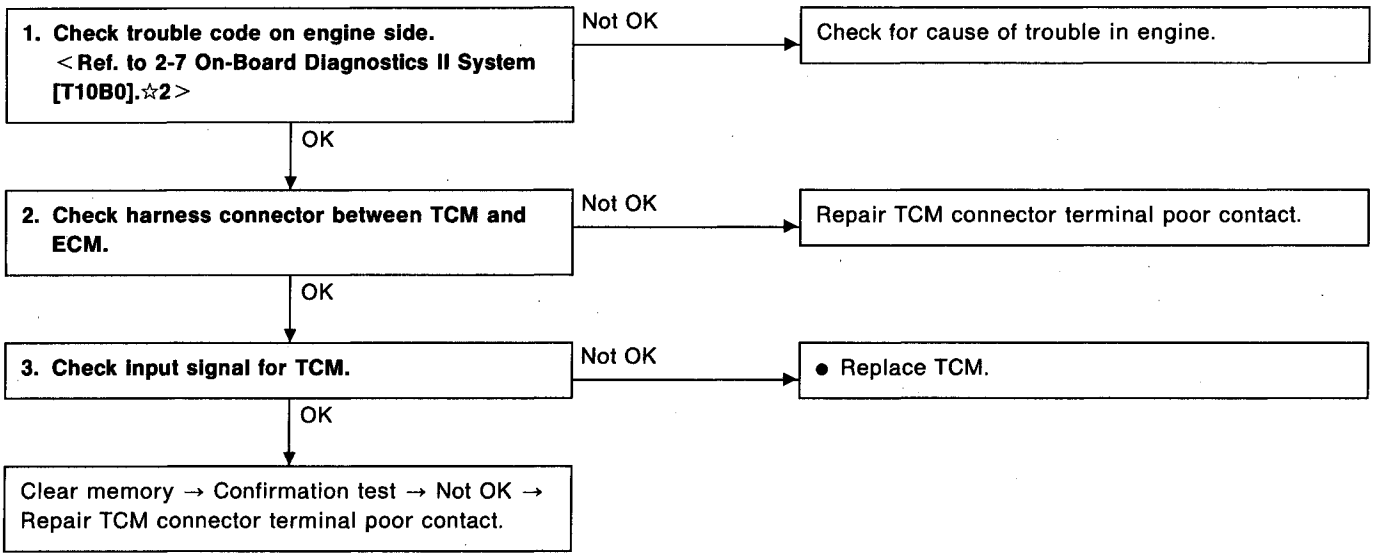
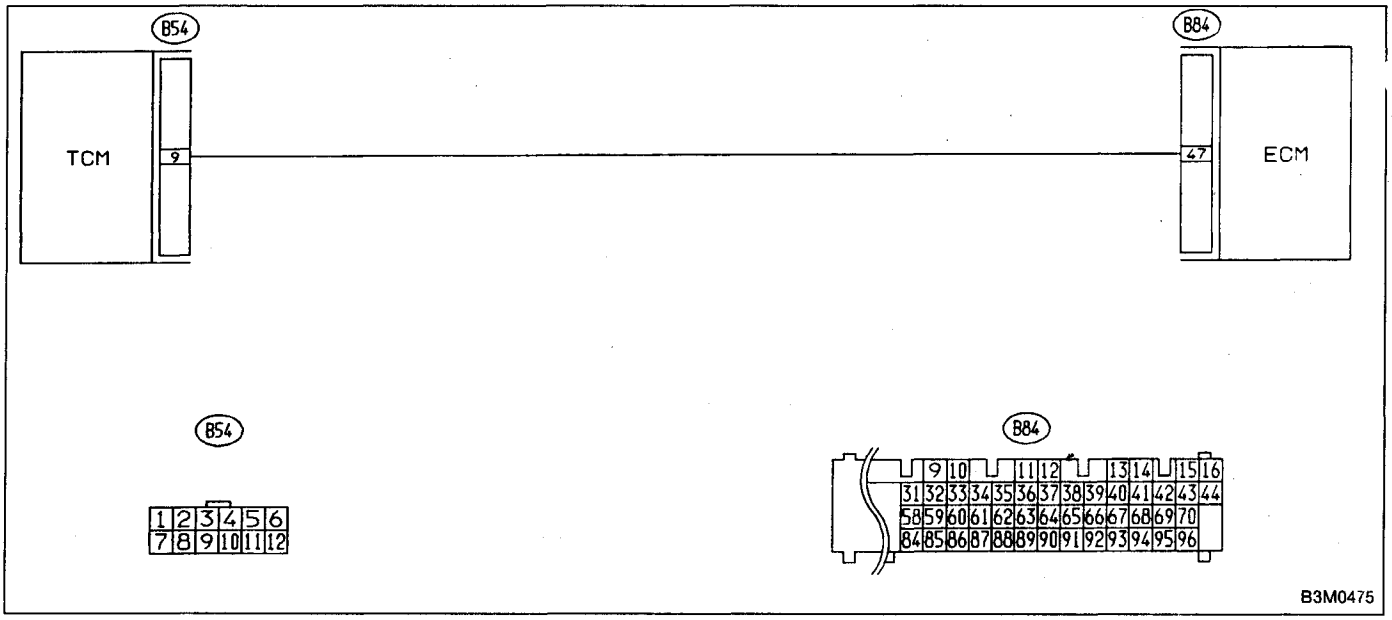
7. Diagnostic Chart with Trouble Code

H: TROUBLE CODE 22
— MASS AIR FLOW SIGNAL —

DIAGNOSIS:

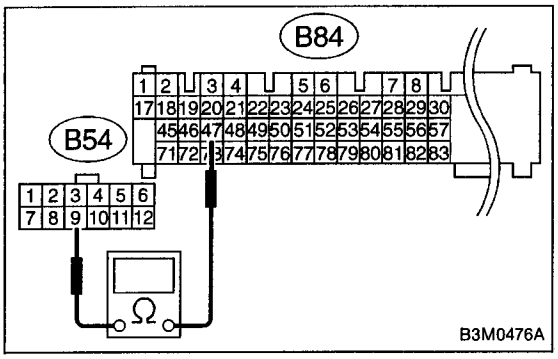
Input signal circuit of TCM from ECM is open or shorted.





1. CHECK TROUBLE CODE ON ENGINE SIDE.

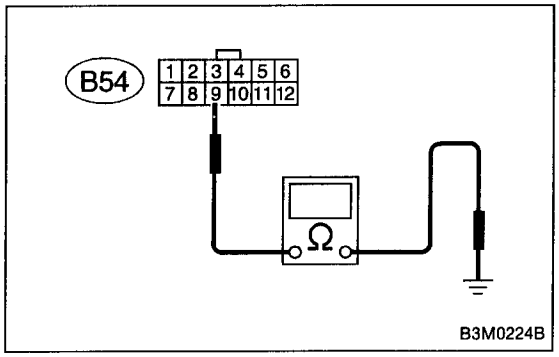
Using Subaru select monitor or OBD-general scan tool, check trouble code of mass air flow sensor on engine side.



2. CHECK HARNESS CONNECTOR BETWEEN TCM AND ECM.

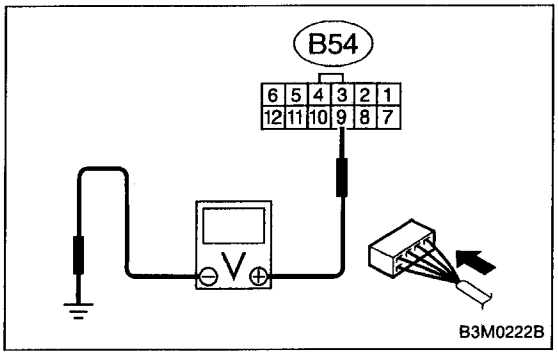
1) Turn ignition switch to OFF.
2) Disconnect connectors from TCM and ECM.
3) Measure resistance of harness connector between TCM and ECM.

Connector & terminal / Specified resistance:
(B54) No. 9 — (B84) No. 47 / 1 Ω, or less



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

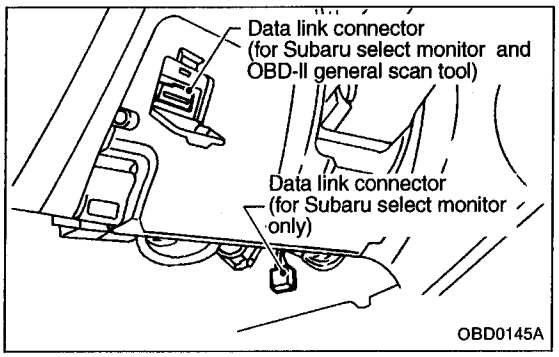
Connector & terminal / Specified resistance:
(B54) No. 9 — Body / 1 MΩ, or more



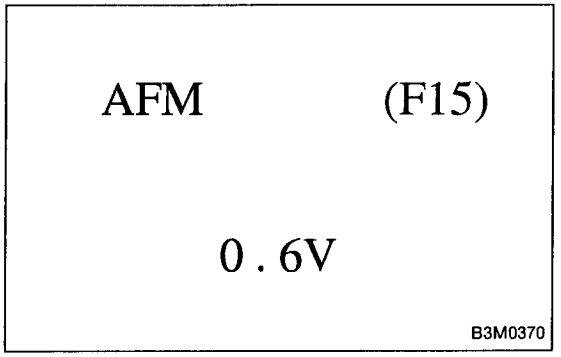
3. CHECK INPUT SIGNAL FOR TCM.

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;
(B54) No. 9 — Body / 0.5 — 1.22 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 — 1.22 V (Engine warm-up)

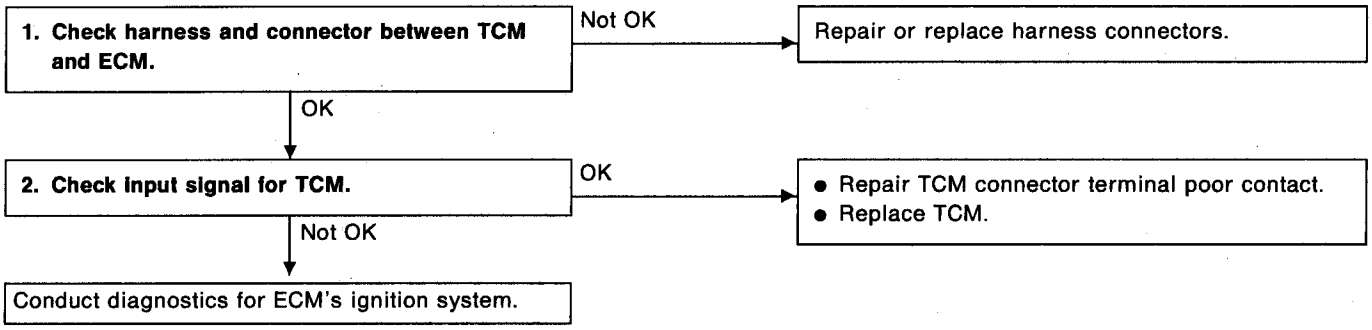
I: TROUBLE CODE 23
— ENGINE SPEED SIGNAL —

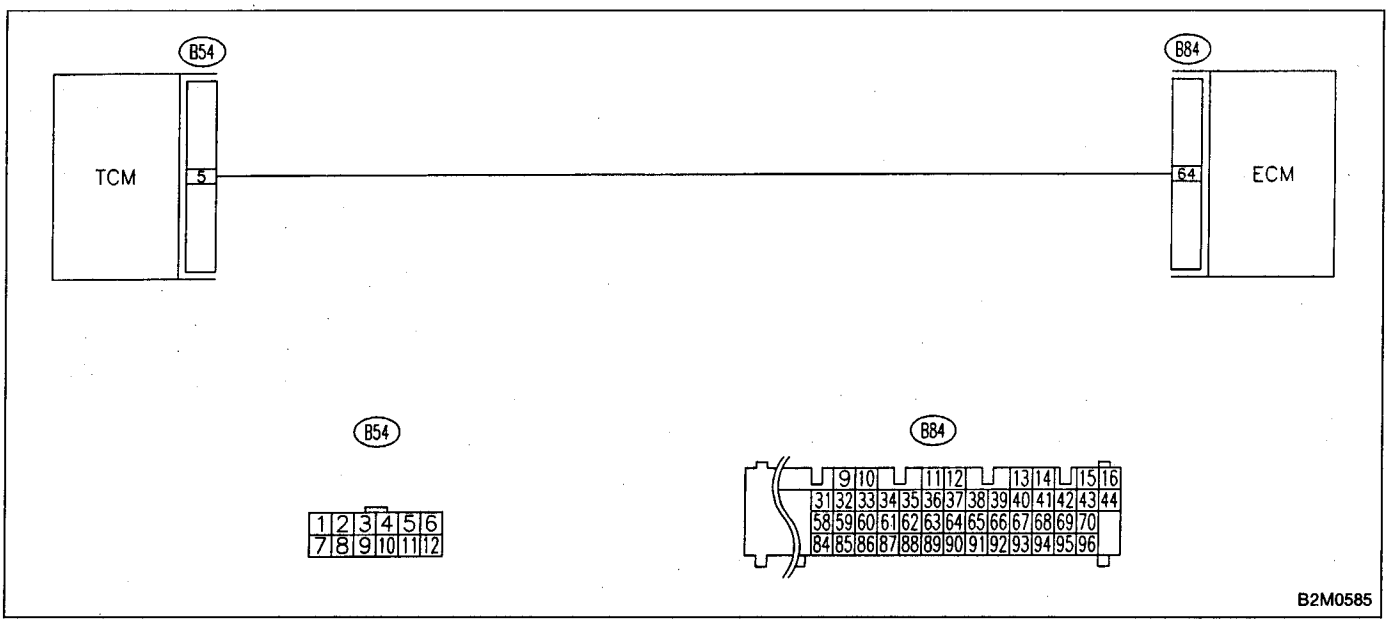
DIAGNOSIS:

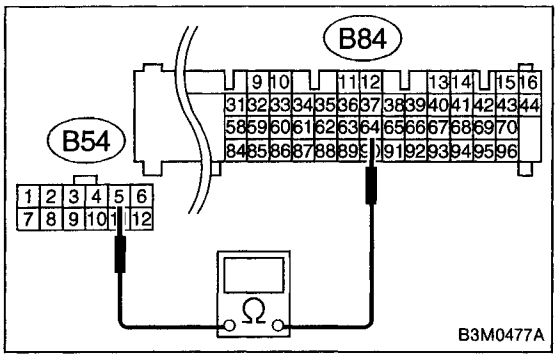
Engine speed input signal circuit is open or shorted.

TROUBLE SYMPTOM:

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



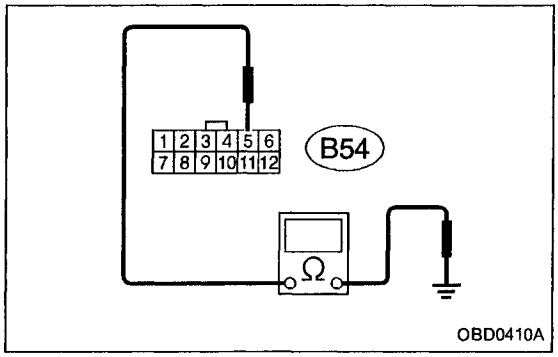




1. CHECK HARNESS AND CONNECTOR BETWEEN TCM AND ECM.

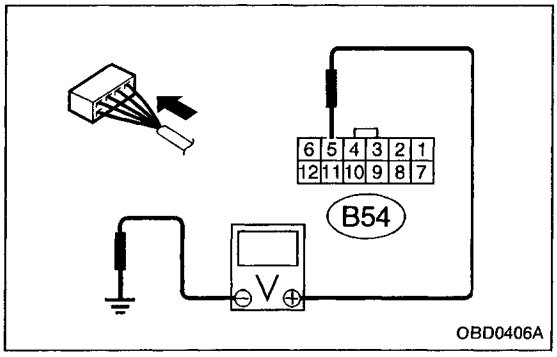
1) Turn ignition switch to OFF.
2) Disconnect connectors from TCM and ECM.
3) Measure resistance of harness connector between TCM and ECM.

Connector & terminal / Specified resistance:
(B54) No. 5 — (B84) No. 64 / 1 Ω, or less



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

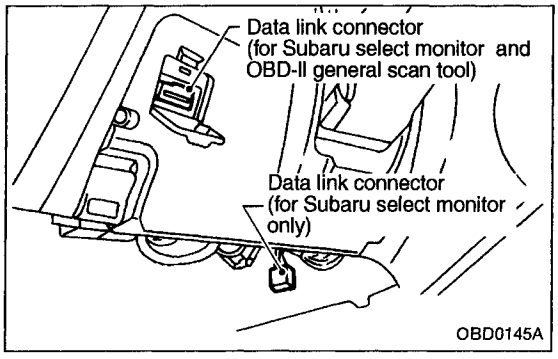
Connector & terminal / Specified resistance:
(B54) No. 5 — Body / 1 MΩ, or more



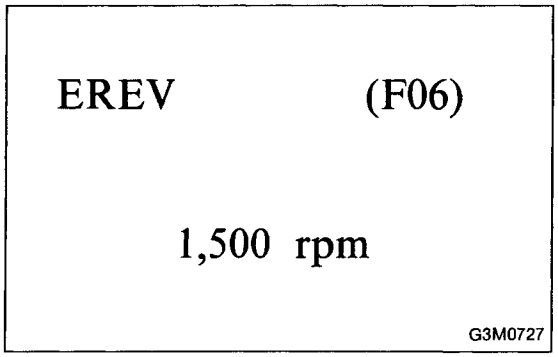
2. CHECK INPUT SIGNAL FOR TCM.

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:
(B54) 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.

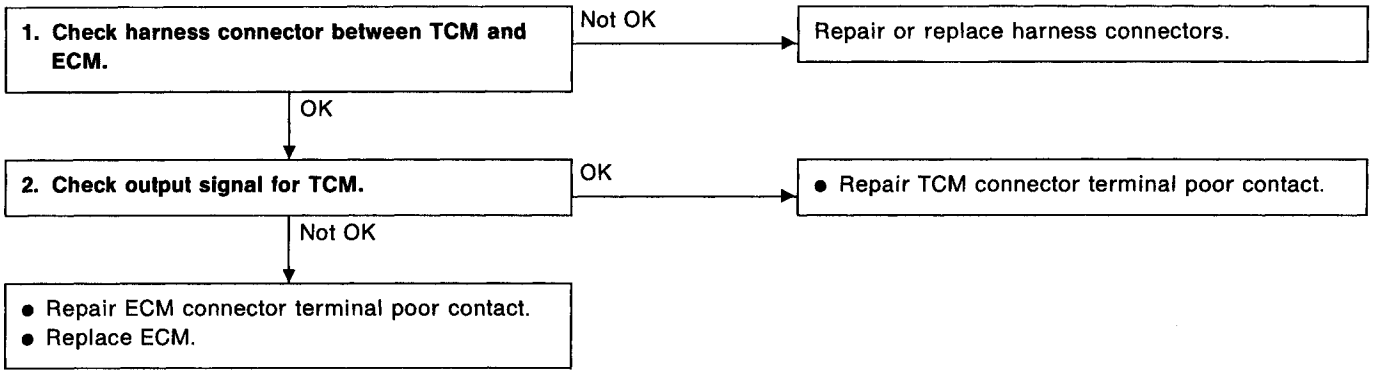
Function mode: F06

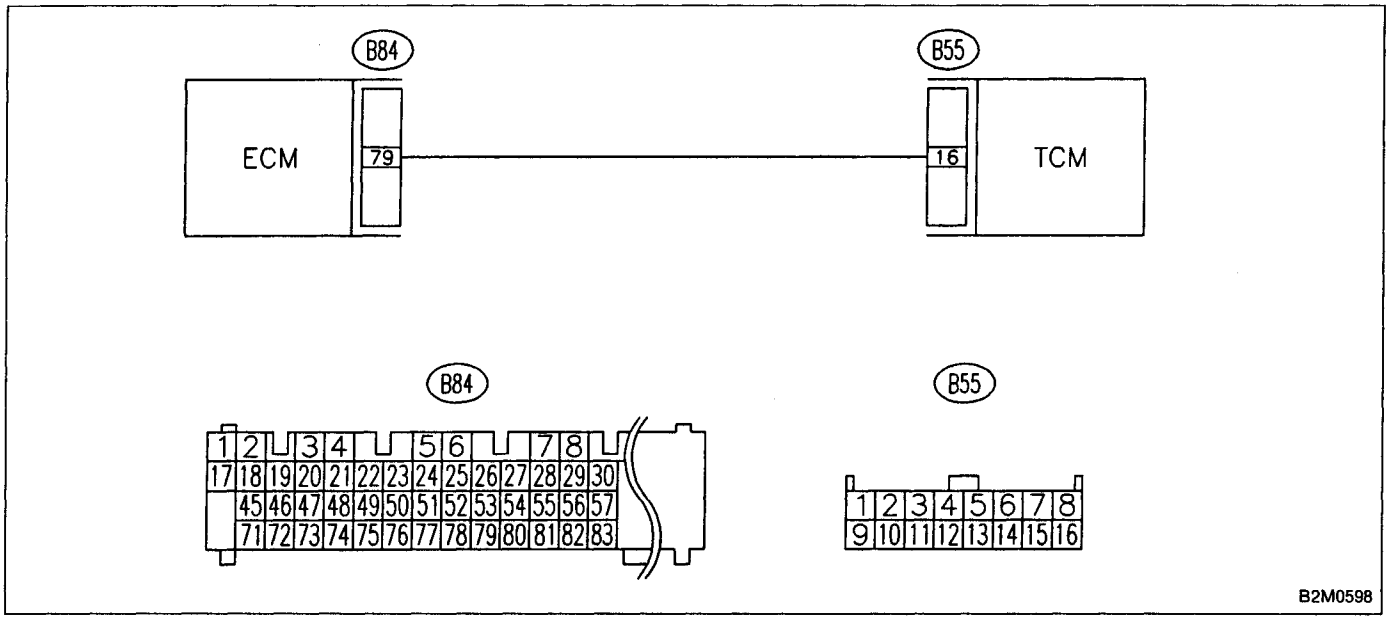
SPECIFIED DATA:
Same as tachometer reading (in combination meter)

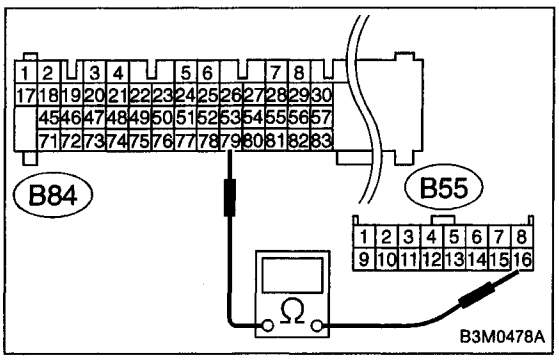
K: TROUBLE CODE 25
— TORQUE CONTROL SIGNAL —

DIAGNOSIS:

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



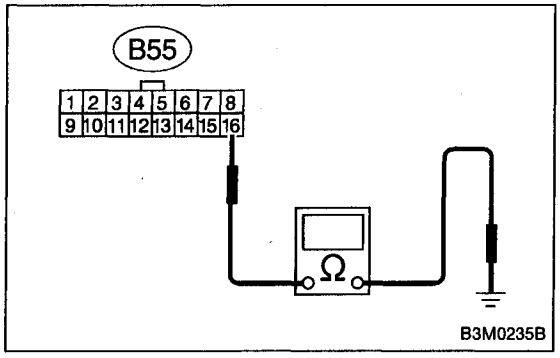




1. CHECK HARNESS CONNECTOR BETWEEN TCM AND ECM.

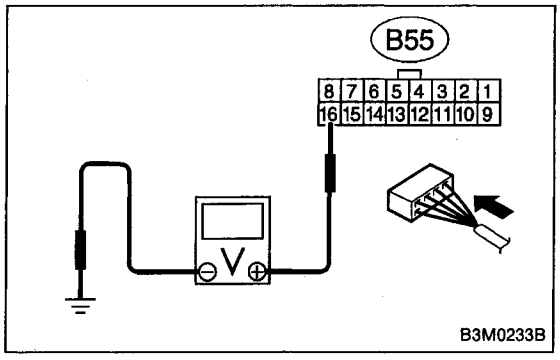
1) Turn ignition switch to OFF.
2) Disconnect connectors from TCM and ECM.
3) Measure resistance of harness connector between TCM and ECM.

Connector & terminal / Specified resistance:
(B55) No. 16 — (B84) No. 79 / 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:
(B55) No. 16 — Body / 1 MΩ, or more



2. CHECK OUTPUT 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:
(B55) No. 16 — Body / 5±1 V

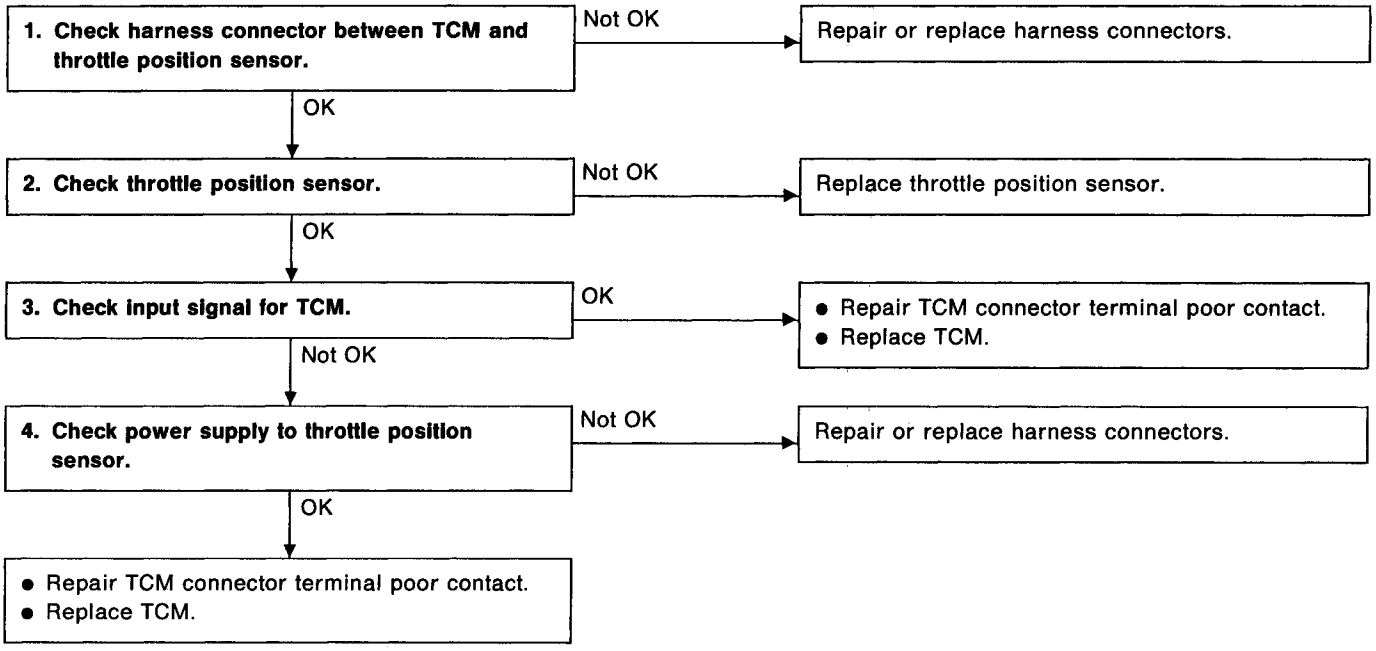
L: TROUBLE CODE 31
— THROTTLE POSITION SENSOR —

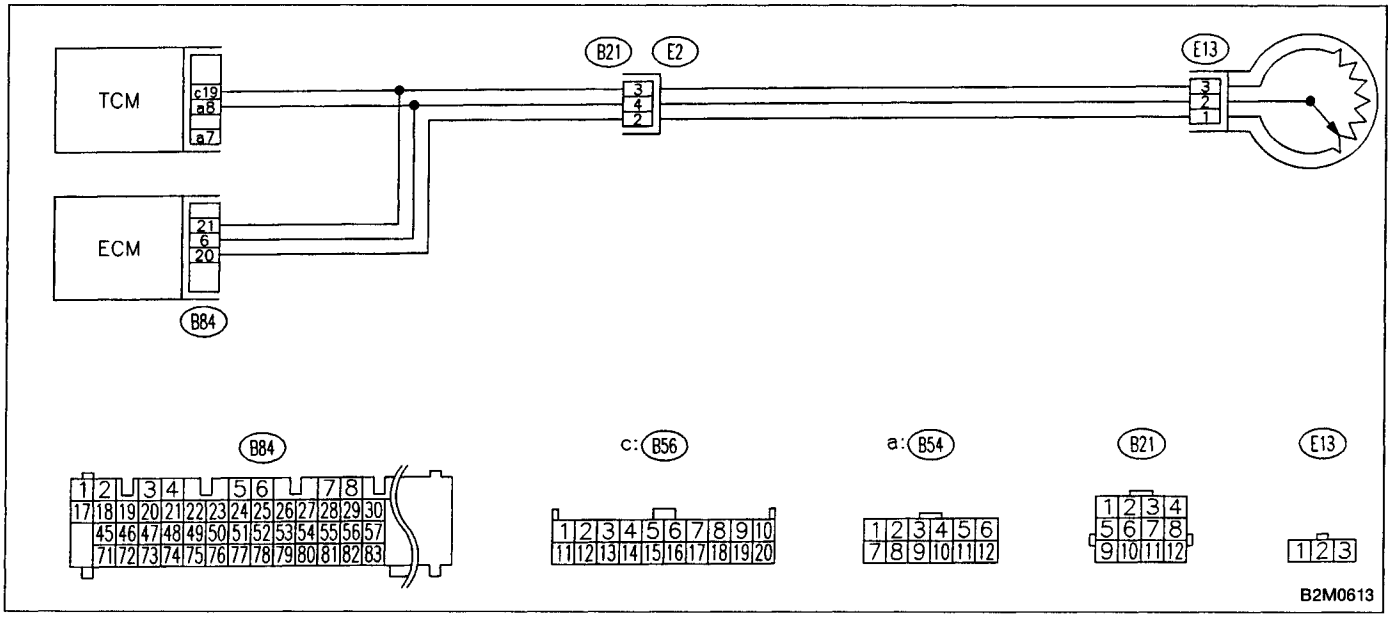
DIAGNOSIS:

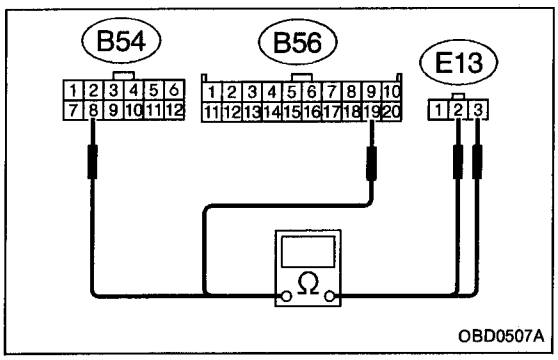
Input signal circuit of throttle position sensor is open or shorted.

TROUBLE SYMPTOM:

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



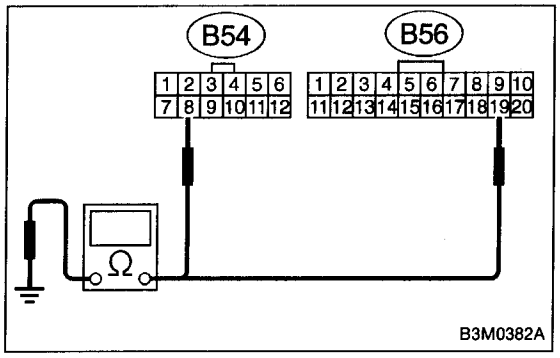




1. CHECK HARNESS CONNECTOR BETWEEN TCM AND THROTTLE POSITION SENSOR.

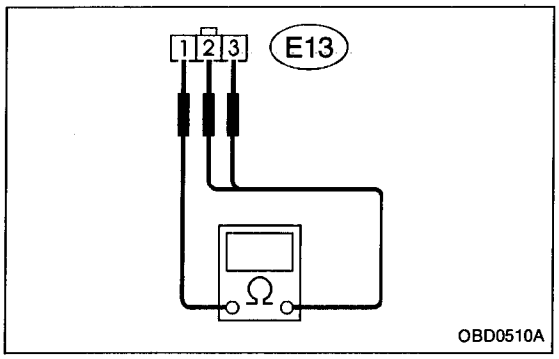
1) Turn ignition switch to OFF.
2) Disconnect connector from TCM and throttle position sensor.
3) Measure resistance of harness connector between TCM and throttle position sensor.

Connector & terminal / Specified resistance:
(B54) No. 8 — (E13) No. 2 / 1 Ω, or less
(B56) No. 19 — (E13) No. 3 / 1 Ω, or less



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

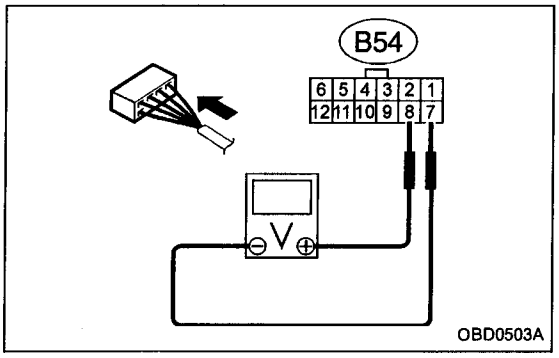
Connector & terminal / Specified resistance:
(B54) No. 8 — Body / 1 MΩ, or more
(B56) No. 19 — Body / 1 MΩ, or more



2. CHECK THROTTLE POSITION SENSOR.

Measure resistance between throttle position sensor terminals.

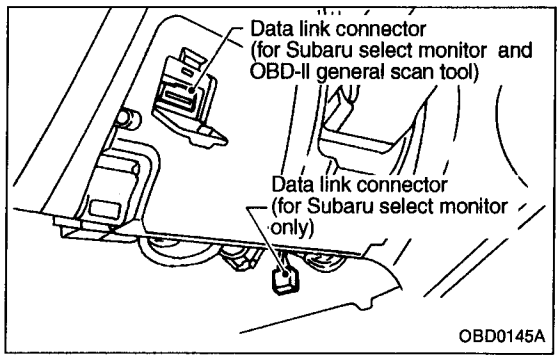
Terminals / Specified resistance:
(E13) No. 1 — No. 2 / 0.3 — 0.7 kΩ
(Throttle fully closed.)
3 — 6 kΩ
(Throttle fully open.)
(E13) No. 1 — No. 3 / 3.5 — 6.5 kΩ



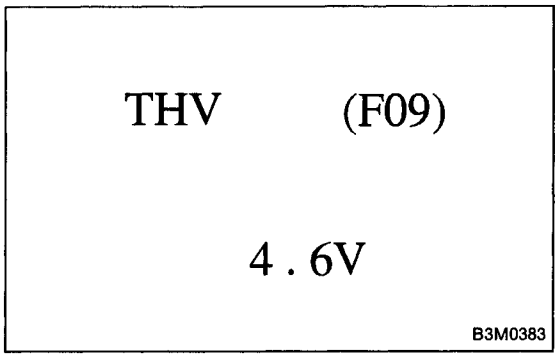
3. CHECK INPUT SIGNAL FOR TCM.

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:
(B54) 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.

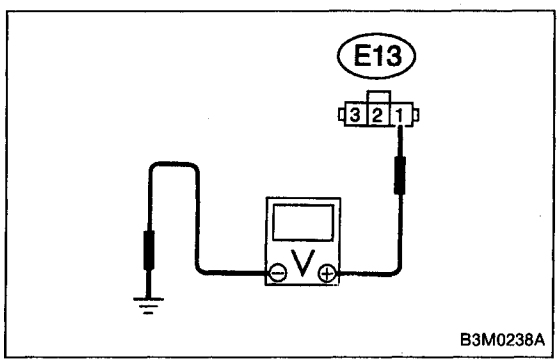


(5) Designate mode using function key.
(6) Read data on Subaru select monitor.

Function mode: F09

SPECIFIED DATA:

0.5 ± 0.2 V (Throttle fully closed.)
4.6 ± 0.3 V (Throttle fully open.)
[Must be changed correspondingly with accelerator pedal operation (from "released" to "depressed" position).]

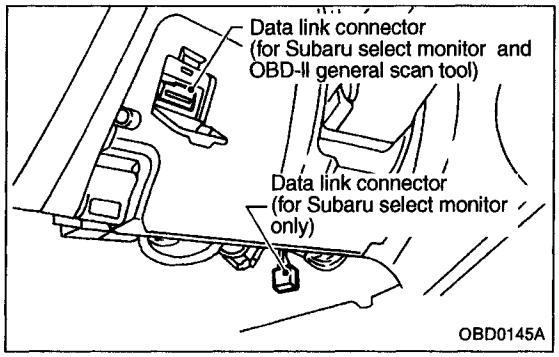


4. CHECK POWER SUPPLY TO THROTTLE POSITION SENSOR.

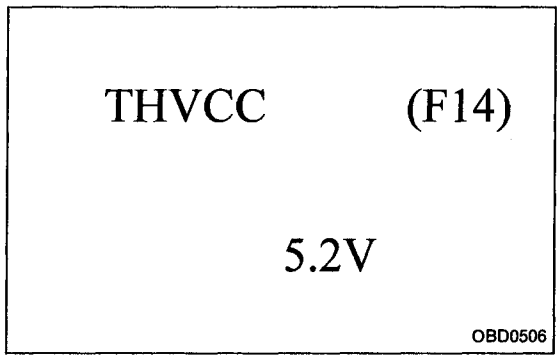
1) Turn ignition switch to OFF.
2) Disconnect connector from throttle position sensor.
3) Turn ignition switch to ON.
4) Measure power supply voltage to throttle position sensor.

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 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