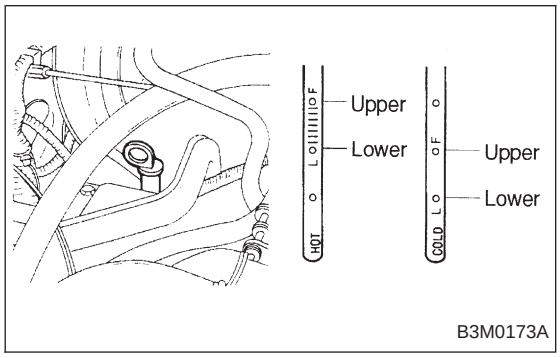
AUTOMATIC TRANSMISSION AND DIFFERENTIAL (2200 cc model) 3-2b

1. Supplemental Restraint System “Airbag”

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

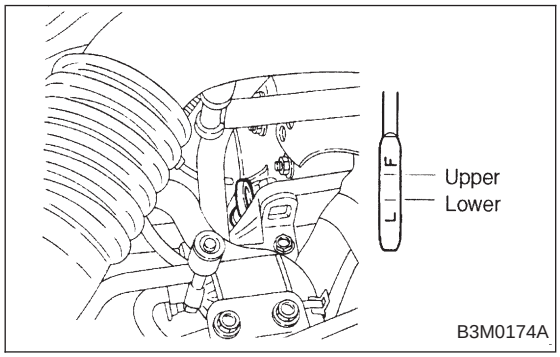
- **All Airbag system wiring harness and connectors are colored yellow. Do not use electrical test equipment on these circuit.**
- **Be careful not to damage Airbag system wiring harness when performing diagnostics and servicing the TCM.**



2. Pre-inspection

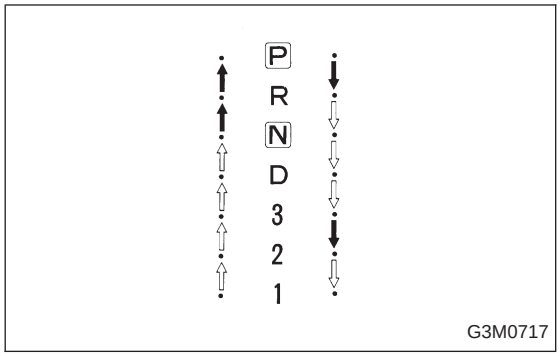
1. ATF LEVEL

Make sure that ATF level is in the specification.



2. FRONT DIFFERENTIAL OIL LEVEL

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



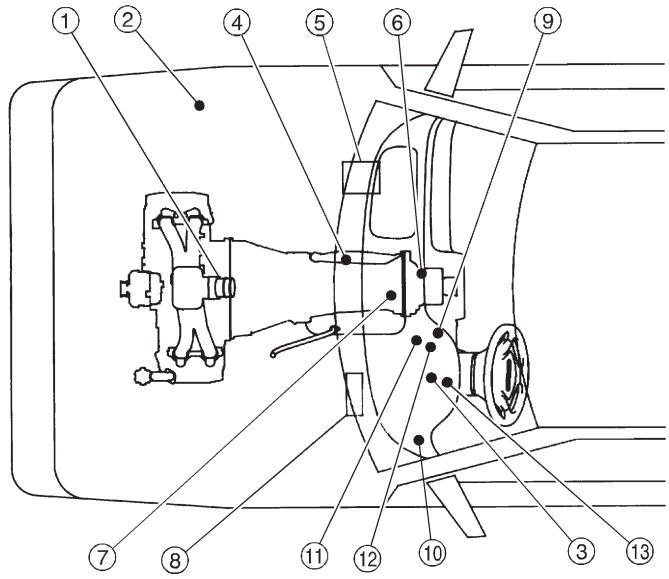
3. OPERATION OF SHIFT SELECTOR LEVER

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.

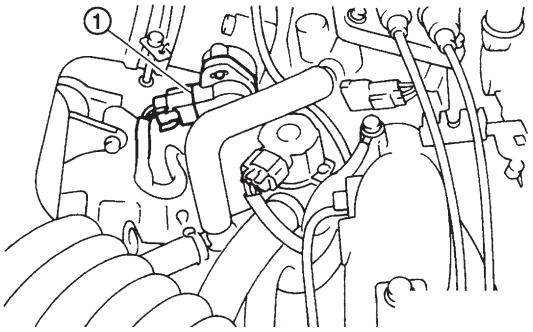
3. Electrical Components Location

1. SENSOR AND CONTROL MODULE

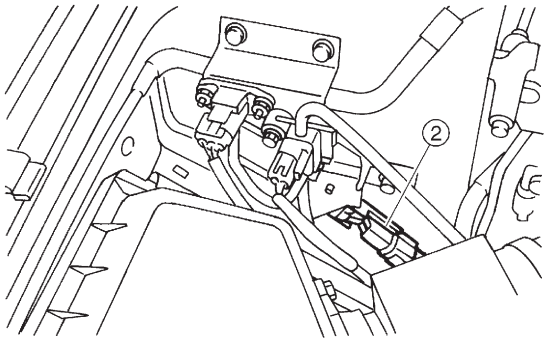


H3M1087A

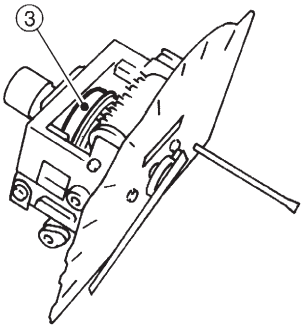
① Throttle position sensor
② Dropping resistor
③ Vehicle speed sensor 2
④ Inhibitor switch
⑤ ECM
⑥ Vehicle speed sensor 1 (AWD)
⑦ Vehicle speed sensor 1 (FWD)
⑧ TCM
⑨ Data link connector (for Subaru select monitor only)
⑩ Data link connector (for Subaru select monitor and OBD-II general scan tool)
⑪ Diagnosis connector
⑫ Diagnosis terminal
⑬ AT OIL TEMP indicator light (AT diagnostic indicator light)



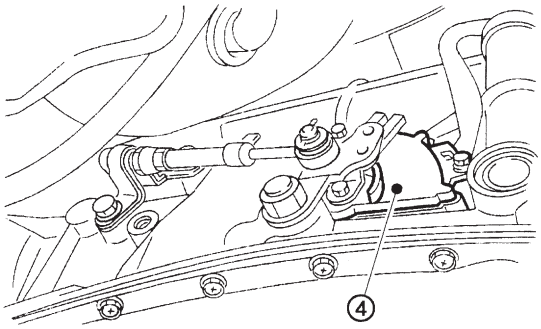
B2M0155A



OBD0046A



H2M1144B



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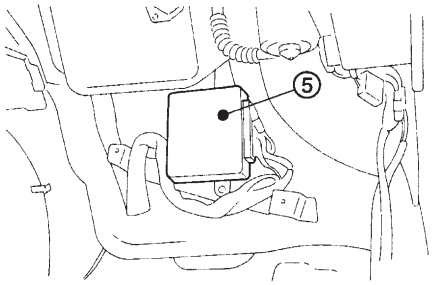

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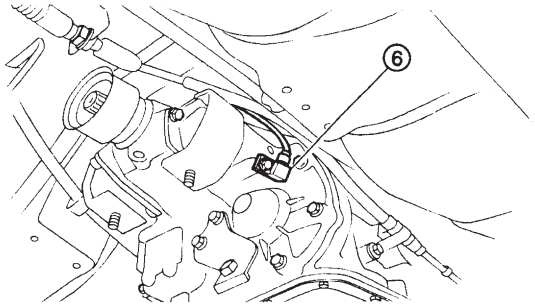

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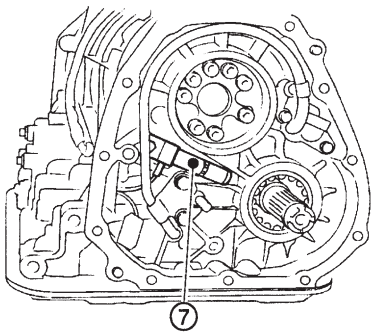

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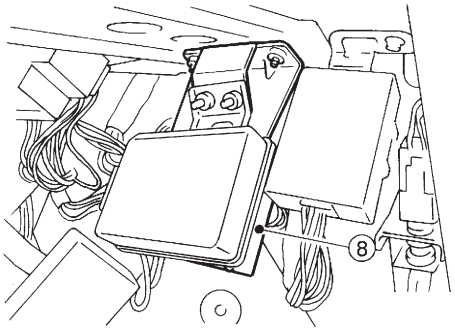
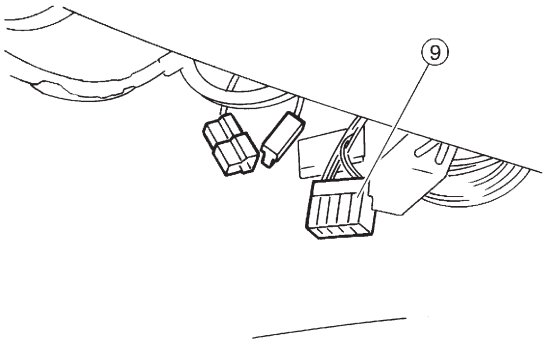
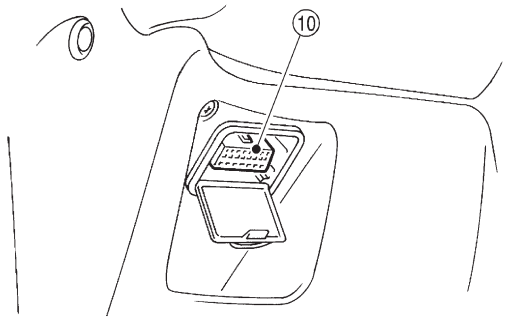


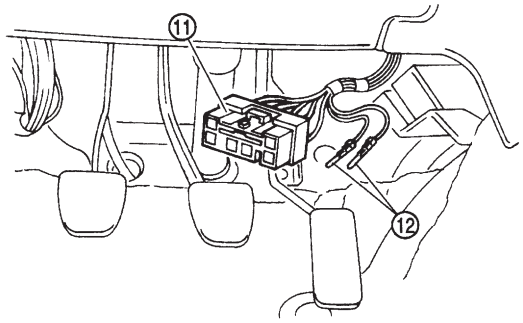
H2M1143B



OBD0005C



H2M1134C



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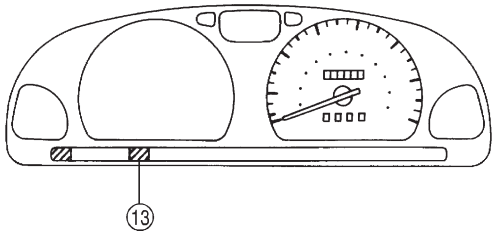
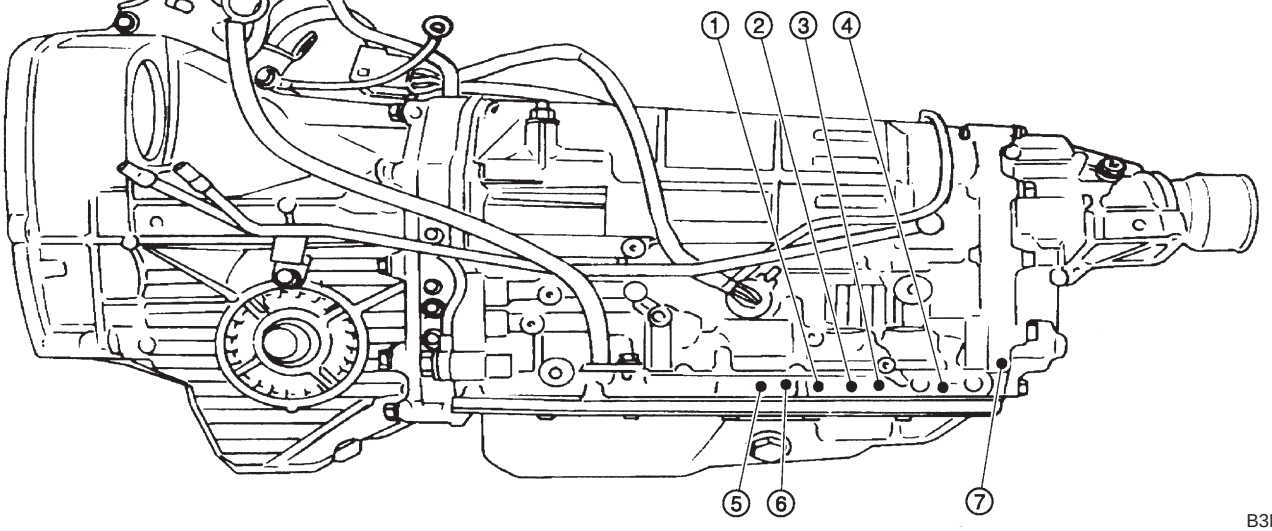


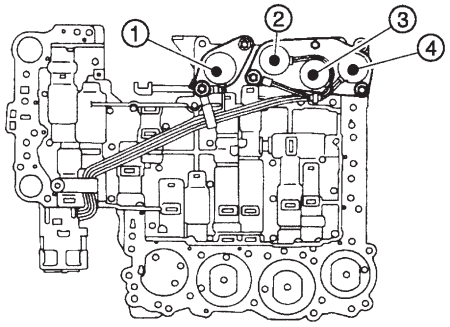
H2M1135D

2. SOLENOID

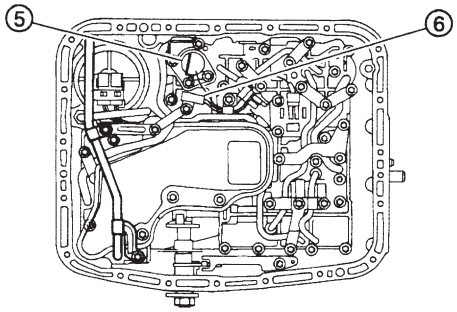


B3M0187A

① Duty solenoid A
② Solenoid 2
③ Solenoid 1
④ Solenoid 3
⑤ Duty solenoid B
⑥ ATF temperature sensor
⑦ Duty solenoid C (AWD)



B3M0188A



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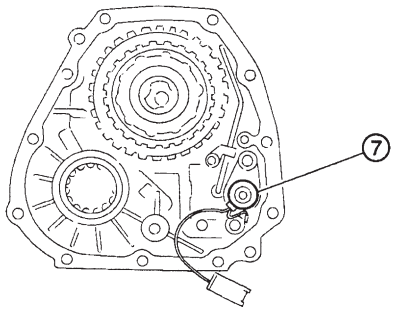
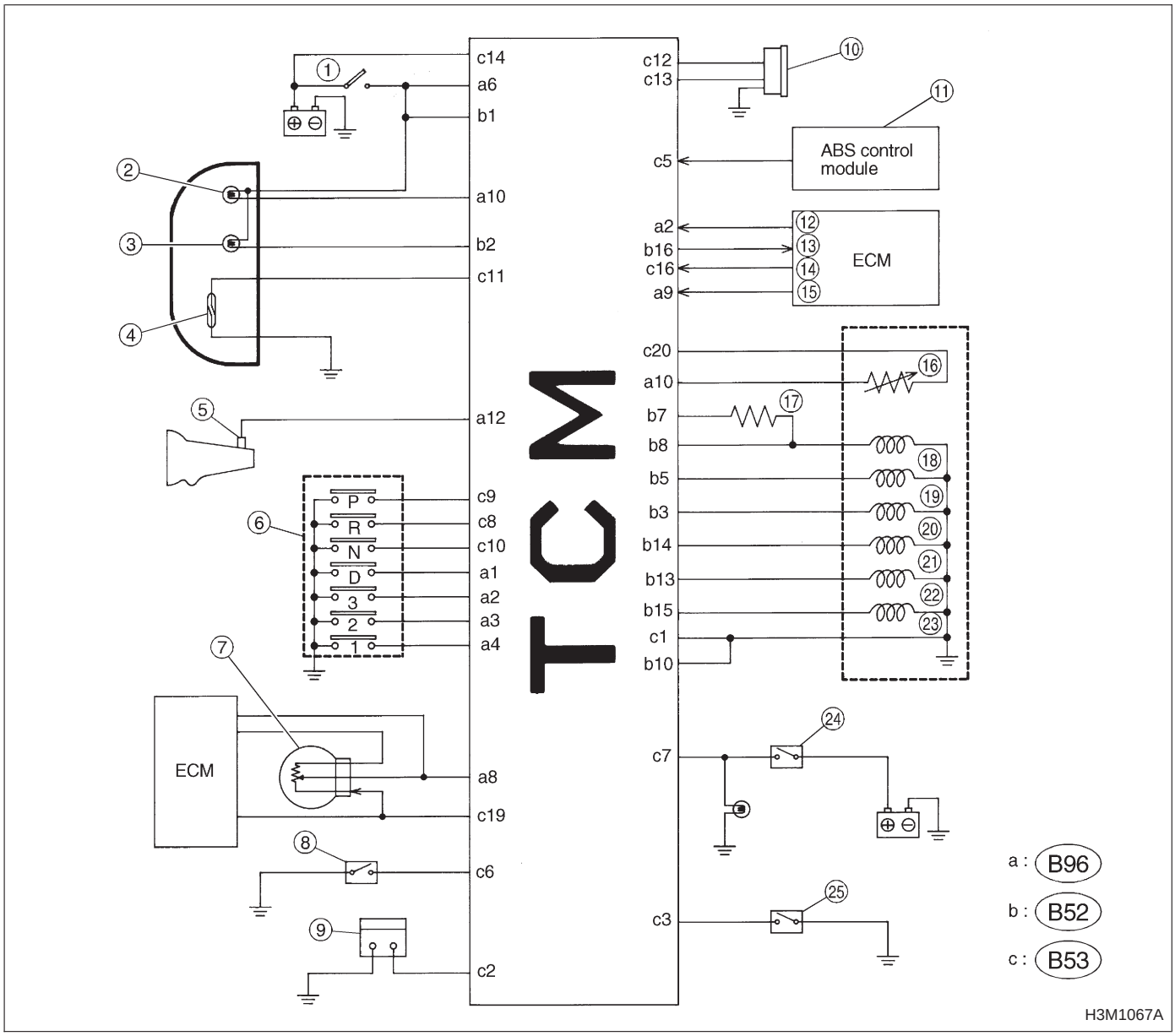


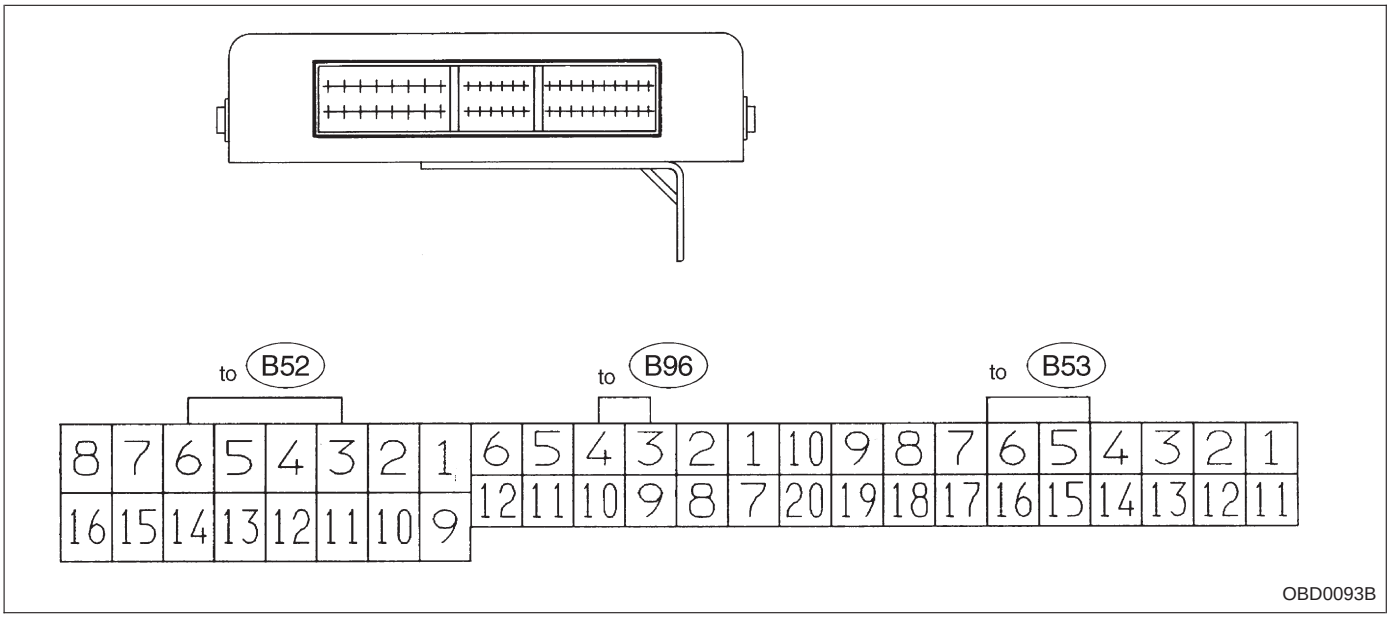
B3M0190A

4. Schematic



① Ignition switch
② FWD indicator light
③ AT OIL TEMP indicator light
④ Vehicle speed sensor 2
⑤ Vehicle speed sensor 1
⑥ Inhibitor switch
⑦ Throttle position sensor
⑧ Diagnosis switch
⑨ FWD switch (AWD)
⑩ Data link connector
⑪ ABS control module
⑫ Engine speed signal
⑬ Torque control signal
⑭ Torque control cut signal
⑮ Mass air flow signal
⑯ ATF temperature sensor
⑰ Dropping resistor
⑱ Duty solenoid A
⑲ Duty solenoid B
⑳ Duty solenoid C (AWD)
㉑ Shift solenoid 1
㉒ Shift solenoid 2
㉓ Shift solenoid 3
㉔ Brake switch
㉕ Cruise set switch

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



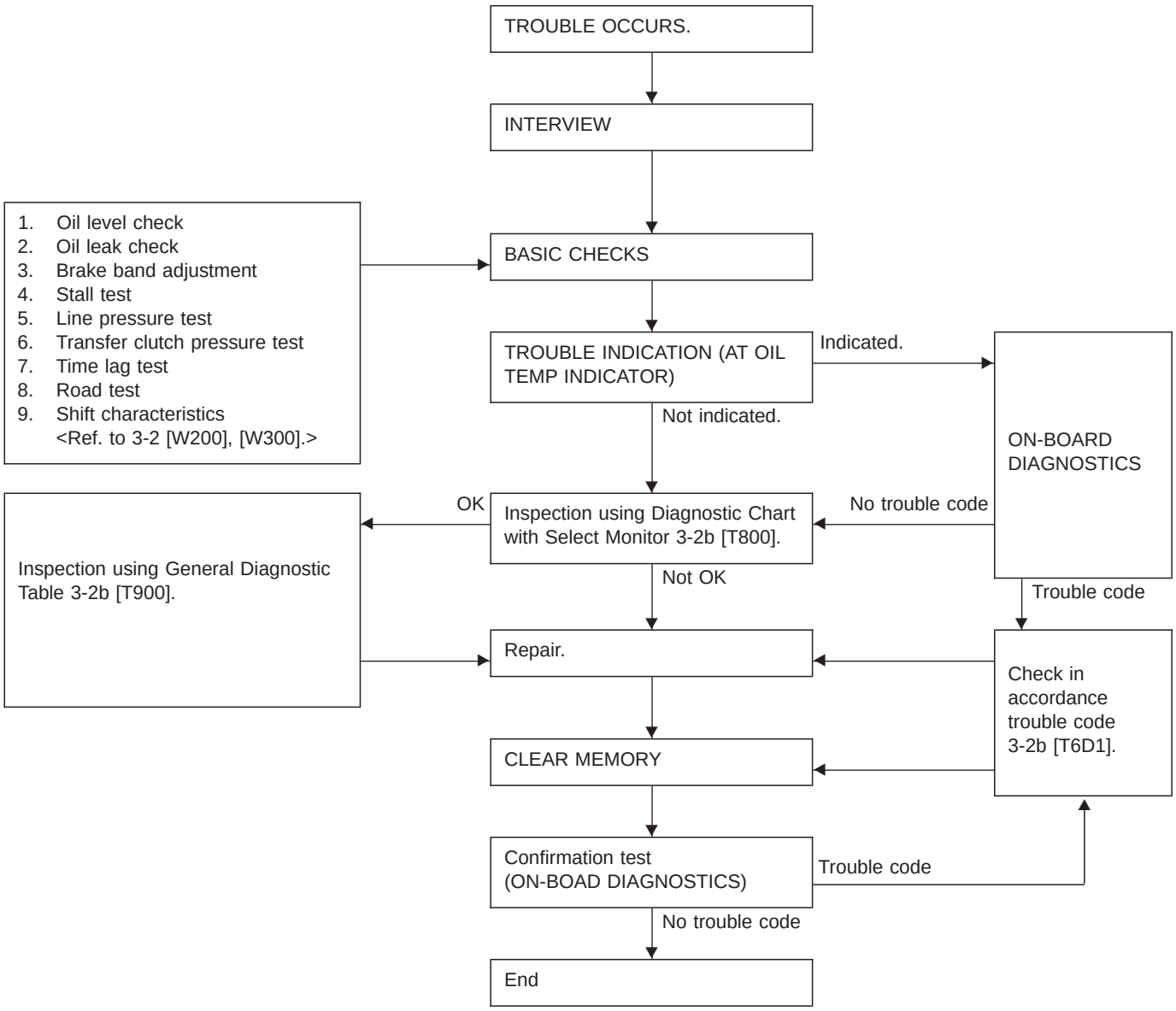
Check with ignition switch ON.

Content		Connector No.	Terminal No.	Measuring conditions	Voltage (V)
Back-up power supply		B53	14	Ignition switch OFF	10 — 16
Ignition power supply		B96	6	Ignition switch ON (with engine OFF)	10 — 16
		B52	1		
Inhibitor switch	“P” range switch	B53	9	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	B53	8	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	B53	10	Select lever in “R” range	Less than 1
				Select lever in any other than “R” range	More than 6
	“D” range switch	B96	1	Select lever in “D” range	Less than 1
				Select lever in any other than “D” range	More than 6
	“3” range switch	B96	2	Select lever in “3” range	Less than 1
				Select lever in any other than “3” range	More than 6
	“2” range switch	B96	3	Select lever in “2” range	Less than 1
				Select lever in any other than “2” range	More than 6
	“1” range switch	B96	4	Select lever in “1” range	Less than 1
				Select lever in any other than “1” range	More than 6
Diagnosis switch		B53	6	Diagnosis connector connected.	Less than 1
				Diagnosis connector disconnected.	More than 6
Brake switch		B53	7	Brake pedal depressed.	More than 10.5
				Brake pedal released.	Less than 1
ABS signal		B53	5	ABS switch ON	Less than 1
				ABS switch OFF	More than 6.5
AT diagnostic signal		B96	12	Ignition switch ON (With engine OFF)	Less than 1
				Ignition switch ON (With engine ON)	More than 10

Content	Connector No.	Terminal No.	Measuring conditions	Voltage (V)	Resistance to body (ohms)
Throttle position sensor	B96	8	Throttle fully closed.	0.5±0.2	—
			Throttle fully open.	4.6±0.3	
Throttle position sensor power supply	B53	19	Ignition switch ON (With engine OFF)	5.05±0.25	—
ATF temperature sensor	B96	10	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	275 — 375
Vehicle speed sensor 1	B96	12	Vehicle stopped.	0	450 — 720
			Vehicle speed at least 20 km/h (12 MPH)	More than 1 (AC range)	
Vehicle speed sensor 2	B53	11	When vehicle is slowly moved at least 2 meters (7ft).	Less than 1↔More than 4	—
Engine speed signal	B96	5	Ignition switch ON (with engine OFF).	More than 10.5	—
			Ignition switch ON (with engine ON).	8 — 11	
Cruise set signal	B53	3	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	B52	16	Ignition switch ON	5±1	—
Torque control cut signal	B53	16	Ignition switch ON	6 — 9	—
Mass air flow signal	B96	9	Engine idling after warm-up	0.5 — 1.2	—
Shift solenoid 1	B52	14	1st or 4th gear	More than 9	20 — 32
			2nd or 3rd gear	Less than 1	
Shift solenoid 2	B52	13	1st or 2nd gear	More than 9	20 — 32
			3rd or 4th gear	Less than 1	
Shift solenoid 3	B52	15	Select lever in “N” range (with throttle fully closed).	Less than 1	20 — 32
			Select lever in “D” range (with throttle fully closed).	More than 9	
Duty solenoid A	B52	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 1	
Dropping resistor	B52	7	Throttle fully closed (with engine OFF) after warm-up.	More than 8.5	12 — 18
			Throttle fully open (with engine OFF) after warm-up.	Less than 1	
Duty solenoid B	B52	5	When lock up occurs.	More than 8.5	9 — 17
			When lock up is released.	Less than 0.5	
Duty solenoid C (AWD model only)	B52	3	Fuse on FWD switch	More than 8.5	9 — 17
			Fuse removed from FWD switch (with throttle fully open and with select lever in 1st gear).	Less than 0.5	
Sensor ground line 1	B96	7	—	0	Less than 1
Sensor ground line 2	B53	20	—	0	Less than 1
System ground line	B53	1	—	0	Less than 1
Power system ground line	B52	10	—	0	Less than 1
FWD switch (AWD model only)	B53	2	Fuse removed.	6 — 9.1	—
			Fuse installed.	Less than 1	

6. Diagnostic Chart for On-board Diagnostic System

A: BASIC DIAGNOSTICS PROCEDURE

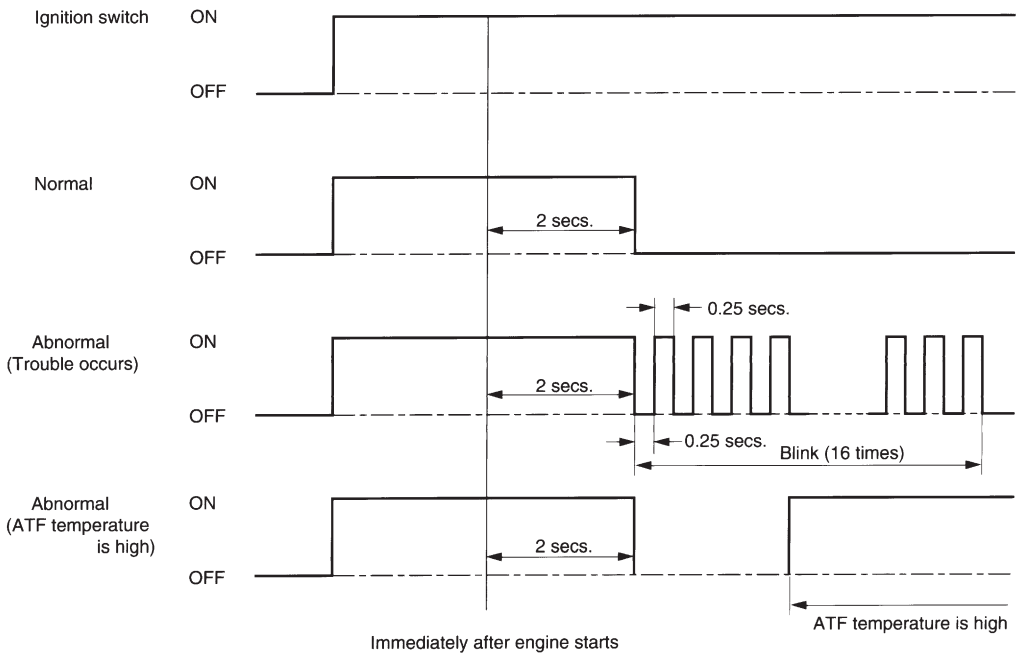


B: ABNORMAL DISPLAY ON AT OIL TEMP INDICATOR

When any on-board diagnostic item is malfunctioning, the display on the AT OIL TEMP indicator blinks immediately after the engine starts.
The malfunctioning part or unit can be determined by a trouble code during on-board diagnostic 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.

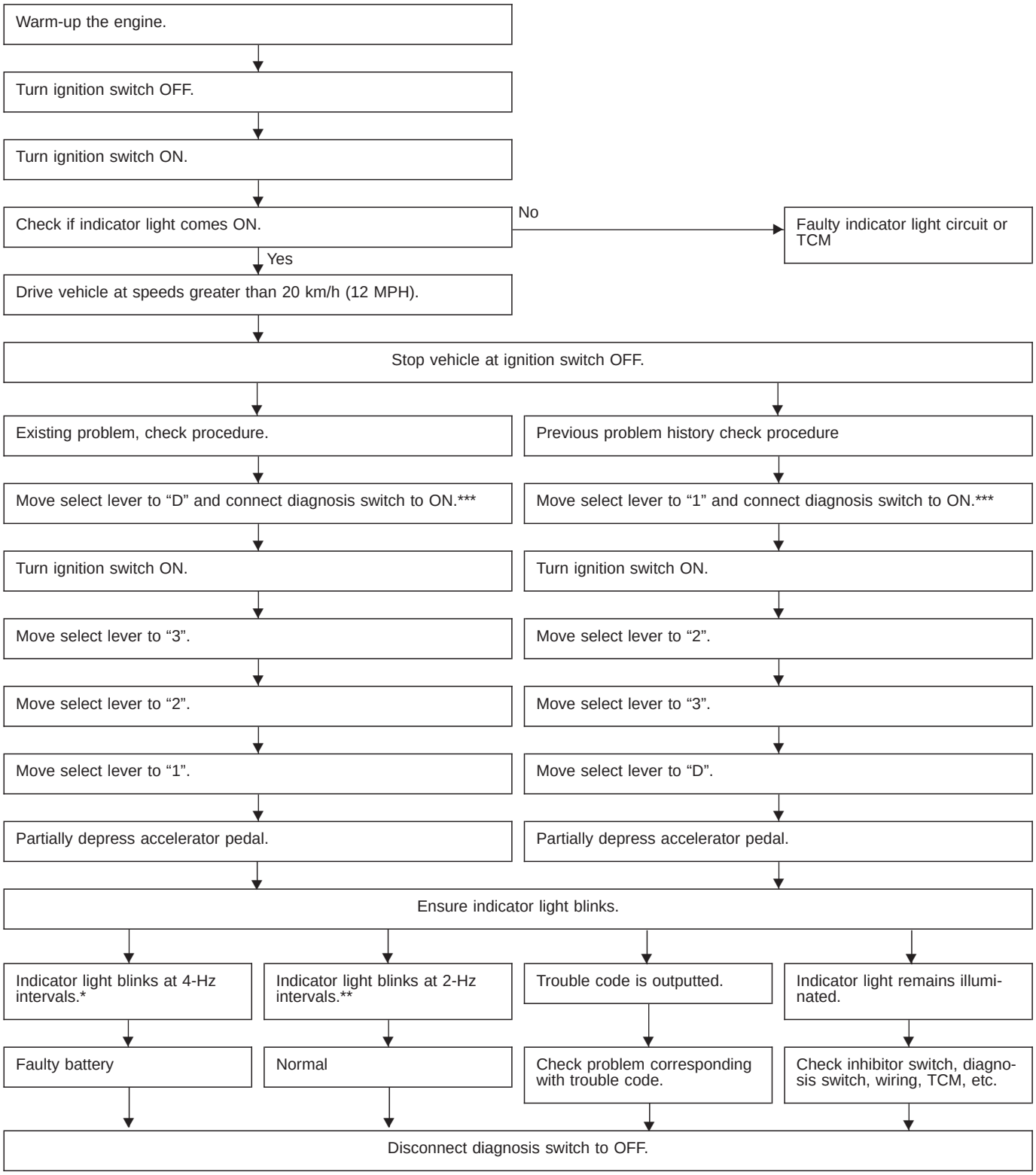
WARNING:

Warning can be noticed only when the engine is initially started.



H3H1066

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).
***: Plug in diagnosis terminal to diagnosis connector No. 5 located below instrument lower cover.

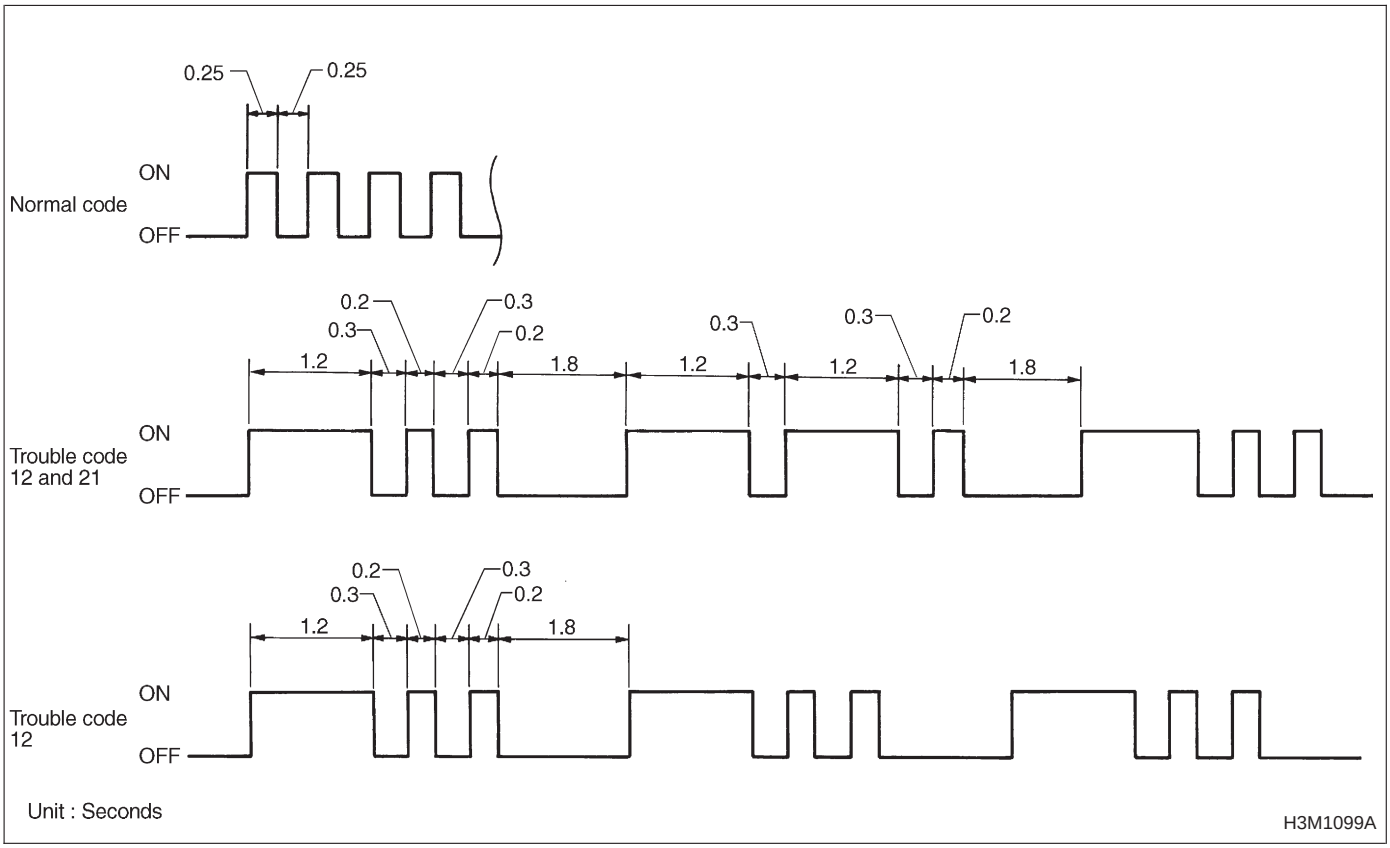
D: LIST OF TROUBLE CODE

1. TROUBLE CODE

Trouble code	Item	Content of diagnosis	Abbr. (Select monitor)	Page
11	Duty solenoid A	Detects open or shorted drive circuit, as well as valve seizure.	PL	16
12	Duty solenoid B	Detects open or shorted drive circuit, as well as valve seizure.	L/U	20
13	Shift solenoid 3	Detects open or shorted drive circuit, as well as valve seizure.	OVR	24
14	Shift solenoid 2	Detects open or shorted drive circuit, as well as valve seizure.	SFT2	26
15	Shift solenoid 1	Detects open or shorted drive circuit, as well as valve seizure.	SFT1	28
16	Torque control cut signal	Detects open or shorted input signal circuit.	TQ.DS	30
21	ATF temperature sensor	Detects open or shorted input signal circuit.	ATFT	32
22	Mass air flow signal	Detects open or shorted input signal circuit.	AFM	35
23	Engine speed signal	Detects open or shorted input signal circuit.	EREV	37
24	Duty solenoid C	Detects open or shorted drive circuit, as well as valve seizure.	4WD	39
25	Torque control signal	Detects open or shorted input signal circuit.	TQ.CT	41
31	Throttle position sensor	Detects open or shorted input signal circuit.	THV	43
32	Vehicle speed sensor 1	Detects open or shorted input signal circuit.	VSP1	46
33	Vehicle speed sensor 2	Detects open or shorted input signal circuit.	VSP2	50

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”.



E: CLEAR MEMORY

Current trouble codes shown on the display are cleared by turning the ignition switch OFF after conducting on-board diagnostic 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 right lower portion of the instrument panel).

CLEAR MEMORY:

Removal of No. 14 fuse (for at least one minute)

- The No. 14 fuse is located in the line to the memory back-up power supply of the TCM and ECM (MFI). Removal of this fuse clears the previous trouble codes stored in the TCM and ECM (MFI) memory.
- Be sure to remove the No. 14 fuse for at least the specified length of time. Otherwise, trouble codes may not be cleared.

7. Diagnostic Chart with Trouble Code

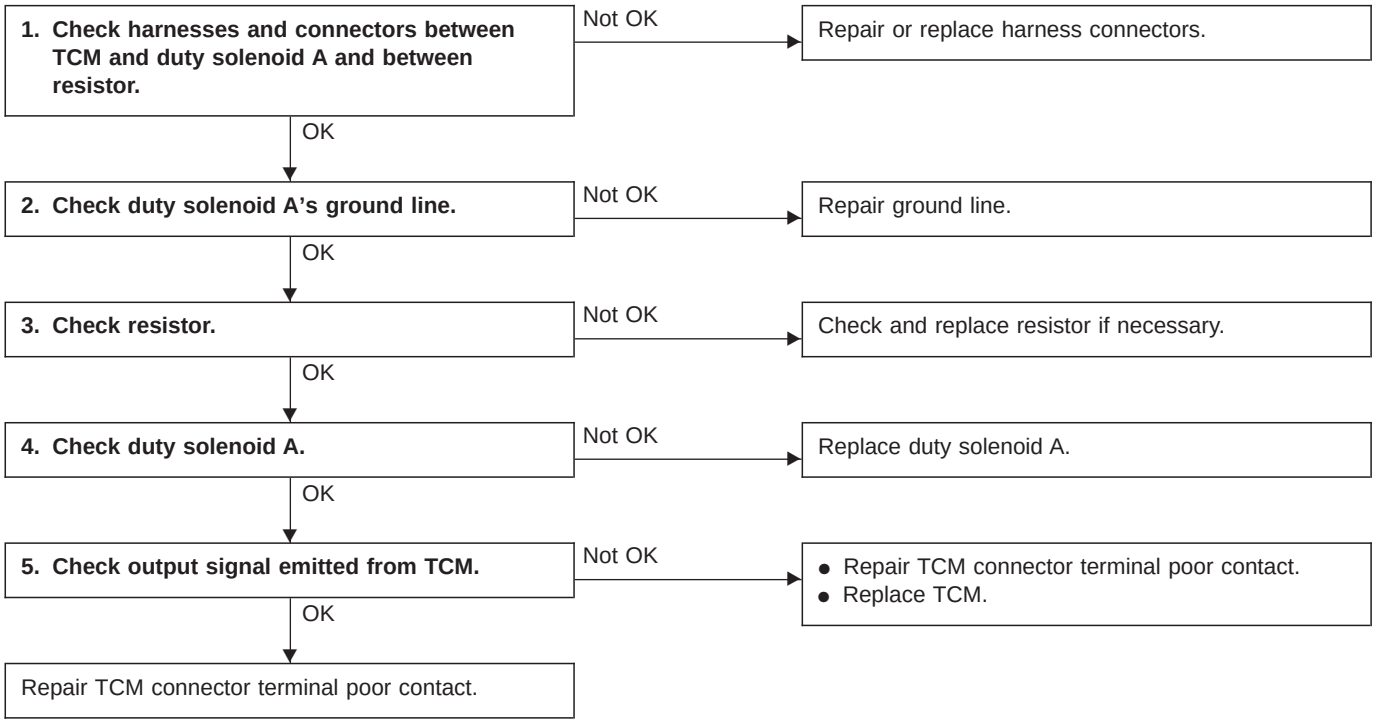
A: TROUBLE CODE 11 — DUTY SOLENOID A —

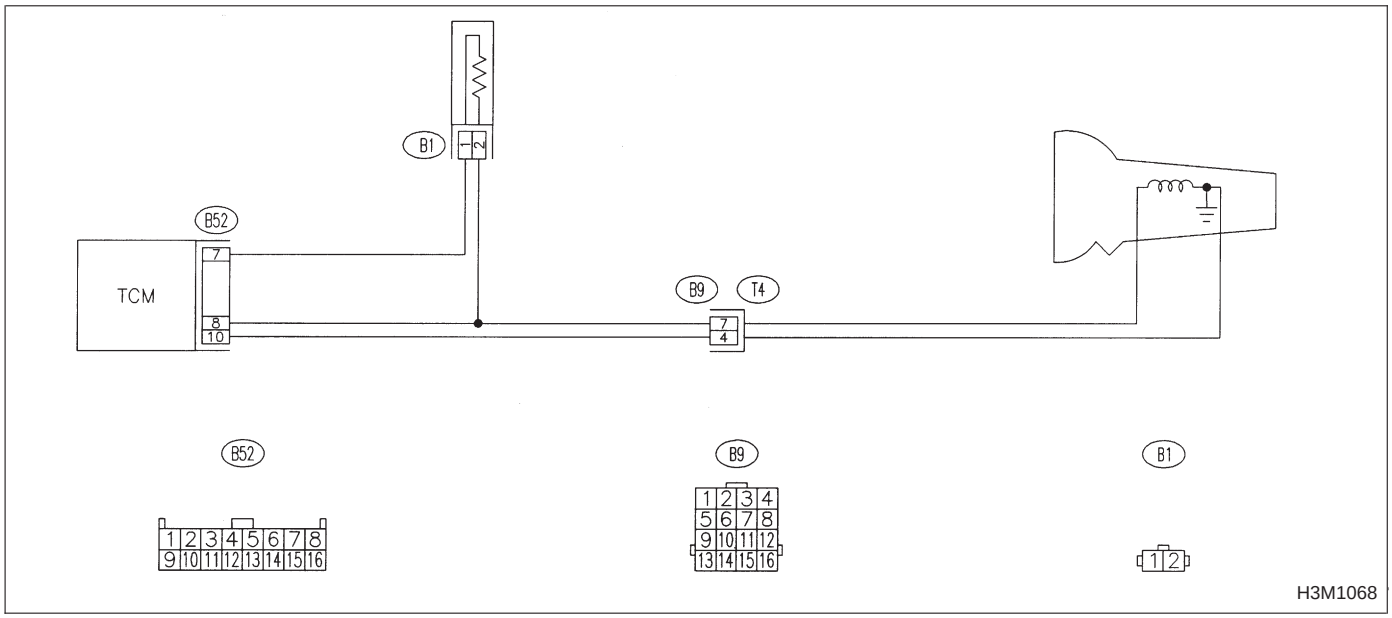
DIAGNOSIS:

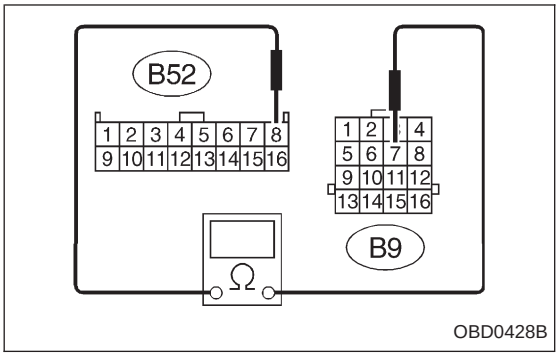
Output signal circuit of duty solenoid A or resistor is open or shorted.

TROUBLE SYMPTOM:

Excessive shift shock



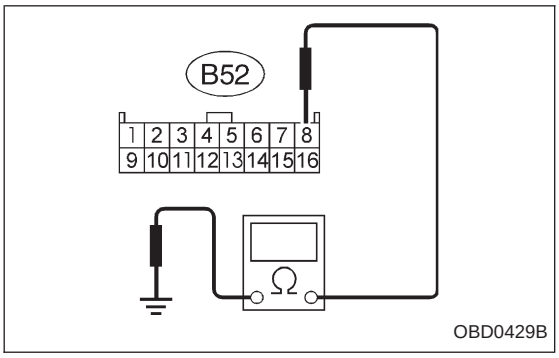




1. CHECK HARNESSES AND CONNECTORS BETWEEN TCM AND DUTY SOLENOID A AND BETWEEN RESISTOR.

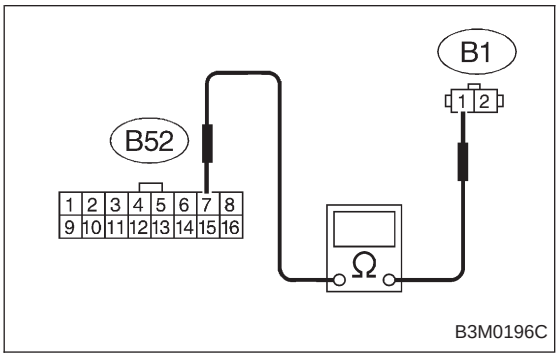
1) Turn ignition switch to OFF.
2) Disconnect connectors from TCM, transmission and resistor.
3) Measure resistance of harness connector between TCM and transmission.

Connector & terminal / Specified resistance:
(B52) No. 8 — (B9) No. 7 / 1 Ω, or less



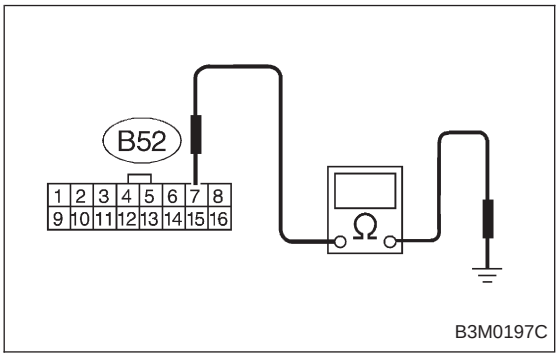
4) Measure resistance of harness connector between TCM and body to make sure that circuit does not short.

Connector & terminal / Specified resistance:
(B52) No. 8 — Body / 1 MΩ, or more



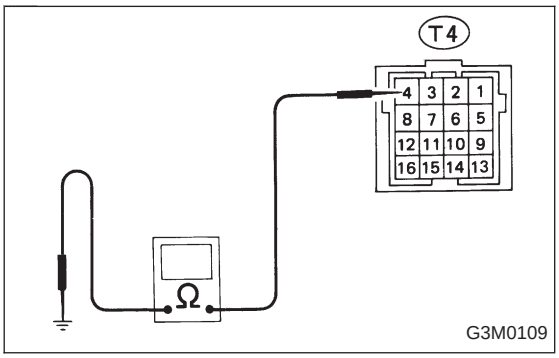
5) Measure resistance of harness connector between TCM and resistor connector.

Connector & terminal / Specified resistance:
(B52) No. 7 — (B1) No. 1 / 1 Ω, or less



6) Measure resistance of harness connector between TCM and body to make sure that circuit does not short.

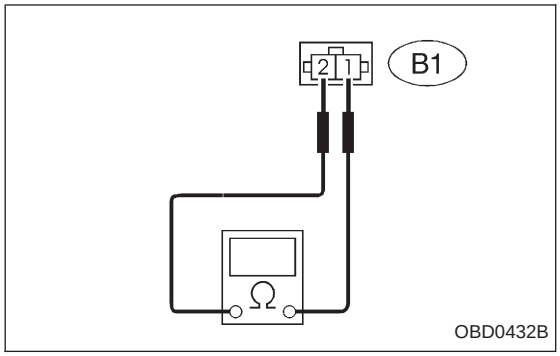
Connector & terminal / Specified resistance:
(B52) No. 7 — Body / 1 MΩ, or more



2. CHECK DUTY SOLENOID A's GROUND LINE.

Measure resistance between transmission connector receptacle (on transmission) and transmission case.

Connector & terminal / Specified resistance:
(T4) No. 4 — Transmission / 1 Ω, or less

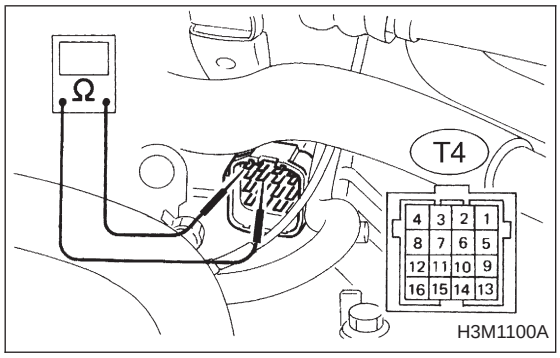


3. CHECK RESISTOR.

Measure resistance between resistor terminals.

Specified resistance:

(B1) No. 1 — No. 2 / 9 — 15 Ω

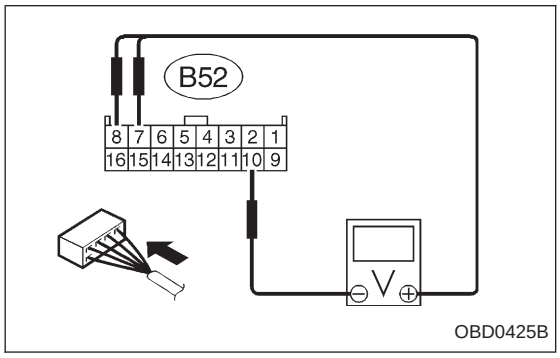


4. CHECK DUTY SOLENOID A.

Measure resistance between transmission connector receptacle (on transmission) terminals.

Connector & terminal / Specified resistance:

(T4) No. 7 — No. 4 / 1.5 — 4.5 Ω

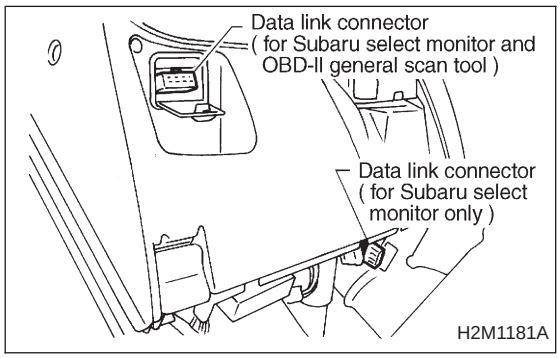


5. CHECK OUTPUT SIGNAL EMITTED FROM TCM.

1) Connect connectors to TCM, transmission and resistor.
2) Start and warm-up the engine and transmission.
3) Ignition switch ON (Engine OFF).
4) Move selector lever to “N”.
5) Measure voltage between TCM connector and body while opening and closing throttle position sensor.

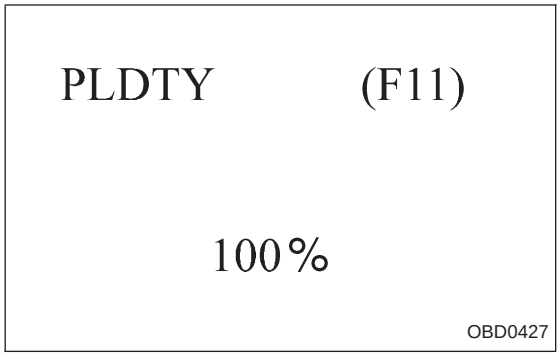
Connector & terminal / Specified resistance:

(B52) No. 8 — No. 10 / 1.5 — 4.0 V (Throttle is fully closed.)
(B52) No. 8 — No. 10 / 1 V, or less (Throttle is fully open.)
(B52) No. 7 — No. 10 / 5 — 14 V (Throttle is fully closed.)
(B52) No. 7 — No. 10 / 1 V, or less (Throttle is fully open.)



- Using Subaru select monitor:

  (1) Connect connectors to TCM, transmission and resistor.
  (2) Turn ignition switch to OFF.
  (3) Connect the Subaru select monitor to data link connector.
  (4) Turn ignition switch to ON and Subaru select monitor switch to ON.



(5) Start and warm-up the engine and transmission.
(6) Stop the engine and turn ignition switch to ON (Engine OFF).
(7) Move selector lever to “N”.
(8) Read data on Subaru select monitor.
(9) Designate mode using function key.

Function mode: F11

SPECIFIED DATA:

- ***100% (Throttle is fully closed.)***
- ***15% (Throttle is fully open.)***

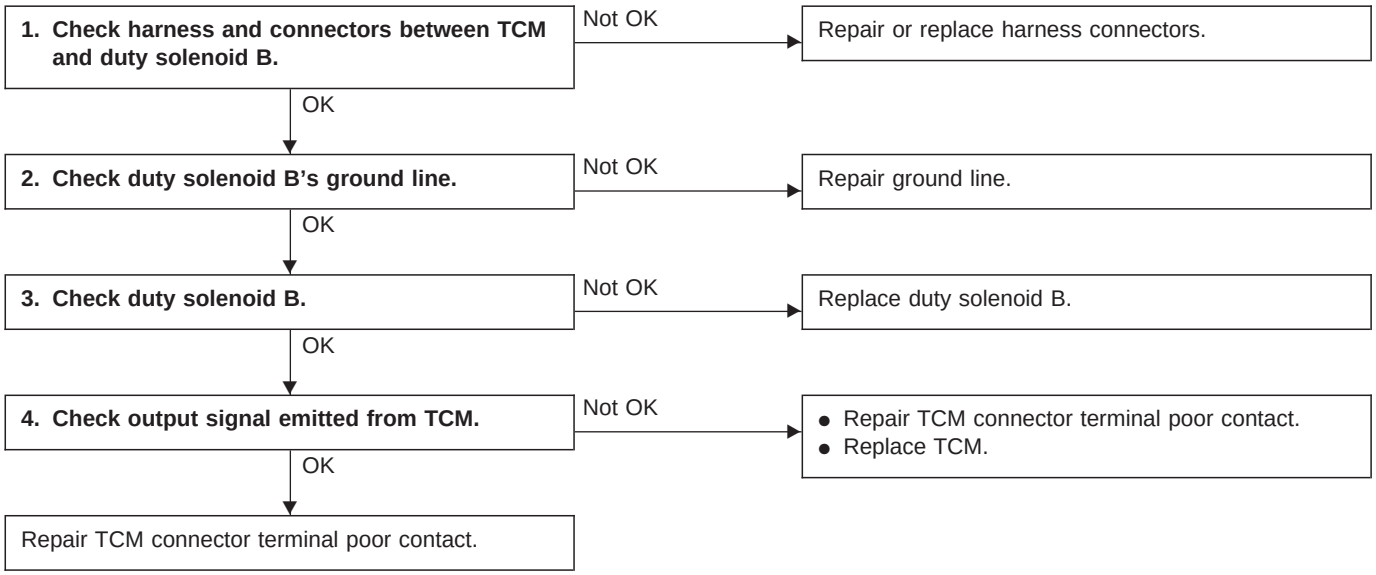
B: TROUBLE CODE 12 — DUTY SOLENOID B —

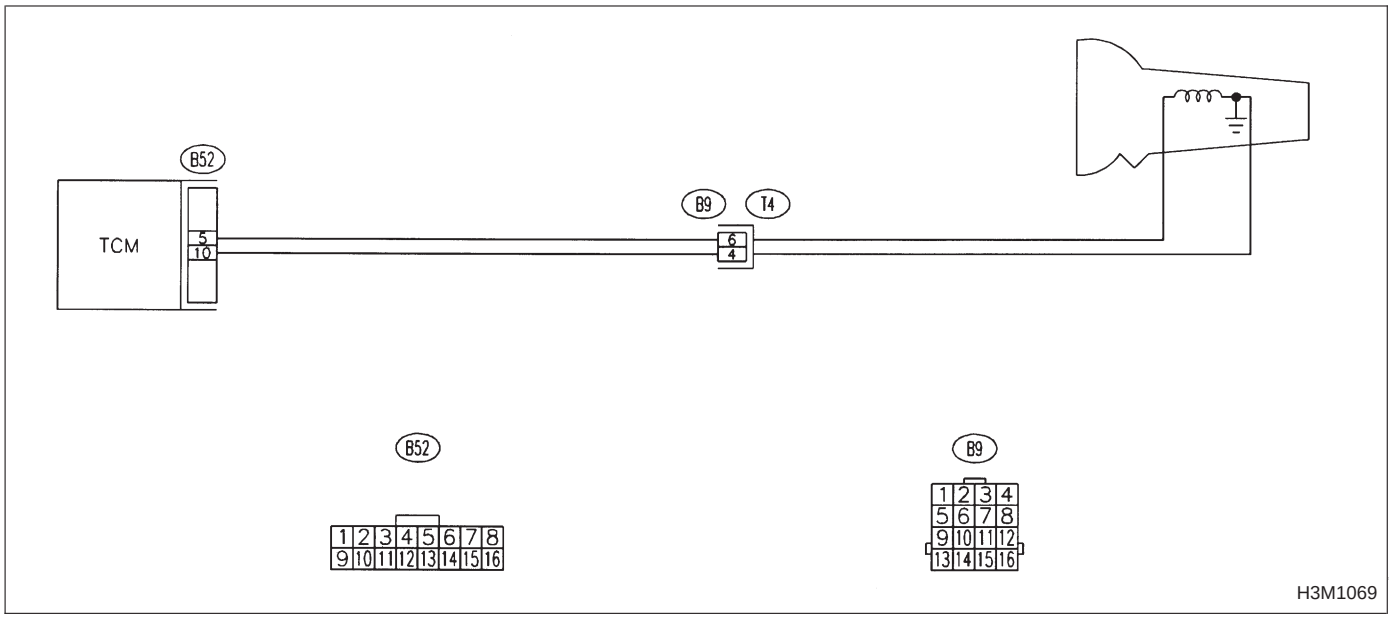
DIAGNOSIS:

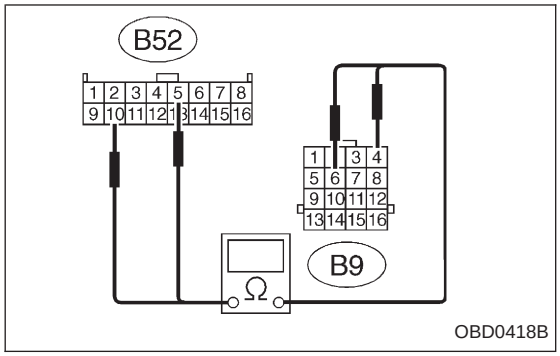
Output signal circuit of duty solenoid B is open or shorted.

TROUBLE SYMPTOM:

No lock-up (after engine warm-up)



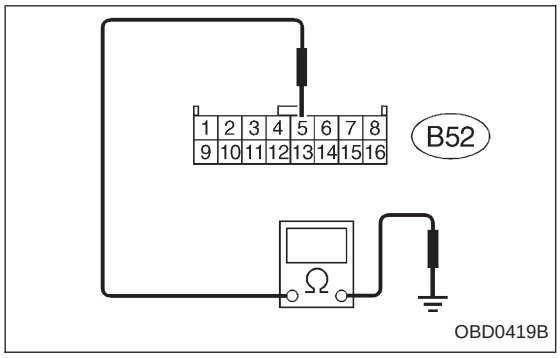




1. CHECK HARNESS AND CONNECTORS BETWEEN TCM AND DUTY SOLENOID B.

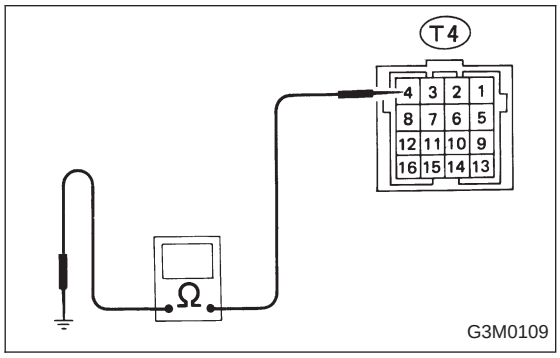
1) Turn ignition switch to OFF.
2) Disconnect connectors from TCM and transmission.
3) Measure resistance of harness connector between TCM and transmission connector.

Connector & terminal / Specified resistance:
(B52) No. 5 — (B9) No. 6 / 1 Ω, or less
(B52) No. 10 — (B9) No. 4 / 1 Ω, or less



4) Measure resistance of harness connector between TCM and body to make sure that circuit does not short.

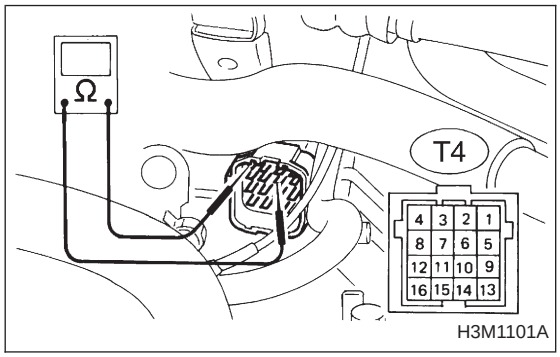
Connector & terminal / Specified resistance:
(B52) No. 5 — Body / 1 MΩ, or more



2. CHECK DUTY SOLENOID B's GROUND LINE.

Measure resistance between transmission connector receptacle and transmission case.

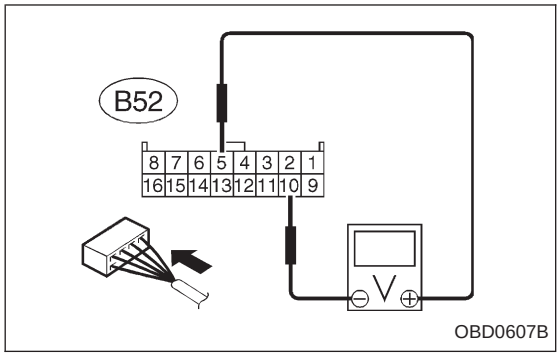
Connector & terminal / Specified resistance:
(T4) No. 4 — Transmission / 1 Ω, or less



3. CHECK DUTY SOLENOID B.

Measure resistance between transmission connector receptacle's terminals.

Connector & terminal / Specified resistance:
(T4) No. 6 — No. 4 / 9 — 17 Ω



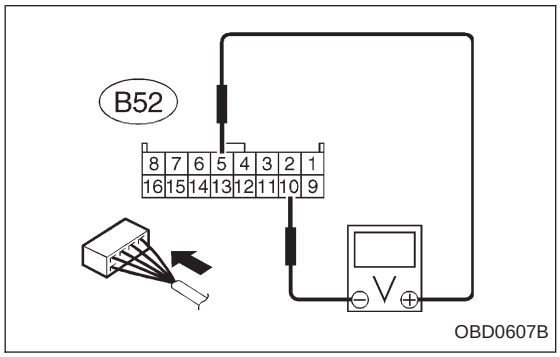
4. CHECK OUTPUT SIGNAL EMITTED FROM TCM.

1) Connect connectors to TCM and transmission.
2) Lift-up the vehicle or set the vehicle on free roller.

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

3) Start and warm-up the engine and transmission.
4) Move selector lever to “D” and slowly increase vehicle speed to 70 km/h or 44 MPH.
5) Measure voltage between TCM connector terminals.

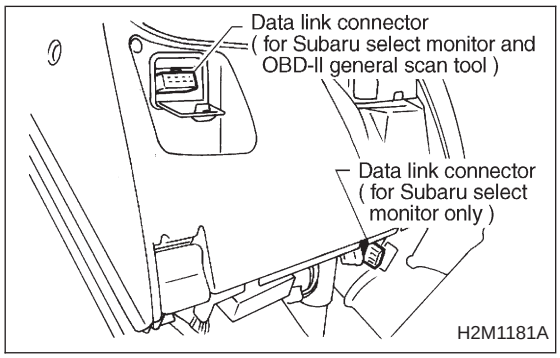
Connector & terminal / Specified voltage:
(B52) No. 5 — No. 10 / 8.5 V, or more (when wheels are locked-up.)



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

Connector & terminal / Specified voltage:
(B52) No. 5 — No. 10 / 0.5 V, or less

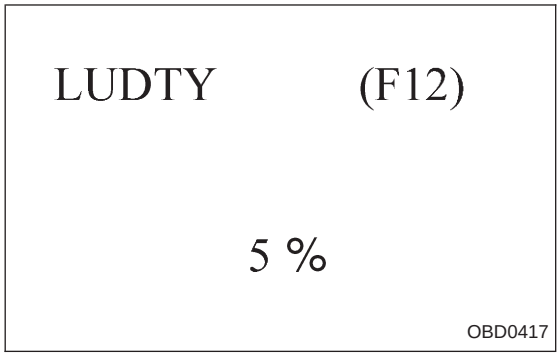
NOTE:
The speed difference between front and rear wheels may light either the ABS warning light, but this indicates no malfunctions. When AT control diagnosis is finished, perform the ABS memory clearance procedure of self-diagnosis system.
<Ref. to 4-4 [T1C2].>



- Using Subaru select monitor:
  (1) Connect connectors to TCM and transmission.
  (2) Lift-up the vehicle or set the vehicle on free roller.

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

  (3) Turn ignition switch to OFF.
  (4) Connect the Subaru select monitor to data link connector.
  (5) Turn ignition switch to ON and Subaru select monitor switch to ON.



(6) Start and warm-up the engine and transmission.
(7) Designate mode using function key.

Function mode: F12

(8) Move selector lever to “D” and slowly increase vehicle speed to 70 km/h or 44 MPH.
(9) Read data on Subaru select monitor.

SPECIFIED DATA:

- ***95% (Wheel locked-up)***
- ***5% (Released)***

NOTE:
The speed difference between front and rear wheels may light either 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 [T1C2].>

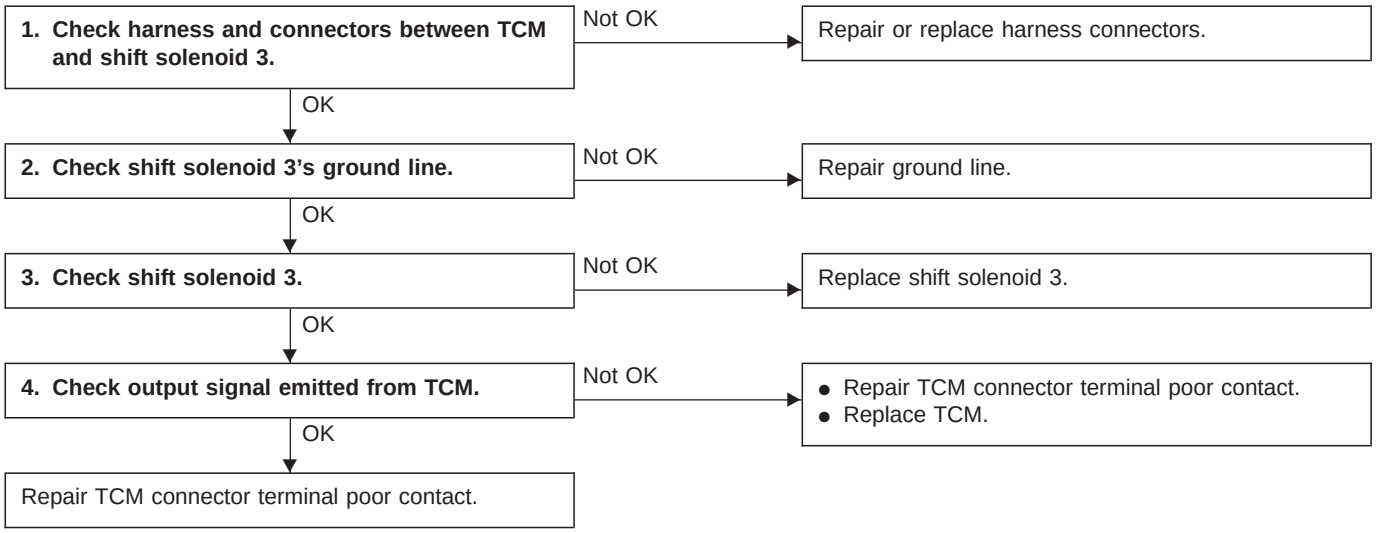
C: TROUBLE CODE 13 — SHIFT SOLENOID 3 —

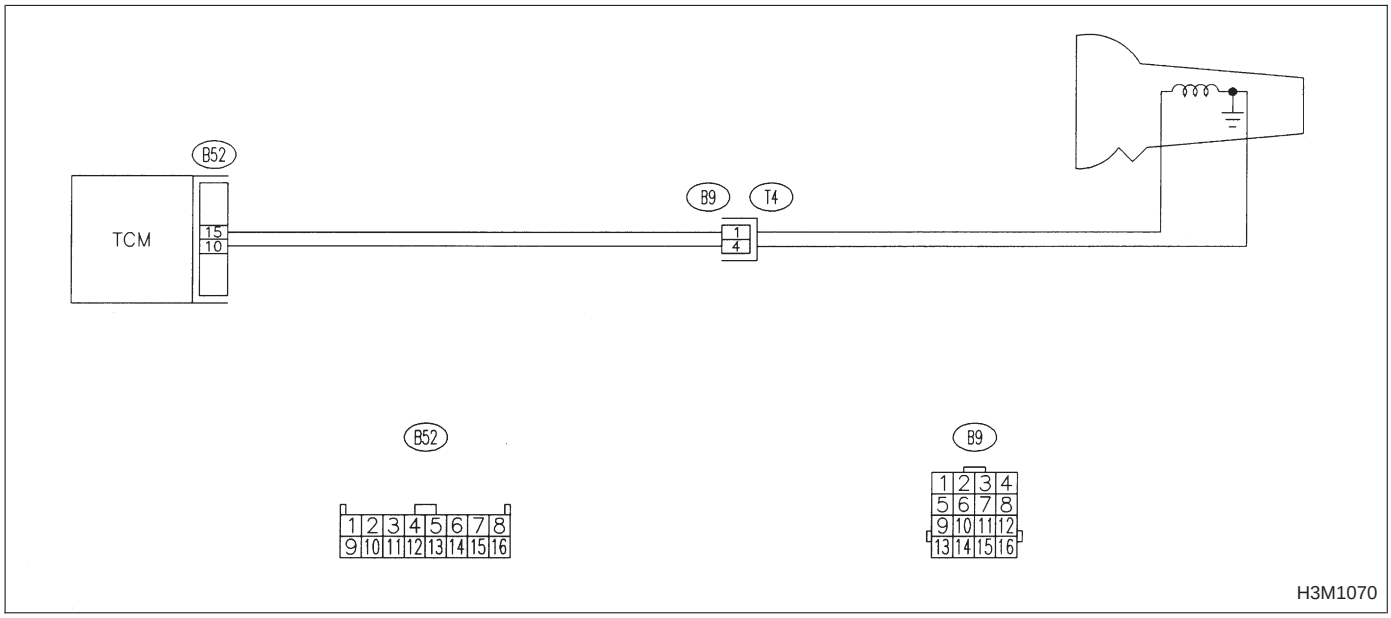
DIAGNOSIS:

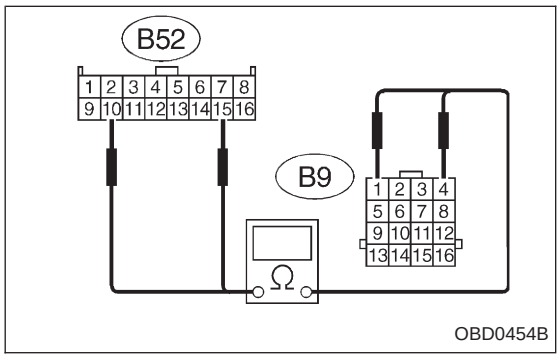
Output signal circuit of shift solenoid 3 is open or shorted.

TROUBLE SYMPTOM:

Ineffective engine brake with shift lever in “3”





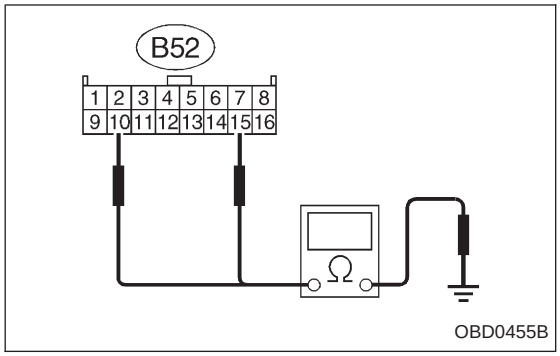


1. CHECK HARNESS AND CONNECTORS BETWEEN TCM AND SHIFT SOLENOID 3.

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

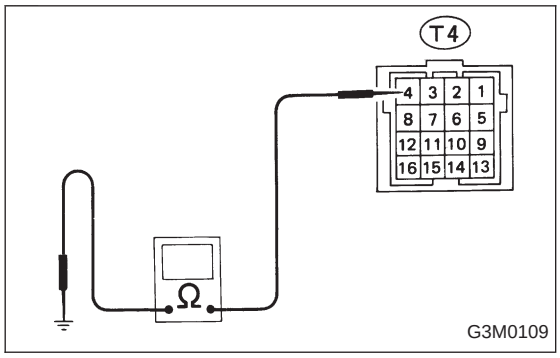
Connector & terminal / Specified resistance:

(B52) No. 15 — (B9) No. 1 / 1 Ω, or less
(B52) No. 10 — (B9) No. 4 / 1 Ω, or less



4) Measure resistance of harness connector between TCM and body to make sure that circuit does not short.

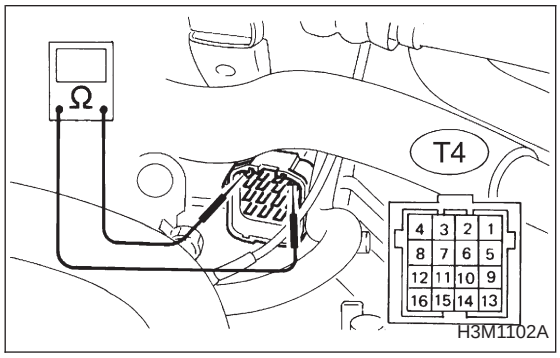
Connector & terminal / Specified resistance:
(B52) No. 15 — Body / 1 MΩ, or more
(B52) No. 10 — Body / 1 MΩ, or more



2. CHECK SHIFT SOLENOID 3's GROUND LINE.

Measure resistance between transmission connector receptacle and transmission case.

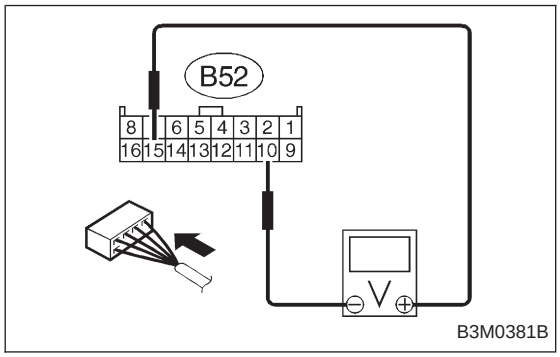
Connector & terminal / Specified resistance:
(T4) No. 4 — Transmission / 1 Ω, or less



3. CHECK SHIFT SOLENOID 3.

Measure resistance between transmission connector receptacle's terminals.

Connector & terminal / Specified resistance:
(T4) No. 1 — No. 4 / 20 — 32 Ω



4. CHECK OUTPUT SIGNAL EMITTED FROM TCM.

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

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

3) Start and warm-up the engine and transmission.
4) Idle the engine.
5) Move selector lever to "D".
6) Measure voltage between TCM connector terminals.

Connector & terminal / Specified voltage:
(B52) No. 15 — No. 10 / 9 V, or more

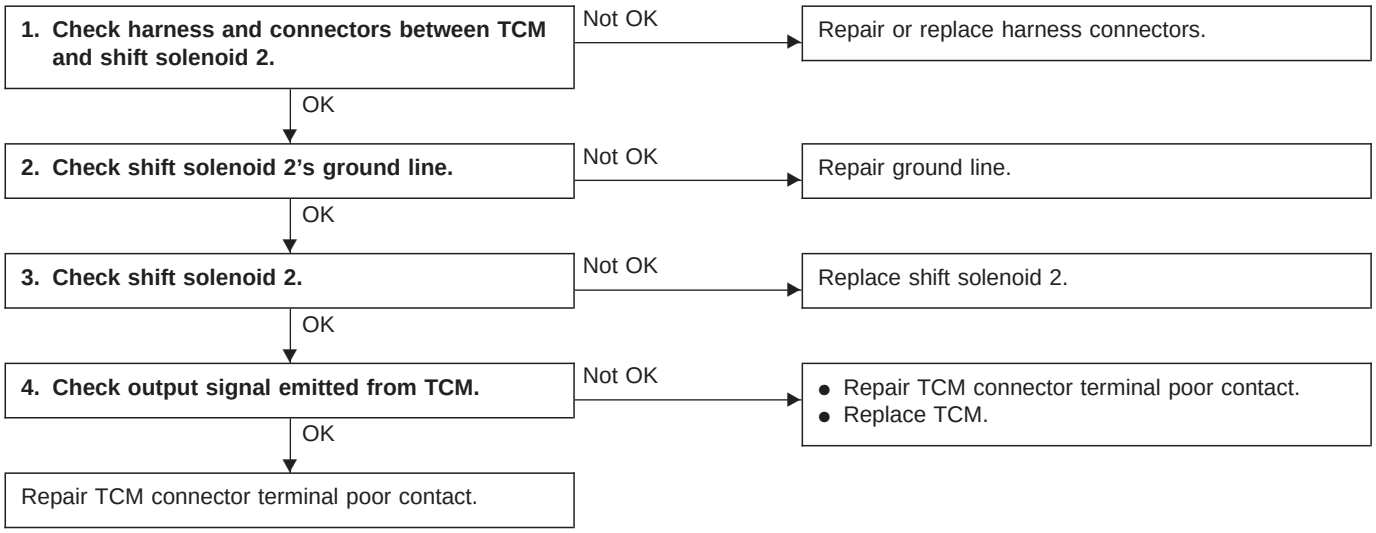
D: TROUBLE CODE 14 — SHIFT SOLENOID 2 —

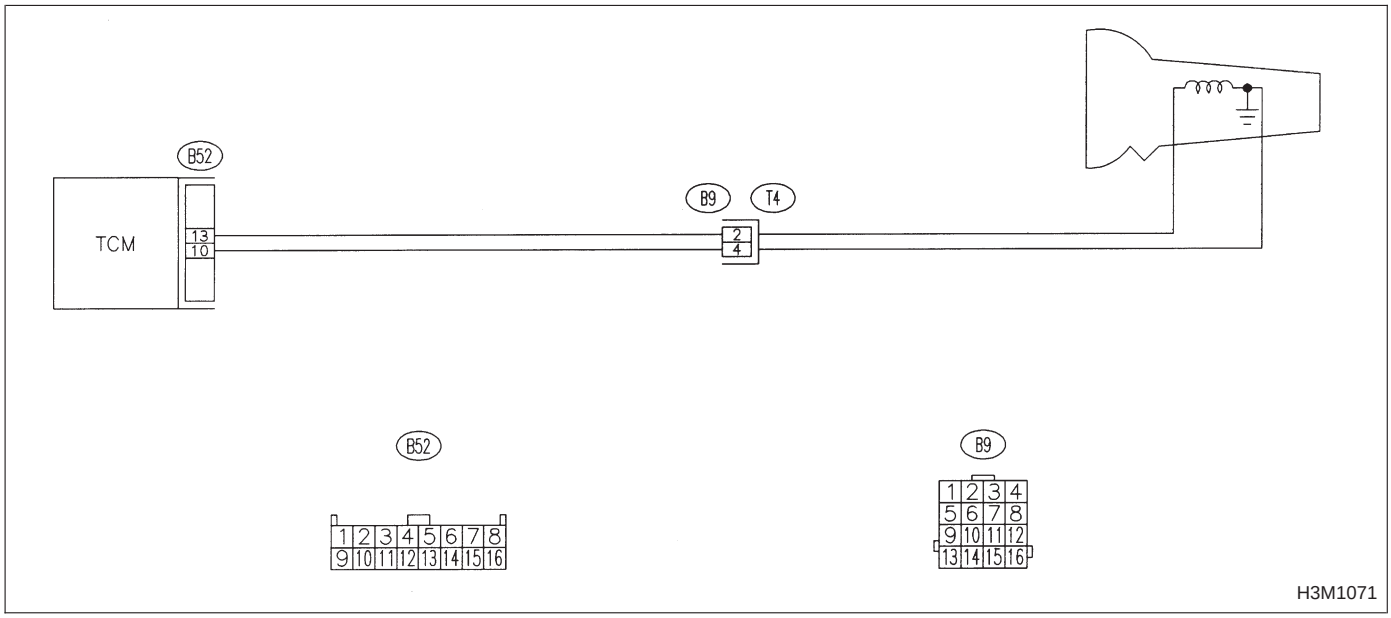
DIAGNOSIS:

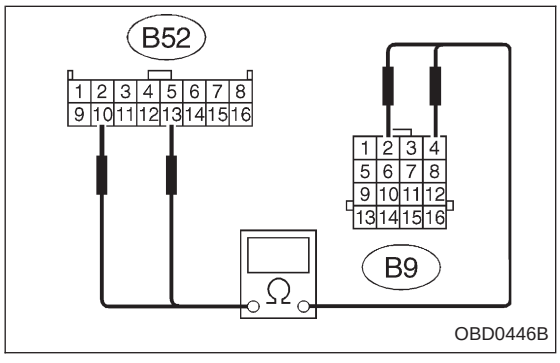
Output signal circuit of shift solenoid 2 is open or shorted.

TROUBLE SYMPTOM:

No shift





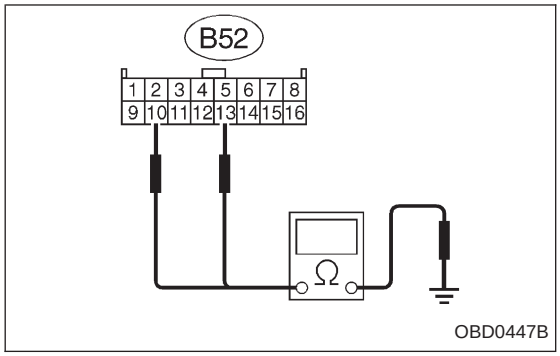


1. CHECK HARNESS AND CONNECTORS BETWEEN TCM AND SHIFT SOLENOID 2.

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

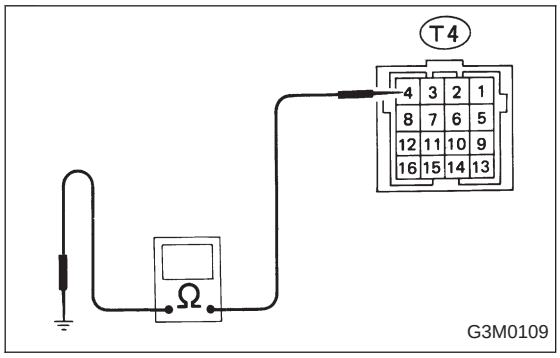
Connector & terminal / Specified resistance:

(B52) No. 13 — (B9) No. 2 / 1 Ω, or less
(B52) No. 10 — (B9) No. 4 / 1 Ω, or less



4) Measure resistance of harness connector between TCM and body to make sure that circuit does not short.

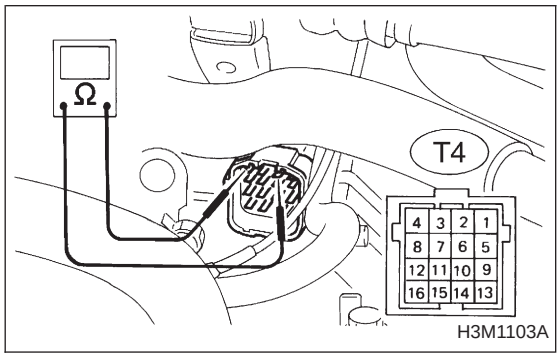
Connector & terminal / Specified resistance:
(B52) No. 13 — Body / 1 MΩ, or more
(B52) No. 10 — Body / 1 MΩ, or more



2. CHECK SHIFT SOLENOID 2's GROUND LINE.

Measure resistance between transmission connector receptacle and transmission case.

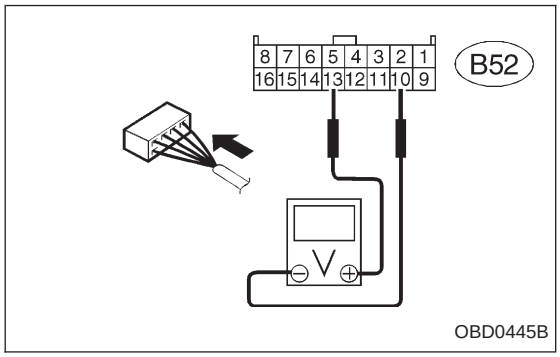
Connector & terminal / Specified resistance:
(T4) No. 4 — Transmission / 1 Ω, or less



3. CHECK SHIFT SOLENOID 2.

Measure resistance between transmission connector receptacle's terminals.

Connector & terminal / Specified resistance:
(T4) No. 2 — No. 4 / 20 — 32 Ω



4. CHECK OUTPUT SIGNAL EMITTED FROM TCM.

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

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

3) Start and warm-up the engine and transmission.
4) Idle the engine.
5) Move selector lever to "D".
6) Measure voltage between TCM connector terminals.

Connector & terminal / Specified voltage:
(B52) No. 13 — No. 10 / 9 V, or more

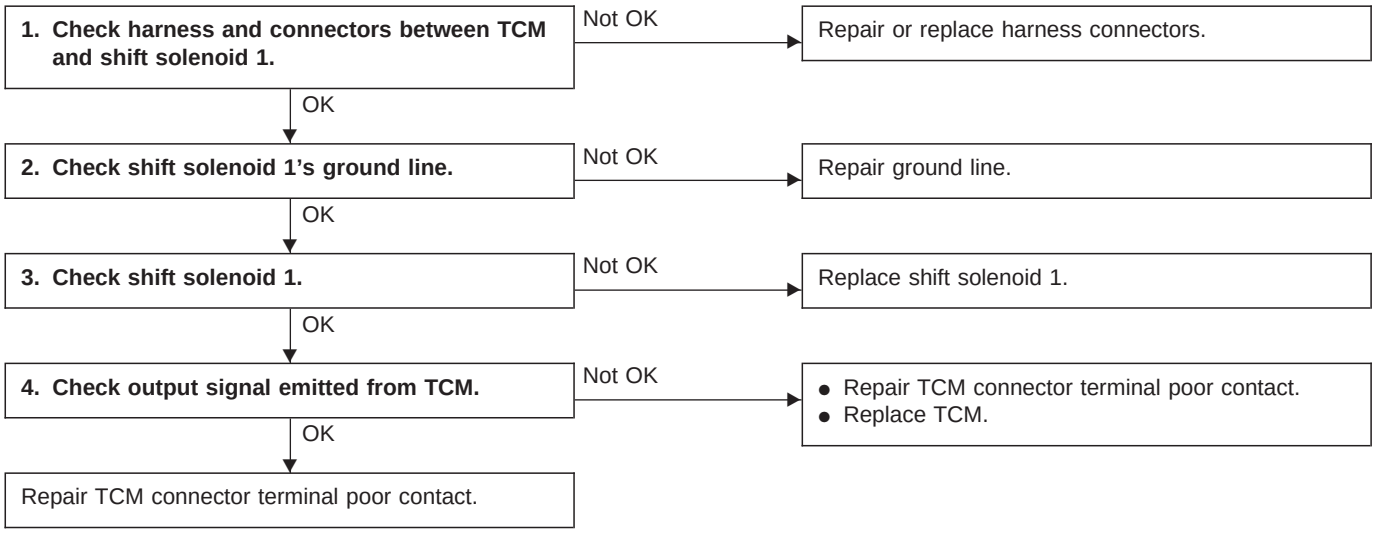
E: TROUBLE CODE 15 — SHIFT SOLENOID 1 —

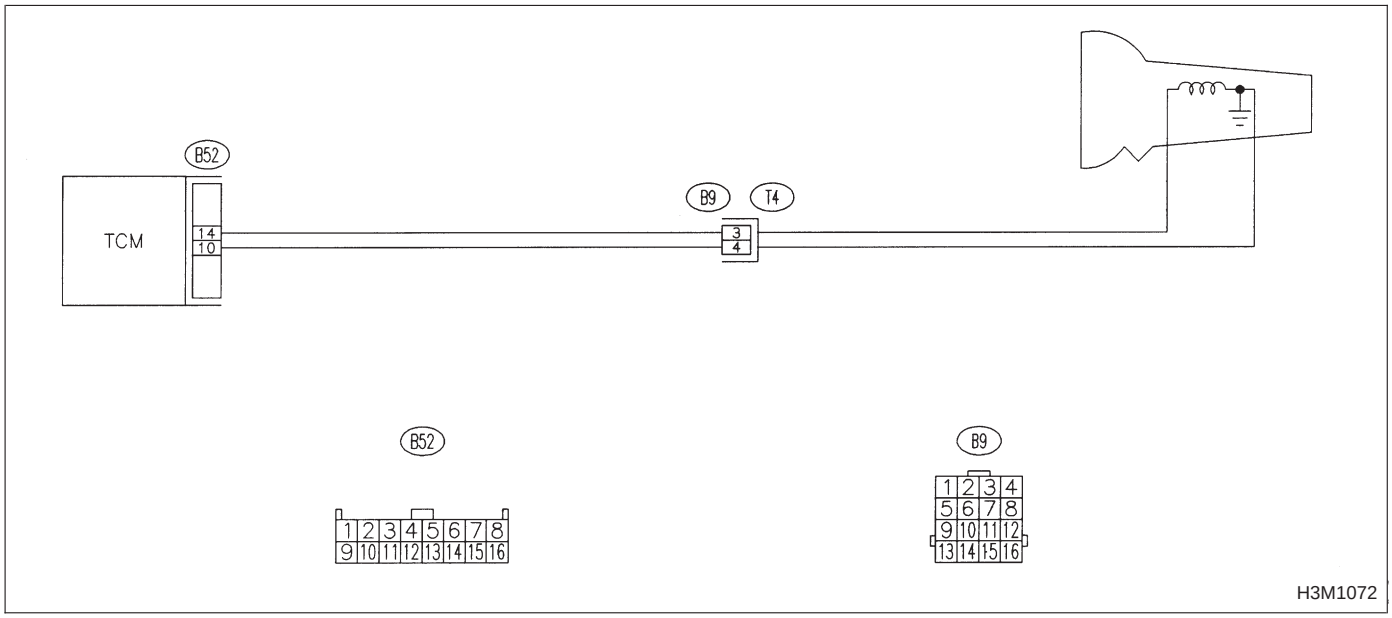
DIAGNOSIS:

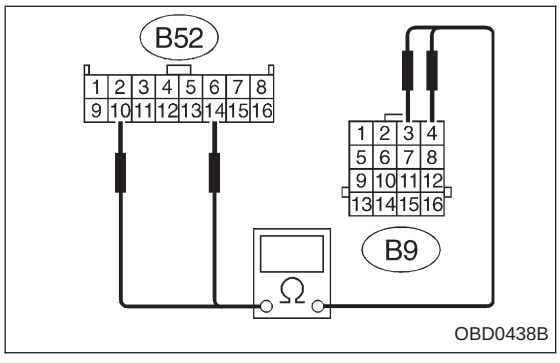
Output signal circuit of shift solenoid 1 is open or shorted.

TROUBLE SYMPTOM:

No shift





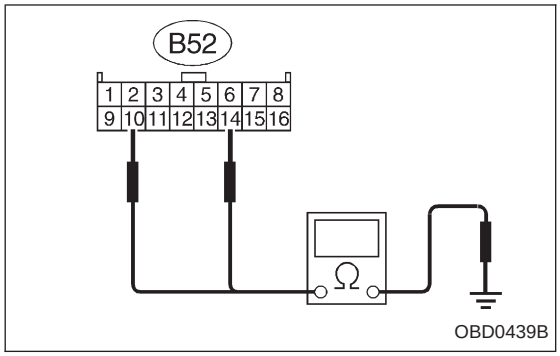


1. CHECK HARNESS AND CONNECTORS BETWEEN TCM AND SHIFT SOLENOID 1.

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

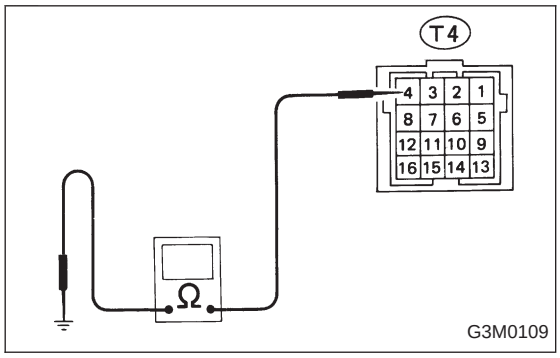
Connector & terminal / Specified resistance:

(B52) No. 14 — (B9) No. 3 / 1 Ω, or less
(B52) No. 10 — (B9) No. 4 / 1 Ω, or less



4) Measure resistance of harness connector between TCM and body to make sure that circuit does not short.

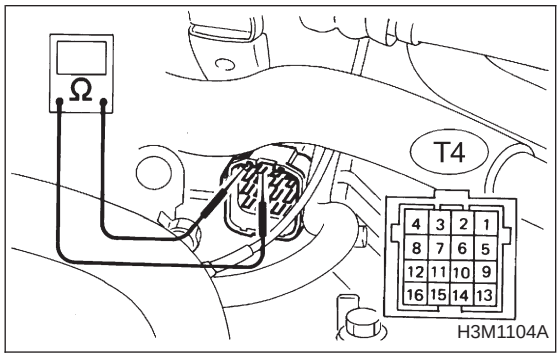
Connector & terminal / Specified resistance:
(B52) No. 14 — Body / 1 MΩ, or more
(B52) No. 10 — Body / 1 MΩ, or more



2. CHECK SHIFT SOLENOID 1's GROUND LINE.

Measure resistance between transmission connector receptacle and transmission case.

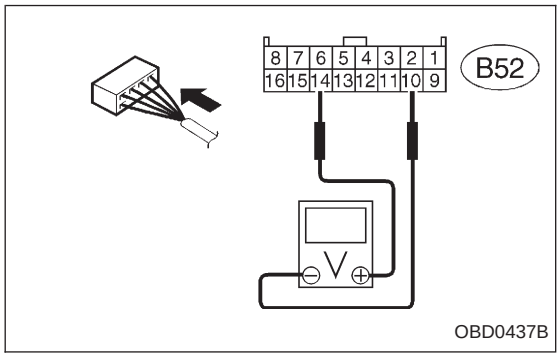
Connector & terminal / Specified resistance:
(T4) No. 4 — Transmission / 1 Ω, or less



3. CHECK SHIFT SOLENOID 1.

Measure resistance between transmission connector receptacle's terminals.

Connector & terminal / Specified resistance:
(T4) No. 3 — No. 4 / 20 — 32 Ω



4. CHECK OUTPUT SIGNAL EMITTED FROM TCM.

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

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

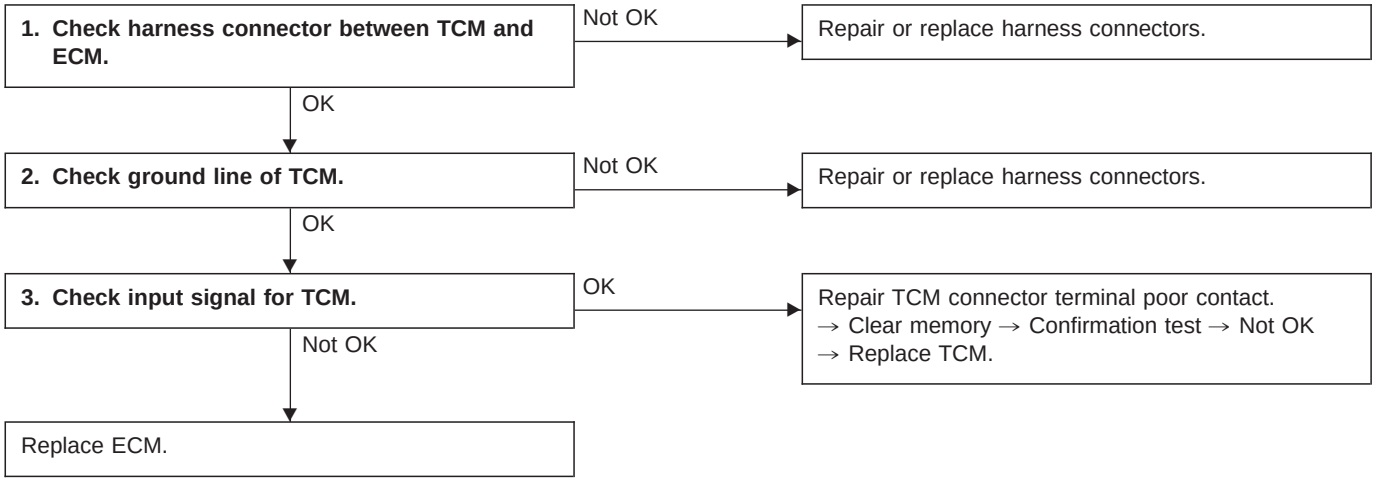
3) Start and warm-up the engine and transmission.
4) Idle the engine.
5) Move selector lever to "D".
6) Measure voltage between TCM connector terminals.

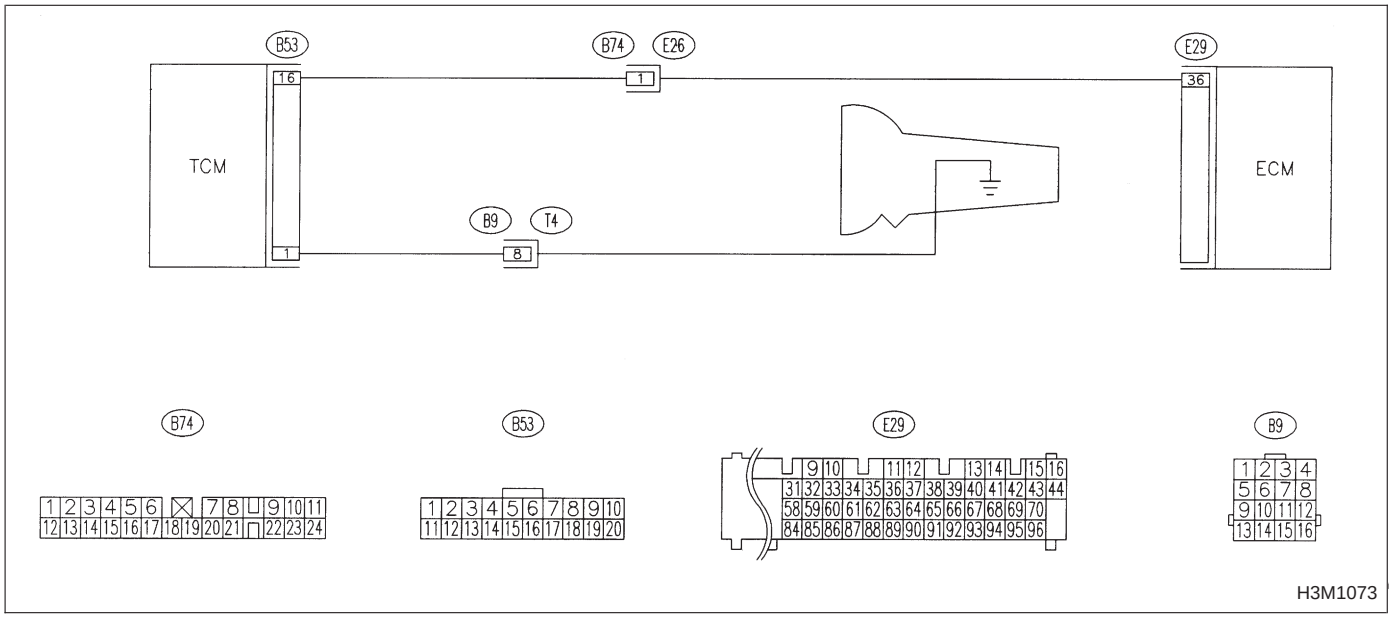
Connector & terminal / Specified voltage:
(B52) No. 14 — No. 10 / 9 V, or more

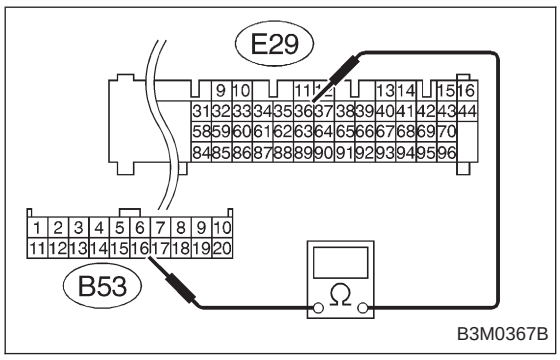
F: TROUBLE CODE 16
— TORQUE CONTROL CUT SIGNAL —

DIAGNOSIS:

- Torque control cut signal is not emitted from ECM.
- The signal circuit is open or shorted.



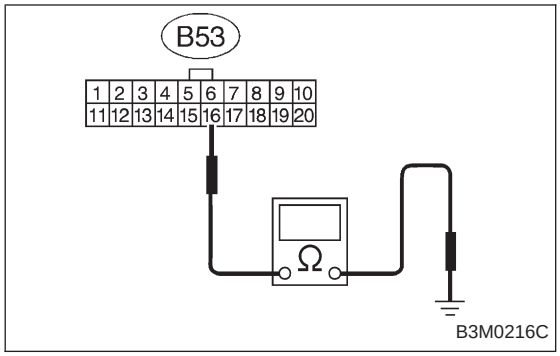




1. CHECK HARNESS CONNECTOR BETWEEN TCM AND ECM.

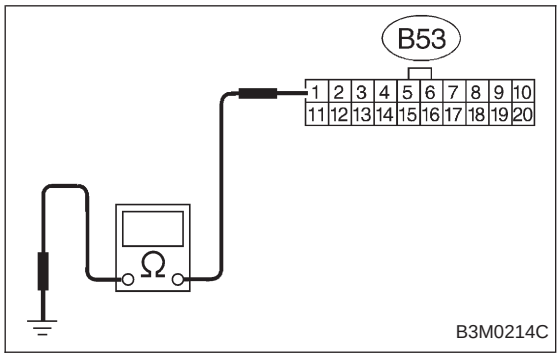
1) Turn ignition switch to OFF.
2) Disconnect connectors from ECM and TCM.
3) Measure resistance of harness connector between TCM and ECM.

Connector & terminal / Specified resistance:
(B53) No. 16 — (E29) No. 36/ 1 Ω, or less



4) Measure resistance of harness connector between TCM and body to make sure that circuit does not short.

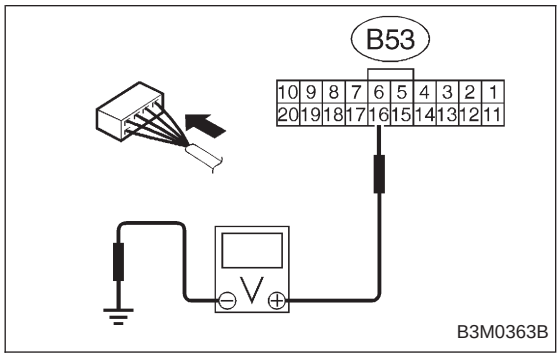
Connector & terminal / Specified resistance:
(B53) No. 16 — Body / 1 MΩ, or more



2. CHECK GROUND LINE OF TCM.

Measure resistance of harness connector between TCM and body.

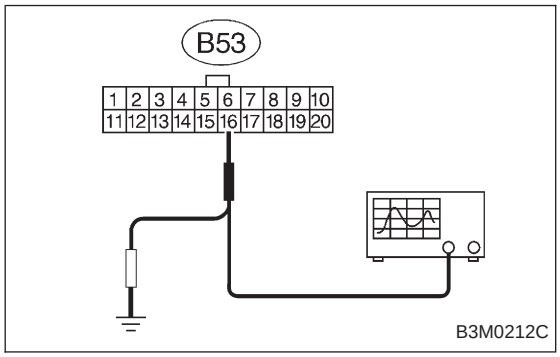
Connector & terminal / Specified resistance:
(B53) No. 1 — Body / 1 Ω, or less



3. CHECK INPUT SIGNAL FOR TCM.

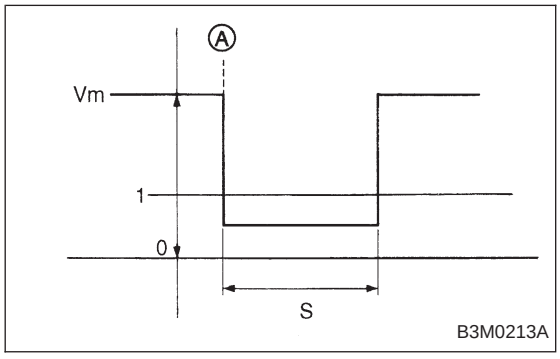
1) Connect connectors to ECM and TCM.
2) Turn ignition switch to ON.
3) Measure voltage between TCM and body.

Connector & terminal / Specified voltage:
(B53) No. 16 — Body / 6 — 9 V



- Using oscilloscope:
  (1) Connect connectors to ECM and TCM.
  (2) Set oscilloscope to TCM connector terminals.

Connector & terminals:
Positive probe; (B53) No. 16
Earth lead; Body



(3) Measure voltage while starting the engine.

CAUTION:
Make sure that signal voltage is below 1 V for one second after starting the engine (point Ⓐ).

Vm: 6 — 9 V
S: 1 second

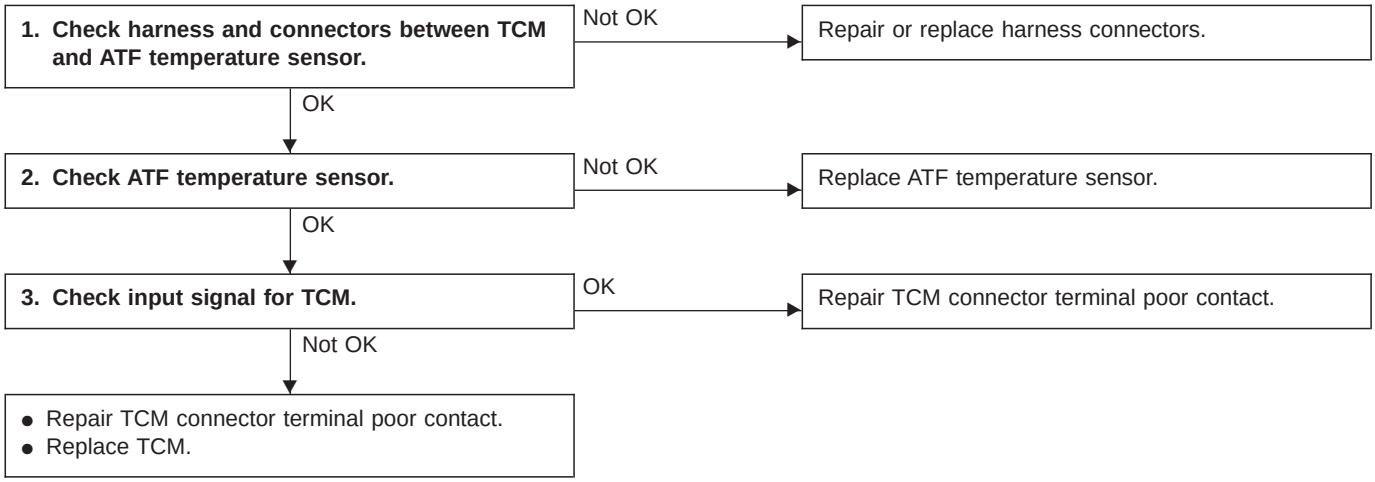
G: TROUBLE CODE 21
— ATF TEMPERATURE SENSOR —

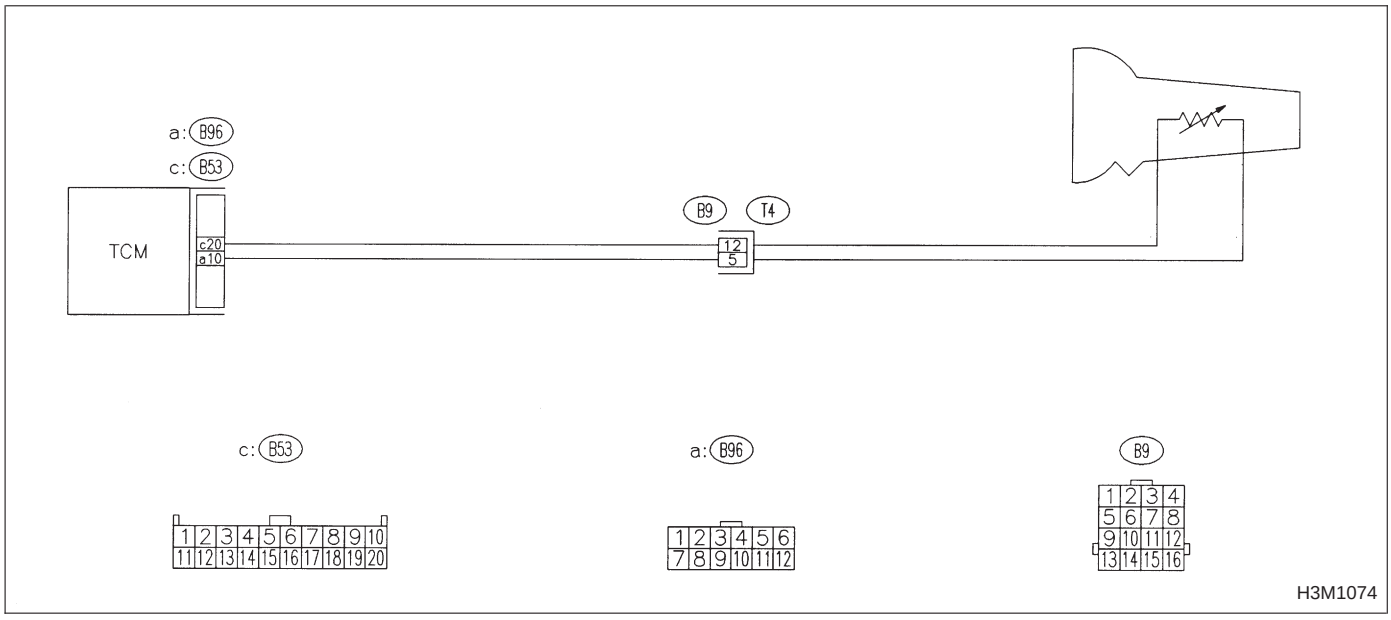
DIAGNOSIS:

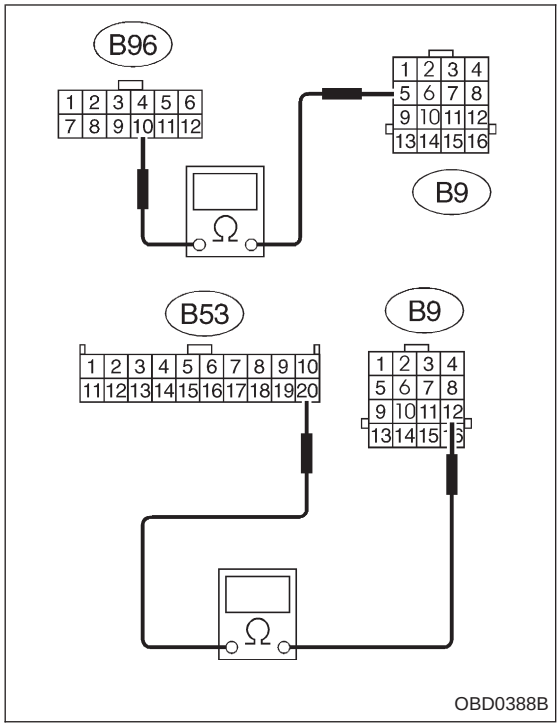
Input signal circuit of TCM to ATF temperature sensor is open or shorted.

TROUBLE SYMPTOM:

Excessive shift shock



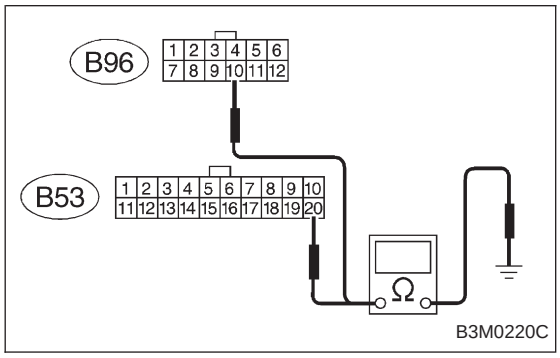




1. CHECK HARNESS AND CONNECTORS BETWEEN TCM AND ATF TEMPERATURE SENSOR.

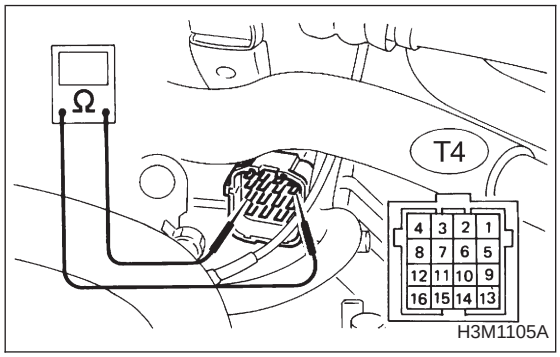
1) Turn ignition switch to OFF.
2) Disconnect connectors from TCM and transmission.
3) Measure resistance of harness connector between TCM and transmission connector.

Connector & terminal / Specified voltage:
(B96) No. 10 — (B9) No. 5 / 1 Ω, or less
(B53) No. 20 — (B9) No. 12 / 1 Ω, or less



4) Measure resistance of harness connector between TCM and body to make sure that circuit does not short.

Connector & terminal / Specified resistance:
(B96) No. 10 — Body / 1 MΩ, or more
(B53) No. 20 — Body / 1 MΩ, or more



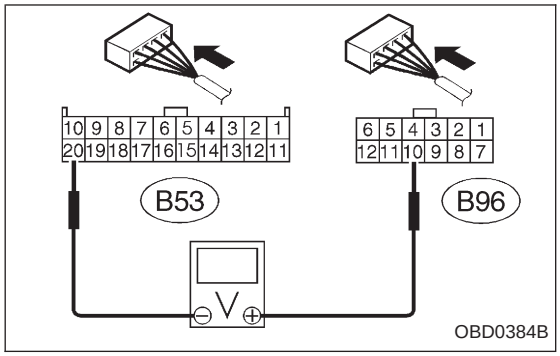
2. CHECK ATF TEMPERATURE SENSOR.

1) Measure resistance between transmission connector receptacle's terminals.

Connector & terminal / Specified resistance:
(T4) No. 5 — No. 12 /
2.1 — 2.9 kΩ [ATF temperature: 20 deg C (68 deg F)]

2) Connect connectors to transmission and TCM.
3) Start and warm-up the engine until ATF temperature has increased.
4) Stop the engine and disconnect connector from transmission.
5) Measure resistance between transmission connector receptacle's terminals.

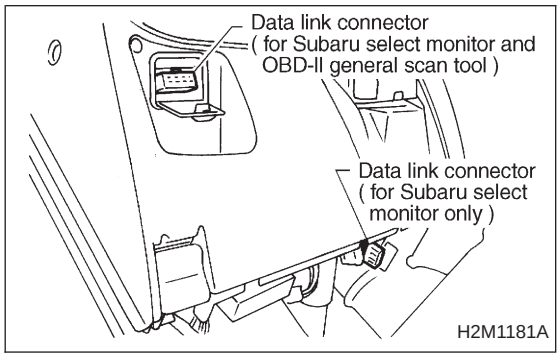
Connector & terminal / Specified resistance:
(T4) No. 5 — No. 12 /
275 — 375 Ω [ATF temperature: 80 deg C (176 deg F)]



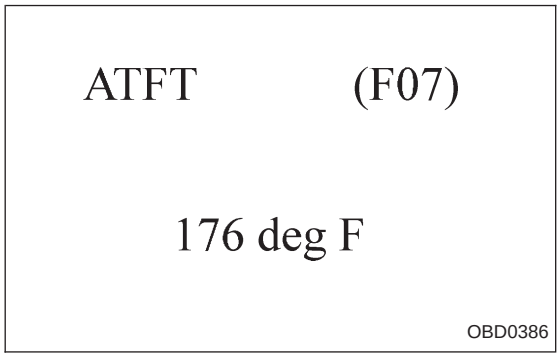
3. CHECK INPUT SIGNAL FOR TCM.

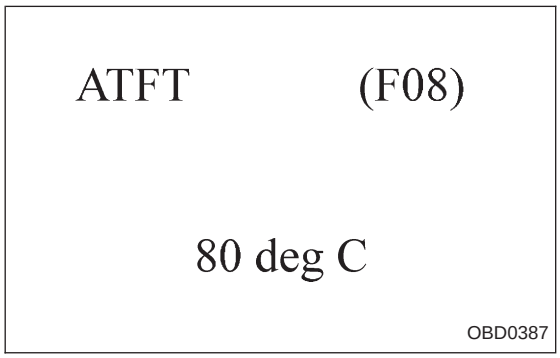
1) Turn ignition switch ON (with engine OFF) and measure signal voltage input of TCM.
2) Start and warm-up the engine. Measure signal voltage input of TCM.

Connector & terminal / Specified voltage:
(B96) No. 10 — (B53) No. 20 /
3.45±0.55 V [ATF temperature: 20 deg C (68 deg F)]
1.2±0.2 V [ATF temperature: 80 deg C (176 deg F)]



- Using Subaru select monitor:
  (1) Turn ignition switch to OFF.
  (2) Connect the Subaru select monitor to data link connector.
  (3) Turn ignition switch to ON and Subaru select monitor switch to ON.





  (4) Start and warm-up the engine.
  (5) Read data on Subaru select monitor.
  (6) Designate mode using function key.

Function mode: F07 or F08

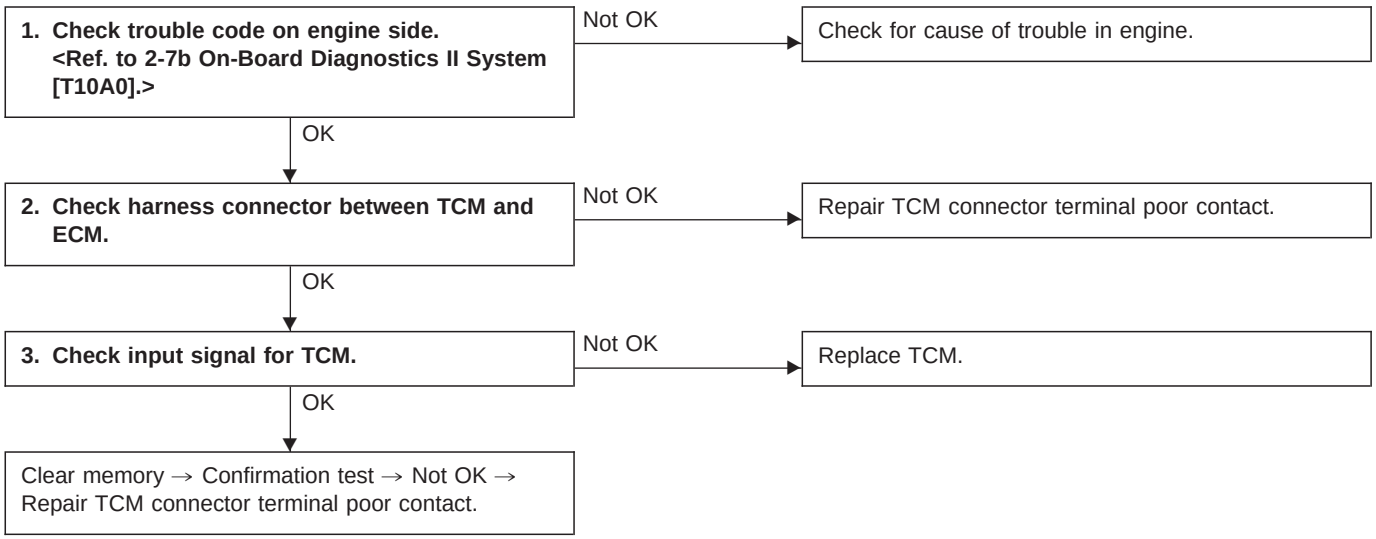
SPECIFIED DATA:
F07: ● ***Ambient temperature: ±50 deg F***
● ***ATF temperature: 158 — 230 deg F***
● ***Open harness: 176 deg F***
● ***Shorted harness: 320 deg F***
F08: ● ***Ambient temperature: ±10 deg C***
● ***ATF temperature: 70 — 110 deg C***
● ***Open harness: 80 deg C***
● ***Shorted harness: 160 deg C***

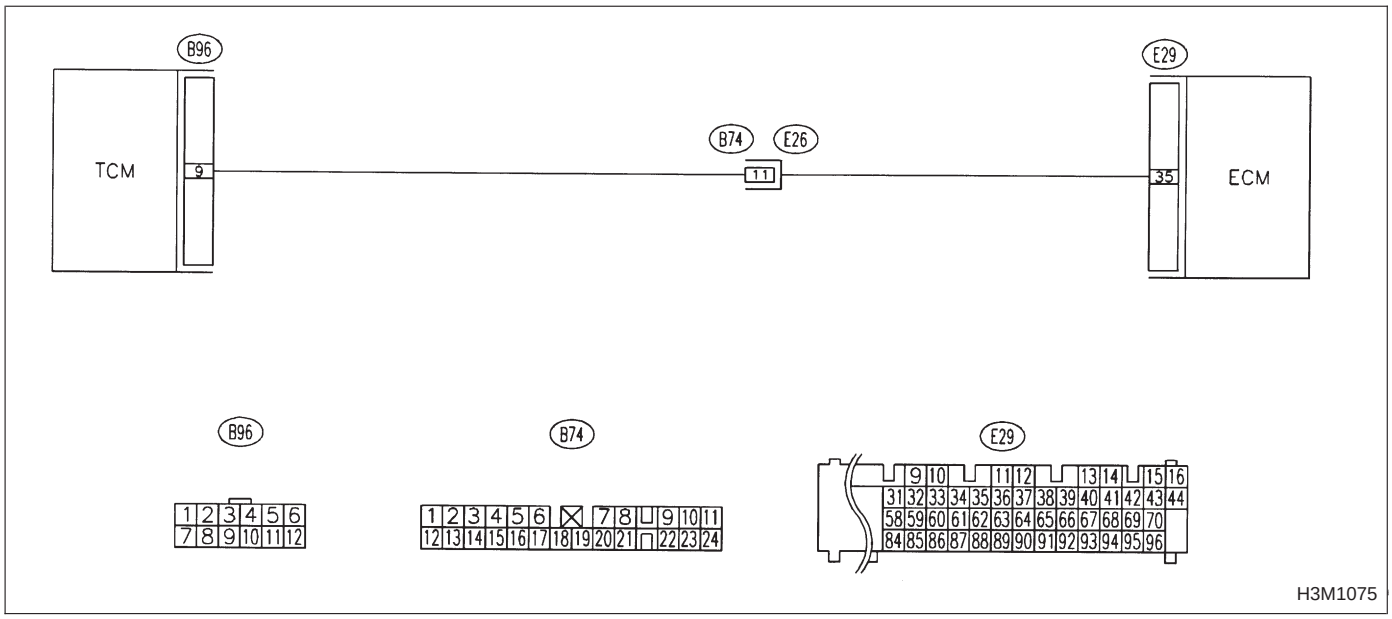
- F07: ATF temperature is indicated in “deg F”.
- F08: ATF temperature is indicated in “deg C”.

H: TROUBLE CODE 22
— MASS AIR FLOW SIGNAL —

DIAGNOSIS:

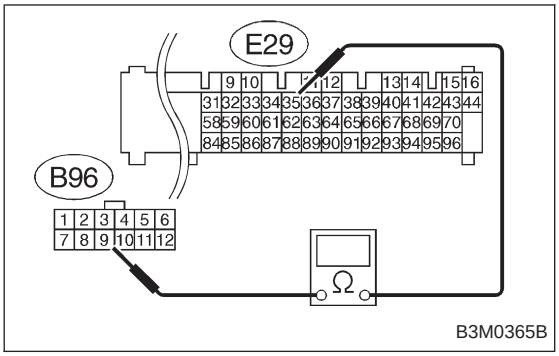
Input signal circuit of TCM from ECM is open or shorted.





1. CHECK TROUBLE CODE ON ENGINE SIDE.

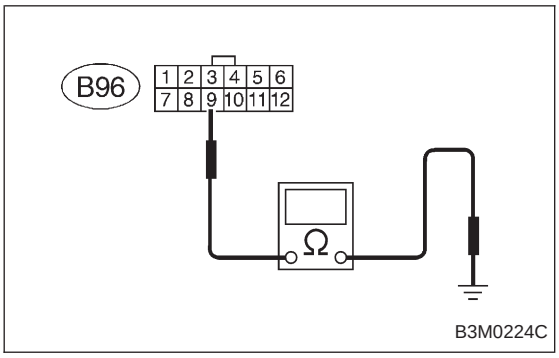
Using Subaru select monitor or OBD-II general scan tool, check trouble code of mass air flow sensor on engine side.



2. CHECK HARNESS CONNECTOR BETWEEN TCM AND ECM.

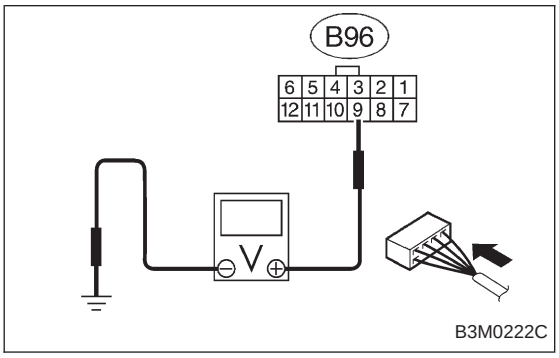
1) Turn ignition switch to OFF.
2) Disconnect connectors from TCM and ECM.
3) Measure resistance of harness connector between TCM and ECM.

Connector & terminal / Specified resistance:
(B96) No. 9 — (E29) No. 35 / 1 Ω, or less



4) Measure resistance of harness connector between TCM and body to make sure that circuit does not short.

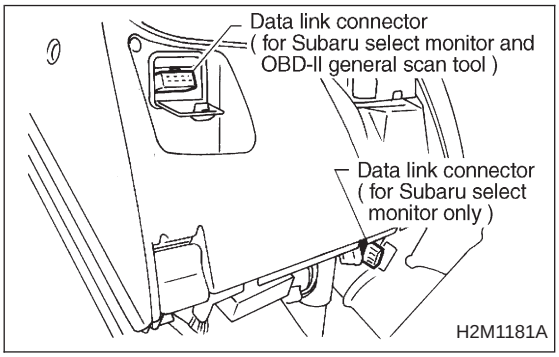
Connector & terminal / Specified resistance:
(B96) No. 9 — Body / 1 MΩ, or more



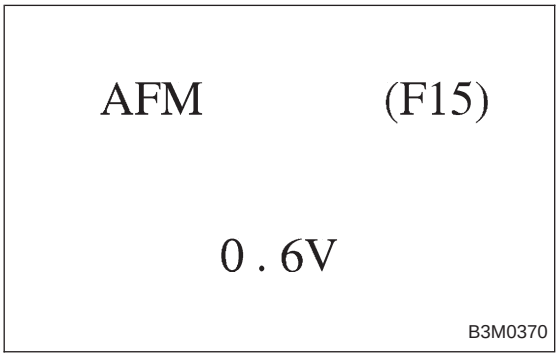
3. CHECK INPUT SIGNAL FOR TCM.

1) Connect connectors to TCM and ECM.
2) Start the engine. (engine idling after warm-up)
3) Measure signal voltage between TCM connector terminal and body.

Connector & terminal / Specified voltage:
Engine warm-up;
(B96) No. 9 — Body / 0.5 — 1.2 V



- Using Subaru select monitor:
  (1) Connect connectors to TCM and ECM.
  (2) Turn ignition switch to OFF.
  (3) Connect the Subaru select monitor to data link connector.
  (4) Turn ignition switch to ON and Subaru select monitor switch to ON.
  (5) Start and warm-up the engine.



(6) Read data on Subaru select monitor.
(7) Designate mode using function key.

Function mode: F15

SPECIFIED DATA:
0.5 — 1.2 V (Engine warm-up)

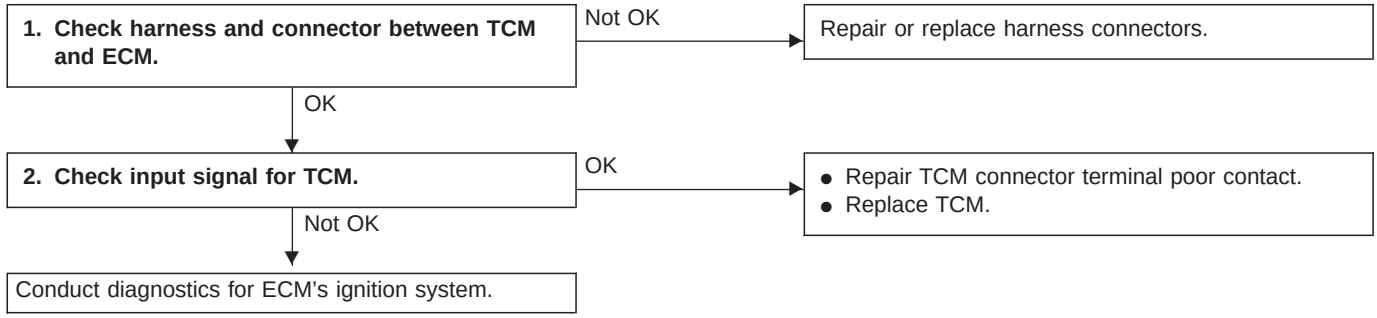
I: TROUBLE CODE 23 — ENGINE SPEED SIGNAL —

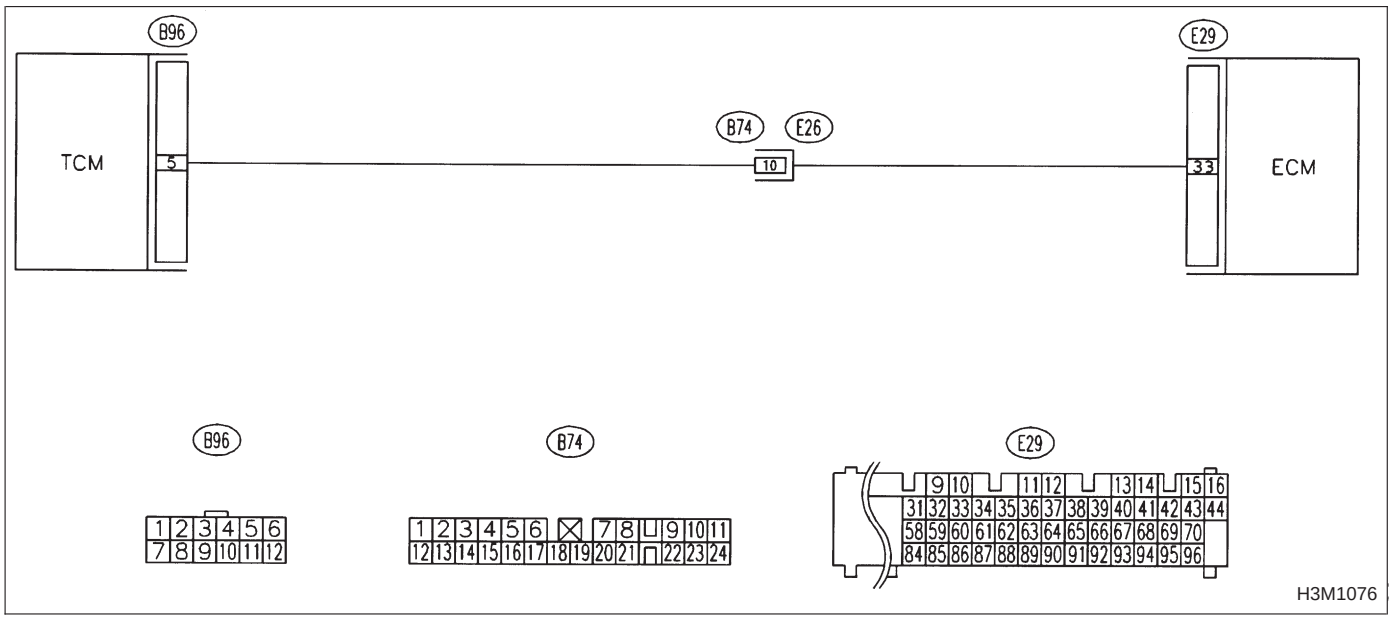
DIAGNOSIS:

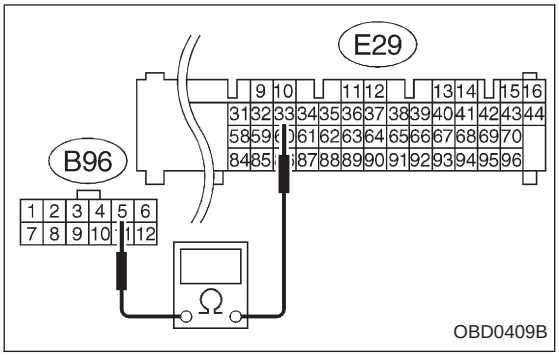
Engine speed input signal circuit is open or shorted.

TROUBLE SYMPTOM:

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



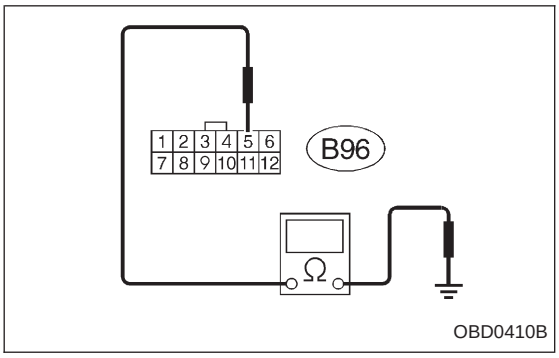




1. CHECK HARNESS AND CONNECTOR BETWEEN TCM AND ECM.

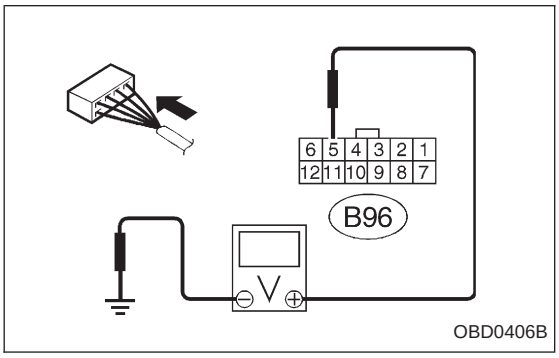
1) Turn ignition switch to OFF.
2) Disconnect connectors from TCM and ECM.
3) Measure resistance of harness connector between TCM and ECM.

Connector & terminal / Specified resistance:
(B96) No. 5 — (E29) No. 33 / 1 Ω, or less



4) Measure resistance of harness connector between TCM and body to make sure that circuit does not short.

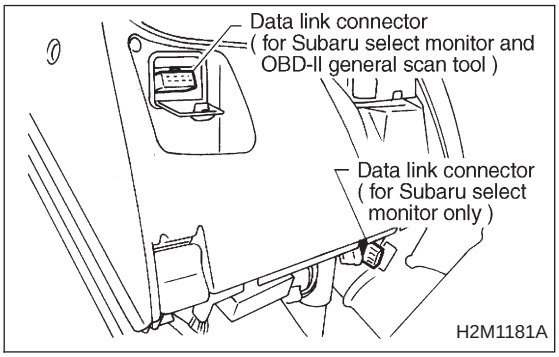
Connector & terminal / Specified resistance:
(B96) No. 5 — Body / 1 MΩ, or more



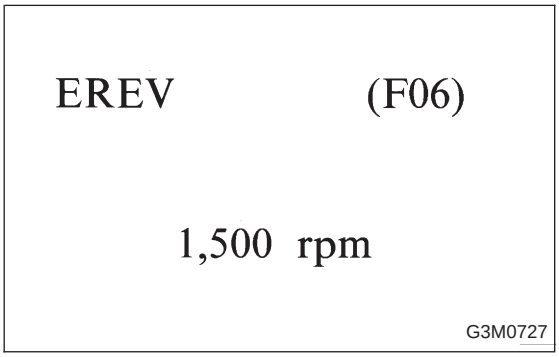
2. CHECK INPUT SIGNAL FOR TCM.

1) Connect connectors to ECM and TCM.
2) Turn ignition switch ON (with engine OFF).
3) Measure signal voltage for TCM.

Connector & terminal / Specified voltage:
(B96) No. 5 — Body / 10.5 V, or more



- Using Subaru select monitor:
  (1) Connect connectors to ECM and TCM.
  (2) Turn ignition switch to OFF.
  (3) Connect the Subaru select monitor to data link connector.
  (4) Turn ignition switch to ON and Subaru select monitor switch to ON.



(5) Start and warm-up the engine.
(6) Operate at constant engine speed.
(7) Read data on Subaru select monitor.
(8) Designate mode using function key.

Function mode: F06

SPECIFIED DATA:
Same as tachometer reading (in combination meter)

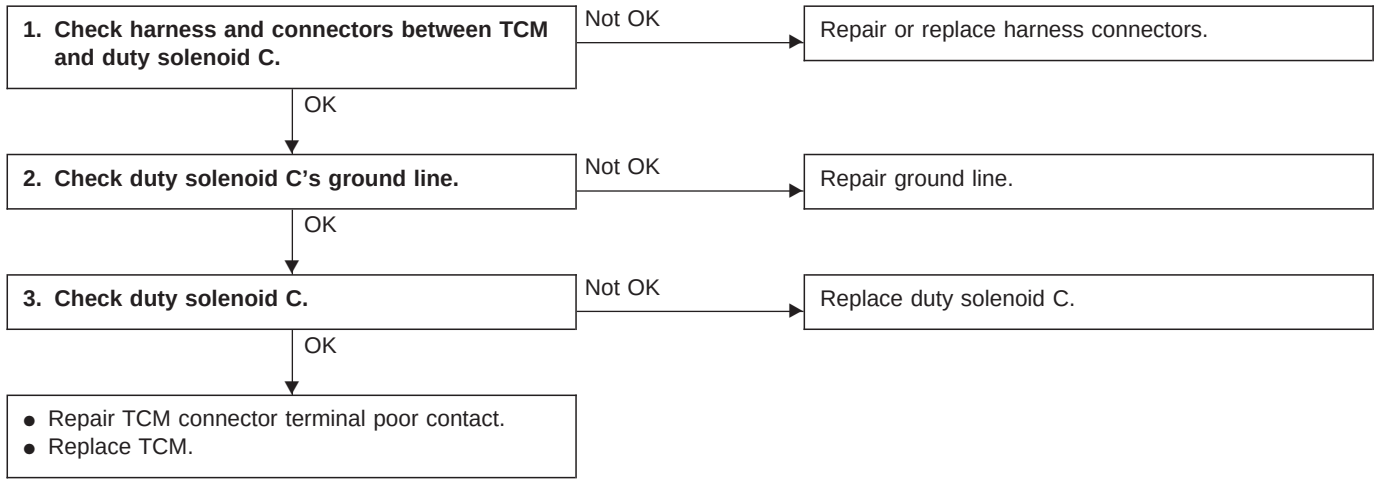
J: TROUBLE CODE 24 — DUTY SOLENOID C —

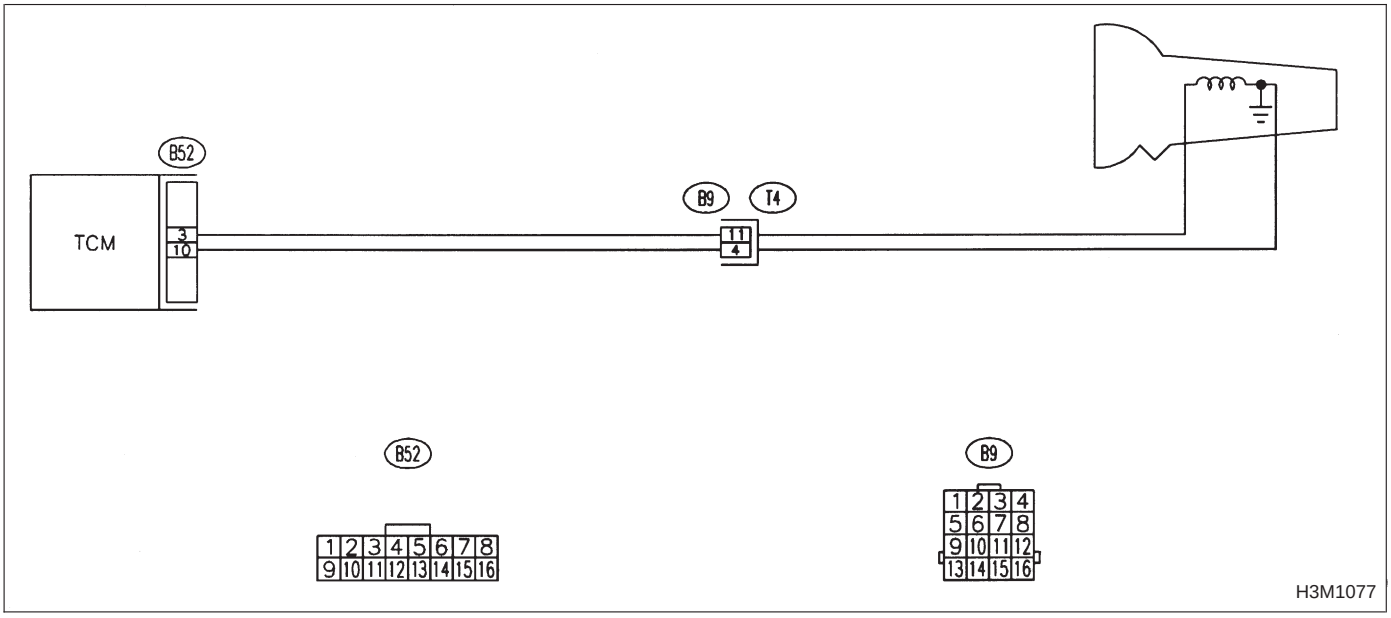
DIAGNOSIS:

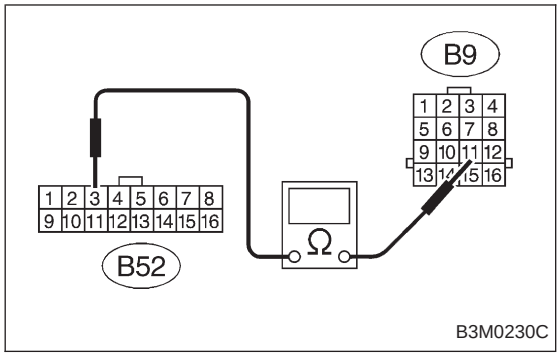
Output signal circuit of duty solenoid C is open or shorted.

TROUBLE SYMPTOM:

Excessive “braking” in tight corners



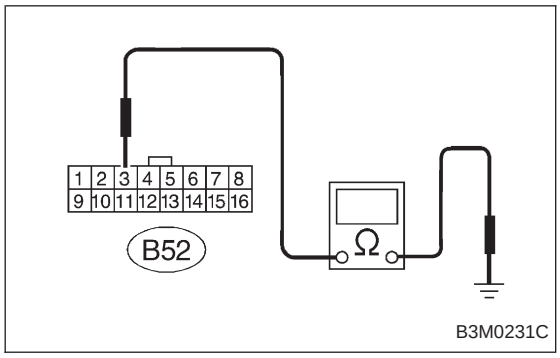




1. CHECK HARNESS AND CONNECTORS BETWEEN TCM AND DUTY SOLENOID C.

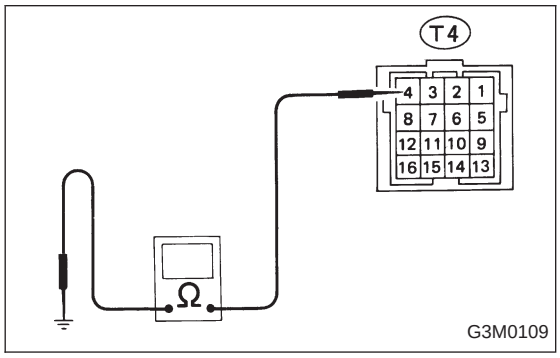
1) Turn ignition switch to OFF.
2) Disconnect connectors from TCM and transmission.
3) Measure resistance of harness connector between TCM and transmission.

Connector & terminal / Specified resistance:
(B52) No. 3 — (B9) No. 11 / 1 Ω, or less



4) Measure resistance of harness connector between TCM and body to make sure that circuit does not short.

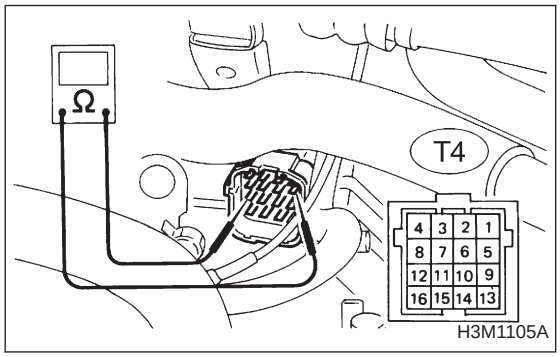
Connector & terminal / Specified resistance:
(B52) No. 3 — Body / 1 MΩ, or more



2. CHECK DUTY SOLENOID C's GROUND LINE.

Measure resistance between transmission connector receptacle and transmission case.

Connector & terminal / Specified resistance:
(T4) No. 4 — Transmission / 1 Ω, or less



3. CHECK DUTY SOLENOID C.

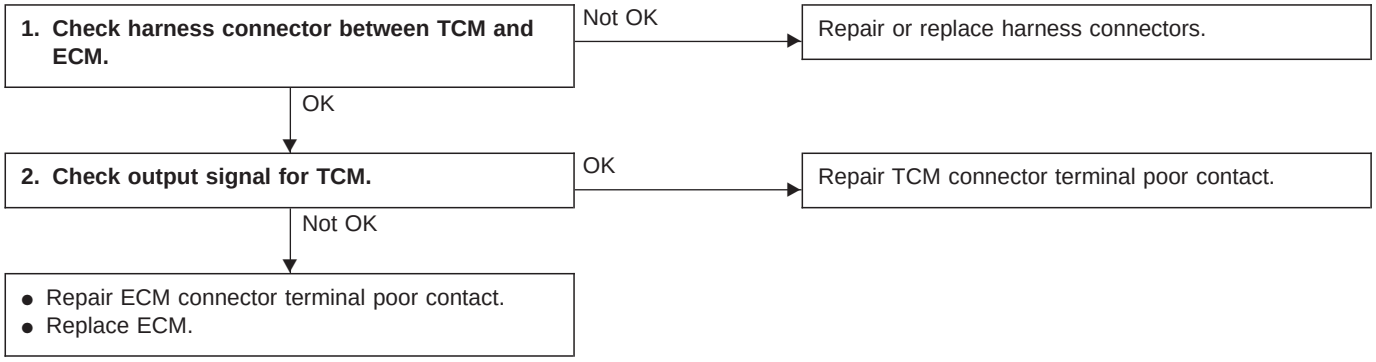
Measure resistance between transmission connector receptacle's terminals.

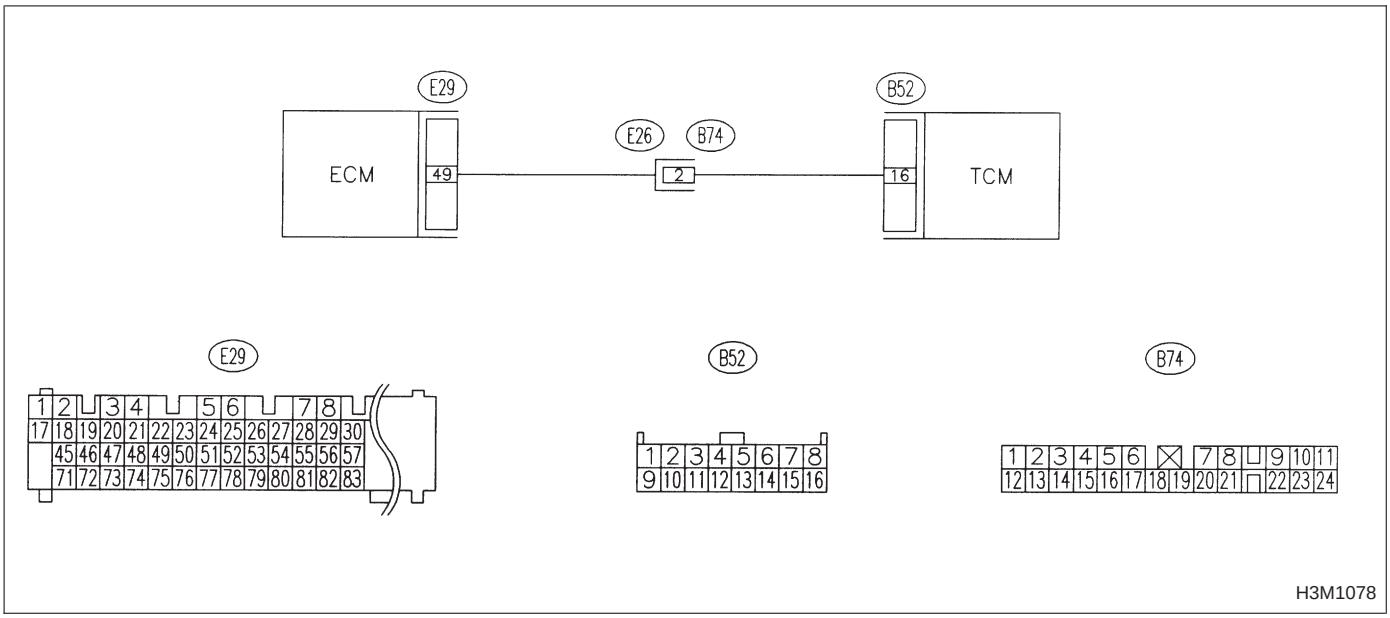
Connector & terminal / Specified resistance:
(T4) No. 11 — No. 4 / 9 — 17 Ω

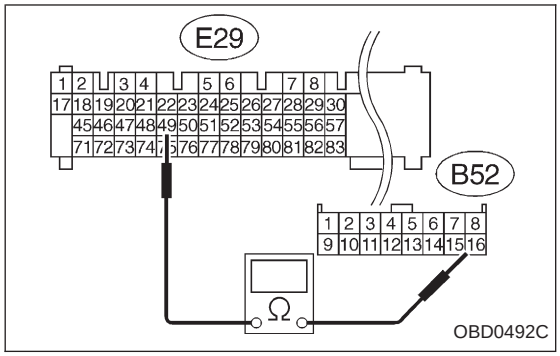
K: TROUBLE CODE 25
— TORQUE CONTROL SIGNAL —

DIAGNOSIS:

- Torque control signal is not emitted from TCM.
- The signal circuit is open or shorted.



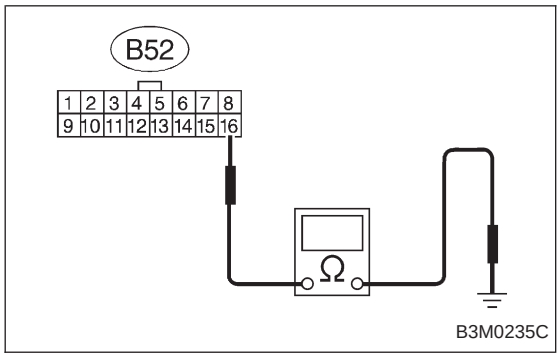




1. CHECK HARNESS CONNECTOR BETWEEN TCM AND ECM.

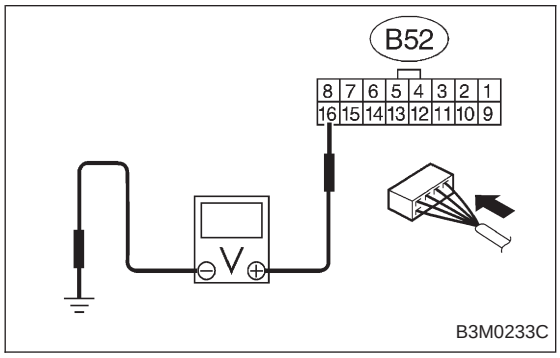
1) Turn ignition switch to OFF.
2) Disconnect connectors from TCM and ECM.
3) Measure resistance of harness connector between TCM and ECM.

Connector & terminal / Specified resistance:
(B52) No. 16 — (E29) No. 49 / 1 Ω, or less



4) Measure resistance of harness connector between TCM and body to make sure that circuit does not short.

Connector & terminal / Specified resistance:
(B52) No. 16 — Body / 1 MΩ, or more



2. CHECK INPUT SIGNAL FOR TCM.

1) Connect connectors to TCM and ECM.
2) Turn ignition switch to ON.
3) Measure signal voltage between TCM connector terminal and body.

Connector & terminal / Specified voltage:
(B52) No. 16 — Body / 5±1 V

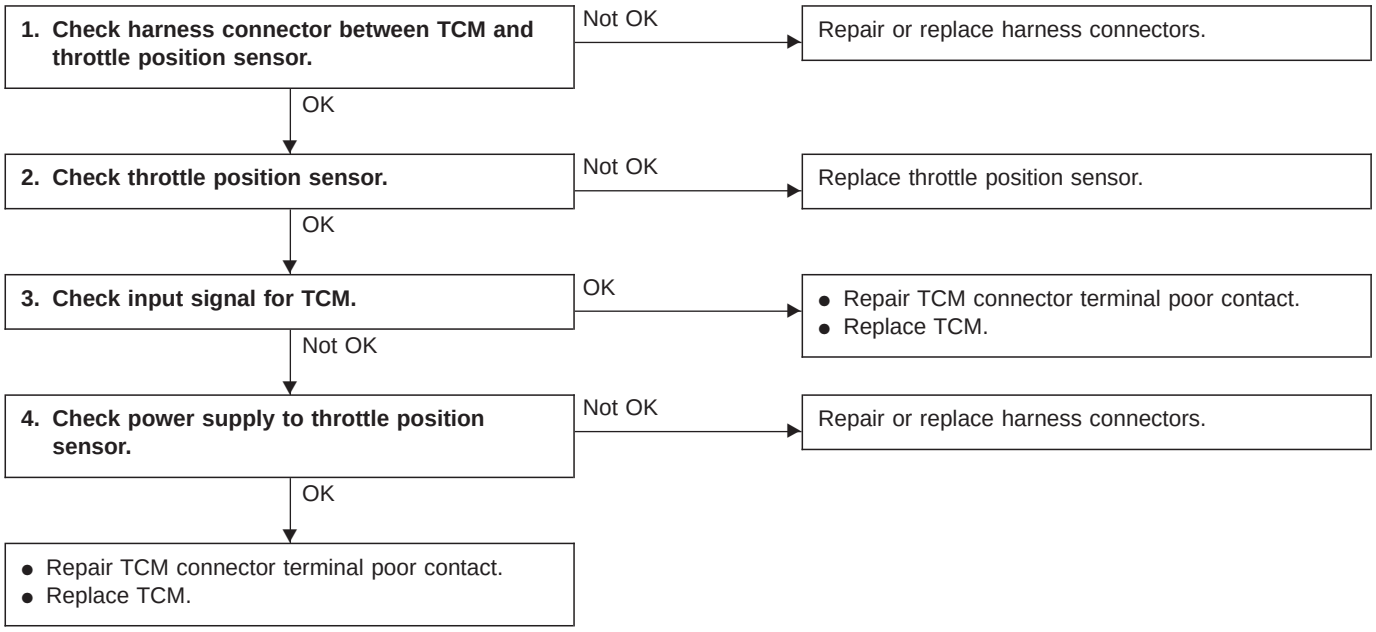
L: TROUBLE CODE 31
— THROTTLE POSITION SENSOR —

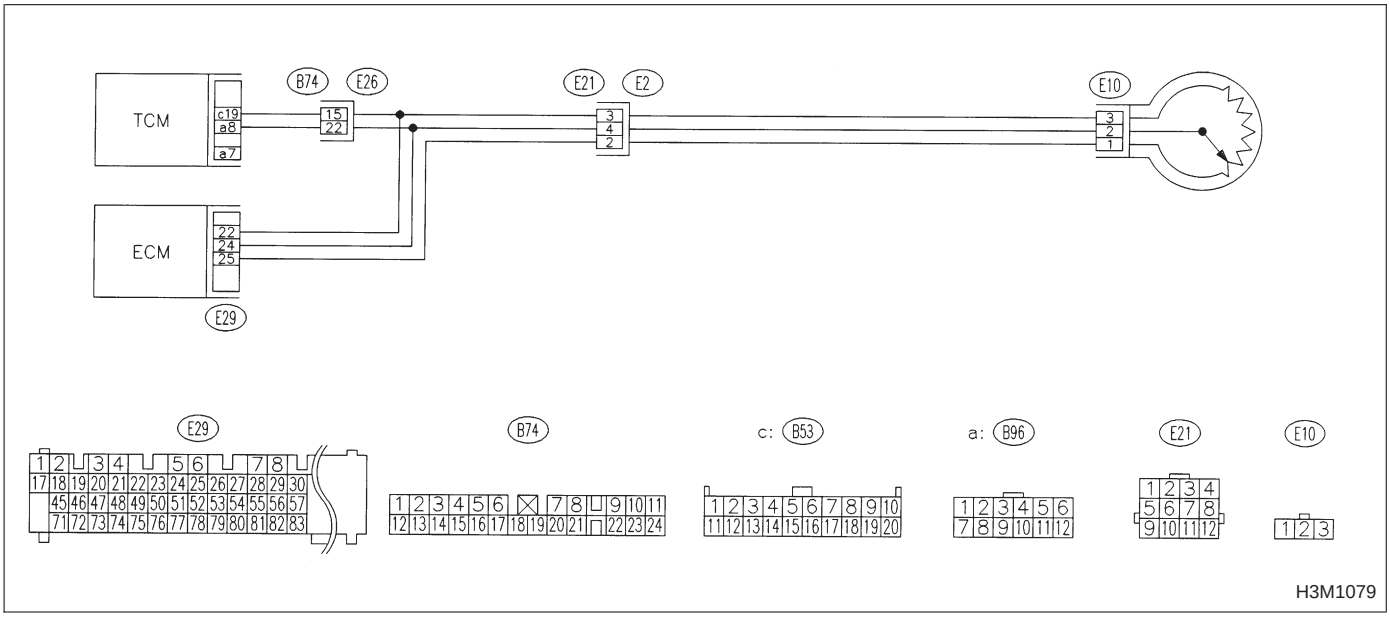
DIAGNOSIS:

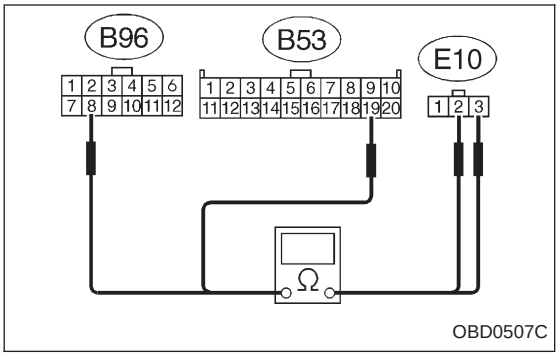
Input signal circuit of throttle position sensor is open or shorted.

TROUBLE SYMPTOM:

Shift point too high or too low; engine brake not effected in “3” range; excessive shift shock; excessive tight corner “braking”



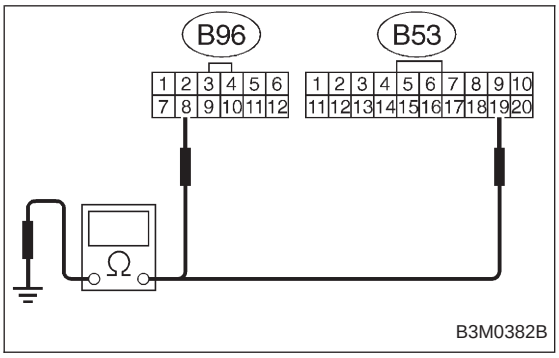




1. CHECK HARNESS CONNECTOR BETWEEN TCM AND THROTTLE POSITION SENSOR.

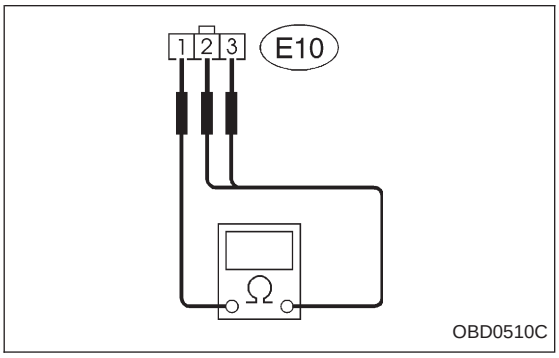
1) Turn ignition switch to OFF.
2) Disconnect connector from TCM and throttle position sensor.
3) Measure resistance of harness connector between TCM and throttle position sensor.

Connector & terminal / Specified resistance:
(B96) No. 8 — (E10) No. 2 / 1 Ω, or less
(B53) No. 19 — (E10) No. 3 / 1 Ω, or less



4) Measure resistance of harness connector between TCM and body to make sure that circuit does not short.

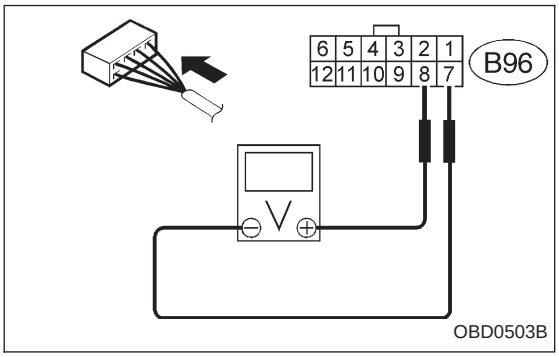
Connector & terminal / Specified resistance:
(B96) No. 8 — Body / 1 MΩ, or more
(B53) No. 19 — Body / 1 MΩ, or more



2. CHECK THROTTLE POSITION SENSOR.

Measure resistance between throttle position sensor terminals.

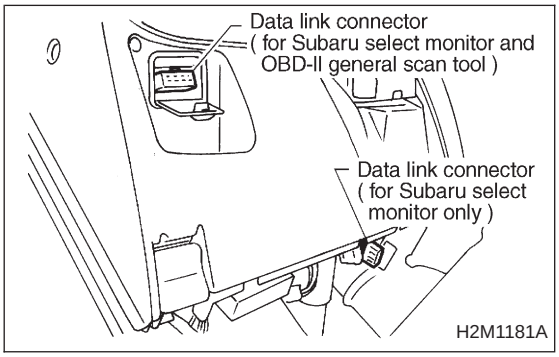
Terminals / Specified resistance:
(E10) No. 1 — No. 2 / 0.3 — 0.7 kΩ
(Throttle fully closed.)
3 — 6 kΩ
(Throttle fully open.)
(E10) No. 1 — No. 3 / 3.5 — 6.5 kΩ



3. CHECK INPUT SIGNAL FOR TCM.

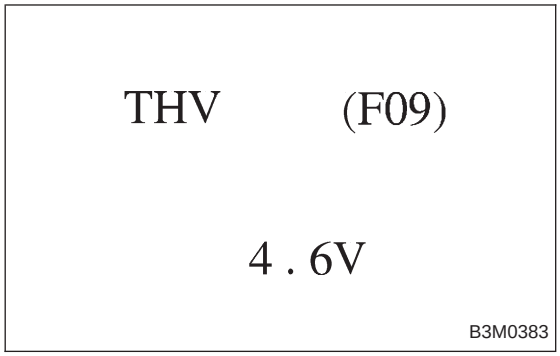
1) Connect connectors to TCM and throttle position sensor.
2) Turn ignition switch ON (with engine OFF).
3) Measure signal voltage input emitted from throttle position sensor with accelerator pedal fully depressed.

Connector & terminal / Specified voltage:
(B96) No. 8 — No. 7 /
0.5±0.2 V (Throttle fully closed.)
4.6±0.3 V (Throttle fully open.)



- Using Subaru select monitor:

(1) Connect connectors to TCM and throttle position sensor.
(2) Turn ignition switch to OFF.
(3) Connect the Subaru select monitor to data link connector.
(4) Turn ignition switch to ON and Subaru select monitor switch to ON.

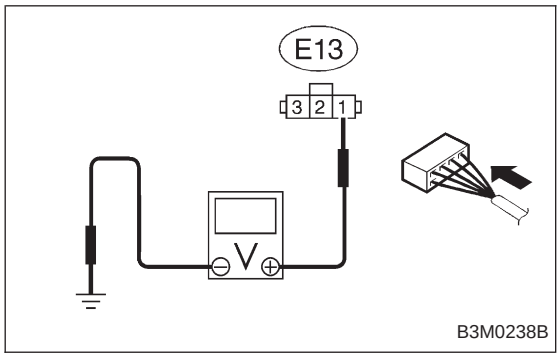


(5) Designate mode using function key.
(6) Read data on Subaru select monitor.

Function mode: F09

SPECIFIED DATA:

0.5±0.2 V (Throttle fully closed.)
4.6±0.2 V (Throttle fully open.)
[Must be changed correspondingly with accelerator pedal operation (from "released" to "depressed" position).]

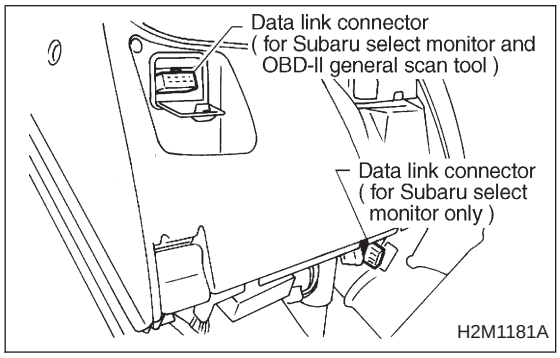


4. CHECK POWER SUPPLY TO THROTTLE POSITION SENSOR.

1) Turn ignition switch to ON (with engine OFF).
2) Measure power supply voltage to throttle position sensor.

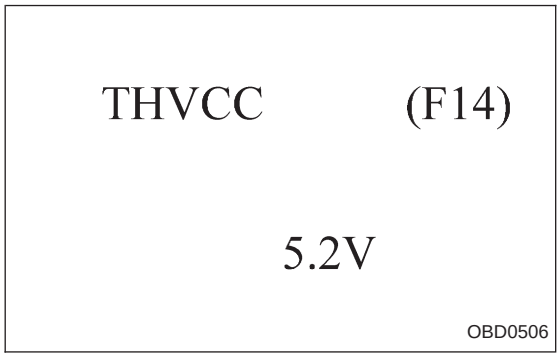
Connector & terminal / Specified voltage:

(E13) No. 1 — Body / 5.12±0.1 V



- Using Subaru select monitor:

(1) Turn ignition switch to OFF.
(2) Connect the Subaru select monitor to data link connector.
(3) Turn ignition switch to ON (engine OFF) and Subaru select monitor switch to ON.



(4) Designate mode using function key.
(5) Read data on Subaru select monitor.

Function mode: F14

SPECIFIED DATA:

5.12±0.1 V

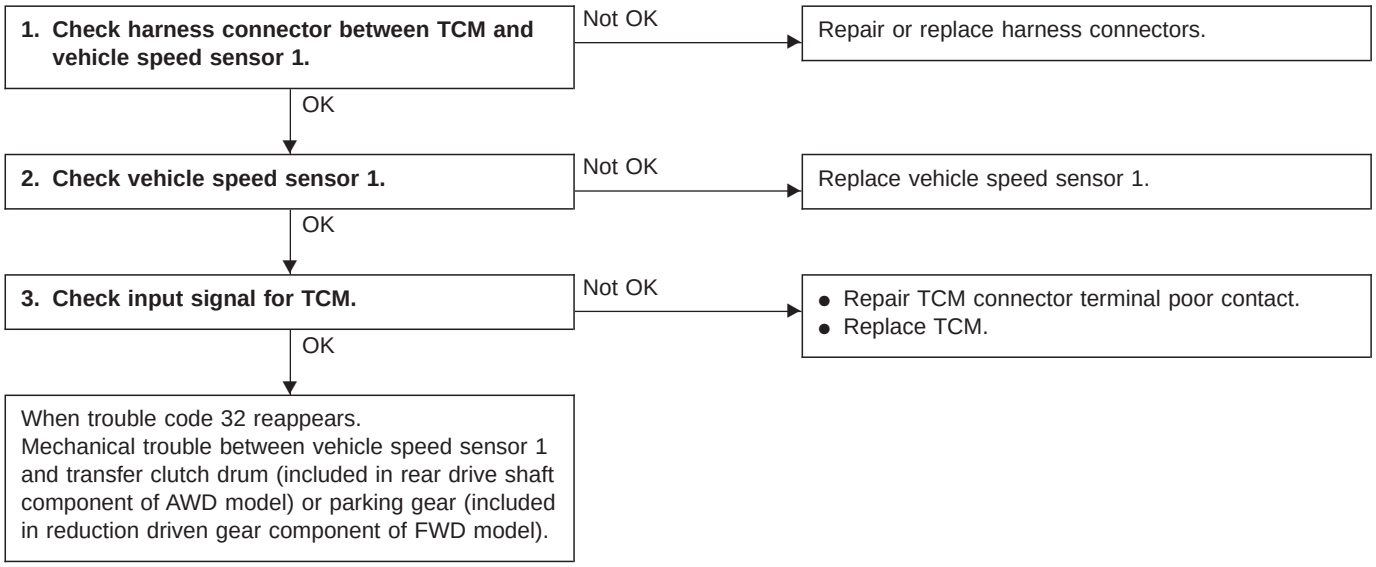
M: TROUBLE CODE 32 — VEHICLE SPEED SENSOR 1 —

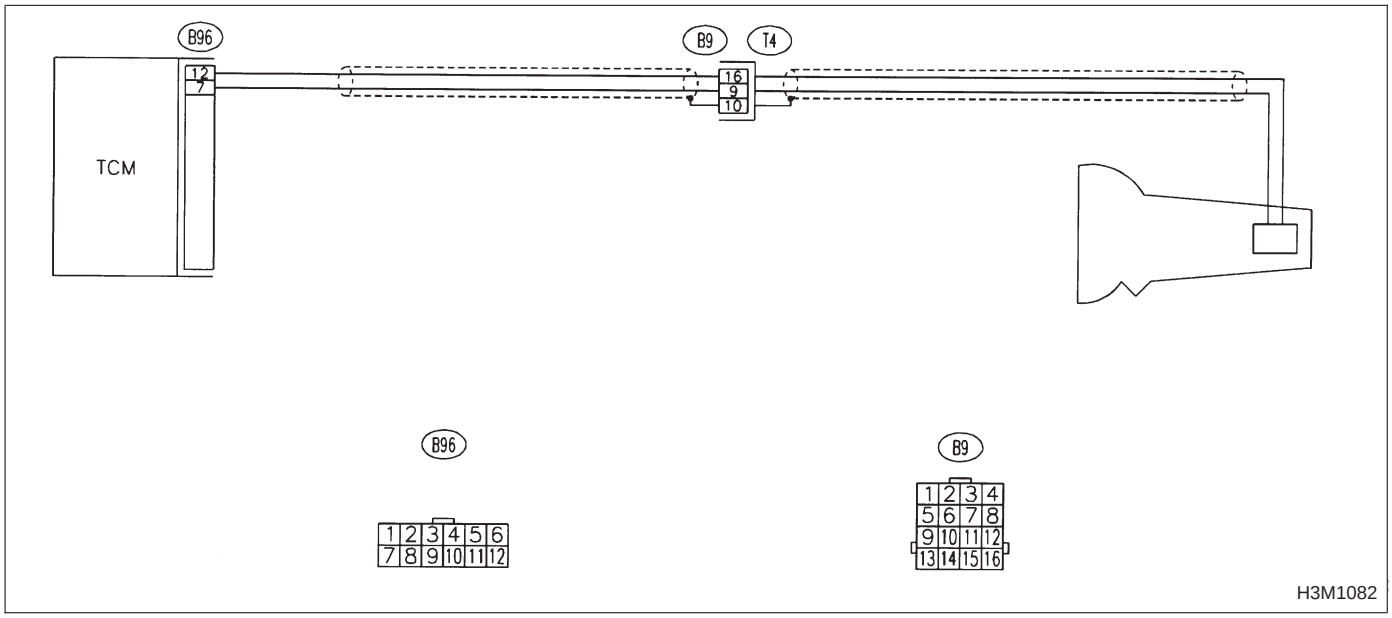
DIAGNOSIS:

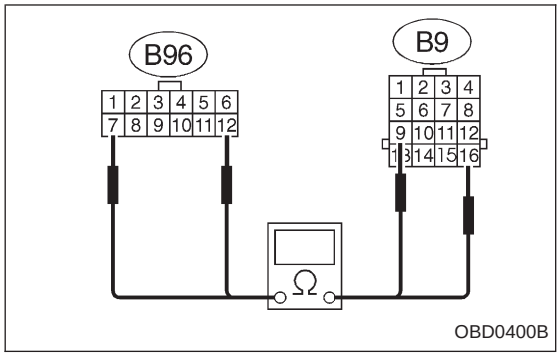
Input signal circuit of TCM is open or shorted.

TROUBLE SYMPTOM:

No lock-up or excessive tight corner “braking”



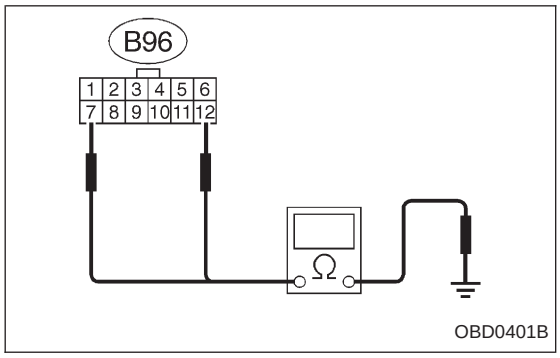




1. CHECK HARNESS CONNECTOR BETWEEN TCM AND VEHICLE SPEED SENSOR 1.

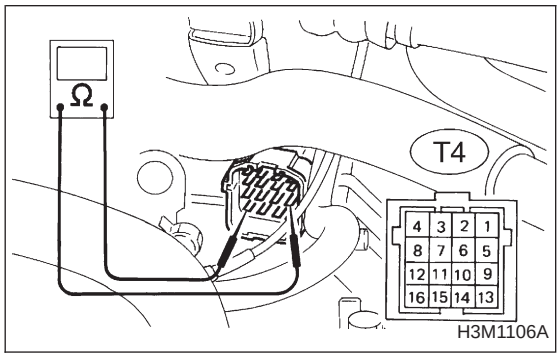
1) Turn ignition switch to OFF.
2) Disconnect connectors from TCM and transmission.
3) Measure resistance of harness connector between TCM and transmission connector.

Connector & terminal / Specified resistance:
(B96) No. 12 — (B9) No. 16 / 1 Ω, or less
(B96) No. 7 — (B9) No. 9 / 1 Ω, or less



4) Measure resistance of harness connector between TCM and body to make sure that circuit does not short.

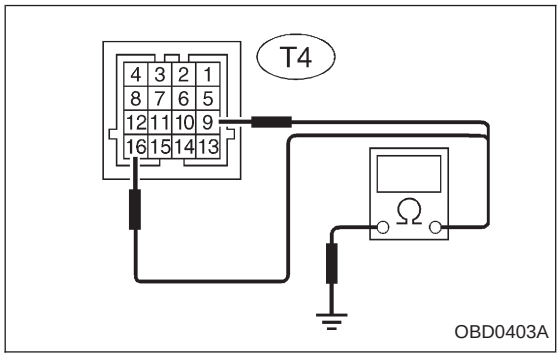
Connector & terminal / Specified resistance:
(B96) No. 7 — Body / 1 MΩ, or more
(B96) No. 12 — Body / 1 MΩ, or more



2. CHECK VEHICLE SPEED SENSOR 1.

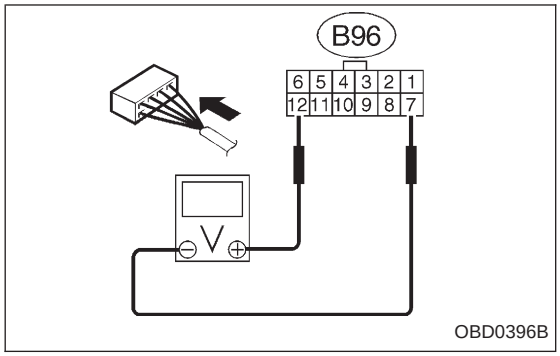
1) Measure resistance between transmission connector receptacle's terminals.

Connector & terminal / Specified resistance:
(T4) No. 16 — No. 9 / 450 — 720 Ω



2) Measure resistance of harness connector between transmission connector and transmission case to make sure that circuit does not short.

Connector & terminal / Specified resistance:
(T4) No. 16 — Transmission / 1 MΩ, or more
(T4) No. 9 — Transmission / 1 MΩ, or more



3. CHECK INPUT SIGNAL FOR TCM.

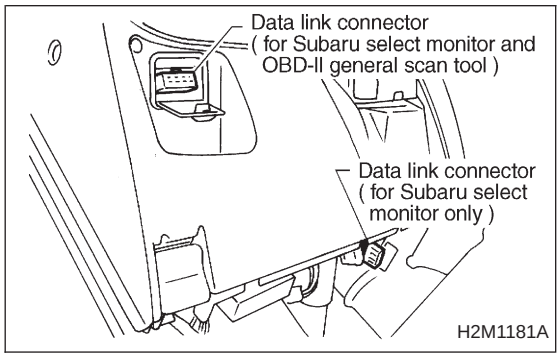
1) Connect connectors to TCM and transmission.
2) Lift-up or raise the vehicle and place safety stands.

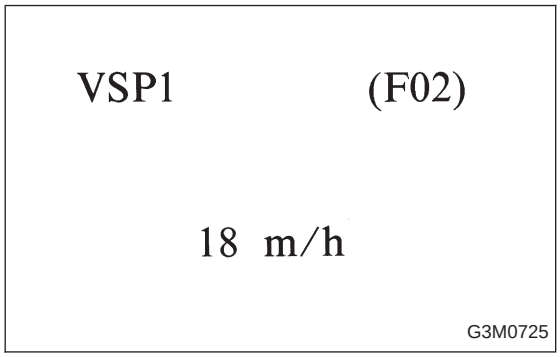
CAUTION:
On AWD models, raise all wheels off floor.

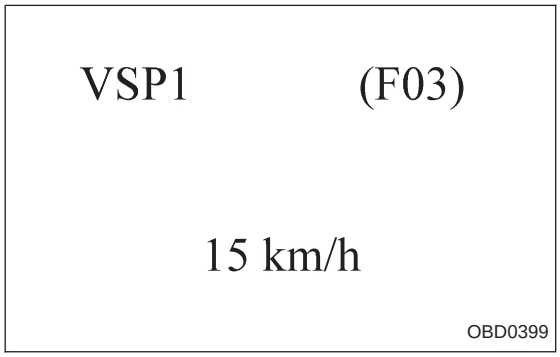
3) Start the engine and set vehicle in 20 km/h (12 MPH) condition.
4) Measure voltage between TCM connector terminals.

Connector & terminal / Specified voltage:
(B96) No. 12 — No. 7 / AC 1 V, or more

NOTE:
The speed difference between front and rear wheels may light either 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 [T1C2].>







- Using Subaru select monitor:
  (1) Connect connectors to TCM and transmission.
  (2) Turn ignition switch to OFF.
  (3) Connect the Subaru select monitor to data link connector.
  (4) Lift-up or raise the vehicle and place safety stands.

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

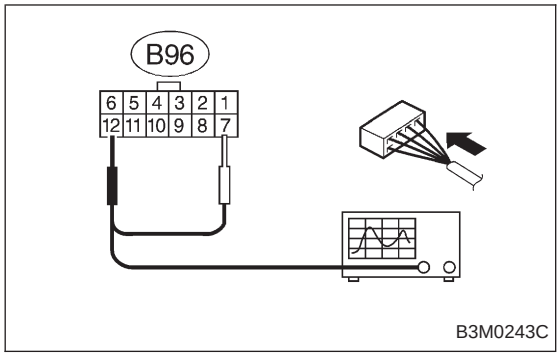
  (5) Turn ignition switch to ON and Subaru select monitor switch to ON.
  (6) Start the engine and operate at constant speed.
  (7) Read data on Subaru select monitor.
  (8) Designate mode using function key.

Function mode: F02 or F03

SPECIFIED DATA:
F02: Compare speedometer with monitor indications.
F03: Compare speedometer with monitor indications.

- F02: Vehicle speed is indicated in “m/h”.
- F03: Vehicle speed is indicated in “km/h”.

NOTE:
The speed difference between front and rear wheels may light either 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 [T1C2].>



- Using oscilloscope:
  (1) Connect connectors to TCM and transmission.
  (2) Lift-up the vehicle and place safety stands.

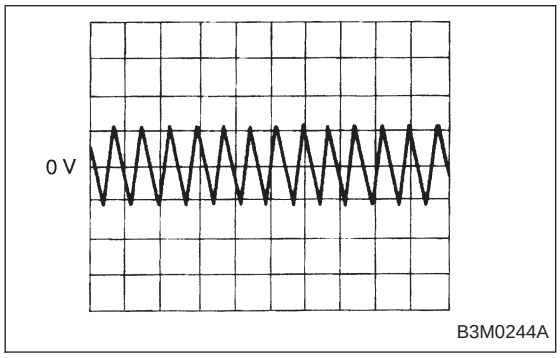
WARNING:

On AWD models, make sure that all wheels are raised off floor.

(3) Set oscilloscope to TCM connector terminals.

Connector & terminals:

Positive probe; (B96) No. 12
Earth lead; (B96) No. 7



(4) Start the engine, and set vehicle in 20 km/h (12 MPH) condition.
(5) Measure signal voltage indicated on oscilloscope.

Specified voltage: AC 1 V, or more

NOTE:
The speed difference between front and rear wheels may light either 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 [T1C2].>

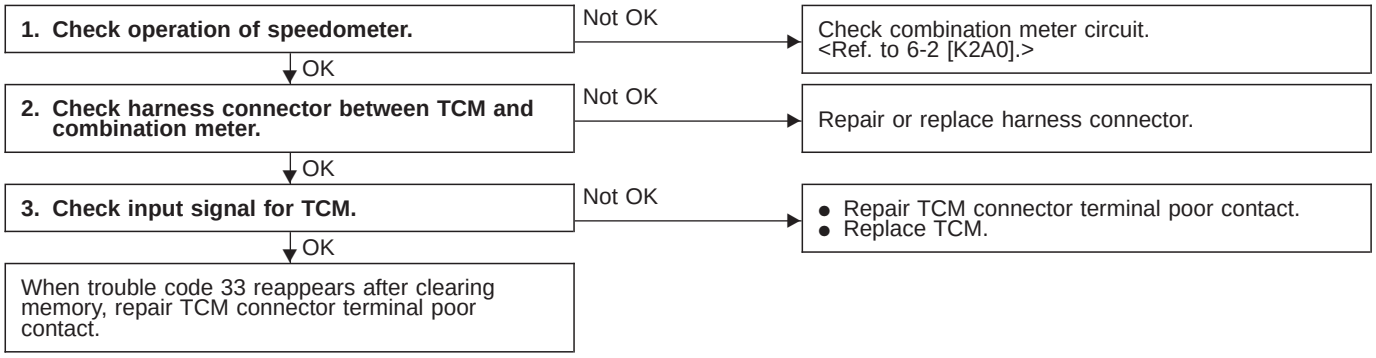
N: TROUBLE CODE 33 — VEHICLE SPEED SENSOR 2 —

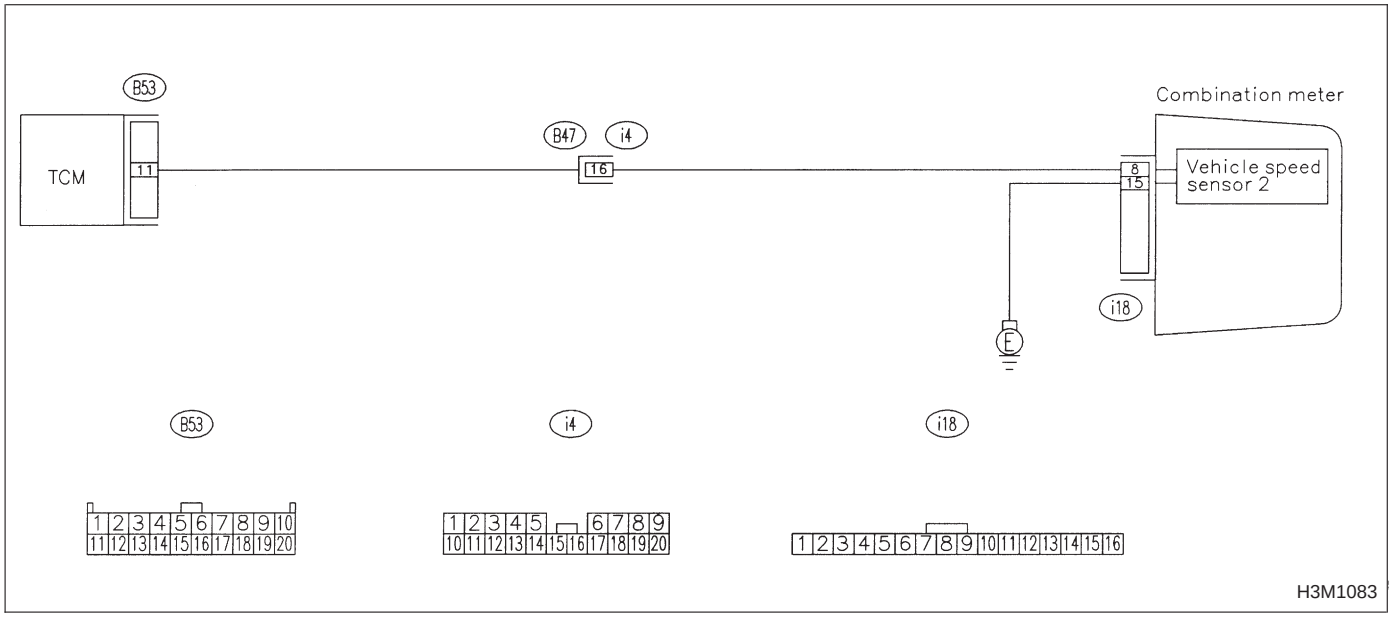
DIAGNOSIS:

The harness connector between TCM and vehicle speed sensor is in short or open.

TROUBLE SYMPTOM:

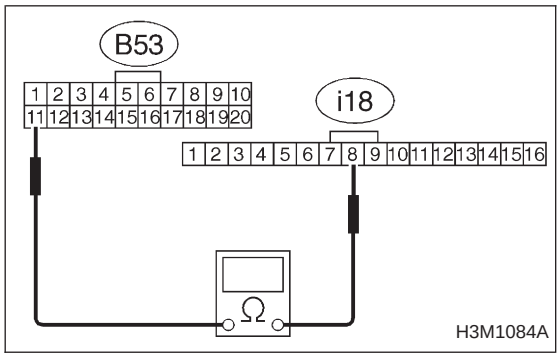
Improper shift point





1. CHECK OPERATION OF SPEEDOMETER.

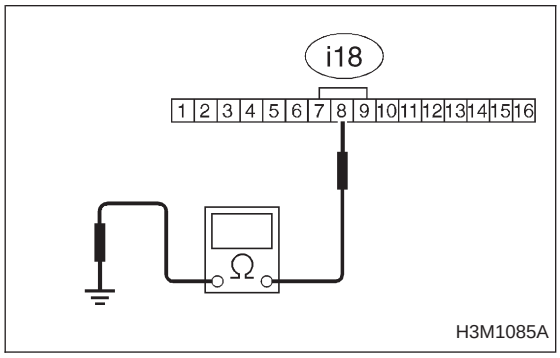
Make sure that speedometer indicates the vehicle speed by driving the vehicle.



2. CHECK HARNESS CONNECTOR BETWEEN TCM AND COMBINATION METER.

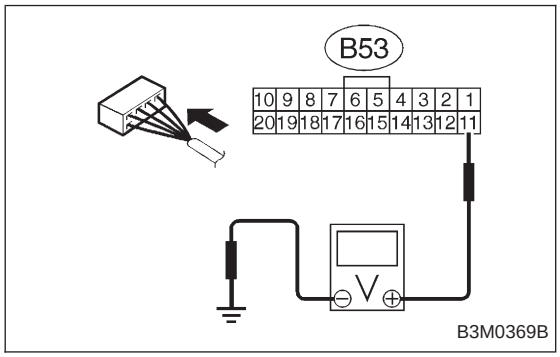
1) Turn ignition switch to OFF.
2) Remove combination meter.
3) Disconnect connectors from TCM and combination meter.
4) Measure resistance of harness connector between TCM and combination meter.

Connector & terminal / Specified resistance:
(B53) No. 11 — (i18) No. 8 / 1 Ω, or less



5) Measure resistance of harness connector between combination meter and body to make sure that circuit does not short.

Connector & terminal / Specified resistance:
(i18) No. 8 — Body / 1 MΩ, or more



3. CHECK INPUT SIGNAL FOR TCM.

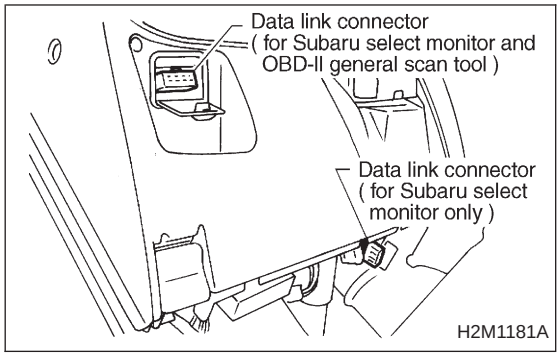
1) Connect connector to combination meter.
2) Install combination meter.
3) Lift-up the vehicle or set the vehicle on free roller.

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

4) Start the engine, and drive the wheels slowly.
5) Measure voltage between TCM and body.

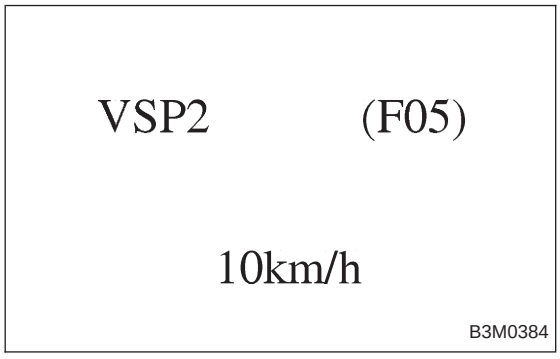
Connector & terminal / Specified voltage:
(B53) No. 11 — Body / Less than 1 ↔ more than 4 V

NOTE:
The speed difference between front and rear wheels may light either 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 [T1C2].>



- Using Subaru select monitor:
  (1) Connect connector to combination meter.
  (2) Install combination meter.
  (3) Connect connectors to TCM.
  (4) Lift-up the vehicle or set the vehicle on free roller.
  (5) Turn ignition switch to OFF.
  (6) Connect the Subaru select monitor to data link connector.
  (7) Turn ignition switch to ON and Subaru select monitor switch to ON.

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



(8) Start the engine, and drive the wheels.
(9) Read data on Subaru select monitor.
(10) Designate mode using function key.

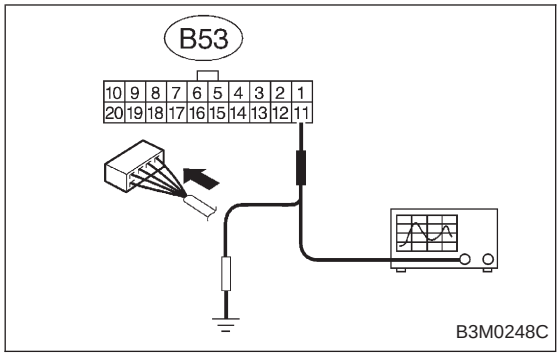
Function mode: F04 or F05

SPECIFIED DATA:

Compare speedometer with select monitor indications.

- F04: Vehicle speed is indicated in mile per hour (MPH).
- F05: Vehicle speed is indicated in kilometer per hour (km/h).

NOTE:
The speed difference between front and rear wheels may light either 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 [T1C2].>

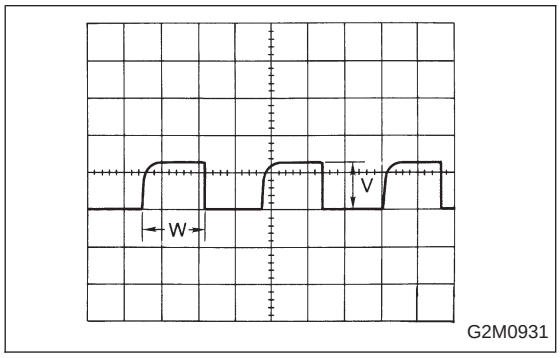


● Using oscilloscope:
(1) Connect connector to combination meter.
(2) Install combination meter.
(3) Lift-up the vehicle or set the vehicle on free rollers.

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

(4) Set oscilloscope to TCM connector terminals.

Connector & terminals:
Positive probe; (B53) No. 11
Earth lead; Body



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

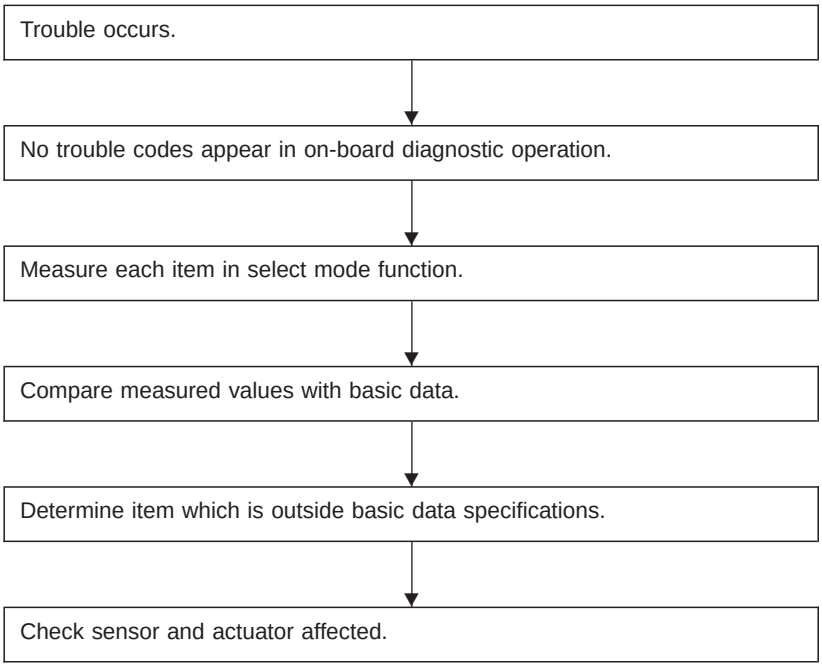
Specified voltage: 2 V, or more

NOTE:
● If vehicle speed increases, the width of amplitude (W) decreases.
● The speed difference between front and rear wheels may light either 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 [T1C2].>

8. Diagnostic Chart with Select Monitor

A: BASIC DIAGNOSTIC CHART

If no trouble codes appear in the on-board diagnostic operation (although problems have occurred or are occurring), measure performance characteristics of sensors, actuators, etc., in the “F” mode (select monitor function), and compare with the “basic data” to determine the cause of problems.



B: LIST OF OUTPUT MODES

1. FUNCTION MODE

Mode	Contents	Abbr.	Unit	Contents of display	Page
F00	Mode display	—	—	AT or EGI mode (when monitor is connected.)	57
F01	Battery voltage	VB	V	Battery voltage applied to control unit.	57
F02	Vehicle speed sensor 1	VSP1	m/h	Vehicle speed (miles/h) sent from vehicle speed sensor 1.	58
F03	Vehicle speed sensor 1	VSP1	km/h	Vehicle speed (km/h) sent from vehicle speed sensor 1.	58
F04	Vehicle speed sensor 2	VSP2	m/h	Vehicle speed (miles/h) sent from vehicle speed sensor 2.	58
F05	Vehicle speed sensor 2	VSP2	km/h	Vehicle speed (km/h) sent from vehicle speed sensor 2.	58
F06	Engine speed	EREV	rpm	Engine speed sent from ECM.	59
F07	ATF temperature sensor	ATFT	°F	ATF temperature (°F) sent from ATF temperature sensor.	59
F08	ATF temperature sensor	ATFT	°C	ATF temperature (°C) sent from ATF temperature sensor.	59
F09	Throttle position sensor	THV	V	Voltage sent from throttle position sensor.	60
F10	Gear position	GEAR	—	Transmission gear position	60
F11	Line pressure duty	PLDTY	%	Duty ratio flowing through duty solenoid A.	61
F12	Lock-up duty	LUDTY	%	Duty ratio flowing through duty solenoid B.	62
F13	AWD duty	4WDTY	%	Duty ratio flowing through duty solenoid C.	63
F14	Throttle position sensor power supply	THVCC	V	Power supply voltage to throttle position sensor	64
F15	Mass air flow signal	AFM	V	Output voltage from air flow sensor	64

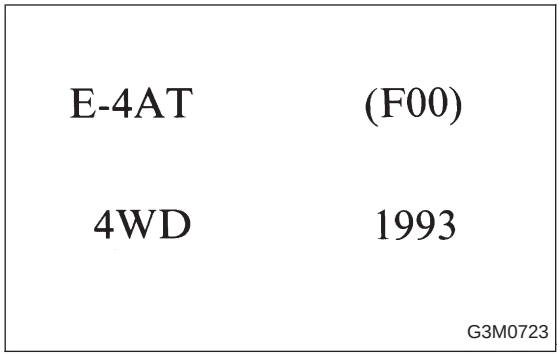
2. ON ←→ OFF SIGNAL LIST

Mode	LED No.	Signal name	Display	LED "ON" requirements	Page
FA0	1	FWD switch	FF	When fuse is installed in FWD switch.	—
	2	Kick-down switch	KD		—
	3	—	—		—
	4	—	—		—
	5	Brake switch	BR	When brake switch is turned ON.	—
	6	ABS switch	AB	When ABS signal is entered.	—
	7	Cruise control set	CR	When cruise control is set.	—
	8	Power switch	PW		—
	9	—	—		—
	10	—	—		—
FA1	1	P/N range switch	NP	When P or N range is selected.	—
	2	R range switch	RR	When R range is selected.	—
	3	D range switch	RD	When D range is selected.	—
	4	3 range switch	R3	When 3 range is selected.	—
	5	2 range switch	R2	When 2 range is selected.	—
	6	1 range switch	R1	When 1 range is selected.	—
	7	Diagnosis switch	SS	When diagnosis switch is turned ON.	66
	8	—	—		—
	9	—	—		—
	10	—	—		—

NOTE: LED Nos. 2 and 8 cannot be turned on.

3. DIAGNOSIS MODE

Mode	Contents	Abbr.	Contents of display
FB0	On-board diagnostics	DIAG.U	Current trouble code determined by on-board diagnostics.
FB1	On-board diagnostics	DIAG.M	Previous trouble code stored in memory by on-board diagnostics.
FC0	Back-up clear	—	Function of clearing trouble code stored in memory.



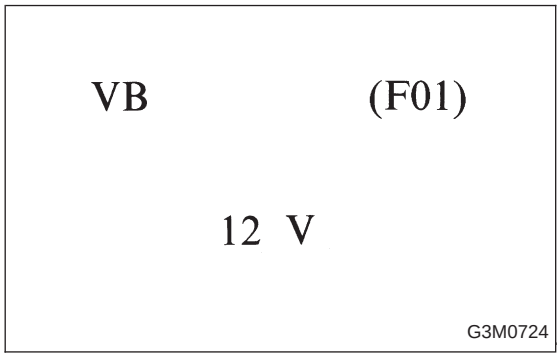
C: MODE F00 — MODE DISPLAY —

SPECIFIED DATA:

Data at the left should be indicated.

Probable cause (if outside “specified data”)

1. Communication failure (No communication method can be confirmed with power ON.)	● Check loose or poor connectors, or shortcircuit. ● Check type of cartridge.
2. Vehicle types cannot be identified (due to communication failure).	● Check improper cartridge. ● Replace with proper one.



D: MODE F01 — BATTERY VOLTAGE (VB) —

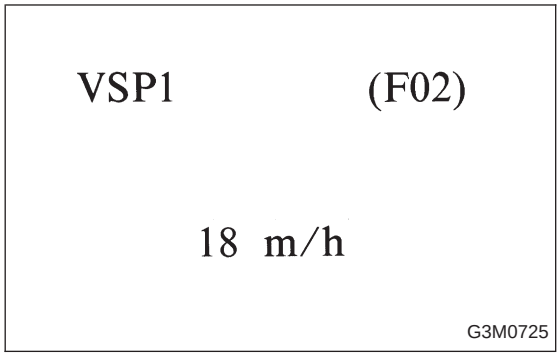
CONDITION:

- Ignition switch ON
- Engine idling after warm-up

SPECIFIED DATA:

VB: 10 — 16 V

1. Battery	Check battery voltage and specific gravity of electrolyte.
2. Charging system	● Measure regulating voltage under no loads. ● Check generator (as a single unit).



E: MODE F02 — VEHICLE SPEED SENSOR 1 (VSP1) —

F03 = vehicle speed (VSP1): to be indicated in “km/h”.

CONDITION:

Raise vehicle off ground and operate at constant speed.

SPECIFIED DATA:

Compare speedometer with monitor indications.

Probable cause (if outside “specified data”)

1. Vehicle speed sensor 1	Check performance characteristics of vehicle speed sensor 1. <Ref. to 3-2b [T7M0].>
	OK
	Check TCM and replace if necessary.

F: MODE F04 — VEHICLE SPEED SENSOR 2 (VSP2) —

F05 = vehicle speed (VSP2): to be indicated in “km/h”.

CONDITION:

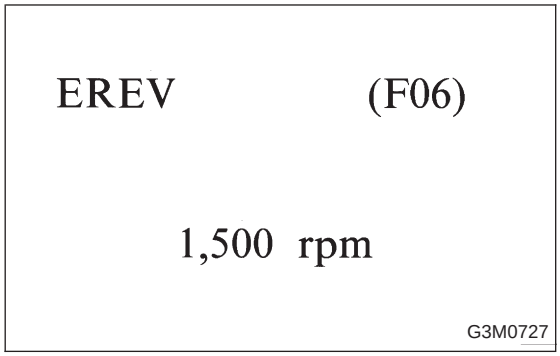
Raise vehicle off ground and operate at constant speed.

SPECIFIED DATA:

Compare speedometer with monitor indications.

Probable cause (if outside “specified data”)

1. Vehicle speed sensor 2	Check performance characteristics of vehicle speed sensor 2. <Ref. to 3-2b [T7N0].>
	OK
	Check TCM and replace if necessary.



G: MODE F06 — ENGINE SPEED (EREV) —

CONDITION:

Measure with engine operating at constant speed.

SPECIFIED DATA:

Same as tachometer reading (in combination meter)

Probable cause (if outside “specified data”)

1. Conduct diagnostics in relation to MPFI system for engine speed.	OK →	Check TCM and replace if necessary.

H: MODE F07 — ATF TEMPERATURE SENSOR (ATFT) —

F08 = ATF temperature (ATFT): to be indicated in “deg C”.

CONDITION:

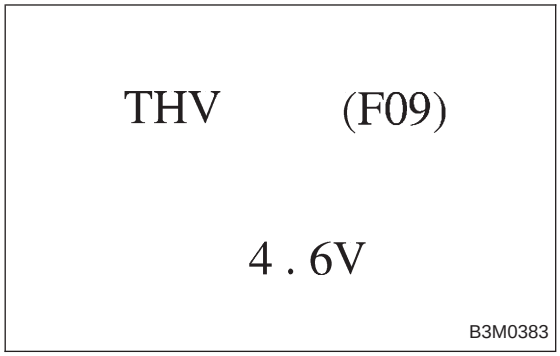
- Low ATF temperature (before engine/vehicle starts.)
- High ATF temperature (after driving vehicle for warm-up.)

SPECIFIED DATA:

- Ambient temperature: ±50 deg F (±10 deg C) (Low ATF temperature)
- ATF temperature: 158 — 230 deg F (70 — 110 deg C) (High ATF temperature)
- Open harness: 176 deg F (80 deg C)
- Shorted harness: 320 deg F (160 deg C)

Probable cause (if outside “specified data”)

1. ATF temperature sensor	→	Check performance characteristics of ATF temperature sensor. <Ref. to 3-2b [T7G0].>
		OK ↓
		Check TCM and replace if necessary.



I: MODE F09 — THROTTLE POSITION SENSOR (THV) —

CONDITION:

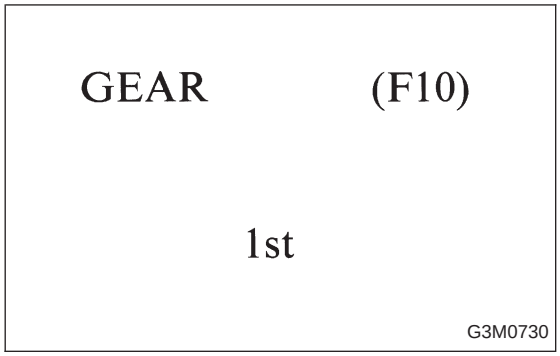
- Ignition switch ON (with engine OFF)
- Measure voltage while operating throttle valve from a fully closed position to a fully open position.

SPECIFIED DATA:

- Fully closed position: 0.5±0.2 V
- Fully open position: 4.6±0.2 V
- From fully closed to fully open position: Voltage must smoothly decrease.
- Open harness: 5.0±0.3 V
- Shorted harness: 0.00 V

Probable cause (if outside “specified data”)

1. Throttle position sensor	Check performance characteristics of throttle position sensor. <Ref. to 3-2b [T7L0].> → OK → Check TCM and replace if necessary.



J: MODE F10 — GEAR POSITION (GEAR) —

CONDITION:

Check while driving vehicle (after warm-up).

SPECIFIED DATA:

Gear position (Refer to shift performance characteristics chart.)

Probable cause (item outside “specified data”)

1. Shift solenoid 1	Check performance characteristics of shift solenoid 1. <Ref. to 3-2b [T7E0].> → OK
2. Shift solenoid 2	Check performance characteristics of shift solenoid 2. <Ref. to 3-2b [T7D0].> → OK
3. Shift solenoid 3	Check performance characteristics of shift solenoid 3. <Ref. to 3-2b [T7C0].> → OK → Check TCM and replace as necessary.

K: MODE F11
— LINE PRESSURE DUTY (PLDTY) —

CONDITION:

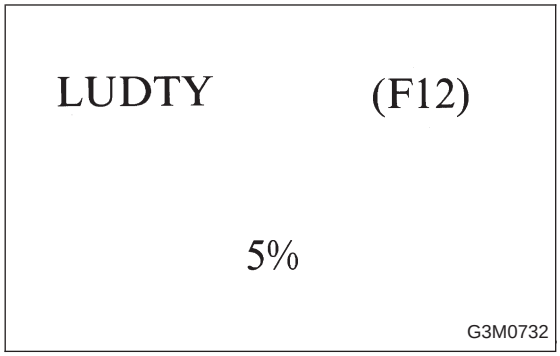
- After sufficient warm-up
- Ignition ON (engine OFF)
- N range

SPECIFIED DATA:

- Throttle fully closed: 100%
- Throttle fully open : 15%

Probable cause (if outside “specified data”)

1. Throttle position sensor	→	Check in F09 mode. <Ref. to 3-2b [T8I0].>
		OK ↓
2. Vehicle speed sensor 1	→	Check in F02 mode. <Ref. to 3-2b [T8E0].>
		OK ↓
3. Vehicle speed sensor 2	→	Check in F04 mode. <Ref. to 3-2b [T8F0].>
		OK ↓
4. Engine speed	→	Check in F06 mode. <Ref. to 3-2b [T8G0].>
		OK ↓
5. ATF temperature sensor	→	Check in F07 mode. <Ref. to 3-2b [T8H0].>
		OK ↓
6. Inhibitor switch	→	Check for operation.
		OK ↓
7. Power switch	→	Check for operation.
		OK ↓
		Check TCM and replace if necessary.



L: MODE F12 — LOCK-UP DUTY (LUDTY) —

CONDITION:

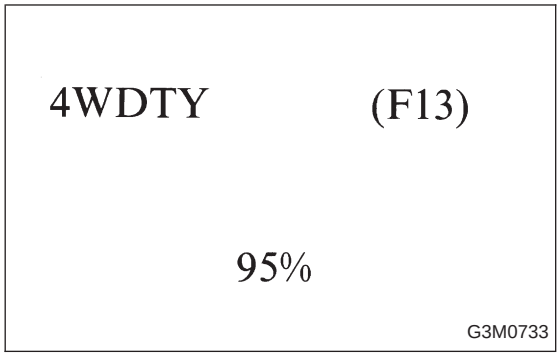
- Idling (after sufficient warm-up) with lock-up system released.
- Driving at 70 km/h or 44 MPH (after sufficient warm-up) with lock-up system applied.

SPECIFIED DATA:

- Lock-up system released: 5%
- Lock-up system applied: 95%

Probable cause (if outside “specified data”)

1. Throttle position sensor	Check in F09 mode. <Ref. to 3-2b [T8I0].>
	OK
2. Vehicle speed sensor 1	Check in F02 mode. <Ref. to 3-2b [T8E0].>
	OK
3. Vehicle speed sensor 2	Check in F04 mode. <Ref. to 3-2b [T8F0].>
	OK
4. Engine speed	Check in F06 mode. <Ref. to 3-2b [T8G0].>
	OK
5. Inhibitor switch	Check for operation.
	OK
	Check TCM and replace if necessary.



M: MODE F13 — AWD DUTY (4WDTY) —

CONDITION:

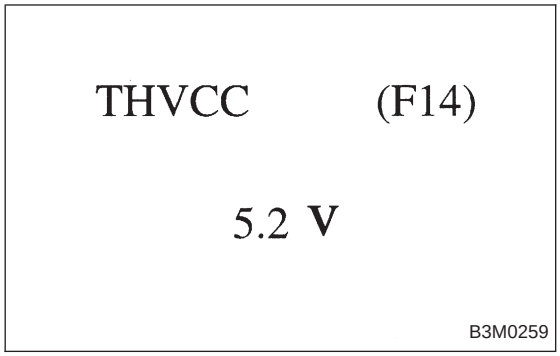
- FWD mode
  (1) After sufficient warm-up
  (2) Ignition switch ON (engine OFF)
- AWD mode
  (1) After sufficient warm-up
  (2) Ignition switch ON (engine OFF)
  (3) D range and full throttle
  (4) Vehicle speed 0 km/h or 0 MPH

SPECIFIED DATA:

- 95% (FWD mode)
- 25% or less (AWD mode)

Probable cause (if outside “specified data”)

1. Throttle position sensor	→	Check in F09 mode. <Ref. to 3-2b [T8I0].>
		OK ↓
2. Vehicle speed sensor 1	→	Check in F02 mode. <Ref. to 3-2b [T8E0].>
		OK ↓
3. Vehicle speed sensor 2	→	Check in F04 mode. <Ref. to 3-2b [T8F0].>
		OK ↓
4. ATF temperature sensor	→	Check in F07 mode. <Ref. to 3-2b [T8H0].>
		OK ↓
5. Inhibitor switch	→	Check for operation.
		OK ↓
6. ABS signal	→	Check ABS system for operation.
		OK ↓
		Check TCM and replace if necessary.



N: MODE F14
— THROTTLE POSITION SENSOR POWER SUPPLY (THVCC) —

CONDITION:

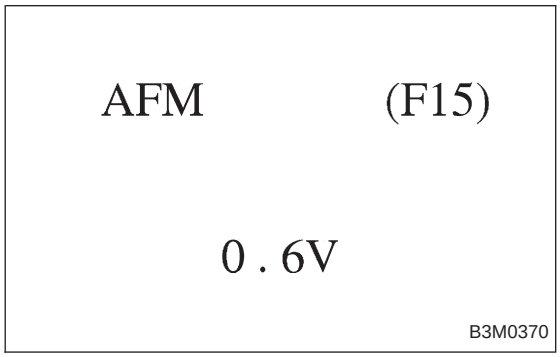
Ignition switch ON (engine OFF)

SPECIFIED DATA:

5.12±0.1 V

Probable cause (Item outside “specified data”)

1. Throttle position sensor power supply	Check throttle sensor line. <Ref. to 3-2b [T7L0].>
	OK
	Check TCM and replace if necessary.



O: MODE F15
— MASS AIR FLOW SIGNAL (AFM) —

CONDITION:

- Ignition switch ON (engine ON)
- N range
- Idling

SPECIFIED DATA:

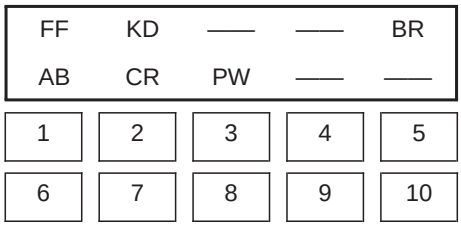
Engine warm-up: 0.55±0.25 V

Probable cause (if outside “specified data”)

1. Mass air flow signal	Check performance characteristics of mass air flow signal. <Ref. to 3-2b [T7H0].>
	OK
	Check TCM and replace if necessary.

DISPLAY

LED No.	Signal name	Symbol
1	FWD switch	FF
2	Kick-down switch	KD
3	—	—
4	—	—
5	Brake	BR
6	ABS switch	AB
7	Cruise control set	CR
8	Power switch	PW
9	—	—
10	—	—



P: MODE FA0 — SWITCH 1 (SW1) —

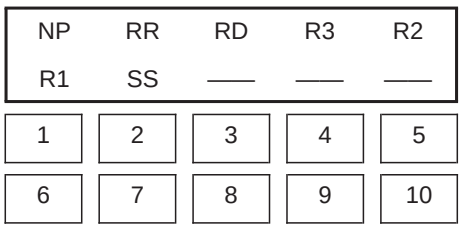
Reference values

- Lights up when the fuse is installed in FWD switch (No. 1).
- Light up when the brake pedal is depressed (No. 5).
- Light up when the ABS signal is entered (No. 6).
- Lights up when the cruise control is set (No. 7).

NOTE:
LED Nos. 2 and 8 do not come on.

DISPLAY

LED No.	Signal name	Symbol
1	N/P range switch	NP
2	R range switch	RR
3	D range switch	RD
4	3 range switch	R3
5	2 range switch	R2
6	1 range switch	R1
7	Diagnosis switch	SS
8	—	—
9	—	—
10	—	—



Q: MODE FA1 — SWITCH 2 (SW2) —

Reference values

- Lights up when the N or P range is selected (No. 1).
- Lights up when the R range is selected (No. 2).
- Lights up when the D range is selected (No. 3).
- Lights up when the 3 range is selected (No. 4).
- Lights up when the 2 range is selected (No. 5).
- Lights up when the 1 range is selected (No. 6).
- Lights up when the diagnosis switch is connected (No. 7).

NOTE:
If each LED does not illuminate in the above conditions, inhibitor switch malfunction may occur. Perform diagnostics on inhibitor switch. <Ref. to 2-7b [T10AN0].>

R: MODE FA1
— LED No. 7, DIAGNOSIS SWITCH —

DIAGNOSIS:

- LED does not come on when diagnosis switch is ON.
- Diagnosis switch circuit is open or shorted.

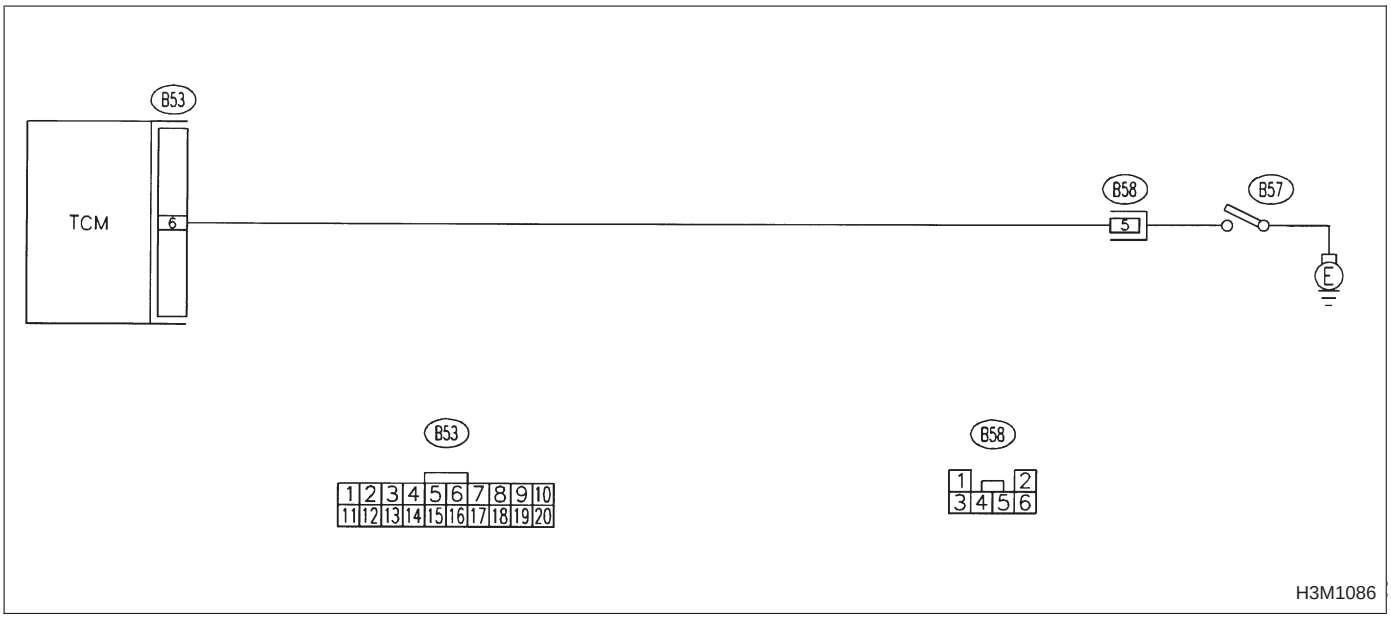
Probable cause (if outside “specified data”)

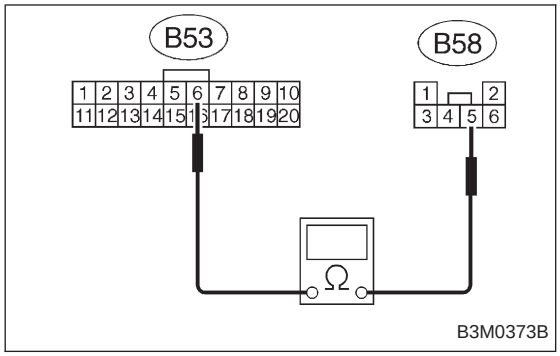
1. Check harness connector between TCM and diagnosis switch.
Not OK → Repair or replace harness connectors.
OK ↓

2. Check input signal for TCM.
Not OK → Repair TCM connector terminal poor contact.
OK ↓

3. Check diagnosis switch ground line.
Not OK → Repair or replace harness connector.
OK ↓

Repair diagnosis switch connector terminal poor contact.
→ Not OK → Repair TCM and diagnosis switch connector terminal poor contact.

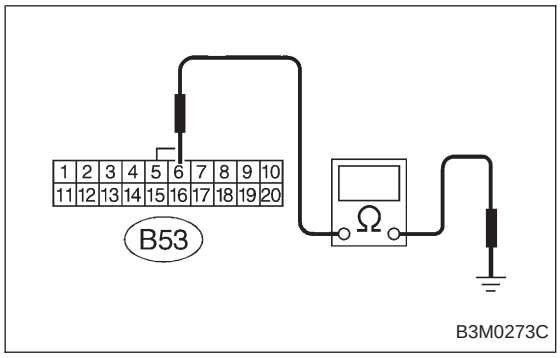




1. CHECK HARNESS CONNECTOR BETWEEN TCM AND DIAGNOSIS SWITCH.

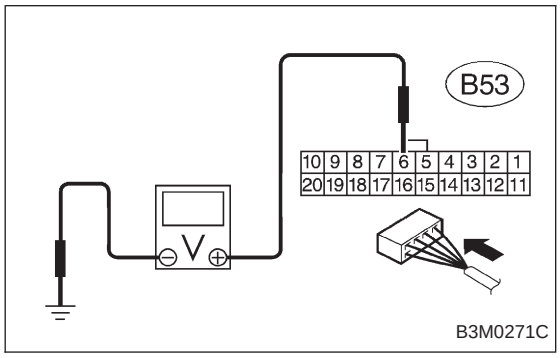
1) Turn ignition switch OFF.
2) Disconnect connector from TCM.
3) Measure resistance of harness connector between TCM and diagnosis switch.

Connector & terminal / Specified resistance:
(B53) No. 6 — (B58) No. 5 / 1 Ω, or less.



4) Measure resistance of harness connector between TCM and body to make sure that circuit does not short.

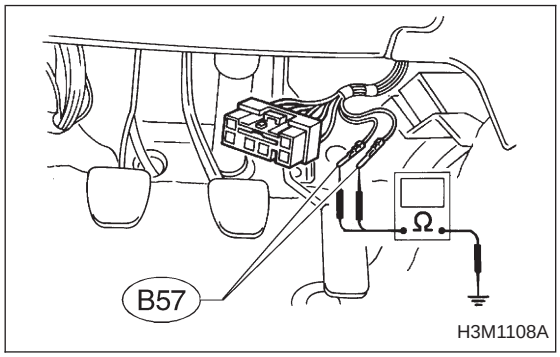
Connector & terminal / Specified resistance:
(B53) No. 6 — Body / 1 M Ω, or more



2. CHECK INPUT SIGNAL FOR TCM.

1) Connect connector to TCM.
2) Turn ignition switch ON (with engine OFF).
3) Measure signal voltage for TCM while connecting and disconnecting the diagnosis terminal to diagnosis connector.

Connector & terminal / Specified voltage:
(B53) No. 6 — Body / Less than 1 V (Connected)
More than 6 V (Disconnected)



3. CHECK DIAGNOSIS SWITCH GROUND LINE.

Measure resistance of harness terminal between diagnosis terminal and body.

Connector & terminal / Specified resistance:
(B57) — Body / 1 Ω, or less

9. General Diagnostic Table

Problem parts / Symptom	Inhibitor switch	Control module	Vehicle speed sensor 1	Vehicle speed sensor 2	Select cable	Select lever	FWD switch	Starter motor and harness	Throttle position sensor	Diagnosis switch	Accumulator ("N" — "D")	Accumulator (2A)	Accumulator (4A)	Accumulator (3R)	ATF temperature sensor	Strainer	Duty solenoid A	Duty solenoid B	Shift solenoid 1	Shift solenoid 2	Shift solenoid 3	Control valve	Detent spring	Manual plate	Transfer clutch	Transfer valve	Transfer pipe	Duty solenoid C	Forward clutch
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
Starter does not rotate when select lever is in "P" or "N."; starter rotates when select lever is "R", "D", "3" or "2."	X				X	X		X																					
Abnormal noise when select lever is in "P" or "N."																X												X	
Hissing noise occurs during standing starts.																X													
Noise occurs while driving in "D_1" range.																													
Noise occurs while driving in "D_2" range.																													
Noise occurs while driving in "D_3" range.																													
Noise occurs while driving in "D_4" range.																													
Engine stalls while shifting from one range to another.																						X							
Vehicle moves when select lever is in "N."																													X
Shock occurs when select lever is moved from "N" to "D."		X									X											X							
Excessive time lag occurs when select lever is moved from "N" to "D."																						X							X
Shock occurs when select lever is moved from "N" to "R."		X											X									X							
Excessive time lag occurs when select lever is moved from "N" to "R."																						X							
Vehicle does not start in any shift range (engine revving up).																X						X							
Vehicle does not start in any shift range (engine stall).																													
Vehicle does not start in "R" range only (engine revving up).					X	X																X							
Vehicle does not start in "R" range only (engine stall).																													X
Vehicle does not start in "D" or "3" range (engine revving up).																													X
Vehicle does not start in "D", "3" or "2" range (engine revving up).																													X
Vehicle does not start in "D", "3" or "2" range (engine stall).																													
Vehicle starts in "R" range only (engine revving up).																						X							
Acceleration during standing starts is poor (high stall rpm).																						X							X
Acceleration during standing starts is poor (low stall rpm).																													
Acceleration is poor when select lever is in "D", "3" or "2" range (normal stall rpm).		X																				X							
Acceleration is poor when select lever is in "R" (normal stall rpm).																						X							
No shift occurs from 1st to 2nd gear.		X	X	X					X										X	X		X							
No shift occurs from 2nd to 3rd gear.		X																				X							
No shift occurs from 3rd to 4th gear.		X												X	X						X	X							
No "kick-down" shifts occur.		X							X																				
Engine brake is not effected when select lever is in "3" range.	X	X							X													X							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29

Overrunning clutch	Drive pinion	Crown gear	Axle shaft	Differential gear	Final gear	Seal pipe	Oil pump	High clutch	Band brake	Low & reverse clutch	Reverse clutch	One-way clutch (1-2)	One-way clutch (3-4)	Double oil seal	Input shaft	Output shaft	Planetary gear	Reduction gear	Drive plate	Torque converter one-way clutch	Lock-up facing	Lock-up damper	ATF deterioration	ATF level too high or too low	Differential gear oil level too high or too low	Engine performance	Engine speed signal	Parking brake mechanism	Problem parts
30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	Symptom
																													Starter does not rotate when select lever is in “P” or “N.”; starter rotates when select lever is “R”, “D”, “3” or “2.”
							X												X					X					Abnormal noise when select lever is in “P” or “N.”
																								X					Hissing noise occurs during standing starts.
					X												X	X							X				Noise occurs while driving in “D_1” range.
					X												X	X							X				Noise occurs while driving in “D_2” range.
					X													X							X				Noise occurs while driving in “D_3” range.
					X												X	X							X				Noise occurs while driving in “D_4” range.
																						X				X			Engine stalls while shifting from one range to another.
																													Vehicle moves when select lever is in “N.”
																							X						Shock occurs when select lever is moved from “N” to “D.”
																													Excessive time lag occurs when select lever is moved from “N” to “D.”
																							X						Shock occurs when select lever is moved from “N” to “R.”
										X	X																		Excessive time lag occurs when select lever is moved from “N” to “R.”
	X	X	X	X			X								X	X	X		X					X					Vehicle does not start in any shift range (engine revving up).
																												X	Vehicle does not start in any shift range (engine stall).
										X	X																		Vehicle does not start in “R” range only (engine revving up).
									X								X												Vehicle does not start in “R” range only (engine stall).
												X																	Vehicle does not start in “D” or “3” range (engine revving up).
																													Vehicle does not start in “D”, “3” or “2” range (engine revving up).
											X																		Vehicle does not start in “D”, “3” or “2” range (engine stall).
																													Vehicle starts in “R” range only (engine revving up).
											X														X				Acceleration during standing starts is poor (high stall rpm).
							X													X						X			Acceleration during standing starts is poor (low stall rpm).
								X	X								X												Acceleration is poor when select lever is in “D”, “3” or “2” range (normal stall rpm).
X								X	X								X												Acceleration is poor when select lever is in “R” (normal stall rpm).
									X																				No shift occurs from 1st to 2nd gear.
								X					X																No shift occurs from 2nd to 3rd gear.
									X																				No shift occurs from 3rd to 4th gear.
																													No “kick-down” shifts occur.
																													Engine brake is not effected when select lever is in “3” range.
30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	

9. General Diagnostic Table

Problem parts / Symptom	Inhibitor switch	Control module	Vehicle speed sensor 1	Vehicle speed sensor 2	Select cable	Select lever	FWD switch	Starter motor and harness	Throttle position sensor	Diagnosis switch	Accumulator ("N" — "D")	Accumulator (2A)	Accumulator (4A)	Accumulator (3R)	ATF temperature sensor	Strainer	Duty solenoid A	Duty solenoid B	Shift solenoid 1	Shift solenoid 2	Shift solenoid 3	Control valve	Detent spring	Manual plate	Transfer clutch	Transfer valve	Transfer pipe	Duty solenoid C	Forward clutch
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
Engine brake is not effected when select lever is in "3" or "2" range.																													
Engine brake is not effected when select lever is in "1" range.																						X							
Shift characteristics are erroneous.	X	X	X	X					X													X							
No lock-up occurs.		X							X						X							X							
Vehicle cannot be set in "D" range power mode.		X							X																				
"D" range power mode cannot be released.		X							X						X														
Parking brake is not effected.					X	X																							
Shift lever cannot be moved or is hard to move from "P" range.					X	X																							
Select lever is hard to move.					X	X																	X	X					
Select lever is too light to move (unreasonable resistance).																							X	X					
ATF spurts out.																													
Differential oil spurts out.																													
Differential oil level changes excessively.																													
Odor is produced from oil supply pipe.																									X				X
Shock occurs when select lever is moved from "1" to "2" range.		X							X			X			X		X					X							
Slippage occurs when select lever is moved from "1" to "2" range.		X							X			X			X		X					X							
Shock occurs when select lever is moved from "2" to "3" range.		X							X					X	X		X					X							
Slippage occurs when select lever is moved from "2" to "3" range.		X							X					X	X		X					X							
Shock occurs when select lever is moved from "3" to "4" range.		X							X				X		X		X					X							
Slippage occurs when select lever is moved from "3" to "4" range.		X							X				X		X		X					X							
Shock occurs when select lever is moved from "3" to "2" range.		X							X						X		X					X							
Shock occurs when select lever is moved from "D" to "1" range.		X							X						X		X					X							
Shock occurs when select lever is moved from "2" to "1" range.		X							X						X		X					X							
Shock occurs when accelerator pedal is released at medium speeds.		X							X						X		X					X							
Vibration occurs during straight-forward operation.		X																X											
Select lever slips out of position during acceleration or while driving on rough terrain.					X	X																	X	X					
Vibration occurs during turns (tight corner "braking" phenomenon).		X	X	X					X						X										X	X		X	
Front wheel slippage occurs during standing starts.		X		X			X		X						X							X			X	X	X	X	
Vehicle is not set in FWD mode.		X					X																		X	X		X	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29

Overrunning clutch	Drive pinion	Crown gear	Axle shaft	Differential gear	Final gear	Seal pipe	Oil pump	High clutch	Band brake	Low & reverse clutch	Reverse clutch	One-way clutch (1-2)	One-way clutch (3-4)	Double oil seal	Input shaft	Output shaft	Planetary gear	Reduction gear	Drive plate	Torque converter one-way clutch	Lock-up facing	Lock-up damper	ATF deterioration	ATF level too high or too low	Differential gear oil level too high or too low	Engine performance	Engine speed signal	Parking brake mechanism	Problem parts
30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	Symptom
X																													Engine brake is not effected when select lever is in “3” or “2” range.
										X																			Engine brake is not effected when select lever is in “1” range.
																													Shift characteristics are erroneous.
																					X						X		No lock-up occurs.
																													Vehicle cannot be set in “D” range power mode.
																													“D” range power mode cannot be released.
																												X	Parking brake is not effected.
																												X	Shift lever cannot be moved or is hard to move from “P” range.
																													Select lever is hard to move.
																													Select lever is too light to move (unreasonable resistance).
																								X					ATF spurts out.
																									X				Differential oil spurts out.
						X								X															Differential oil level changes excessively.
X								X	X	X	X										X		X						Odor is produced from oil supply pipe.
									X														X			X			Shock occurs when select lever is moved from “1” to “2” range.
									X																				Slippage occurs when select lever is moved from “1” to “2” range.
								X	X														X			X			Shock occurs when select lever is moved from “2” to “3” range.
								X	X																				Slippage occurs when select lever is moved from “2” to “3” range.
X									X														X			X			Shock occurs when select lever is moved from “3” to “4” range.
									X																				Slippage occurs when select lever is moved from “3” to “4” range.
X									X														X						Shock occurs when select lever is moved from “3” to “2” range.
																							X						Shock occurs when select lever is moved from “D” to “1” range.
										X													X						Shock occurs when select lever is moved from “2” to “1” range.
																						X				X			Shock occurs when accelerator pedal is released at medium speeds.
																					X	X							Vibration occurs during straight-forward operation.
																													Select lever slips out of position during acceleration or while driving on rough terrain.
																							X						Vibration occurs during turns (tight corner “braking” phenomenon).
																													Front wheel slippage occurs during standing starts.
																													Vehicle is not set in FWD mode.
30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	