

7. Diagnostic Chart with Trouble Code

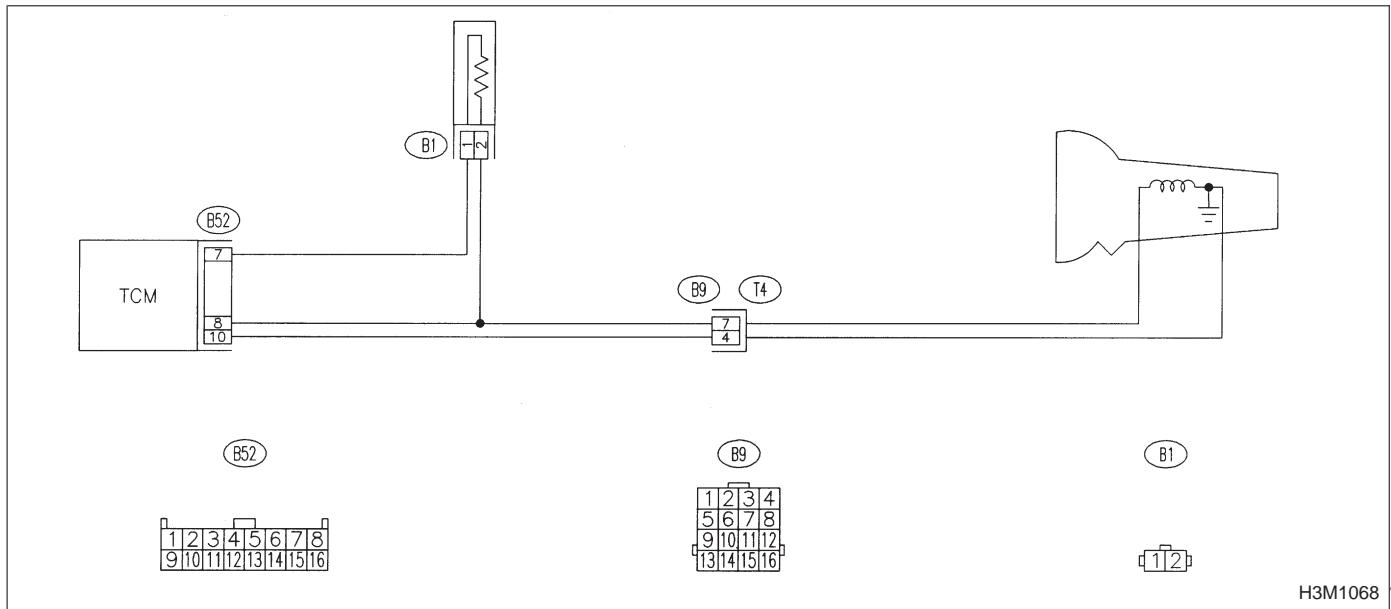
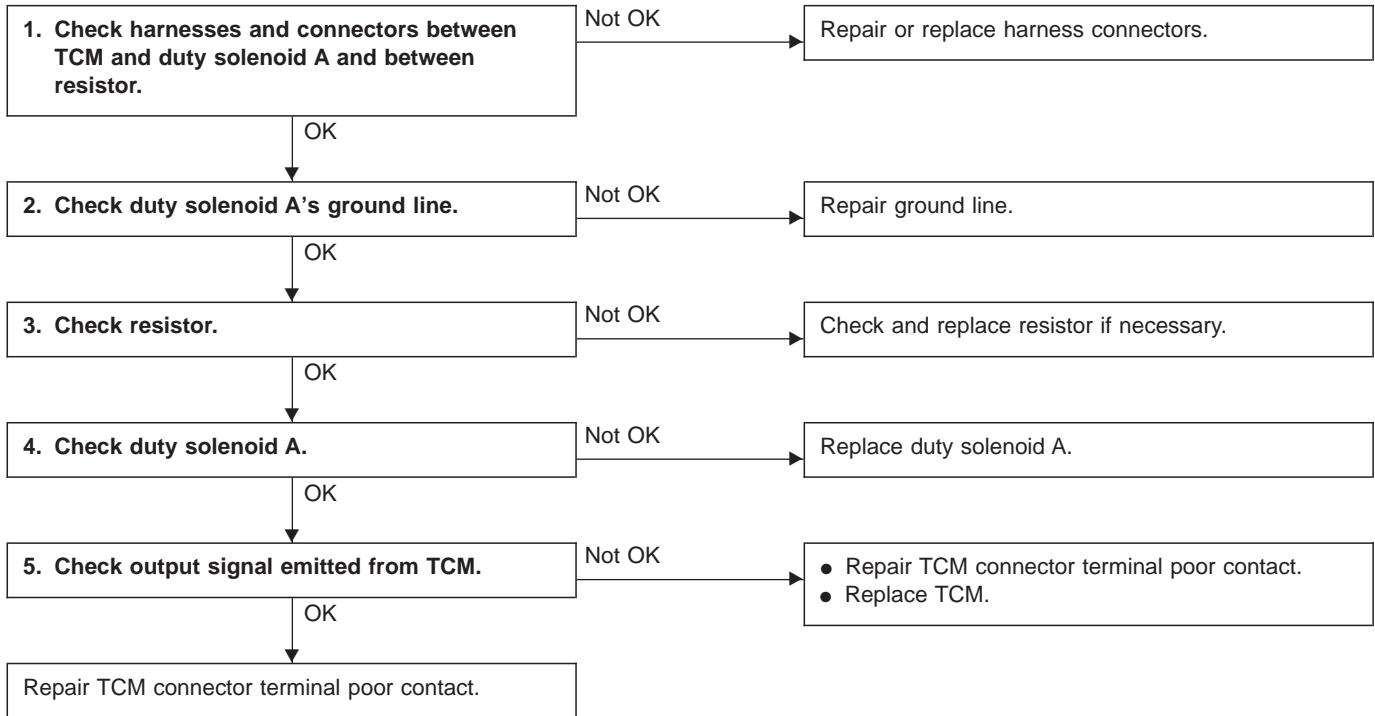
A: TROUBLE CODE 11 — DUTY SOLENOID A —

DIAGNOSIS:

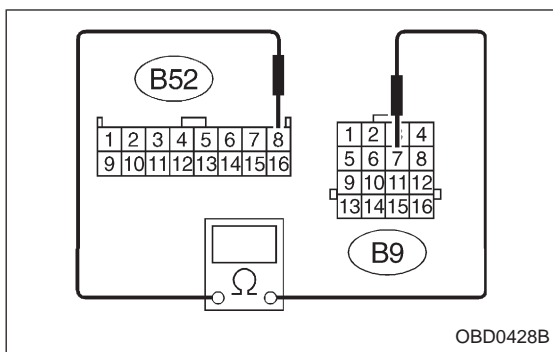
Output signal circuit of duty solenoid A or resistor is open or shorted.

TROUBLE SYMPTOM:

Excessive shift shock



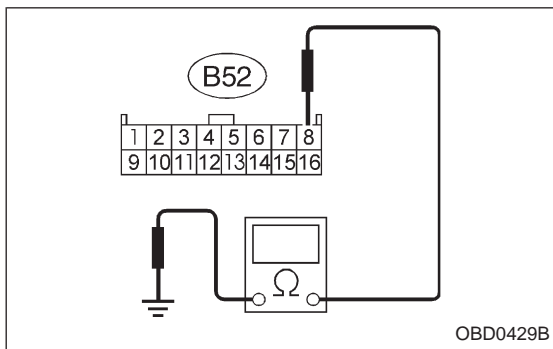
H3M1068



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

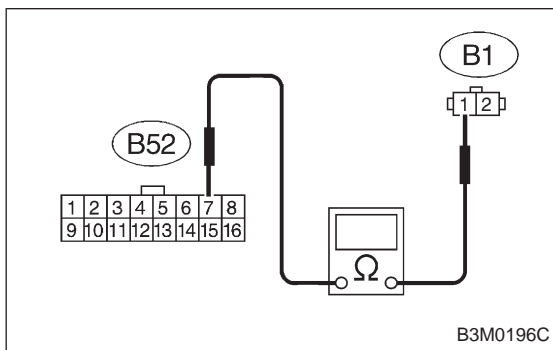
- 1) Turn ignition switch to OFF.
- 2) Disconnect connectors from TCM, transmission and resistor.
- 3) Measure resistance of harness connector between TCM and transmission.

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



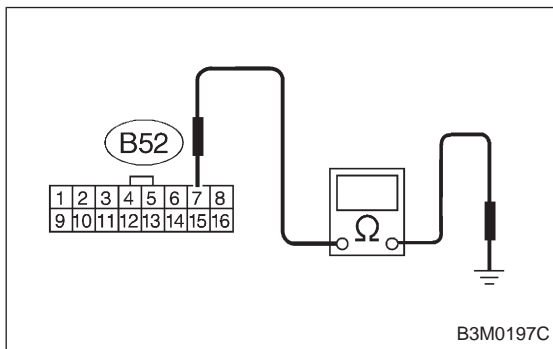
- 4) Measure resistance of harness connector between TCM and body to make sure that circuit does not short.

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



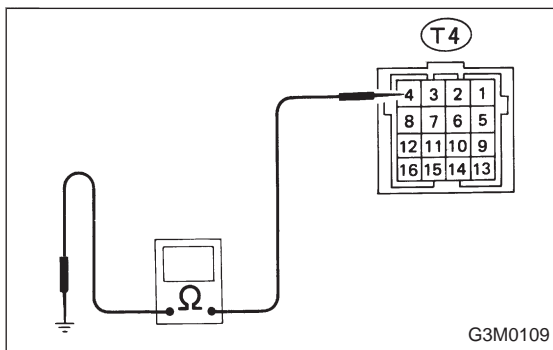
- 5) Measure resistance of harness connector between TCM and resistor connector.

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.

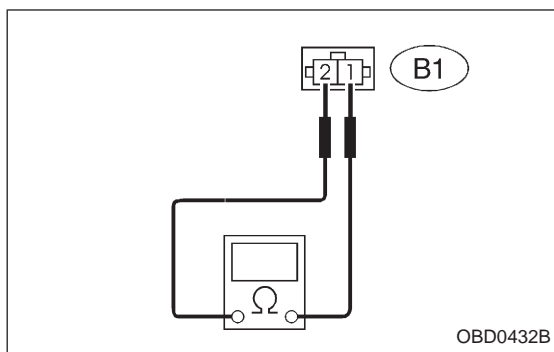
Connector & terminal / Specified resistance:
(B52) No. 7 — Body / 1 MΩ, or more



2. CHECK DUTY SOLENOID A's GROUND LINE.

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

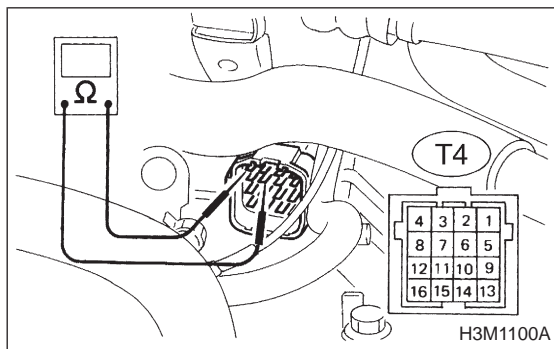
Connector & terminal / Specified resistance:
(T4) No. 4 — Transmission / 1 Ω, or less

**3. CHECK RESISTOR.**

Measure resistance between resistor terminals.

Specified resistance:

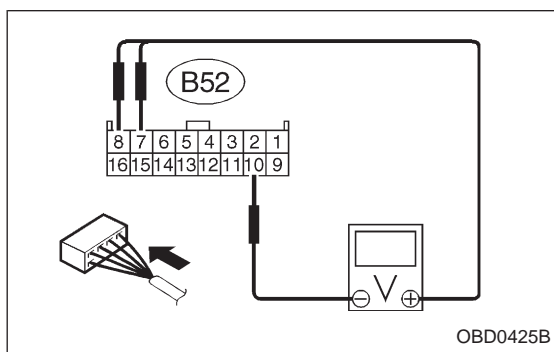
(B1) No. 1 — No. 2 / 9 — 15 Ω

**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.

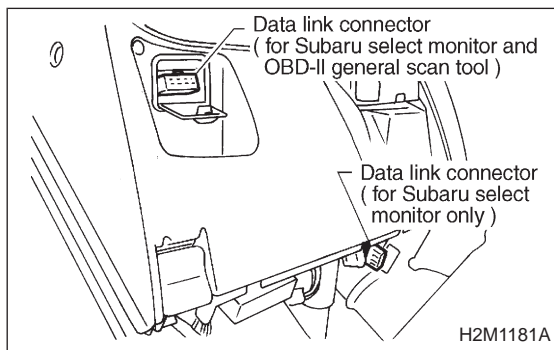
Connector & terminal / Specified resistance:

(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.

PLDTY (F11)

100%

OBD0427

- (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.)

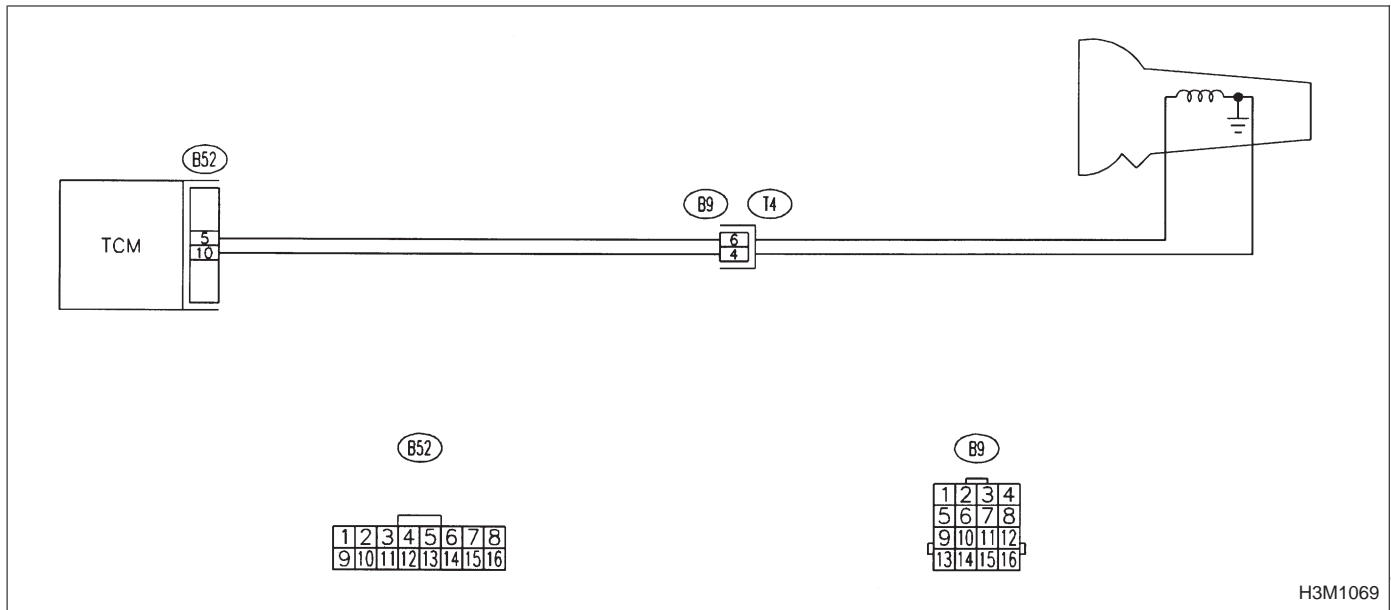
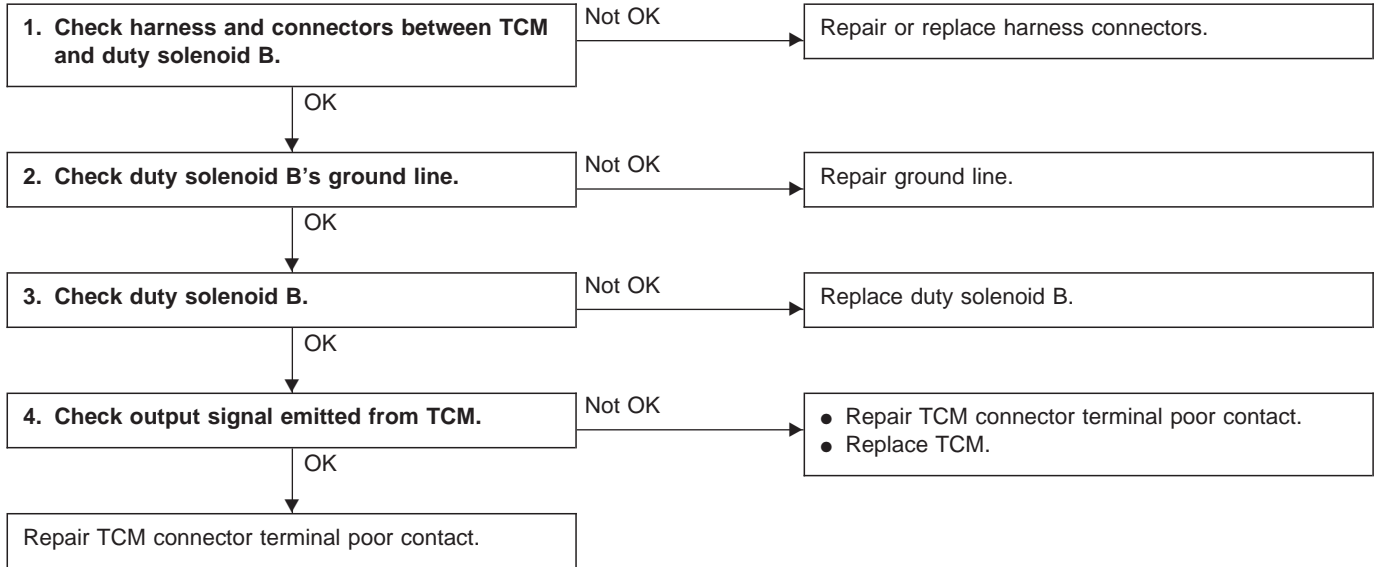
**B: TROUBLE CODE 12
— DUTY SOLENOID B —**

DIAGNOSIS:

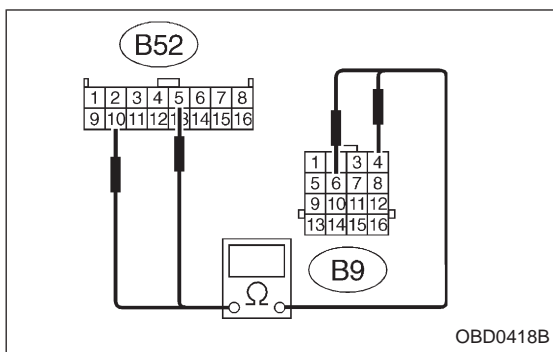
Output signal circuit of duty solenoid B is open or shorted.

TROUBLE SYMPTOM:

No lock-up (after engine warm-up)



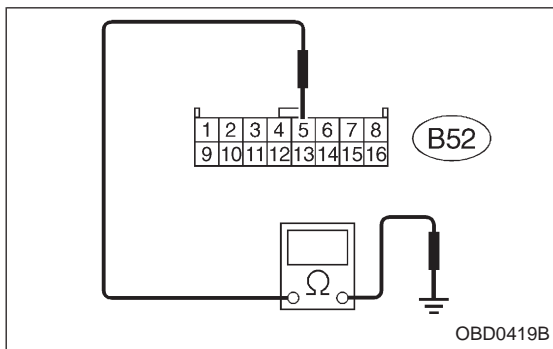
H3M1069



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

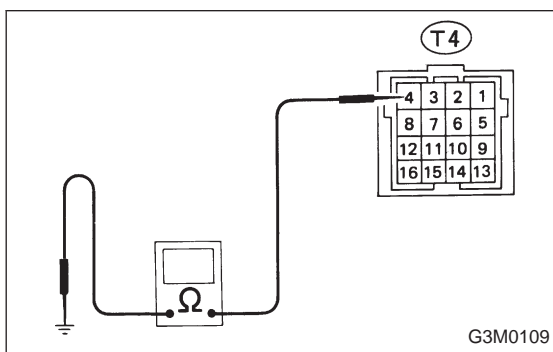
- 1) Turn ignition switch to OFF.
- 2) Disconnect connectors from TCM and transmission.
- 3) Measure resistance of harness connector between TCM and transmission connector.

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.

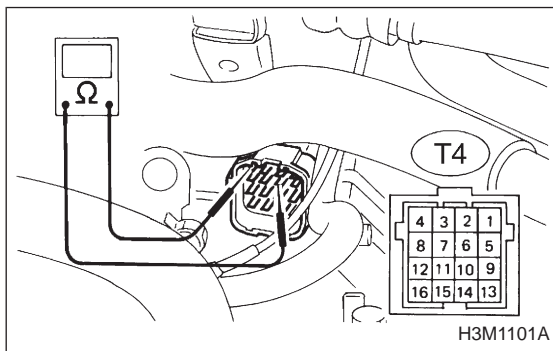
Connector & terminal / Specified resistance:
 (B52) No. 5 — Body / 1 MΩ, or more



2. CHECK DUTY SOLENOID B's GROUND LINE.

Measure resistance between transmission connector receptacle and transmission case.

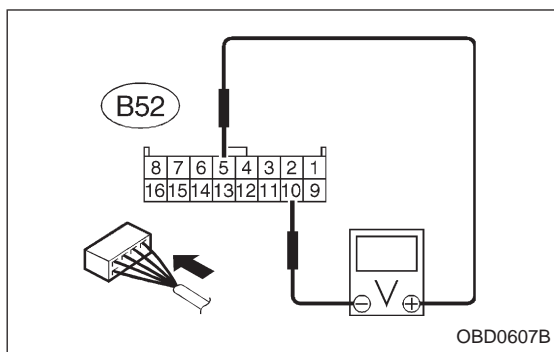
Connector & terminal / Specified resistance:
 (T4) No. 4 — Transmission / 1 Ω, or less



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.

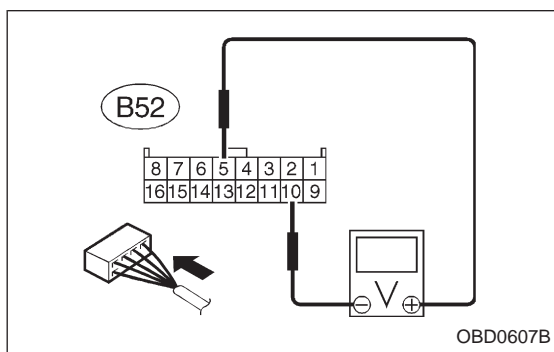
CAUTION:

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.

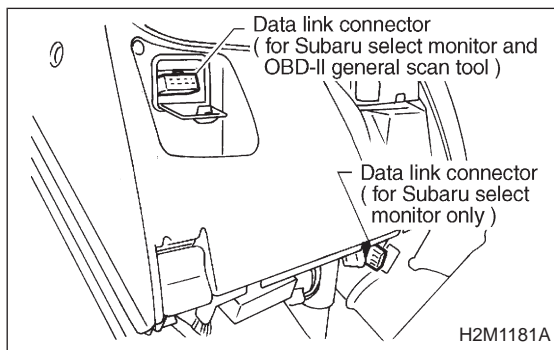
Connector & terminal / Specified voltage:

(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.

LUDTY (F12)

5 %

OBD0417

(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].>

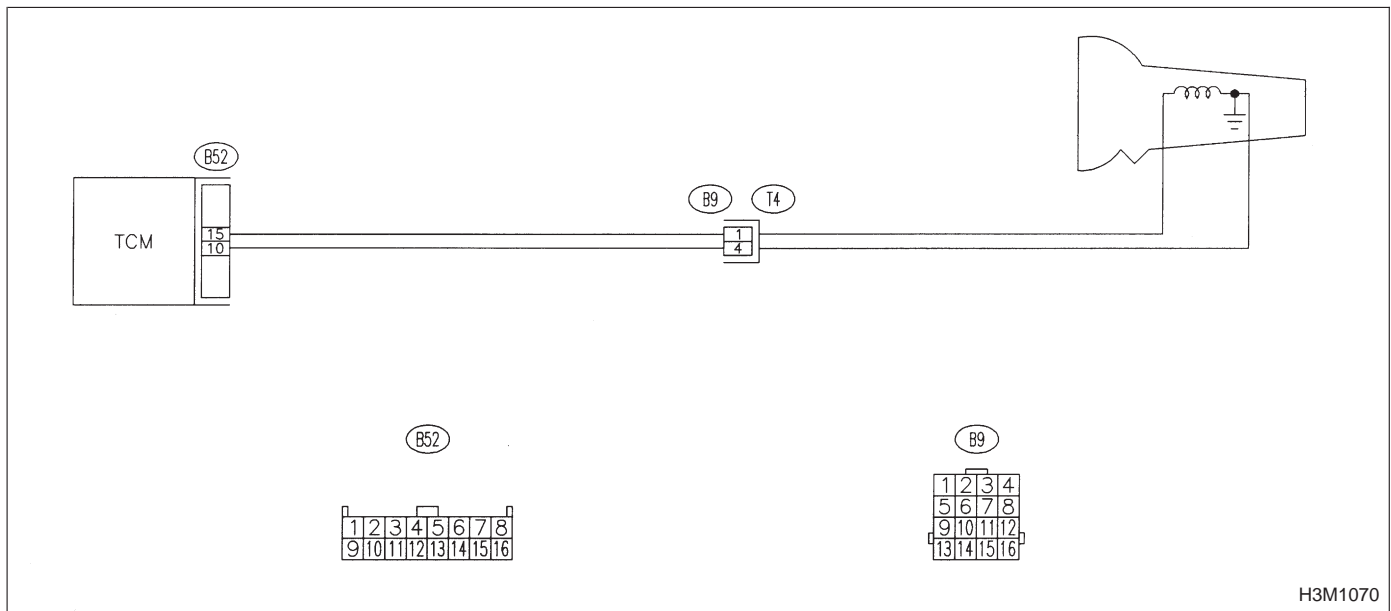
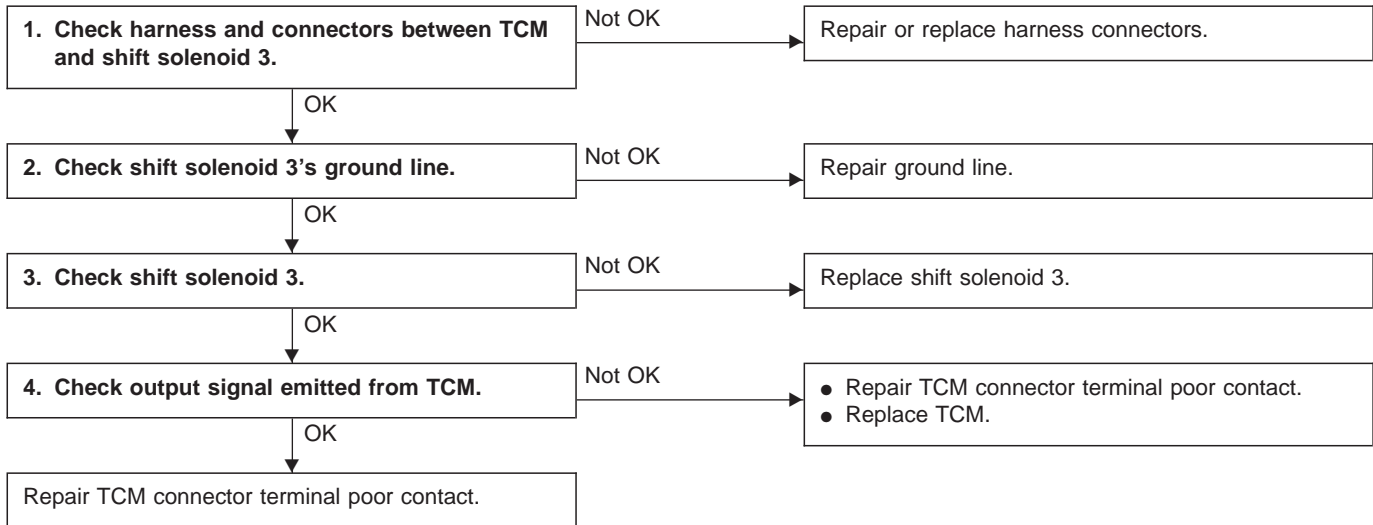
C: TROUBLE CODE 13
— SHIFT SOLENOID 3 —

DIAGNOSIS:

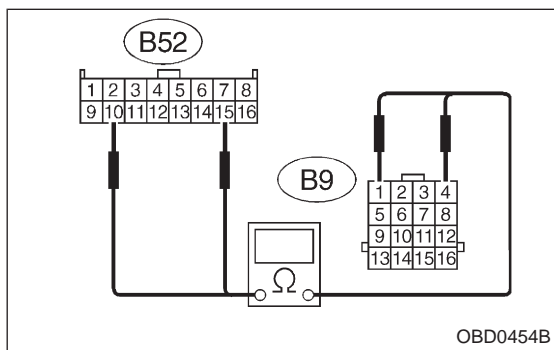
Output signal circuit of shift solenoid 3 is open or shorted.

TROUBLE SYMPTOM:

Ineffective engine brake with shift lever in “3”



H3M1070



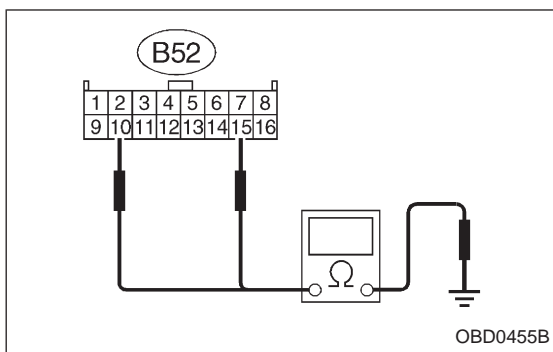
OBD0454B

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

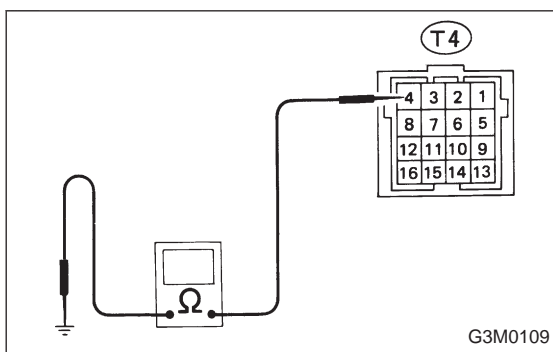


4) Measure resistance of harness connector between TCM and body to make sure that circuit does not short.

Connector & terminal / Specified resistance:

(B52) No. 15 — Body / 1 MΩ, or more

(B52) No. 10 — Body / 1 MΩ, or more

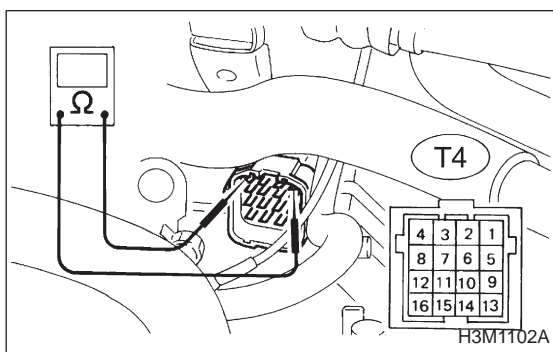


2. CHECK SHIFT SOLENOID 3's GROUND LINE.

Measure resistance between transmission connector receptacle and transmission case.

Connector & terminal / Specified resistance:

(T4) No. 4 — Transmission / 1 Ω, or less

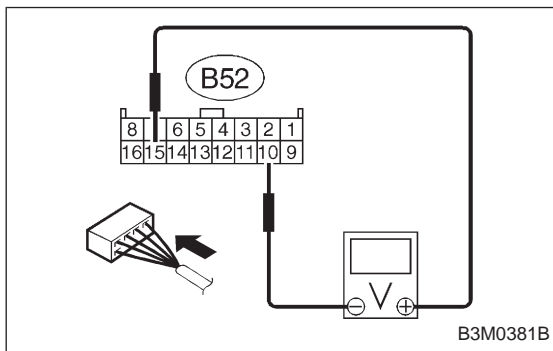


3. CHECK SHIFT SOLENOID 3.

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

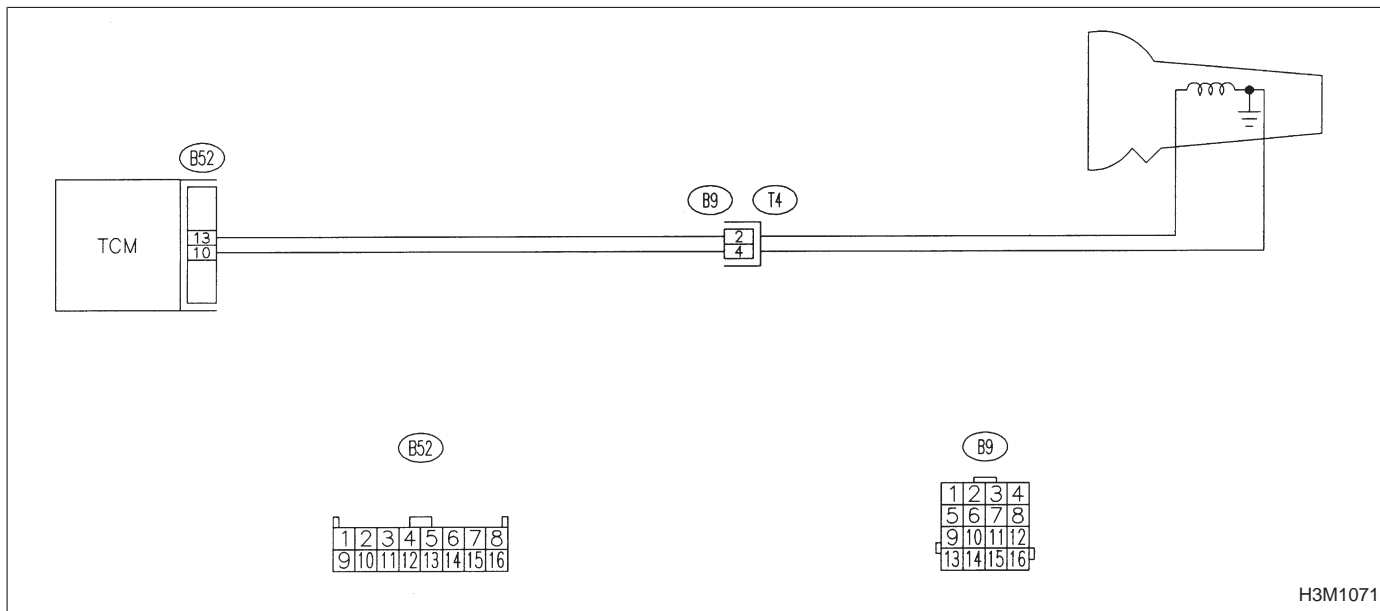
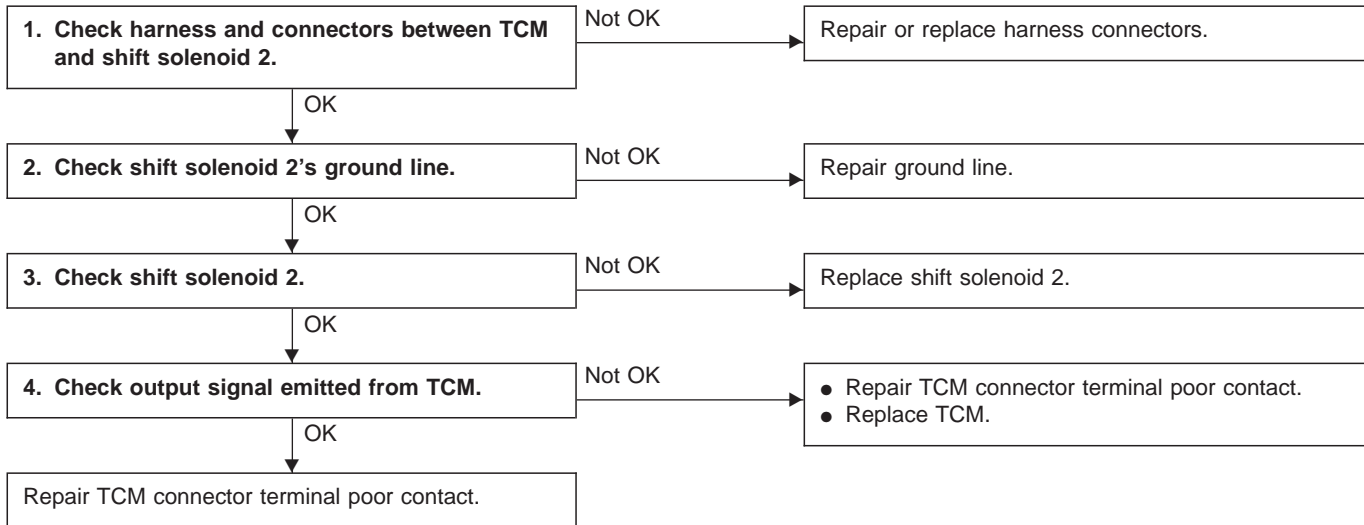
**D: TROUBLE CODE 14
— SHIFT SOLENOID 2 —**

DIAGNOSIS:

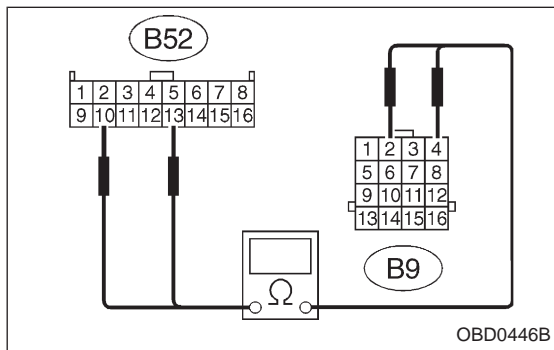
Output signal circuit of shift solenoid 2 is open or shorted.

TROUBLE SYMPTOM:

No shift



H3M1071

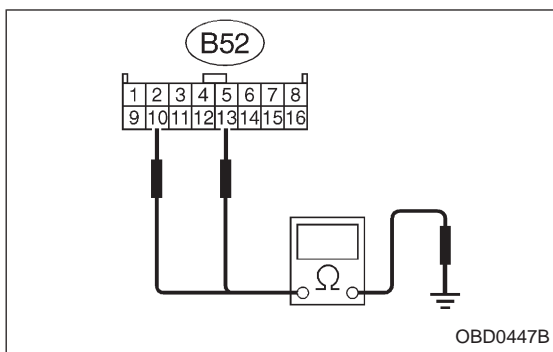


1. CHECK HARNESS AND CONNECTORS BETWEEN TCM AND SHIFT SOLENOID 2.

- 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

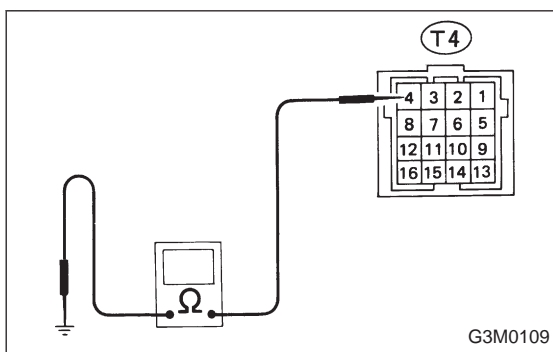


4) Measure resistance of harness connector between TCM and body to make sure that circuit does not short.

Connector & terminal / Specified resistance:

(B52) No. 13 — Body / 1 MΩ, or more

(B52) No. 10 — Body / 1 MΩ, or more

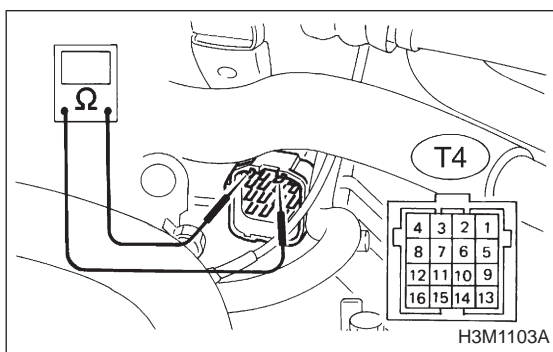


2. CHECK SHIFT SOLENOID 2's GROUND LINE.

Measure resistance between transmission connector receptacle and transmission case.

Connector & terminal / Specified resistance:

(T4) No. 4 — Transmission / 1 Ω, or less

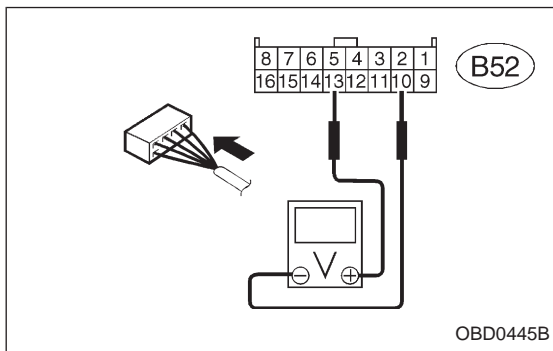


3. CHECK SHIFT SOLENOID 2.

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

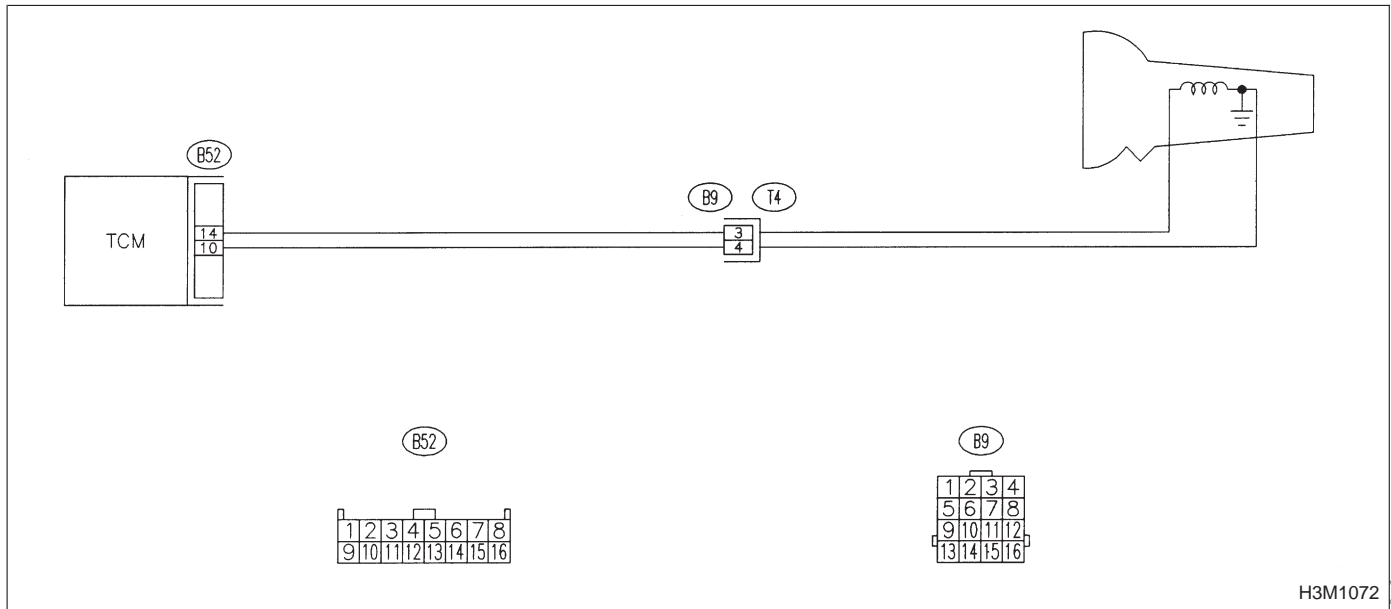
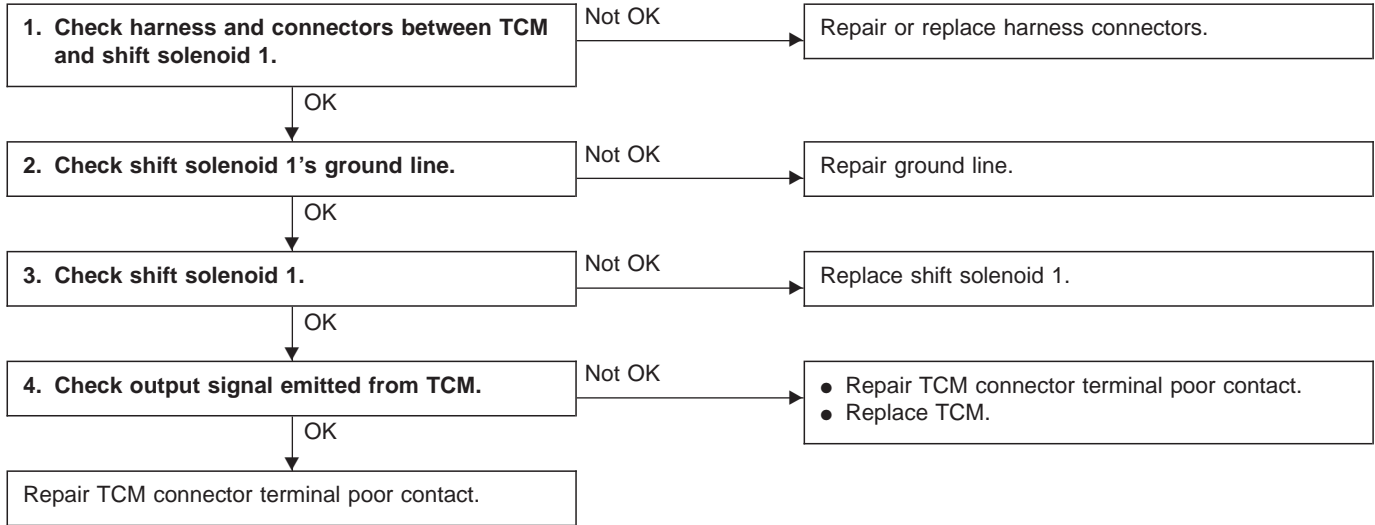
**E: TROUBLE CODE 15
— SHIFT SOLENOID 1 —**

DIAGNOSIS:

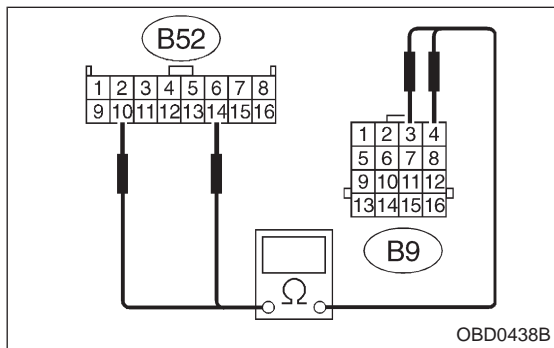
Output signal circuit of shift solenoid 1 is open or shorted.

TROUBLE SYMPTOM:

No shift



H3M1072



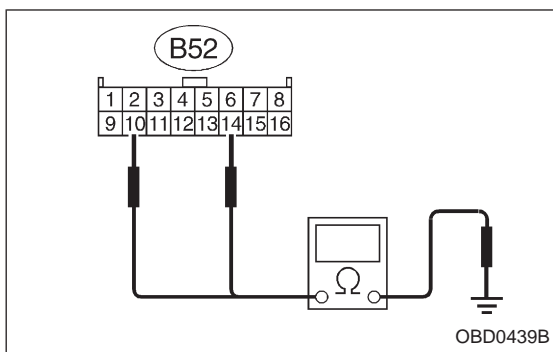
OBD0438B

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

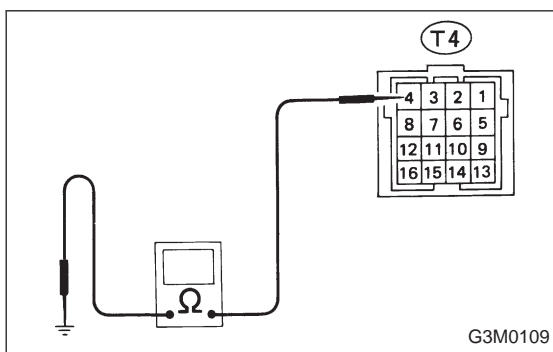


4) Measure resistance of harness connector between TCM and body to make sure that circuit does not short.

Connector & terminal / Specified resistance:

(B52) No. 14 — Body / 1 MΩ, or more

(B52) No. 10 — Body / 1 MΩ, or more

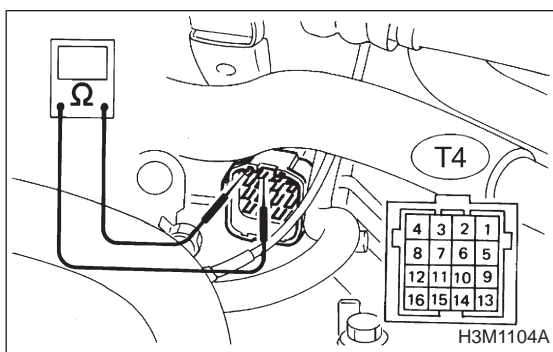


2. CHECK SHIFT SOLENOID 1's GROUND LINE.

Measure resistance between transmission connector receptacle and transmission case.

Connector & terminal / Specified resistance:

(T4) No. 4 — Transmission / 1 Ω, or less

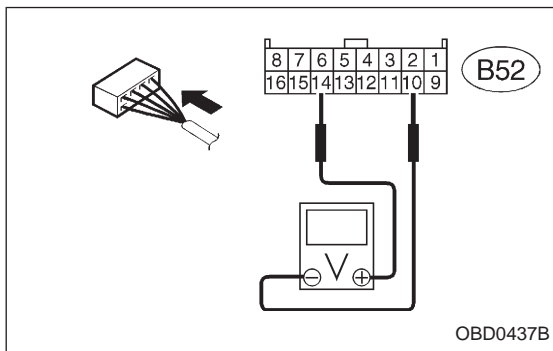


3. CHECK SHIFT SOLENOID 1.

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.

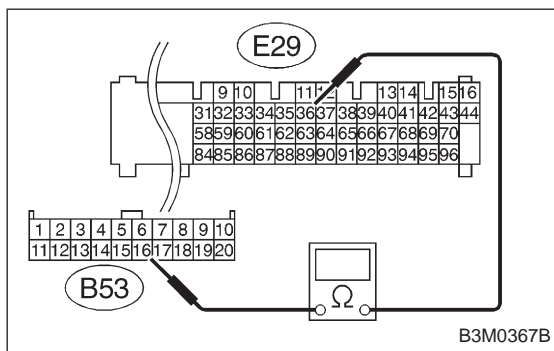
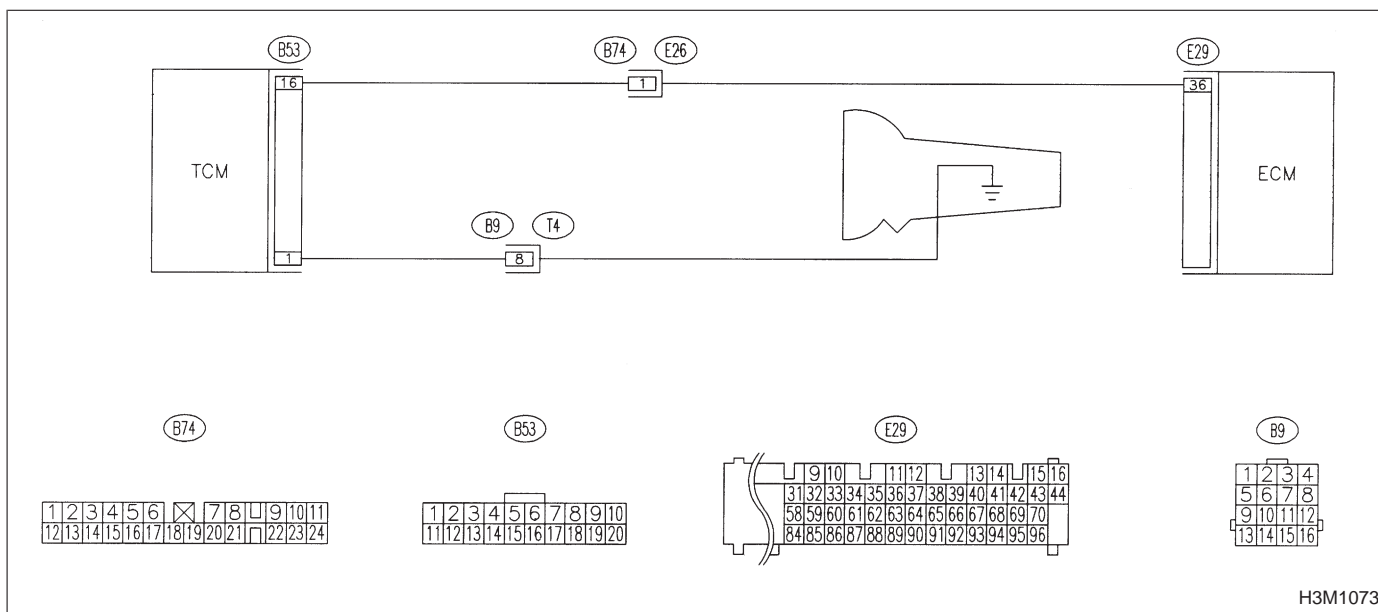
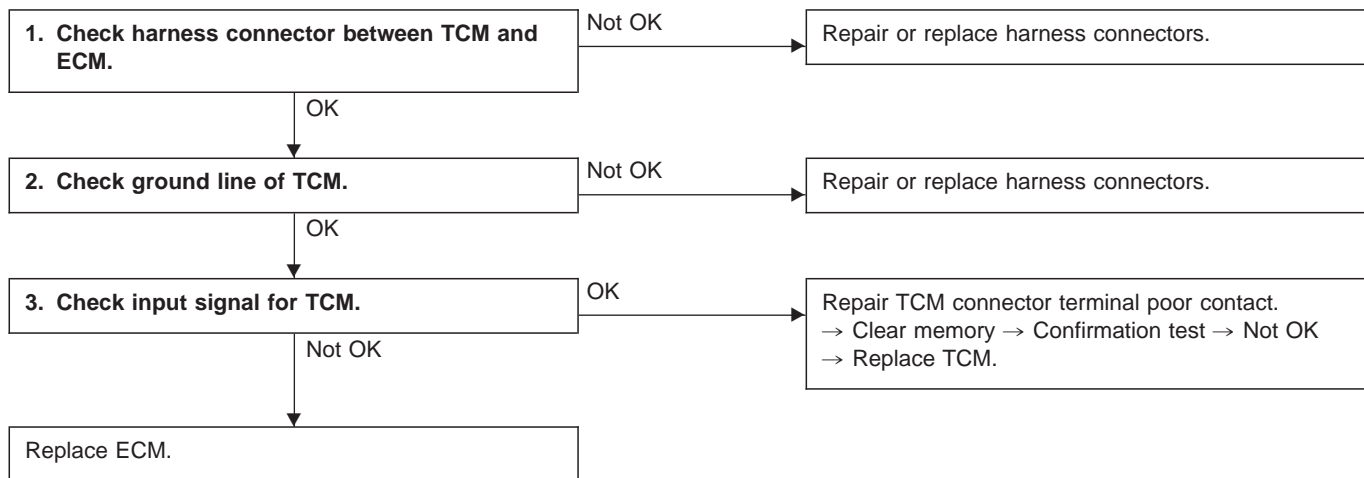
- 3) Start and warm-up the engine and transmission.
- 4) Idle the engine.
- 5) Move selector lever to "D".
- 6) Measure voltage between TCM connector terminals.

Connector & terminal / Specified voltage:

(B52) No. 14 — No. 10 / 9 V, or more

**F: TROUBLE CODE 16
— TORQUE CONTROL CUT SIGNAL —
DIAGNOSIS:**

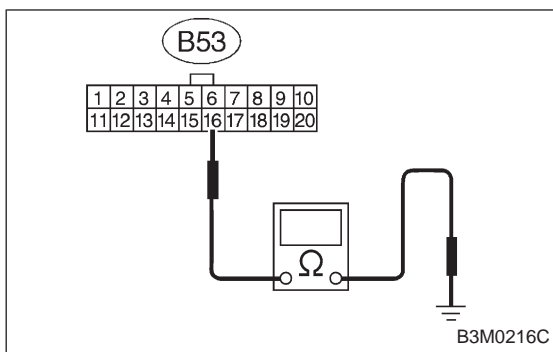
- Torque control cut signal is not emitted from ECM.
- The signal circuit is open or shorted.



1. CHECK HARNESS CONNECTOR BETWEEN TCM AND ECM.

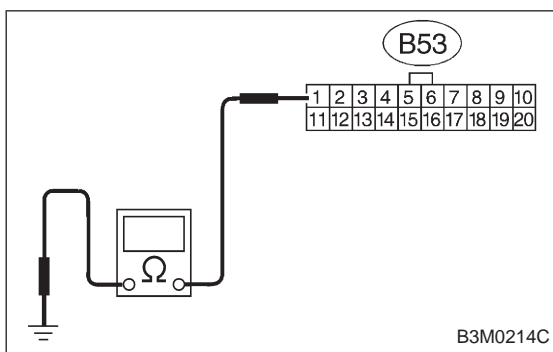
- 1) Turn ignition switch to OFF.
- 2) Disconnect connectors from ECM and TCM.
- 3) Measure resistance of harness connector between TCM and ECM.

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.

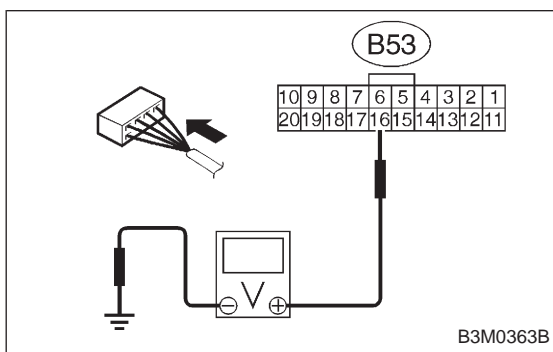
Connector & terminal / Specified resistance:
(B53) No. 16 — Body / 1 MΩ, or more



2. CHECK GROUND LINE OF TCM.

Measure resistance of harness connector between TCM and body.

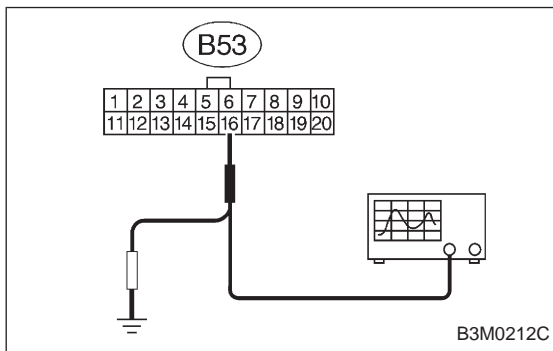
Connector & terminal / Specified resistance:
(B53) No. 1 — Body / 1 Ω, or less



3. CHECK INPUT SIGNAL FOR TCM.

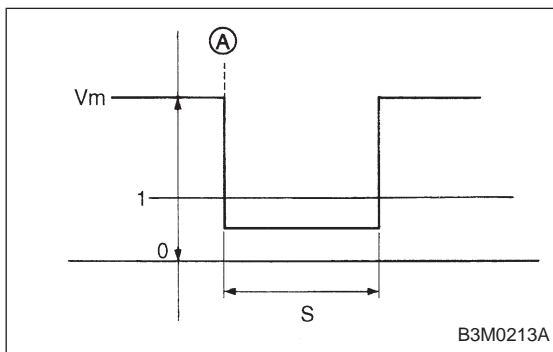
- 1) Connect connectors to ECM and TCM.
- 2) Turn ignition switch to ON.
- 3) Measure voltage between TCM and body.

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 A).

Vm: 6 — 9 V
S: 1 second

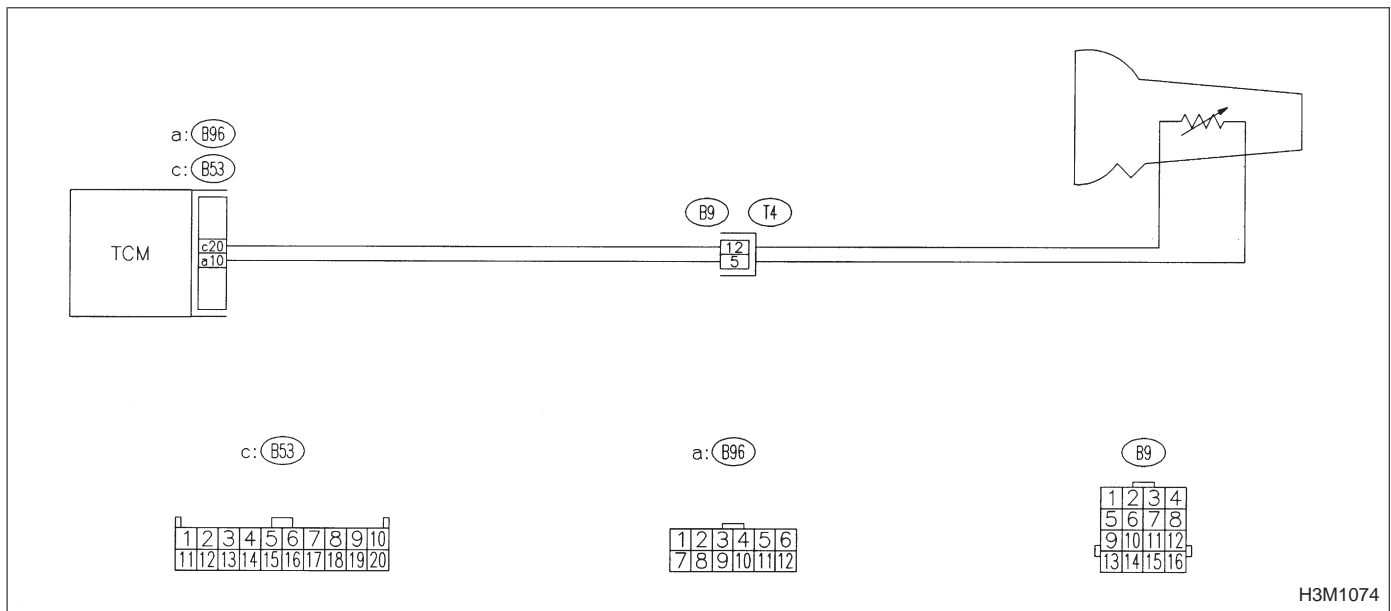
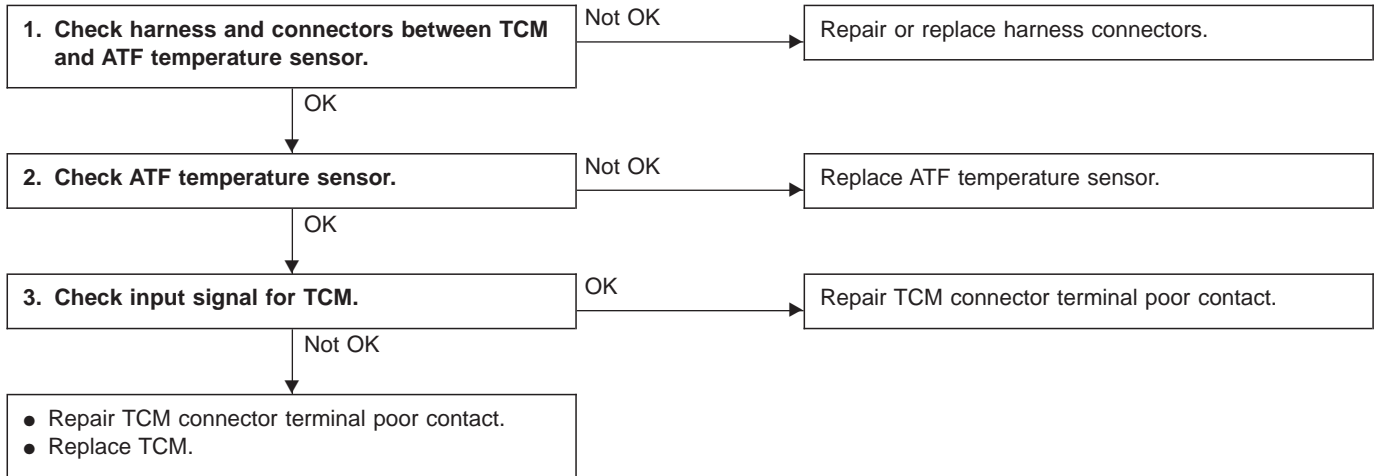
**G: TROUBLE CODE 21
— ATF TEMPERATURE SENSOR —**

DIAGNOSIS:

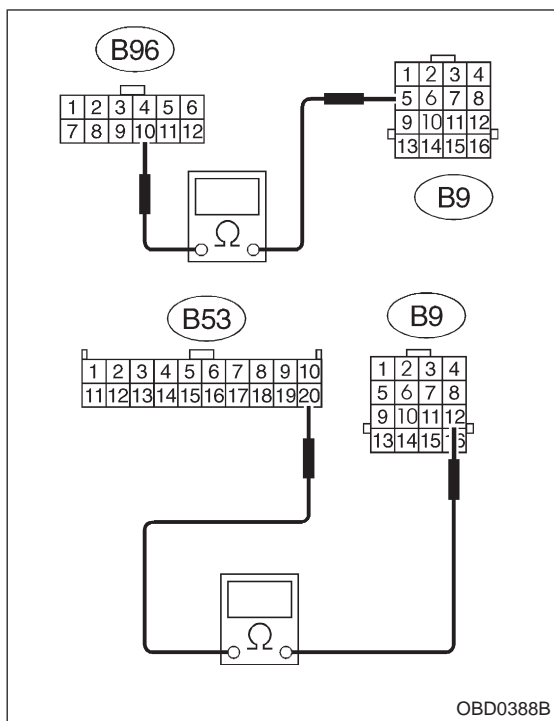
Input signal circuit of TCM to ATF temperature sensor is open or shorted.

TROUBLE SYMPTOM:

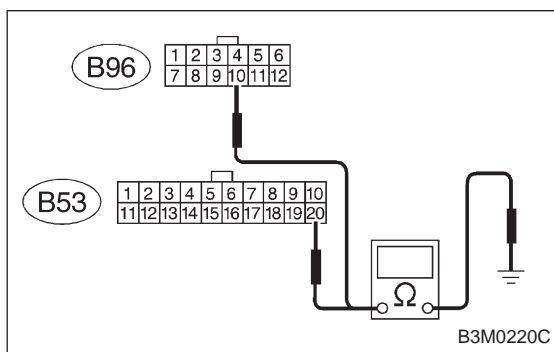
Excessive shift shock



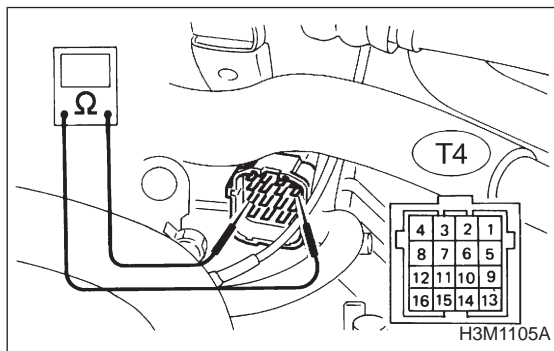
H3M1074



OBD0388B



B3M0220C



H3M1105A

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

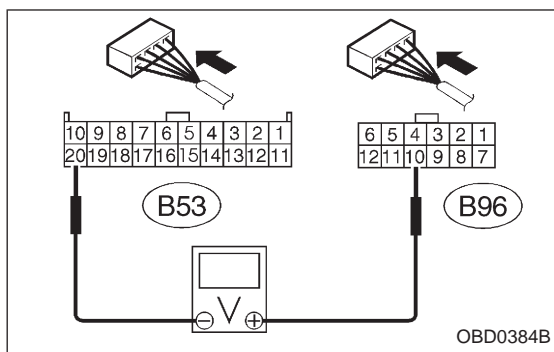
2. CHECK ATF TEMPERATURE SENSOR.

- 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)]

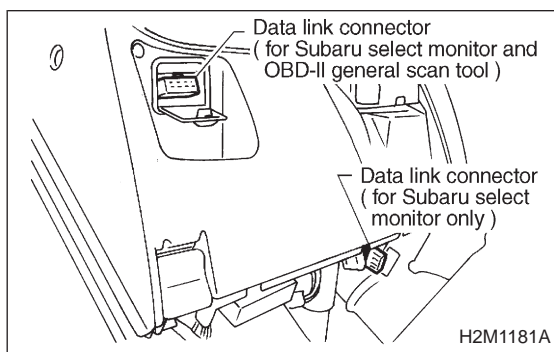


3. CHECK INPUT SIGNAL FOR TCM.

- 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.

ATFT (F07)

176 deg F

OBD0386

- (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

ATFT (F08)

80 deg C

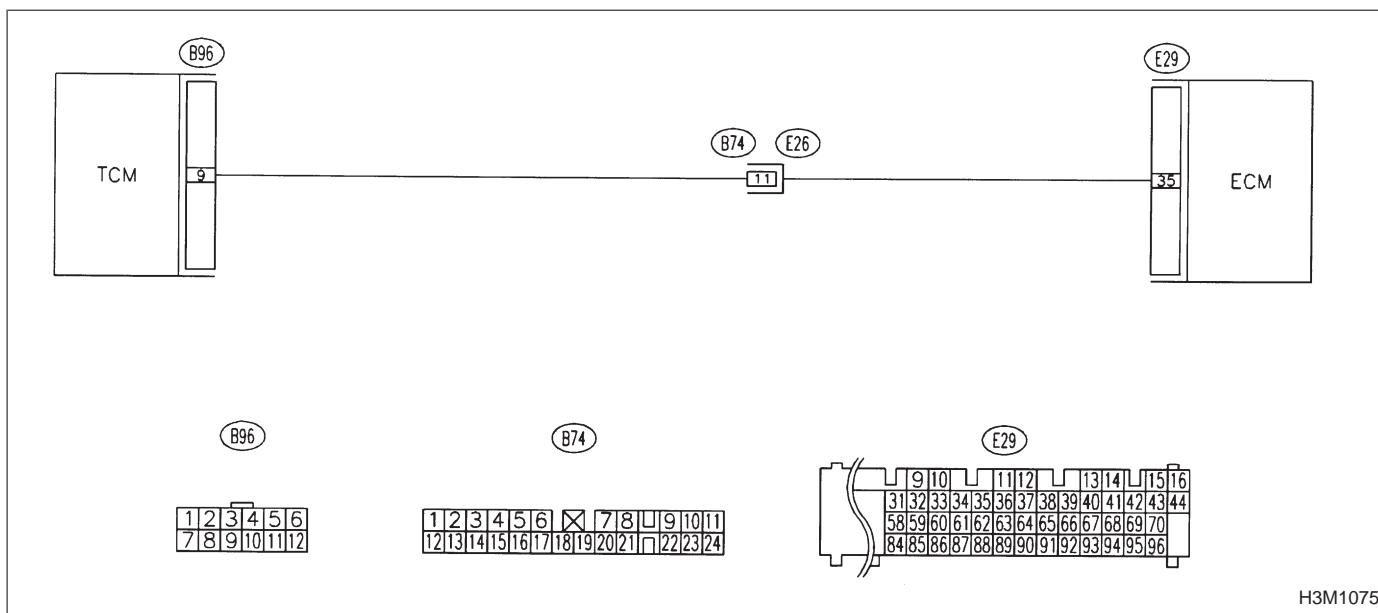
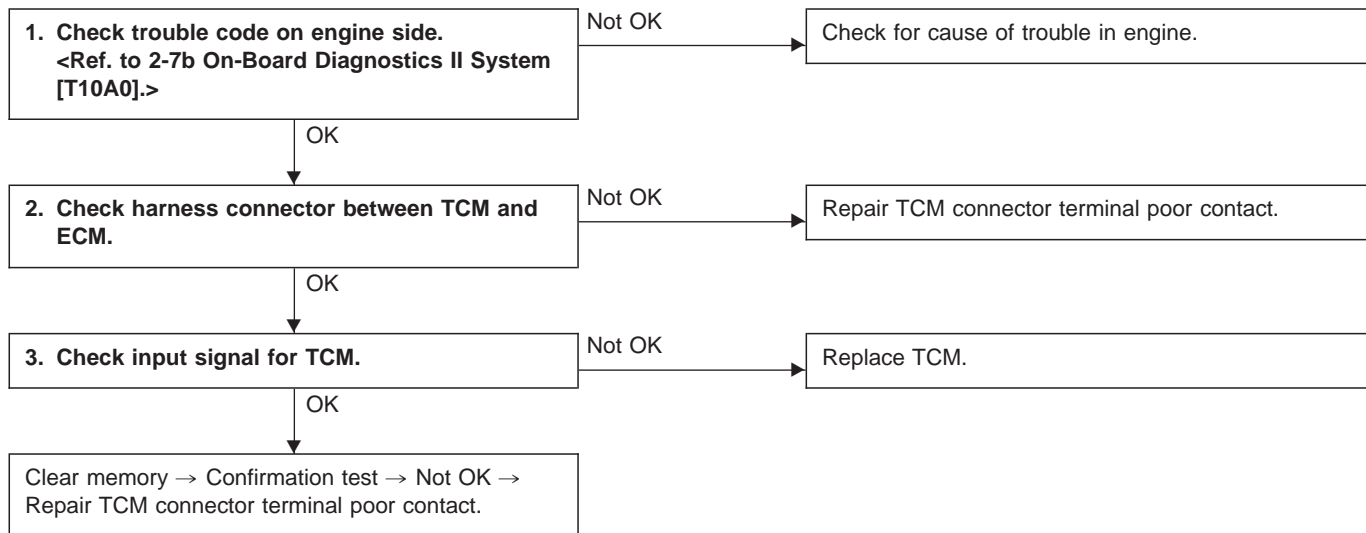
OBD0387

- 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:

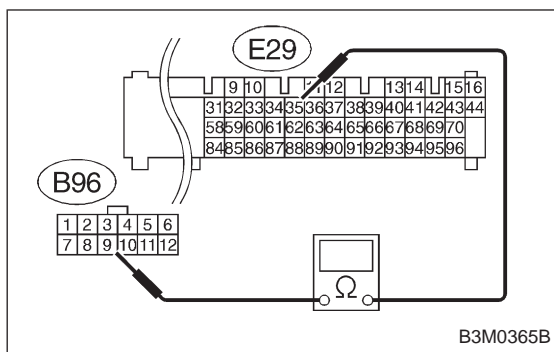
Input signal circuit of TCM from ECM is open or shorted.



H3M1075

1. CHECK TROUBLE CODE ON ENGINE SIDE.

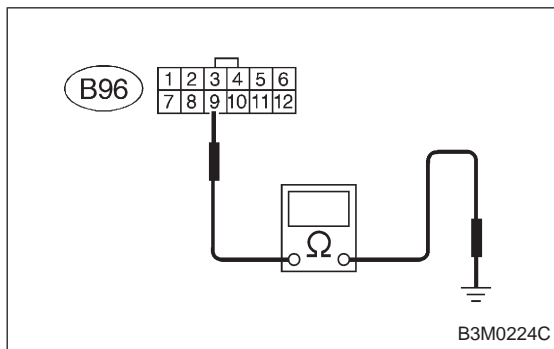
Using Subaru select monitor or OBD-II general scan tool, check trouble code of mass air flow sensor on engine side.



2. CHECK HARNESS CONNECTOR BETWEEN TCM AND ECM.

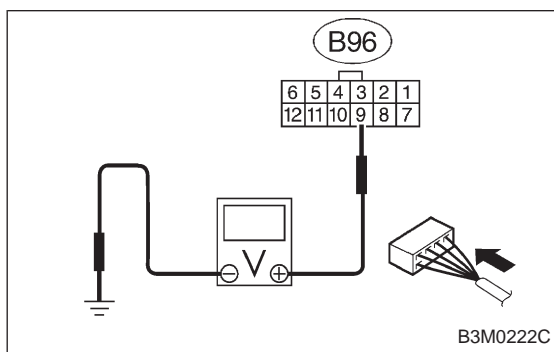
- 1) Turn ignition switch to OFF.
- 2) Disconnect connectors from TCM and ECM.
- 3) Measure resistance of harness connector between TCM and ECM.

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.

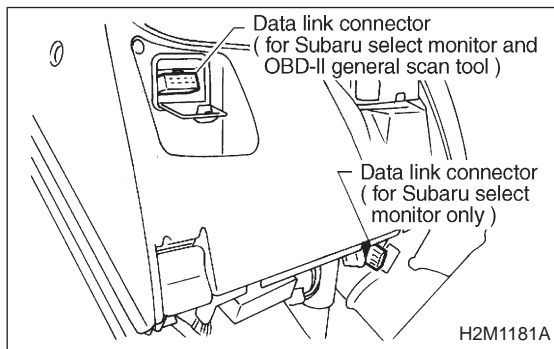
Connector & terminal / Specified resistance:
(B96) No. 9 — Body / 1 MΩ, or more



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)

AFM (F15)

0.6V

B3M0370

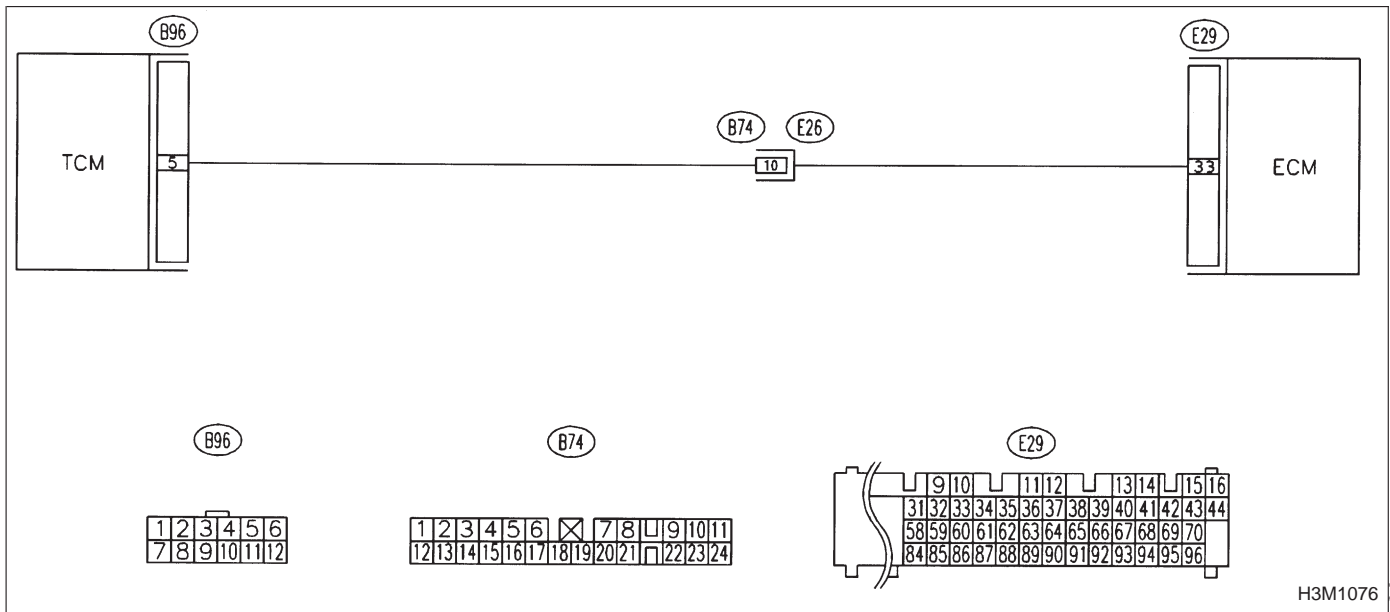
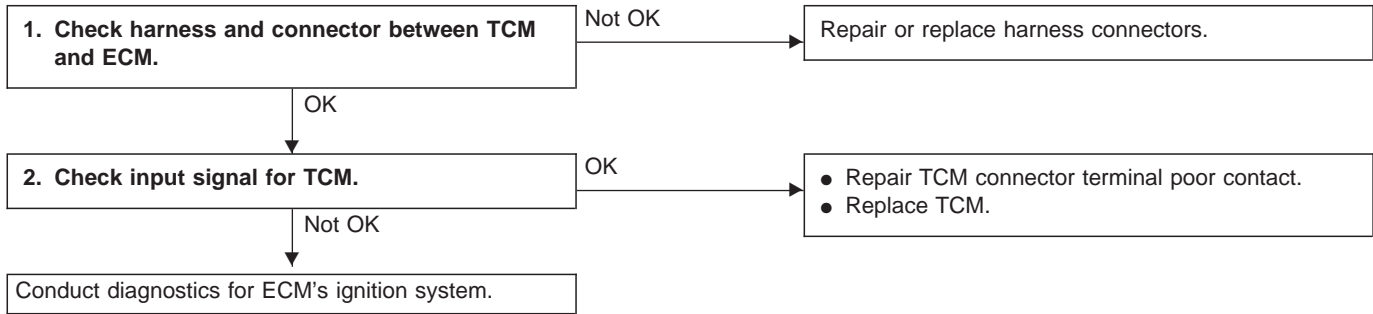
**I: TROUBLE CODE 23
— ENGINE SPEED SIGNAL —**

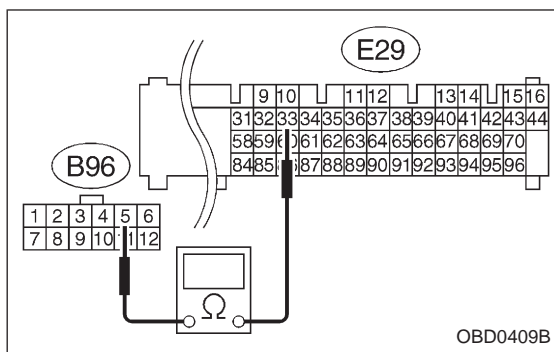
DIAGNOSIS:

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".

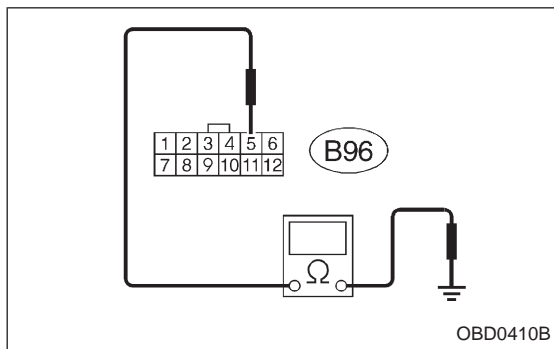




1. CHECK HARNESS AND CONNECTOR BETWEEN TCM AND ECM.

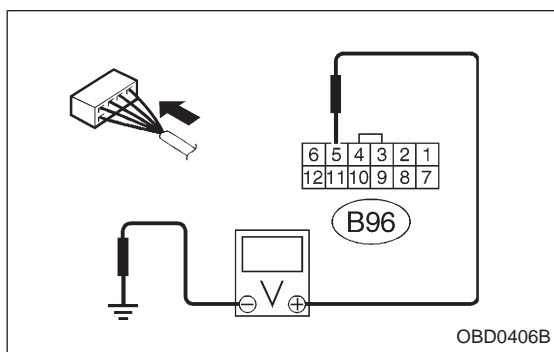
- 1) Turn ignition switch to OFF.
- 2) Disconnect connectors from TCM and ECM.
- 3) Measure resistance of harness connector between TCM and ECM.

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.

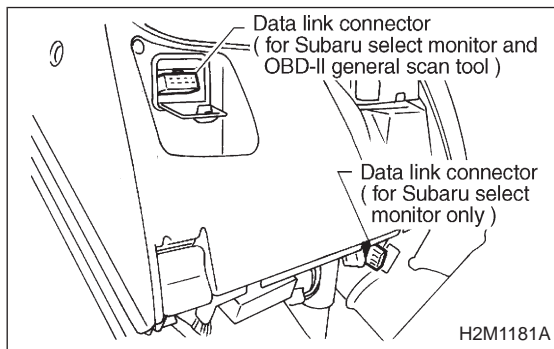
Connector & terminal / Specified resistance:
(B96) No. 5 — Body / 1 MΩ, or more



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.

EREV (F06)

1,500 rpm

G3M0727

- (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)

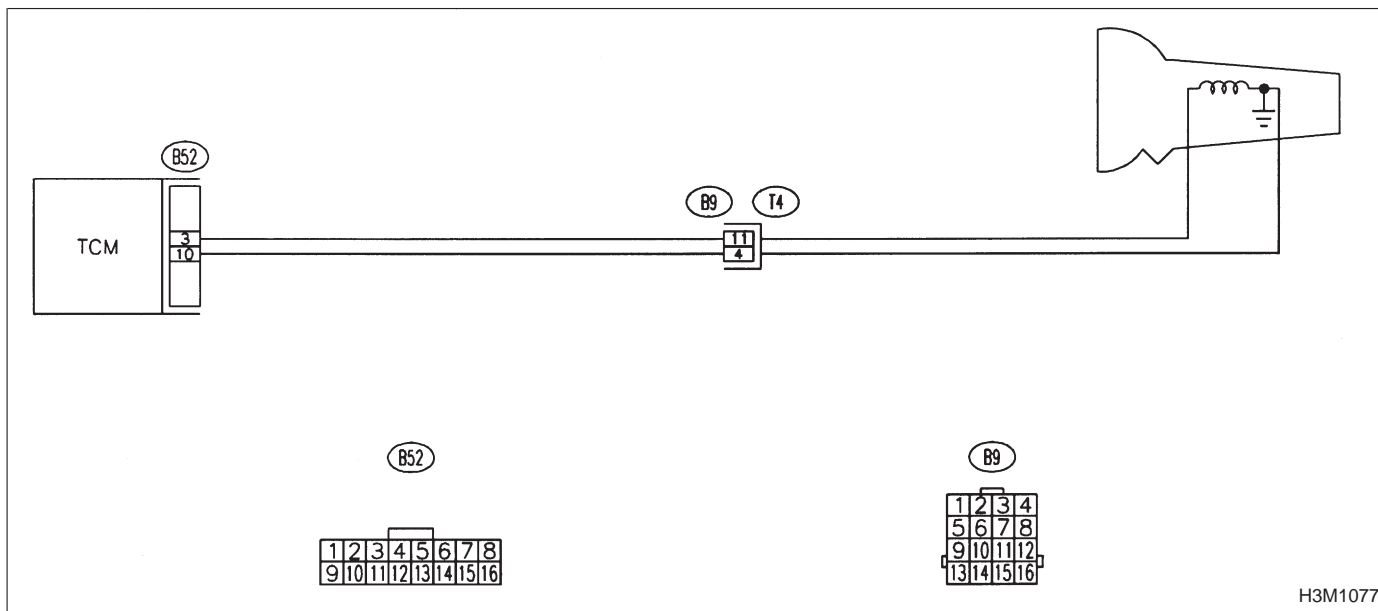
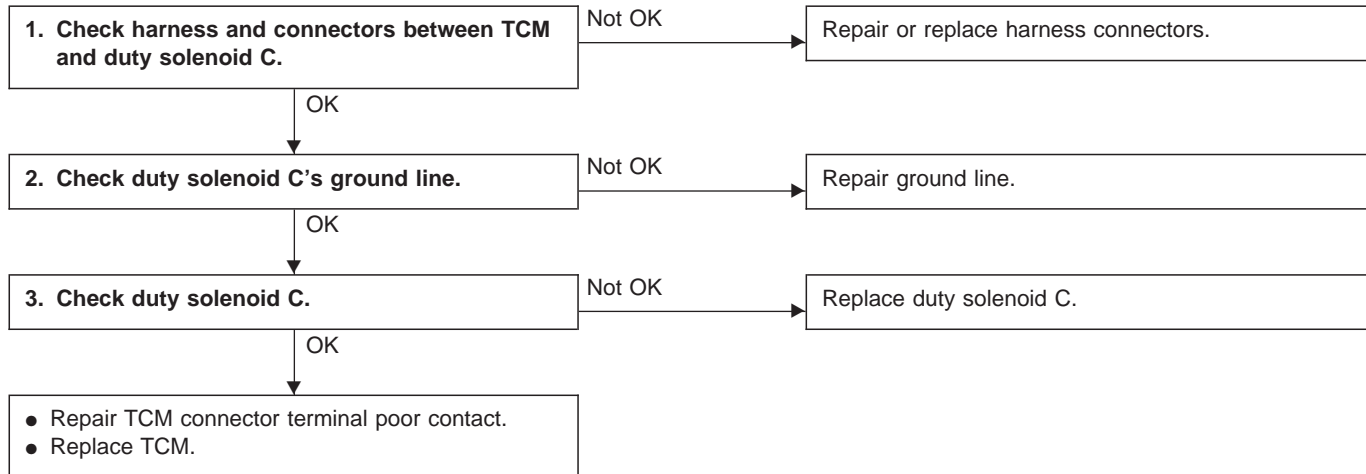
**J: TROUBLE CODE 24
— DUTY SOLENOID C —**

DIAGNOSIS:

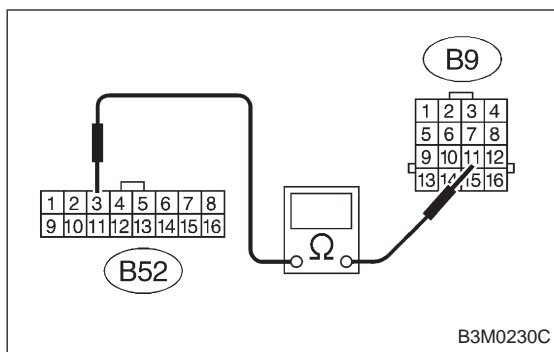
Output signal circuit of duty solenoid C is open or shorted.

TROUBLE SYMPTOM:

Excessive “braking” in tight corners



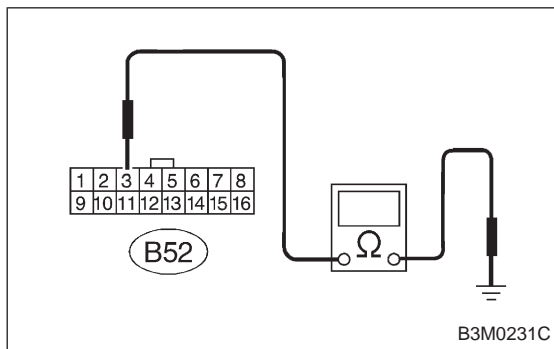
H3M1077



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

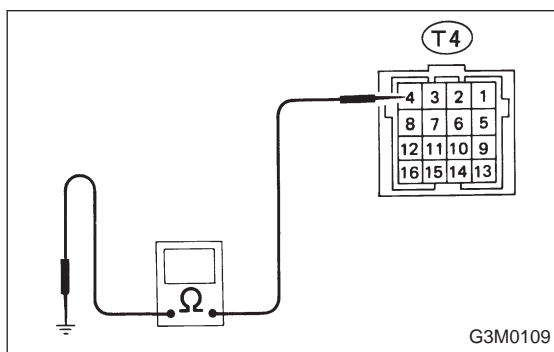
- 1) Turn ignition switch to OFF.
- 2) Disconnect connectors from TCM and transmission.
- 3) Measure resistance of harness connector between TCM and transmission.

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.

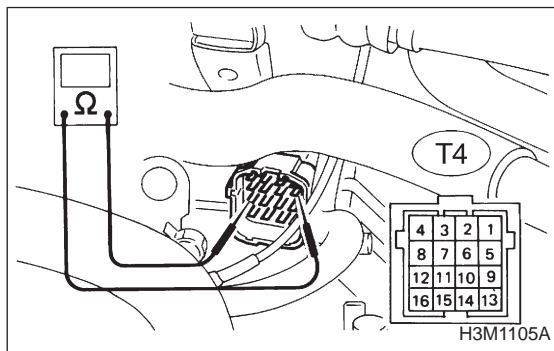
Connector & terminal / Specified resistance:
(B52) No. 3 — Body / 1 MΩ, or more



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.

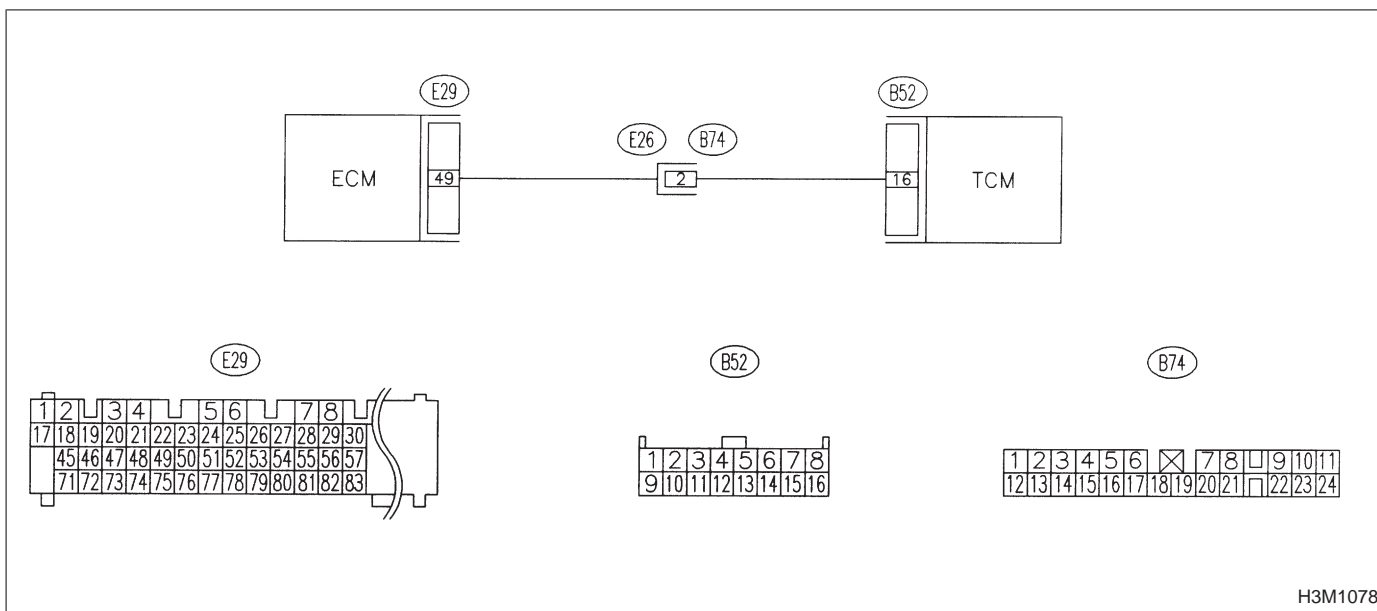
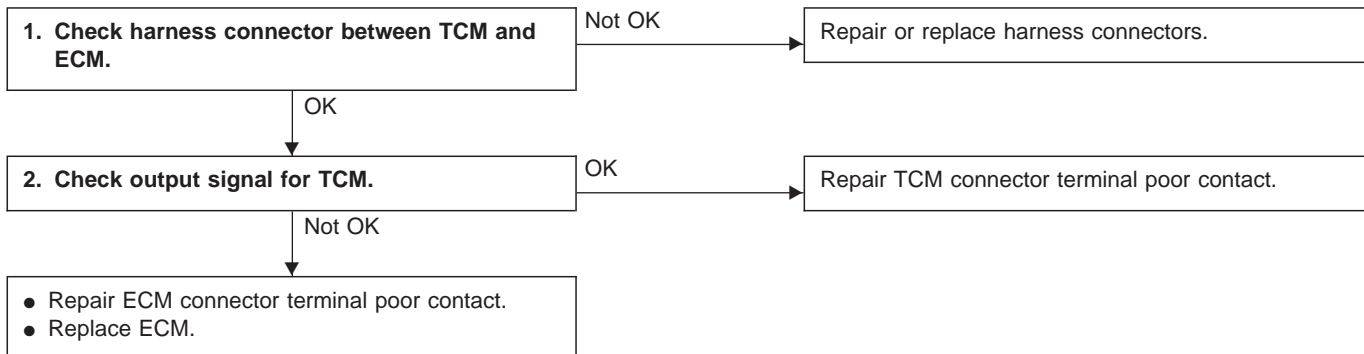
Measure resistance between transmission connector receptacle's terminals.

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

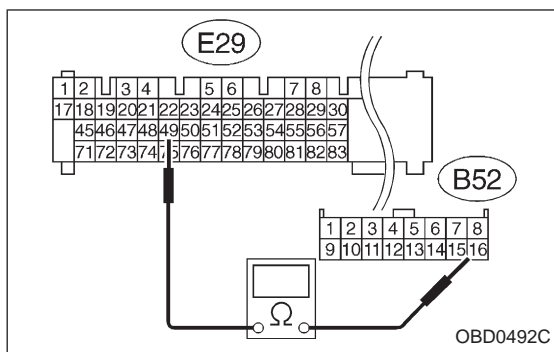
**K: TROUBLE CODE 25
— TORQUE CONTROL SIGNAL —**

DIAGNOSIS:

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



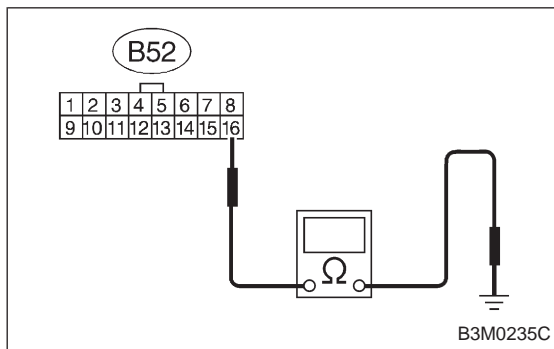
H3M1078



1. CHECK HARNESS CONNECTOR BETWEEN TCM AND ECM.

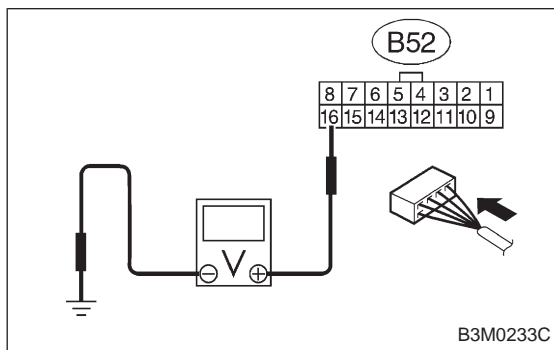
- 1) Turn ignition switch to OFF.
- 2) Disconnect connectors from TCM and ECM.
- 3) Measure resistance of harness connector between TCM and ECM.

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

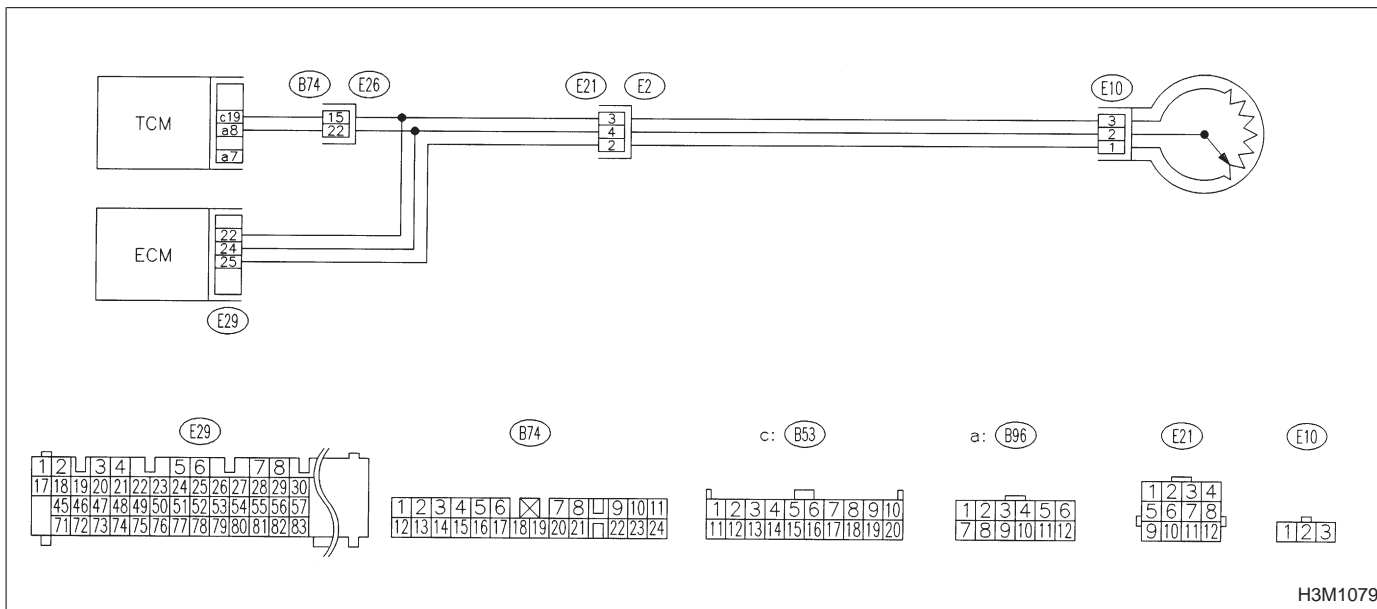
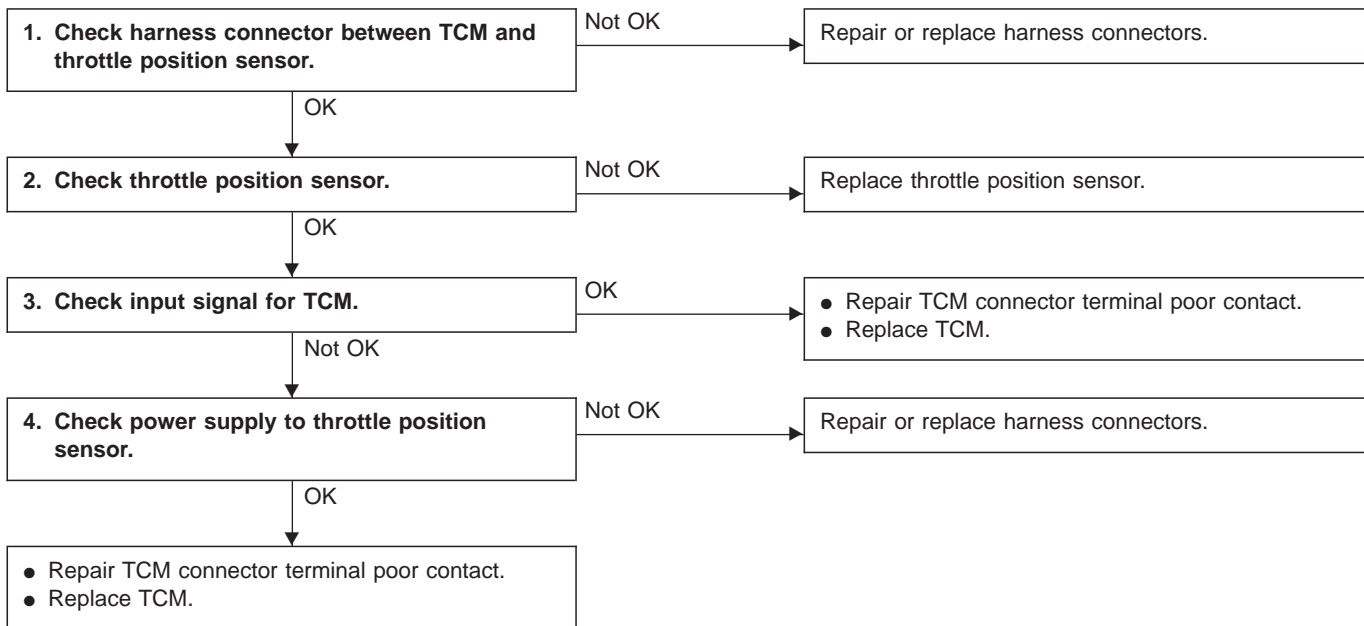
**L: TROUBLE CODE 31
— THROTTLE POSITION SENSOR —**

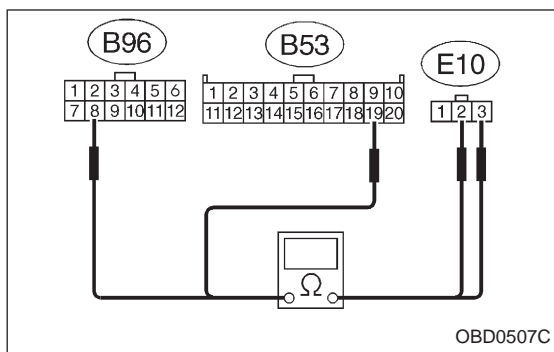
DIAGNOSIS:

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"

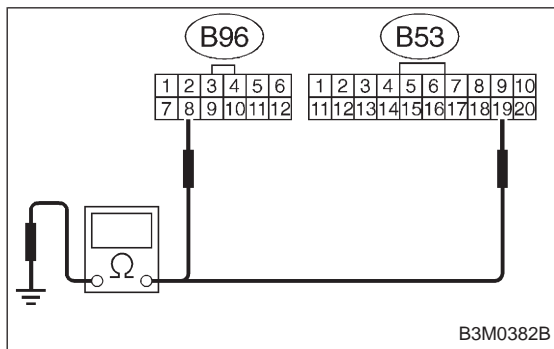




1. CHECK HARNESS CONNECTOR BETWEEN TCM AND THROTTLE POSITION SENSOR.

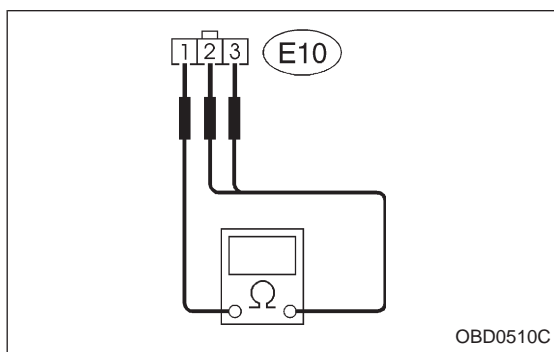
- 1) Turn ignition switch to OFF.
- 2) Disconnect connector from TCM and throttle position sensor.
- 3) Measure resistance of harness connector between TCM and throttle position sensor.

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.

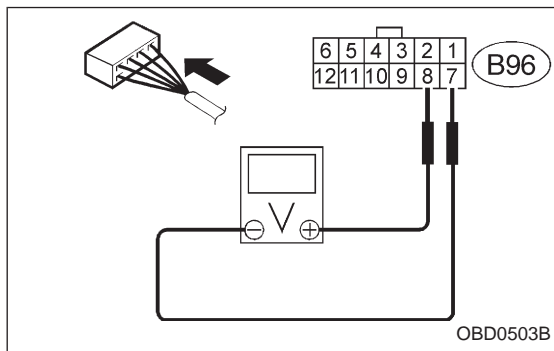
Connector & terminal / Specified resistance:
 (B96) No. 8 — Body / 1 MΩ, or more
 (B53) No. 19 — Body / 1 MΩ, or more



2. CHECK THROTTLE POSITION SENSOR.

Measure resistance between throttle position sensor terminals.

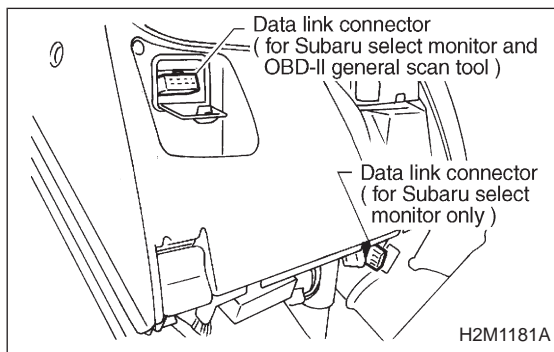
Terminals / Specified resistance:
 (E10) No. 1 — No. 2 / 0.3 — 0.7 kΩ
 (Throttle fully closed.)
 3 — 6 kΩ
 (Throttle fully open.)
 (E10) No. 1 — No. 3 / 3.5 — 6.5 kΩ



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.

THV (F09)
4.6V
B3M0383

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

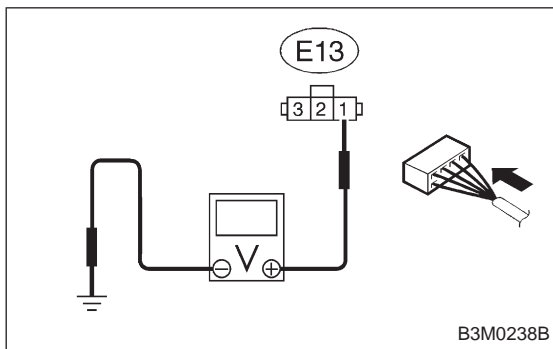
Function mode: F09

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).]

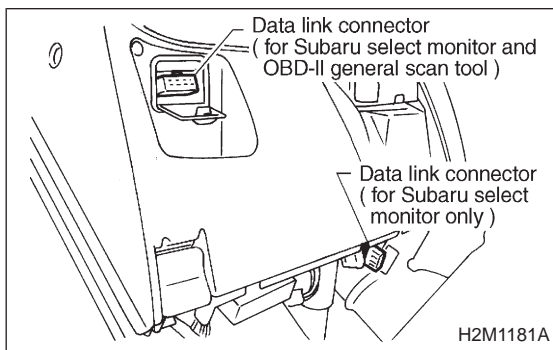


4. CHECK POWER SUPPLY TO THROTTLE POSITION SENSOR.

- 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.

THVCC (F14)
5.2V
OBD0506

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

Function mode: F14

SPECIFIED DATA:

5.12±0.1 V

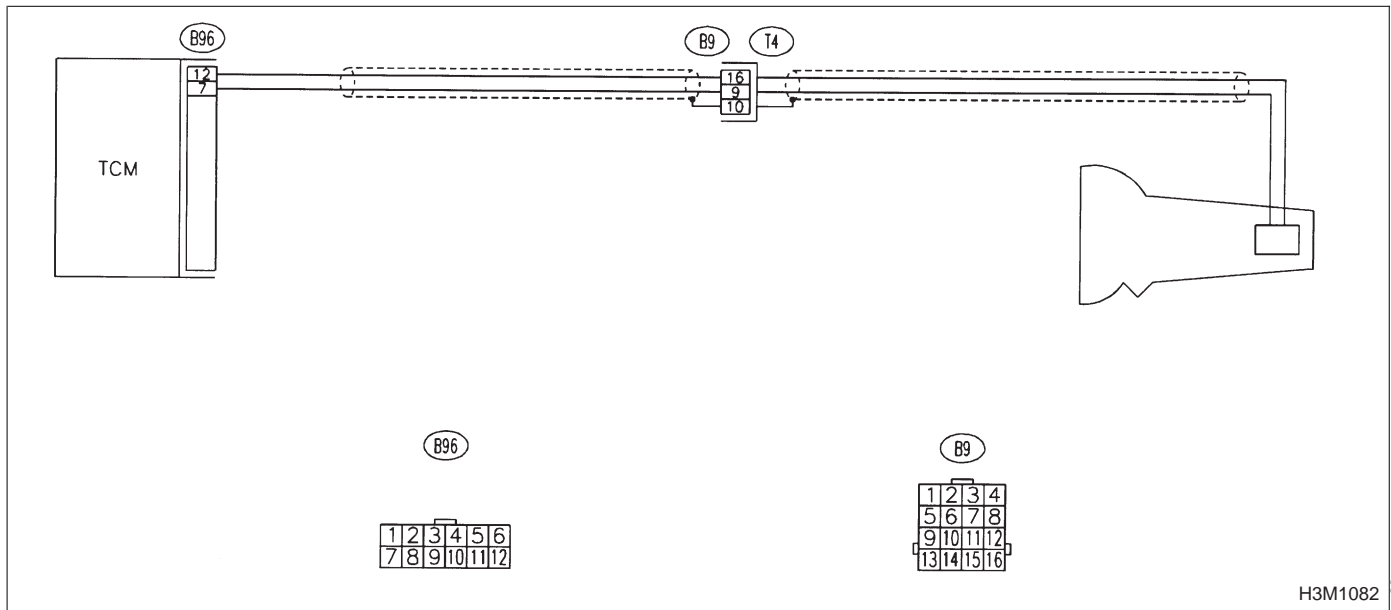
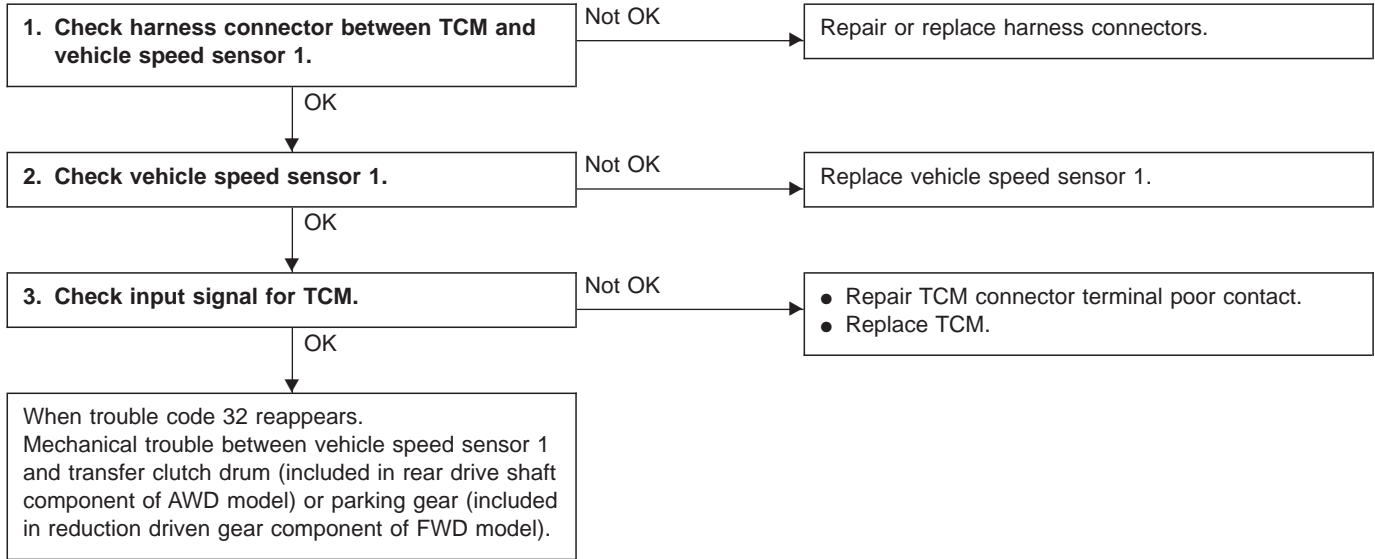
**M: TROUBLE CODE 32
— VEHICLE SPEED SENSOR 1 —**

DIAGNOSIS:

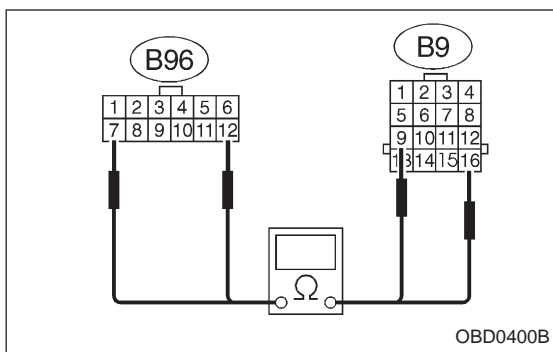
Input signal circuit of TCM is open or shorted.

TROUBLE SYMPTOM:

No lock-up or excessive tight corner “braking”



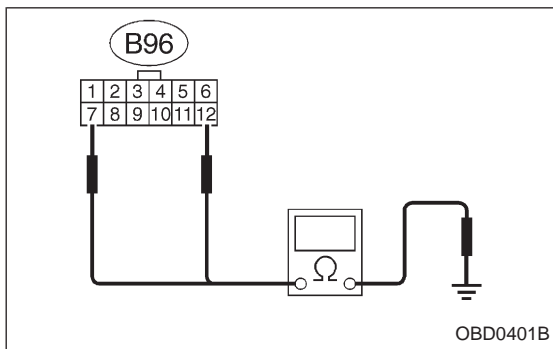
H3M1082



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

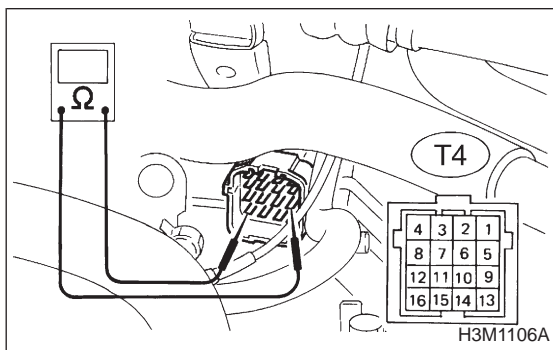
- 1) Turn ignition switch to OFF.
- 2) Disconnect connectors from TCM and transmission.
- 3) Measure resistance of harness connector between TCM and transmission connector.

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.

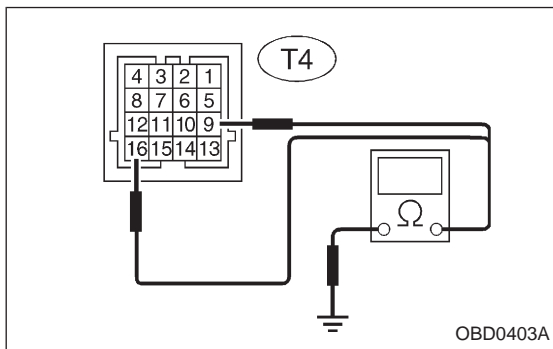
Connector & terminal / Specified resistance:
 (B96) No. 7 — Body / 1 MΩ, or more
 (B96) No. 12 — Body / 1 MΩ, or more



2. CHECK VEHICLE SPEED SENSOR 1.

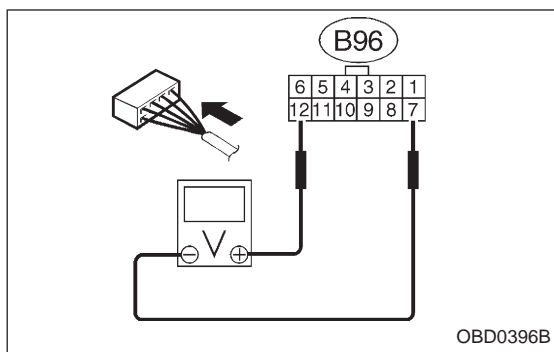
- 1) Measure resistance between transmission connector receptacle's terminals.

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.

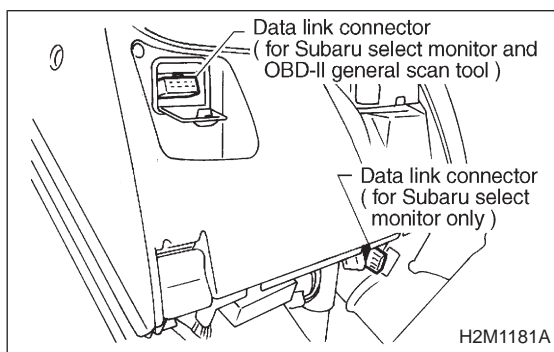
Connector & terminal / Specified voltage:

(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].>

VSP1 (F02)

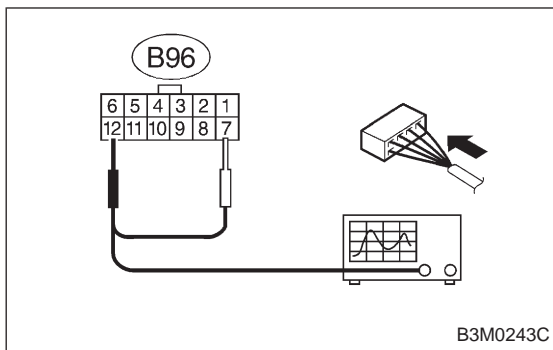
18 m/h

G3M0725

VSP1 (F03)

15 km/h

OBD0399



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

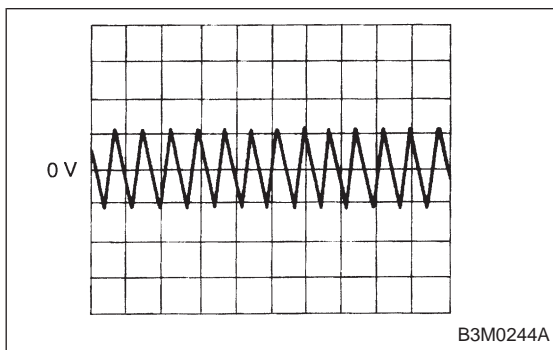
WARNING:

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].>

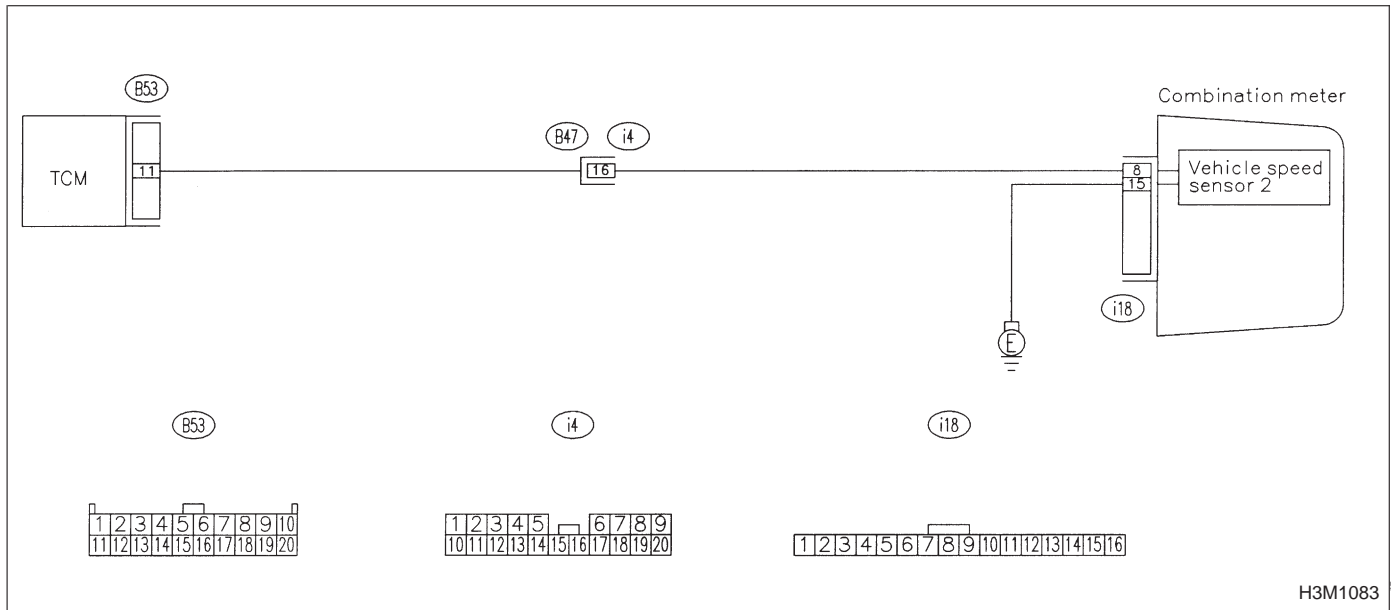
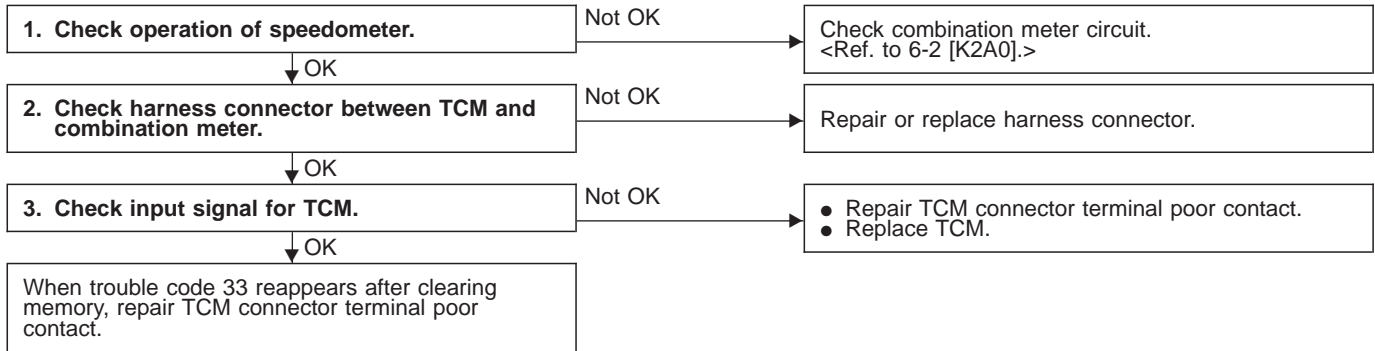
**N: TROUBLE CODE 33
— VEHICLE SPEED SENSOR 2 —**

DIAGNOSIS:

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

TROUBLE SYMPTOM:

Improper shift point



H3M1083

1. CHECK OPERATION OF SPEEDOMETER.

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

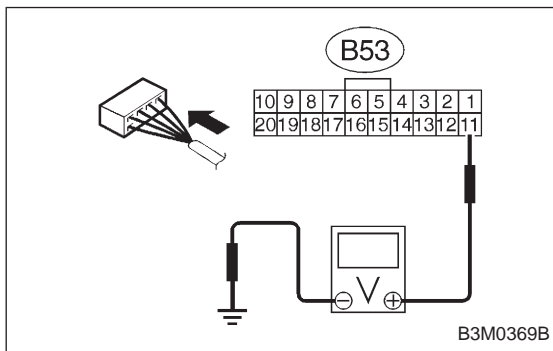
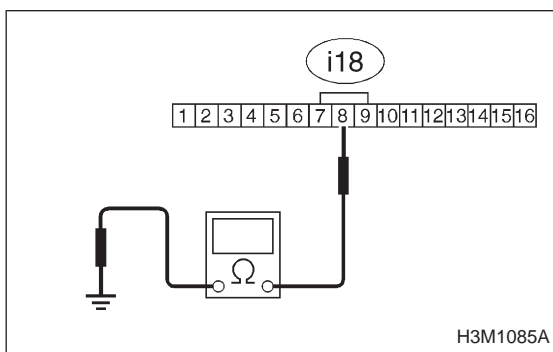
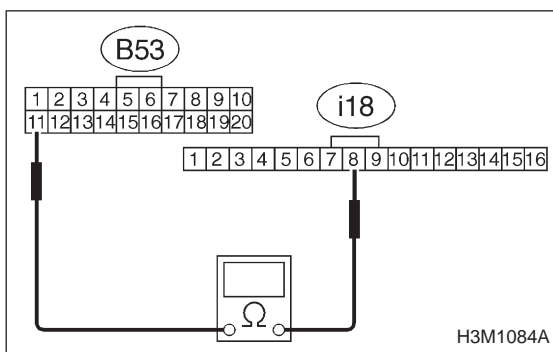
2. CHECK HARNESS CONNECTOR BETWEEN TCM AND COMBINATION METER.

- 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.

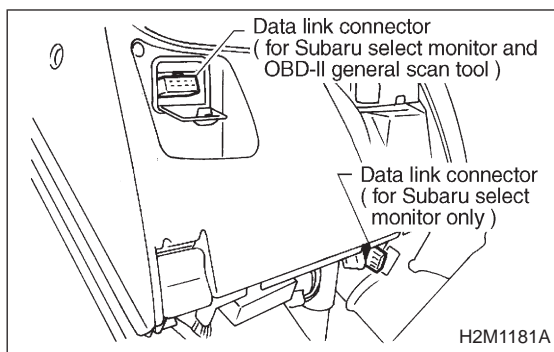
- 4) Start the engine, and drive the wheels slowly.
- 5) Measure voltage between TCM and body.

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.

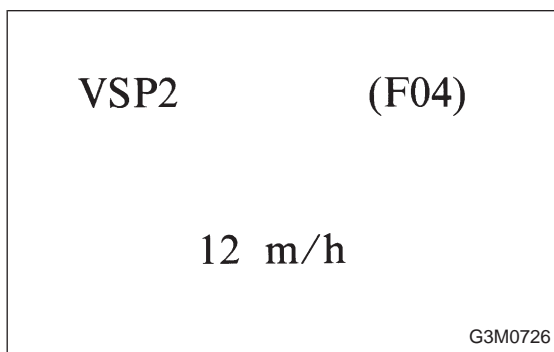
<Ref. to 4-4 [T1C2].>



- 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:

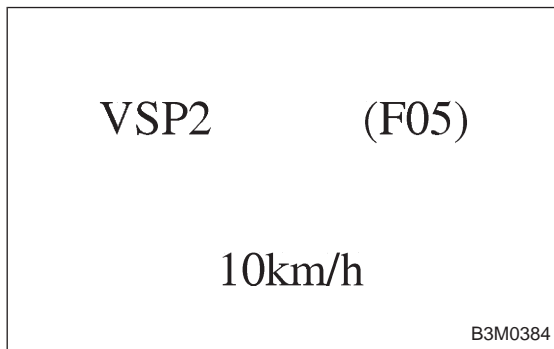
Compare speedometer with select monitor indications.

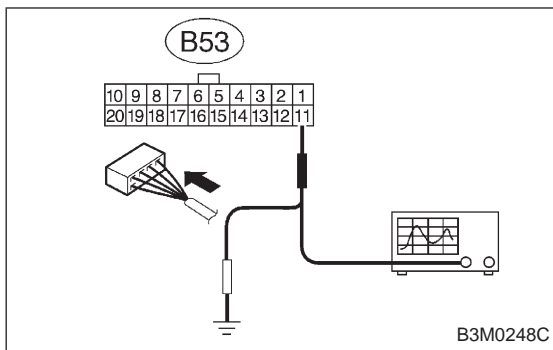
- F04: Vehicle speed is indicated in mile per hour (MPH).
- F05: Vehicle speed is indicated in kilometer per hour (km/h).

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:

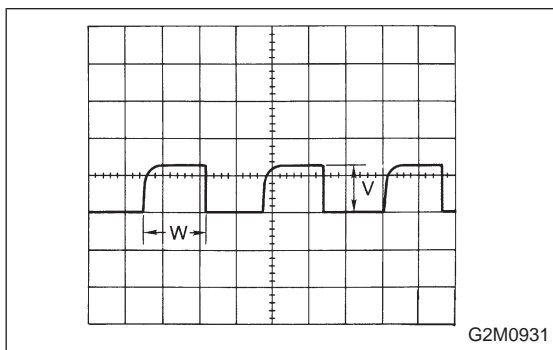
On AWD models, raise all wheels off floor.

- (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].>