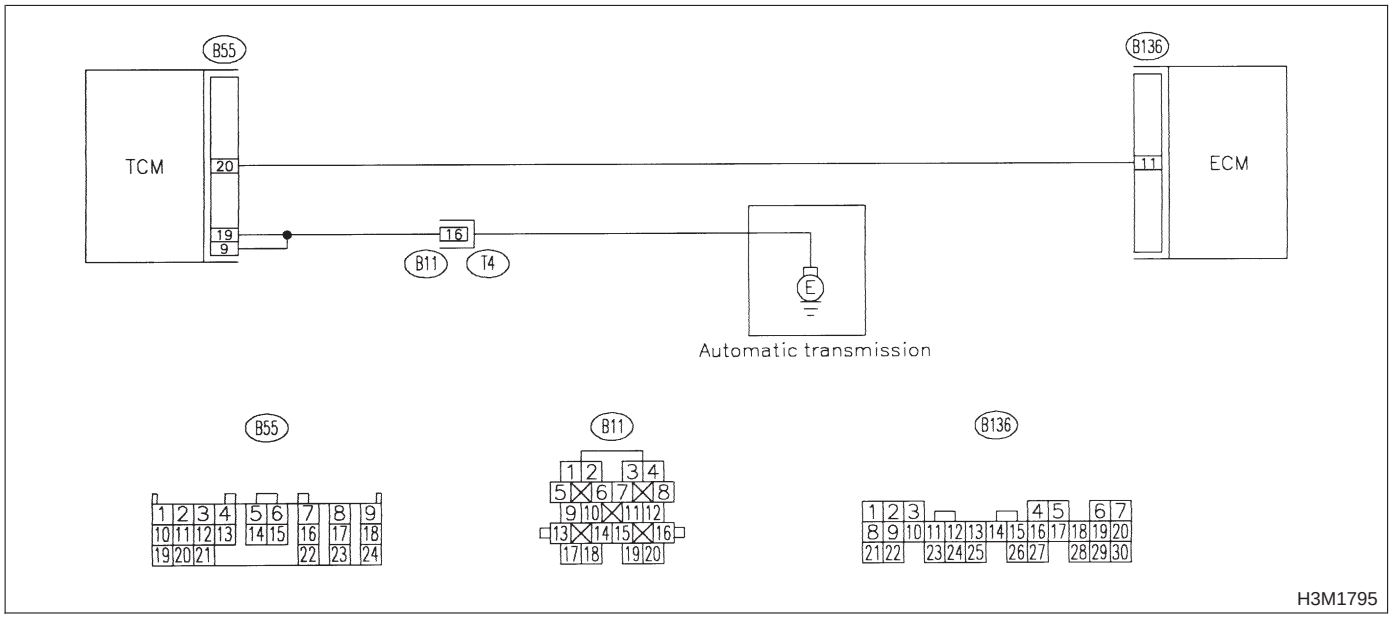
8C7 : CONFIRM TROUBLE CODE 11.

CHECK : ***Replace ECM with a new one. Does the trouble code appear again, after the memory has been cleared?***
YES : Replace TCM. <Ref. to 3-2 [W22A0].>
NO : Replace ECM. <Ref. to 2-7 [W15A0].>

MEMO:

D: TROUBLE CODE 23 — AT LOAD SIGNAL (EXCEPT 2200 cc CALIFORNIA SPEC. VEHICLES) —

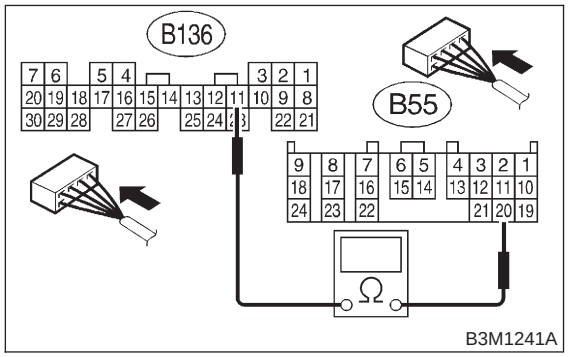
DIAGNOSIS:
Input signal circuit of TCM from ECM is open or shorted.
TROUBLE SYMPTOM:
Excessive shift shock.
WIRING DIAGRAM:



8D1 : CHECK HARNESS CONNECTOR BETWEEN TCM AND ECM.

1) Turn ignition switch to OFF.
2) Disconnect connectors from TCM and ECM.
3) Measure resistance of harness between TCM and ECM connector.

Connector & terminal
(B55) No. 20 — (B136) No. 11:

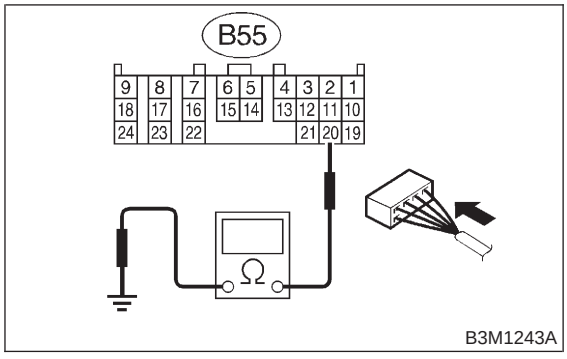


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8D2**.
NO : Repair open circuit in harness between TCM and ECM connector.

8D2 : CHECK HARNESS CONNECTOR BETWEEN TCM AND ECM.

Measure resistance of harness between TCM connector and chassis ground.

Connector & terminal
(B55) No. 20 — Chassis ground:



CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8D3**.
NO : Repair short circuit in harness between TCM and ECM connector.

8D3 : PREPARE SUBARU SELECT MONITOR.

CHECK : ***Do you have a Subaru Select Monitor?***
YES : Go to step **8D5**.
NO : Go to step **8D4**.

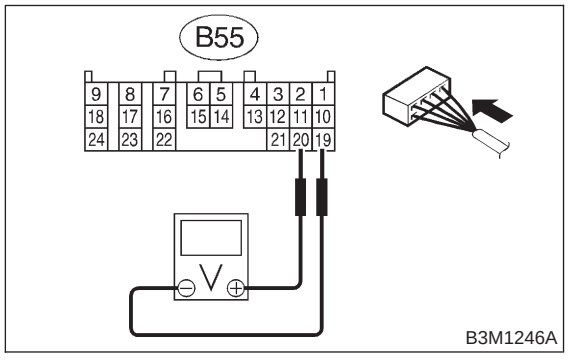
8D4 : CHECK INPUT SIGNAL FOR TCM.

1) Connect connectors to TCM and ECM.
2) Start the engine, and warm-up the transmission until ATF temperature is above 80°C (176°F).

NOTE:
If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature.

3) Engine idling.
4) Measure voltage between TCM connectors.

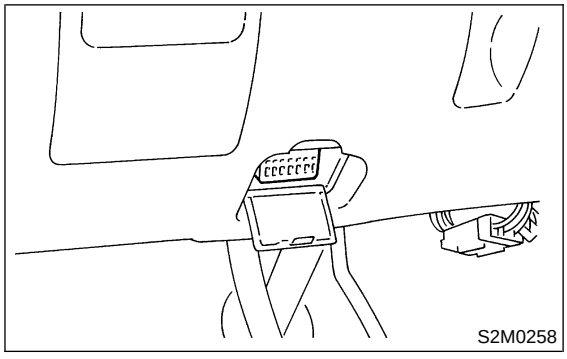
Connector & terminal
(B55) No. 20 (+) — No. 19 (−):



CHECK : ***Is the voltage between 0.5 and 1.2 V?***
YES : Even if “AT OIL TEMP” lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM and ECM.
NO : Go to step **8D6**.

8D5 : CHECK INPUT SIGNAL FOR TCM USING SUBARU SELECT MONITOR.

1) Connect connectors to TCM and ECM.
2) Turn ignition switch to OFF.
3) Connect Subaru Select Monitor to data link connector.



4) Start the engine, and turn Subaru Select monitor switch to ON.
5) Warm-up the engine until engine coolant temperature is above 80°C (176°F).
6) Engine idling.
7) Read data of mass air flow signal using Subaru Select Monitor.
● Display shows mass air flow signal value sent from ECM.

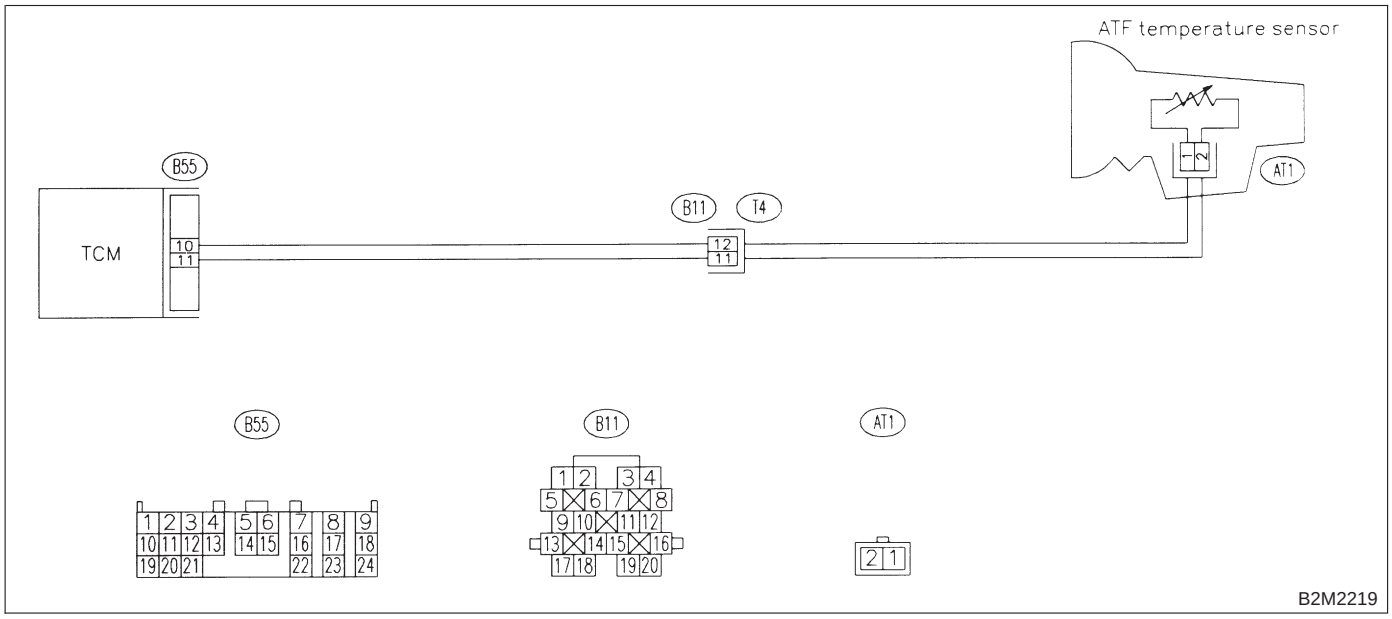
CHECK : ***Is the value between 0.5 and 1.2 V?***
YES : Even if “AT OIL TEMP” lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM and ECM.
NO : Go to step **8D6**.

8D6 : CHECK POOR CONTACT.

CHECK : ***Is there poor contact in mass air flow signal circuit?***
YES : Repair poor contact.
NO : Replace TCM. <Ref. to 3-2 [W22A0].>

E: TROUBLE CODE 27 — ATF TEMPERATURE SENSOR —

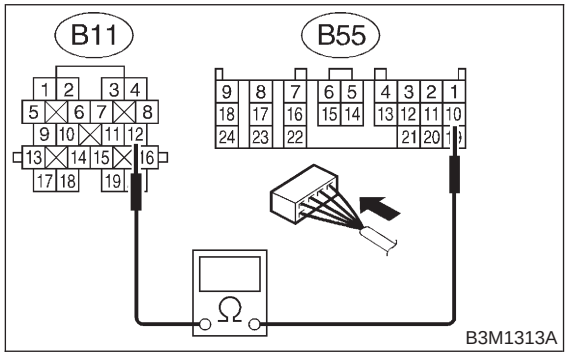
DIAGNOSIS:
Input signal circuit of TCM to ATF temperature sensor is open or shorted.
TROUBLE SYMPTOM:
Excessive shift shock.
WIRING DIAGRAM:



8E1 : CHECK HARNESS CONNECTOR BETWEEN TCM AND ATF TEMPERATURE SENSOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from transmission and TCM.
3) Measure resistance of harness between TCM and transmission connector.

Connector & terminal
(B55) No. 10 — (B11) No. 12:

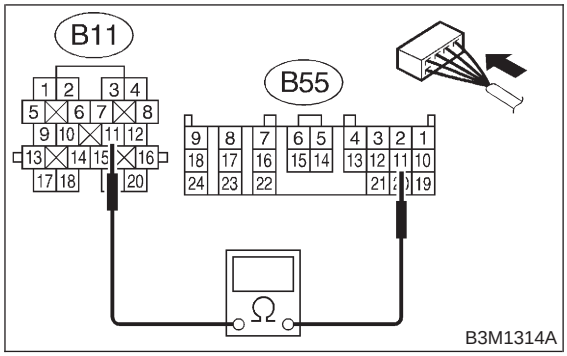


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8E2**.
NO : Repair open circuit in harness between TCM and transmission connector.

8E2 : CHECK HARNESS CONNECTOR BETWEEN TCM AND ATF TEMPERATURE SENSOR.

Measure resistance of harness between TCM and transmission connector.

Connector & terminal
(B55) No. 11 — (B11) No. 11:

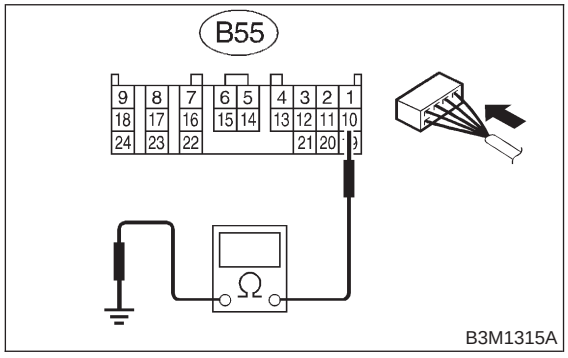


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8E3**.
NO : Repair open circuit in harness between TCM and transmission connector.

8E3 : CHECK HARNESS CONNECTOR BETWEEN TCM AND ATF TEMPERATURE SENSOR.

Measure resistance of harness between TCM connector and transmission ground.

Connector & terminal
(B55) No. 10 — Chassis ground:

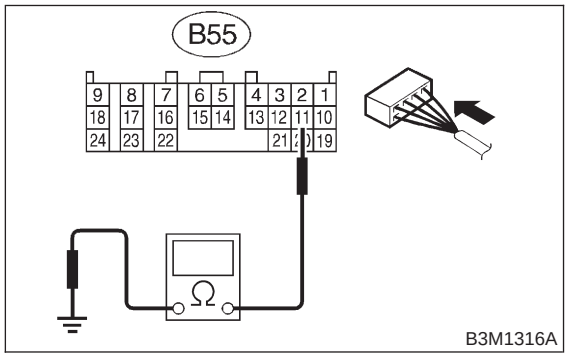


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8E4**.
NO : Repair short circuit in harness between TCM and transmission connector.

8E4 : CHECK HARNESS CONNECTOR BETWEEN TCM AND ATF TEMPERATURE SENSOR.

Measure resistance of harness between TCM connector and transmission ground.

Connector & terminal
(B55) No. 11 — Chassis ground:



CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8E5**.
NO : Repair short circuit in harness between TCM and transmission connector.

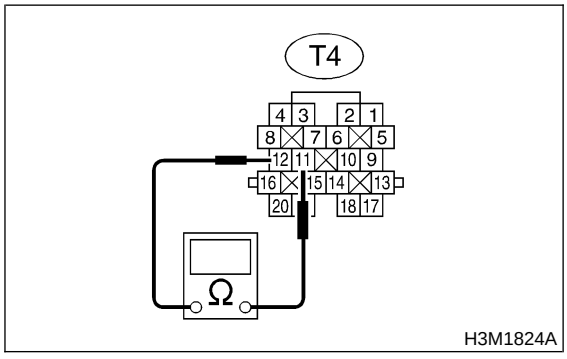
8E5 : CHECK ATF TEMPERATURE SENSOR.

1) Turn ignition switch to OFF.
2) Connect connectors to transmission and TCM.
3) Turn ignition switch to ON and start engine.
4) Warm-up the transmission until ATF temperature reaches to 80°C (176°F).

NOTE:
If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature.

5) Measure resistance between transmission connector terminals.
6) Disconnect connector from transmission.

Connector & terminal
(T4) No. 11 — No. 12:

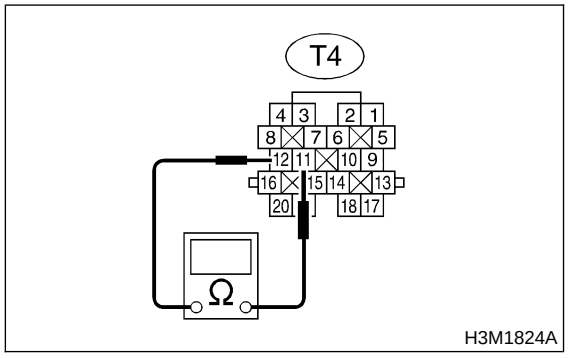


CHECK : ***Is the resistance between 275 and 375 Ω?***
YES : Go to step **8E6**.
NO : Go to step **8E13**.

8E6 : CHECK ATF TEMPERATURE SENSOR.

1) Turn ignition switch to ON (engine OFF).
2) Measure resistance between transmission connector terminals.

Connector & terminal
(T4) No. 11 — No. 12:



CHECK : ***Does the resistance value increase while the ATF temperature decreases?***
YES : Go to step **8E7**.
NO : Go to step **8E13**.

8E7 : PREPARE SUBARU SELECT MONITOR.

CHECK : ***Do you have a Subaru Select Monitor?***
YES : Go to step **8E10**.
NO : Go to step **8E8**.

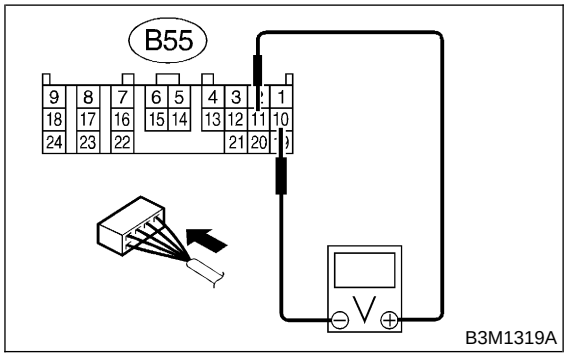
8E8 : CHECK INPUT SIGNAL FOR TCM.

1) Warm-up the transmission until ATF temperature is about 80°C (176°F).

NOTE:
If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature.

2) Measure voltage between TCM connector terminal.

Connector & terminal
(B55) No. 11 (+) — No. 10 (−):

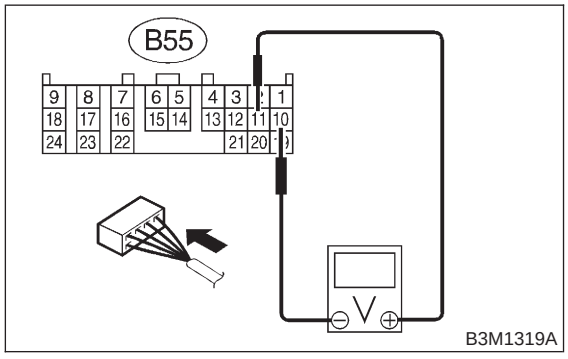


CHECK : ***Is the voltage between 2.9 and 4.0 V?***
YES : Go to step **8E9**.
NO : Go to step **8E12**.

8E9 : CHECK INPUT SIGNAL FOR TCM.

1) Turn ignition switch to ON (engine OFF).
2) Measure voltage between TCM connector terminal.

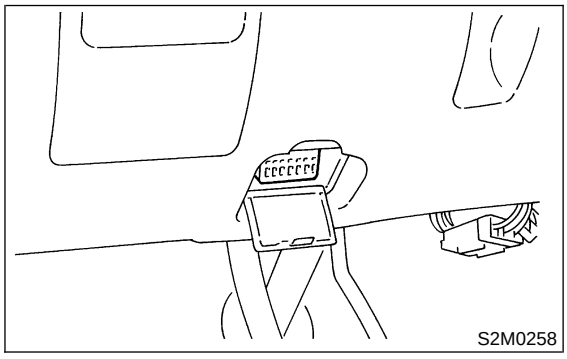
Connector & terminal
(B55) No. 11 (+) — No. 10 (−):



CHECK : ***Is the voltage between 1.0 and 1.4 V?***
YES : Even if “AT OIL TEMP” lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or contact in the TCM.
NO : Go to step **8E12**.

8E10 : CHECK INPUT SIGNAL FOR TCM USING SUBARU SELECT MONITOR.

1) Turn ignition switch to OFF.
2) Connect connectors to TCM and transmission.
3) Connect Subaru Select Monitor to data link connector.



4) Start the engine, and turn Subaru Select Monitor switch to ON.
5) Warm-up the transmission until ATF temperature is above 80°C (176°F).

NOTE:
If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature.

6) Read data of ATF temperature using Subaru Select Monitor.
- ATF temperature is indicated in “°F” or “°C”.

CHECK : ***Is the ATF temperature between 70 and 110°C (158 and 230°F).***
YES : Go to step **8E11**.
NO : Go to step **8E12**.

8E11 : CHECK INPUT SIGNAL FOR TCM USING SUBARU SELECT MONITOR.

Turn ignition switch to ON (engine OFF).

CHECK : ***Does the ATF temperature gradually decrease?***
YES : Even if “AT OIL TEMP” light up, the circuit has returned to a normal condition at this time. Temporary poor contact of the connector or harness may be the case. Repair harness or contact in the ATF temperature sensor and transmission connector.
NO : Go to step **8E12**.

8E12 : CHECK POOR CONTACT.

CHECK : ***Is there poor contact in ATF temperature sensor circuit?***
YES : Repair poor contact.
NO : Replace TCM. <Ref. to 3-2 [W22A0].>

8E13 : CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND ATF TEMPERATURE SENSOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from transmission.
3) Remove transmission connector from bracket.
4) Lift-up the vehicle and place safety stand.

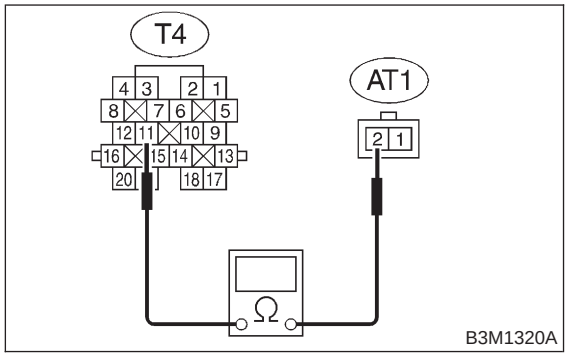
CAUTION:
On AWD models, raise all wheels off ground.

5) Drain automatic transmission fluid.

CAUTION:
Do not drain the automatic transmission fluid until it cools down.

6) Remove oil pan, and disconnect connector from ATF temperature sensor connector.
7) Measure resistance of harness between ATF temperature sensor and transmission connector.

Connector & terminal
(T4) No. 11 — (AT1) No. 2:

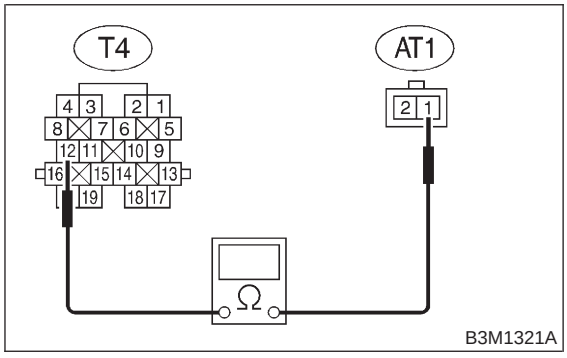


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8E14**.
NO : Repair open circuit in harness between ATF temperature sensor and transmission connector.

8E14 : CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND ATF TEMPERATURE SENSOR.

Measure resistance of harness between ATF temperature sensor and transmission connector.

Connector & terminal
(T4) No. 12 — (AT1) No. 1:

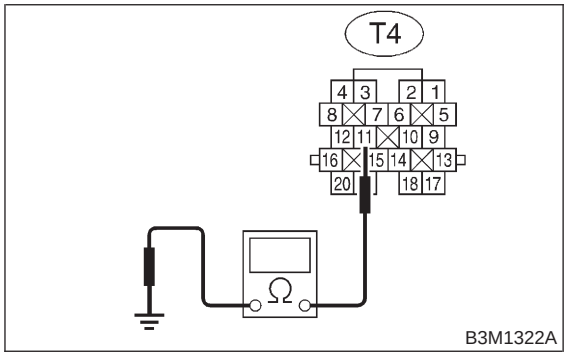


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8E15**.
NO : Repair open circuit in harness between ATF temperature sensor and transmission connector.

8E15 : CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND ATF TEMPERATURE SENSOR.

Measure resistance of harness between transmission connector and transmission ground.

Connector & terminal
(T4) No. 11 — Transmission ground:

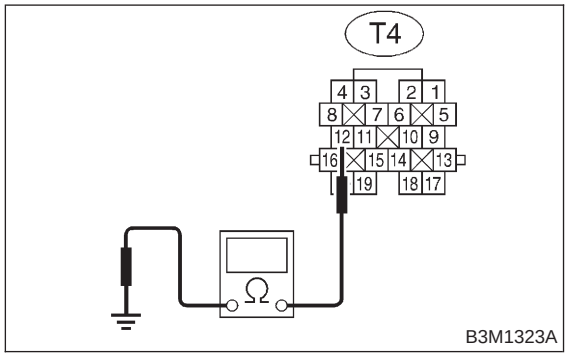


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8E16**.
NO : Repair short circuit in harness between ATF temperature sensor and transmission connector.

8E16 : CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND ATF TEMPERATURE SENSOR.

Measure resistance of harness between transmission connector and transmission ground.

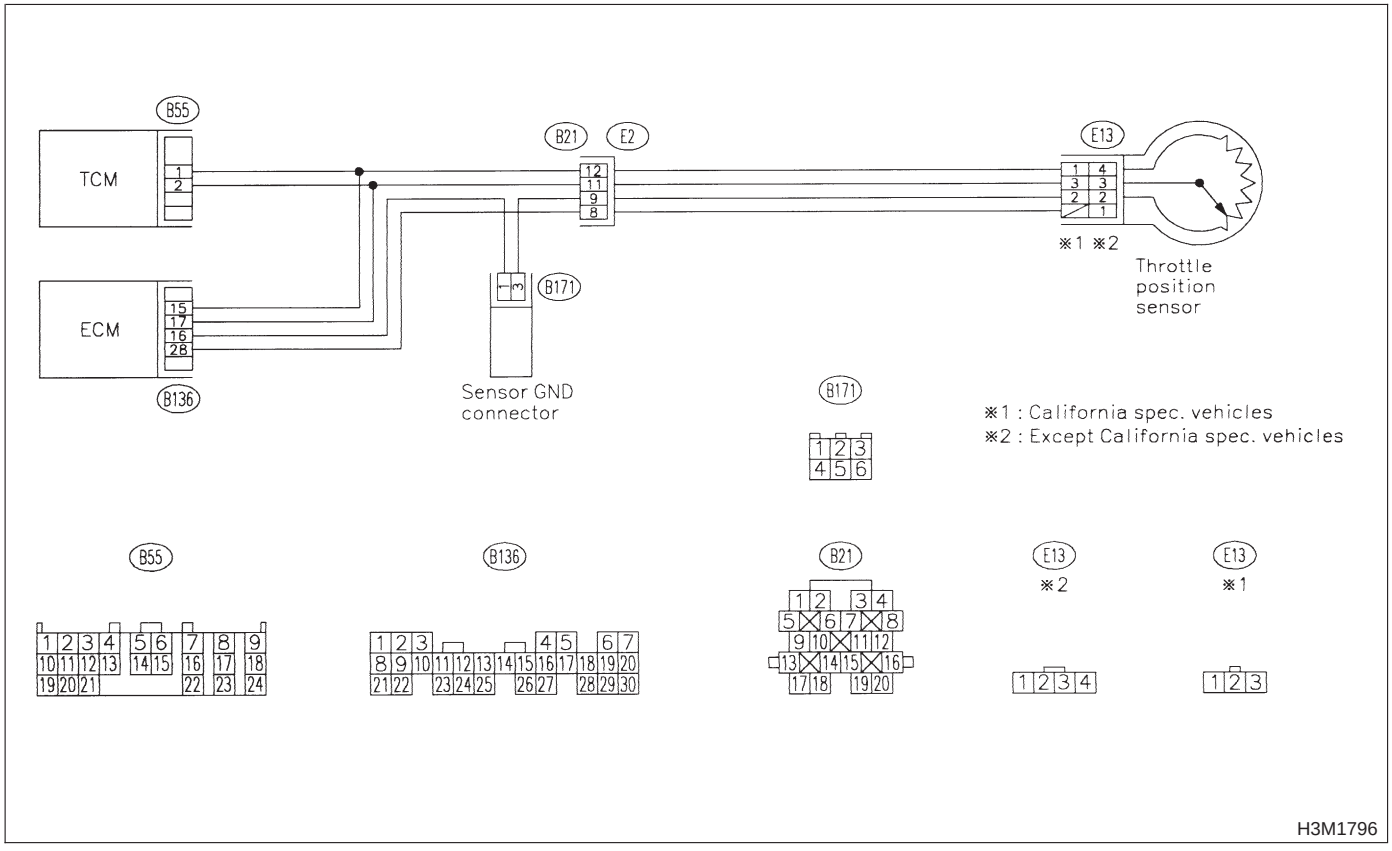
Connector & terminal
(T4) No. 12 — Transmission ground:



CHECK : ***Is the resistance more than 1 MΩ?***
YES : Replace ATF temperature sensor. <Ref. to 3-2 [W4A0].>
NO : Repair short circuit in harness between ATF temperature sensor and transmission connector.

F: TROUBLE CODE 31 — THROTTLE POSITION SENSOR —

DIAGNOSIS:
Input signal circuit of throttle position sensor is open or shorted.
TROUBLE SYMPTOM:
Shift point too high or too low; engine brake not effected in “3” range: excessive shift shock; excessive tight corner “braking”.
WIRING DIAGRAM:



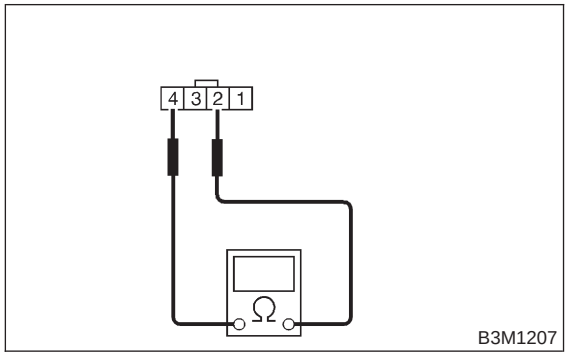
8F1 : CHECK CALIFORNIA SPEC. VEHICLES.

CHECK : ***Is the vehicle California spec. vehicle?***
YES : Go to step **8F6**.
NO : Go to step **8F2**.

8F2 : CHECK THROTTLE POSITION SENSOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from throttle position sensor.
3) Measure resistance between throttle position sensor connector receptacle's terminals.

Terminals
No. 4 — No. 2:

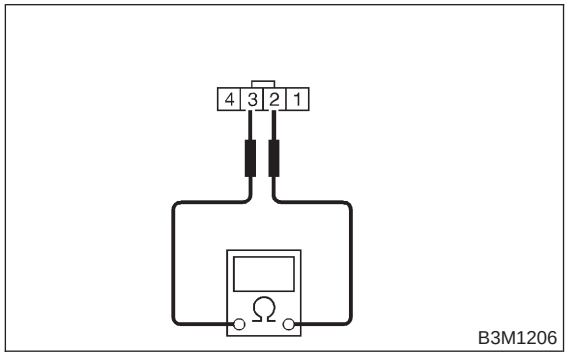


CHECK : ***Is the resistance between 0.3 and 0.7 kΩ?***
YES : Go to step **8F3**.
NO : Replace throttle position sensor. <Ref. to 2-7 [W9A0].>

8F3 : CHECK THROTTLE POSITION SENSOR.

Measure resistance between throttle position sensor connector receptacle's terminals.

Terminals
No. 2 — No. 3:

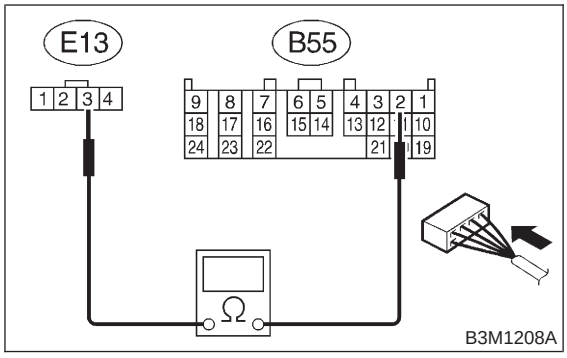


CHECK : ***Is the resistance between 3.5 and 6.5 kΩ?***
YES : Go to step **8F4**.
NO : Replace throttle position sensor. <Ref. to 2-7 [W9A0].>

8F4 : CHECK HARNESS CONNECTOR BETWEEN TCM AND THROTTLE POSITION SENSOR.

1) Disconnect connector from TCM.
2) Measure resistance of harness between TCM and throttle position sensor connector.

Connector & terminal
(B55) No. 2 — (E13) No. 3:

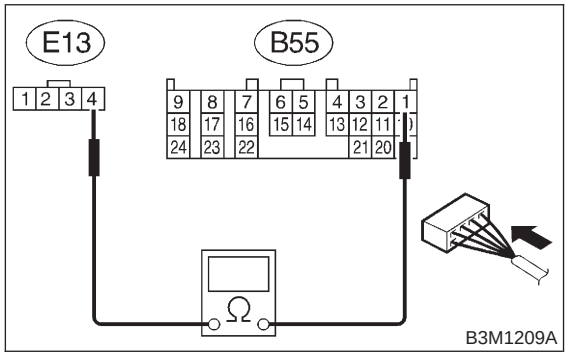


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8F5**.
NO : Repair open circuit in harness between TCM and throttle position sensor connector, and poor contact in coupling connector.

8F5 : CHECK HARNESS CONNECTOR BETWEEN TCM AND THROTTLE POSITION SENSOR.

Measure resistance of harness between TCM and throttle position sensor connector.

Connector & terminal
(B55) No. 1 — (E13) No. 4:

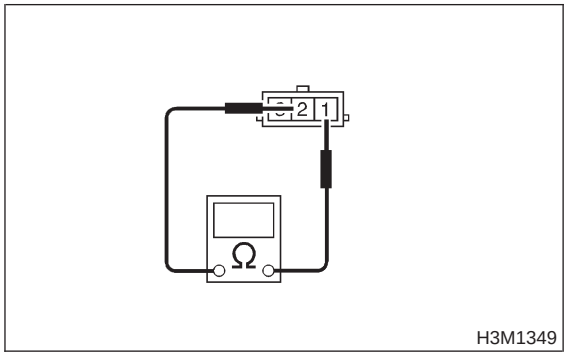


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8F10**.
NO : Repair open circuit in harness between TCM and throttle position sensor connector, and poor contact in coupling connector.

8F6 : CHECK THROTTLE POSITION SENSOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from throttle position sensor.
3) Measure resistance between throttle position sensor connector receptacle's terminals.

Terminals
No. 1 — No. 2:

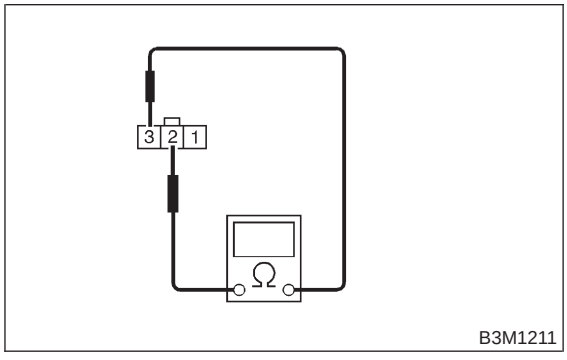


CHECK : ***Is the resistance between 0.3 and 0.7 kΩ?***
YES : Go to step **8F7**.
NO : Replace throttle position sensor. <Ref. to 2-7 [W9A0].>

8F7 : CHECK THROTTLE POSITION SENSOR.

Measure resistance between throttle position sensor connector receptacle's terminals.

Terminals
No. 2 — No. 3:

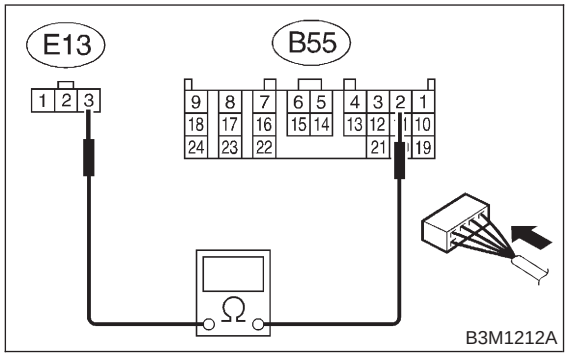


CHECK : ***Is the resistance between 3.5 and 6.5 kΩ?***
YES : Go to step **8F8**.
NO : Replace throttle position sensor. <Ref. to 2-7 [W9A0].>

8F8 : CHECK HARNESS CONNECTOR BETWEEN TCM AND THROTTLE POSITION SENSOR.

1) Disconnect connector from TCM.
2) Measure resistance of harness between TCM and throttle position sensor connector.

Connector & terminal
(B55) No. 2 — (E13) No. 3:

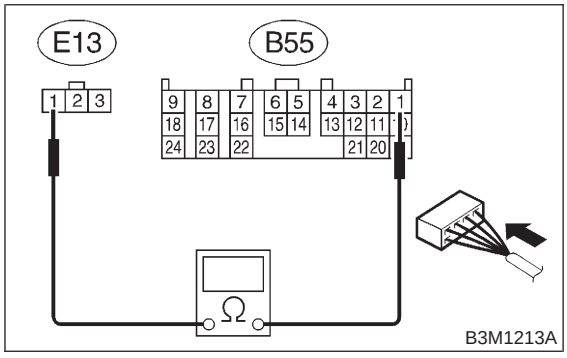


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8F9**.
NO : Repair open circuit in harness between TCM and throttle position sensor connector, and poor contact in coupling connector.

8F9 : CHECK HARNESS CONNECTOR BETWEEN TCM AND THROTTLE POSITION SENSOR.

Measure resistance of harness between TCM and throttle position sensor connector.

Connector & terminal
(B55) No. 1 — (E13) No. 1:

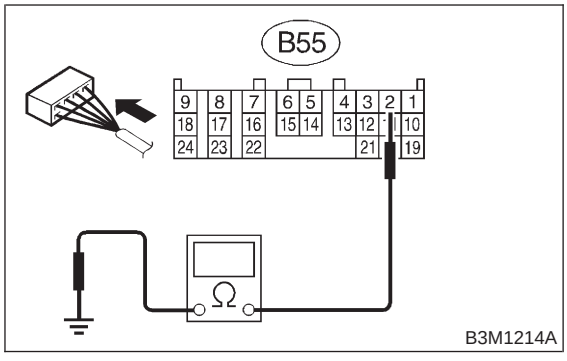


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8F10**.
NO : Repair open circuit in harness between TCM and throttle position sensor connector, and poor contact in coupling connector.

8F10 : CHECK HARNESS CONNECTOR BETWEEN TCM AND THROTTLE POSITION SENSOR.

Measure resistance of harness between TCM connector and chassis ground.

Connector & terminal
(B55) No. 2 — Chassis ground:

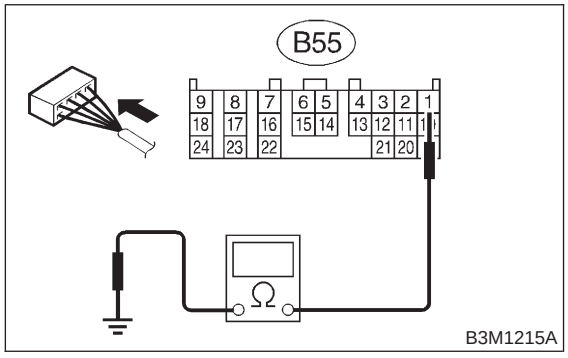


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8F11**.
NO : Repair short circuit in harness between TCM and throttle position sensor connector.

8F11 : CHECK HARNESS CONNECTOR BETWEEN TCM AND THROTTLE POSITION SENSOR.

Measure resistance of harness between TCM connector and chassis ground.

Connector & terminal
(B55) No. 1 — Chassis ground:

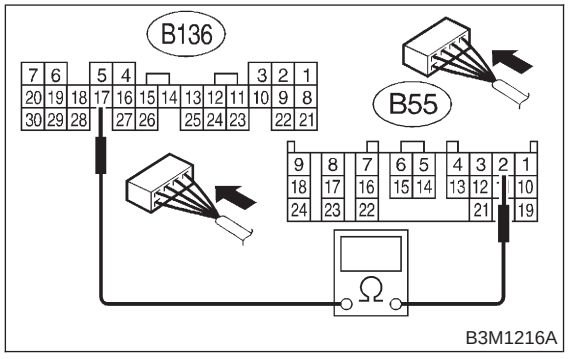


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8F12**.
NO : Repair short circuit in harness between TCM and throttle position sensor connector.

8F12 : CHECK HARNESS CONNECTOR BETWEEN TCM AND ECM.

1) Disconnect connector from ECM.
2) Measure resistance of harness between TCM and ECM connector.

Connector & terminal
(B55) No. 2 — (B136) No. 17:

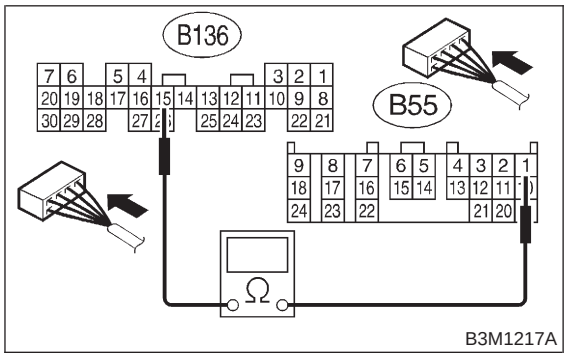


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8F13**.
NO : Repair open circuit in harness between TCM and ECM connector.

8F13 : CHECK HARNESS CONNECTOR BETWEEN TCM AND ECM.

Measure resistance of harness between TCM and ECM connector.

Connector & terminal
(B55) No. 1 — (B136) No. 15:



CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8F14**.
NO : Repair open circuit in harness between TCM and ECM connector.

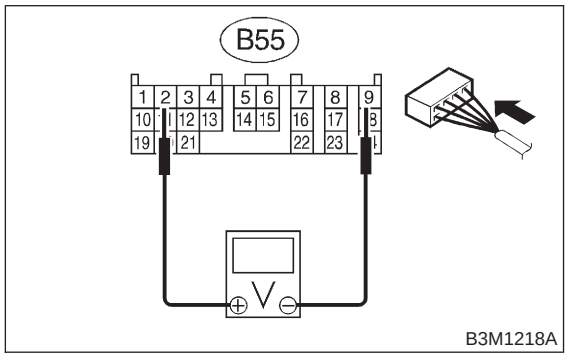
8F14 : PREPARE SUBARU SELECT MONITOR.

CHECK : ***Do you have a Subaru Select Monitor?***
YES : Go to step **8F17**.
NO : Go to step **8F15**.

8F15 : CHECK INPUT SIGNAL FOR TCM.

1) Connect connectors to TCM, throttle position sensor and ECM.
2) Turn ignition switch to ON (engine OFF).
3) Measure voltage between TCM connector terminals.

Connector & terminal
(B55) No. 2 (+) — No. 9 (−):

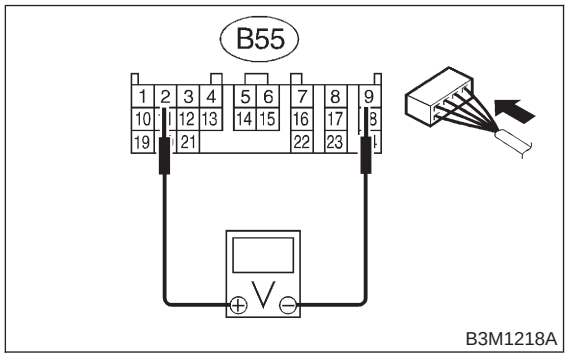


CHECK : ***Is the voltage between 0.3 and 0.7 V in throttle fully closed?***
YES : Go to step **8F16**.
NO : Go to step **8F21**.

8F16 : CHECK INPUT SIGNAL FOR TCM.

Measure voltage between TCM connector terminals.

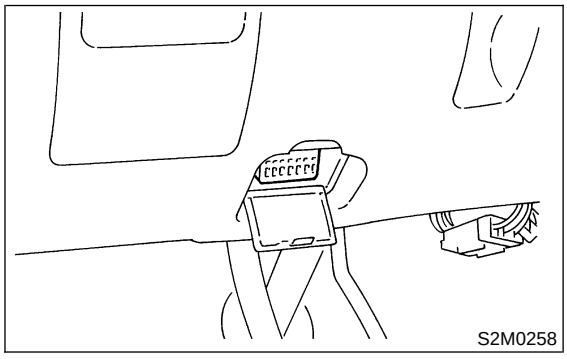
Connector & terminal
(B55) No. 2 (+) — No. 9 (−):



CHECK : ***Is the voltage between 4.3 and 4.9 V with throttle fully open?***
YES : Go to step **8F19**.
NO : Go to step **8F21**.

8F17 : CHECK INPUT SIGNAL FOR TCM USING SUBARU SELECT MONITOR.

1) Connect connectors to TCM, throttle position sensor and ECM.
2) Connect Subaru Select Monitor to data link connector.



3) Turn ignition switch to ON (engine OFF).
4) Turn Subaru Select Monitor switch to ON.
5) Throttle fully closed.
6) Read data of throttle position sensor using Subaru Select Monitor.
- Throttle position sensor input signal is indicated.

CHECK : ***Is the value voltage between 0.3 and 0.7 V?***
YES : Go to step **8F18**.
NO : Go to step **8F21**.

8F18 : CHECK INPUT SIGNAL FOR TCM USING SUBARU SELECT MONITOR.

Throttle fully open.

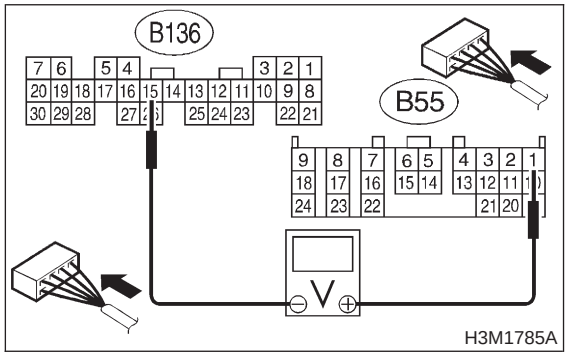
NOTE:
Must be changed correspondingly with accelerator pedal operation (from “released” to “depressed” position).

CHECK : ***Is the value voltage between 4.3 and 4.9 V ?***
YES : Go to step **8F20**.
NO : Go to step **8F21**.

8F19 : CHECK INPUT SIGNAL FOR TCM (THROTTLE POSITION SENSOR POWER SUPPLY).

Measure voltage between TCM connector terminals.

Connector & terminal
(B55) No. 1 (+) — (B136) No. 15 (−):



CHECK : ***Is the voltage between 5.02 and 5.22 V?***

YES : Even if “AT OIL TEMP” lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in throttle position sensor circuit.

NO : Go to step **8F21**.

8F20 : CHECK INPUT SIGNAL FOR TCM USING SUBARU SELECT MONITOR (THROTTLE POSITION SENSOR POWER SUPPLY).

Read data of throttle position sensor power supply using Subaru Select Monitor.
● Throttle position sensor power supply voltage is indicated.

CHECK : ***Is the value voltage between 5.02 and 5.22 V?***

YES : Even if “AT OIL TEMP” lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in throttle position sensor circuit.

NO : Go to step **8F21**.

8F21 : CHECK POOR CONTACT.

CHECK : ***Is there poor contact in throttle position sensor circuit?***

YES : Repair poor contact.

NO : Replace TCM. <Ref. to 3-2 [W22A0].>

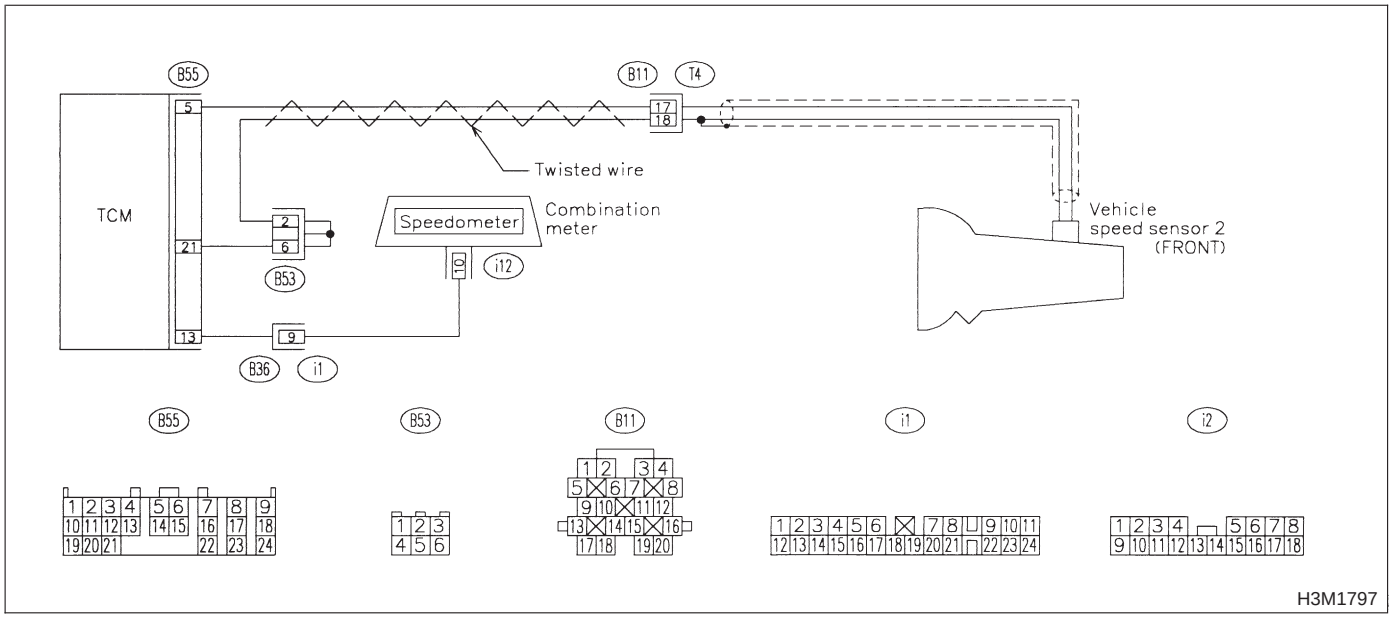
MEMO:

G: TROUBLE CODE 33 — VEHICLE SPEED SENSOR 2 (FRONT) —

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

TROUBLE SYMPTOM:
- Erroneous idling.
- Engine stalls.
- Poor driving performance.

WIRING DIAGRAM:



8G1 : CHECK OPERATION OF SPEEDOMETER.

CHECK : ***Does speedometer operate normally?***

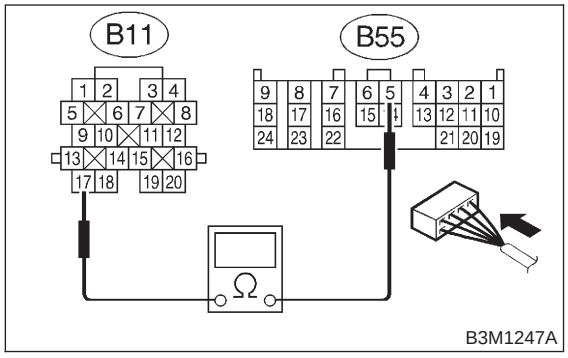
YES : Even if “AT OIL TEMP” lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM and transmission.

NO : Go to step **8G2**.

8G2 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

1) Disconnect connector from TCM.
2) Measure resistance of harness between TCM and transmission connector.

Connector & terminal
(B55) No. 5 — (B11) No. 17:

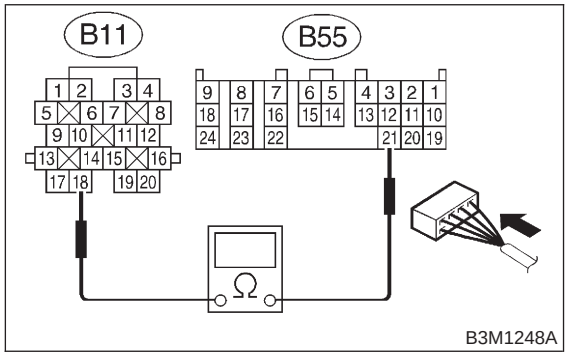


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8G3**.
NO : Repair open circuit in harness between TCM and transmission connector.

8G3 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

Measure resistance of harness between TCM and transmission connector.

Connector & terminal
(B55) No. 21 — (B11) No. 18:

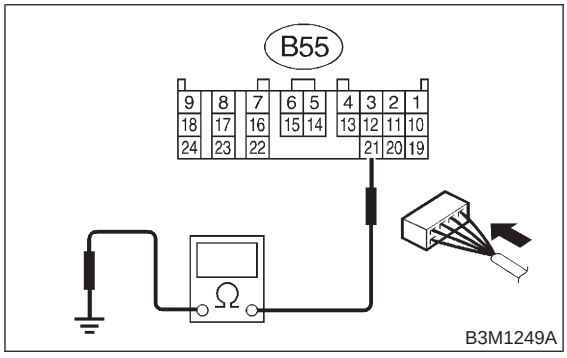


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8G4**.
NO : Repair open circuit in harness between TCM and transmission connector, and poor contact in coupling connector.

8G4 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

Measure resistance of harness between TCM and transmission connector.

Connector & terminal
(B55) No. 21 — Chassis ground:

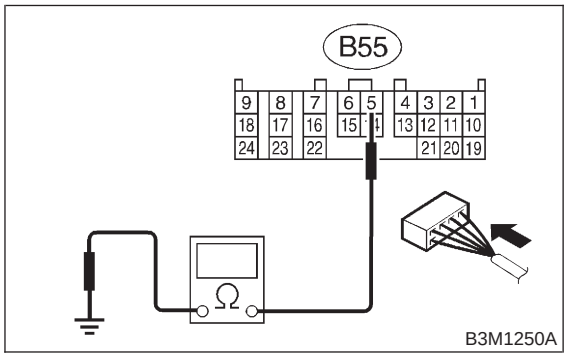


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8G5**.
NO : Repair short circuit in harness between TCM and transmission connector.

8G5 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

Measure resistance of harness between TCM and transmission connector.

Connector & terminal
(B55) No. 5 — Chassis ground:

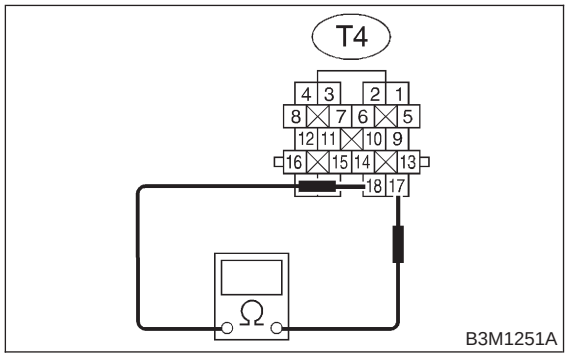


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8G6**.
NO : Repair short circuit in harness between TCM and transmission connector.

8G6 : CHECK VEHICLE SPEED SENSOR 2.

1) Turn ignition switch to OFF.
2) Disconnect connector from transmission.
3) Measure resistance between transmission connector receptacle's terminals.

Connector & terminal
(T4) No. 17 — No. 18:



CHECK : ***Is the resistance between 450 and 650 Ω?***
YES : Go to step **8G7**.
NO : Replace transmission harness connector. <Ref. to 3-2 [W11B0].>

8G7 : PREPARE OSCILLOSCOPE.

CHECK : ***Do you have oscilloscope?***
YES : Go to step **8G10**.
NO : Go to step **8G8**.

8G8 : PREPARE SUBARU SELECT MONITOR.

CHECK : ***Do you have a Subaru Select Monitor?***
YES : Go to step **8G11**.
NO : Go to step **8G9**.

8G9 : CHECK INPUT SIGNAL FOR TCM.

1) Connect all connectors.
2) Lift-up or raise the vehicle and place safety stands.

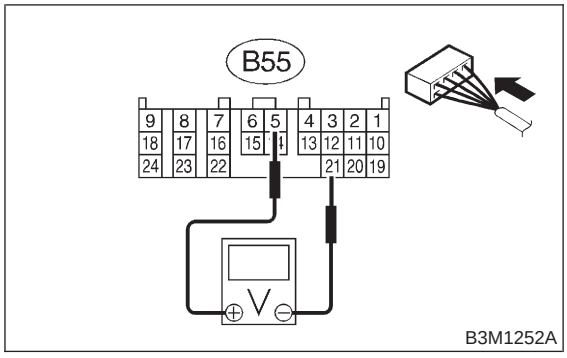
CAUTION:
On AWD models, raise all wheels off floor.

3) Start the engine and set vehicle in 20 km/h (12 MPH) condition.

NOTE:
The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to 4-4 [T6D2].>

4) Measure voltage between TCM connector terminals.

Connector & terminal
(B55) No. 5 (+) — No. 21 (−):



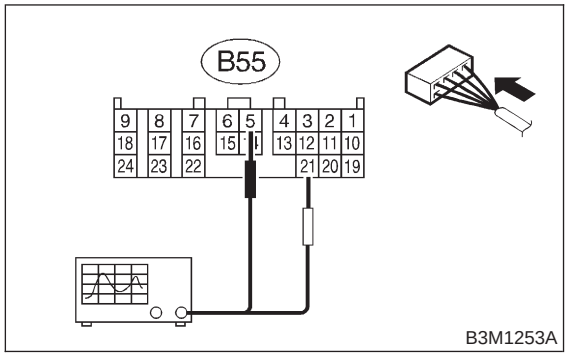
CHECK : ***Is the voltage more than AC 1 V?***
YES : Go to step **8G12**.
NO : Go to step **8G19**.

8G10 : CHECK VEHICLE SPEED SENSOR 2 USING OSCILLOSCOPE.

1) Connect all connectors.
2) Lift-up the vehicle and place safety stand.

CAUTION:
On AWD models, raise all wheels off ground.

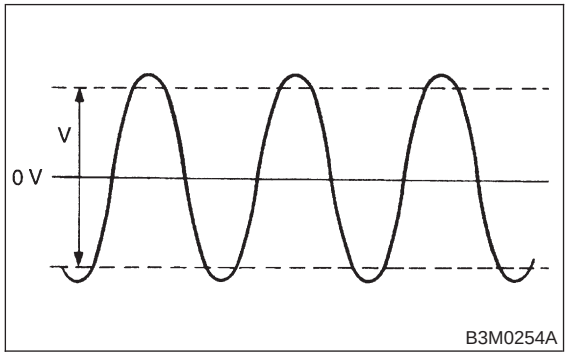
3) Set oscilloscope to TCM connector terminals.
Positive prove; (B55) No. 5
Earth lead; (B55) No. 21



4) Start the engine, and drive the wheels slowly.

NOTE:
The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunctions. When AT control diagnosis is finished, perform the ABS memory clearance procedure of self-diagnosis system. <Ref. to 4-4 [T6D2].>

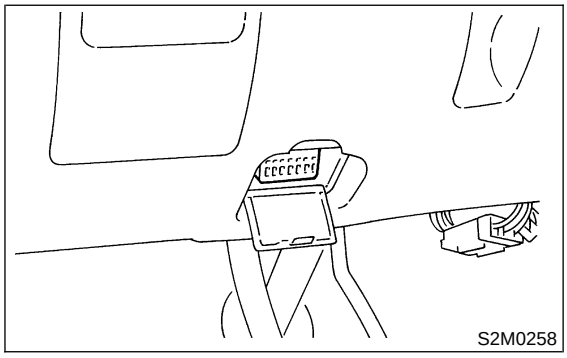
5) Measure signal voltage indicated on oscilloscope.



CHECK : ***Is the voltage more than AC 4 V?***
YES : Go to step **8G12**.
NO : Go to step **8G19**.

8G11 : CHECK INPUT SIGNAL FOR TCM USING SUBARU SELECT MONITOR.

1) Connect all connectors.
2) Connect Subaru Select Monitor to data link connector.



3) Lift-up or raise the vehicle and place safety stands.

CAUTION:
On AWD models, raise all wheels off floor.

4) Turn ignition switch to ON and turn Subaru Select Monitor switch to ON.
5) Start the engine.
6) Read data of vehicle speed using Subaru Select Monitor.
● Compare speedometer with Subaru Select Monitor indications.
● Vehicle speed is indicated in “km/h” or “MPH”.
7) Slowly increase vehicle speed to 60 km/h or 37 MPH.

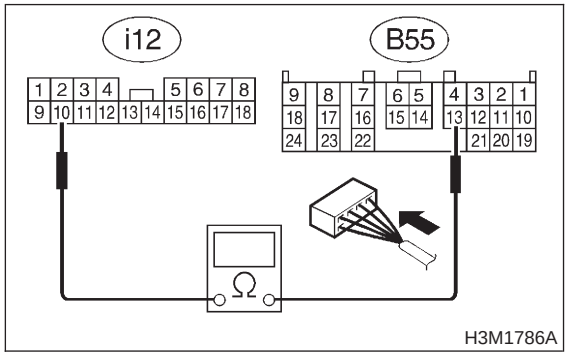
NOTE:
The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to 4-4 [T6D2].>

CHECK : ***Does the speedometer indication increase as the Subaru Select Monitor data increases?***
YES : Go to step **8G12**.
NO : Go to step **8G19**.

8G12 : CHECK HARNESS CONNECTOR BETWEEN TCM AND COMBINATION METER.

1) Turn ignition switch to OFF.
2) Disconnect connectors from TCM and combination meter.
3) Measure resistance of harness between TCM and combination meter connector.

Connector & terminal
(B55) No. 13 — (i12) No. 10:

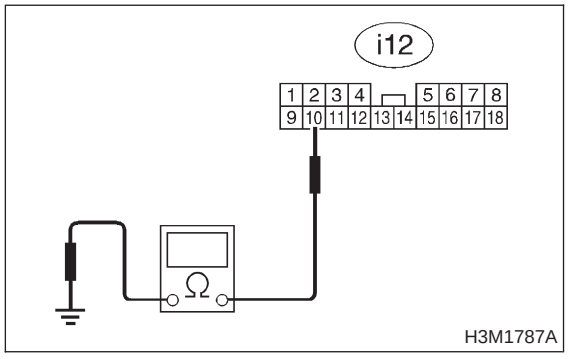


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8G13**.
NO : Repair open circuit in harness between TCM and combination meter connector, and poor contact in coupling connector.

8G13 : CHECK HARNESS CONNECTOR BETWEEN TCM AND COMBINATION METER.

Measure resistance of harness between combination meter and chassis ground.

Connector & terminal
(i12) No. 10 — Chassis ground:



CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8G14**.
NO : Repair short circuit in harness between TCM and combination meter connector.

8G14 : PREPARE OSCILLOSCOPE.

CHECK : ***Do you have oscilloscope?***
YES : Go to step **8G17**.
NO : Go to step **8G15**.

8G15 : PREPARE SUBARU SELECT MONITOR.

CHECK : ***Do you have a Subaru Select Monitor?***
YES : Go to step **8G18**.
NO : Go to step **8G16**.

8G16 : CHECK OUTPUT SIGNAL FOR TCM.

1) Connect all connectors.
2) Lift-up the vehicle and place safety stand.

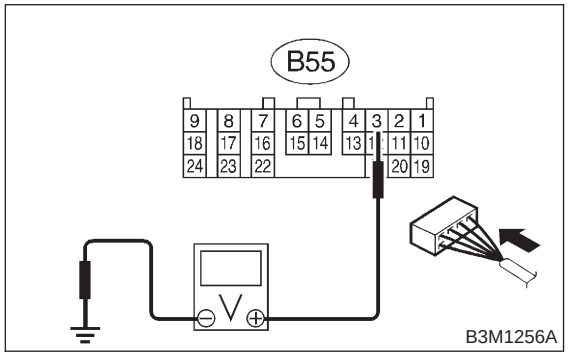
CAUTION:
On AWD models, raise all wheels off ground.

3) Set vehicle in 10 km/h (6 MPH) condition.

NOTE:
The speed difference between front and rear wheels may light ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure on on-board diagnostics system. <Ref. to 4-4 [T6D2].>

4) Measure voltage between TCM connector terminals.

Connector & terminal
(B55) No. 3 — Chassis ground:



CHECK : ***Is the voltage less than 1 V ←→ more than 4 V?***

YES : Even if “AT OIL TEMP” lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM.

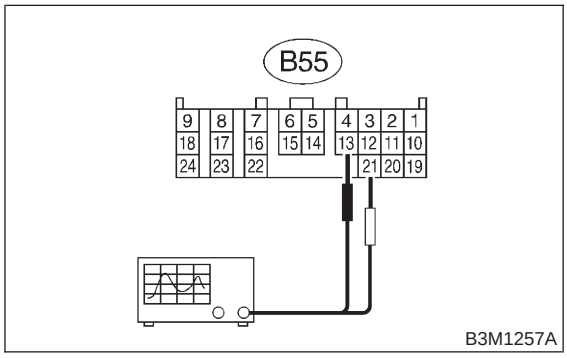
NO : Go to step **8G19**.

8G17 : CHECK INPUT SIGNAL FOR TCM USING OSCILLOSCOPE.

1) Connect connectors to TCM and combination meter.
2) Lift-up or raise the vehicle and place safety stands.

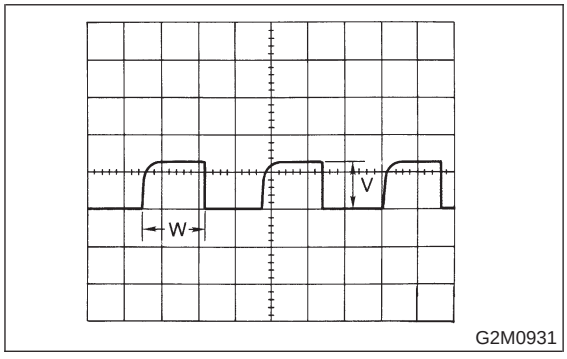
CAUTION:
On AWD models, raise all wheels off floor.

3) Set oscilloscope to TCM connector terminals.
Positive prove; (B55) No. 13
Earth lead; (B55) No. 21



4) Start the engine.
5) Shift on the gear position, and keep the vehicle speed at constant.
6) Measure signal voltage indicated on oscilloscope.

NOTE:
● If vehicle speed increases, the width of amplitude (W) decreases.
● The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to 4-4 [T6D2].>



CHECK : ***Is the voltage more than AC 2 V?***

YES : Even if “AT OIL TEMP” lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM.

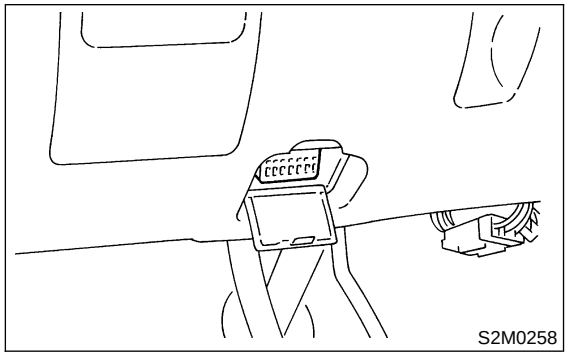
NO : Go to step **8G19**.

8G18 : CHECK INPUT SIGNAL FOR TCM USING SUBARU SELECT MONITOR.

1) Connect all connectors.
2) Lift-up the vehicle and place safety stand.

CAUTION:
On AWD models, raise all wheels off ground.

3) Connect Subaru Select Monitor to data link connector.



4) Turn ignition switch to ON and Subaru Select Monitor switch to ON.
5) Start the engine, and drive all wheels.
6) Read data of vehicle speed using Subaru Select Monitor.
● Compare speedometer with Subaru Select Monitor indications.
● Vehicle speed is indicated in “km/h” or “MPH”.
7) Slowly increase vehicle speed to 60 km/h or 37 MPH.

NOTE:
The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to 4-4 [T6D2].>

CHECK : ***Does the speedometer indication increase as the Subaru Select Monitor data increases?***

YES : Even if “AT OIL TEMP” lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM.

NO : Go to step **8G19**.

8G19 : CHECK POOR CONTACT.

CHECK : ***Is there poor contact in vehicle speed sensor 2 circuit?***

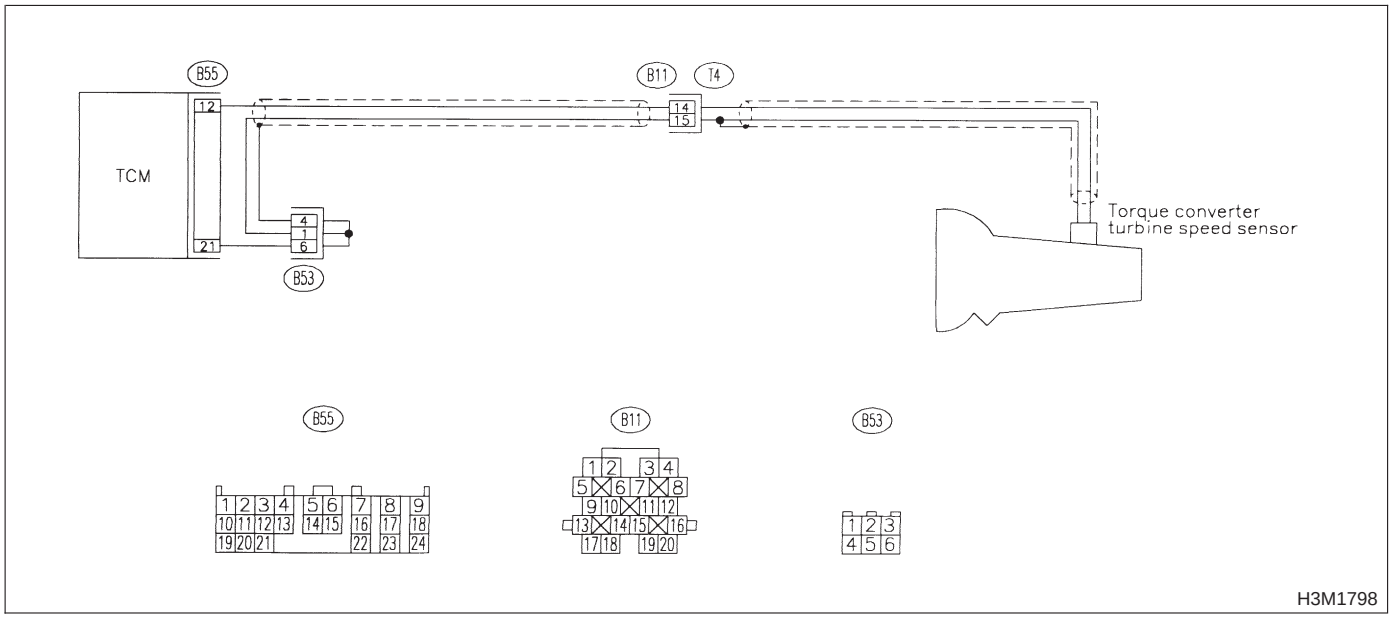
YES : Repair poor contact.

NO : Replace TCM. <Ref. to 3-2 [W22A0].>

MEMO:

H: TROUBLE CODE 36 — TORQUE CONVERTER TURBINE SPEED SENSOR —

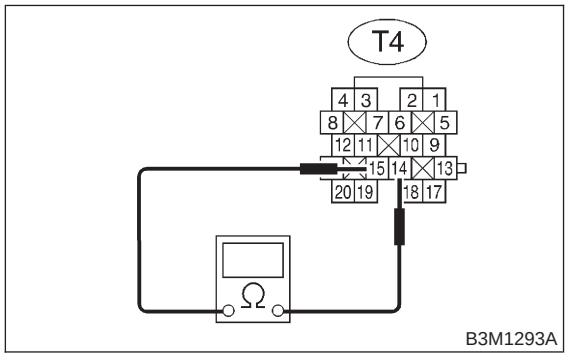
DIAGNOSIS:
Input signal circuit of TCM is open or shorted.
TROUBLE SYMPTOM:
Excessive shift shock.
WIRING DIAGRAM:



8H1 : CHECK TORQUE CONVERTER TURBINE SPEED SENSOR 1.

1) Turn ignition switch to OFF.
2) Disconnect connector from transmission.
3) Measure resistance between transmission connector receptacle's terminals.

Connector & terminal
(T4) No. 14 — No. 15:

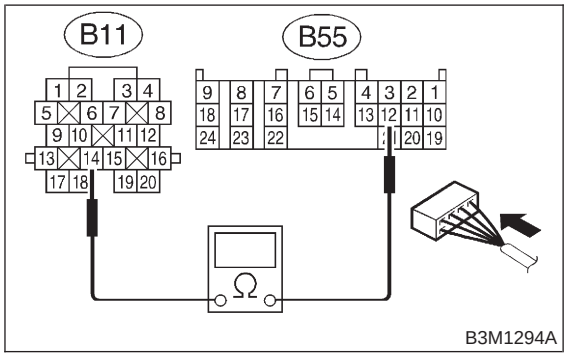


CHECK : ***Is the resistance between 450 and 650 Ω?***
YES : Go to step **8H2**.
NO : Replace turbine speed sensor. <Ref. to 3-2 [W11B0].>

8H2 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

1) Disconnect connector from TCM.
2) Measure resistance of harness between TCM and transmission connector.

Connector & terminal
(B55) No. 12 — (B11) No. 14:

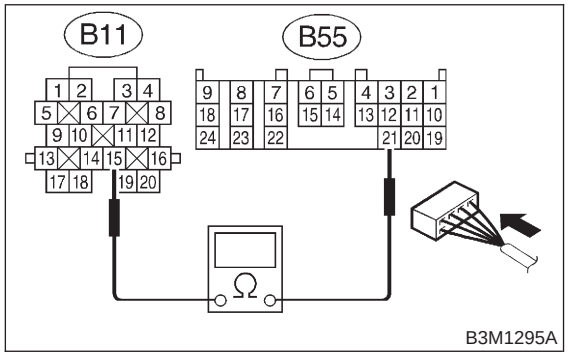


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8H3**.
NO : Repair open circuit in harness between TCM and transmission connector.

8H3 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

Measure resistance of harness between TCM and transmission connector.

Connector & terminal
(B55) No. 21 — (B11) No. 15:

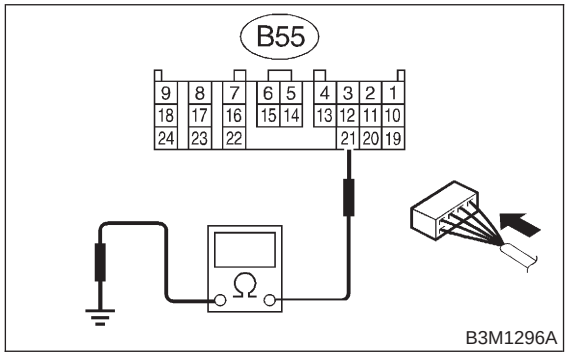


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8H4**.
NO : Repair open circuit in harness between TCM and transmission connector, and poor contact in coupling connector.

8H4 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

Measure resistance of harness between TCM and transmission connector.

Connector & terminal
(B55) No. 21 — Chassis ground:

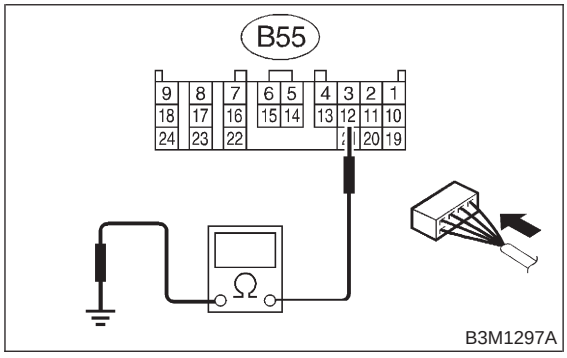


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8H5**.
NO : Repair short circuit in harness between TCM and transmission connector.

8H5 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

Measure resistance of harness between TCM and transmission connector.

Connector & terminal
(B55) No. 12 — Chassis ground:



CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8H6**.
NO : Repair short circuit in harness between TCM and transmission connector.

8H6 : PREPARE OSCILLOSCOPE.

CHECK : ***Do you have oscilloscope?***
YES : Go to step **8H10**.
NO : Go to step **8H7**.

8H7 : PREPARE SUBARU SELECT MONITOR.

CHECK : ***Do you have a Subaru Select Monitor?***
YES : Go to step **8H9**.
NO : Go to step **8H8**.

8H8 : CHECK INPUT SIGNAL FOR TCM.

1) Connect connectors to TCM and transmission.
2) Lift-up or raise the vehicle and place safety stands.

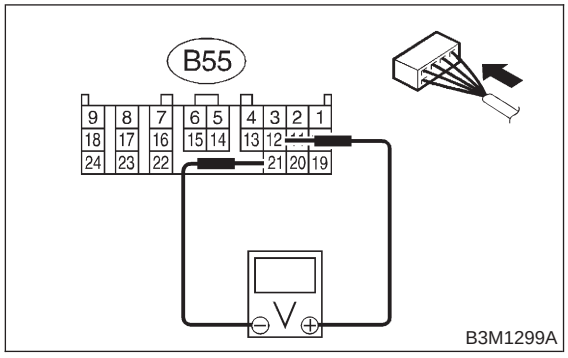
CAUTION:
Raise all wheels off floor.

3) Start the engine and set vehicle in 20 km/h (12 MPH) condition.

NOTE:
The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to 4-4 [T6D2].>

4) Measure voltage between TCM connector terminals.

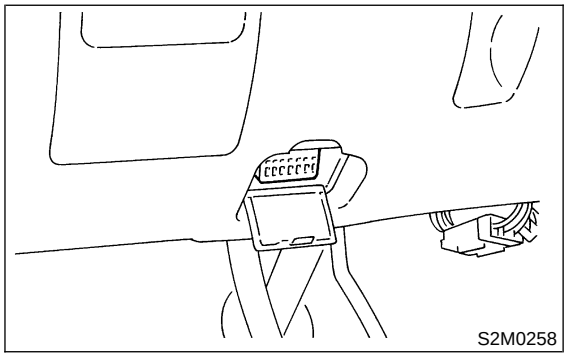
Connector & terminal
(B55) No. 12 (+) — No. 21 (−):



CHECK : ***Is the voltage more than AC 1 V?***
YES : Even if “AT OIL TEMP” lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM and transmission.
NO : Go to step **8H11**.

8H9 : CHECK INPUT SIGNAL FOR TCM USING SUBARU SELECT MONITOR.

1) Connect connectors to TCM and transmission.
2) Connect Subaru Select Monitor to data link connector.



3) Lift-up or raise the vehicle and place safety stands.

CAUTION:
Raise all wheels off floor.

4) Turn ignition switch to ON and turn Subaru Select Monitor switch to ON.
5) Start the engine.
6) Read data of vehicle speed using Subaru Select Monitor.
● Compare speedometer with Subaru Select Monitor indications.
● Vehicle speed is indicated in “km/h” or “MPH”.
7) Slowly increase vehicle speed to 20 km/h or 12 MPH.

NOTE:
The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to 4-4 [T6D2].>

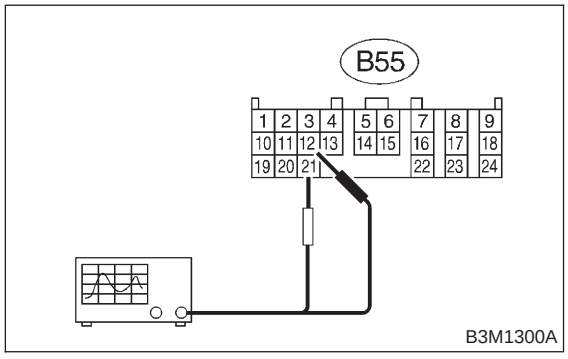
CHECK : ***Is the revolution value same as the tachometer reading shown on the combination meter?***
YES : Even if “AT OIL TEMP” lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM and transmission.
NO : Go to step **8H11**.

8H10 : CHECK INPUT SIGNAL FOR TCM USING OSCILLOSCOPE.

1) Connect connectors to TCM and transmission.
2) Lift-up or raise the vehicle and place safety stands.

CAUTION:
Raise all wheels off floor.

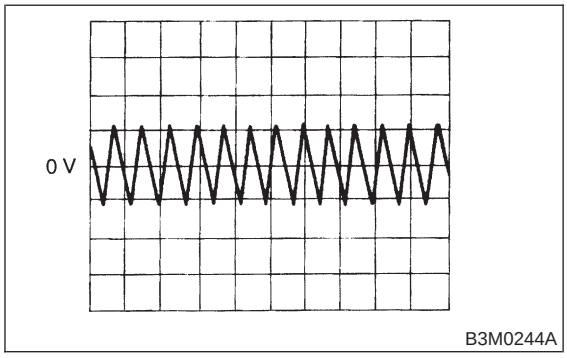
3) Set oscilloscope to TCM connector terminals.
Positive prove; (B55) No. 12
Earth lead; (B55) No. 21



4) Start the engine and set vehicle in 20 km/h (12 MPH) condition.

NOTE:
The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to 4-4 [T6D2].>

5) Measure signal voltage indicated on oscilloscope.



CHECK : ***Is the signal voltage more than AC 1 V?***

YES : Even if “AT OIL TEMP” lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM and transmission.

NO : Go to step **8H11**.

8H11 : CHECK POOR CONTACT.

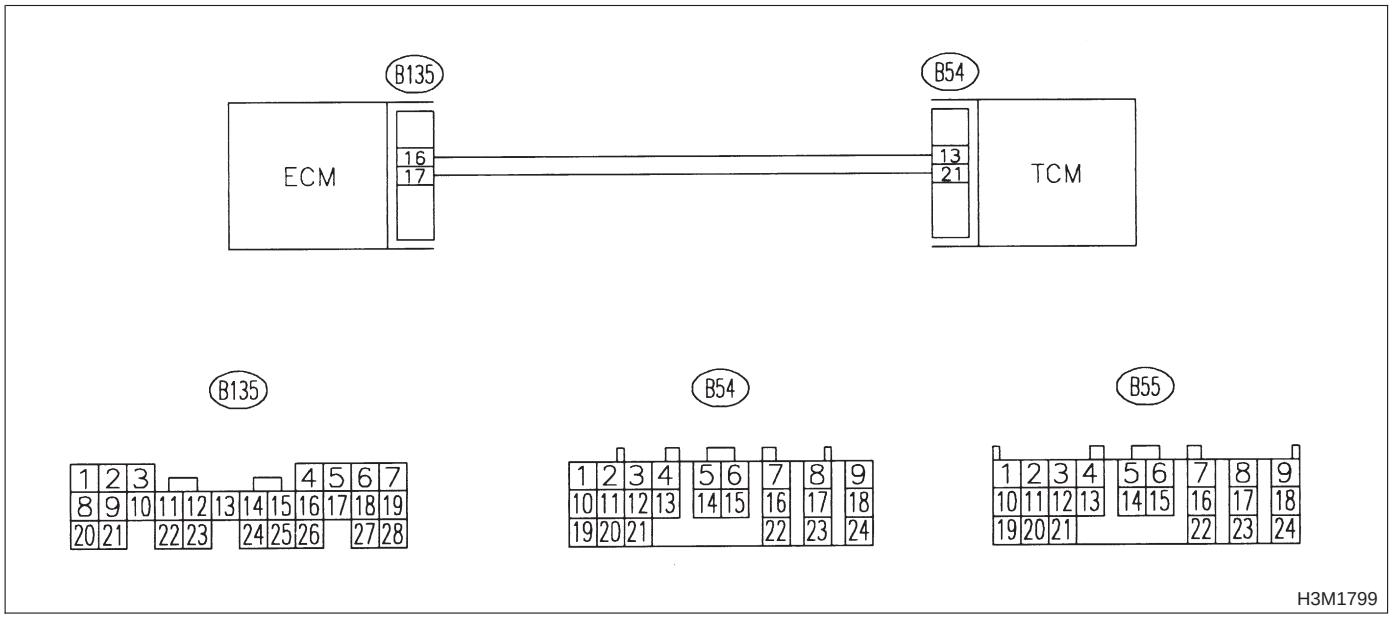
CHECK : ***Is there poor contact in vehicle speed sensor 1 circuit?***

YES : Repair poor contact.

NO : Replace TCM. <Ref. to 3-2 [W22A0].>

I: TROUBLE CODE 38 — TORQUE CONTROL SIGNAL —

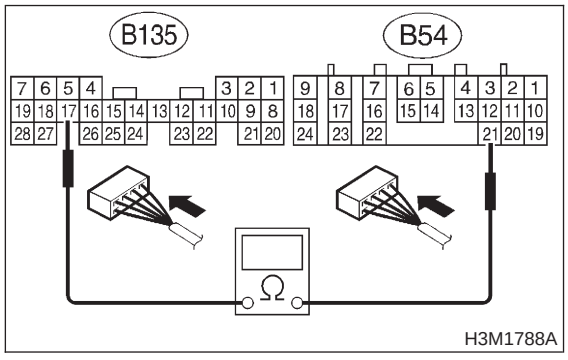
DIAGNOSIS:
● The signal circuit is open or shorted.
TROUBLE SYMPTOM:
Excessive shift shock.
WIRING DIAGRAM:



8I1 : CHECK HARNESS CONNECTOR BETWEEN TCM AND ECM.

1) Turn ignition switch to OFF.
2) Disconnect connectors from TCM and ECM.
3) Measure resistance of harness between TCM and ECM connector.

Connector & terminal
(B54) No. 21 — (B135) No. 17:

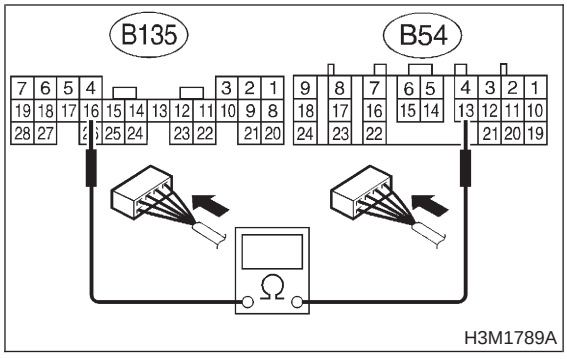


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8I2**.
NO : Repair open circuit in harness between TCM and ECM connector.

8I2 : CHECK HARNESS CONNECTOR BETWEEN TCM AND ECM.

Measure resistance of harness between TCM and ECM connector.

Connector & terminal
(B54) No. 13 — (B135) No. 16:

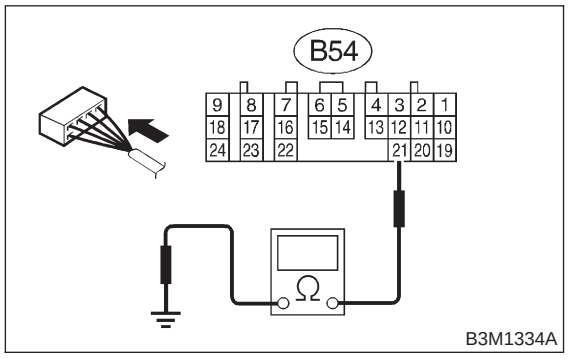


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8I3**.
NO : Repair open circuit in harness between TCM and ECM connector.

8I3 : CHECK HARNESS CONNECTOR BETWEEN TCM AND ECM.

Measure resistance of harness between TCM connector and chassis ground.

Connector & terminal
(B54) No. 21 — Chassis ground:

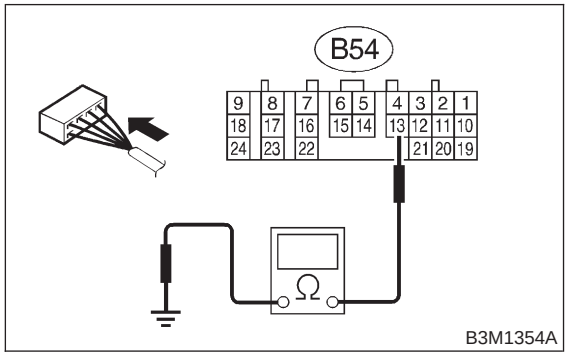


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8I4**.
NO : Repair short circuit in harness between TCM and ECM connector.

8I4 : CHECK HARNESS CONNECTOR BETWEEN TCM AND ECM.

Measure resistance of harness between TCM connector and chassis ground.

Connector & terminal
(B54) No. 13 — Chassis ground:

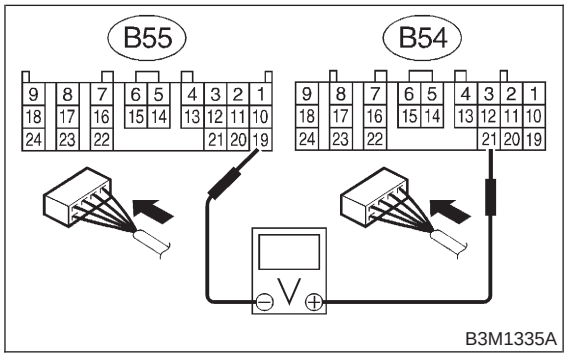


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8I5**.
NO : Repair short circuit in harness between TCM and ECM connector.

8I5 : CHECK OUTPUT SIGNAL EMITTED FROM TCM.

1) Connect connectors to TCM and ECM.
2) Turn ignition switch to ON (engine OFF).
3) Measure voltage between TCM connector terminals.

Connector & terminal
(B54) No. 21 (+) — (B55) No. 19:

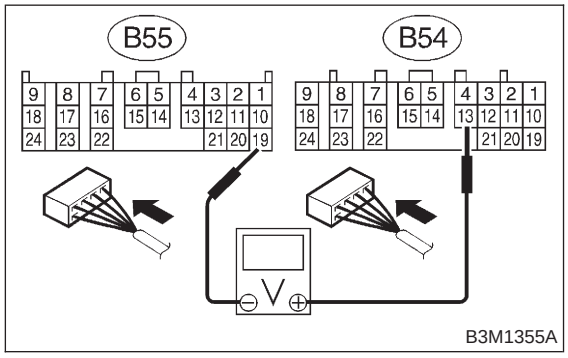


CHECK : ***Is the voltage more than 9 V?***
YES : Even if “AT OIL TEMP” lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM and ECM.
NO : Go to step **8I6**.

8I6 : CHECK OUTPUT SIGNAL EMITTED FROM TCM.

Measure voltage between TCM connector terminals.

Connector & terminal
(B54) No. 13 (+) — (B55) No. 19 (–):



CHECK : ***Is the voltage more than 9 V?***
YES : Even if “AT OIL TEMP” lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM and ECM.
NO : Go to step **8I7**.

8I7 : CHECK POOR CONTACT.

CHECK : ***Is there poor contact in torque control signal circuit?***
YES : Repair poor contact.
NO : Go to step **8I8**.

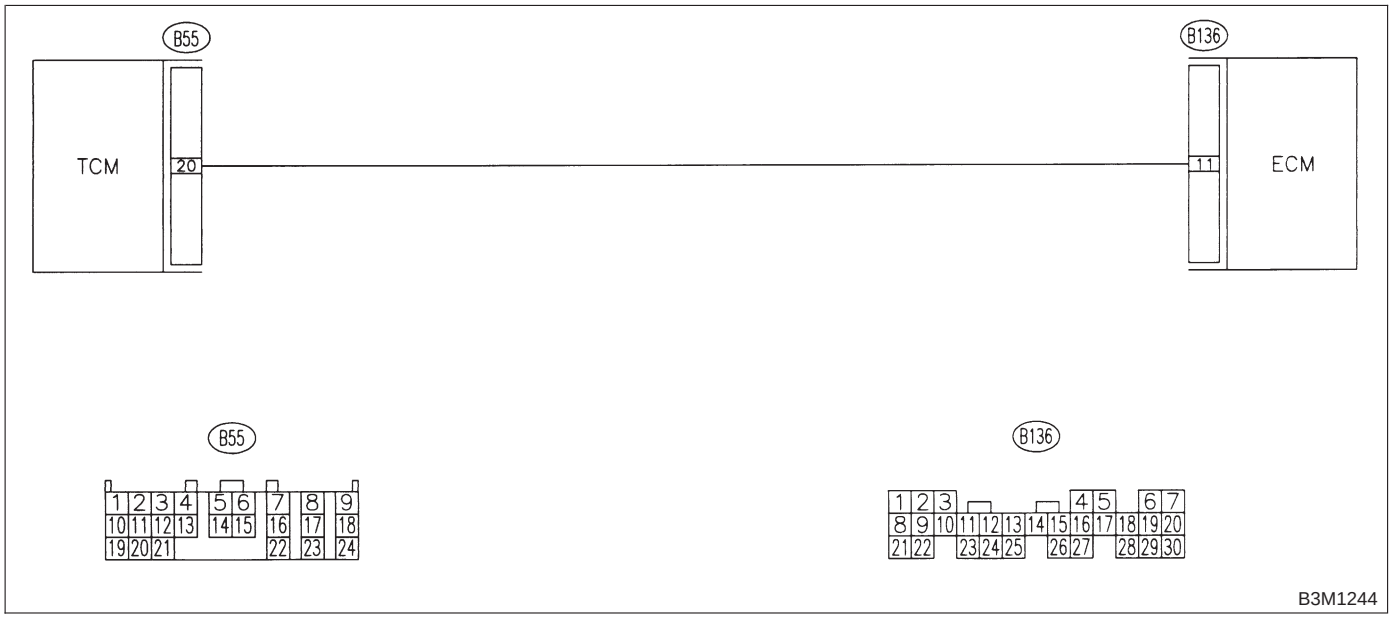
8I8 : CONFIRM TROUBLE CODE 38.

CHECK : ***Replace ECM with a new one. Does the trouble code appear again, after the memory has been cleared?***
YES : Replace TCM. <Ref. to 3-2 [W22A0].>
NO : Replace ECM. <Ref. to 2-7 [W15A0].>

MEMO:

J: TROUBLE CODE 45 — AT LOAD SIGNAL (2200 cc CALIFORNIA SPEC. VEHICLES) —

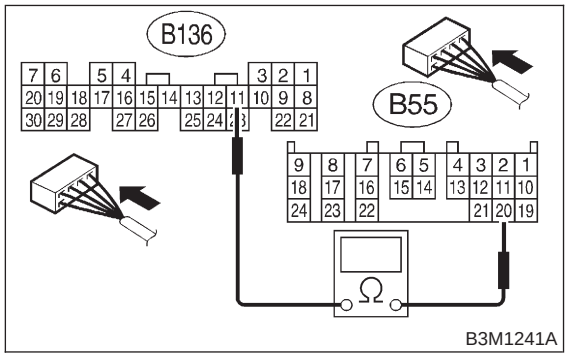
DIAGNOSIS:
Input signal circuit of TCM from ECM is open or shorted.
TROUBLE SYMPTOM:
Excessive shift shock.
WIRING DIAGRAM:



8J1 : CHECK HARNESS CONNECTOR BETWEEN TCM AND ECM.

1) Turn ignition switch to OFF.
2) Disconnect connectors from TCM and ECM.
3) Measure resistance of harness between TCM and ECM connector.

Connector & terminal
(B55) No. 20 — (B136) No. 11:

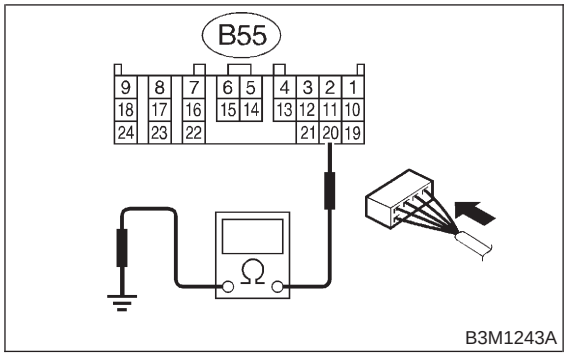


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8J2**.
NO : Repair open circuit in harness between TCM and ECM connector.

8J2 : CHECK HARNESS CONNECTOR BETWEEN TCM AND ECM.

Measure resistance of harness between TCM connector and chassis ground.

Connector & terminal
(B55) No. 20 — Chassis ground:



CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8J3**.
NO : Repair short circuit in harness between TCM and ECM connector.

8J3 : PREPARE SUBARU SELECT MONITOR.

CHECK : ***Do you have a Subaru Select Monitor?***
YES : Go to step **8J5**.
NO : Go to step **8J4**.

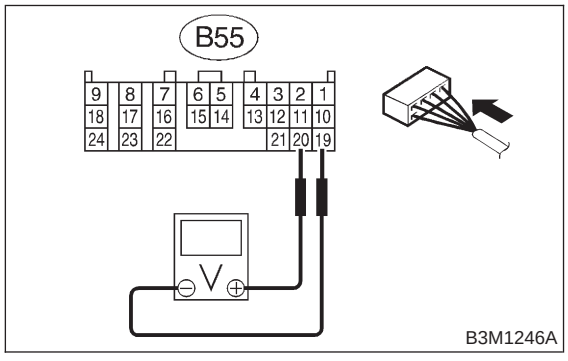
8J4 : CHECK INPUT SIGNAL FOR TCM.

1) Connect connectors to TCM and ECM.
2) Start the engine, and warm-up the transmission until ATF temperature is above 80°C (176°F).

NOTE:
If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature.

3) Engine idling.
4) Measure voltage between TCM connectors.

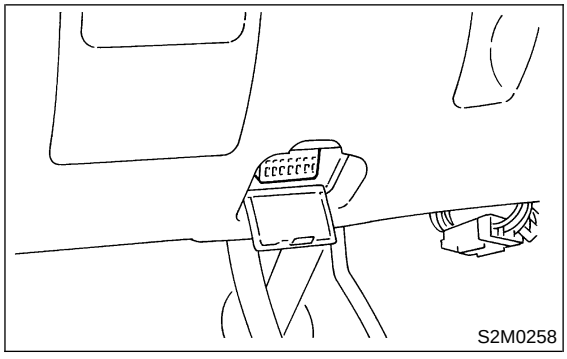
Connector & terminal
(B55) No. 20 (+) — No. 19 (−):



CHECK : ***Is the voltage between 1.2 and 1.8 V?***
YES : Even if “AT OIL TEMP” lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM and ECM.
NO : Go to step **8J6**.

8J5 : CHECK INPUT SIGNAL FOR TCM USING SUBARU SELECT MONITOR.

1) Connect connectors to TCM and ECM.
2) Turn ignition switch to OFF.
3) Connect Subaru Select Monitor to data link connector.



4) Start the engine, and turn Subaru Select monitor switch to ON.
5) Warm-up the engine until engine coolant temperature is above 80°C (176°F).
6) Engine idling.
7) Read data of mass air flow signal using Subaru Select Monitor.
● Display shows mass air flow signal value sent from ECM.

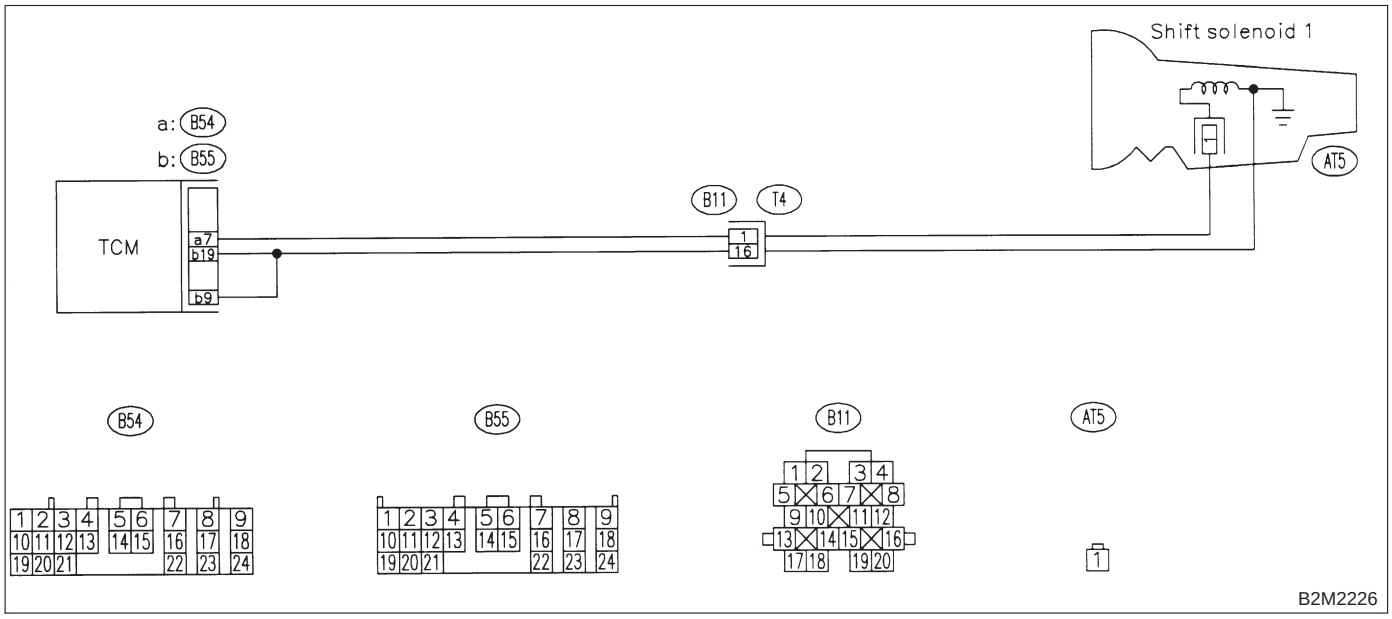
CHECK : ***Is the value between 1.2 and 1.8 V?***
YES : Even if “AT OIL TEMP” lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM and ECM.
NO : Go to step **8J6**.

8J6 : CHECK POOR CONTACT.

CHECK : ***Is there poor contact in mass air flow signal circuit?***
YES : Repair poor contact.
NO : Replace TCM. <Ref. to 3-2 [W22A0].>

K: TROUBLE CODE 71 — SHIFT SOLENOID 1 —

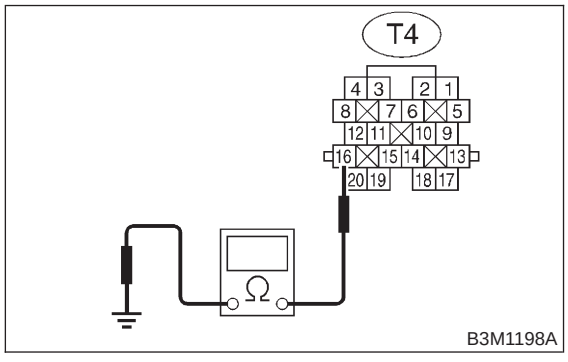
DIAGNOSIS:
Output signal circuit of shift solenoid 1 is open or shorted.
TROUBLE SYMPTOM:
Does not shift.
WIRING DIAGRAM:



8K1 : CHECK SHIFT SOLENOID 1 GROUND LINE.

1) Turn ignition switch to OFF.
2) Disconnect connector from transmission.
3) Measure resistance between transmission connector and transmission ground.

Connector & terminal
(T4) No. 16 — Chassis ground:

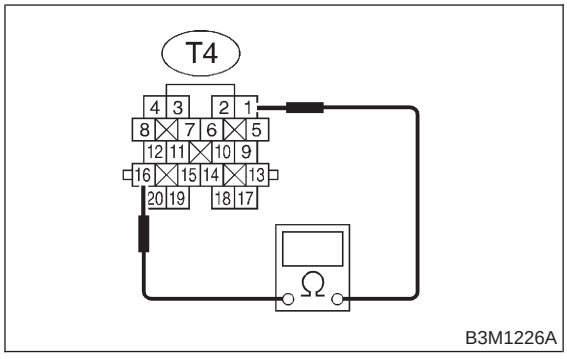


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8K2**.
NO : Repair open circuit in transmission harness.

8K2 : CHECK SHIFT SOLENOID 1.

Measure resistance between transmission connector terminals.

Connector & terminal
(T4) No. 1 — No. 16:

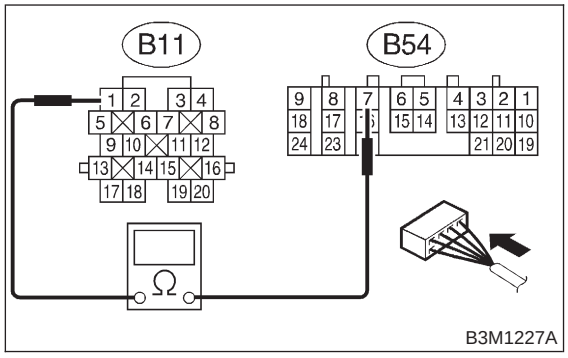


CHECK : ***Is the resistance between 10 and 16 Ω?***
YES : Go to step **8K3**.
NO : Go to step **8K9**.

8K3 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

1) Disconnect connector from TCM.
2) Measure resistance of harness between TCM and shift solenoid 1 connector.

Connector & terminal
(B54) No. 7 — (B11) No. 1:

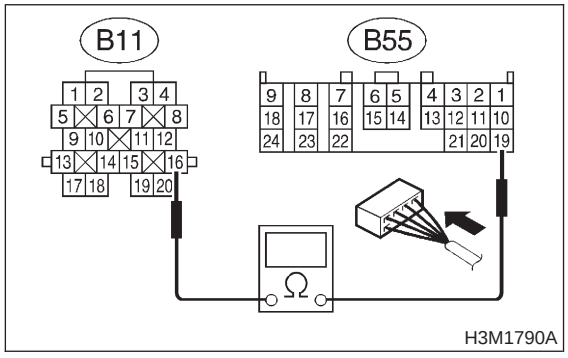


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8K4**.
NO : Repair open circuit in harness between TCM and transmission connector.

8K4 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

Measure resistance of harness between TCM and shift solenoid 1 connector.

Connector & terminal
(B55) No. 19 — (B11) No. 16:

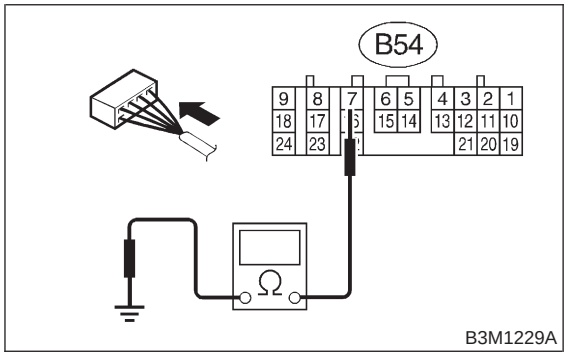


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8K5**.
NO : Repair open circuit in harness between TCM and transmission connector.

8K5 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

Measure resistance of harness between TCM connector and transmission ground.

Connector & terminal
(B54) No. 7 — Chassis ground:

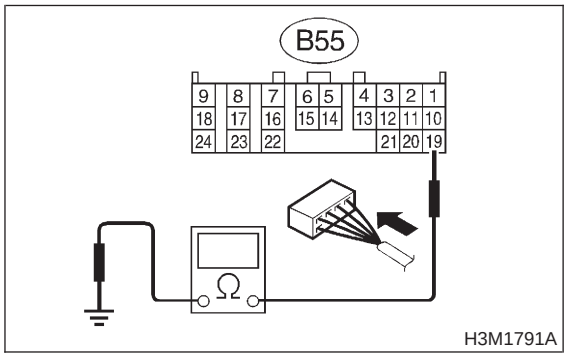


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8K6**.
NO : Repair short circuit in harness between TCM and transmission connector.

8K6 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

Measure resistance of harness TCM connector and transmission ground.

Connector & terminal
(B55) No. 19 — Chassis ground:



CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8K7**.
NO : Repair short circuit in harness between TCM and transmission connector.

8K7 : CHECK OUTPUT SIGNAL EMITTED FROM TCM.

1) Connect connectors to TCM and transmission.
2) Lift-up or raise the vehicle and support with safety stand.

CAUTION:
On AWD models, raise all wheels off ground.

3) Start the engine and warm-up the transmission until ATF temperature is above 80°C (176°F).

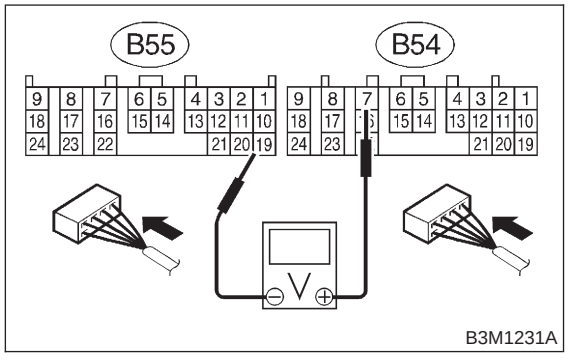
NOTE:
If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature.

4) Move selector lever to "D", and slowly increase vehicle speed to 50 km/h (31 MPH).

NOTE:
The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to 4-4 [T6D2].>

5) Measure voltage between TCM connector terminals.

Connector & terminal
(B54) No. 7 (+) — (B55) No. 19 (−):



CHECK : ***Is the voltage 1 V → 9 V?***
YES : Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM.
NO : Go to step **8K8**.

8K8 : CHECK POOR CONTACT.

CHECK : ***Is there poor contact in shift solenoid 1 circuit?***
YES : Repair poor contact.
NO : Replace TCM. <Ref. to 3-2 [W22A0].>

8K9 : CHECK SHIFT SOLENOID 1 (IN TRANSMISSION).

1) Remove transmission connector from bracket.
2) Lift-up or raise the vehicle and support with safety stand.

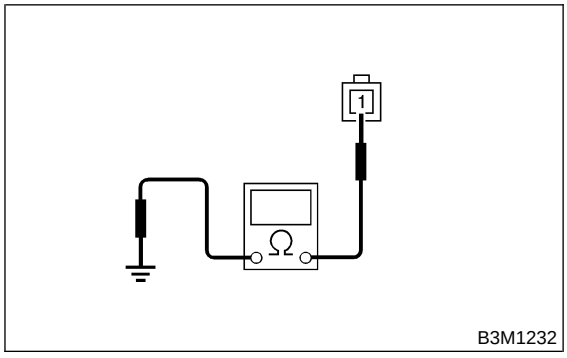
CAUTION:
On AWD models, raise all wheels off ground.

3) Drain automatic transmission fluid.

CAUTION:
Do not drain the automatic transmission fluid until it cools down.

4) Remove oil pan, and disconnect connector from shift solenoid 1.
5) Measure resistance between shift solenoid 1 connector and transmission ground.

Terminal
No. 1 — Transmission ground:

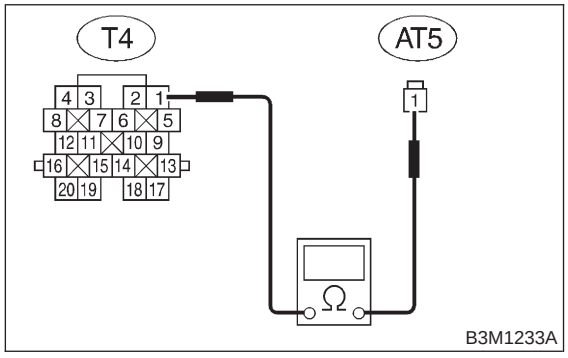


CHECK : ***Is the resistance between 10 and 16 Ω?***
YES : Go to step **8K10**.
NO : Replace shift solenoid 1. <Ref. to 3-2 [W4A0].>

8K10 : CHECK HARNESS CONNECTOR BETWEEN SHIFT SOLENOID 1 AND TRANSMISSION.

Measure resistance of harness between shift solenoid 1 and transmission connector.

Connector & terminal
(AT5) No. 1 — (T4) No. 1:

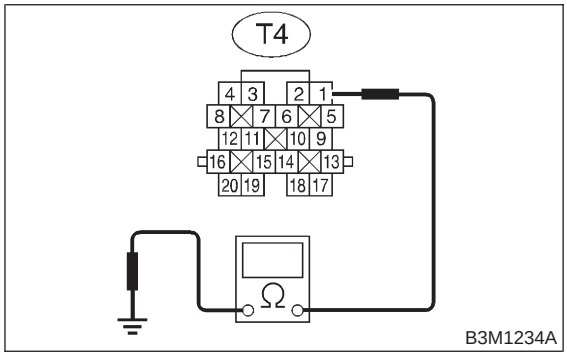


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8K11**.
NO : Repair open circuit in harness between TCM and transmission connector.

8K11 : CHECK HARNESS CONNECTOR BETWEEN SHIFT SOLENOID 1 AND TRANSMISSION.

Measure resistance of harness between shift solenoid 1 connector and transmission ground.

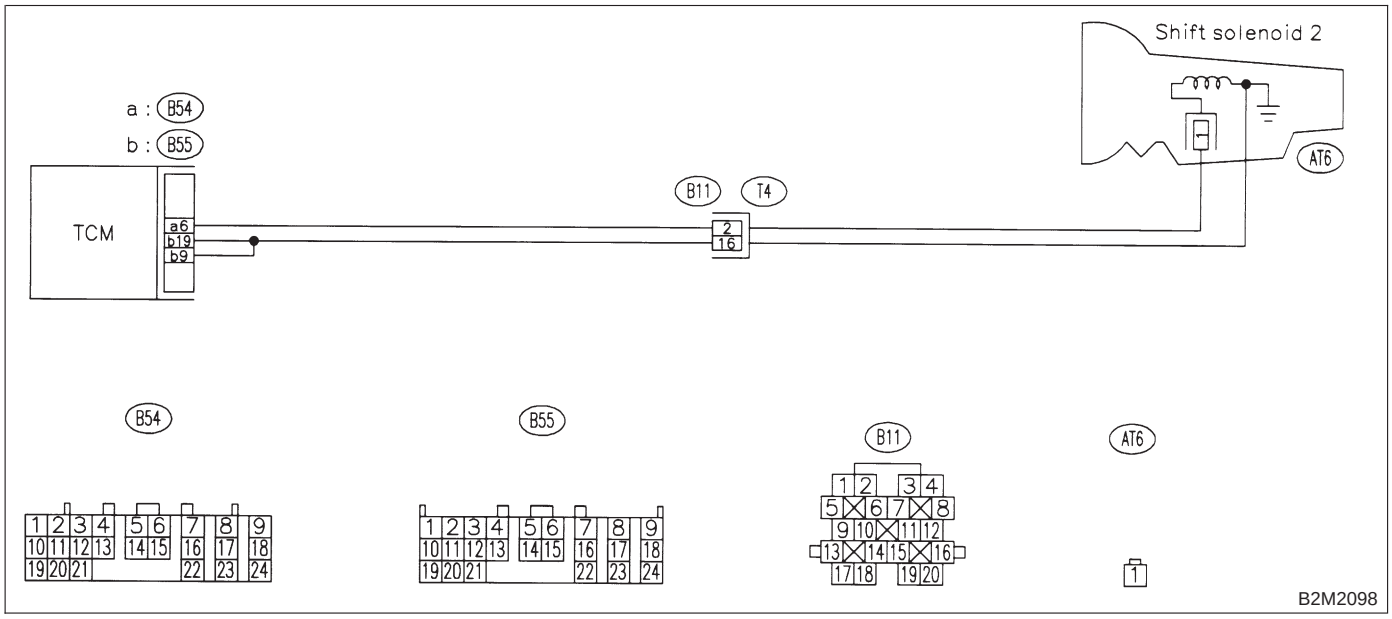
Connector & terminal
(T4) No. 1 — Transmission ground:



CHECK : ***Is the resistance more than 1 MΩ?***
YES : Even if “AT OIL TEMP” lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in shift solenoid 1 and transmission.
NO : Repair short circuit harness between TCM and transmission connector.

L: TROUBLE CODE 72 — SHIFT SOLENOID 2 —

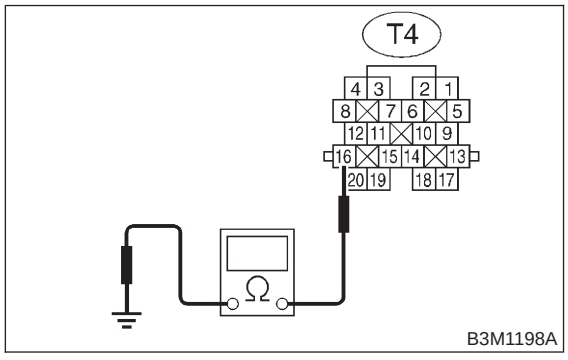
DIAGNOSIS:
Output signal circuit of shift solenoid 2 is open or shorted.
TROUBLE SYMPTOM:
Does not shift.
WIRING DIAGRAM:



8L1 : CHECK SHIFT SOLENOID 2 GROUND LINE.

1) Turn ignition switch to OFF.
2) Disconnect connector from transmission.
3) Measure resistance between transmission connector and transmission ground.

Connector & terminal
(T4) No. 16 — Chassis ground:

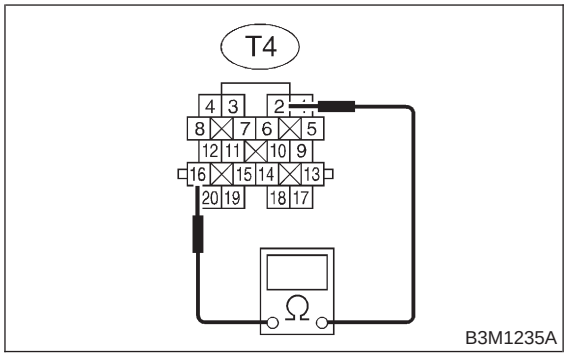


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8L2**.
NO : Repair open circuit in transmission harness.

8L2 : CHECK SHIFT SOLENOID 2.

Measure resistance between transmission connector terminals.

Connector & terminal
(T4) No. 2 — No. 16:

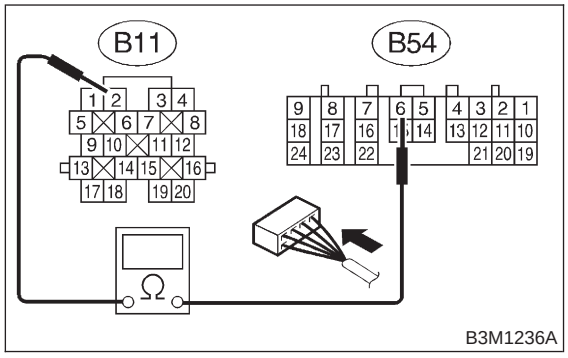


CHECK : ***Is the resistance between 10 and 16 Ω?***
YES : Go to step **8L3**.
NO : Go to step **8L9**.

8L3 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

1) Disconnect connector from TCM.
2) Measure resistance of harness between TCM and shift solenoid 2 connector.

Connector & terminal
(B54) No. 6 — (B11) No. 2:

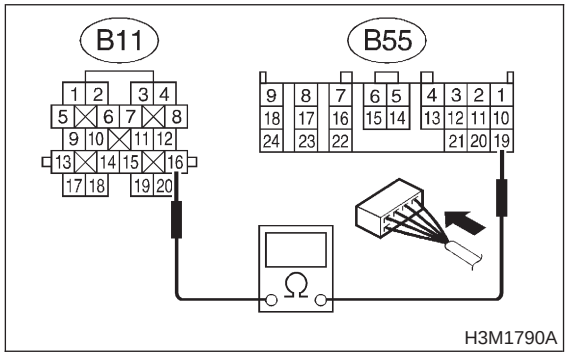


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8L4**.
NO : Repair open circuit in harness between TCM and transmission connector.

8L4 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

Measure resistance of harness between TCM and shift solenoid 2 connector.

Connector & terminal
(B55) No. 19 — (B11) No. 16:

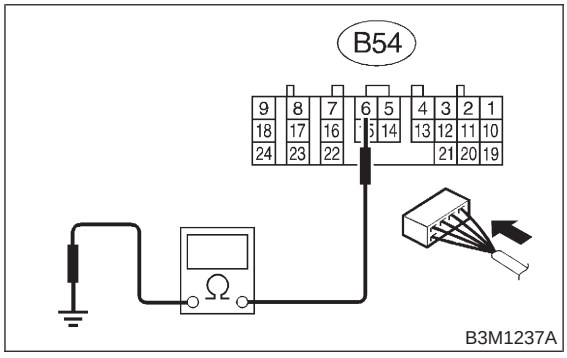


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8L5**.
NO : Repair open circuit in harness between TCM and transmission connector.

8L5 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

Measure resistance of harness between TCM connector and transmission ground.

Connector & terminal
(B54) No. 6 — Chassis ground:

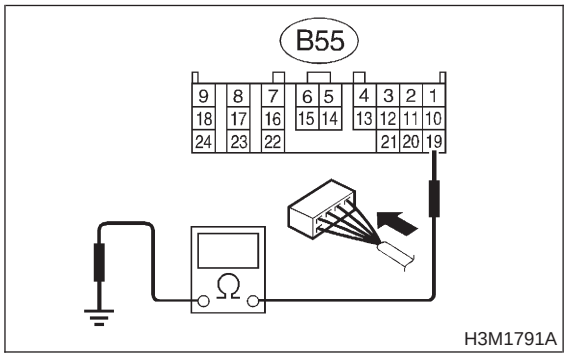


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8L6**.
NO : Repair short circuit in harness between TCM and transmission connector.

8L6 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

Measure resistance of harness between TCM connector and transmission ground.

Connector & terminal
(B55) No. 19 — Chassis ground:



CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8L7**.
NO : Repair short circuit in harness between TCM and transmission connector.

8L7 : CHECK OUTPUT SIGNAL EMITTED FROM TCM.

1) Connect connectors to TCM and transmission.
2) Lift-up or raise the vehicle and support with safety stand.

CAUTION:
On AWD models, raise all wheels off ground.

3) Start the engine, and warm-up the transmission until ATF temperature is above 80°C (176°F).

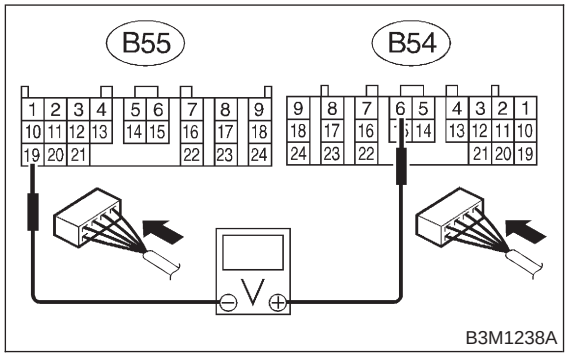
NOTE:
If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature.

4) Move selector lever to "D", and slowly increase vehicle speed to 50 km/h (31 MPH).

NOTE:
The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to 4-4 [T6D2].>

5) Measure voltage between TCM connector terminals.

Connector & terminal
(B54) No. 6 (+) — (B55) No. 19:



CHECK : ***Is the voltage 9 V → 1 V?***
YES : Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or contact in the TCM.
NO : Go to step **8L8**.

8L8 : CHECK POOR CONTACT.

CHECK : ***Is there poor contact in shift solenoid 2 circuit?***
YES : Repair poor contact.
NO : Replace TCM. <Ref. to 3-2 [W22A0].>

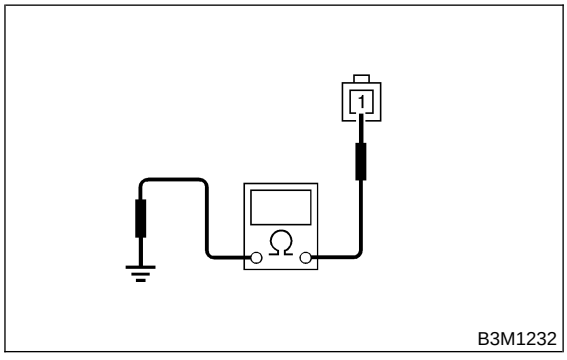
8L9 : CHECK SHIFT SOLENOID 2 (IN TRANSMISSION).

1) Remove transmission connector from bracket.
2) Drain automatic transmission fluid.

CAUTION:
Do not drain the automatic transmission fluid until it cools down.

3) Remove oil pan, and disconnect connector from shift solenoid 2.
4) Measure resistance between shift solenoid 2 connector and transmission ground.

Connector & terminal
No. 1 — Transmission ground:

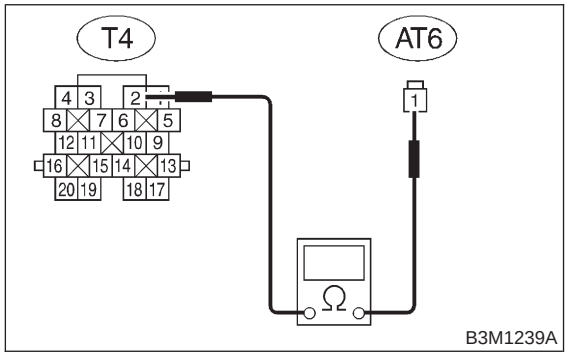


CHECK : ***Is the resistance between 10 and 16 Ω?***
YES : Go to step **8L10**.
NO : Replace shift solenoid assembly. <Ref. to 3-2 [W4A0].>

8L10 : CHECK HARNESS CONNECTOR BETWEEN SHIFT SOLENOID 2 AND TRANSMISSION.

Measure resistance of harness between shift solenoid 2 and transmission connector.

Connector & terminal
(AT6) No. 1 — (T4) No. 2:

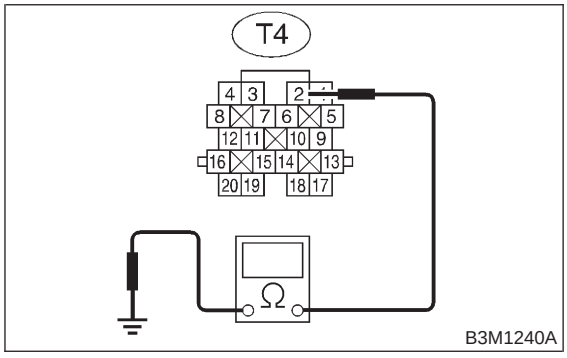


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8L11**.
NO : Repair open circuit in harness between shift solenoid 2 and transmission connector.

8L11 : CHECK HARNESS CONNECTOR BETWEEN SHIFT SOLENOID 2 AND TRANSMISSION.

Measure resistance of harness between shift solenoid 2 connector and transmission ground.

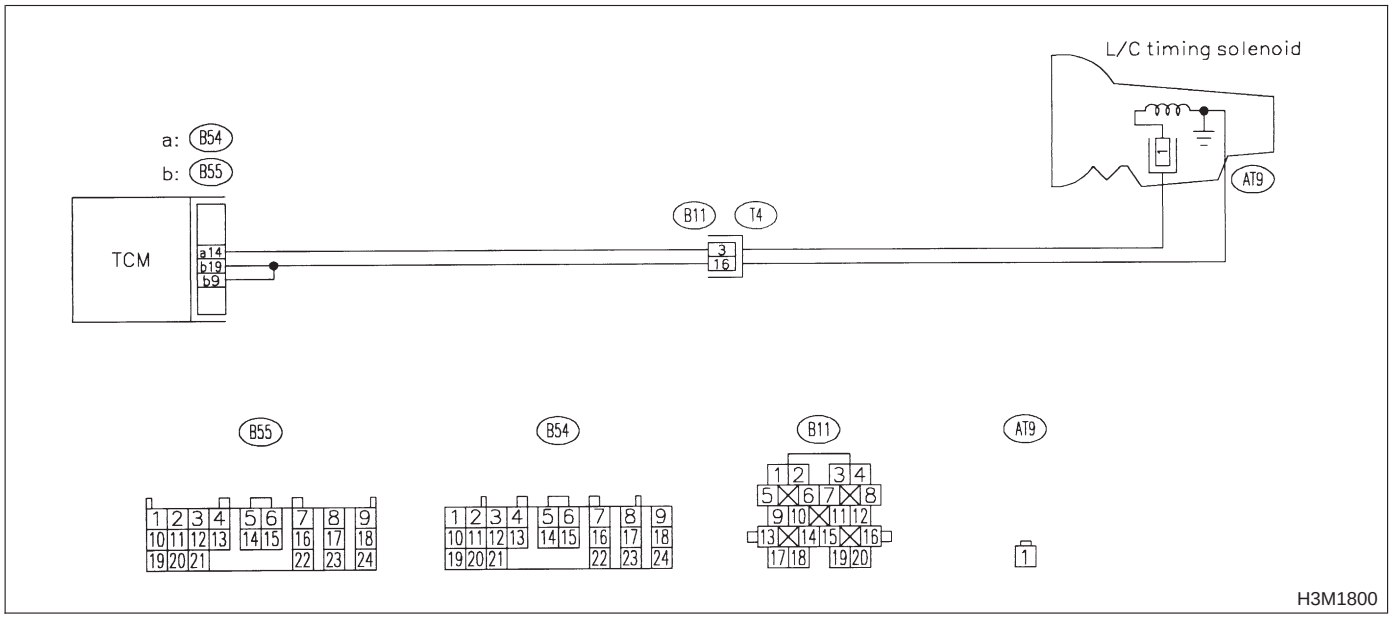
Connector & terminal
(T4) No. 2 — Transmission ground:



CHECK : ***Is the resistance more than 1 MΩ?***
YES : Even if “AT OIL TEMP” lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or contact in the TCM.
NO : Repair short circuit harness between TCM and transmission connector.

M: TROUBLE CODE 73 — LOW CLUTCH TIMING SOLENOID —

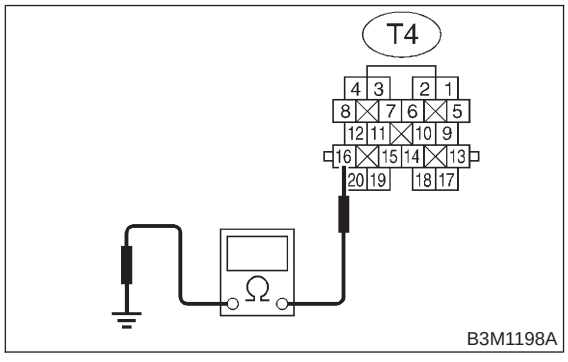
DIAGNOSIS:
Output signal circuit of low clutch timing solenoid is open or shorted.
TROUBLE SYMPTOM:
Excessive shift shock.
WIRING DIAGRAM:



8M1 : CHECK LOW CLUTCH TIMING SOLENOID GROUND LINE.

1) Turn ignition switch to OFF.
2) Disconnect connector from transmission.
3) Measure resistance between transmission connector and transmission ground.

Connector & terminal
(T4) No. 16 — Chassis ground:

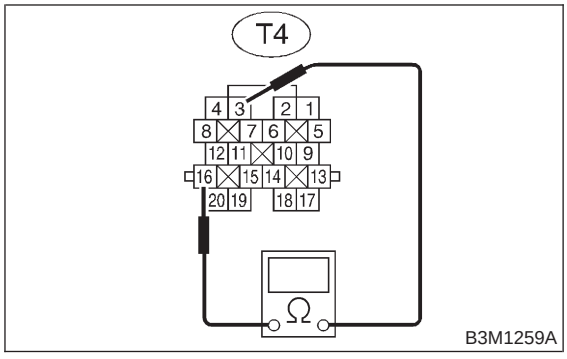


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8M2**.
NO : Repair open circuit in transmission harness.

8M2 : CHECK LOW CLUTCH TIMING SOLENOID.

Measure resistance between transmission connector terminals.

Connector & terminal
(T4) No. 3 — No. 16:

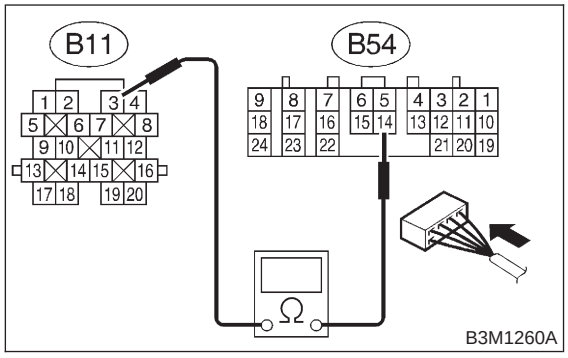


CHECK : ***Is the resistance between 10 and 16 Ω?***
YES : Go to step **8M3**.
NO : Go to step **8M10**.

8M3 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

1) Disconnect connector from TCM.
2) Measure resistance of harness between TCM and transmission connector.

Connector & terminal
(B54) No. 14 — (B11) No. 3:

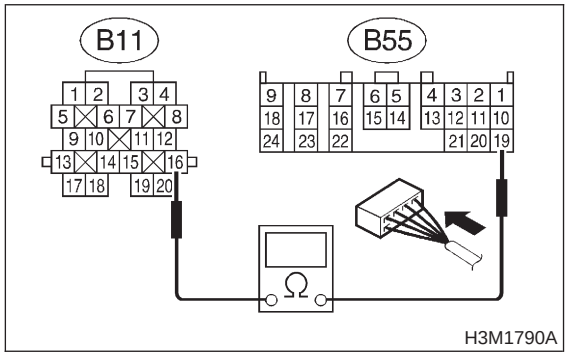


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8M4**.
NO : Repair open circuit in harness between TCM and transmission connector.

8M4 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

Measure resistance of harness between TCM and transmission connector.

Connector & terminal
(B55) No. 19 — (B11) No. 16:

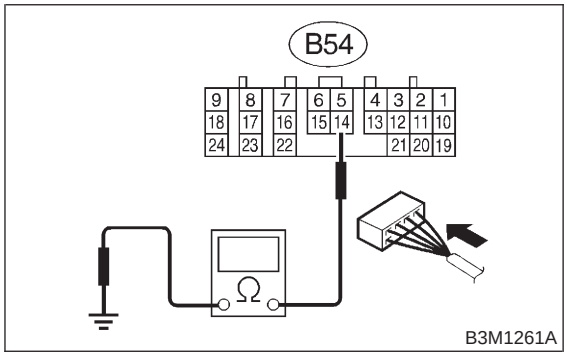


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8M5**.
NO : Repair open circuit in harness between TCM and transmission connector.

8M5 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

Measure resistance of harness between TCM connector and transmission ground.

Connector & terminal
(B54) No. 14 — Chassis ground:

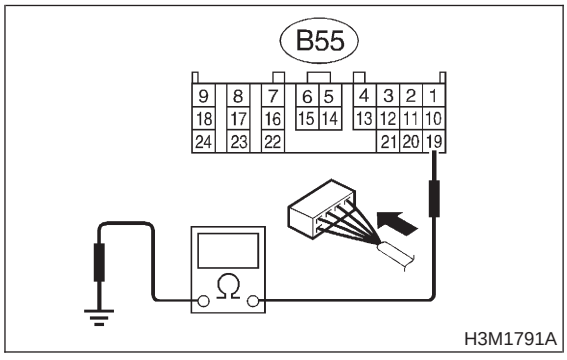


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8M6**.
NO : Repair short circuit in harness between TCM and transmission connector.

8M6 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

Measure resistance of harness between TCM connector and transmission ground.

Connector & terminal
(B55) No. 19 — Chassis ground:



CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8M7**.
NO : Repair short circuit in harness between TCM and transmission connector.

8M7 : CHECK OUTPUT SIGNAL EMITTED FROM TCM.

1) Connect connectors to TCM and transmission.
2) Lift-up or raise the vehicle and support with safety stand.

CAUTION:
On AWD models, raise all wheels off ground.

3) Start the engine and warm-up the transmission until ATF temperature is above 80°C (176°F).

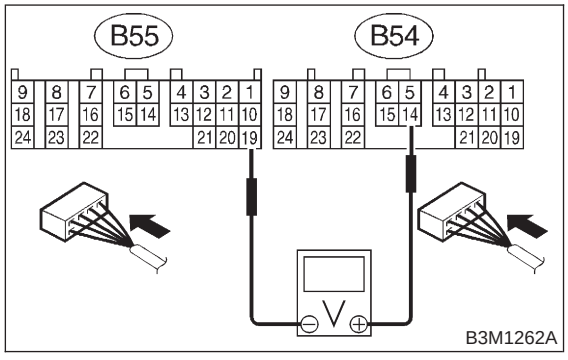
NOTE:
If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature.

4) Move selector lever to "2", and slowly increase vehicle speed to 35 km/h (22 MPH).

NOTE:
The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to 4-4 [T6D2].>

5) Measure voltage between TCM connector terminals.

Connector & terminal
(B54) No. 14 (+) — (B55) No. 19 (−):



CHECK : ***Is the voltage less than 1 V?***
YES : Go to step **8M8**.
NO : Go to step **8M9**.

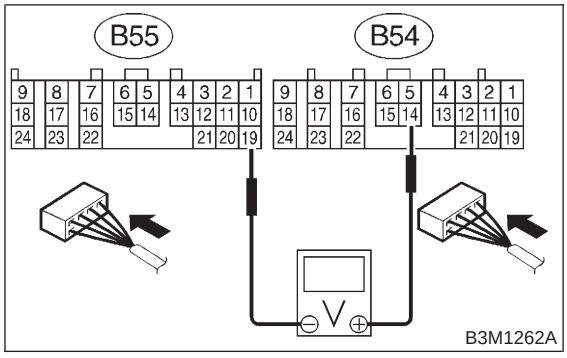
8M8 : CHECK OUTPUT SIGNAL EMITTED FROM TCM.

1) Move selector lever to "D", and slowly increase vehicle speed to 65 km/h (40 MPH).

NOTE:
The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to 4-4 [T6D2].>

2) Measure voltage between TCM connector terminals.

Connector & terminal
(B54) No. 14 (+) — (B55) No. 19 (−):



CHECK : ***Is the voltage more than 9 V?***
YES : Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or contact in the TCM.
NO : Go to step **8M9**.

8M9 : CHECK POOR CONTACT.

CHECK : ***Is there poor contact in low clutch timing solenoid circuit?***
YES : Repair poor contact.
NO : Replace TCM. <Ref. to 3-2 [W22A0].>

8M10 : CHECK LOW CLUTCH TIMING SOLENOID (IN TRANSMISSION).

1) Remove transmission connector from bracket.
2) Lift-up or raise the vehicle and support with safety stand.

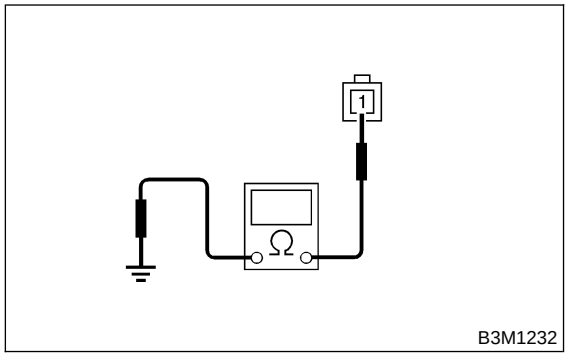
CAUTION:
On AWD models, raise all wheels off ground.

3) Drain automatic transmission fluid.

CAUTION:
Do not drain the automatic transmission fluid until it cools down.

4) Remove oil pan, and disconnect connector from low clutch timing solenoid.
5) Measure resistance between low clutch timing solenoid connector and transmission ground.

Terminal
No. 1 — Transmission ground:

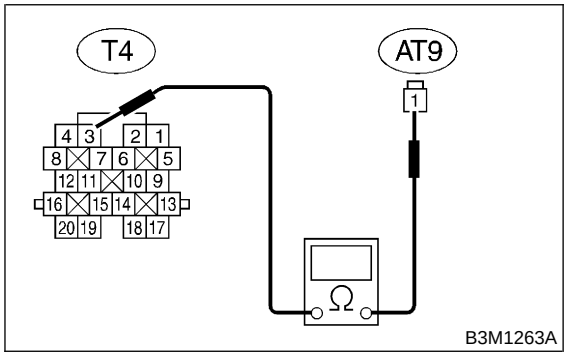


CHECK : ***Is the resistance between 10 and 16 Ω?***
YES : Go to step **8M11**.
NO : Replace low clutch timing solenoid. <Ref. to 3-2 [W4A0].>

8M11 : CHECK HARNESS CONNECTOR BETWEEN LOW CLUTCH TIMING SOLENOID AND TRANSMISSION.

Measure resistance of harness between low clutch timing solenoid and transmission connector.

Connector & terminal
(AT9) No. 1 — (T4) No. 3:

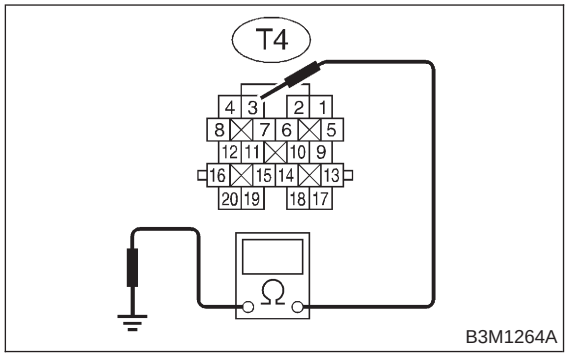


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8M12**.
NO : Repair open circuit in harness between low clutch timing solenoid and transmission connector.

8M12 : CHECK HARNESS CONNECTOR BETWEEN LOW CLUTCH TIMING SOLENOID AND TRANSMISSION.

Measure resistance of harness between low clutch timing solenoid connector and transmission ground.

Connector & terminal
(T4) No. 3 — Transmission ground:



CHECK : ***Is the resistance more than 1 MΩ?***

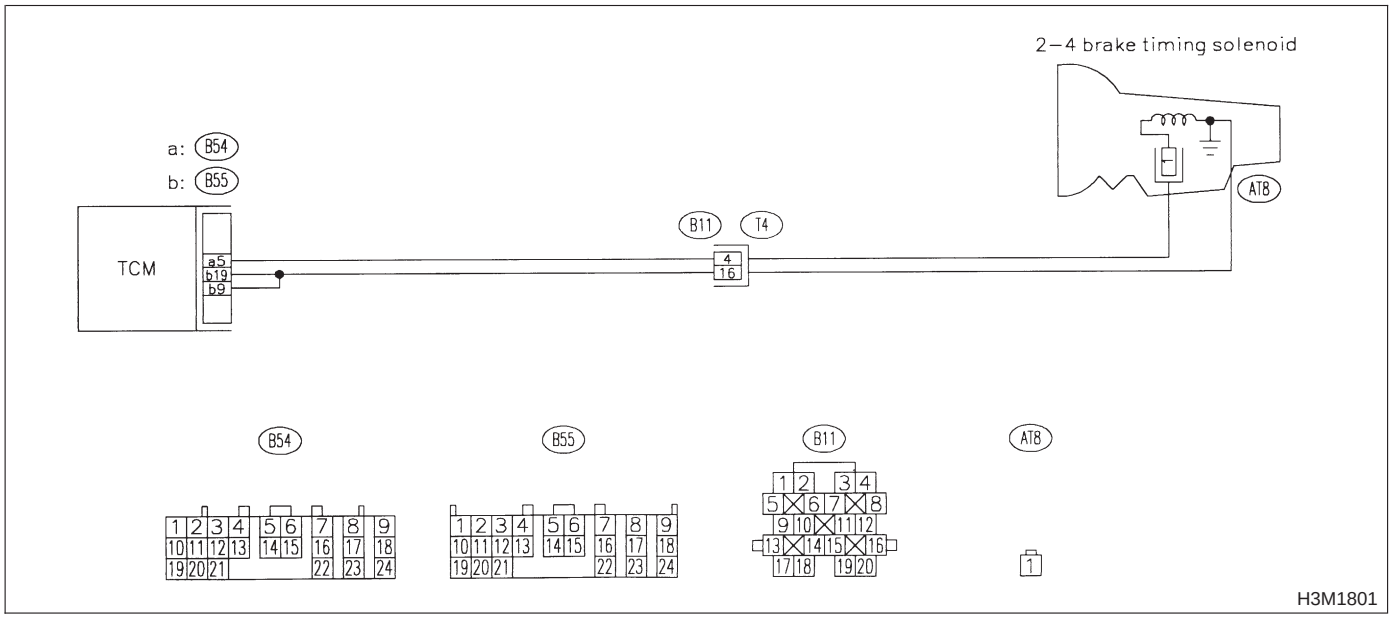
YES : Even if “AT OIL TEMP” lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in low clutch timing solenoid and transmission.

NO : Repair short circuit harness between TCM and transmission connector.

MEMO:

N: TROUBLE CODE 74 — 2-4 BRAKE TIMING SOLENOID —

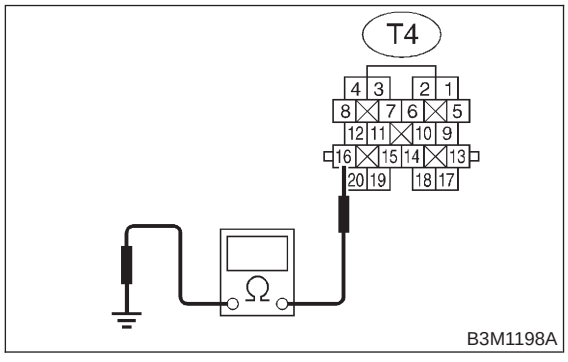
DIAGNOSIS:
Output signal circuit of 2-4 brake timing solenoid is open or shorted.
TROUBLE SYMPTOM:
Excessive shift shock.
WIRING DIAGRAM:



8N1 : CHECK 2-4 BRAKE TIMING SOLENOID GROUND LINE.

1) Turn ignition switch to OFF.
2) Disconnect connector from transmission.
3) Measure resistance between transmission connector and transmission ground.

Connector & terminal
(T4) No. 16 — Chassis ground:

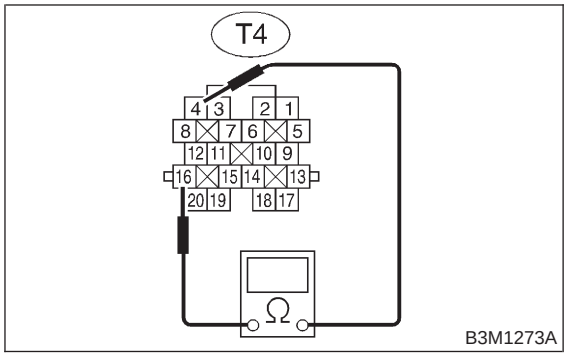


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8N2**.
NO : Repair open circuit in transmission harness.

8N2 : CHECK 2-4 BRAKE TIMING SOLENOID.

Measure resistance between transmission connector terminals.

Connector & terminal
(T4) No. 4 — No. 16:

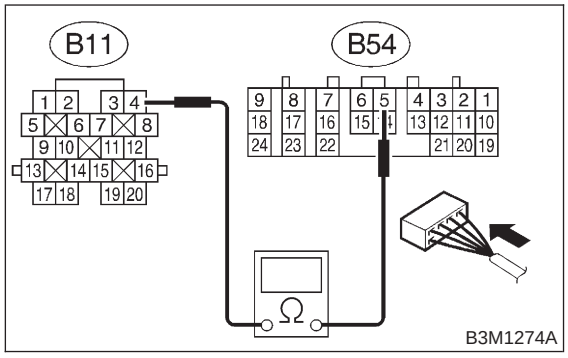


CHECK : ***Is the resistance between 10 and 16 Ω?***
YES : Go to step **8N3**.
NO : Go to step **8N10**.

8N3 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

1) Disconnect connector from TCM.
2) Measure resistance of harness between TCM and transmission connector.

Connector & terminal
(B54) No. 5 — (B11) No. 4:

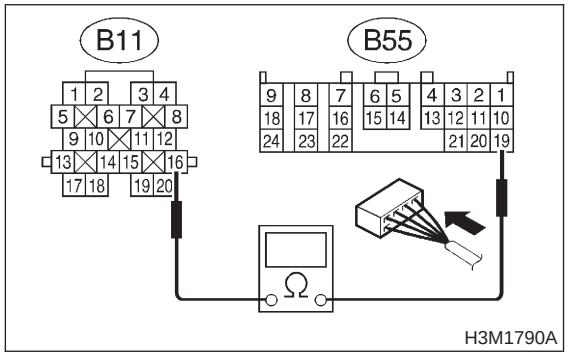


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8N4**.
NO : Repair open circuit in harness between TCM and transmission connector.

8N4 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

Measure resistance of harness between TCM and transmission connector.

Connector & terminal
(B55) No. 19 — (B11) No. 16:

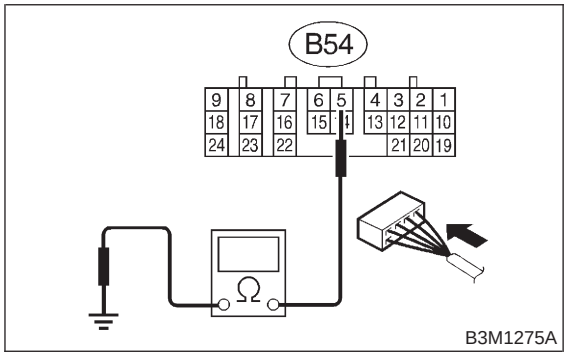


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8N5**.
NO : Repair open circuit in harness between TCM and transmission connector.

8N5 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

Measure resistance of harness between TCM connector and transmission ground.

Connector & terminal
(B54) No. 5 — Chassis ground:

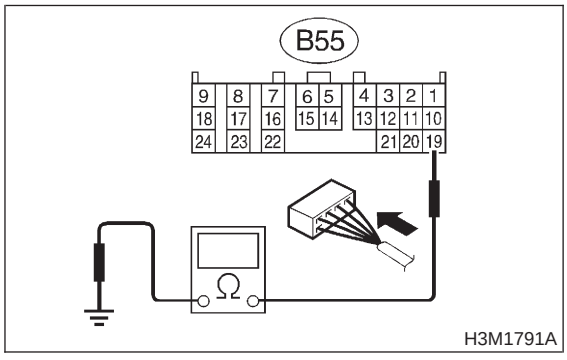


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8N6**.
NO : Repair short circuit in harness between TCM and transmission connector.

8N6 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

Measure resistance of harness between TCM connector and transmission ground.

Connector & terminal
(B55) No. 19 — Chassis ground:



CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8N7**.
NO : Repair short circuit in harness between TCM and transmission connector.

8N7 : CHECK OUTPUT SIGNAL EMITTED FROM TCM.

1) Connect connectors to TCM and transmission.
2) Lift-up or raise the vehicle and support with safety stand.

CAUTION:
On AWD models, raise all wheels off ground.

3) Start the engine and warm-up the transmission until ATF temperature is above 80°C (176°F).

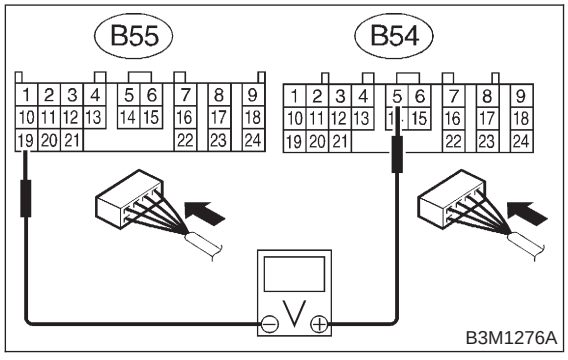
NOTE:
If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature.

4) Move selector lever to "1", and slowly increase vehicle speed to 10 km/h (6 MPH).

NOTE:
The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to 4-4 [T6D2].>

5) Measure voltage between TCM connector terminals.

Connector & terminal
(B54) No. 5 (+) — (B55) No. 19 (−):



CHECK : ***Is the voltage less than 1 V?***
YES : Go to step **8N8**.
NO : Go to step **8N9**.

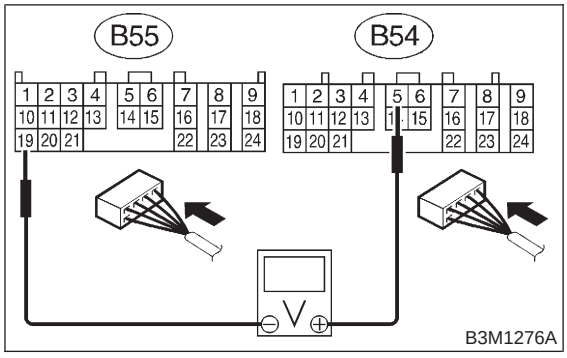
8N8 : CHECK OUTPUT SIGNAL EMITTED FROM TCM.

1) Move selector lever to "D", and slowly increase vehicle speed to 65 km/h (40 MPH).

NOTE:
The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to 4-4 [T6D2].>

2) Measure voltage between TCM connector terminals.

Connector & terminal
(B54) No. 5 (+) — (B55) No. 19 (−):



CHECK : ***Is the voltage more than 9 V?***
YES : Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or contact in the TCM.
NO : Go to step **8N9**.

8N9 : CHECK POOR CONTACT.

CHECK : ***Is there poor contact in 2-4 brake timing solenoid circuit?***
YES : Repair poor contact.
NO : Replace TCM. <Ref. to 3-2 [W22A0].>

8N10 : CHECK 2-4 BRAKE TIMING SOLENOID (IN TRANSMISSION).

1) Remove transmission connector from bracket.
2) Lift-up or raise the vehicle and support with safety stand.

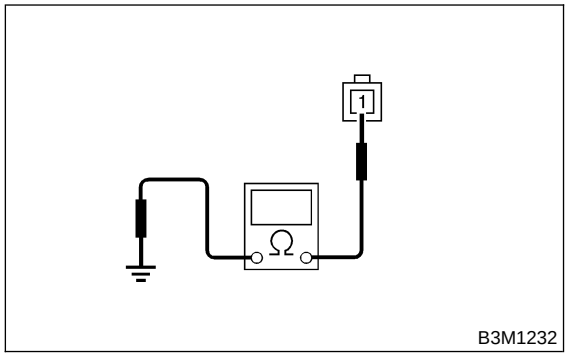
CAUTION:
On AWD models, raise all wheels off ground.

3) Drain automatic transmission fluid.

CAUTION:
Do not drain the automatic transmission fluid until it cools down.

4) Remove oil pan, and disconnect connector from 2-4 brake timing solenoid.
5) Measure resistance between 2-4 brake timing solenoid connector and transmission ground.

Terminal
No. 1 — Transmission ground:

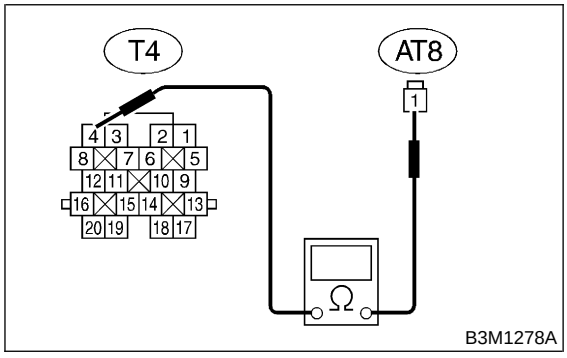


CHECK : ***Is the resistance between 10 and 16 Ω?***
YES : Go to step **8N11**.
NO : Replace 2-4 brake timing solenoid. <Ref. to 3-2 [W4A0].>

8N11 : CHECK HARNESS CONNECTOR BETWEEN 2-4 BRAKE TIMING SOLENOID AND TRANSMISSION.

Measure resistance of harness between 2-4 brake timing solenoid and transmission connector.

Connector & terminal
(AT8) No. 1 — (T4) No. 4:

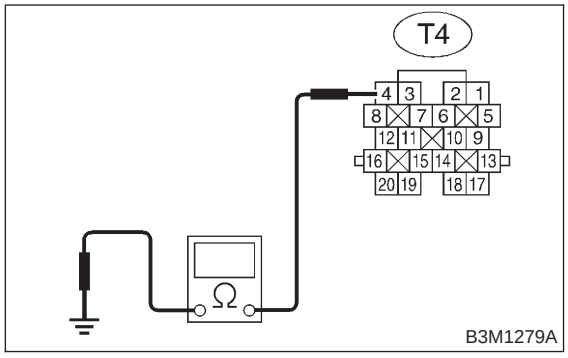


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8N12**.
NO : Repair open circuit in harness between 2-4 brake timing solenoid and transmission connector.

8N12 : CHECK HARNESS CONNECTOR BETWEEN 2-4 BRAKE TIMING SOLENOID AND TRANSMISSION.

Measure resistance of harness between 2-4 brake timing solenoid connector and transmission ground.

Connector & terminal
(T4) No. 4 — Transmission ground:



CHECK : ***Is the resistance more than 1 MΩ?***

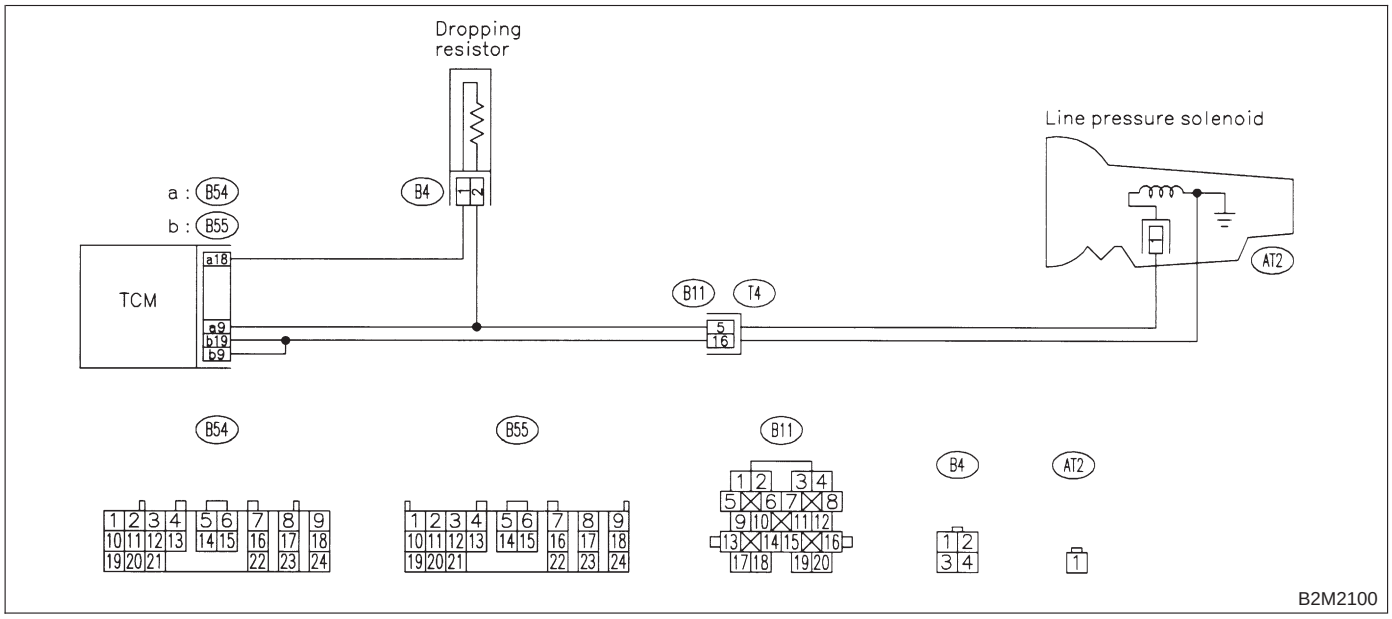
YES : Even if “AT OIL TEMP” lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in 2-4 brake timing solenoid and transmission.

NO : Repair short circuit harness between TCM and transmission connector.

MEMO:

O: TROUBLE CODE 75 — DUTY SOLENOID A —

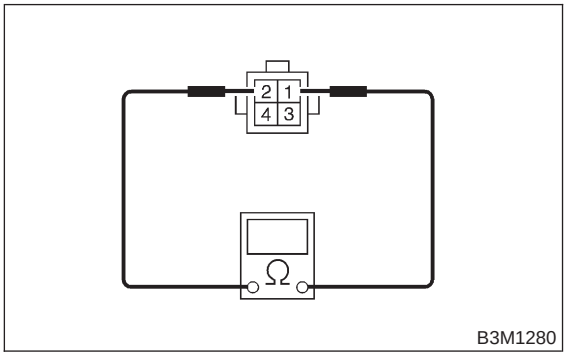
DIAGNOSIS:
Output signal circuit of duty solenoid A or resistor is open or shorted.
TROUBLE SYMPTOM:
Excessive shift shock.
WIRING DIAGRAM:



8O1 : CHECK RESISTOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from dropping resistor.
3) Measure resistance between dropping resistor terminal.

Terminals
No. 1 — No. 2:

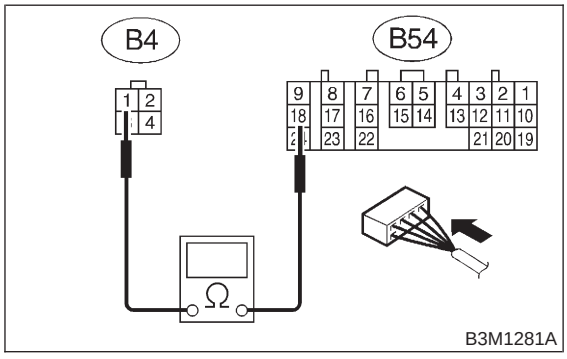


CHECK : ***Is the resistance between 9 and 15 Ω?***
YES : Go to step **8O2**.
NO : Replace dropping resistor. <Ref. to 3-2 [W23A0].>

8O2 : CHECK HARNESS CONNECTOR BETWEEN TCM AND DROPPING RESISTOR.

1) Disconnect connector from TCM.
2) Measure resistance of harness between TCM connector and dropping resistor connector.

Connector & terminal
(B54) No. 18 — (B4) No. 1:

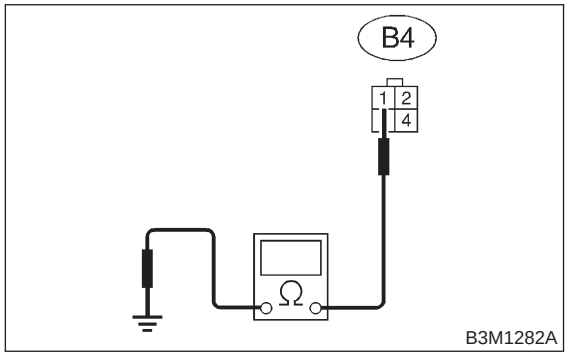


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8O3**.
NO : Repair open circuit in harness between TCM and dropping resistor connector.

8O3 : CHECK HARNESS CONNECTOR BETWEEN TCM AND DROPPING RESISTOR.

Measure resistance of harness between dropping resistor connector and chassis ground.

Connector & terminal
(B4) No. 1 — Chassis ground:

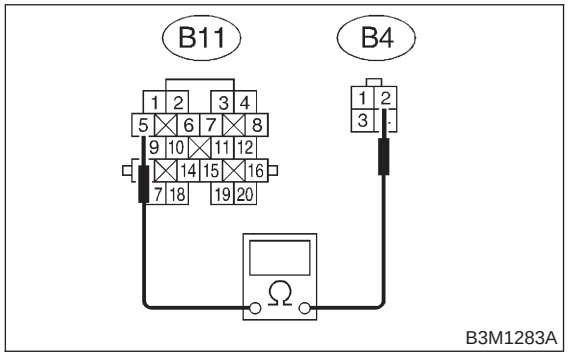


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8O4**.
NO : Repair short circuit in harness between TCM and dropping resistor connector.

8O4 : CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND DROPPING RESISTOR.

1) Disconnect connector from transmission.
2) Measure resistance of harness between transmission and dropping resistor connector.

Connector & terminal
(B4) No. 2 — (B11) No. 5:

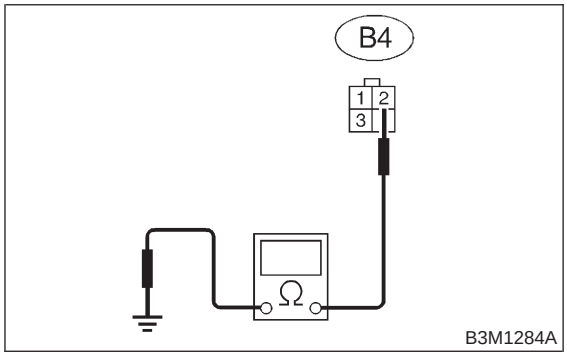


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8O5**.
NO : Repair open circuit in harness between dropping resistor and transmission connector.

8O5 : CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND DROPPING RESISTOR.

Measure resistance of harness between dropping resistor connector and chassis ground.

Connector & terminal
(B4) No. 2 — Chassis ground:

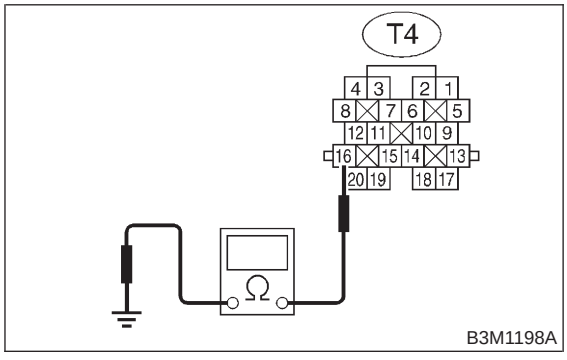


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8O6**.
NO : Repair short circuit in harness between dropping resistor and transmission connector.

8O6 : CHECK DUTY SOLENOID A GROUND LINE.

Measure resistance between transmission connector and transmission ground.

Connector & terminal
(T4) No. 16 — Transmission ground:

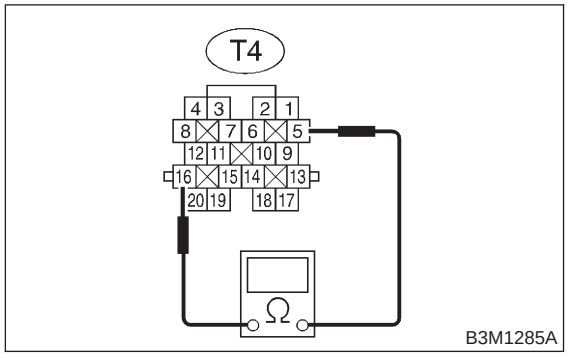


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8O7**.
NO : Repair open circuit in transmission harness.

8O7 : CHECK DUTY SOLENOID A.

Measure resistance between transmission connector receptacle's terminals.

Terminal
(T4) No. 5 — No. 16:

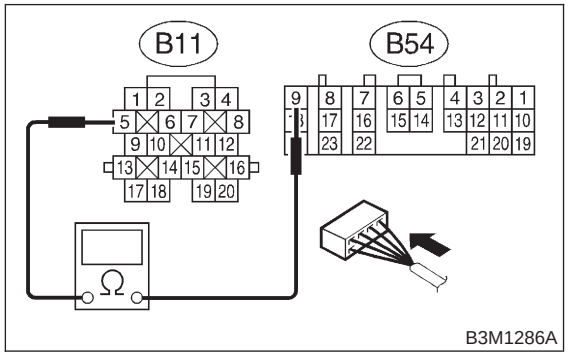


CHECK : ***Is the resistance between 2.0 and 4.5 Ω?***
YES : Go to step **8O8**.
NO : Go to step **8O20**.

8O8 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

Measure resistance of harness between TCM and transmission connector.

Connector & terminal
(B54) No. 9 — (B11) No. 5:

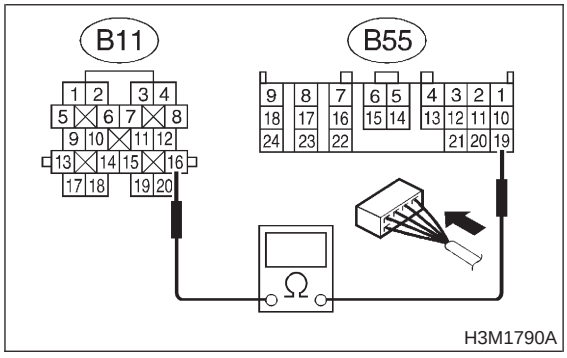


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8O9**.
NO : Repair open circuit in harness between TCM and transmission connector.

8O9 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

Measure resistance of harness between TCM and transmission connector.

Connector & terminal
(B55) No. 19 — (B11) No. 16:

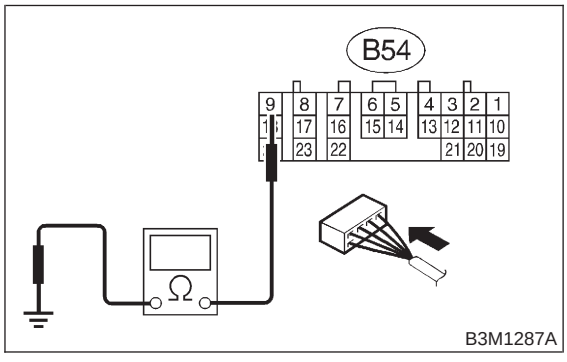


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8O10**.
NO : Repair open circuit in harness between TCM and transmission connector.

8O10 : CHECK HARNESS CONNECTOR BETWEEN TCM AND CHASSIS GROUND.

Measure resistance of harness between TCM and chassis ground.

Connector & terminal
(B54) No. 9 — Chassis ground:



CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8O11**.
NO : Repair short circuit in harness between TCM and transmission connector.

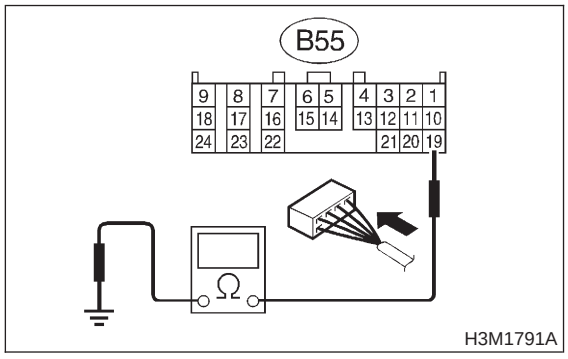
8O11 : PREPARE SUBARU SELECT MONITOR.

CHECK : ***Do you have a Subaru Select Monitor?***
YES : Go to step **8O17**.
NO : Go to step **8O12**.

8O12 : CHECK HARNESS CONNECTOR BETWEEN TCM AND CHASSIS GROUND.

Measure resistance of harness between TCM and chassis ground.

Connector & terminal
(B55) No. 19 — Chassis ground:



CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8O13**.
NO : Repair short circuit harness between TCM and transmission connector.

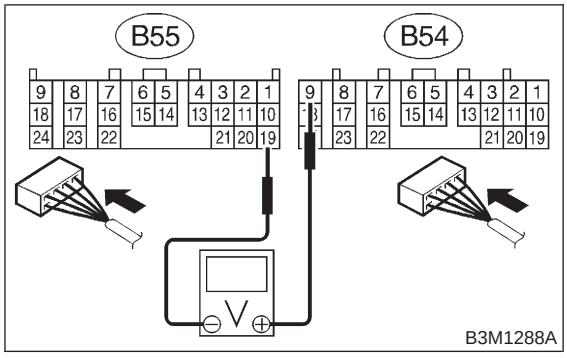
8O13 : CHECK OUTPUT SIGNAL EMITTED FROM TCM.

1) Connect all connectors.
2) Start the engine and warm-up the transmission until ATF temperature is above 80°C (176°F).

NOTE:
If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature.

3) Turn ignition switch to ON (engine OFF).
4) Move selector lever to “N”.
5) Measure voltage between TCM connector terminal.

Connector & terminal
(B54) No. 9 (+) — (B55) No. 19 (−):

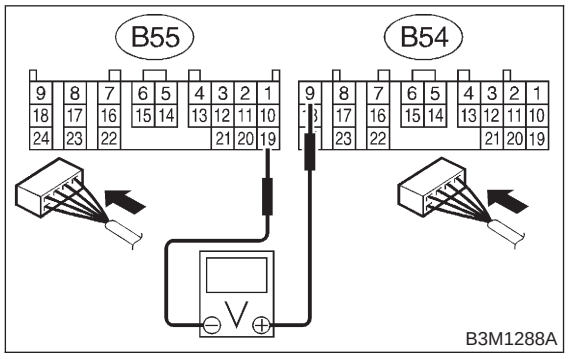


CHECK : ***Is the voltage between 1.5 and 4.0 V with throttle fully closed?***
YES : Go to step **8O14**.
NO : Go to step **8O19**.

8O14 : CHECK OUTPUT SIGNAL EMITTED FROM TCM.

Measure voltage between TCM connector terminal.

Connector & terminal
(B54) No. 9 (+) — (B55) No. 19 (−):

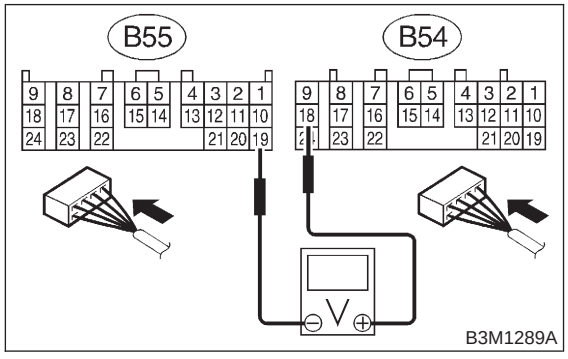


CHECK : ***Is the voltage less than 1 V with throttle fully open?***
YES : Go to step **8O15**.
NO : Go to step **8O19**.

8O15 : CHECK OUTPUT SIGNAL EMITTED FROM TCM.

Measure voltage between TCM connector terminal.

Connector & terminal
(B54) No. 18 (+) — (B55) No. 19 (−):

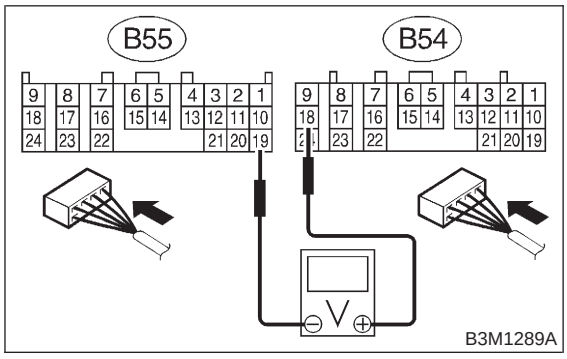


CHECK : ***Is the voltage more than 8.5 V with throttle fully closed?***
YES : Go to step **8O16**.
NO : Go to step **8O19**.

8O16 : CHECK OUTPUT SIGNAL EMITTED FROM TCM.

Measure voltage between TCM connector terminal.

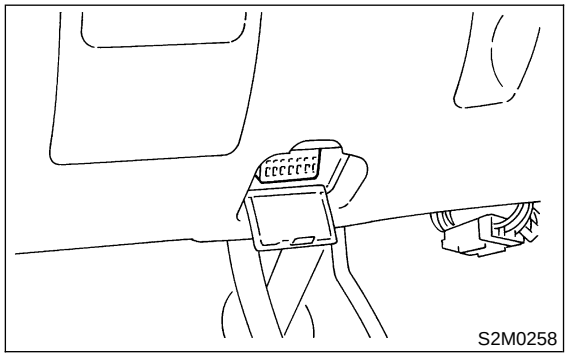
Connector & terminal
(B54) No. 18 (+) — (B55) No. 19:



CHECK : ***Is the voltage less than 1 V with throttle fully open?***
YES : Even if “AT OIL TEMP” lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in TCM.
NO : Go to step **8O19**.

8O17 : CHECK OUTPUT SIGNAL EMITTED FROM TCM USING SUBARU SELECT MONITOR.

1) Connect connectors to TCM and transmission.
2) Connect Subaru Select Monitor to data link connector.



3) Start the engine, and turn Subaru Select Monitor switch to ON.
4) Warm-up the transmission until ATF temperature is above 80°C (176°F).

NOTE:
If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature.

5) Stop the engine and turn ignition switch to ON (engine OFF).
6) Move selector lever to "N".
7) Read data of duty solenoid A using Subaru Select Monitor.
● Line pressure duty is indicated in "%".
8) Throttle is fully closed.

CHECK : ***Is the value 100%?***
YES : Go to step **8O18**.
NO : Go to step **8O19**.

8O18 : CHECK OUTPUT SIGNAL EMITTED FROM TCM USING SUBARU SELECT MONITOR.

1) Turn ignition switch to ON (Engine OFF).
2) Throttle is fully open.

CHECK : ***Is the value between 10 and 20%?***
YES : Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in TCM.
NO : Go to step **8O19**.

8O19 : CHECK POOR CONTACT.

CHECK : ***Is there poor contact in duty solenoid A circuit?***
YES : Repair poor contact.
NO : Replace TCM. <Ref. to 3-2 [W22A0].>

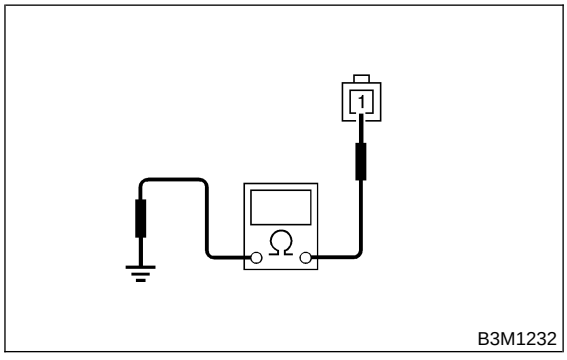
8O20 : CHECK DUTY SOLENOID A (IN TRANSMISSION).

1) Remove transmission connector from bracket.
2) Drain automatic transmission fluid.

CAUTION:
Do not drain the automatic transmission fluid until it cools down.

3) Remove oil pan, and disconnect connector from duty solenoid A.
4) Measure resistance between duty solenoid A connector and transmission ground.

Terminal
No. 1 — Transmission ground:

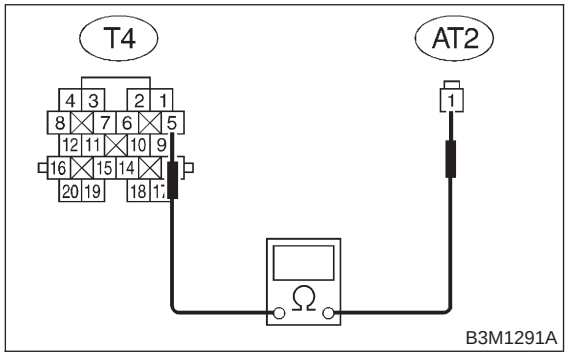


CHECK : ***Is the resistance between 2.0 and 4.5 Ω?***
YES : Go to step **8O21**.
NO : Replace duty solenoid A. <Ref. to 3-2 [W4A0].>

8O21 : CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND DUTY SOLENOID A.

Measure resistance of harness between duty solenoid A and transmission connector.

Connector & terminal
(T4) No. 5 — (AT2) No. 1:

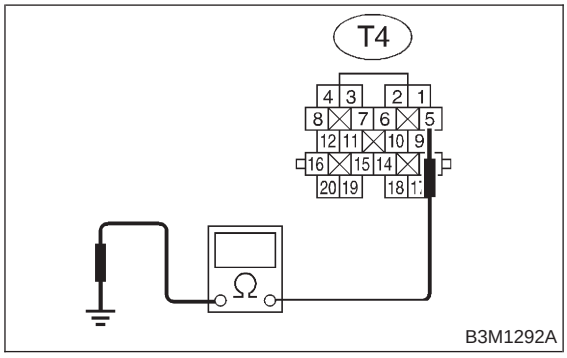


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8O22**.
NO : Repair open circuit in harness between duty solenoid A and transmission connector.

8O22 : CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND DUTY SOLENOID A.

Measure resistance of harness between transmission connector and transmission ground.

Connector & terminal
(T4) No. 5 — Transmission ground:

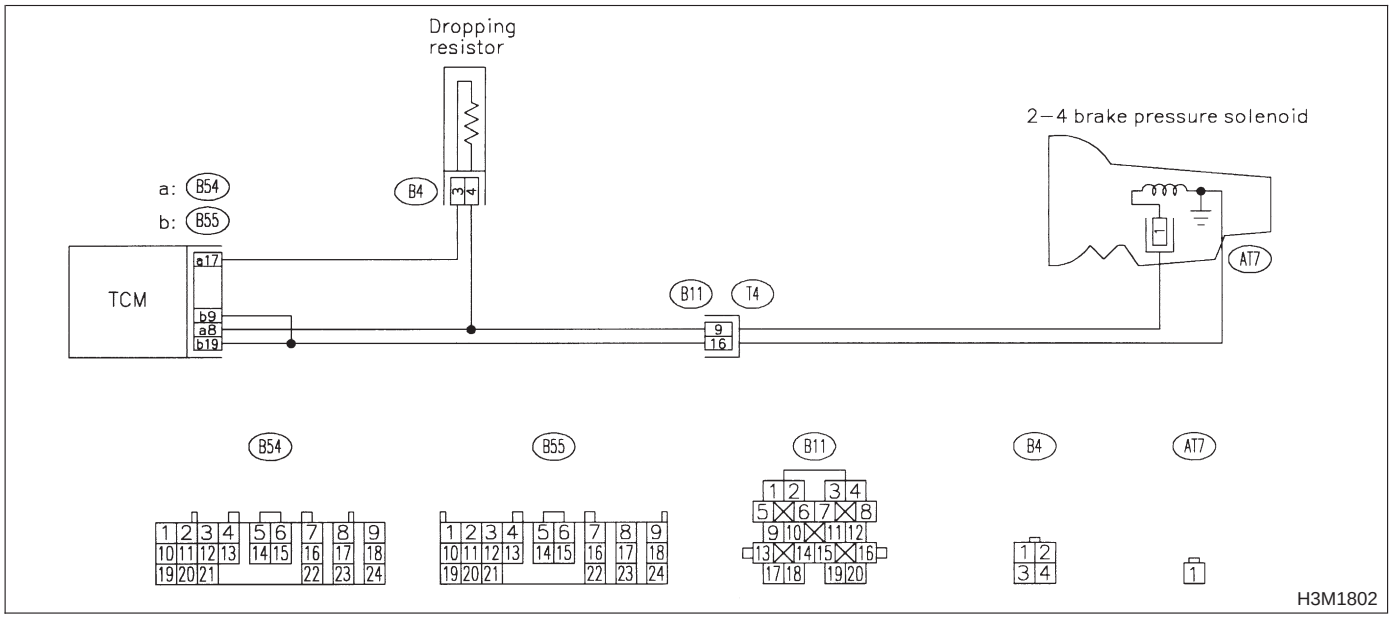


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Even if “AT OIL TEMP” lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in duty solenoid A and transmission connector.
NO : Repair short circuit in harness between duty solenoid A and transmission connector.

MEMO:

P: TROUBLE CODE 76 — DUTY SOLENOID D —

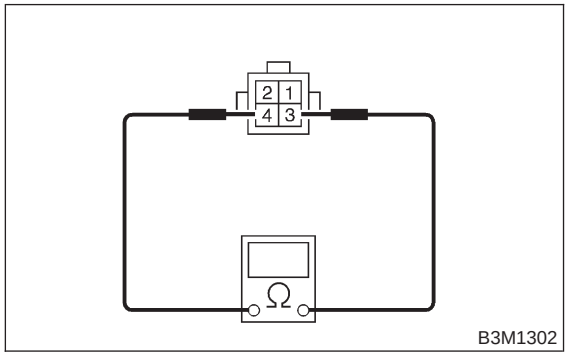
DIAGNOSIS:
Output signal circuit of duty solenoid D is open or shorted.
TROUBLE SYMPTOM:
Excessive shift shock.
WIRING DIAGRAM:



8P1 : CHECK RESISTOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from dropping resistor.
3) Measure resistance between dropping resistor terminal.

Terminals
No. 3 — No. 4:

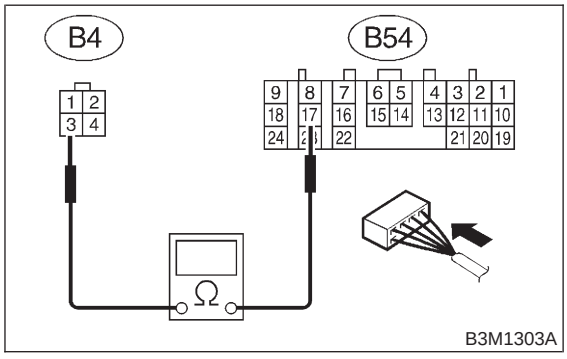


CHECK : ***Is the resistance between 9 and 15 Ω?***
YES : Go to step **8P2**.
NO : Replace dropping resistor. <Ref. to 3-2 [W23A0].>

8P2 : CHECK HARNESS CONNECTOR BETWEEN TCM AND DROPPING RESISTOR.

1) Disconnect connector from TCM.
2) Measure resistance of harness between TCM connector and dropping resistor connector.

Connector & terminal
(B54) No. 17 — (B4) No. 3:

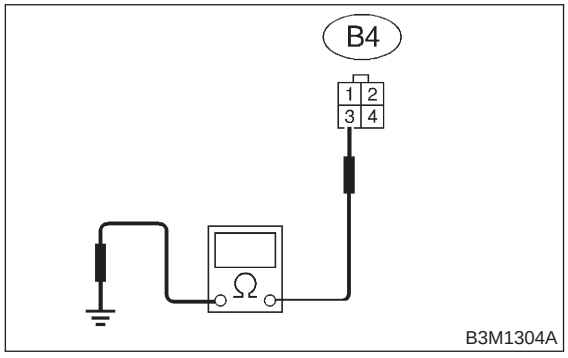


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8P3**.
NO : Repair open circuit in harness between TCM and dropping resistor connector.

8P3 : CHECK HARNESS CONNECTOR BETWEEN TCM AND DROPPING RESISTOR.

Measure resistance of harness between dropping resistor connector and chassis ground.

Connector & terminal
(B4) No. 3 — Chassis ground:

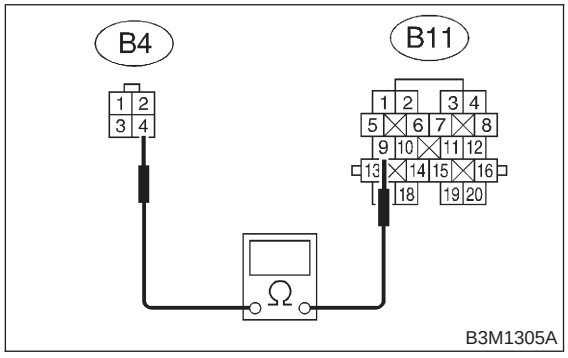


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8P4**.
NO : Repair short circuit in harness between TCM and dropping resistor connector.

8P4 : CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND DROPPING RESISTOR.

1) Disconnect connector from transmission.
2) Measure resistance of harness between transmission and dropping resistor connector.

Connector & terminal
(B4) No. 4 — (B11) No. 9:

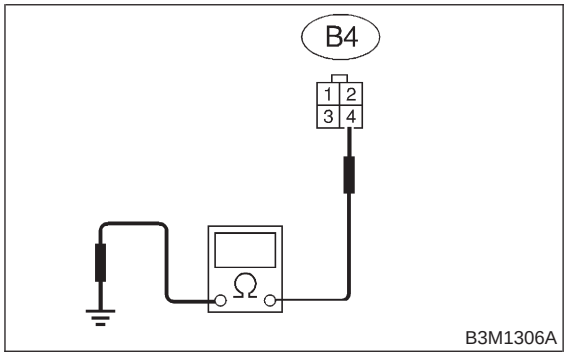


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8P5**.
NO : Repair open circuit in harness between dropping resistor and transmission connector.

8P5 : CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND DROPPING RESISTOR.

Measure resistance of harness between dropping resistor connector and chassis ground.

Connector & terminal
(B4) No. 4 — Chassis ground:

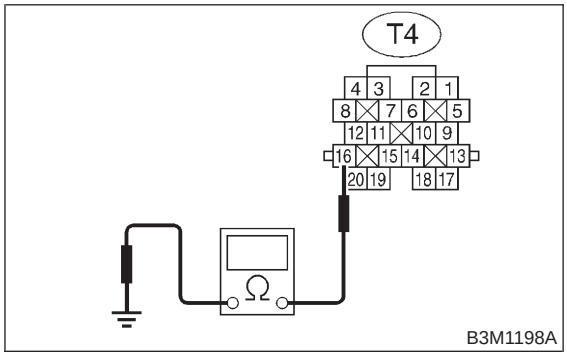


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8P6**.
NO : Repair short circuit in harness between dropping resistor and transmission connector.

8P6 : CHECK DUTY SOLENOID D GROUND LINE.

Measure resistance between transmission connector and transmission ground.

Connector & terminal
(T4) No. 16 — Transmission ground:

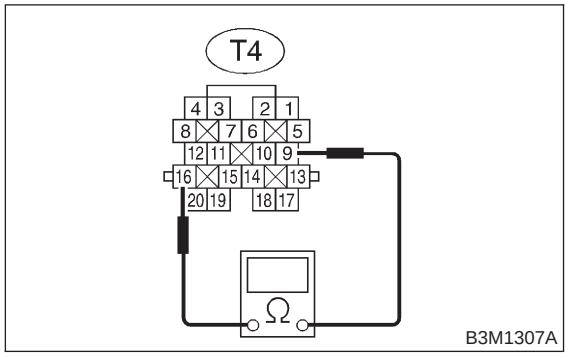


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8P7**.
NO : Repair open circuit in transmission harness.

8P7 : CHECK DUTY SOLENOID D.

Measure resistance between transmission connector receptacle's terminals.

Terminal
(T4) No. 16 — No. 9:

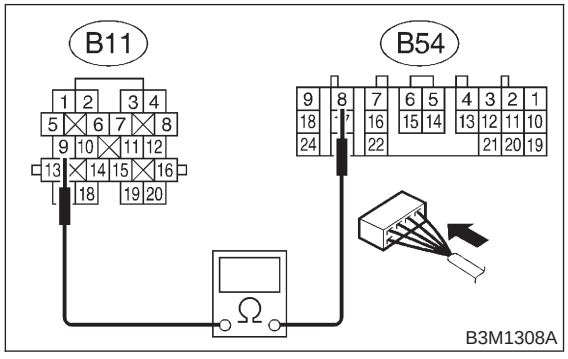


CHECK : ***Is the resistance between 2.0 and 4.5 Ω?***
YES : Go to step **8P8**.
NO : Go to step **8P20**.

8P8 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

Measure resistance of harness between TCM and transmission connector.

Connector & terminal
(B54) No. 8 — (B11) No. 9:

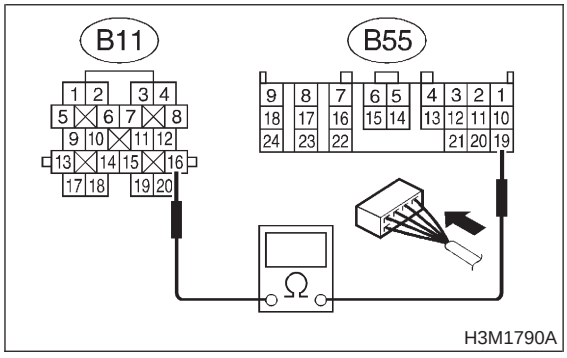


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8P9**.
NO : Repair open circuit in harness between TCM and transmission connector.

8P9 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

Measure resistance of harness between TCM and transmission connector.

Connector & terminal
(B55) No. 19 — (B11) No. 16:

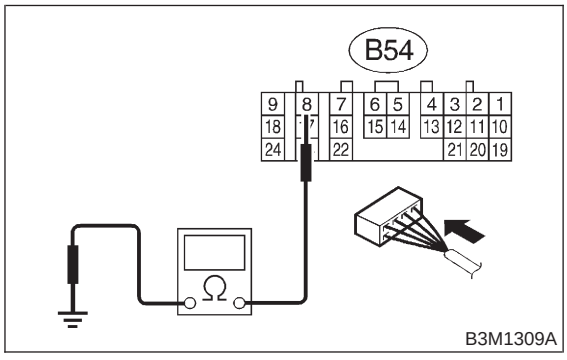


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8P10**.
NO : Repair open circuit in harness between TCM and transmission connector.

8P10 : CHECK HARNESS CONNECTOR BETWEEN TCM AND CHASSIS GROUND.

Measure resistance of harness between TCM and chassis ground.

Connector & terminal
(B54) No. 8 — Chassis ground:



CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8P11**.
NO : Repair short circuit in harness between TCM and transmission connector.

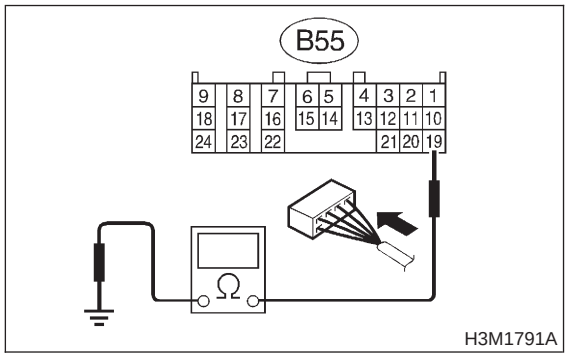
8P11 : PREPARE SUBARU SELECT MONITOR.

CHECK : ***Do you have a Subaru Select Monitor?***
YES : Go to step **8P17**.
NO : Go to step **8P12**.

8P12 : CHECK HARNESS CONNECTOR BETWEEN TCM AND CHASSIS GROUND.

Measure resistance of harness between TCM and chassis ground.

Connector & terminal
(B55) No. 19 — Chassis ground:



CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8P13**.
NO : Repair short circuit harness between TCM and transmission connector.

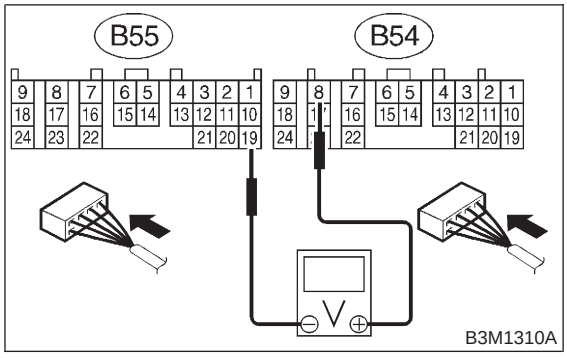
8P13 : CHECK OUTPUT SIGNAL EMITTED FROM TCM.

1) Connect all connectors.
2) Start the engine and warm-up the transmission until ATF temperature is above 80°C (176°F).

NOTE:
If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature.

3) Turn ignition switch to ON (engine OFF).
4) Move selector lever to “N”.
5) Measure voltage between TCM connector terminal.

Connector & terminal
(B54) No. 8 (+) — (B55) No. 19 (−):

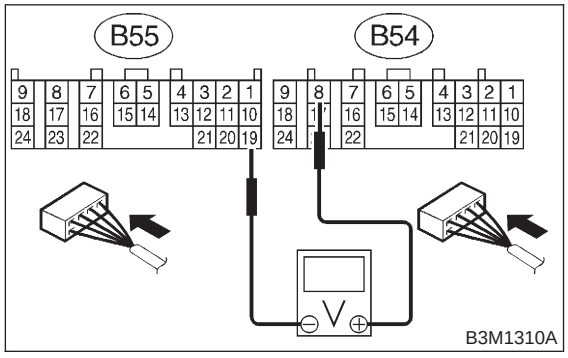


CHECK : ***Is the voltage between 1.5 and 4.0 V with throttle fully closed?***
YES : Go to step **8P14**.
NO : Go to step **8P19**.

8P14 : CHECK OUTPUT SIGNAL EMITTED FROM TCM.

Measure voltage between TCM connector terminal.

Connector & terminal
(B54) No. 8 (+) — (B55) No. 19 (−):

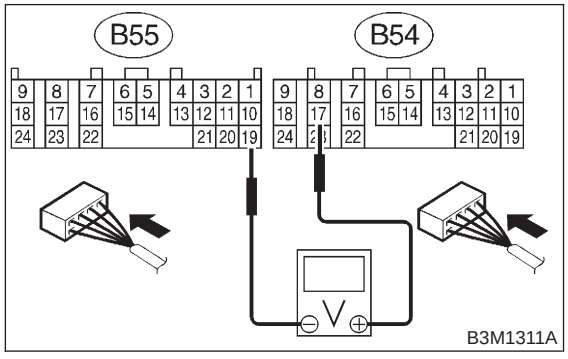


CHECK : ***Is the voltage less than 1 V with throttle fully open?***
YES : Go to step **8P15**.
NO : Go to step **8P19**.

8P15 : CHECK OUTPUT SIGNAL EMITTED FROM TCM.

Measure voltage between TCM connector terminal.

Connector & terminal
(B54) No. 17 (+) — (B55) No. 19 (−):

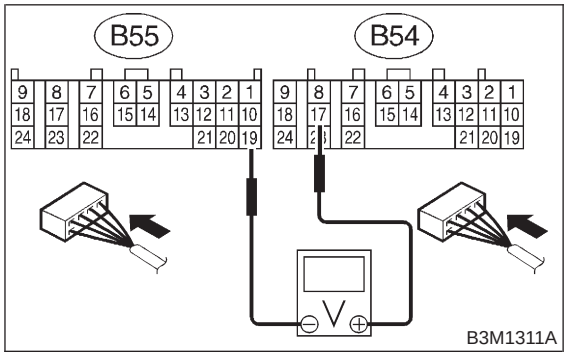


CHECK : ***Is the voltage more than 8.5 V with throttle fully closed?***
YES : Go to step **8P16**.
NO : Go to step **8P19**.

8P16 : CHECK OUTPUT SIGNAL EMITTED FROM TCM.

Measure voltage between TCM connector terminal.

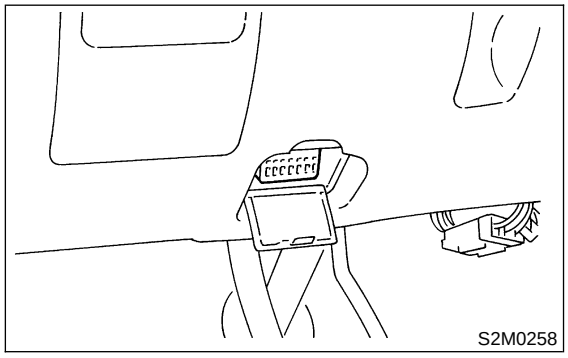
Connector & terminal
(B54) No. 17 (+) — (B55) No. 19 (−):



CHECK : ***Is the voltage less than 1 V with throttle fully open?***
YES : Even if “AT OIL TEMP” lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in TCM.
NO : Go to step **8P19**.

8P17 : CHECK OUTPUT SIGNAL EMITTED FROM TCM USING SUBARU SELECT MONITOR.

1) Connect all connectors.
2) Connect Subaru Select Monitor to data link connector.



3) Start the engine, and turn Subaru Select Monitor switch to ON.
4) Warm-up the transmission until ATF temperature is above 80°C (176°F).

NOTE:
If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature.

5) Stop the engine and turn ignition switch to ON (engine OFF).
6) Move selector lever to "N".
7) Read data of duty solenoid D using Subaru Select Monitor.
● Line pressure duty is indicated in "%".
8) Throttle is fully closed.

CHECK : ***Is the value 100%?***
YES : Go to step **8P18**.
NO : Go to step **8P19**.

8P18 : CHECK OUTPUT SIGNAL EMITTED FROM TCM USING SUBARU SELECT MONITOR.

1) Turn ignition switch to ON (Engine OFF).
2) Throttle is fully open.

CHECK : ***Is the value between 10 and 20%?***
YES : Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in TCM.
NO : Go to step **8P19**.

8P19 : CHECK POOR CONTACT.

CHECK : ***Is there poor contact in duty solenoid A circuit?***
YES : Repair poor contact.
NO : Replace TCM. <Ref. to 3-2 [W22A0].>

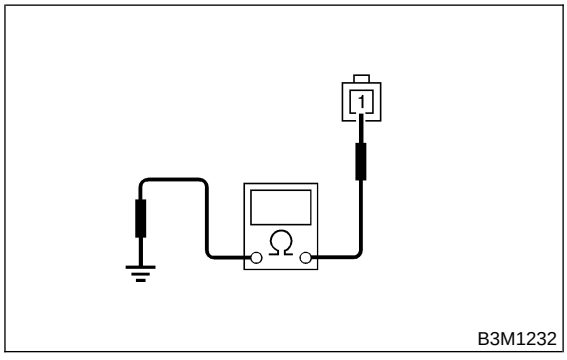
8P20 : CHECK DUTY SOLENOID D (IN TRANSMISSION).

1) Remove transmission connector from bracket.
2) Drain automatic transmission fluid.

CAUTION:
Do not drain the automatic transmission fluid until it cools down.

3) Remove oil pan, and disconnect connector from duty solenoid D.
4) Measure resistance between duty solenoid D connector and transmission ground.

Terminal
No. 1 — Transmission ground:

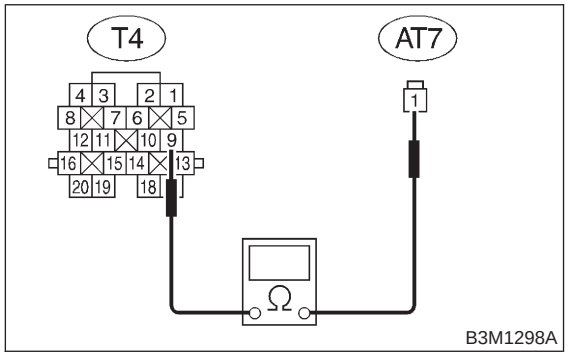


CHECK : ***Is the resistance between 2.0 and 4.5 Ω?***
YES : Go to step **8P21**.
NO : Replace duty solenoid D. <Ref. to 3-2 [W4A0].>

8P21 : CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND DUTY SOLENOID D.

Measure resistance of harness between duty solenoid D and transmission connector.

Connector & terminal
(T4) No. 9 — (AT7) No. 1:

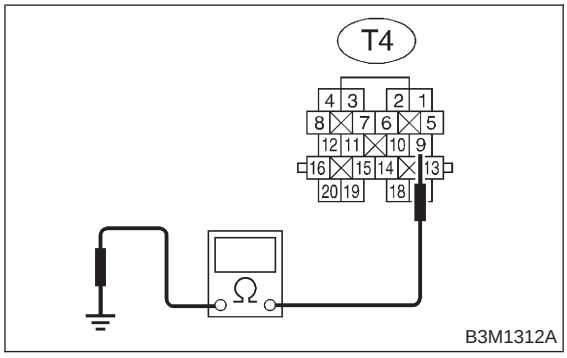


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8P22**.
NO : Repair open circuit in harness between duty solenoid D and transmission connector.

8P22 : CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND DUTY SOLENOID D.

Measure resistance of harness between transmission connector and transmission ground.

Connector & terminal
(T4) No. 9 — Transmission ground:

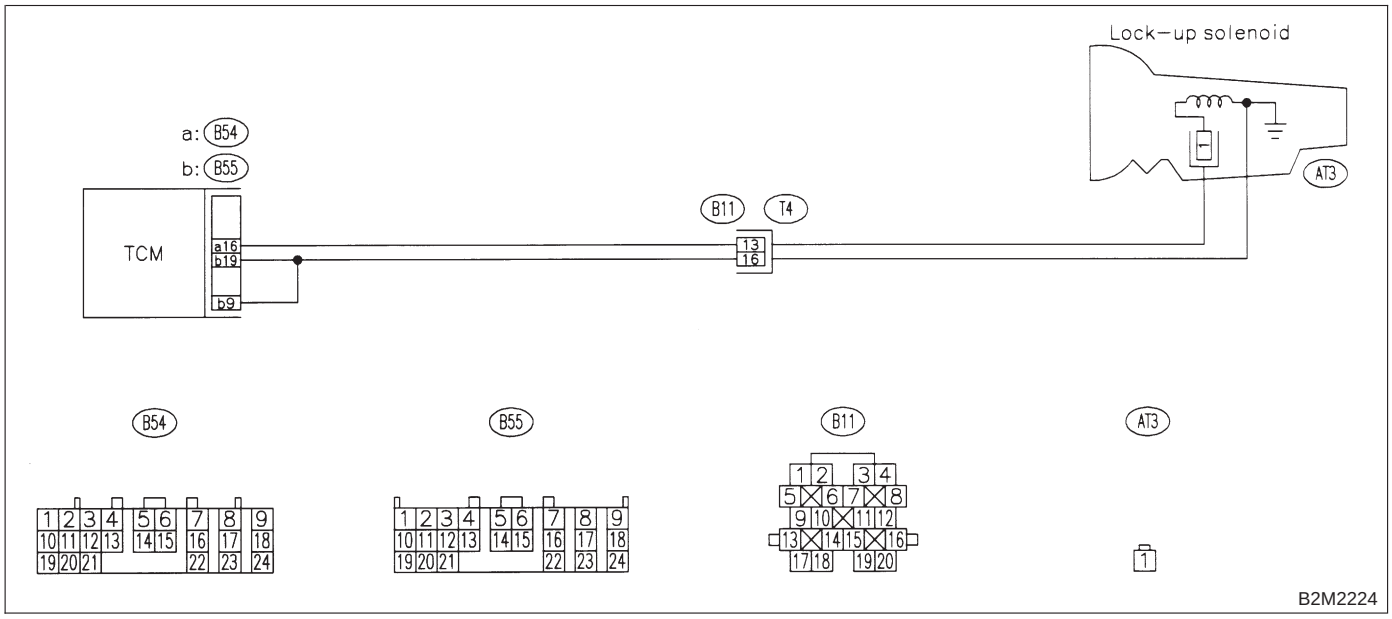


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Even if “AT OIL TEMP” lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in duty solenoid A and transmission connector.
NO : Repair short circuit in harness between duty solenoid D and transmission connector.

MEMO:

Q: TROUBLE CODE 77 — DUTY SOLENOID B —

DIAGNOSIS:
Output signal circuit of duty solenoid B is open or shorted.
TROUBLE SYMPTOM:
No “lock-up” (after engine warm-up).
WIRING DIAGRAM:



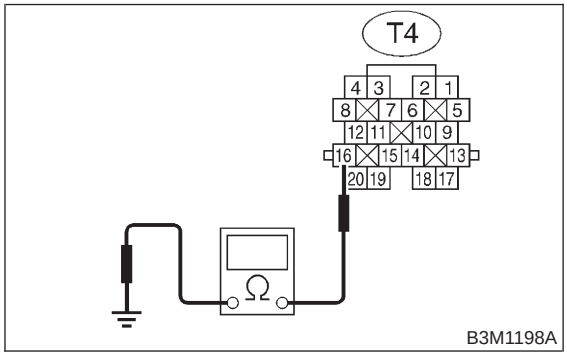
8Q1 : CHECK TROUBLE CODE.

CHECK : ***Do multiple trouble codes appear in the on-board diagnostics test mode?***
YES : Go to another trouble code.
NO : Go to step **8Q2**.

8Q2 : CHECK DUTY SOLENOID B GROUND LINE.

1) Turn ignition switch to OFF.
2) Disconnect connector from transmission.
3) Measure resistance between transmission connector receptacle’s terminals.

Connector & terminal
(T4) No. 16 — Chassis ground:

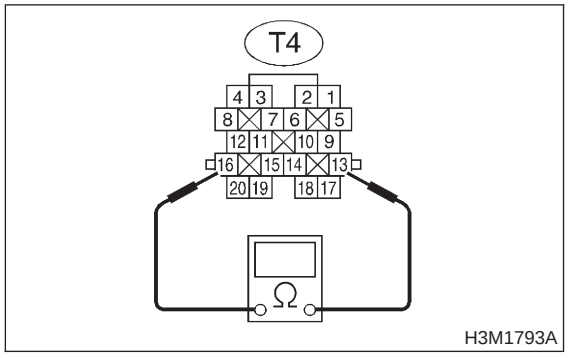


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8Q3**.
NO : Repair open circuit in transmission harness.

8Q3 : CHECK DUTY SOLENOID B.

Measure resistance between transmission connector receptacle's terminals.

Connector & terminal
(T4) No. 13 — No. 16:

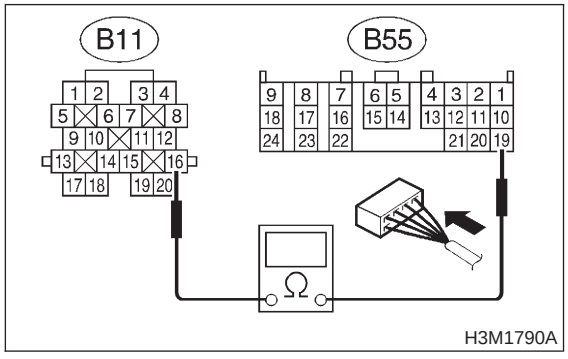


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8Q4**.
NO : Go to step **8Q14**.

8Q4 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

1) Disconnect connector from TCM.
2) Measure resistance of harness between TCM and transmission connector.

Connector & terminal
(B55) No. 19 — (B11) No. 16:

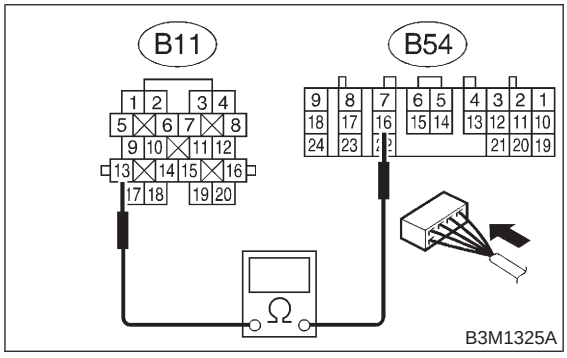


CHECK : ***Is the resistance than 1 Ω?***
YES : Go to step **8Q5**.
NO : Repair open circuit in harness between TCM and transmission connector.

8Q5 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

Measure resistance of harness connector between TCM and transmission.

Connector & terminal
(B54) No. 16 — (B11) No. 13:

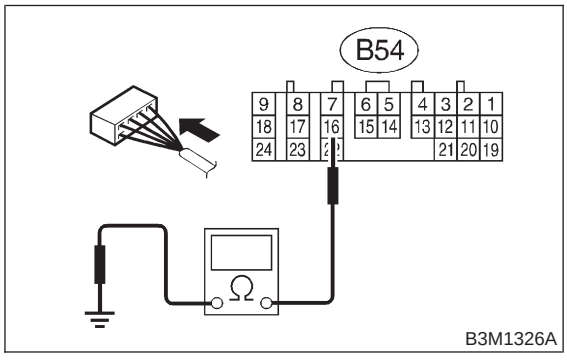


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8Q6**.
NO : Repair open circuit in harness between TCM and transmission connector.

8Q6 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

Measure resistance of harness connector between TCM and chassis ground.

Connector & terminal
(B54) No. 16 — Chassis ground:

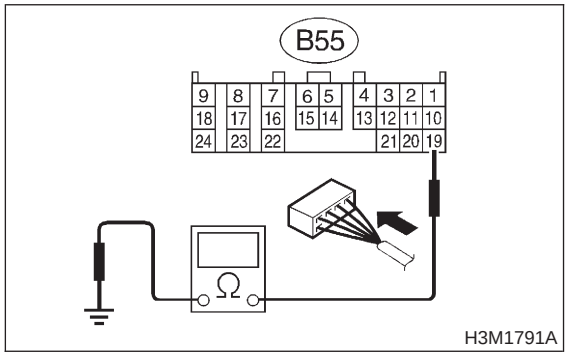


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8Q7**.
NO : Repair short circuit in harness between TCM and transmission connector.

8Q7 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

Measure resistance of harness connector between TCM and chassis ground.

Connector & terminal
(B55) No. 19 — Chassis ground:



CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8Q8**.
NO : Repair short circuit in harness between TCM and transmission connector.

8Q8 : PREPARE SUBARU SELECT MONITOR.

CHECK : ***Do you have a Subaru Select Monitor?***
YES : Go to step **8Q11**.
NO : Go to step **8Q9**.

8Q9 : CHECK OUTPUT SIGNAL EMITTED FROM TCM.

1) Connect connectors to TCM and transmission.
2) Lift-up the vehicle and place safety stand.

CAUTION:
On AWD models, raise all wheels off ground.

3) Start the engine and warm-up the transmission until ATF temperature is above 80°C (176°F).

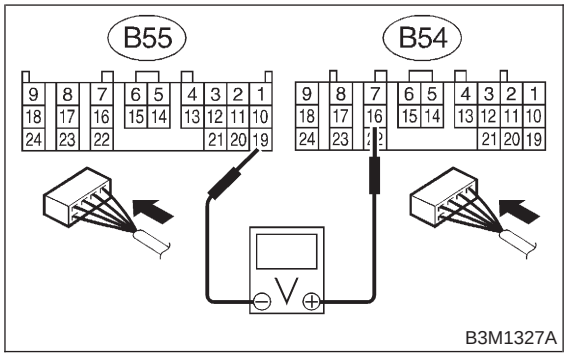
NOTE:
If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature.

4) Move selector lever to “D” and slowly increase vehicle speed to 75 km/h (47 MPH). Wheels will lock-up.

NOTE:
The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to 4-4 [T6D2].>

5) Measure voltage between TCM connector terminals.

Connector & terminal
(B54) No. 16 (+) — (B55) No. 19 (−):

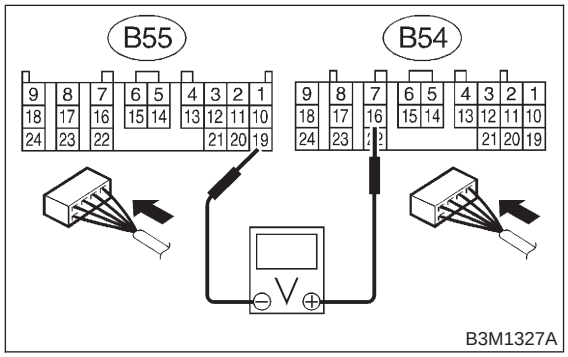


CHECK : ***Is the voltage more than 8.5 V?***
YES : Go to step **8Q10**.
NO : Go to step **8Q13**.

8Q10 : CHECK OUTPUT SIGNAL EMITTED FROM TCM.

1) Return the engine to idling speed and move selector lever to “N”.
2) Measure voltage between TCM connector terminals.

Connector & terminal
(B54) No. 16 (+) — (B55) No. 19 (−):



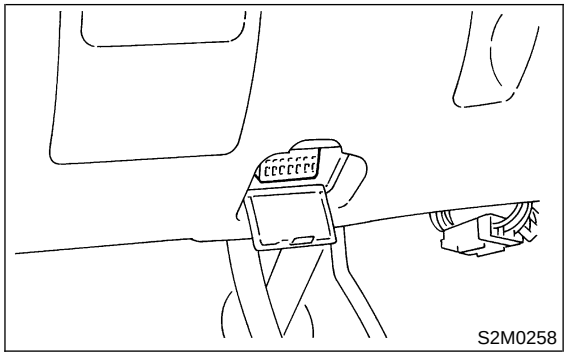
CHECK : ***Is the voltage less than 0.5 V?***
YES : Even if “AT OIL TEMP” lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in TCM.
NO : Go to step **8Q13**.

8Q11 : CHECK OUTPUT SIGNAL EMITTED FROM TCM USING SUBARU SELECT MONITOR.

1) Connect connectors to TCM and transmission.
2) Lift-up the vehicle and place safety stand.

CAUTION:
On AWD models, raise all wheels off ground.

3) Connect Subaru Select Monitor to data link connector.



4) Start the engine, and turn Subaru Select Monitor switch to ON.
5) Start the engine and warm-up the transmission until ATF temperature is above 80°C (176°F).

NOTE:
If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature.

6) Read data of duty solenoid B using Subaru Select Monitor.
● Lock-up duty is indicated in “%”.
7) Move selector lever to “D” and slowly increase vehicle speed to 75 km/h (47 MPH). Wheels will lock-up.

NOTE:
The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to 4-4 [T6D2].>

CHECK : ***Is the value 95%?***
YES : Go to step **8Q12**.
NO : Go to step **8Q13**.

8Q12 : CHECK OUTPUT SIGNAL EMITTED FROM TCM USING SUBARU SELECT MONITOR.

Return the engine to idling speed and move selector lever to “N”.

NOTE:
The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to 4-4 [T6D2].>

CHECK : ***Is the value 5%?***
YES : Even if “AT OIL TEMP” lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in TCM.
NO : Go to step **8Q13**.

8Q13 : CHECK POOR CONTACT.

CHECK : ***Is there poor contact in duty solenoid B circuit?***
YES : Repair poor contact.
NO : Replace TCM. <Ref. to 3-2 [W22A0].>

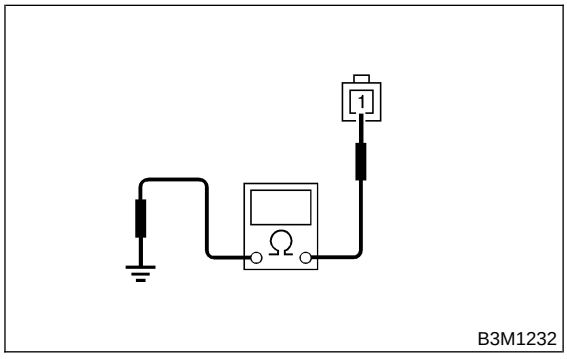
8Q14 : CHECK DUTY SOLENOID B (IN TRANSMISSION).

1) Remove transmission connector from bracket.
2) Drain automatic transmission fluid.

CAUTION:
Do not drain the automatic transmission fluid until it cools down.

3) Remove oil pan, and disconnect connector from duty solenoid B.
4) Measure resistance between duty solenoid B connector and transmission ground.

Terminal
No. 1 — Transmission ground:

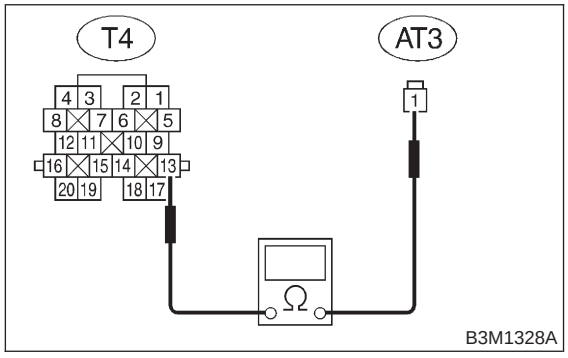


CHECK : ***Is the resistance between 10 and 17 Ω?***
YES : Go to step **8Q15**.
NO : Replace duty solenoid B. <Ref. to 3-2 [W4A0].>

8Q15 : CHECK HARNESS CONNECTOR BETWEEN DUTY SOLENOID B AND TRANSMISSION.

Measure resistance of harness between duty solenoid B and transmission connector.

Connector & terminal
(T4) No. 13 — (AT3) No. 1:

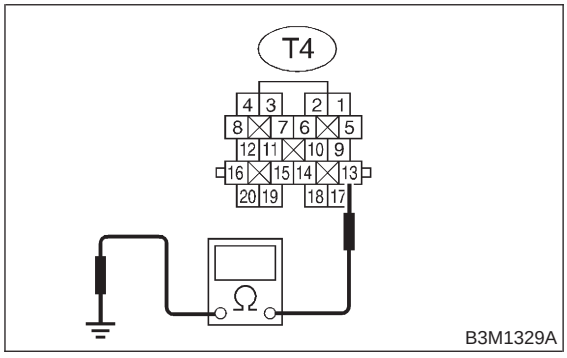


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8Q16**.
NO : Repair open circuit in harness between TCM and transmission connector.

8Q16 : CHECK HARNESS CONNECTOR BETWEEN DUTY SOLENOID B AND TRANSMISSION.

Measure resistance of harness between transmission connector and transmission ground.

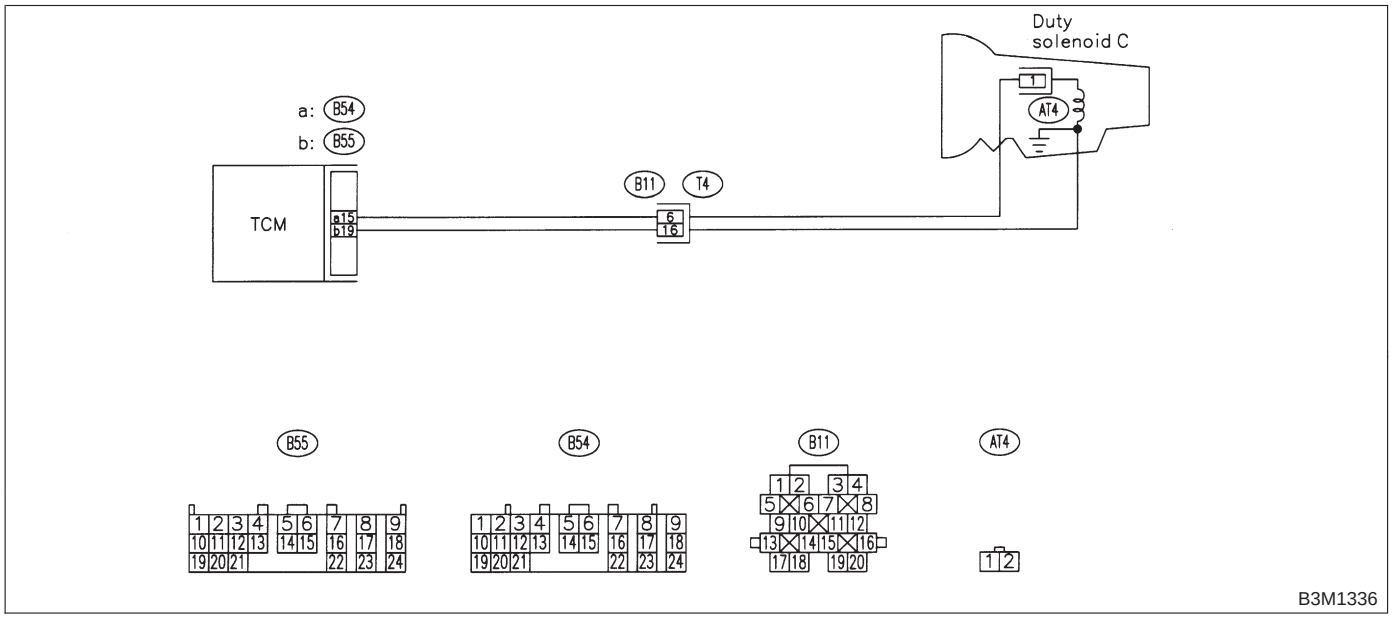
Connector & terminal
(T4) No. 13 — Transmission ground:



CHECK : ***Is the resistance more than 1 MΩ?***
YES : Even if “AT OIL TEMP” lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in duty solenoid B and transmission.
NO : Repair short circuit in harness between TCM and transmission connector.

R: TROUBLE CODE 79 — DUTY SOLENOID C —

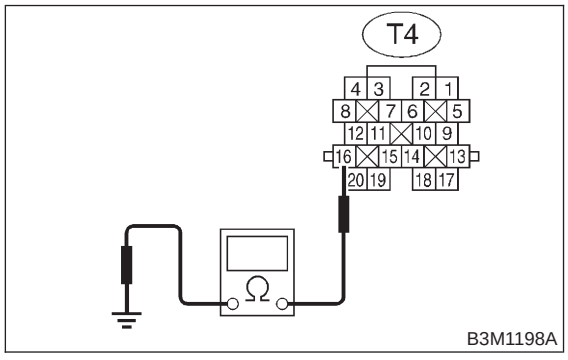
DIAGNOSIS:
Output signal circuit of duty solenoid C is open or shorted.
TROUBLE SYMPTOM:
Excessive “braking” in tight corners.
WIRING DIAGRAM:



8R1 : CHECK DUTY SOLENOID C GROUND LINE.

1) Turn ignition switch to OFF.
2) Disconnect connector from transmission.
3) Measure resistance between transmission connector and transmission ground.

Connector & terminal
(T4) No. 16 — Chassis ground:

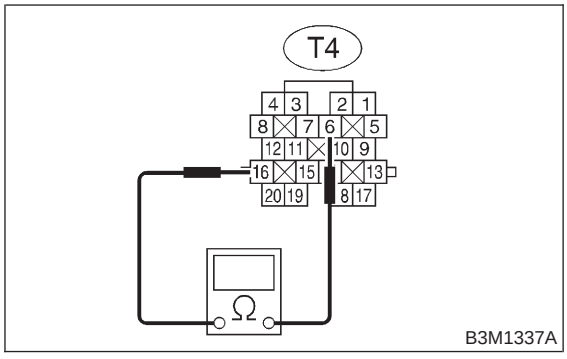


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8R2**.
NO : Repair open circuit in transmission harness.

8R2 : CHECK DUTY SOLENOID C.

Measure resistance between transmission connector and transmission terminals.

Connector & terminal
(T4) No. 6 — No. 16:

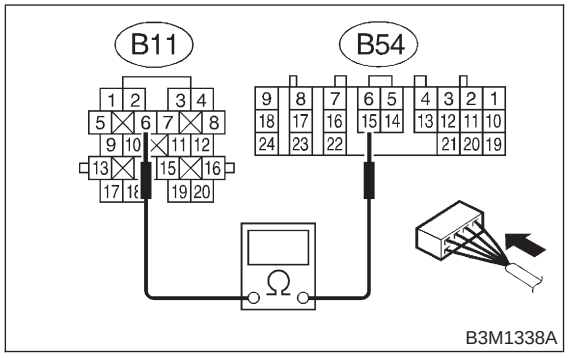


CHECK : ***Is the resistance between 10 and 17 Ω?***
YES : Go to step **8R3**.
NO : Go to step **8R13**.

8R3 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

1) Disconnect connector from TCM.
2) Measure resistance of harness between TCM and transmission connector.

Connector & terminal
(B54) No. 15 — (B11) No. 6:

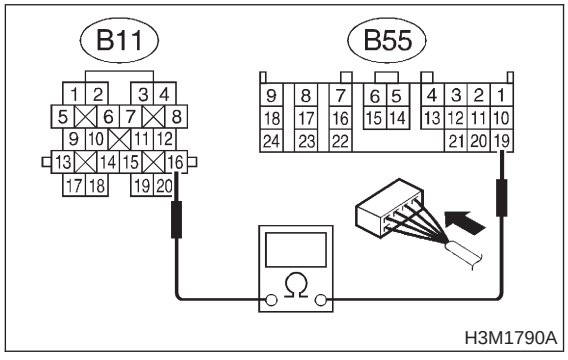


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8R4**.
NO : Repair open circuit in harness between TCM and transmission connector.

8R4 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

Measure resistance harness connector between TCM and transmission connector.

Connector & terminal
(B55) No. 19 — (B11) No. 16:

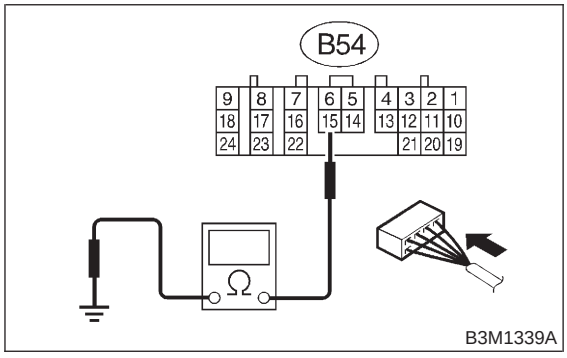


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8R5**.
NO : Repair open circuit in harness between TCM and transmission connector.

8R5 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

Measure resistance harness connector between TCM and chassis ground.

Connector & terminal
(B54) No. 15 — Chassis ground:

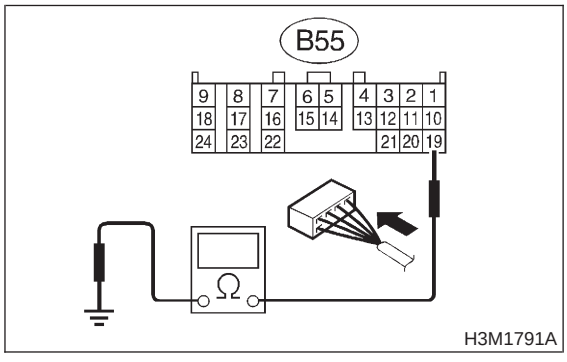


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8R6**.
NO : Repair short circuit in harness between TCM and transmission connector.

8R6 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

Measure resistance harness connector between TCM and chassis ground.

Connector & terminal
(B55) No. 19 — Chassis ground:



CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8R7**.
NO : Repair short circuit in harness between TCM and transmission connector.

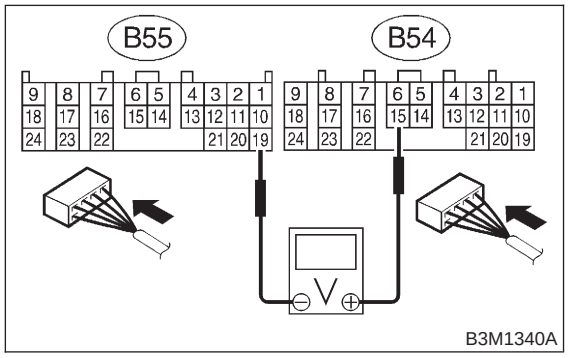
8R7 : PREPARE SUBARU SELECT MONITOR.

CHECK : ***Do you have a Subaru Select Monitor?***
YES : Go to step **8R10**.
NO : Go to step **8R8**.

8R8 : CHECK OUTPUT SIGNAL EMITTED FROM TCM.

1) Connect connectors to TCM and transmission.
2) Turn ignition switch to ON (engine OFF).
3) Throttle is fully closed.
4) Measure voltage between TCM connector terminals.

Connector & terminal
(B54) No. 15 (+) — (B55) No. 19 (−):

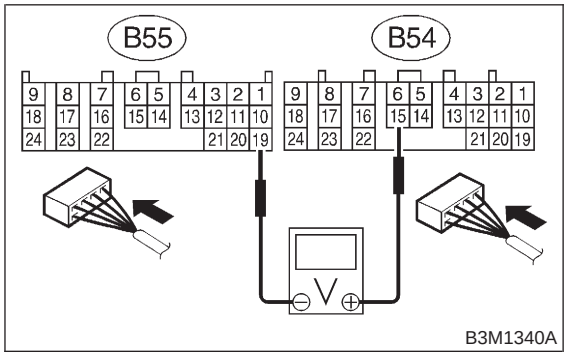


CHECK : ***Is the voltage less than 1 V in "P" range?***
YES : Go to step **8R9**.
NO : Go to step **8R12**.

8R9 : CHECK OUTPUT SIGNAL EMITTED FROM TCM.

Measure voltage between TCM connector terminals.

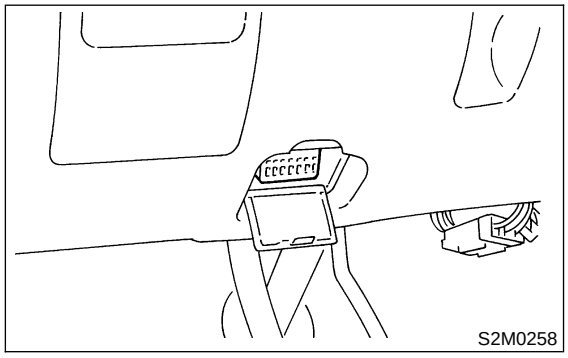
Connector & terminal
(B54) No. 15 (+) — (B55) No. 19 (−):



CHECK : ***Is the voltage between 5 and 7 V in "D" range?***
YES : Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the duty solenoid C and TCM connector.
NO : Go to step **8R12**.

8R10 : CHECK OUTPUT SIGNAL EMITTED FROM TCM USING SUBARU SELECT MONITOR.

1) Connect connectors to TCM and transmission.
2) Connect Subaru Select Monitor to data link connector.



3) Turn ignition switch to ON (engine OFF) and turn Subaru Select Monitor switch to ON.
4) Move selector lever to "D" with throttle fully open (vehicle speed 0 km/h or 0 MPH).
5) Read data of duty solenoid C using Subaru Select Monitor.
● Duty solenoid C is indicated in "%".

CHECK : ***Is the value between 5 and 10%?***
YES : Go to step **8R11**.
NO : Go to step **8R12**.

8R11 : CHECK OUTPUT SIGNAL EMITTED FROM TCM USING SUBARU SELECT MONITOR.

1) Set FWD mode.
2) Throttle fully closed.

CHECK : ***Is the value 95%?***
YES : Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the duty solenoid C and TCM connector.
NO : Go to step **8R12**.

8R12 : CHECK POOR CONTACT.

CHECK : ***Is there poor contact in duty solenoid C circuit?***
YES : Repair poor contact.
NO : Replace TCM. <Ref. to 3-2 [W22A0].>

8R13 : CHECK DUTY SOLENOID C (IN TRANSMISSION).

1) Lift-up the vehicle and place safety stand.

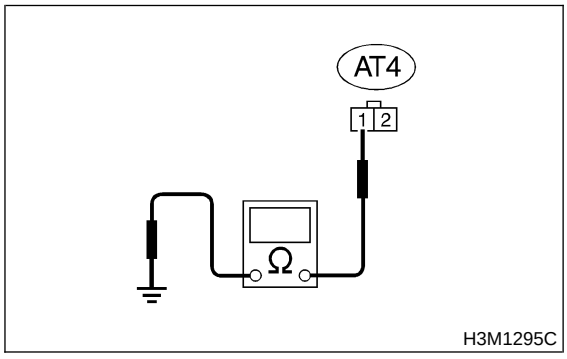
CAUTION:
On AWD models, raise all wheels off ground.

2) Drain automatic transmission fluid.

CAUTION:
Do not drain the automatic transmission fluid until it cools down.

3) Remove extension case, and disconnect connector from duty solenoid C.
4) Measure resistance between duty solenoid C connector and transmission ground.

Connector & terminal
(AT4) No. 1 — Transmission ground:

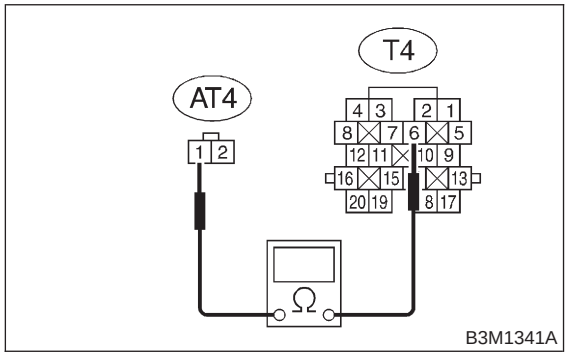


CHECK : ***Is the resistance between 10 and 17 Ω?***
YES : Go to step **8R14**.
NO : Replace duty solenoid C. <Ref. to 3-2 [W5A0].>

8R14 : CHECK HARNESS CONNECTOR BETWEEN DUTY SOLENOID C AND TRANSMISSION.

Measure resistance of harness between duty solenoid C and transmission connector.

Connector & terminal
(T4) No. 6 — (AT4) No. 1:

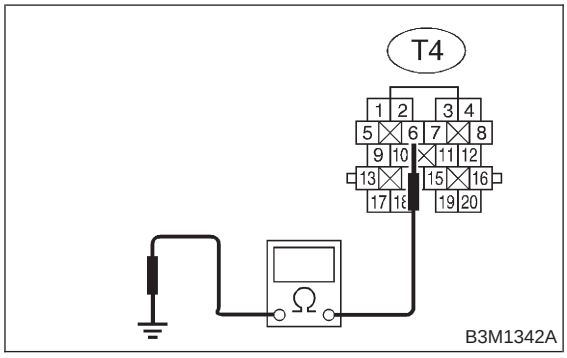


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8R15**.
NO : Repair open circuit in harness between duty solenoid C and transmission connector.

8R15 : CHECK HARNESS CONNECTOR BETWEEN DUTY SOLENOID C AND TRANSMISSION.

Measure resistance of harness between transmission connector and transmission ground.

Connector & terminal
(T4) No. 6 — Transmission ground:

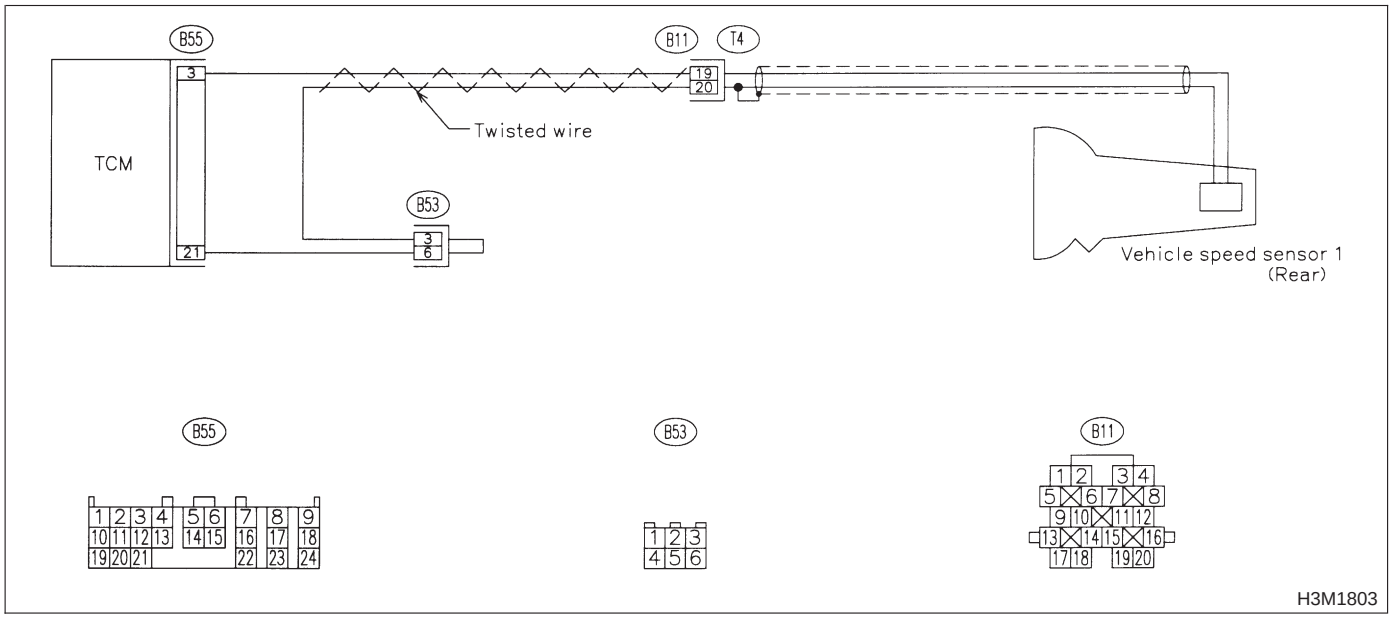


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Even if “AT OIL TEMP” lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or contact in the duty solenoid C and transmission connector.
NO : Repair short circuit in harness between duty solenoid C and transmission connector.

MEMO:

S: TROUBLE CODE 93 — VEHICLE SPEED SENSOR 1 (REAR) —

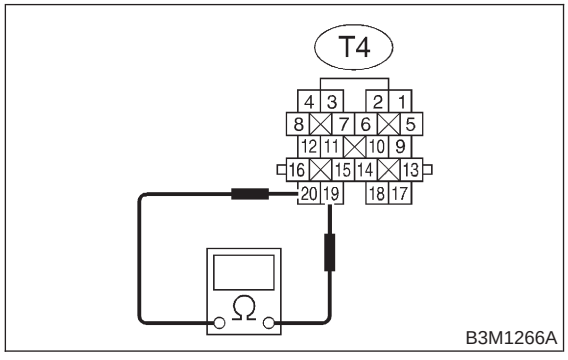
DIAGNOSIS:
Input signal circuit of TCM is open or shorted.
TROUBLE SYMPTOM:
No lock-up or excessive tight corner “braking”.
WIRING DIAGRAM:



8S1 : CHECK VEHICLE SPEED SENSOR 1.

1) Turn ignition switch to OFF.
2) Disconnect connector from transmission.
3) Measure resistance between transmission connector receptacle’s terminals.

Connector & terminal
(T4) No. 19 — No. 20:

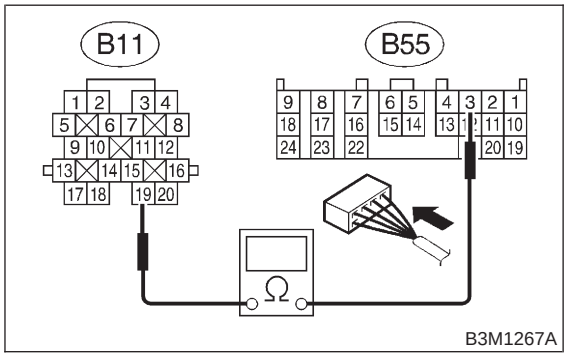


CHECK : ***Is the resistance between 450 and 650 Ω?***
YES : Go to step **8S1**.
NO : Replace transmission harness connector. <Ref. to 3-2 [W11B0].>

8S2 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

1) Disconnect connector from TCM.
2) Measure resistance of harness between TCM and transmission connector.

Connector & terminal
(B55) No. 3 — (B11) No. 19:

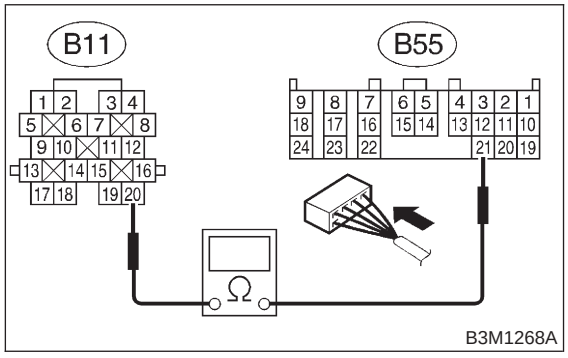


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8S3**.
NO : Repair open circuit in harness between TCM and transmission connector.

8S3 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

Measure resistance of harness between TCM and transmission connector.

Connector & terminal
(B55) No. 21 — (B11) No. 20:

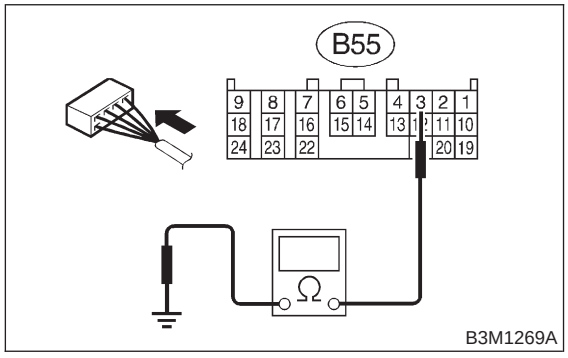


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **8S4**.
NO : Repair open circuit in harness between TCM and transmission, and poor contact in coupling connector.

8S4 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

Measure resistance of harness between TCM and transmission connector.

Connector & terminal
(B55) No. 3 — Chassis ground:

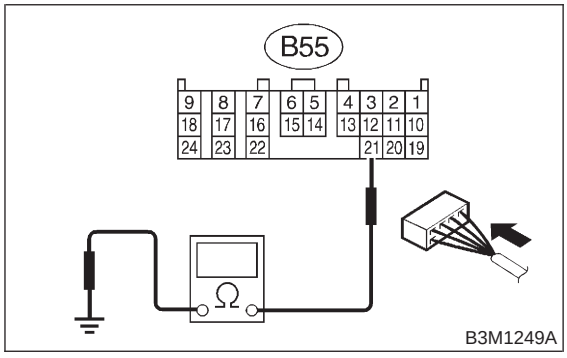


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8S5**.
NO : Repair short circuit in harness between TCM and transmission connector.

8S5 : CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

Measure resistance of harness between TCM and transmission connector.

Connector & terminal
(B55) No. 21 — Chassis ground:



CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **8S6**.
NO : Repair short circuit in harness between TCM and transmission connector.

8S6 : PREPARE OSCILLOSCOPE.

CHECK : ***Do you have oscilloscope?***
YES : Go to step **8S10**.
NO : Go to step **8S7**.

8S7 : PREPARE SUBARU SELECT MONITOR.

CHECK : ***Do you have a Subaru Select Monitor?***
YES : Go to step **8S9**.
NO : Go to step **8S8**.

8S8 : CHECK INPUT SIGNAL FOR TCM.

1) Connect connectors to TCM and transmission.
2) Lift-up or raise the vehicle and place safety stands.

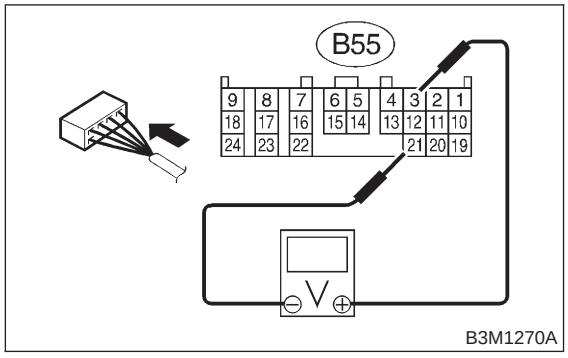
CAUTION:
On AWD models, raise all wheels off floor.

3) Start the engine and set vehicle in 20 km/h (12 MPH) condition.

NOTE:
The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to 4-4 [T6D2].>

4) Measure voltage between TCM connector terminals.

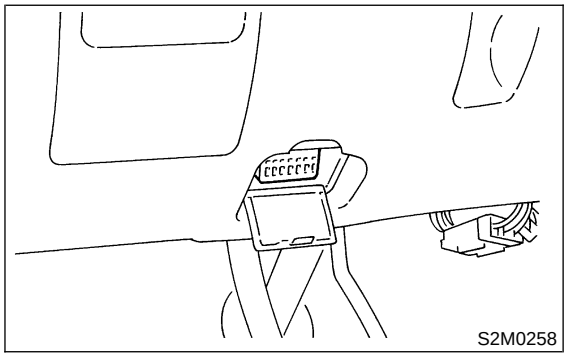
Connector & terminal
(B55) No. 3 (+) — No. 21 (−):



CHECK : ***Is the voltage more than AC 1 V?***
YES : Even if “AT OIL TEMP” lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM and transmission.
NO : Go to step **8S11**.

8S9 : CHECK INPUT SIGNAL FOR TCM USING SUBARU SELECT MONITOR.

1) Connect connectors to TCM and transmission.
2) Connect Subaru Select Monitor to data link connector.



3) Lift-up or raise the vehicle and place safety stands.

CAUTION:
On AWD models, raise all wheels off floor.

4) Turn ignition switch to ON and turn Subaru Select Monitor switch to ON.
5) Start the engine.
6) Read data of vehicle speed using Subaru Select Monitor.
● Compare speedometer with Subaru Select Monitor indications.
● Vehicle speed is indicated in “km/h” or “MPH”.
7) Slowly increase vehicle speed to 60 km/h or 37 MPH.

NOTE:
The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to 4-4 [T6D2].>

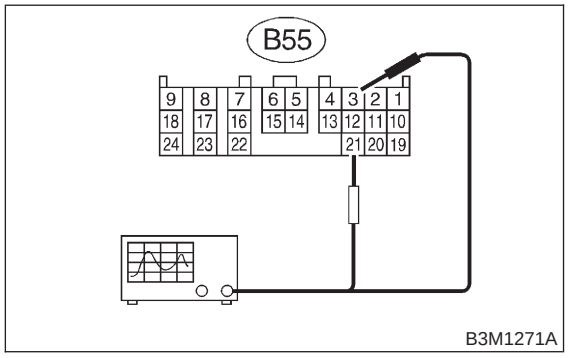
CHECK : ***Does the speedometer indication increase as the Subaru Select Monitor data increases?***
YES : Even if “AT OIL TEMP” lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM and transmission.
NO : Go to step **8S11**.

8S10 : CHECK INPUT SIGNAL FOR TCM USING OSCILLOSCOPE.

1) Connect connectors to TCM and transmission.
2) Lift-up or raise the vehicle and place safety stands.

CAUTION:
On AWD models, raise all wheels off floor.

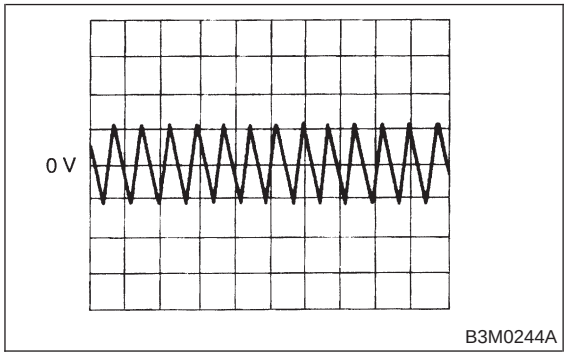
3) Set oscilloscope to TCM connector terminals.
Positive prove; (B55) No. 3
Earth lead; (B55) No. 21



4) Start the engine and set vehicle in 20 km/h (12 MPH) condition.

NOTE:
The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to 4-4 [T6D2].>

5) Measure signal voltage indicated on oscilloscope.



CHECK : ***Is the signal voltage more than AC 1 V?***

YES : Even if “AT OIL TEMP” lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM and transmission.

NO : Go to step **8S11**.

8S11 : CHECK POOR CONTACT.

CHECK : ***Is there poor contact in vehicle speed sensor 1 circuit?***

YES : Repair poor contact.

NO : Replace TCM. <Ref. to 3-2 [W22A0].>

9. Diagnostic Chart with Select Monitor

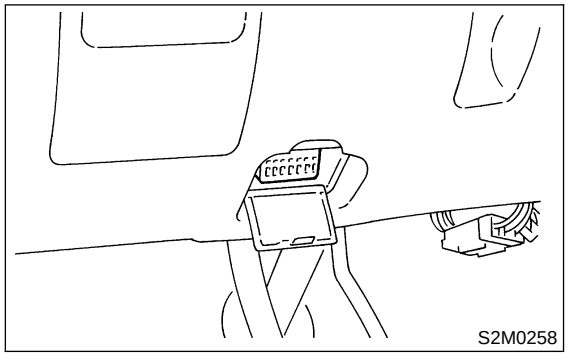
A: BASIC DIAGNOSTIC CHART

If no trouble codes appear in the on-board diagnostics operation (although problems have occurred or are occurring), measure performance characteristics of sensors, actuators, etc., in the Subaru Select Monitor and compare with the "basic data" to determine the cause of problems.
1) Trouble occurs.
2) No trouble codes appear in on-board diagnostics operation.
3) Measure each item using Subaru Select Monitor.
4) Compare measured values with basic data.
5) Determine item which is outside basic data specifications.
6) Check sensor and actuator affected.

B: BATTERY VOLTAGE

9B1 : CHECK BATTERY VOLTAGE.

1) Turn ignition switch to OFF.
2) Connect Subaru Select Monitor to data link connector.



3) Start the engine, and engine idling after warm-up.
4) Turn Subaru Select Monitor switch to ON.
5) Read data of battery voltage using Subaru Select Monitor.
● Battery voltage applied to TCM.

CHECK : ***Is voltage between 10 and 16 V?***
YES : Go to step VEHICLE SPEED SENSOR 1. <Ref. to 3-2 [T9C0].>
NO : Check battery voltage and specification of electrolyte, regulating voltage under no loads and generator (as a single unit).

C: CHECK VEHICLE SPEED SENSOR 1.

9C1 : CHECK VEHICLE SPEED SENSOR 1.

1) Lift-up the vehicle and place safety stand.

CAUTION:
On AWD models, raise all wheels off ground.

2) Read data of vehicle speed #1 using Subaru Select Monitor.
● Compare speedometer with Subaru Select Monitor indications.
● Vehicle speed is indicated in "MPH" or "km/h".

NOTE:
The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to 4-4 [T6D2].>

CHECK : ***Does the speedometer indication increase as the Subaru Select Monitor data increases?***
YES : Go to step VEHICLE SPEED SENSOR 2. <Ref. to 3-2 [T9D0].>
NO : Check vehicle speed sensor 1 circuit. <Ref. to 3-2 [T8S0].>

D: CHECK VEHICLE SPEED SENSOR 2.

9D1 : CHECK VEHICLE SPEED SENSOR 2.

Read data of vehicle speed #2 using Subaru Select Monitor.
● Compare speedometer with Subaru Select Monitor indications.
● Vehicle speed is indicated in "MPH" or "km/h".

NOTE:
The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to 4-4 [T6D2].>

CHECK : ***Does the speedometer indication increase as the Subaru Select Monitor data increases?***
YES : Go to step ENGINE SPEED SIGNAL. <Ref. to 3-2 [T9E0].>
NO : Check vehicle speed sensor 2 circuit. <Ref. to 3-2 [T8G0].>

E: CHECK ENGINE SPEED SIGNAL.

9E1 : CHECK ENGINE SPEED SIGNAL.

1) Turn A/C switch to OFF (with A/C models).
2) Warm-up the engine until engine coolant temperature is above 80°C (176°F).

NOTE:
If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature.

3) Read data of engine speed using Subaru Select Monitor.
- Engine speed is indicated in “rpm”.

NOTE:
The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to 4-4 [T6D2].>

CHECK : ***Does the tachometer revolution increase as the Subaru Select Monitor revolution data increases?***
YES : Go to step ATF TEMPERATURE SENSOR. <Ref. to 3-2 [T9F0].>
NO : Check engine speed signal circuit. <Ref. to 3-2 [T8C0].>

F: CHECK ATF TEMPERATURE SENSOR.

9F1 : CHECK AT OIL TEMP WARNING LIGHT.

CHECK : ***Does the AT OIL TEMP warning light remain on 2 seconds after the engine has been started?***
YES : Go to step **9F2**.
NO : Check ATF temperature sensor and TCM circuit. <Ref. to 3-2 [T8E0].>

9F2 : CHECK ATF TEMPERATURE SENSOR.

1) Read data of ATF temperature using Subaru Select Monitor.
- ATF temperature is indicated in “°F” or “°C”.

2) Warm-up the transmission until ATF temperature is above 80°C (176°F).

NOTE:
If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature.

3) Turn ignition switch to ON (engine OFF).

CHECK : ***Does the ATF temperature change from 80°C (176°F)?***
YES : Go to step THROTTLE POSITION SENSOR. <Ref. to 3-2 [T9G0].>
NO : Check ATF temperature sensor circuit. <Ref. to 3-2 [T8E0].>

G: CHECK THROTTLE POSITION SENSOR.

9G1 : CHECK INPUT SIGNAL FOR TCM.

Read data of throttle position sensor using Subaru Select Monitor.
- Throttle position sensor input signal is indicated.

CHECK : ***Is voltage between 0.3 and 0.7 V when the accelerator pedal is completely released?***
YES : Go to step **9G2**.
NO : Check throttle position sensor circuit. <Ref. to 3-2 [T8F0].>

9G2 : CHECK INPUT SIGNAL FOR TCM.

CHECK : ***Is voltage between 4.4 and 4.8 V when the accelerator pedal is completely depressed?***
YES : Go to step **9G3**.
NO : Check throttle position sensor circuit. <Ref. to 3-2 [T8F0].>

9G3 : CHECK INPUT SIGNAL FOR TCM.

CHECK : ***Does voltage decrease smoothly when the accelerator pedal is fully depressed and then fully released?***

YES : Go to step GEAR POSITION. <Ref. to 3-2 [T9H0].>

NO : Check throttle position sensor circuit. <Ref. to 3-2 [T8F0].>

H: CHECK GEAR POSITION.

9H1 : CHECK GEAR POSITION.

1) Lift-up the vehicle and place safety stand.

CAUTION:
On AWD models, raise all wheels off ground.

2) Start the engine.
3) Move select lever to “D”, and drive vehicle.
4) Read data of gear position using Subaru Select Monitor.
- Gear position is indicated.

NOTE:
The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to 4-4 [T6D2].>

CHECK : ***Does the transmission gear correspond to the gear which is shown on display?***

YES : Go to step LINE PRESSURE DUTY. <Ref. to 3-2 [T9I0].>

NO : Check shift solenoid 1 and shift solenoid 2 signal circuit. <Ref. to 3-2 [T8K0].> and <Ref. to 3-2 [T8L0].>

I: CHECK LINE PRESSURE DUTY.

9I1 : CHECK OUTPUT SIGNAL EMITTED FROM TCM.

1) Warm-up the transmission until ATF temperature is above 80°C (176°F).

NOTE:
If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature.

2) Stop the engine and turn ignition switch to ON (engine OFF).
3) Move selector lever to “N”.
4) Read data of line pressure duty ratio using Subaru Select Monitor.
- Line pressure duty is indicated in “%”.

CHECK : ***Does the Subaru Select Monitor indicate 100% when the accelerator pedal is completely released?***

YES : Go to step **9I2**.

NO : Go to step **9I4**.

9I2 : CHECK OUTPUT SIGNAL EMITTED FROM TCM.

CHECK : ***Does the Subaru Select Monitor indicate between 10 and 20% when the accelerator pedal is completely depressed?***

YES : Go to step **9I3**.

NO : Go to step **9I4**.

9I3 : CHECK OUTPUT SIGNAL EMITTED FROM TCM.

CHECK : ***Does the Subaru Select Monitor change smoothly when the accelerator pedal is fully depressed and then fully released?***

YES : Go to step LOCK-UP DUTY. <Ref. to 3-2 [T9J0].>

NO : Go to step **9I4**.

9I4 : CHECK THROTTLE POSITION SENSOR.

NOTE:
For the diagnostics procedure on throttle position sensor circuit, <Ref. to 3-2 [T9G0].>.

CHECK : ***Is there any trouble in throttle position sensor circuit?***
YES : Repair or replace throttle position sensor circuit, <Ref. to 3-2 [T8F0].>.
NO : Go to step **9I5**.

9I5 : CHECK ENGINE SPEED SIGNAL.

NOTE:
For the diagnostics procedure on engine speed signal circuit, <Ref. to 3-2 [T9E0].>.

CHECK : ***Is there any trouble in engine speed signal circuit?***
YES : Repair or replace engine speed signal circuit, <Ref. to 3-2 [T8C0].>.
NO : Go to step **9I6**.

9I6 : CHECK ATF TEMPERATURE SENSOR.

NOTE:
For the diagnostics procedure on ATF temperature sensor circuit, <Ref. to 3-2 [T9F1].>.

CHECK : ***Is there any trouble in ATF temperature sensor circuit?***
YES : Repair or replace ATF temperature sensor circuit, <Ref. to 3-2 [T8E0].>.
NO : Go to step **9I7**.

9I7 : CHECK INHIBITOR SWITCH.

1) Turn ignition switch and Subaru Select Monitor to ON.
2) Read data of range switch using Subaru Select Monitor.
- Range switch is indicated in ON ⇔ OFF.

CHECK : ***When each range is selected, does LED of the range switch on Subaru Select Monitor light up?***
YES : Go to step LOCK-UP DUTY. <Ref. to 3-2 [T9J0].>
NO : Check inhibitor switch circuit. <Ref. to 3-2 [T9T0].>

J: CHECK LOCK-UP DUTY.

9J1 : CHECK OUTPUT SIGNAL EMITTED FROM TCM.

Read data of lock-up duty ratio using Subaru Select Monitor.
- Lock-up duty ratio is indicated in “%”.

CHECK : ***Does the Subaru Select Monitor indicate 5%?***
YES : Go to step **9J2**.
NO : Go to step **9J3**.

9J2 : CHECK OUTPUT SIGNAL EMITTED FROM TCM.

Move selector lever to “D” and slowly increase vehicle speed to 75 km/h (47 MPH).

NOTE:
The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to 4-4 [T6D2].>

CHECK : ***Does the Subaru Select Monitor indicate 95%?***
YES : Go to step TRANSFER DUTY RATIO. <Ref. to 3-2 [T9K0].>
NO : Go to step **9J3**.

9J3 : CHECK THROTTLE POSITION SENSOR.

NOTE:
For the diagnostics procedure on throttle position sensor circuit, <Ref. to 3-2 [T9G0].>.

CHECK : ***Is there any trouble in throttle position sensor circuit?***
YES : Repair or replace throttle position sensor circuit, <Ref. to 3-2 [T8F0].>.
NO : Go to step **9J4**.

9J4 : CHECK VEHICLE SPEED SENSOR 1.

NOTE:
For the diagnostics procedure on vehicle speed sensor 1 circuit, <Ref. to 3-2 [T9C0].>.

CHECK : ***Is there any trouble in vehicle speed sensor 1 circuit?***
YES : Repair or replace vehicle speed sensor 1 circuit, <Ref. to 3-2 [T8S0].>.
NO : Go to step **9J5**.

9J5 : CHECK VEHICLE SPEED SENSOR 2.

NOTE:
For the diagnostics procedure on vehicle speed sensor 2 circuit, <Ref. to 3-2 [T9D0].>.

CHECK : ***Is there any trouble in vehicle speed sensor 2 circuit?***
YES : Repair or replace vehicle speed sensor 2 circuit, <Ref. to 3-2 [T8G0].>.
NO : Go to step **9J6**.

9J6 : CHECK ENGINE SPEED SIGNAL.

NOTE:
For the diagnostics procedure on engine speed signal circuit, <Ref. to 3-2 [T9E0].>.

CHECK : ***Is there any trouble in engine speed signal circuit?***
YES : Repair or replace engine speed signal circuit, <Ref. to 3-2 [T8C0].>.
NO : Go to step **9J7**.

9J7 : CHECK INHIBITOR SWITCH.

Read data of range switch using Subaru Select Monitor.
- Range switch is indicated in ON ⇔ OFF.

CHECK : ***When each range is selected, does LED of the range switch on Subaru Select Monitor light up?***
YES : Go to step TRANSFER DUTY. <Ref. to 3-2 [T9K0].>
NO : Check inhibitor switch circuit. <Ref. to 3-2 [T9T0].>

K: CHECK TRANSFER DUTY.

9K1 : CHECK OUTPUT SIGNAL EMITTED FROM TCM.

1) Turn ignition switch to ON (engine OFF).
2) Move selector lever to “D”.
3) Read data of transfer duty ratio using Subaru Select Monitor.
- Transfer duty ratio is indicated in “%”.

CHECK : ***Does the duty ratio change in response to the depress-release motion of the accelerator pedal?***
YES : Go to step **9K2**.
NO : Go to step **9K3**.

9K2 : CHECK OUTPUT SIGNAL EMITTED FROM TCM.

1) Turn ignition switch to OFF.
2) Set FWD mode.
3) Turn ignition switch to ON (engine OFF).

CHECK : ***Does the Subaru Select Monitor indicate 95%?***
YES : Go to step THROTTLE POSITION SENSOR POWER SUPPLY. <Ref. to 3-2 [T9L0].>
NO : Go to step **9K3**.

9K3 : CHECK THROTTLE POSITION SENSOR.

NOTE:
For the diagnostics procedure on throttle position sensor circuit, <Ref to 3-2 [T9G0].>.

CHECK : ***Is there any trouble in throttle position sensor circuit?***
YES : Repair or replace throttle position sensor circuit, <Ref. to 3-2 [T8F0].>.
NO : Go to step **9K4**.

9K4 : CHECK VEHICLE SPEED SENSOR 1.

NOTE:
For the diagnostics procedure on vehicle speed sensor 1 circuit, <Ref. to 3-2 [T9C0].>.

CHECK : ***Is there any trouble in vehicle speed sensor 1 circuit?***
YES : Repair or replace vehicle speed sensor 1 circuit, <Ref to 3-2 [T8S0].>.
NO : Go to step **9K5**.

9K5 : CHECK VEHICLE SPEED SENSOR 2 CIRCUIT.

NOTE:
For the diagnostics procedure on vehicle speed sensor 2 circuit, <Ref. to 3-2 [T9D0].>.

CHECK : ***Is there any trouble in vehicle speed sensor 2 circuit?***
YES : Repair or replace vehicle speed sensor 2 circuit, <Ref. to 3-2 [T8G0].>.
NO : Go to step **9K6**.

9K6 : CHECK ATF TEMPERATURE SENSOR.

NOTE:
For the diagnostics procedure on ATF temperature sensor circuit, <Ref. to 3-2 [T9F0].>.

CHECK : ***Is there any trouble in ATF temperature sensor circuit?***
YES : Repair or replace ATF temperature sensor circuit, <Ref. to 3-2 [T8E0].>.
NO : Go to step **9K7**.

9K7 : CHECK INHIBITOR SWITCH.

Read data of range switch using Subaru Select Monitor.
● Range switch is indicated in ON ⇔ OFF.

CHECK : ***When each range is selected, does LED of range switch on Subaru Select Monitor light up?***
YES : Go to step **9K8**.
NO : Check inhibitor switch circuit. <Ref. to 3-2 [T9T0].>

9K8 : CHECK ABS SIGNAL.

1) Start the engine, and turn Subaru Select Monitor switch to ON.
2) Read data of ABS signal using Subaru Select Monitor.
● ABS switch is indicated in ON ⇔ OFF.

CHECK : ***Does the LED of ABS switch light up?***
YES : Check ABS signal circuit. <Ref. to 4-4 [T10A0].> and <Ref. to 4-4 [T10U0].>
NO : Go to step THROTTLE POSITION SENSOR POWER SUPPLY. <Ref. to 3-2 [T9L0].>

L: CHECK THROTTLE POSITION SENSOR POWER SUPPLY.

9L1 : CHECK THROTTLE POSITION POWER SUPPLY.

Read data of throttle position sensor power supply using Subaru Select Monitor.
● Throttle position sensor power supply voltage is indicated.

CHECK : ***Is the value fixed between 5.02 and 5.22 V?***
YES : Go to step MASS AIR FLOW SIGNAL. <Ref. to 3-2 [T9M0].>
NO : Check throttle position sensor power supply circuit. <Ref. to 3-2 [T8F0].>

M: CHECK MASS AIR FLOW SIGNAL. (EXCEPT 2200 cc CALIFORNIA SPEC. VEHICLES)

9M1 : CHECK VEHICLE MARKET.

CHECK : ***Is it 2200 cc California spec. vehicle?***
YES : Go to step INTAKE MANIFOLD PRESSURE SIGNAL. <Ref. to 3-2 [T9N0].>
NO : Go to step **9M2**.

9M2 : CHECK INPUT SIGNAL FOR TCM.

1) Start the engine.
2) Warm-up the engine until engine coolant temperature is above 80°C (176°F).

NOTE:
If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature.

3) Engine idling after warm-up.
4) Move selector lever to “N”.
5) Read data of mass air flow signal using Subaru Select Monitor.
● Display shows mass air flow signal value sent from ECM.

CHECK : ***Does voltage change in response to the depress-release motion of the accelerator pedal?***
YES : Go to step **9M3**.
NO : Check mass air flow signal circuit. <Ref. to 3-2 [T8D0].>

9M3 : CHECK ECM.

CHECK : ***Has trouble been eliminated after ECM replacement?***
YES : Replace ECM. <Ref. to 2-7 [W15A0].>
NO : Go to step **9M4**.

9M4 : CHECK TCM.

NOTE:
Install former ECM.

CHECK : ***Has trouble been eliminated after TCM replacement?***
YES : Replace TCM. <Ref. to 3-2 [W22A0].>
NO : Go to step TURBINE SPEED SENSOR. <Ref. to 3-2 [T9O0].>

N: CHECK INTAKE MANIFOLD PRESSURE SIGNAL. (2200 cc CALIFORNIA SPEC. VEHICLES)

9N1 : CHECK INPUT SIGNAL FOR TCM.

1) Start the engine.
2) Warm-up the engine until engine coolant temperature is above 80°C (176°F).

NOTE:
If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature.

3) Engine idling after warm-up.
4) Move selector lever to “N”.
5) Read data of intake manifold pressure signal using Subaru Select Monitor.
● Display shows intake manifold pressure signal value sent from ECM.

CHECK : ***Does voltage change in response to the depress-release motion of the accelerator pedal?***
YES : Go to step **9N2**.
NO : Check intake manifold pressure signal circuit. <Ref. to 3-2 [T8J0].>

9N2 : CHECK ECM.

CHECK : ***Has trouble been eliminated after ECM replacement?***
YES : Replace ECM. <Ref. to 2-7 [W15A0].>
NO : Go to step **9N3**.

9N3 : CHECK TCM.

NOTE:
Install former ECM.

CHECK : ***Has trouble been eliminated after TCM replacement?***
YES : Replace TCM. <Ref. to 3-2 [W22A0].>
NO : Go to step TORQUE CONVERTER TURBINE SPEED SENSOR. <Ref. to 3-2 [T9O0].>

O: CHECK TORQUE CONVERTER TURBINE SPEED SENSOR.

9O1 : CHECK TORQUE CONVERTER TURBINE SPEED SENSOR.

1) Lift-up the vehicle and place safety stand.

CAUTION:
On AWD models, raise all wheels off ground.

2) Read data of torque converter turbine speed sensor using Subaru Select Monitor.
● Compare speedometer with Subaru Select Monitor indications.
● Vehicle speed is indicated in “MPH” or “km/h”.

NOTE:
The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to 4-4 [T6D2].>

CHECK : ***Does the speedometer indication increase as the Subaru Select Monitor data increases?***
YES : Go to step 2-4 BRAKE PRESSURE DUTY. <Ref. to 3-2 [T9P0].>
NO : Check turbine speed sensor circuit. <Ref. to 3-2 [T8H0].>

P: CHECK 2-4 BRAKE PRESSURE DUTY.

9P1 : CHECK OUTPUT SIGNAL EMITTED FROM TCM.

1) Warm-up the transmission until ATF temperature is above 80°C (176°F).

NOTE:
If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature.

2) Stop the engine and turn ignition switch to ON (engine OFF).
3) Move selector lever to "N".
4) Read data of 2-4 brake pressure duty ratio using Subaru Select Monitor.
● 2-4 brake pressure duty is indicated in "%".

CHECK : ***Does the Subaru Select Monitor indicate 100% when the accelerator pedal is completely released?***
YES : Go to step **9P2**.
NO : Go to step **9P4**.

9P2 : CHECK OUTPUT SIGNAL EMITTED FROM TCM.

CHECK : ***Does the Subaru Select Monitor indicate between 10 and 20% when the accelerator pedal is completely depressed?***
YES : Go to step **9P3**.
NO : Go to step **9P4**.

9P3 : CHECK OUTPUT SIGNAL EMITTED FROM TCM.

CHECK : ***Does the Subaru Select Monitor change smoothly when the accelerator pedal is fully depressed and then fully released?***
YES : Go to step FWD SWITCH. <Ref. to 3-2 [T9Q0].>
NO : Go to step **9P4**.

9P4 : CHECK THROTTLE POSITION SENSOR.

NOTE:
For the diagnostics procedure on throttle position sensor circuit, <Ref. to 3-2 [T9G0].>.

CHECK : ***Is there any trouble in throttle position sensor circuit?***
YES : Repair or replace throttle position sensor circuit, <Ref. to 3-2 [T8F0].>.
NO : Go to step **9P5**.

9P5 : CHECK ENGINE SPEED SIGNAL.

NOTE:
For the diagnostics procedure on engine speed signal circuit, <Ref. to 3-2 [T9E0].>.

CHECK : ***Is there any trouble in engine speed signal circuit?***
YES : Repair or replace engine speed signal circuit, <Ref. to 3-2 [T8C0].>.
NO : Go to step **9P6**.

9P6 : CHECK ATF TEMPERATURE SENSOR.

NOTE:
For the diagnostics procedure on ATF temperature sensor circuit, <Ref. to 3-2 [T9F0].>.

CHECK : ***Is there any trouble in ATF temperature sensor circuit?***
YES : Repair or replace ATF temperature sensor circuit, <Ref. to 3-2 [T8E0].>.
NO : Go to step **9P7**.

9P7 : CHECK INHIBITOR SWITCH.

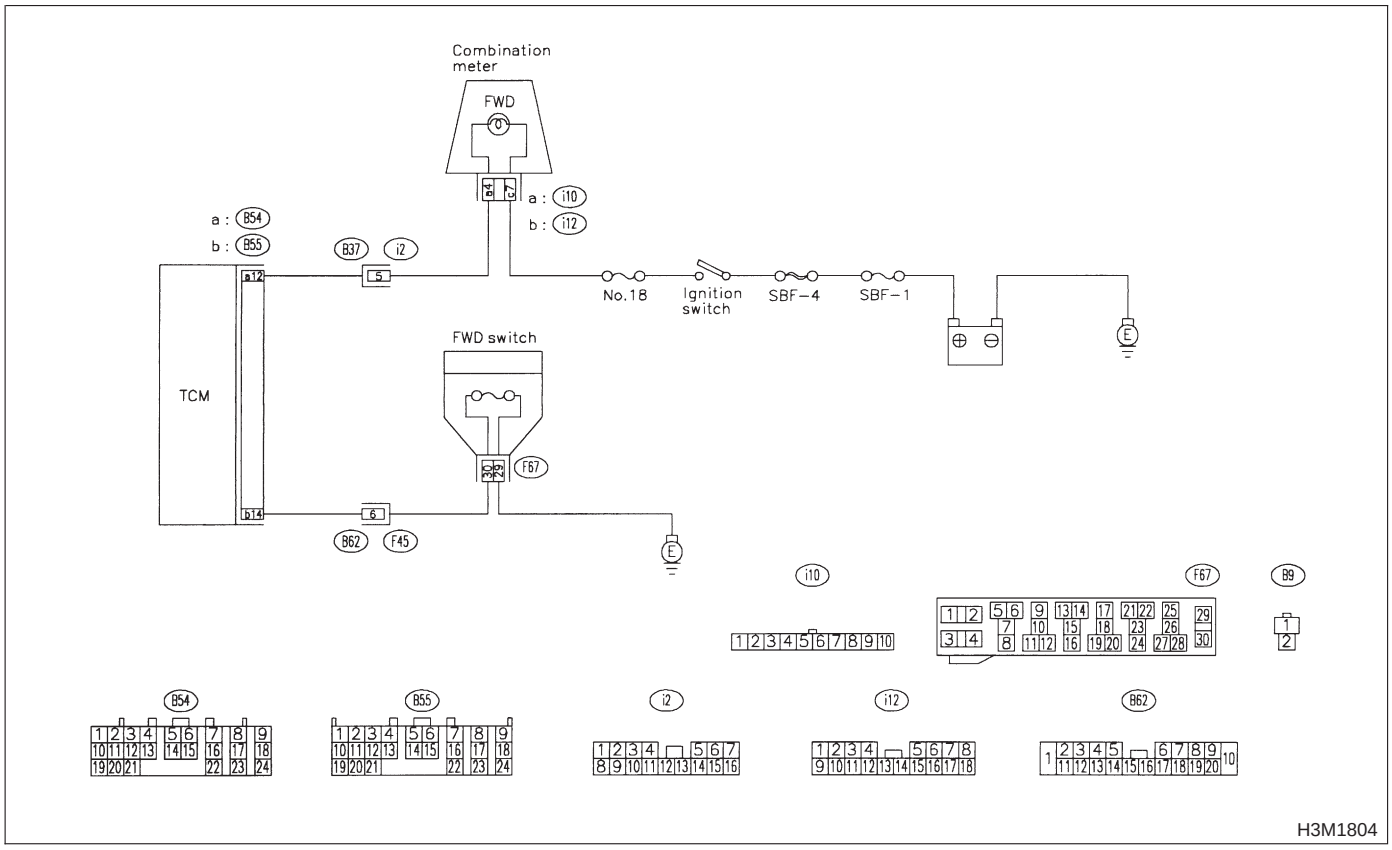
1) Turn ignition switch and Subaru Select Monitor to ON.
2) Read data of range switch using Subaru Select Monitor.
● Range switch is indicated in ON ⇔ OFF.

CHECK : ***When each range is selected, does LED of the range switch on Subaru Select Monitor light up?***
YES : Go to step FWD SWITCH. <Ref. to 3-2 [T9Q0].>
NO : Check inhibitor switch circuit. <Ref. to 3-2 [T9T0].>

Q: CHECK FWD SWITCH.

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

WIRING DIAGRAM:



9Q1 : CHECK FWD SWITCH.

CHECK : ***When fuse is inserted to FWD switch, does LED light up?***

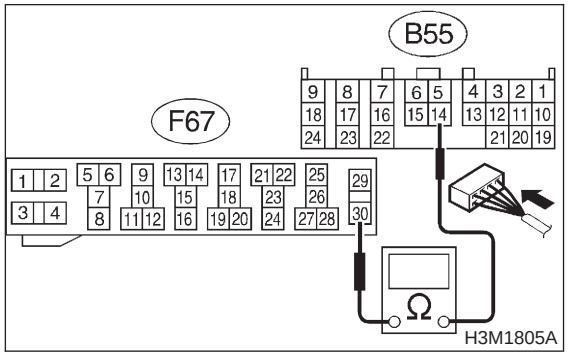
YES : Go to step BRAKE SWITCH. <Ref. to 3-2 [T9R0].>

NO : Go to step **9Q2**.

9Q2 : CHECK HARNESS CONNECTOR BETWEEN TCM AND FWD SWITCH.

1) Turn ignition switch to OFF.
2) Disconnect connector from TCM and FWD switch.
3) Measure resistance of harness between TCM and FWD switch connector.

Connector & terminal
(F67) No. 30 — (B55) No. 14:

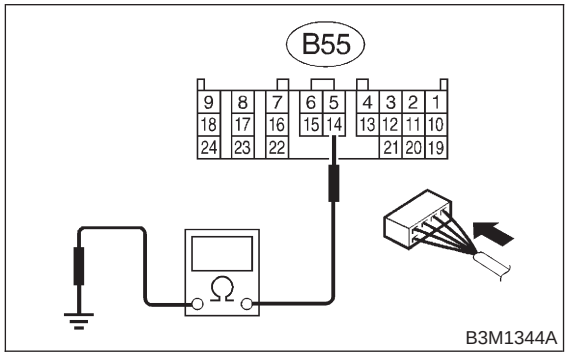


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **9Q3**.
NO : Repair open circuit in harness between TCM and FWD switch connector.

9Q3 : CHECK HARNESS CONNECTOR BETWEEN TCM AND FWD SWITCH.

Measure resistance of harness connector between TCM and body to make sure that circuit does not short.

Connector & terminal
(B55) No. 14 — Chassis ground:

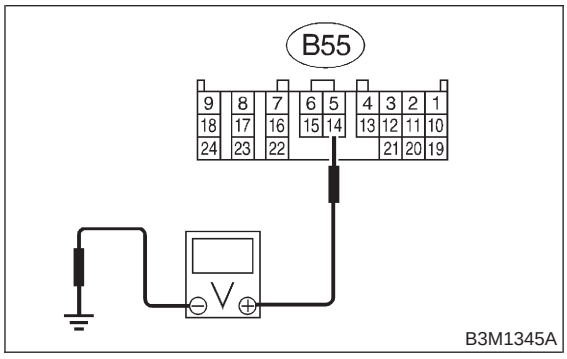


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **9Q4**.
NO : Repair short circuit in harness connector between TCM and chassis ground.

9Q4 : CHECK INPUT SIGNAL FOR TCM.

1) Turn ignition switch to OFF.
2) Connect connector to TCM and FWD switch.
3) Turn ignition switch to ON.
4) Measure signal voltage for TCM while installing the fuse to FWD switch connector.

Connector & terminal
(B55) No. 14 (+) — Chassis ground (−):

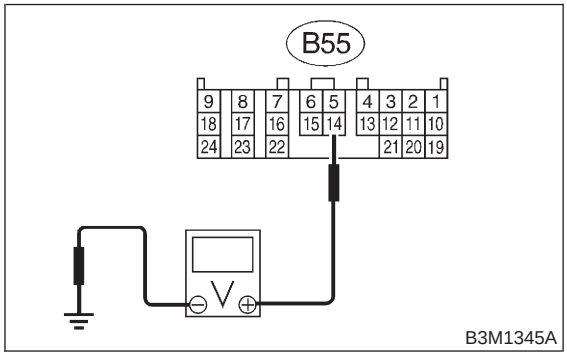


CHECK : ***Is the voltage less than 1 V in FWD switch while installing?***
YES : Go to step **9Q5**.
NO : Go to step **9Q10**.

9Q5 : CHECK INPUT SIGNAL FOR TCM.

Measure signal voltage for TCM while removing the fuse from FWD switch connector.

Connector & terminal
(B55) No. 14 (+) — Chassis ground (−):

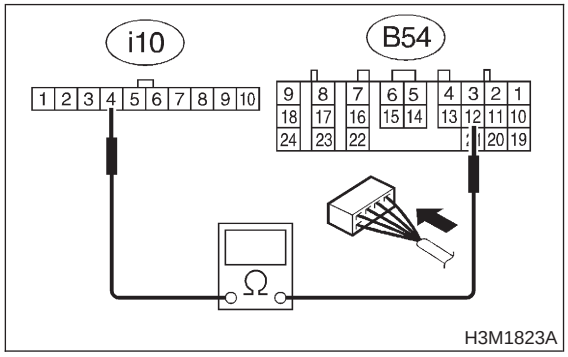


CHECK : ***Is the voltage more than 10 V in FWD switch while removing?***
YES : Go to step **9Q6**.
NO : Replace TCM. <Ref. to 3-2 [W22A0].>

9Q6 : 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 diagnosis connector.

Connector & terminal
(B54) No. 12 — (i10) No. 4:

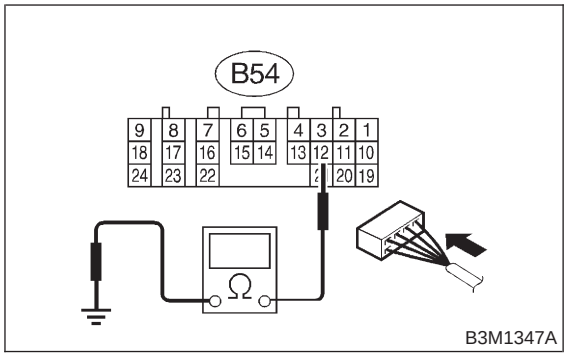


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **9Q7**.
NO : Repair open circuit in harness between TCM and combination meter and poor contact in coupling connector.

9Q7 : CHECK HARNESS CONNECTOR BETWEEN TCM AND COMBINATION METER.

Measure resistance of harness connector between TCM and chassis ground to make sure that circuit does not short.

Connector & terminal
(B54) No. 12 — Chassis ground:

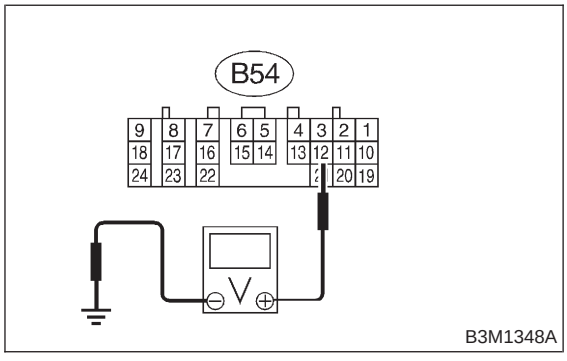


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **9Q8**.
NO : Repair short circuit in harness between TCM and combination meter connector.

9Q8 : CHECK OUTPUT SIGNAL EMITTED FROM TCM.

1) Turn ignition switch to OFF.
2) Connect connector to TCM and combination meter.
3) Turn ignition switch to ON.
4) Measure signal voltage for TCM while installing and removing the fuse to FWD switch connector.

Connector & terminal
(B54) No. 12 — Chassis ground:

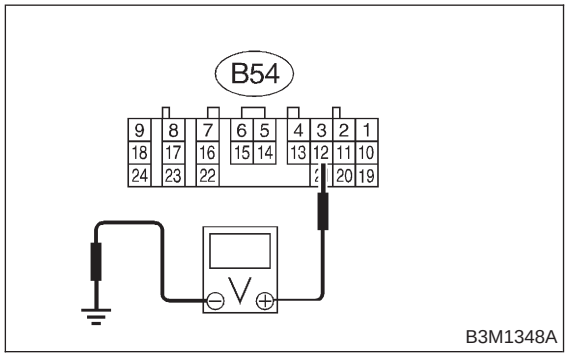


CHECK : ***Is the voltage less than 1 V in FWD switch while installing?***
YES : Go to step **9Q9**.
NO : Go to step **9Q10**.

9Q9 : CHECK OUTPUT SIGNAL EMITTED FROM TCM.

Measure signal voltage for TCM while removing the fuse from FWD switch connector.

Connector & terminal
(B54) No. 12 — Chassis ground:



CHECK : ***Is the voltage more than 10 V in FWD switch while removing?***
YES : Go to step **9Q10**.
NO : Replace TCM. <Ref. to 3-2 [W22A0].>

9Q10 : CHECK POOR CONTACT.

CHECK : ***Is there poor contact in FWD switch circuit?***
YES : Repair poor contact.
NO : Replace TCM. <Ref. to 3-2 [W22A0].>

R: CHECK BRAKE SWITCH.

9R1 : CHECK BRAKE SWITCH.

CHECK : ***When the brake pedal is depressed, does LED light up?***
YES : Go to step ABS SWITCH. <Ref. to 3-2 [T9S0].>
NO : Check brake switch circuit. <Ref. to 2-7 [T10AZ0].>

S: CHECK ABS SWITCH.

9S1 : CHECK ABS SWITCH.

CHECK : ***Does the LED of ABS switch light up?***
YES : Check ABS switch circuit. <Ref. to 4-4 [T10A0].> and <Ref. to 4-4 [T10U0].>
NO : Go to step CRUISE CONTROL SWITCH. <Ref. to 3-2 [T9T0].>

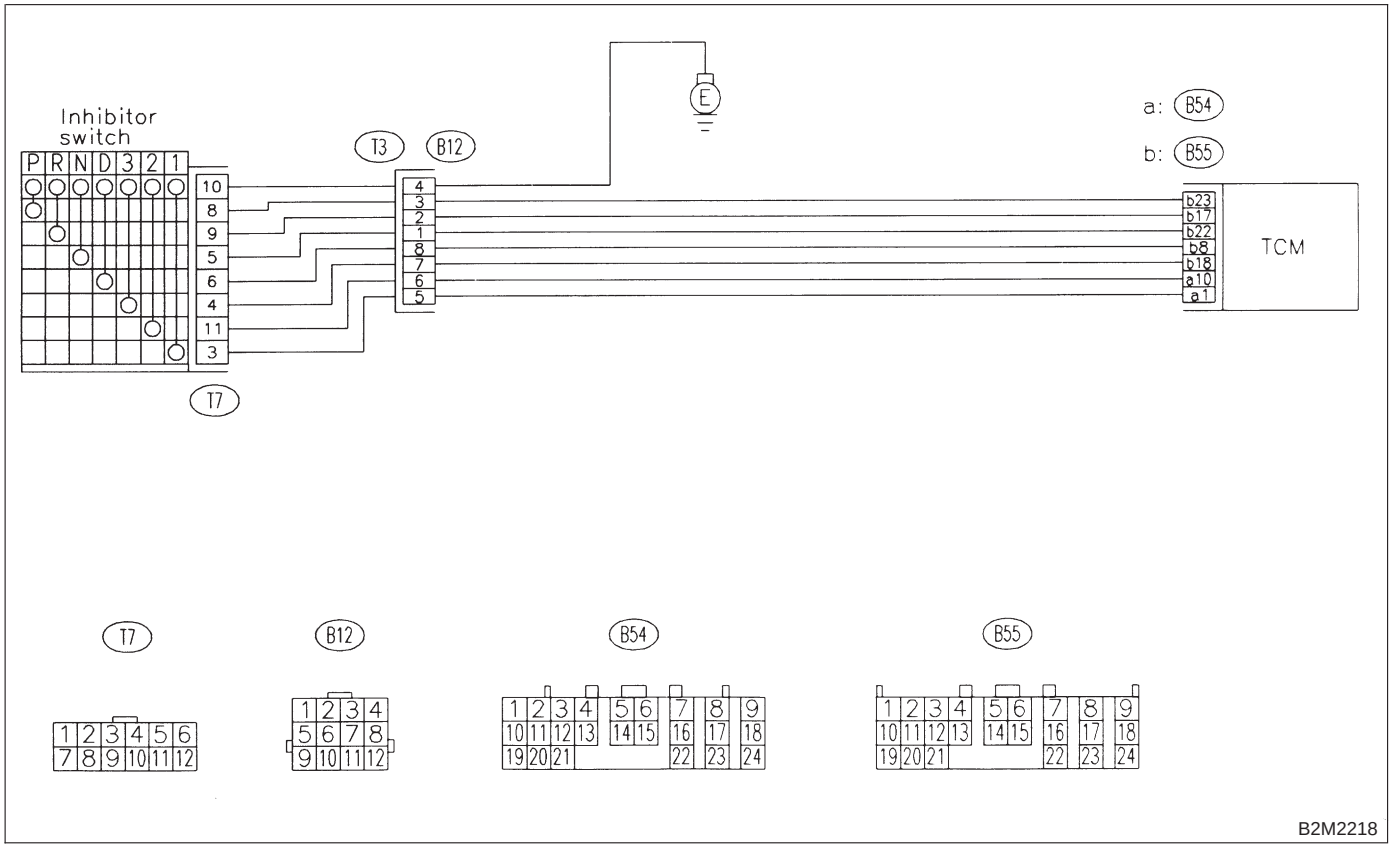
T: CHECK CRUISE CONTROL SWITCH.

9T1 : CHECK CRUISE CONTROL SWITCH.

CHECK : ***When cruise control is set, does LED light up?***
YES : Go to step “N/P” RANGE SWITCH. <Ref. to 3-2 [T9U0].>
NO : Check cruise control. <Ref. to 6-2 [W1100].>

U: CHECK “N/P” RANGE SWITCH.

DIAGNOSIS:
Input signal circuit of “P” or “N” range is open or shorted.
WIRING DIAGRAM:



9U1 : CHECK “P” RANGE SWITCH.

CHECK : ***When “P” range is selected, does LED light up?***
YES : Go to step **9U2**.
NO : Go to step **9U3**.

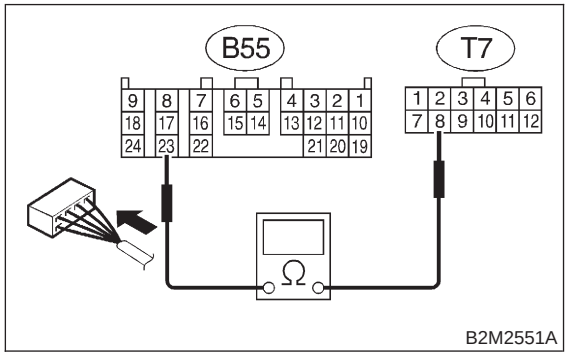
9U2 : CHECK “N” RANGE SWITCH.

CHECK : ***When the “N” range is selected, does LED light up?***
YES : Go to step “R” RANGE SWITCH. <Ref. to 3-2 [T9V0].>
NO : Go to step **9U5**.

9U3 : CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.

1) Turn ignition switch to OFF.
2) Disconnect connectors from TCM and inhibitor switch.
3) Measure resistance of harness between TCM and inhibitor switch connector.

Connector & terminal
(B55) No. 23 — (T7) No. 8:

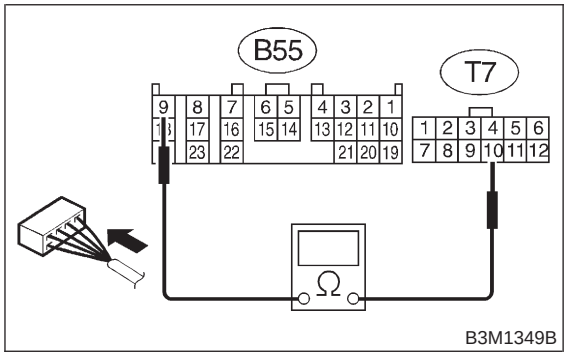


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **9U4**.
NO : Repair open circuit in harness between TCM and inhibitor switch connector, and poor contact in coupling connector.

9U4 : CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.

Measure resistance of harness between inhibitor switch connector and chassis ground.

Connector & terminal
(T7) No. 10 — (B55) No. 9:

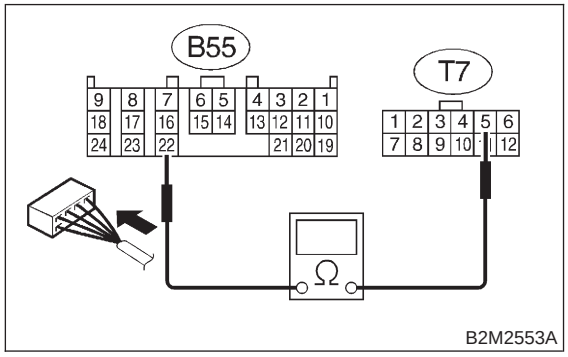


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **9U7**.
NO : Repair open circuit in harness between TCM and inhibitor switch connector, and poor contact in coupling connector.

9U5 : CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.

1) Turn ignition switch to OFF.
2) Disconnect connectors from TCM and inhibitor switch.
3) Measure resistance of harness between TCM and inhibitor switch connector.

Connector & terminal
(B55) No. 22 — (T7) No. 5:

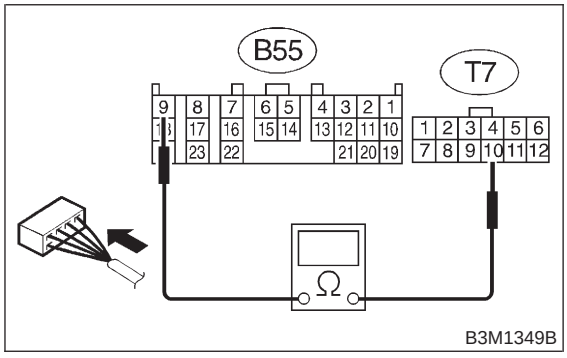


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **9U6**.
NO : Repair open circuit in harness between TCM and inhibitor switch connector, and poor contact in coupling connector.

9U6 : CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.

Measure resistance of harness between inhibitor switch connector chassis ground.

Connector & terminal
(T7) No. 10 — (B55) No. 9:

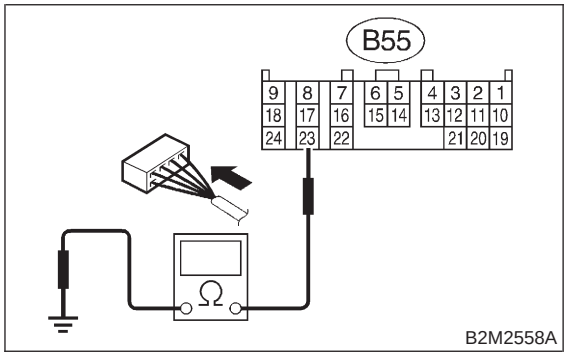


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **9U8**.
NO : Repair open circuit in harness between TCM and inhibitor switch connector, and poor contact in coupling connector.

9U7 : CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.

Measure resistance of harness between TCM and chassis ground.

Connector & terminal
(B55) No. 23 — Chassis ground:

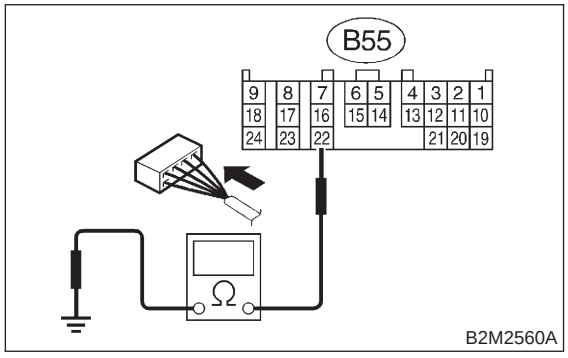


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **9U9**.
NO : Repair ground short circuit in harness between TCM and inhibitor switch connector.

9U8 : CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.

Measure resistance of harness between TCM and chassis ground.

Connector & terminal
(B55) No. 22 — Chassis ground:

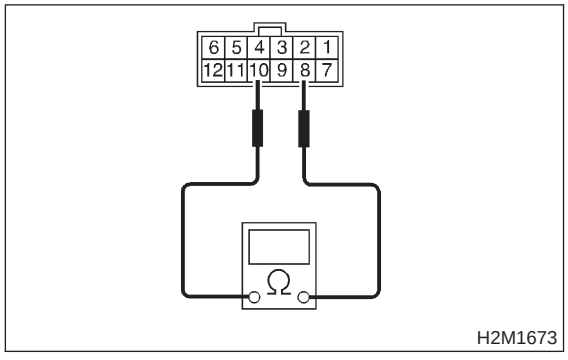


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **9U11**.
NO : Repair ground short circuit in harness between TCM and inhibitor switch connector.

9U9 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals.

Terminals
No. 8 — No. 10:

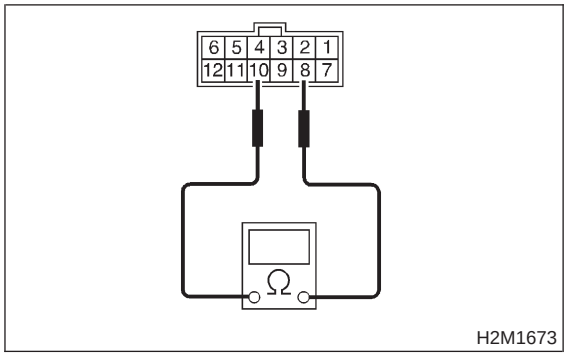


CHECK : ***Is the resistance less than 1 Ω in "P" range?***
YES : Go to step **9U10**.
NO : Go to step **9U18**.

9U10 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals.

Terminals
No. 8 — No. 10:

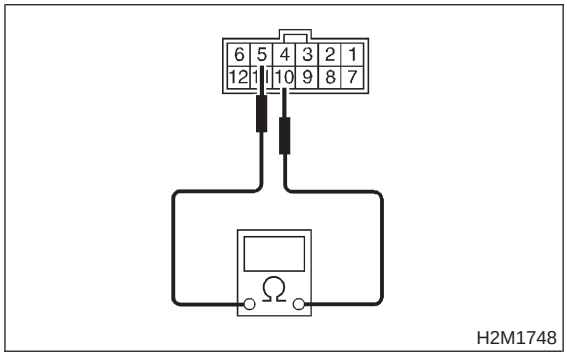


CHECK : ***Is the resistance more than 1 MΩ in other ranges?***
YES : Go to step **9U13**.
NO : Go to step **9U18**.

9U11 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals.

Terminals
No. 5 — No. 10:

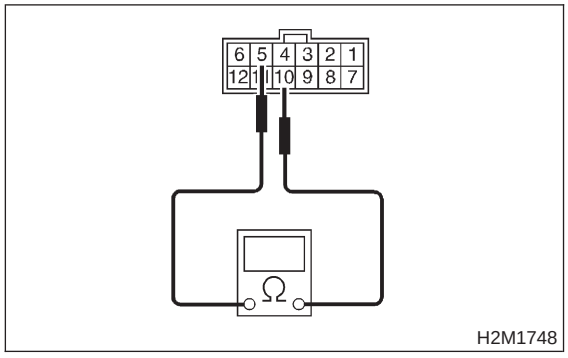


CHECK : ***Is the resistance less than 1 Ω in "N" range?***
YES : Go to step **9U12**.
NO : Go to step **9U18**.

9U12 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals.

Terminals
No. 5 — No. 10:

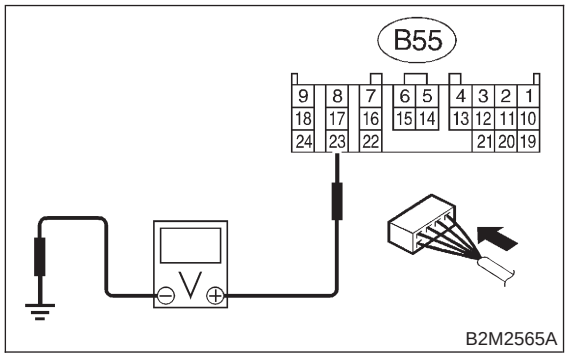


CHECK : ***Is the resistance more than 1 MΩ in other ranges?***
YES : Go to step **9U15**.
NO : Go to step **9U18**.

9U13 : CHECK INPUT SIGNAL FOR TCM.

1) Turn ignition switch to OFF.
2) Connect connector to TCM and inhibitor switch.
3) Turn ignition switch to ON.
4) Measure voltage between TCM and chassis ground.

Connector & terminal
(B55) No. 23 (+) — Chassis ground (–):

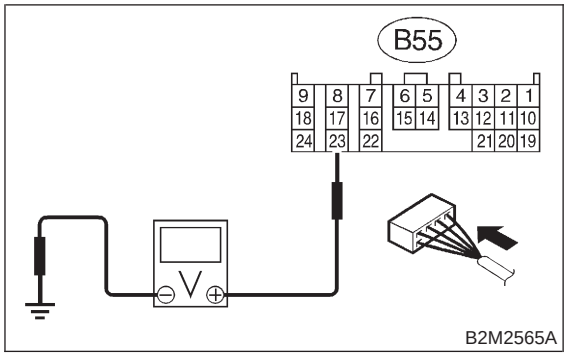


CHECK : ***Is the voltage less than 1 V in "P" range?***
YES : Go to step **9U14**.
NO : Go to step **9U17**.

9U14 : CHECK INPUT SIGNAL FOR TCM.

Measure voltage between TCM and chassis ground.

Connector & terminal
(B55) No. 23 (+) — Chassis ground (–):

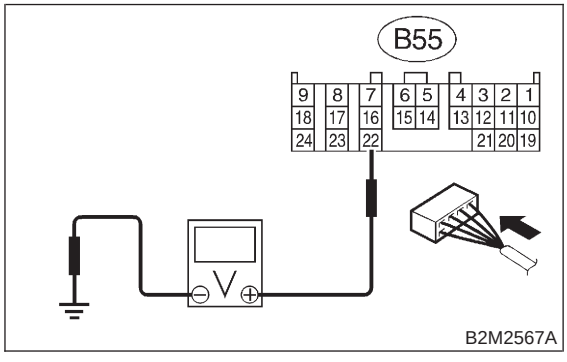


CHECK : ***Is the voltage more than 8 V in other ranges?***
YES : Go to step **9U17**.
NO : Go to step **9U18**.

9U15 : CHECK INPUT SIGNAL FOR TCM.

1) Turn ignition switch to OFF.
2) Connect connector to TCM and inhibitor switch.
3) Turn ignition switch to ON.
4) Measure voltage between TCM and chassis ground.

Connector & terminal
(B55) No. 22 (+) — Chassis ground (–):

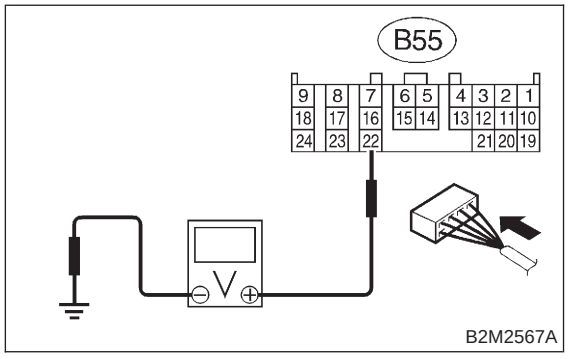


CHECK : ***Is the voltage less than 1 V in "N" range?***
YES : Go to step **9U16**.
NO : Go to step **9U17**.

9U16 : CHECK INPUT SIGNAL FOR TCM.

Measure voltage between TCM and chassis ground.

Connector & terminal
(B55) No. 22 (+) — Chassis ground (–):



CHECK : ***Is the voltage more than 8 V in other ranges?***
YES : Go to step **9U17**.
NO : Go to step **9U18**.

9U17 : CHECK POOR CONTACT.

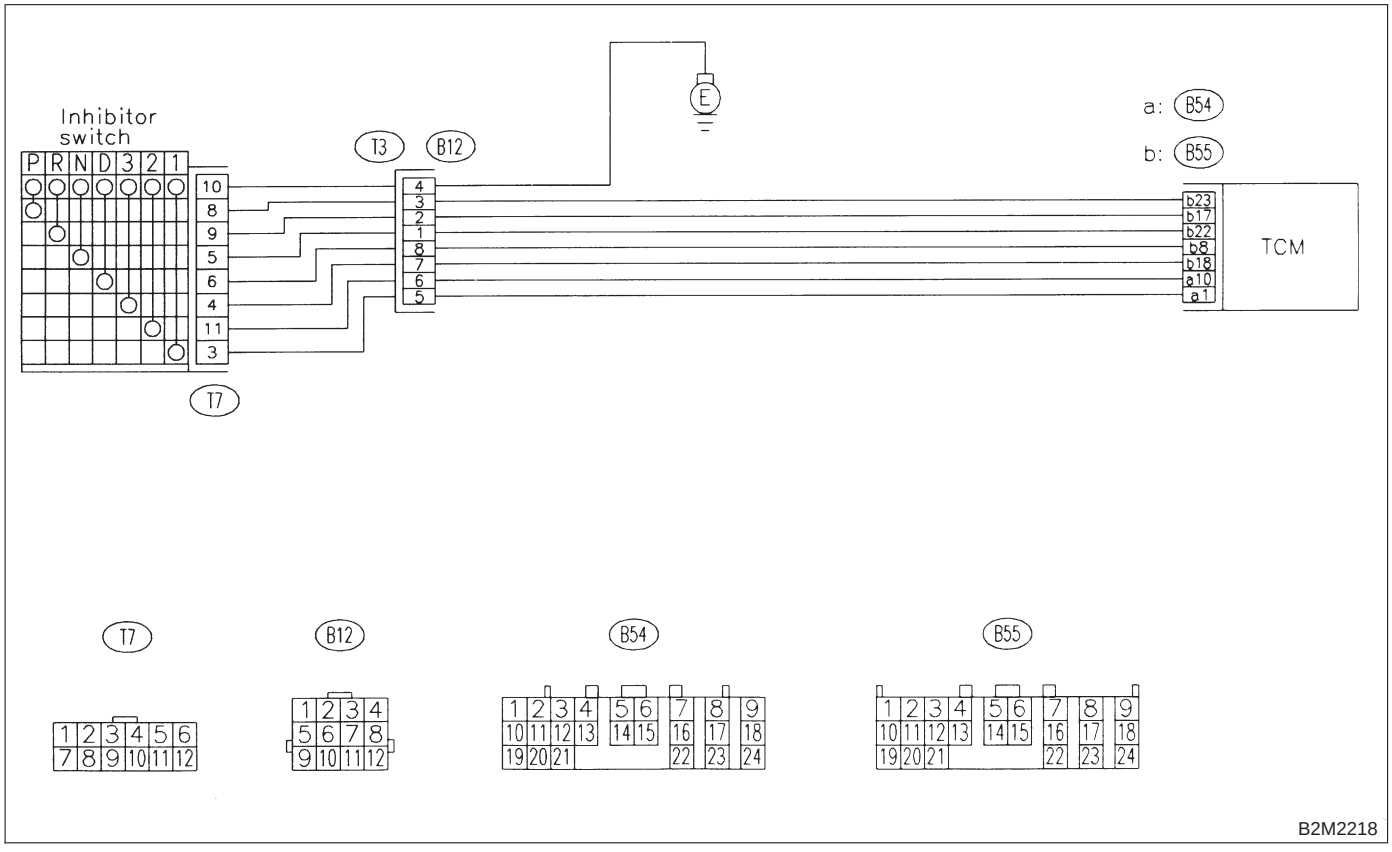
CHECK : ***Is there poor contact in "N/P" range switch circuit?***
YES : Repair poor contact.
NO : Replace TCM. <Ref. to 3-2 [W22A0].>

9U18 : CHECK SELECTOR CABLE.

CHECK : ***Is there faulty connection in the selector cable?***
YES : Repair connection of selector cable.
NO : Replace inhibitor switch. <Ref. to 3-2 [W2C0].>

V: CHECK “R” RANGE SWITCH.

DIAGNOSIS:
Input signal circuit of “R” range is open or shorted.
WIRING DIAGRAM:



9V1 : CHECK “R” RANGE SWITCH.

CHECK : ***When the “R” range is selected, does LED light up?***

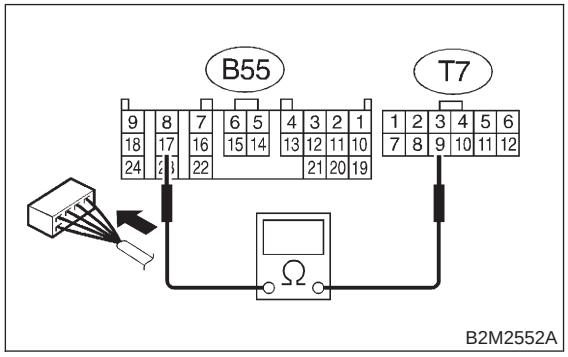
YES : Go to step “D” RANGE SWITCH. <Ref. to 3-2 [T9W0].>

NO : Go to step **9V2**.

9V2 : CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.

1) Turn ignition switch to OFF.
2) Disconnect connectors from TCM and inhibitor switch.
3) Measure resistance of harness between TCM and inhibitor switch connector.

Connector & terminal
(B55) No. 17 — (T7) No. 9:

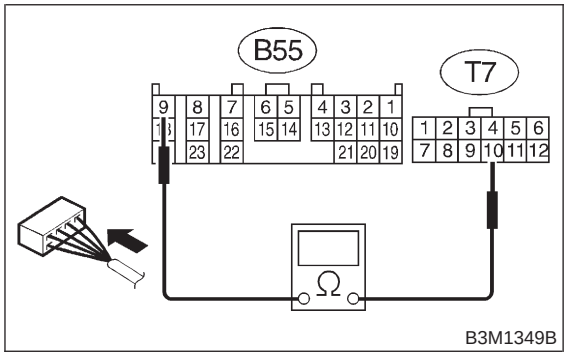


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **9V3**.
NO : Repair open circuit in harness between TCM and inhibitor switch connector, and poor contact in coupling connector.

9V3 : CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.

Measure resistance of harness between inhibitor switch connector and chassis ground.

Connector & terminal
(T7) No. 10 — (B55) No. 9:

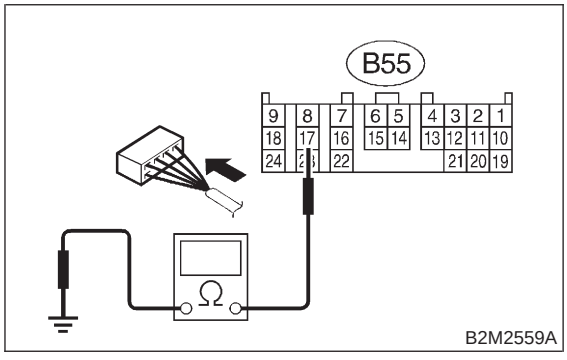


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **9V4**.
NO : Repair open circuit in harness between TCM and inhibitor switch connector, and poor contact in coupling connector.

9V4 : CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.

Measure resistance of harness between TCM and chassis ground.

Connector & terminal
(B55) No. 17 — Chassis ground:

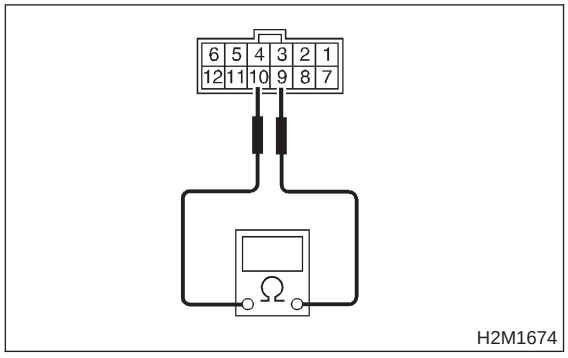


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **9V5**.
NO : Repair ground short circuit in harness between TCM and inhibitor switch connector.

9V5 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals.

Terminals
No. 9 — No. 10:

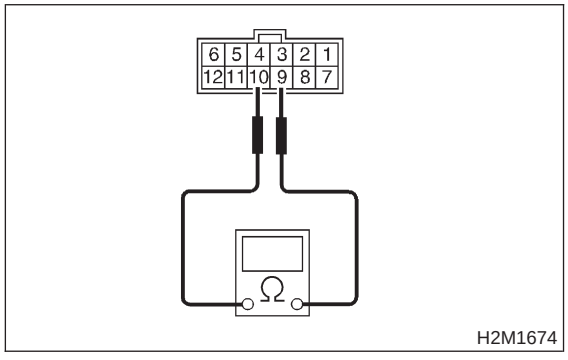


CHECK : ***Is the resistance less than 1 Ω in "R" range?***
YES : Go to step **9V6**.
NO : Go to step **9V10**.

9V6 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals.

Terminals
No. 9 — No. 10:

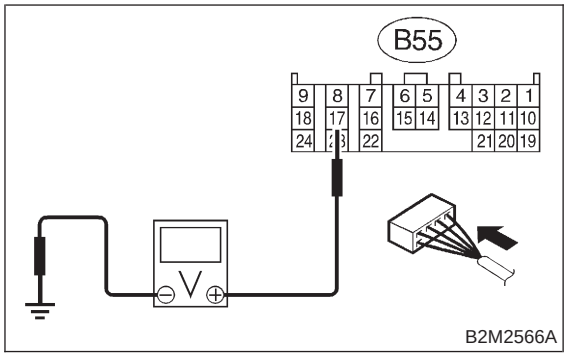


CHECK : ***Is the resistance more than 1 MΩ in other ranges?***
YES : Go to step **9V7**.
NO : Go to step **9V10**.

9V7 : CHECK INPUT SIGNAL FOR TCM.

1) Turn ignition switch to OFF.
2) Connect connector to TCM and inhibitor switch.
3) Turn ignition switch to ON.
4) Measure voltage between TCM and chassis ground.

Connector & terminal
(B55) No. 17 (+) — Chassis ground (–):

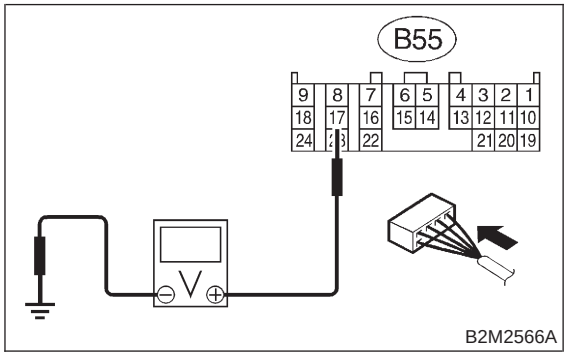


CHECK : ***Is the voltage less than 1 V in "R" range?***
YES : Go to step **9V8**.
NO : Go to step **9V9**.

9V8 : CHECK INPUT SIGNAL FOR TCM.

Measure voltage between TCM and chassis ground.

Connector & terminal
(B55) No. 17 (+) — Chassis ground (–):



CHECK : ***Is the voltage more than 9.5 V in other ranges?***
YES : Go to step **9V9**.
NO : Go to step **9V10**.

9V9 : CHECK POOR CONTACT.

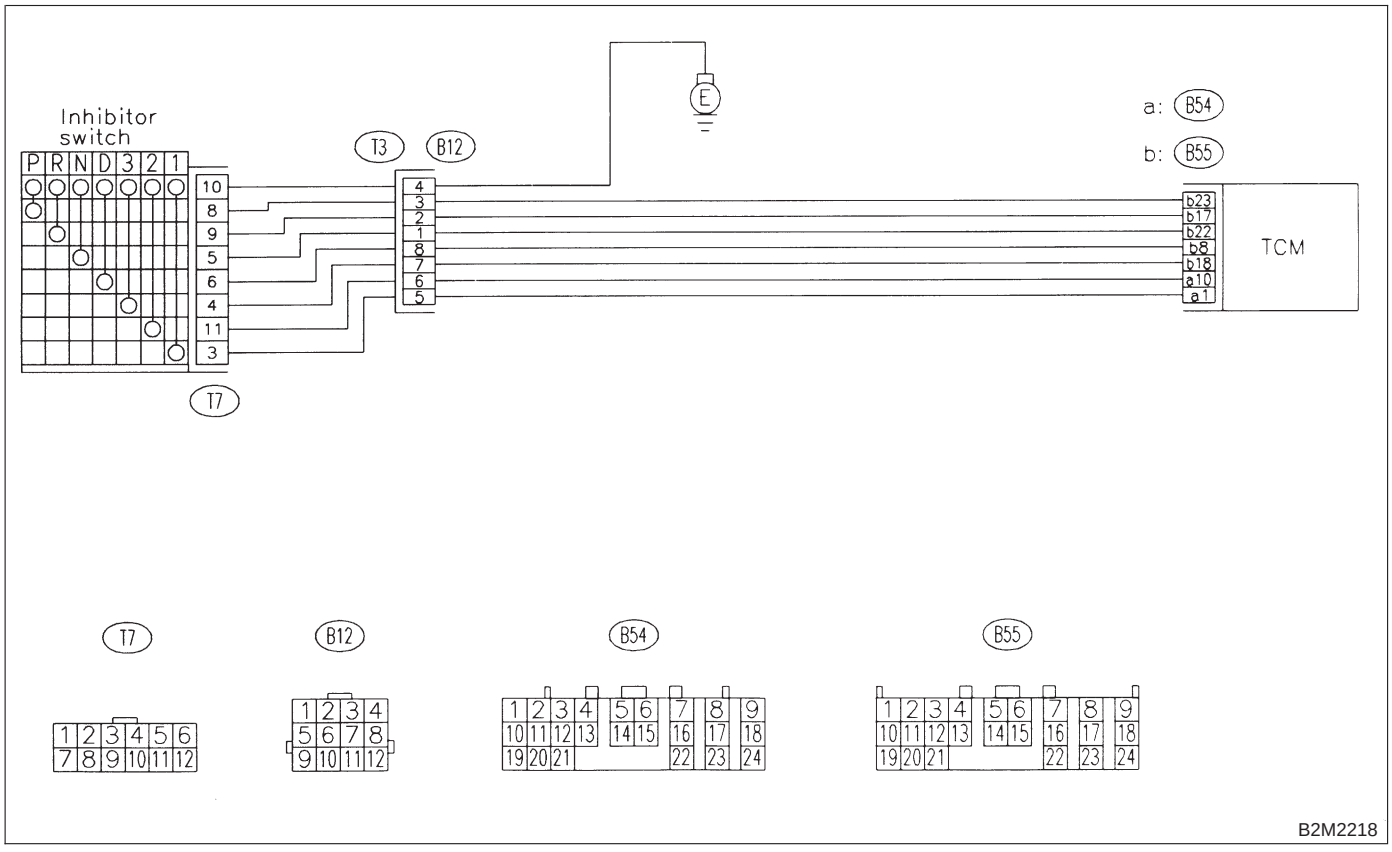
CHECK : ***Is there poor contact in "R" range switch circuit?***
YES : Repair poor contact.
NO : Replace TCM. <Ref. to 3-2 [W22A0].>

9V10 : CHECK SELECTOR CABLE.

CHECK : ***Is there faulty connection in the selector cable?***
YES : Repair connection of selector cable.
NO : Replace inhibitor switch. <Ref. to 3-2 [W2C0].>

W: CHECK “D” RANGE SWITCH.

DIAGNOSIS:
Input signal circuit of “D” range is open or shorted.
TROUBLE SYMPTOM:
Shift characteristics are erroneous.
WIRING DIAGRAM:



9W1 : CHECK “D” RANGE SWITCH.

CHECK : ***When the “D” range is selected, does LED light up?***

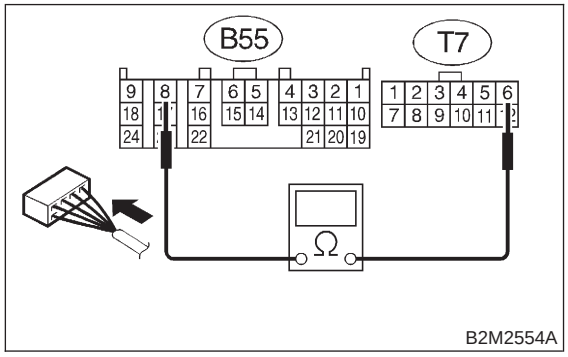
YES : Go to step “3” RANGE SWITCH. <Ref. to 3-2 [T9X0].>

NO : Go to step **9W2**.

9W2 : CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.

1) Turn ignition switch to OFF.
2) Disconnect connectors from TCM and inhibitor switch.
3) Measure resistance of harness between TCM and inhibitor switch connector.

Connector & terminal
(B55) No. 8 — (T7) No. 6:

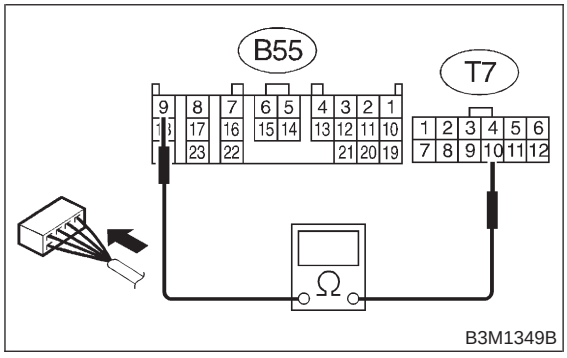


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **9W3**.
NO : Repair open circuit in harness between TCM and inhibitor switch connector, and poor contact in coupling connector.

9W3 : CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.

Measure resistance of harness between inhibitor switch connector and chassis ground.

Connector & terminal
(T7) No. 10 — (B55) No. 9:

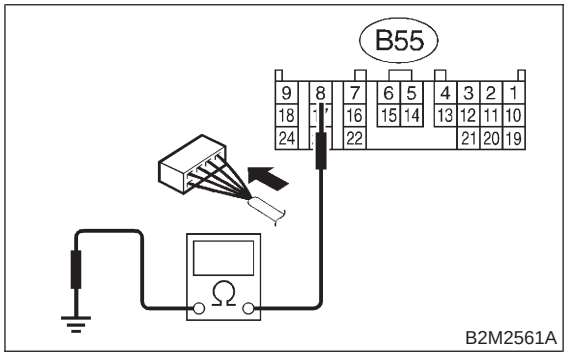


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **9W4**.
NO : Repair open circuit in harness between TCM and inhibitor switch connector, and poor contact in coupling connector.

9W4 : CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.

Measure resistance of harness between TCM and chassis ground.

Connector & terminal
(B55) No. 8 — Chassis ground:

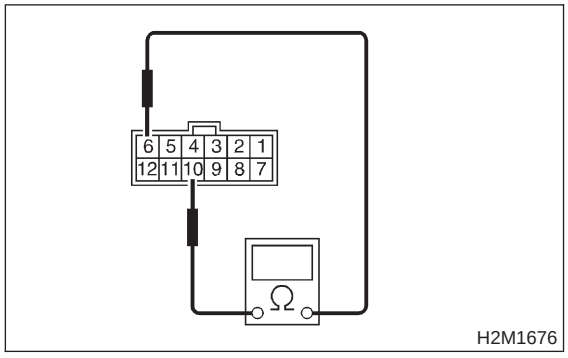


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **9W5**.
NO : Repair ground short circuit in harness between TCM and inhibitor switch connector.

9W5 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals.

Terminals
No. 6 — No. 10:

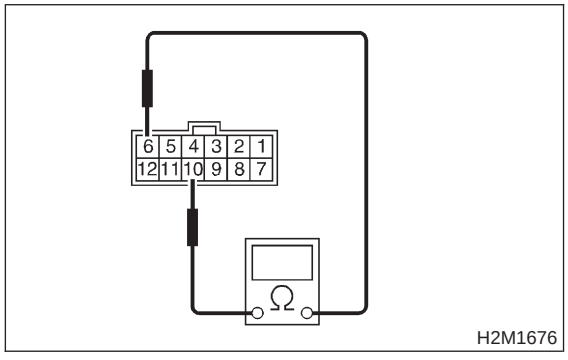


CHECK : ***Is the resistance less than 1 Ω in "D" range?***
YES : Go to step **9W6**.
NO : Go to step **9W10**.

9W6 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals.

Terminals
No. 6 — No. 10:

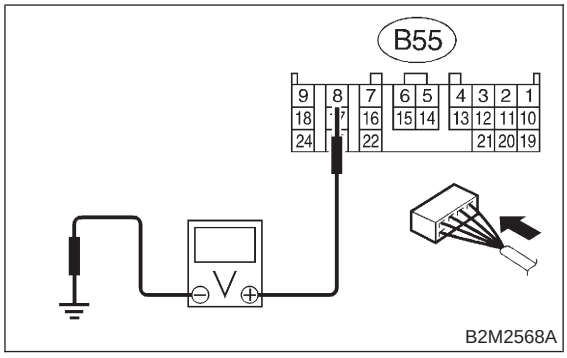


CHECK : ***Is the resistance more than 1 MΩ in other ranges?***
YES : Go to step **9W7**.
NO : Go to step **9W10**.

9W7 : CHECK INPUT SIGNAL FOR TCM.

1) Turn ignition switch to OFF.
2) Connect connector to TCM and inhibitor switch.
3) Turn ignition switch to ON.
4) Measure voltage between TCM and chassis ground.

Connector & terminal
(B55) No. 8 (+) — Chassis ground (–):

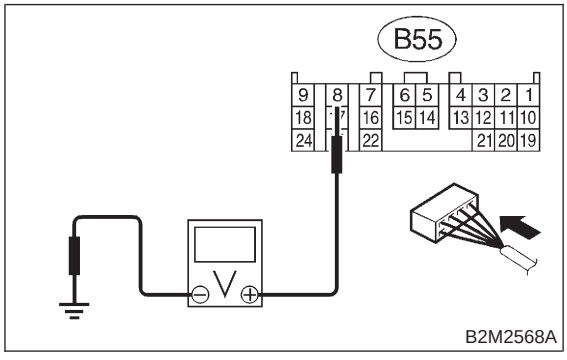


CHECK : ***Is the voltage less than 1 V in "D" range?***
YES : Go to step **9W8**.
NO : Go to step **9W9**.

9W8 : CHECK INPUT SIGNAL FOR TCM.

Measure voltage between TCM and chassis ground.

Connector & terminal
(B55) No. 8 (+) — Chassis ground (–):



CHECK : ***Is the voltage more than 9.5 V in other ranges?***
YES : Go to step **9W9**.
NO : Go to step **9W10**.

9W9 : CHECK POOR CONTACT.

CHECK : ***Is there poor contact in "D" range switch circuit?***
YES : Repair poor contact.
NO : Replace TCM. <Ref. to 3-2 [W22A0].>

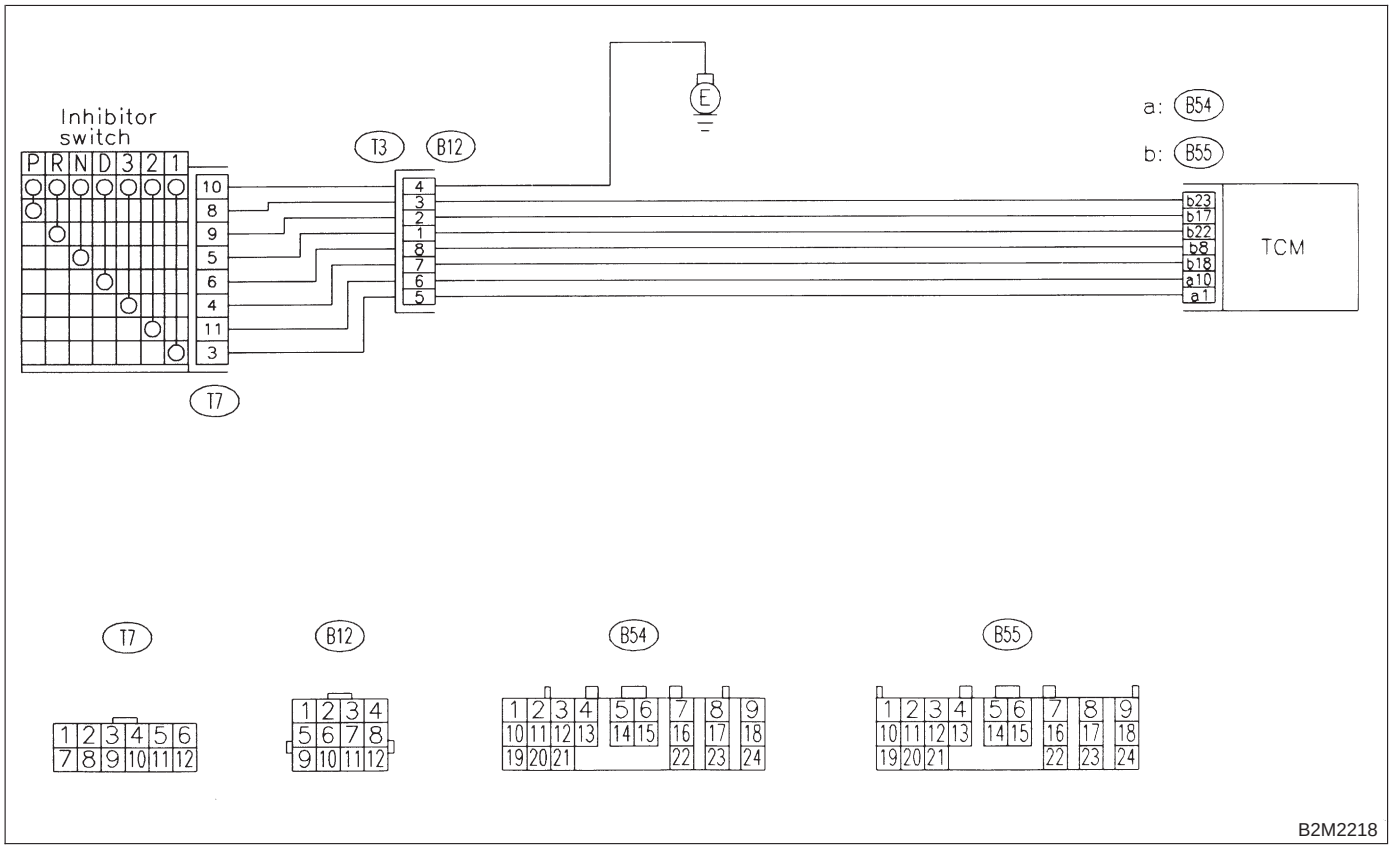
9W10 : CHECK SELECTOR CABLE.

CHECK : ***Is there faulty connection in the selector cable?***
YES : Repair connection of selector cable.
NO : Replace inhibitor switch. <Ref. to 3-2 [W2C0].>

X: CHECK “3” RANGE SWITCH.

DIAGNOSIS:
Input signal circuit of “3” range is open or shorted.
TROUBLE SYMPTOM:
- Shift characteristics are erroneous.
- Engine brake is not effected when selector lever is in “3” range.

WIRING DIAGRAM:



9X1 : CHECK “3” RANGE SWITCH.

CHECK : ***When the “3” range is selected, does LED light up?***

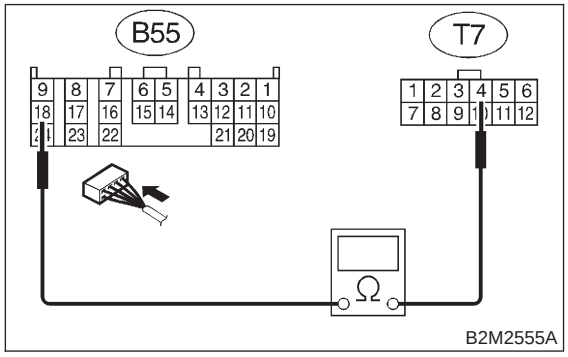
YES : Go to step “2” RANGE SWITCH. <Ref. to 3-2 [T9Y0].>

NO : Go to step **9X2**.

9X2 : CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.

1) Turn ignition switch to OFF.
2) Disconnect connector from TCM and inhibitor switch.
3) Measure resistance of harness between TCM and inhibitor switch connector.

Connector & terminal
(B55) No. 18 — (T7) No. 4:

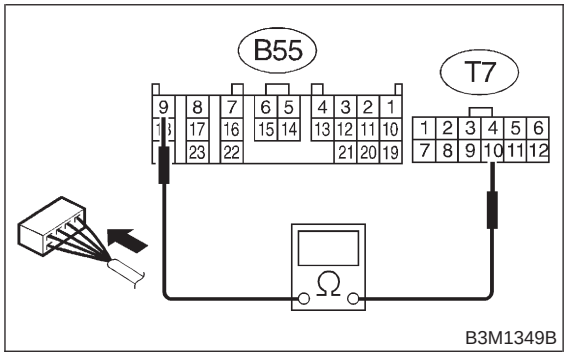


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **9X3**.
NO : Repair open circuit in harness between TCM and inhibitor switch connector, and poor contact in coupling connector.

9X3 : CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.

Measure resistance of harness between inhibitor switch connector and chassis ground.

Connector & terminal
(T7) No. 10 — (B55) No. 9:

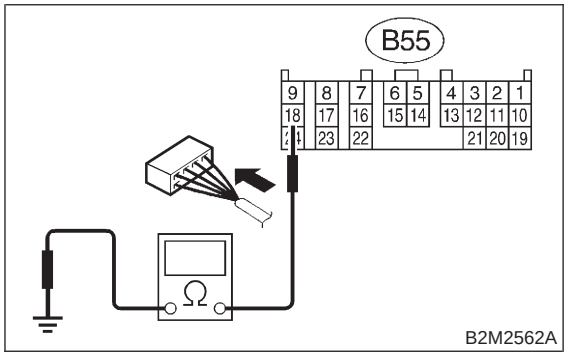


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **9X4**.
NO : Repair open circuit in harness between TCM and inhibitor switch connector, and poor contact in coupling connector.

9X4 : CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.

Measure resistance of harness between TCM and chassis ground.

Connector & terminal
(B55) No. 18 — Chassis ground:

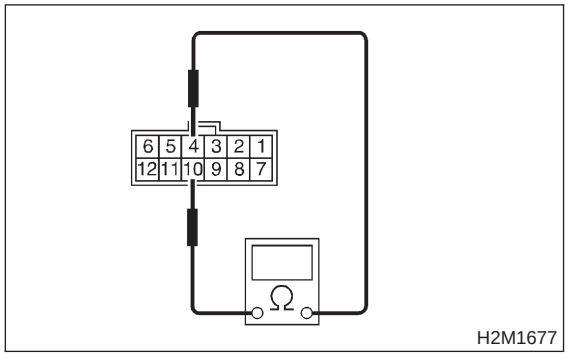


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **9X5**.
NO : Repair ground short circuit in harness between TCM and inhibitor switch connector.

9X5 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals.

Terminals
No. 4 — No. 10:

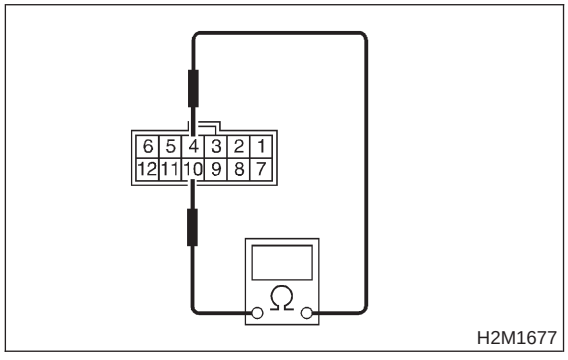


CHECK : ***Is the resistance less than 1 Ω in "3" range?***
YES : Go to step **9X6**.
NO : Go to step **9X7**.

9X6 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals.

Terminals
No. 4 — No. 10:

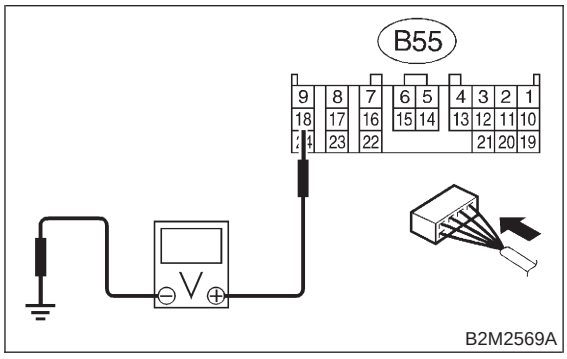


CHECK : ***Is the resistance more than 1 MΩ in other ranges?***
YES : Go to step **9X7**.
NO : Go to step **9X10**.

9X7 : CHECK INPUT SIGNAL FOR TCM.

1) Turn ignition switch to OFF.
2) Connect connector to TCM and inhibitor switch.
3) Turn ignition switch to ON.
4) Measure voltage between TCM and chassis ground.

Connector & terminal
(B55) No. 18 (+) — Chassis ground (–):

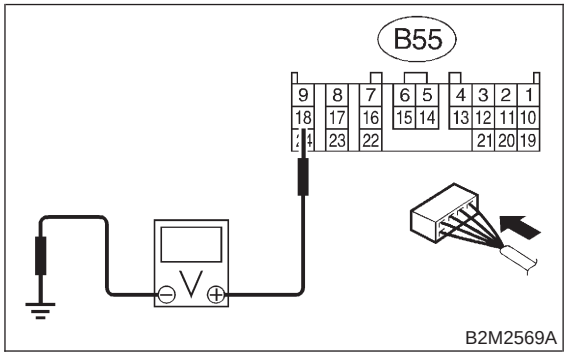


CHECK : ***Is the voltage less than 1 V in "3" range?***
YES : Go to step **9X8**.
NO : Go to step **9X9**.

9X8 : CHECK INPUT SIGNAL FOR TCM.

Measure voltage between TCM and chassis ground.

Connector & terminal
(B55) No. 18 (+) — Chassis ground (–):



CHECK : ***Is the voltage more than 9.5 V in other ranges?***
YES : Go to step **9X9**.
NO : Go to step **9X10**.

9X9 : CHECK POOR CONTACT.

CHECK : ***Is there poor contact in "3" range switch circuit?***
YES : Repair poor contact.
NO : Replace TCM. <Ref. to 3-2 [W22A0].>

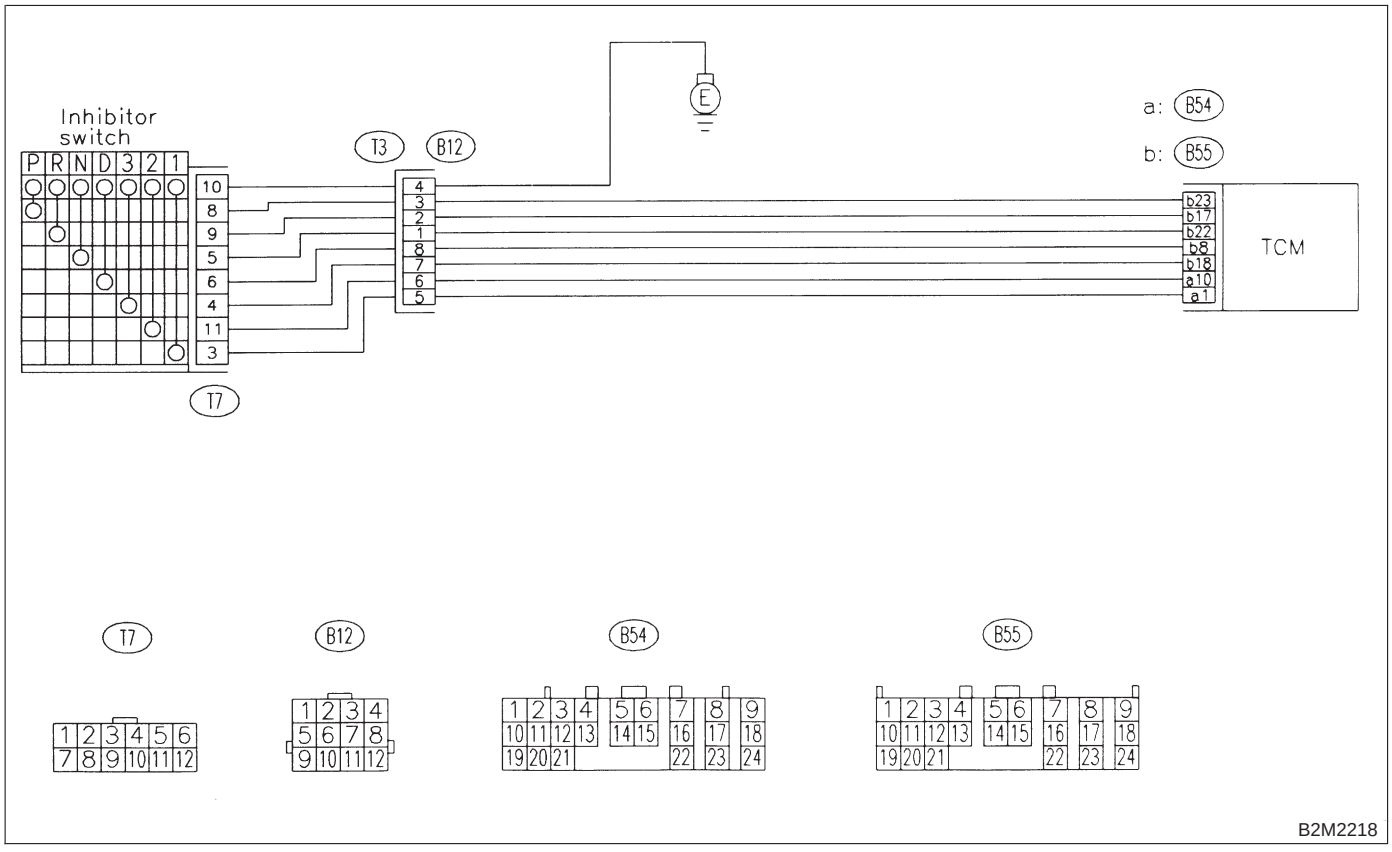
9X10 : CHECK SELECTOR CABLE.

CHECK : ***Is there faulty connection in the selector cable?***
YES : Repair connection of selector cable.
NO : Replace inhibitor switch. <Ref. to 3-2 [W2C0].>

Y: CHECK “2” RANGE SWITCH.

DIAGNOSIS:
Input signal circuit of “2” range is open or shorted.
TROUBLE SYMPTOM:
- Shift characteristics are erroneous.
- Engine brake is not effected when selector lever is in “2” range.

WIRING DIAGRAM:



9Y1 : CHECK “2” RANGE SWITCH.

CHECK : ***When the “2” range is selected, does LED light up?***

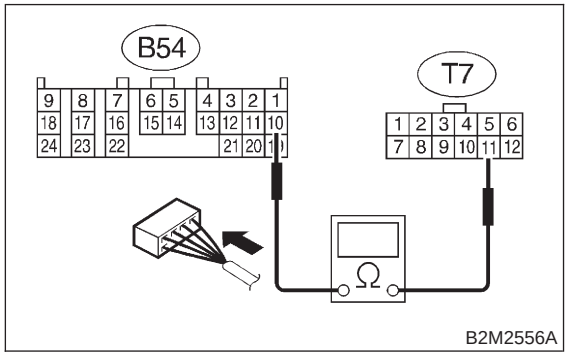
YES : Go to step “1” RANGE SWITCH. <Ref. to 3-2 [T9Z0].>

NO : Go to step **9Y2**.

9Y2 : CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.

1) Turn ignition switch to OFF.
2) Disconnect connector from TCM and inhibitor switch.
3) Measure resistance of harness between TCM and inhibitor switch connector.

Connector & terminal
(B54) No. 10 — (T7) No. 11:

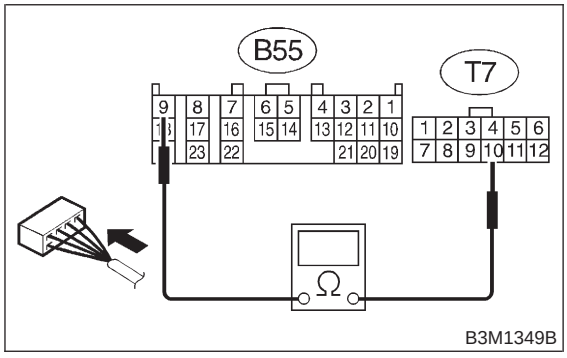


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **9Y3**.
NO : Repair open circuit in harness between TCM and inhibitor switch connector, and poor contact in coupling connector.

9Y3 : CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.

Measure resistance of harness between inhibitor switch connector and chassis ground.

Connector & terminal
(T7) No. 10 — (B55) No. 9:

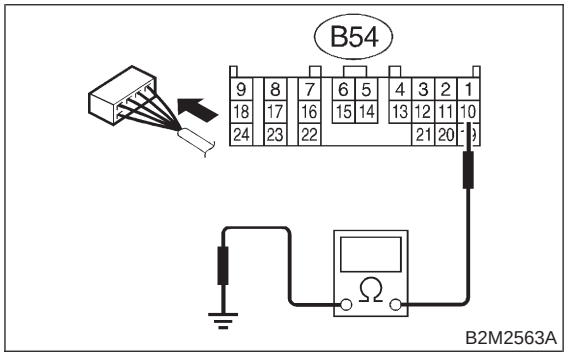


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **9Y4**.
NO : Repair open circuit in harness between TCM and inhibitor switch connector, and poor contact in coupling connector.

9Y4 : CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.

Measure resistance of harness between TCM and chassis ground.

Connector & terminal
(B54) No. 10 — Chassis ground:

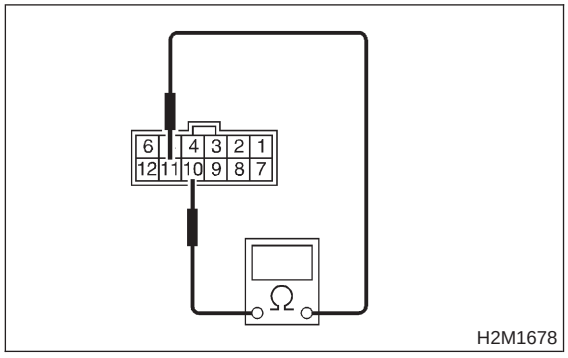


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **9Y5**.
NO : Repair ground short circuit in harness between TCM and inhibitor switch connector.

9Y5 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals.

Terminals
No. 11 — No. 10:

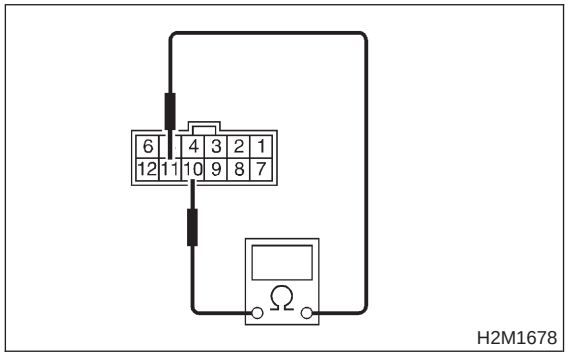


CHECK : ***Is the resistance less than 1 Ω in "2" range?***
YES : Go to step **9Y6**.
NO : Go to step **9Y10**.

9Y6 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals.

Terminals
No. 11 — No. 10:

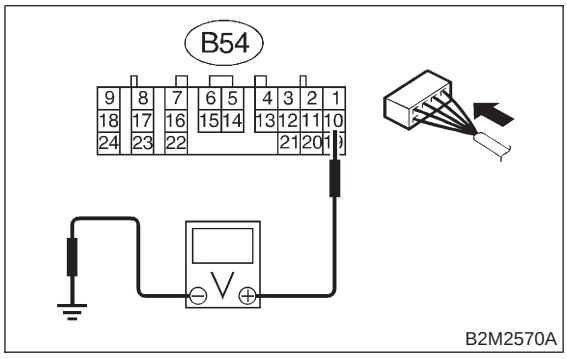


CHECK : ***Is the resistance more than 1 MΩ in other ranges?***
YES : Go to step **9Y7**.
NO : Go to step **9Y10**.

9Y7 : CHECK INPUT SIGNAL FOR TCM.

1) Turn ignition switch to OFF.
2) Connect connector to TCM and inhibitor switch.
3) Turn ignition switch to ON.
4) Measure voltage between TCM and chassis ground.

Connector & terminal
(B54) No. 10 (+) — Chassis ground (–):

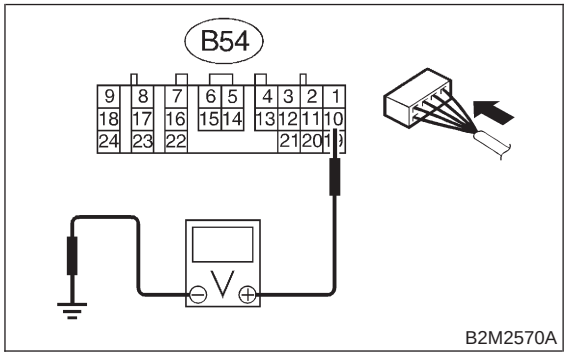


CHECK : ***Is the voltage less than 1 V in "2" range?***
YES : Go to step **9Y8**.
NO : Go to step **9Y9**.

9Y8 : CHECK INPUT SIGNAL FOR TCM.

Measure voltage between TCM and chassis ground.

Connector & terminal
(B54) No. 10 (+) — Chassis ground (–):



CHECK : ***Is the voltage more than 9.5 V in other ranges?***
YES : Go to step **9Y9**.
NO : Go to step **9Y10**.

9Y9 : CHECK POOR CONTACT.

CHECK : ***Is there poor contact in "2" range switch circuit?***
YES : Repair poor contact.
NO : Replace TCM. <Ref. to 3-2 [W22A0].>

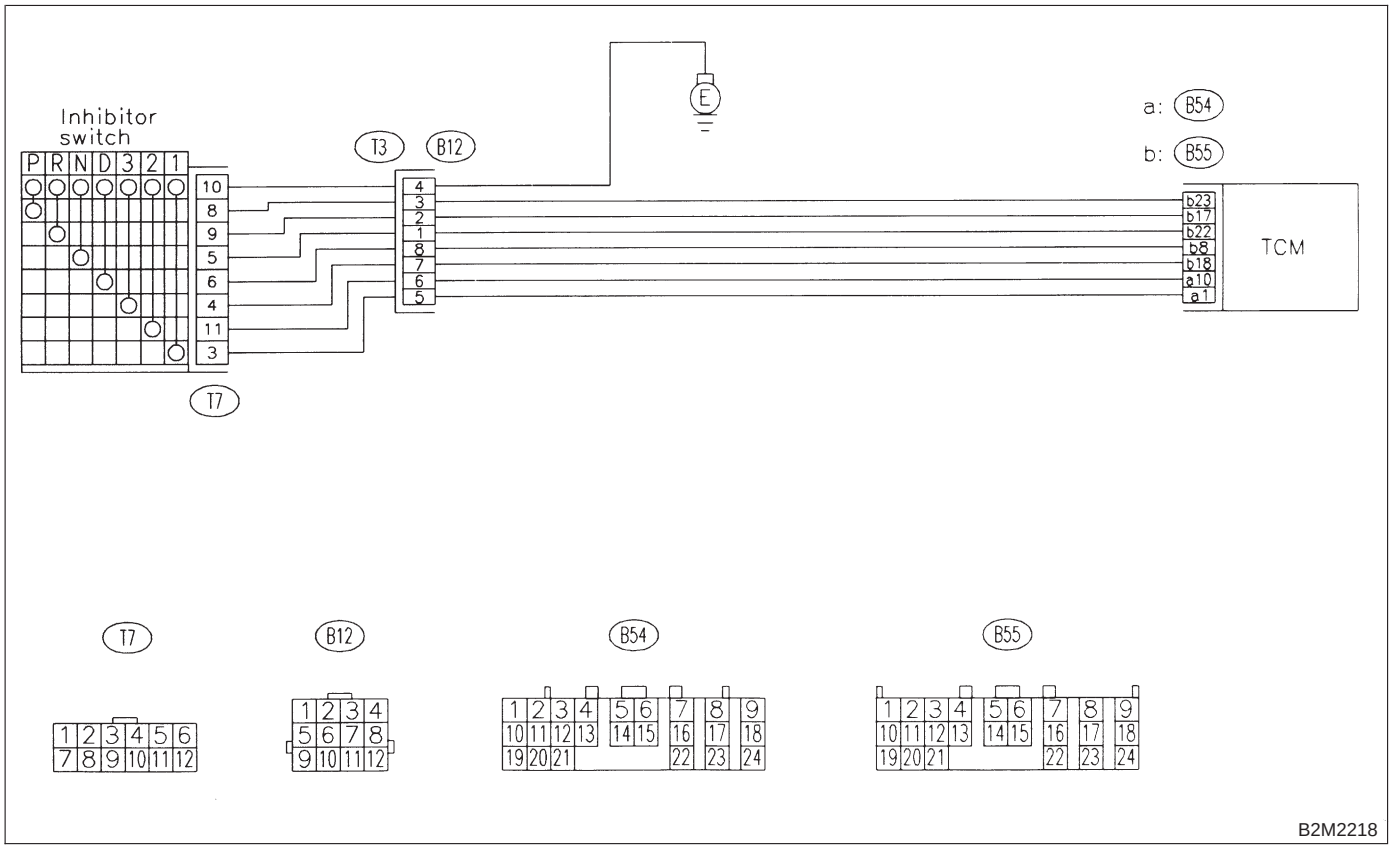
9Y10 : CHECK SELECTOR CABLE.

CHECK : ***Is there faulty connection in the selector cable?***
YES : Repair connection of selector cable.
NO : Replace inhibitor switch. <Ref. to 3-2 [W2C0].>

Z: CHECK “1” RANGE SWITCH.

DIAGNOSIS:
Input signal circuit of “1” range is open or shorted.
TROUBLE SYMPTOM:
- Shift characteristics are erroneous.
- Engine brake is not effected when selector lever is in “1” range.

WIRING DIAGRAM:



9Z1 : CHECK “1” RANGE SWITCH.

CHECK : ***When the “1” range is selected, does LED light up?***

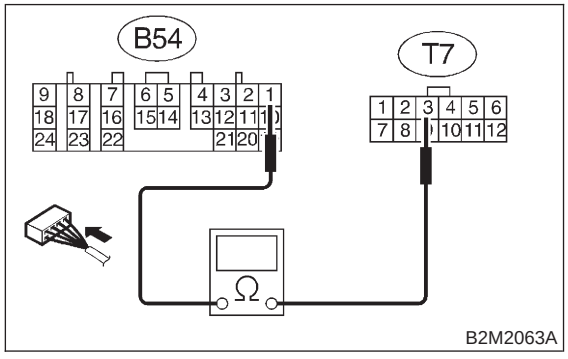
YES : Go to step SHIFT SOLENOID 1. <Ref. to 3-2 [T9AA0].>

NO : Go to step **9Z2**.

9Z2 : CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.

1) Turn ignition switch to OFF.
2) Disconnect connectors from TCM and inhibitor switch.
3) Measure resistance of harness between TCM and inhibitor switch connector.

Connector & terminal
(B54) No. 1 — (T7) No. 3:

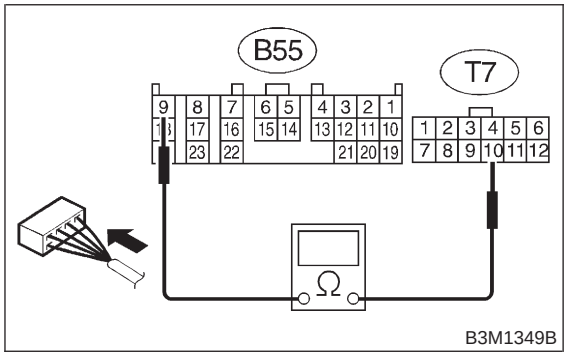


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **9Z3**.
NO : Repair open circuit in harness between TCM and inhibitor switch connector, and poor contact in coupling connector.

9Z3 : CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.

Measure resistance of harness between inhibitor switch connector and chassis ground.

Connector & terminal
(T7) No. 10 — (B55) No. 9:

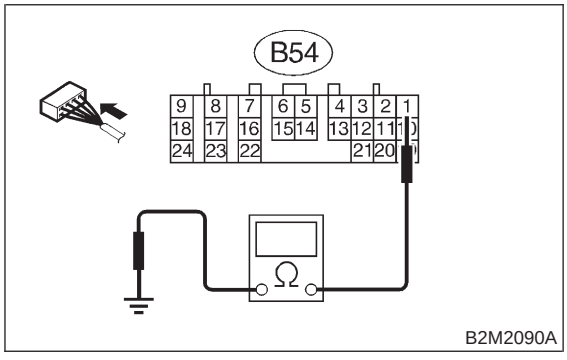


CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **9Z4**.
NO : Repair open circuit in harness between TCM and inhibitor switch connector, and poor contact in coupling connector.

9Z4 : CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.

Measure resistance of harness between TCM and chassis ground.

Connector & terminal
(B54) No. 1 — Chassis ground:

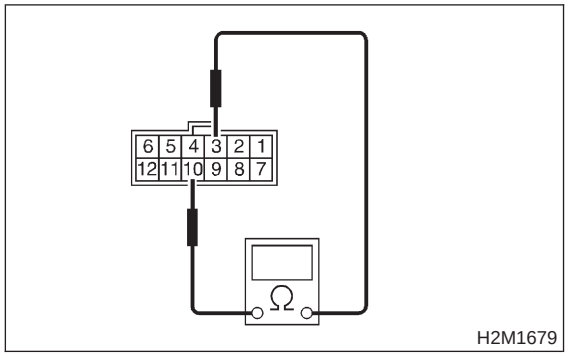


CHECK : ***Is the resistance more than 1 MΩ?***
YES : Go to step **9Z5**.
NO : Repair ground short circuit in harness between TCM and inhibitor switch connector.

9Z5 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals.

Terminals
No. 3 — No. 10:

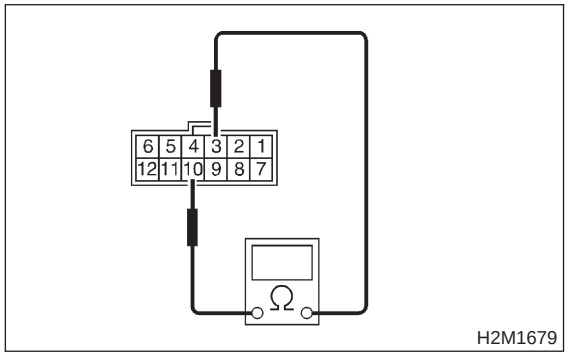


CHECK : ***Is the resistance less than 1 Ω in "1" range?***
YES : Go to step **9Z6**.
NO : Go to step **9Z10**.

9Z6 : CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals.

Terminals
No. 3 — No. 10:

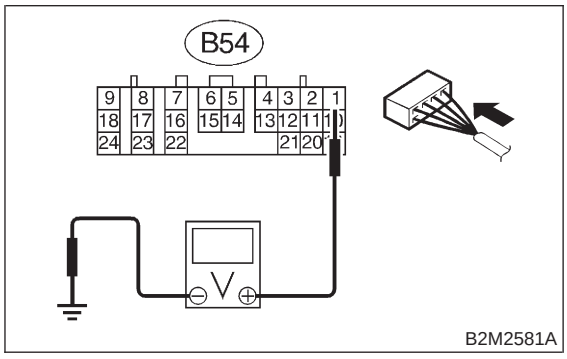


CHECK : ***Is the resistance more than 1 MΩ in other ranges?***
YES : Go to step **9Z7**.
NO : Go to step **9Z10**.

9Z7 : CHECK INPUT SIGNAL FOR TCM.

1) Turn ignition switch to OFF.
2) Connect connector to TCM and inhibitor switch.
3) Turn ignition switch to ON.
4) Measure voltage between TCM and chassis ground.

Connector & terminal
(B54) No. 1 (+) — Chassis ground (–):

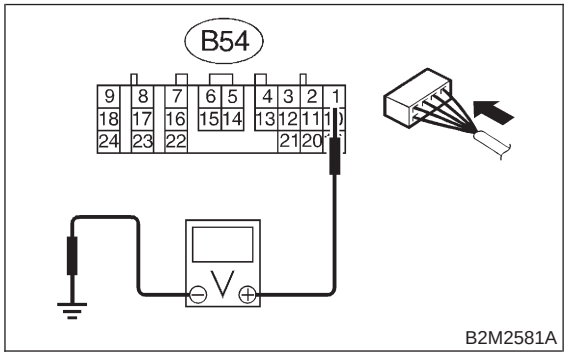


CHECK : ***Is the voltage less than 1 V in "1" range?***
YES : Go to step **9Z8**.
NO : Go to step **9Z9**.

9Z8 : CHECK INPUT SIGNAL FOR TCM.

Measure voltage between TCM and chassis ground.

Connector & terminal
(B54) No. 1 (+) — Chassis ground (–):



CHECK : ***Is the voltage more than 9.5 V in other ranges?***
YES : Go to step **9Z9**.
NO : Go to step **9Z10**.

9Z9 : CHECK POOR CONTACT.

CHECK : ***Is there poor contact in "1" range switch circuit?***
YES : Repair poor contact.
NO : Replace TCM. <Ref. to 3-2 [W22A0].>

9Z10 : CHECK SELECTOR CABLE.

CHECK : ***Is there faulty connection in the selector cable?***
YES : Repair connection of selector cable.
NO : Replace inhibitor switch. <Ref. to 3-2 [W2C0].>

AA: CHECK SHIFT SOLENOID 1.

9AA1 :	CHECK SHIFT SOLENOID 1.

CHECK : ***Does the LED of shift solenoid 1 light up?***
YES : Go to step SHIFT SOLENOID 2. <Ref. to 3-2 [T9AB0].>
NO : Check shift solenoid 1 circuit. <Ref. to 3-2 [T8K0].>

AB: CHECK SHIFT SOLENOID 2.

9AB1 :	CHECK SHIFT SOLENOID 2.

CHECK : ***Does the LED of shift solenoid 2 light up?***
YES : Go to step TORQUE CONTROL 1 SIGNAL. <Ref. to 3-2 [T9AC0].>
NO : Check shift solenoid 2 circuit. <Ref. to 3-2 [T8L0].>

AC: CHECK TORQUE CONTROL 1 SIGNAL.

9AC1 :	CHECK TORQUE CONTROL 1 SIGNAL.

Turn ignition switch to ON (engine ON).

CHECK : ***Does the LED of torque control 1 signal light up?***
YES : Go to step TORQUE CONTROL SIGNAL 2 CIRCUIT. <Ref. to 3-2 [T9AD0].>
NO : Check torque control 1 signal circuit. <Ref. to 3-2 [T8I0].>

AD: CHECK TORQUE CONTROL 2 SIGNAL.

9AD1 :	CHECK TORQUE CONTROL 2 SIGNAL.

Turn ignition switch to ON (engine ON).

CHECK : ***Does the LED of torque control 2 signal light up?***
YES : Go to step 2-4 BRAKE TIMING SOLENOID. <Ref. to 3-2 [T9AE0].>
NO : Check torque control 2 signal circuit. <Ref. to 3-2 [T8I0].>

AE: CHECK 2-4 BRAKE TIMING SOLENOID.

9AE1 :	CHECK 2-4 BRAKE TIMING SOLENOID.

Turn ignition switch to ON, and select 1 range.

CHECK : ***Does the LED of 2-4 brake timing solenoid light up?***
YES : Go to step LOW CLUTCH TIMING SOLENOID. <Ref. to 3-2 [T9AF0].>
NO : Check 2-4 brake timing solenoid circuit. <Ref. to 3-2 [T8N0].>

AF: CHECK LOW CLUTCH TIMING SOLENOID.

9AF1 :	CHECK LOW CLUTCH TIMING SOLENOID.

Turn ignition switch to ON, and select 2 range.

CHECK : ***Does the LED of low clutch timing solenoid light up?***
YES : Go to step DIAGNOSIS LAMP. <Ref. to 3-2 [T9AG0].>
NO : Check low clutch timing solenoid circuit. <Ref. to 3-2 [T8M0].>

AG: CHECK DIAGNOSIS LAMP.

9AG1 :	CHECK DIAGNOSIS LAMP.

Turn ignition switch to ON (engine OFF).

CHECK : ***Does diagnosis lamp light up?***
YES : Go to step FWD LAMP. <Ref. to 3-2 [T9AH0].>
NO : Check diagnosis lamp circuit.

AH: CHECK FWD LAMP.

9AH1 :	CHECK FWD LAMP.

CHECK : ***Does the LED of FWD lamp light up?***
YES : Check FWD lamp circuit. <Ref. to 3-2 [T9Q0].>
NO : Go to step General Diagnostic Table. <Ref. to 3-2 [T1000].>

MEMO:

10. General Diagnostic Table

Symptom	Problem parts
Starter does not rotate when select lever is in “P” or “N”; starter rotates when select lever is in “R”, “D”, “3” or “2”.	1) Inhibitor switch 2) Select cable 3) Select lever 4) Starter motor and harness
Abnormal noise when select lever is in “P” or “N”.	1) Strainer 2) Duty solenoid C 3) Oil pump 4) Drive plate 5) ATF level too high or too low
Hissing noise occurs during standing start.	1) Strainer 2) ATF level too high or too low
Noise occurs while driving in “D1”.	1) Final gear 2) Planetary gear 3) Reduction gear 4) Differential gear oil level too high or too low
Noise occurs while driving in “D2”.	
Noise occurs while driving in “D3”.	1) Final gear 2) Low & reverse brake 3) Reduction gear 4) Differential gear oil level too high or too low
Noise occurs while driving in “D4”.	1) Final gear 2) Low & reverse brake 3) Planetary gear 4) Reduction gear 5) Differential gear oil level too high or too low
Engine stalls while shifting from one range to another.	1) Control valve 2) Lock-up damper 3) Engine performance 4) Input shaft
Vehicle moves when select lever is in “N”.	1) Control module 2) Low clutch
Shock occurs when select lever is moved from “N” to “D”.	1) Control module 2) Harness 3) Control valve 4) ATF deterioration 5) Dropping resistor
Excessive time lag occurs when select lever is moved from “N” to “D”.	1) Control valve 2) Low clutch 3) Duty solenoid A 4) Seal ring 5) Front gasket transmission case
Shock occurs when select lever is moved from “N” to “R”.	1) Control module 2) Harness 3) Control valve 4) ATF deterioration 5) Dropping resistor
Excessive time lag occurs when select lever is moved from “N” to “R”.	1) Control valve 2) Low & reverse clutch 3) Reverse clutch 4) Duty solenoid A 5) Seal ring 6) Front gasket transmission case
Vehicle does not start in any shift range (engine stalls).	1) Parking brake mechanism 2) Planetary gear

Symptom	Problem parts
Vehicle does not start in any shift range (engine revving up).	1) Strainer 2) Duty solenoid A 3) Control valve 4) Drive pinion 5) Hypoid gear 6) Axle shaft 7) Differential gear 8) Oil pump 9) Input shaft 10) Output shaft 11) Planetary gear 12) Drive plate 13) ATF level too low 14) Front gasket transmission case
Vehicle does not start in “R” range only (engine revving up).	1) Select cable 2) Select lever 3) Control valve 4) Low & reverse clutch 5) Reverse clutch
Vehicle does not start in “R” range only (engine stalls).	1) Low clutch 2) 2-4 brake 3) Planetary gear 4) Parking brake mechanism
Vehicle does not start in “D”, “3” range only (engine revving up).	1) Low clutch 2) One-way clutch
Vehicle does not start in “D”, “3” or “2” range only (engine revving up).	1) Low clutch
Vehicle does not start in “D”, “3” or “2” range only (engine stalls).	1) Reverse clutch
Vehicle starts in “R” range only (engine revving up).	1) Control valve
Acceleration during standing starts is poor (high stall rpm).	1) Control valve 2) Low clutch 3) Reverse clutch 4) ATF level too low 5) Front gasket transmission case 6) Differential gear oil level too high or too low
Acceleration during standing starts is poor (low stall rpm).	1) Oil pump 2) Torque converter one-way clutch 3) Engine performance
Acceleration is poor when select lever is in “D”, “3” or “2” range (normal stall rpm).	1) Control module 2) Control valve 3) High clutch 4) 2-4 brake 5) Planetary gear
Acceleration is poor when select lever is in “R” (normal stall rpm).	1) Control valve 2) High clutch 3) 2-4 brake 4) Planetary gear
No shift occurs from 1st to 2nd gear.	1) Control module 2) Vehicle speed sensor 1 (Rear) 3) Vehicle speed sensor 2 (Front) 4) Throttle position sensor 5) Shift solenoid 1 6) Control valve 7) 2-4 brake
No shift occurs from 2nd to 3rd gear.	1) Control module 2) Control valve 3) High clutch 4) Shift solenoid 2

Symptom	Problem parts
No shift occurs from 3rd to 4th gear.	1) Control module 2) Shift solenoid 1 3) ATF temperature sensor 4) Control valve 5) 2-4 brake
Engine brake is not effected when select lever is in “3” range.	1) Inhibitor switch 2) Control module 3) Throttle position sensor 4) Control valve
Engine brake is not effected when select lever is in “3” or “2” range.	1) Control valve
Engine brake is not effected when select lever is in “1” range.	1) Control valve 2) Low & reverse brake
Shift characteristics are erroneous.	1) Inhibitor switch 2) Control module 3) Vehicle speed sensor 1 (Front) 4) Vehicle speed sensor 2 (Rear) 5) Throttle position sensor 6) Control valve 7) Ground earth
No lock-up occurs.	1) Control module 2) Throttle position sensor 3) ATF temperature sensor 4) Control valve 5) Lock-up facing 6) Engine speed signal
Parking brake is not effected.	1) Select cable 2) Select lever 3) Parking mechanism
Shift lever cannot be moved or is hard to move from “P” range.	
ATF spurts out.	1) ATF level too high
Differential oil spurts out.	1) Differential gear oil too high
Differential oil level changes excessively.	1) Seal pipe 2) Double oil seal
Odor is produced from ATF supply pipe.	1) High clutch 2) 2-4 brake 3) Low & reverse clutch 4) Reverse clutch 5) Lock-up facing 6) ATF deterioration
Shock occurs from 1st to 2nd gear.	1) Control module 2) Throttle position sensor 3) Duty solenoid D 4) ATF temperature sensor 5) Duty solenoid A 6) Control valve 7) 2-4 brake 8) ATF deterioration 9) Engine performance 10) Dropping resistor 11) 2-4 brake timing solenoid
Slippage occurs from 1st to 2nd gear.	1) Control module 2) Throttle position sensor 3) Duty solenoid D 4) ATF temperature sensor 5) Duty solenoid A 6) Control valve 7) 2-4 brake 8) 2-4 brake timing solenoid 9) High clutch

Symptom	Problem parts
Shock occurs from 2nd to 3rd gear.	1) Control module 2) Throttle position sensor 3) Duty solenoid D 4) ATF temperature sensor 5) Duty solenoid A 6) Control valve 7) High clutch 8) 2-4 brake 9) ATF deterioration 10) Engine performance 11) 2-4 brake timing solenoid
Slippage occurs from 2nd to 3rd gear.	1) Control module 2) Throttle position sensor 3) Duty solenoid D 4) ATF temperature sensor 5) Duty solenoid A 6) Control valve 7) High clutch 8) 2-4 brake 9) 2-4 brake timing solenoid
Shock occurs from 3rd to 4th gear.	1) Control module 2) Throttle position sensor 3) Duty solenoid D 4) ATF temperature sensor 5) Duty solenoid A 6) Control valve 7) 2-4 brake timing solenoid 8) 2-4 brake 9) ATF deterioration 10) Engine performance 11) Low clutch timing solenoid 12) Low clutch
Slippage occurs from 3rd to 4th gear.	1) Control module 2) Throttle position sensor 3) Duty solenoid D 4) ATF temperature sensor 5) Duty solenoid A 6) Control valve 7) 2-4 brake 8) 2-4 brake timing solenoid
Shock occurs when select lever is moved from “3” to “2” range.	1) Control module 2) Throttle position sensor 3) ATF temperature sensor 4) Duty solenoid A 5) Control valve 6) Duty solenoid D 7) 2-4 brake 8) ATF deterioration 9) 2-4 brake timing solenoid
Shock occurs when select lever is moved from “D” to “1” range.	1) Control module 2) Throttle position sensor 3) ATF temperature sensor 4) Duty solenoid A 5) Control valve 6) ATF deterioration 7) Duty solenoid D 8) 2-4 brake timing solenoid 9) Low clutch timing solenoid

Symptom	Problem parts
Shock occurs when select lever is moved from “2” to “1” range.	1) Control module 2) Throttle position sensor 3) ATF temperature sensor 4) Duty solenoid A 5) Control valve 6) Low & reverse clutch 7) ATF deterioration 8) Duty solenoid D 9) 2-4 brake timing solenoid 10) Low clutch timing solenoid
Shock occurs when accelerator pedal is released at medium speeds.	1) Control module 2) Throttle position sensor 3) ATF temperature sensor 4) Duty solenoid A 5) Control valve 6) Lock-up damper 7) Engine performance 8) Duty solenoid D 9) 2-4 brake timing solenoid 10) Low clutch timing solenoid
Vibration occurs during straight-forward operation.	1) Control module 2) Duty solenoid B 3) Lock-up facing 4) Lock-up damper
Vibration occurs during turns (tight corner “braking” phenomenon).	1) Control module 2) Vehicle speed sensor 1 (Front) 3) Vehicle speed sensor 2 (Rear) 4) Throttle position sensor 5) ATF temperature sensor 6) Transfer clutch 7) Transfer valve 8) Duty solenoid C 9) ATF deterioration 10) Harness
Front wheel slippage occurs during standing starts.	1) Control module 2) Vehicle speed sensor 2 (Front) 3) FWD switch 4) Throttle position sensor 5) ATF temperature sensor 6) Control valve 7) Transfer clutch 8) Transfer valve 9) Transfer pipe 10) Duty solenoid C
Vehicle is not set in FWD mode.	1) Control module 2) FWD switch 3) Transfer clutch 4) Transfer valve 5) Duty solenoid C
Select lever is hard to move.	1) Select cable 2) Select lever 3) Detent spring 4) Manual plate
Select lever is too high to move (unreasonable resistance).	1) Detent spring 2) Manual plate
Select lever slips out of operation during acceleration or while driving on rough terrain.	1) Select cable 2) Select lever 3) Detent spring 4) Manual plate

MEMO: