AUTOMATIC TRANSMISSION AND DIFFERENTIAL 3-2

1. Supplemental Restraint System “Airbag”

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

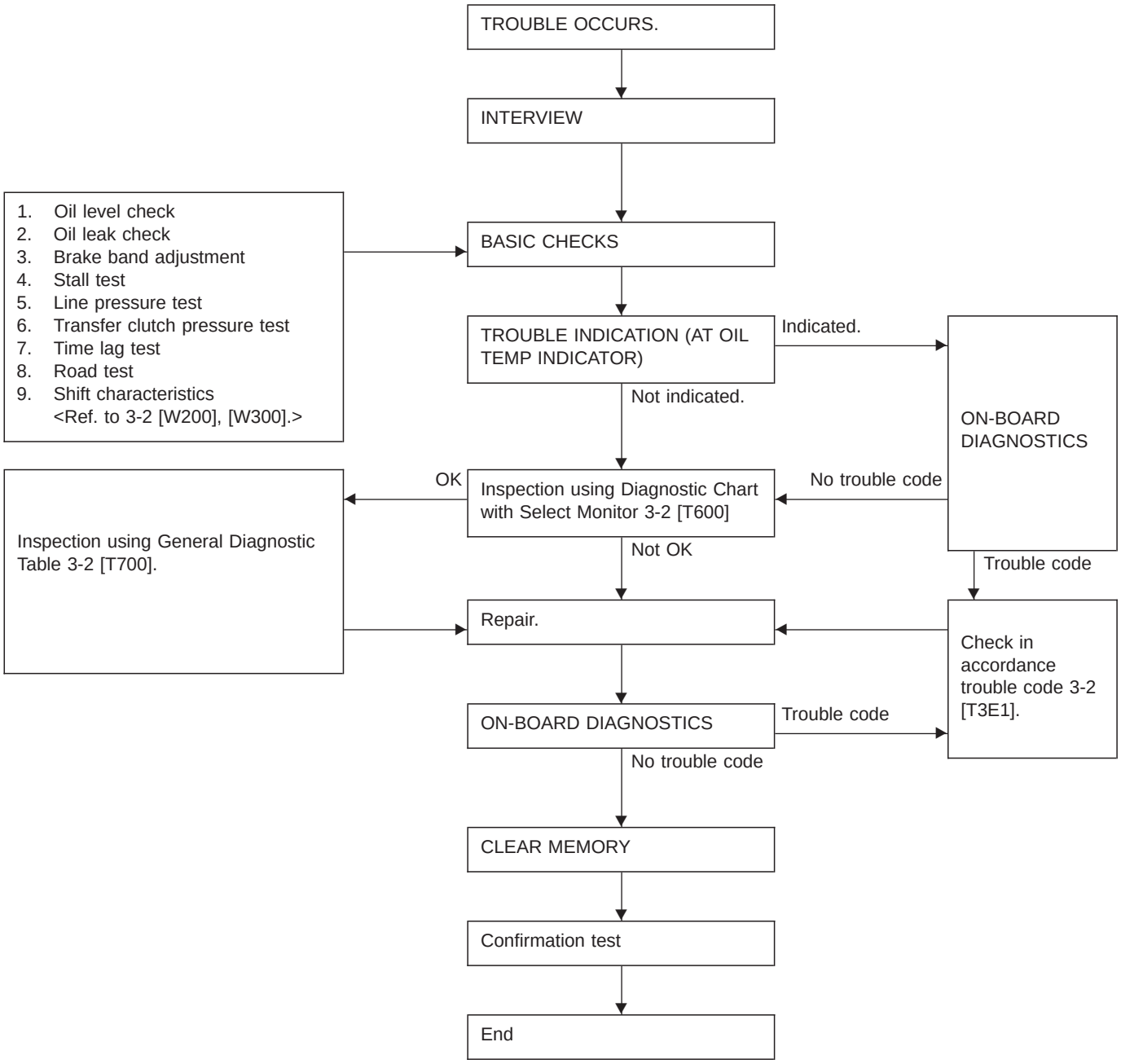
1. **All Airbag system wiring harness and connectors are colored yellow. Do not use electrical test equipment on these circuit.**
2. **Be careful not to damage Airbag system wiring harness when performing diagnostics and servicing the TCM.**

2. Precaution

1) Problems in the electronic-controlled automatic transmission may be caused by failure of the engine, the electronic control system, the transmission proper, or by a combination of these. These three causes must be distinguished clearly when performing diagnostics.
2) Diagnostics should be conducted by rotating with simple, easy operations and proceeding to complicated, difficult operations. The most important thing in diagnostics is to understand the customer’s complaint, and distinguish between the three causes.

3. Diagnostic Chart for On-board Diagnostic System

A: BASIC DIAGNOSTICS PROCEDURE

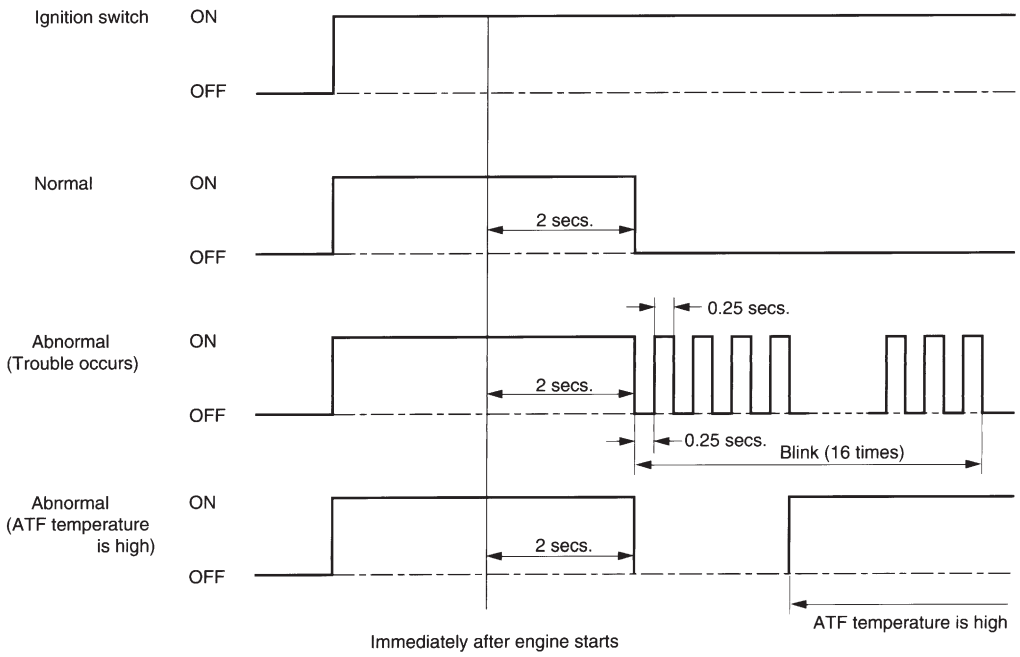


B: ABNORMAL DISPLAY ON “AT OIL TEMP” INDICATOR

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.

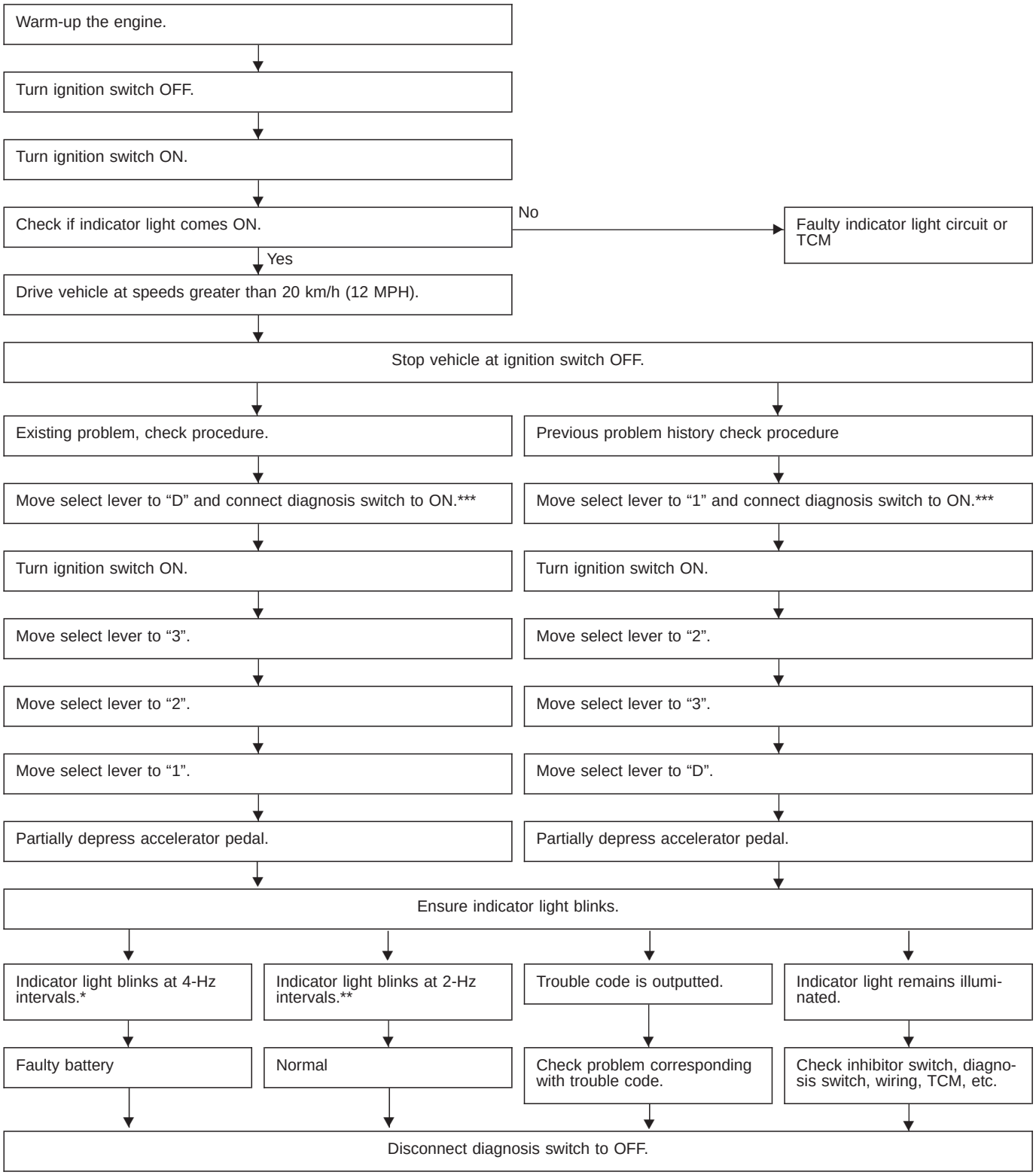
WARNING:

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

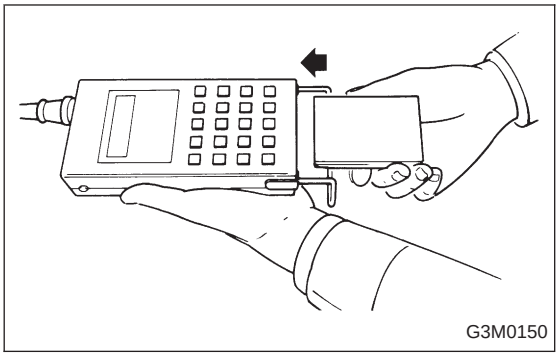


H3H1066

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.

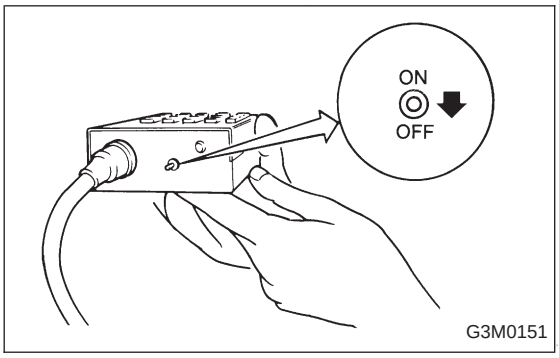

G3M0150

D: ON-BOARD DIAGNOSTICS WITH SELECT MONITOR

1. CONNECT SELECT MONITOR.

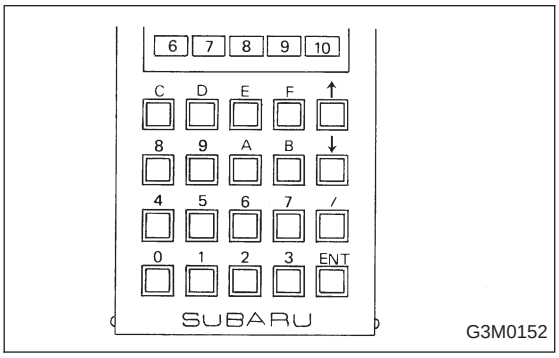
1) Connect select monitor to data link connector located under instrument panel (on driver's side).

Applicable cartridge : No. 498349300



G3M0151

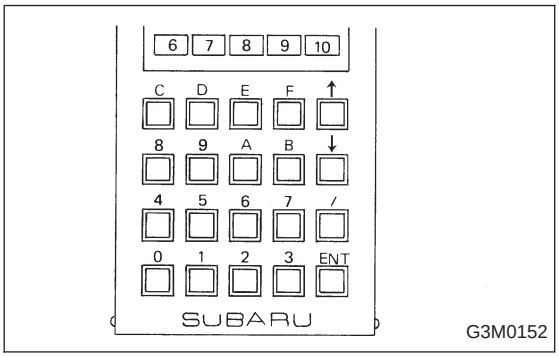
2) Turn ignition switch and select monitor switch ON.
3) After display is shown, press slash "/" key.
4) After AT mode is displayed, press function "[0]".
(Display returns to AT mode when slash "/" is pressed during on-board diagnostic operation.)



G3M0152

2. READ TROUBLE CODE SHOWN ON DISPLAY.

1) Connect select monitor.
2) Designate mode using function key.
Press [F] [B] [0] [ENT] in that order.
3) Ensure trouble code(s) is shown.



G3M0152

3. PREVIOUS TROUBLE CODE READING

1) Connect select monitor.
2) Designate mode using function key.
Press [F] [B] [1] [ENT] in that order.
3) Ensure displayed trouble code(s).

E: LIST OF TROUBLE CODE

1. TROUBLE CODE

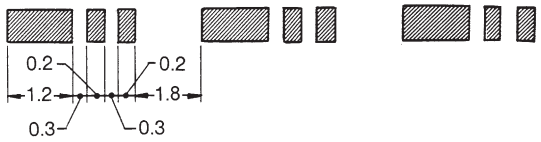
Trouble code	Item	Content of diagnosis	Abbr. (Select monitor)	Page
11	Duty solenoid A	Detects open or shorted drive circuit, as well as valve seizure.	PL	11
12	Duty solenoid B	Detects open or shorted drive circuit, as well as valve seizure.	L/U	14
13	Shift solenoid 3	Detects open or shorted drive circuit, as well as valve seizure.	OVR	16
14	Shift solenoid 2	Detects open or shorted drive circuit, as well as valve seizure.	SFT2	18
15	Shift solenoid 1	Detects open or shorted drive circuit, as well as valve seizure.	SFT1	20
21	ATF temperature sensor	Detects open or shorted input signal circuit.	ATFT	22
23	Engine speed signal	Detects open or shorted input signal circuit.	EREV	24
24	Duty solenoid C	Detects open or shorted drive circuit, as well as valve seizure.	4WD	26
31	Throttle position sensor	Detects open or shorted input signal circuit.	THV	29
32	Vehicle speed sensor 1	Detects open or shorted input signal circuit.	VSP1	32
33	Vehicle speed sensor 2	Detects open or shorted input signal circuit.	VSP2	34

2. HOW TO READ TROUBLE CODE OF INDICATOR LIGHT

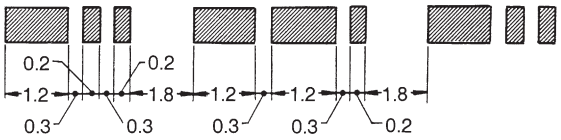
The power indicator light flashes the code corresponding to the faulty part.
The long segment (1.2 sec on) indicates a “ten”, and the short segment (0.2 sec on) signifies a “one”.

Example:

When only one part has failed:
Flashing code 12
(unit: second)



When two or more parts have failed:
Flashing codes 12 and 21
(unit: second)



G3M0104

F: CLEAR MEMORY

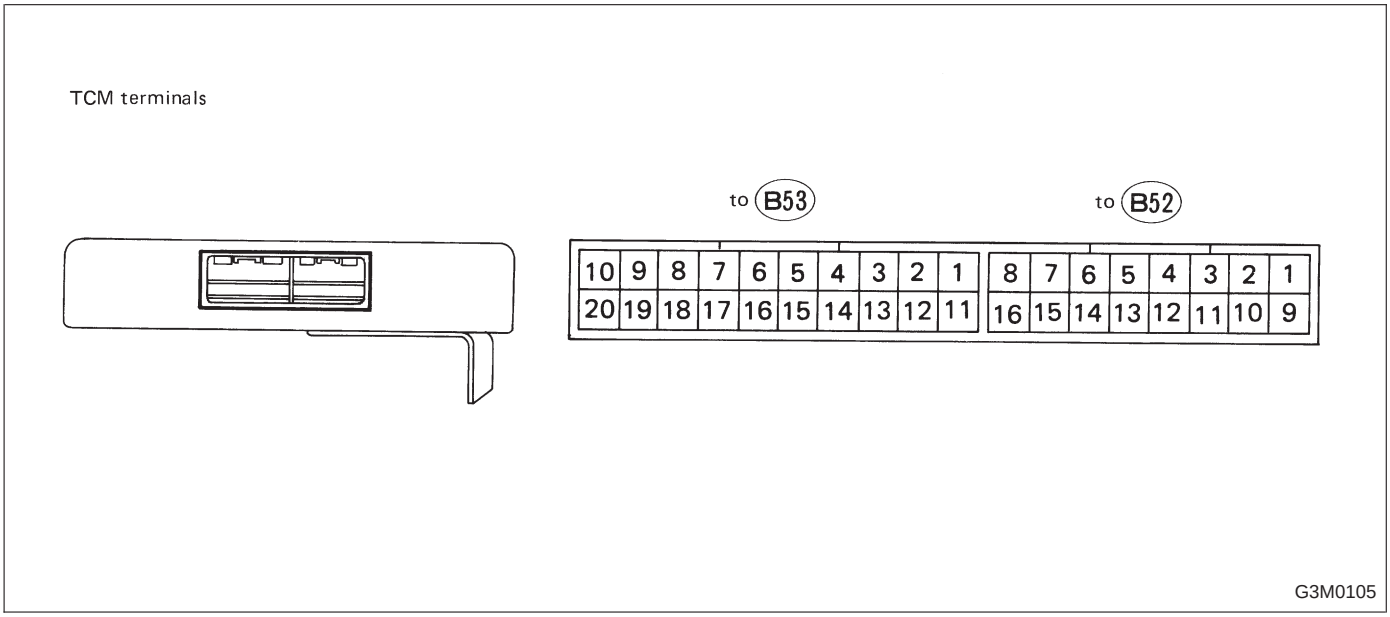
Current trouble codes shown on the display are cleared by turning the ignition switch OFF after conducting on-board diagnostic operation. Previous trouble codes, however, cannot be cleared since they are stored in the TCM memory which is operating on the back-up power supply. These trouble codes can 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.

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



Check with ignition switch ON.

Content		Connector No.	Terminal No.	Measuring conditions	Voltage (V)
Battery supply		B52	1	Ignition switch OFF	11 — 13
Ignition power supply		B52 B52	15 16	Ignition switch ON (with engine OFF)	11 — 13
Inhibitor switch	“P” and “N” range switch	B53	12	Select lever in “P” or “N” range	Less than 1
				Select lever in any other than “P” or “N” range	More than 8
	“R” range switch	B52	3	Select lever in “R” range	Less than 1
				Select lever in any other than “R” range	More than 9.5
	“D” range switch	B53	11	Select lever in “D” range	Less than 1
				Select lever in any other than “D” range	More than 9.5
	“3” range switch	B53	3	Select lever in “3” range	Less than 1
				Select lever in any other than “3” range	More than 9.5
	“2” range switch	B53	10	Select lever in “2” range	Less than 1
				Select lever in any other than “2” range	More than 9.5
	“1” range switch	B53	9	Select lever in “1” range	Less than 1
				Select lever in any other than “1” range	More than 9.5
Diagnosis switch		B53	13	Diagnosis connector connected	Less than 1
				Diagnosis connector disconnected	More than 6
Brake switch		B53	8	Brake pedal depressed	More than 10.5
				Brake pedal released	Less than 1
ABS signal		B53	7	ABS switch ON	Less than 1
				ABS switch OFF	More than 6.5
AT diagnostic signal		B53	18	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	B53	20	Throttle fully closed.	0.3 — 0.7	—
			Throttle fully open.	3.9 — 4.3	
Throttle position sensor power supply voltage	B53	1	Ignition switch ON (with engine OFF)	4.8 — 5.7	—
ATF temperature sensor	B53	19	ATF temperature 20°C (68°F)	2.9 — 4.0	2.1 k — 2.9 k
			ATF temperature 80°C (176°F)	1.0 — 1.4	275 — 375
Vehicle speed sensor 1	B53	15	Vehicle stopped.	0	450 — 650
			Vehicle speed at least 20 km/h (12 MPH)	More than 1 (AC range)	
Vehicle speed sensor 2	B52	5	When vehicle is slowly moved at least 2 meters (7ft).	Less than 1↔More than 4	—
Engine speed signal	B52	4	Ignition switch ON (with engine OFF)	More than 10.5	—
			Ignition switch ON (with engine ON)	8 — 11	
Cruise set signal	B53	6	When cruise control is set (SET lamp ON).	Less than 1	—
			When cruise control is not set (SET lamp OFF).	6 — 10	
Shift solenoid 1	B52	10	Select lever in 1st or 4th gear	More than 10	20 — 30
			Select lever in 2nd or 3rd gear	Less than 1	
Shift solenoid 2	B52	9	Select lever in 1st or 2nd gear	More than 10	20 — 30
			Select lever in 3rd or 4th gear	Less than 1	
Shift solenoid 3	B52	8	Select lever in “N” range (with throttle fully closed.)	Less than 1	20 — 30
			Select lever in “D” range (with throttle fully closed.)	More than 10	
Duty solenoid A	B52	11	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	12	Throttle fully closed (with engine OFF) after warm-up.	5 — 14	12 — 18
			Throttle fully open (with engine OFF) after warm-up.	Less than 0.5	
Duty solenoid B	B52	7	When lock up occurs.	More than 8.5	10 — 17
			When lock up is released.	Less than 0.5	
Duty solenoid C	B52	6	Fuse on FWD switch	More than 8.5	10 — 17
			Fuse removed from FWD switch. (with throttle fully open and with select lever in 1st gear.)	Less than 0.5	
Sensor ground line 1	B53	16	—	0	Less than 1
Sensor ground line 2	B53	4	—	0	Less than 1
System ground line	B52	14	—	0	Less than 1
Power system ground line	B52	13	—	0	Less than 1
FWD switch	B52	2	Fuse removed.	More than 10	
			Fuse installed.	Less than 1	

5. Diagnostic Chart with Trouble Code

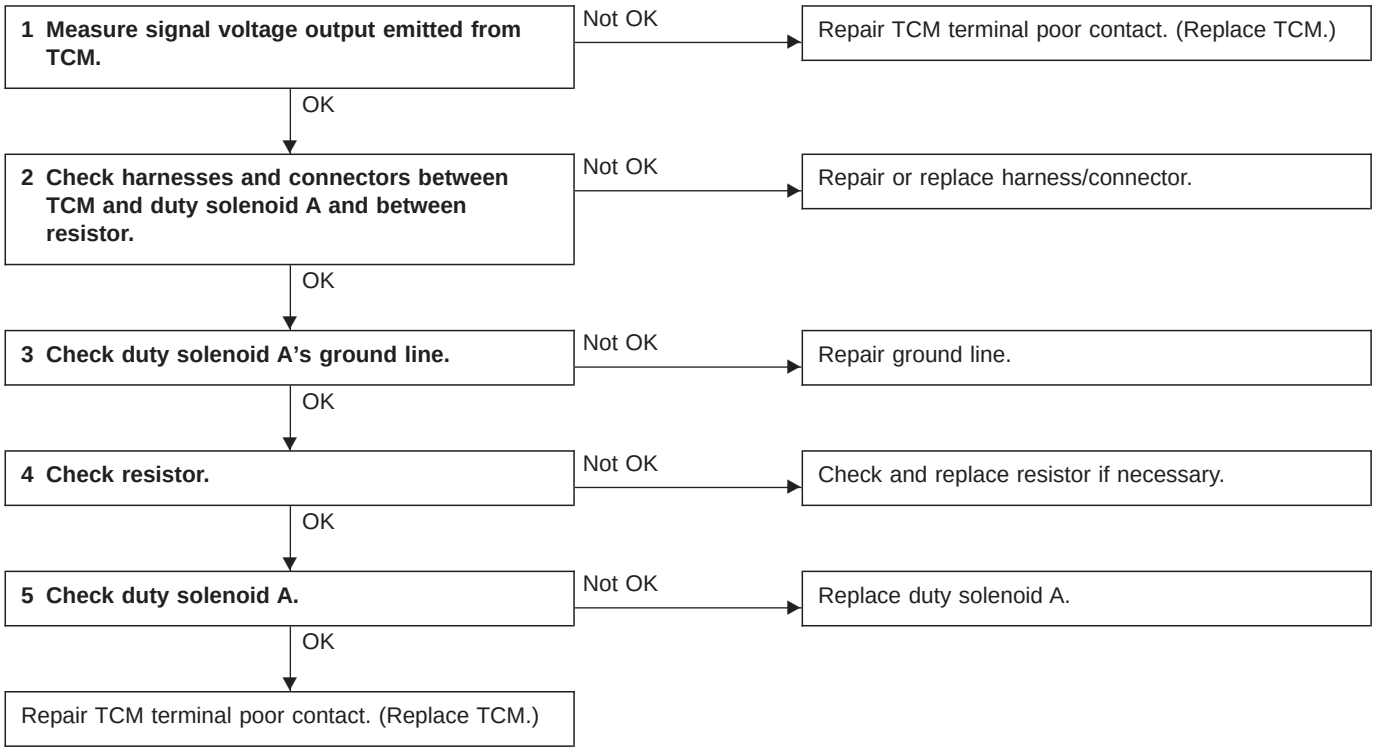
A: TROUBLE CODE 11 — DUTY SOLENOID A —

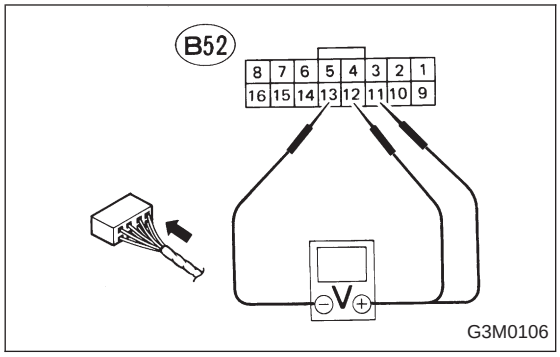
DIAGNOSIS:

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

TROUBLE SYMPTOM:

Excessive shift shock





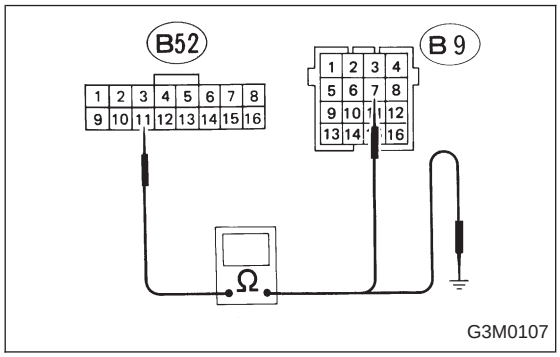
1. MEASURE SIGNAL VOLTAGE OUTPUT EMITTED FROM TCM.

1) Warm-up the engine and transmission.
2) Ignition switch ON (Engine OFF).
3) Move shift lever to “N”.
4) While opening and closing throttle valve, measure voltage between TCM connector and body.

Connector & terminal / Specified resistance:
(B52) No. 11 — No. 13 /
1.5 — 4.0 V (Throttle is fully closed.)
0.5 V, max. (Throttle is fully open.)
(B52) No. 12 — No.13 /
8.5 V, min. (Throttle is fully closed.)
0.5 V, max. (Throttle is fully open.)

● **SELECT MONITOR FUNCTION MODE**

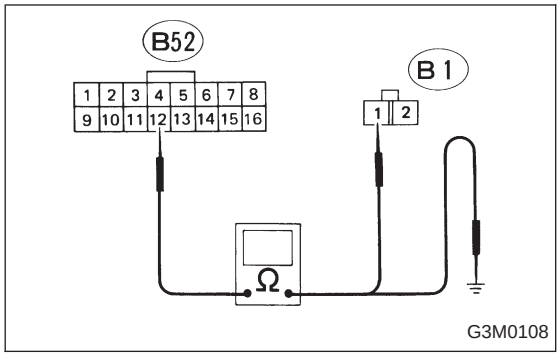
Mode: F11
Condition:
Ignition switch ON (Engine OFF) N range
Specified data:
PLDTY F11
Less than 25% (Throttle is fully open.)
100% (Throttle is fully closed.)



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

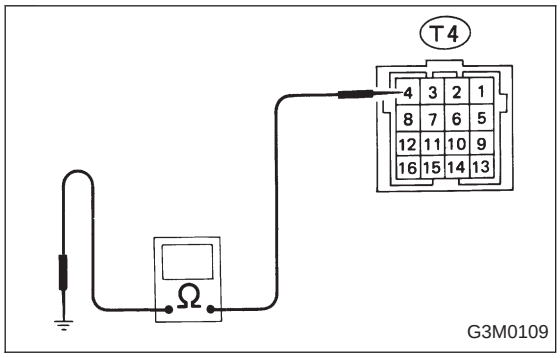
1) Disconnect connector from TCM.
2) Disconnect connector from transmission.
3) Disconnect connector from resistor.
4) Measure resistance between TCM connector and transmission and between TCM connector and body.

Connector & terminal / Specified resistance:
(B52) No. 11 — (B9) No. 7 / 1 Ω, max.
(B52) No. 11 — Body / 1 MΩ, min.



5) Measure resistance between TCM connector and resistor connector and between TCM connector and body.

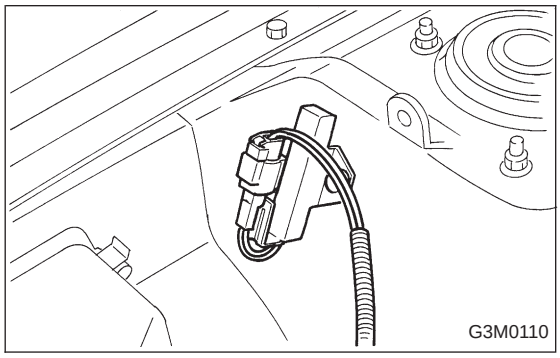
Connector & terminal / Specified resistance:
(B52) No. 12 — (B1) No. 1 / 1 Ω, max.
(B52) No. 12 — Body / 1 MΩ, min.



3. CHECK DUTY SOLENOID A'S GROUND LINE.

1) Disconnect connector from transmission.
2) Measure resistance between transmission connector receptacle (on transmission) and transmission case.

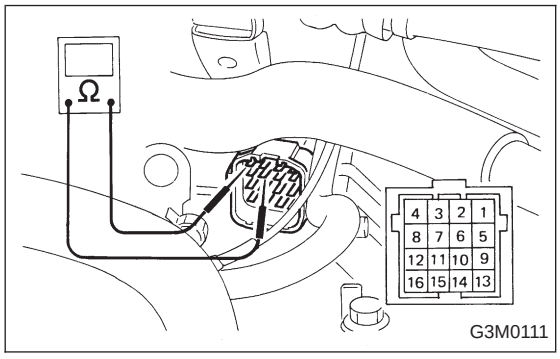
Connector & terminal / Specified resistance:
(T4) No. 4 — Transmission / 1 Ω, max.



4. CHECK RESISTOR.

1) Disconnect connector from resistor.
2) Measure resistance between resistor terminals.

Specified resistance:
9 — 15 Ω



5. CHECK DUTY SOLENOID A.

1) Disconnect connector from transmission.
2) Measure resistance between transmission connector receptacle (on transmission) terminals.

Connector & terminal / Specified resistance:
(T4) No. 7 — No. 4 / 2.0 — 4.5 Ω

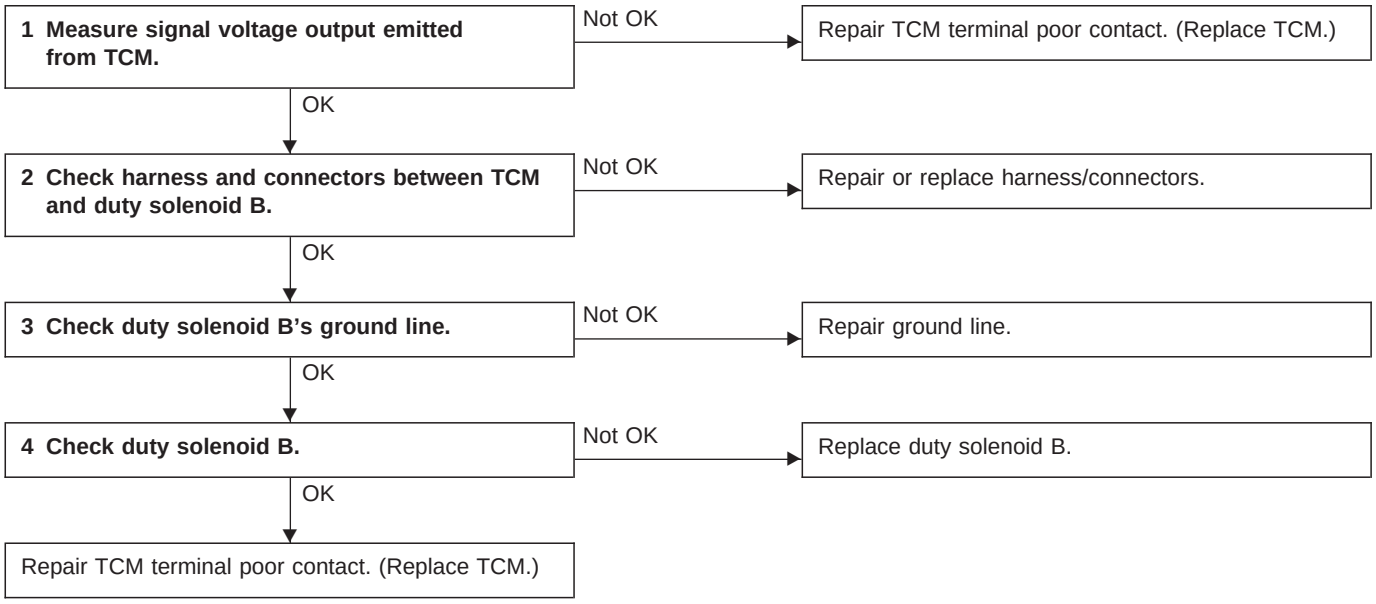
B: TROUBLE CODE 12 — DUTY SOLENOID B —

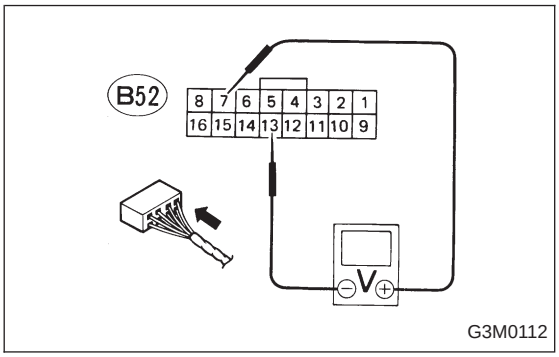
DIAGNOSIS:

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

TROUBLE SYMPTOM:

No “locking-up” (after engine warm-up)





1. MEASURE SIGNAL VOLTAGE OUTPUT EMITTED FROM TCM.

1) Raise vehicle and support with safety stands.

CAUTION:

On AWD models, raise all wheels off ground.

2) Warm-up the engine and transmission.

3) Move shift lever to “D” and slowly increase vehicle speed to 75 km/h (47 MPH). Measure voltage output emitted from TCM.

Connector & terminal / Specified voltage:

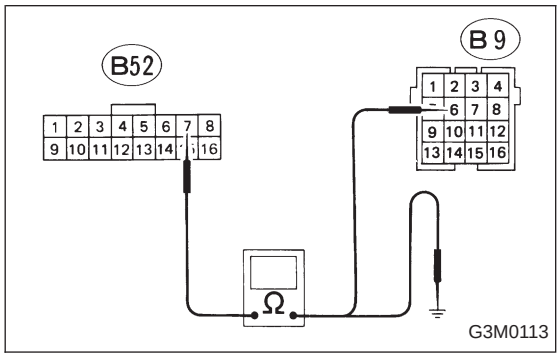
(B52) No. 7 — No. 13 / 8.5 V, min. (when wheels are locked-up.)

4) Return the engine to idling speed. Move shift lever to "N" and measure voltage output emitted from TCM.

Connector & terminal / Specified voltage:
(B33) No. 7 — No. 13 / 0.5 V, max.

- **SELECT MONITOR FUNCTION MODE**

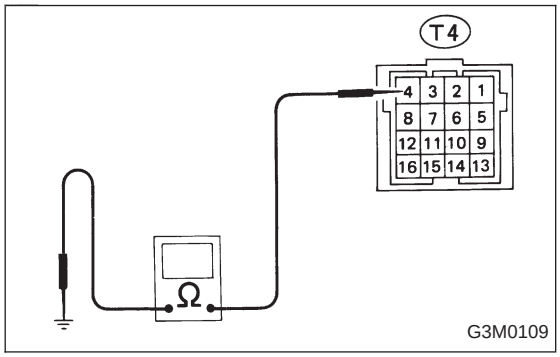
Mode: F12
Condition:
Start the engine and increase vehicle speed to 75 km/h (47 MPH). When wheels are locked-up:
Specified data:
LUDTY F12
95% (Wheel locked-up)
5% (Release)



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

1) Disconnect connector from TCM.
2) Disconnect connector from transmission.
3) Measure resistance between TCM connector and transmission connector, and between TCM connector and body.

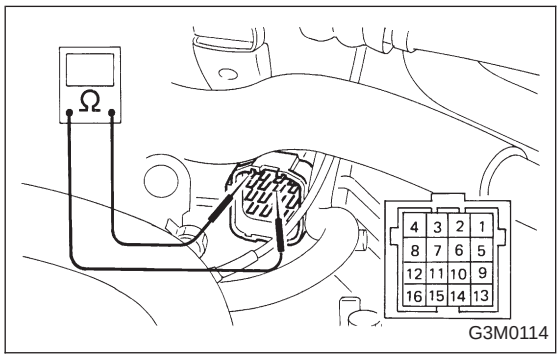
Connector & terminal / Specified resistance:
(B52) No. 7 — (B9) No. 6 / 1 Ω, max.
(B52) No. 7 — Body / 1 MΩ, min.



3. CHECK DUTY SOLENOID B'S GROUND LINE.

1) Disconnect connector from transmission.
2) Measure resistance between transmission connector receptacle and transmission case.

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



4. CHECK DUTY SOLENOID B.

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

Connector & terminal / Specified resistance:
(T4) No. 6 — No. 4 / 10 — 17 Ω

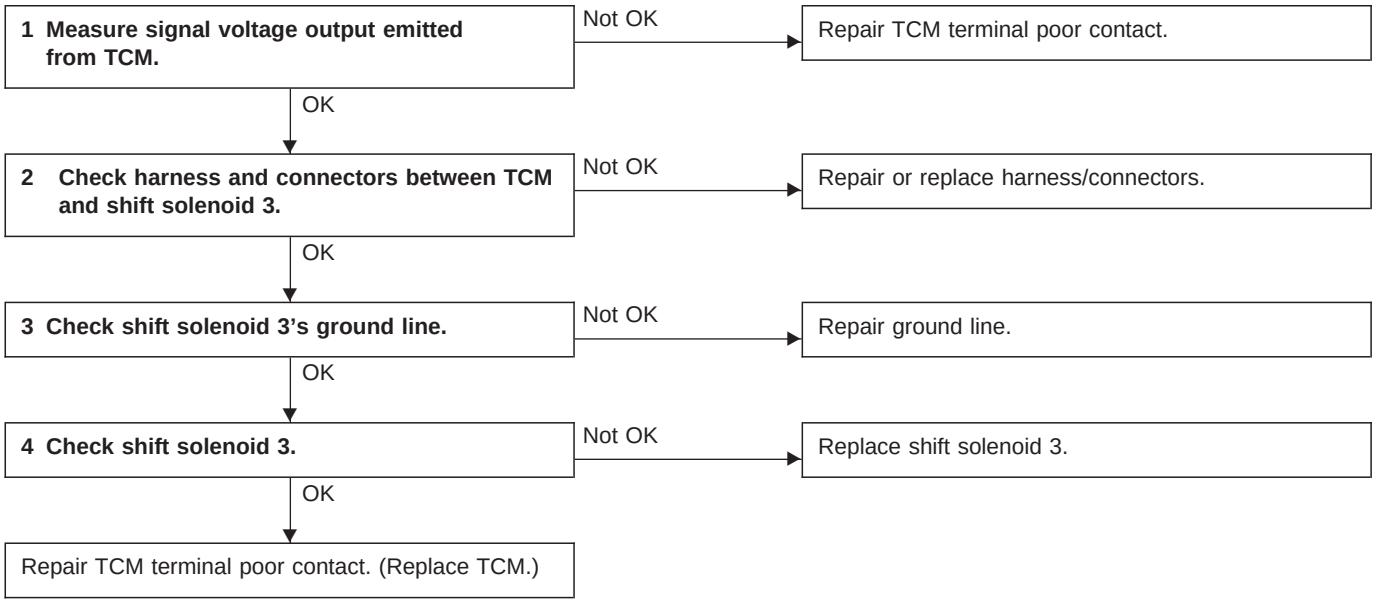
C: TROUBLE CODE 13 — SHIFT SOLENOID 3 —

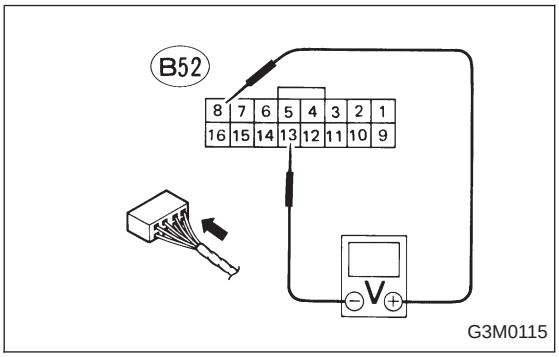
DIAGNOSIS:

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

TROUBLE SYMPTOM:

Ineffective engine brake with shift lever in “3”





1. MEASURE SIGNAL VOLTAGE OUTPUT EMITTED FROM TCM.

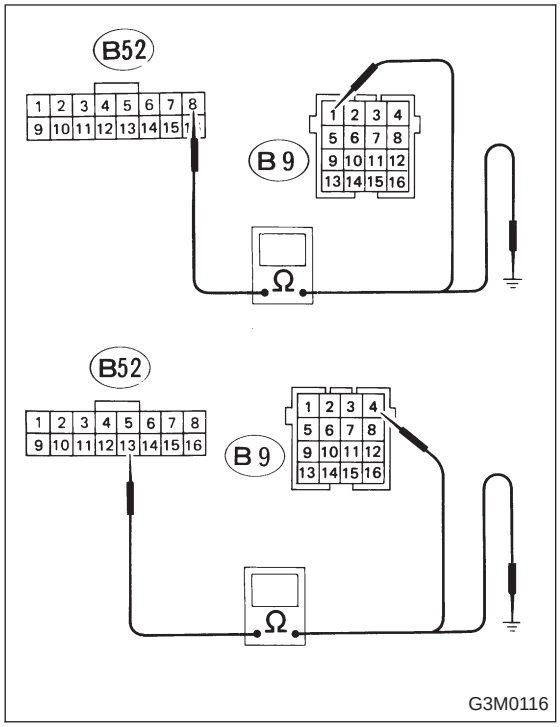
1) Raise vehicle and support with safety stands.

CAUTION:

On AWD models, raise all wheels off ground.

2) Warm-up the engine and transmission.
3) Move shift lever to “D”.
4) Measure signal voltage output emitted from TCM while idling the engine.

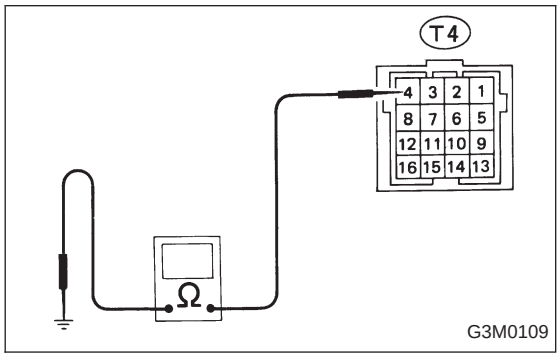
Connector & terminal / Specified voltage:
(B52) No. 8 — No. 13 / 9 V, min.



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

1) Disconnect connector from TCM.
2) Disconnect connector from transmission.
3) Measure resistance between TCM connector and transmission connector, and between TCM connector and body.

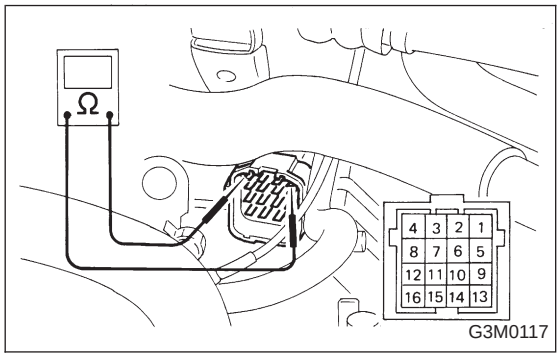
Connector & terminal / Specified resistance:
(B52) No. 8 — (B9) No. 1 / 1 Ω, max.
(B52) No. 8 — Body/ 1 MΩ, min.
(B52) No. 13 — (B9) No. 4 / 1 Ω, max.
(B52) No. 13 — Body / 1 MΩ, min.



3. CHECK SHIFT SOLENOID 3'S GROUNDING LINE.

1) Disconnect connector from transmission.
2) Measure resistance between transmission connector receptacle and transmission case.

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



4. CHECK SHIFT SOLENOID 3.

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

Connector & terminal / Specified resistance:
(T4) No. 1 — No. 4 / 20 — 30 Ω

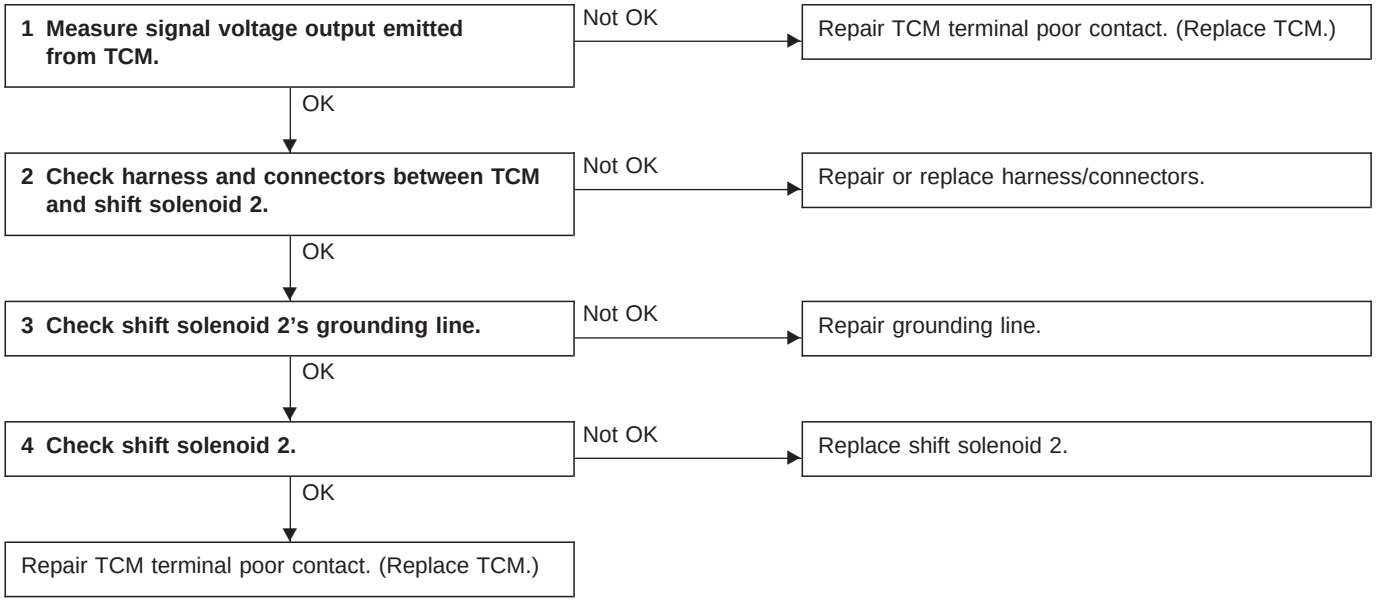
D: TROUBLE CODE 14 — SHIFT SOLENOID 2 —

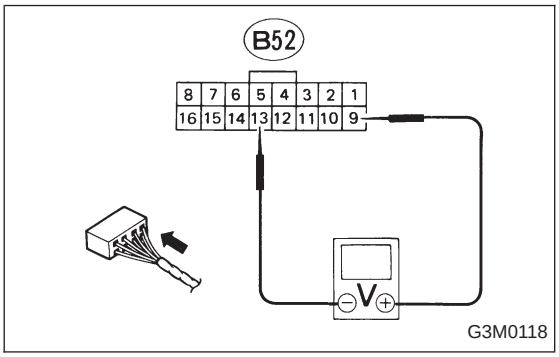
DIAGNOSIS:

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

TROUBLE SYMPTOM:

No shift





1. MEASURE SIGNAL VOLTAGE OUTPUT EMITTED FROM TCM.

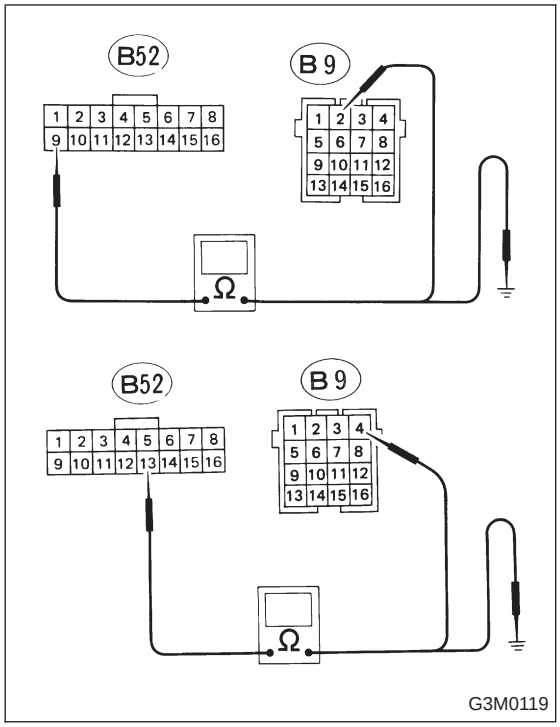
1) Raise vehicle and support with safety stands.

CAUTION:

On AWD models, raise all wheels off ground.

2) Warm-up the engine and transmission.
3) Move shift lever to "D".
4) Measure signal voltage output emitted from TCM while idling the engine.

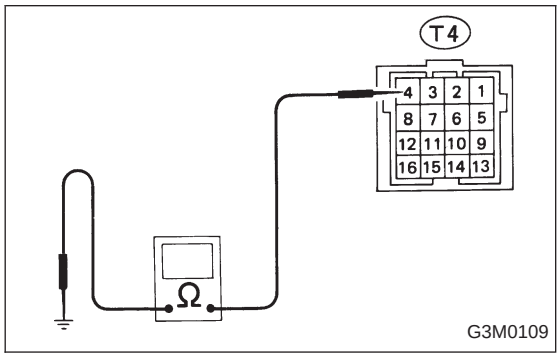
Connector & terminal / Specified voltage:
(B52) No. 9 — No. 13 / 9 V, min.



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

1) Disconnect connector from TCM.
2) Disconnect connector from transmission.
3) Measure resistance between TCM connector and transmission connector, and between TCM connector and body.

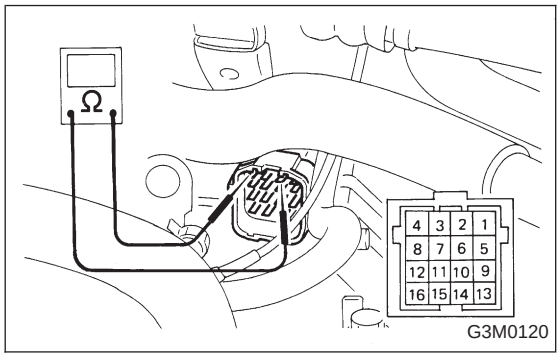
Connector & terminal / Specified resistance:
(B52) No. 9 — (B9) No. 2 / 1 Ω, max.
(B52) No. 9 — Body / 1 MΩ, min.
(B52) No. 13 — (B9) No. 4 / 1 Ω, max.
(B52) No. 13 — Body / 1 MΩ, min.



3. CHECK SHIFT SOLENOID 2'S GROUNDING LINE.

1) Disconnect connector from transmission.
2) Measure resistance between transmission connector receptacle and transmission case.

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



4. CHECK SHIFT SOLENOID 2.

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

Connector & terminal / Specified resistance:
(T4) No. 2 — No. 4 / 20 — 30 Ω

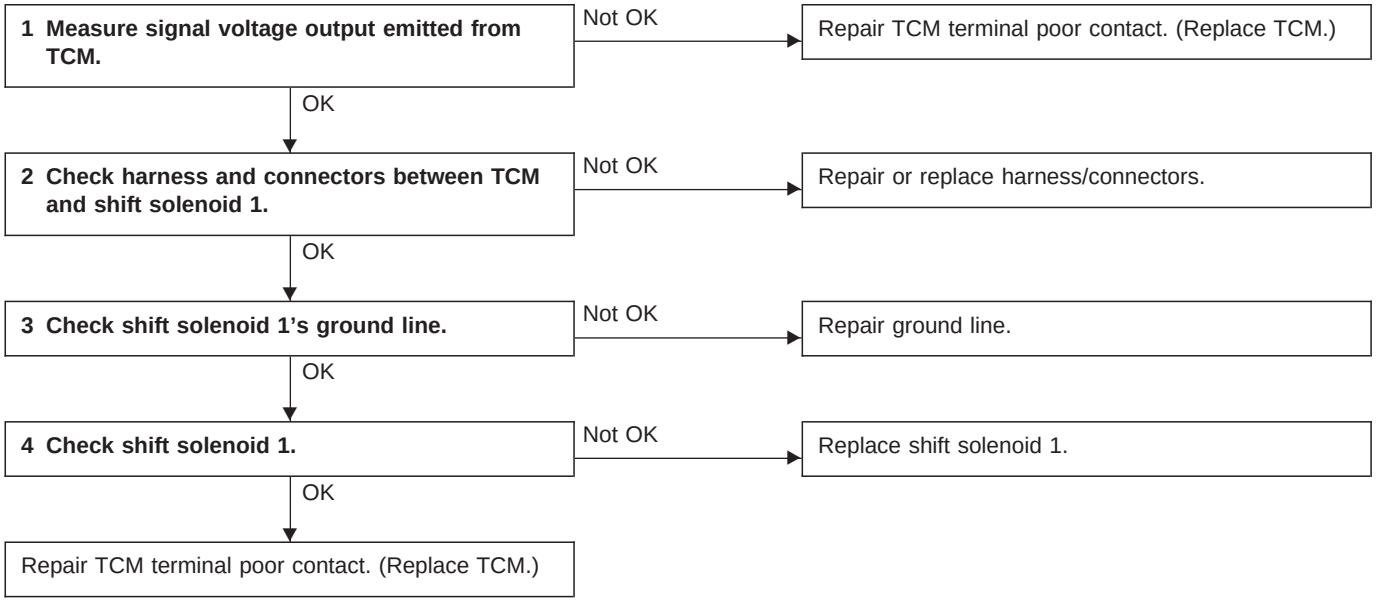
E: TROUBLE CODE 15 — SHIFT SOLENOID 1 —

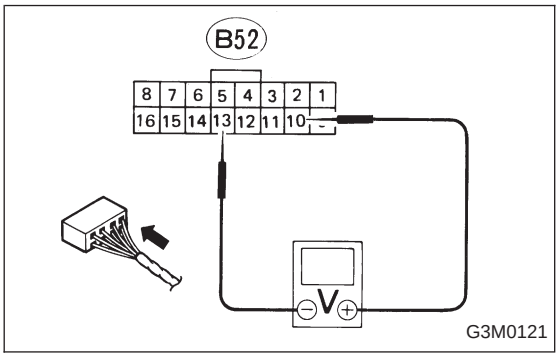
DIAGNOSIS:

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

TROUBLE SYMPTOM:

No shift





1. MEASURE SIGNAL VOLTAGE OUTPUT EMITTED FROM TCM.

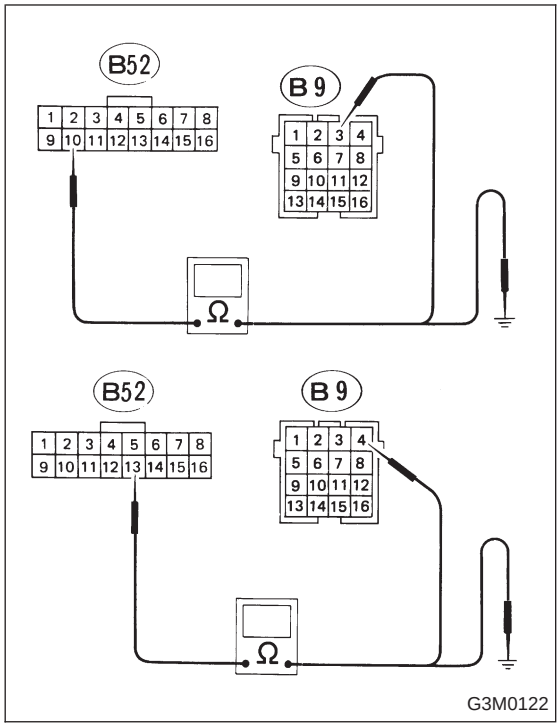
1) Raise vehicle and support with safety stands.

CAUTION:

On AWD models, raise all wheels off ground.

2) Warm-up the engine and transmission.
3) Move shift lever to "D".
4) Measure signal voltage output emitted from TCM while idling the engine.

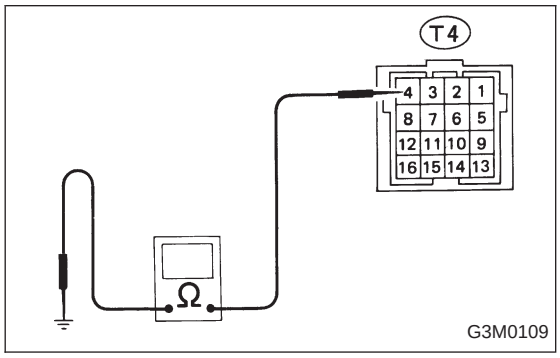
Connector & terminal / Specified voltage:
(B52) No. 10 — No. 13 / 9 V, min.



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

1) Disconnect connector from TCM.
2) Disconnect connector from transmission.
3) Measure resistance between TCM connector and transmission connector, and between TCM connector and body.

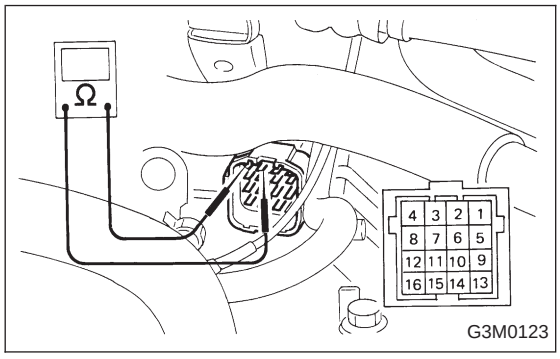
Connector & terminal / Specified resistance:
(B52) No. 10 — (B9) No. 3 / 1 Ω, max.
(B52) No. 10 — Body / 1 MΩ, min.
(B52) No. 13 — (B9) No. 4 / 1 Ω, max.
(B52) No. 13 — Body / 1 MΩ, min.



3. CHECK SHIFT SOLENOID 1'S GROUND LINE.

1) Disconnect connector from transmission.
2) Measure resistance between transmission connector receptacle and transmission case.

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



4. CHECK SHIFT SOLENOID 1.

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

Connector & terminal / Specified resistance:
(T4) No. 3 — No. 4 / 20 — 30 Ω

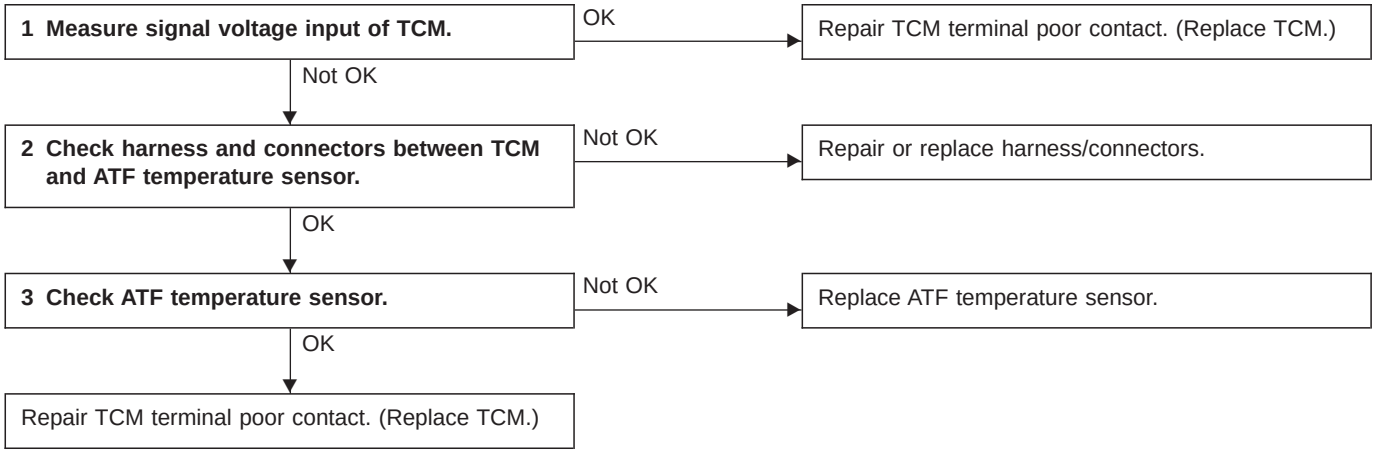
F: TROUBLE CODE 21 — ATF TEMPERATURE SENSOR —

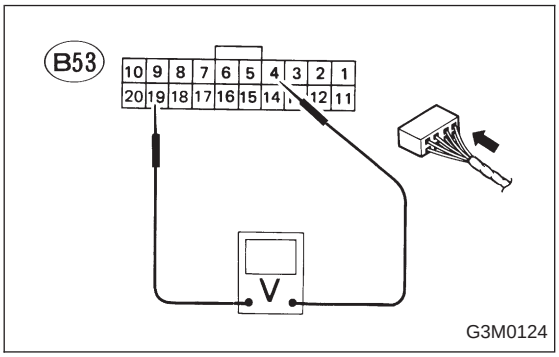
DIAGNOSIS:

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

TROUBLE SYMPTOM:

Excessive shift shock





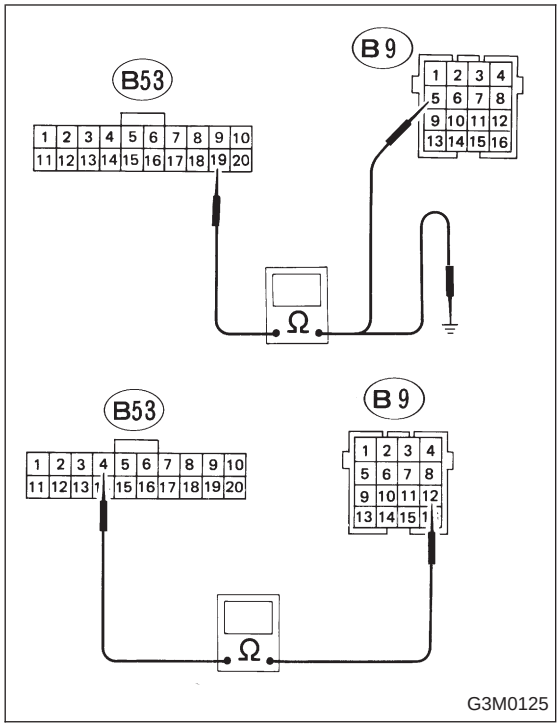
1. MEASURE SIGNAL VOLTAGE INPUT OF TCM.

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:
(B53) No. 19 — No. 4 /
2.9 — 4.0 V [ATF temperature: 20°C (68°F)]
1.0 — 1.4 V [ATF temperature: 80°C (176°F)]

- **SELECT MONITOR FUNCTION MODE**

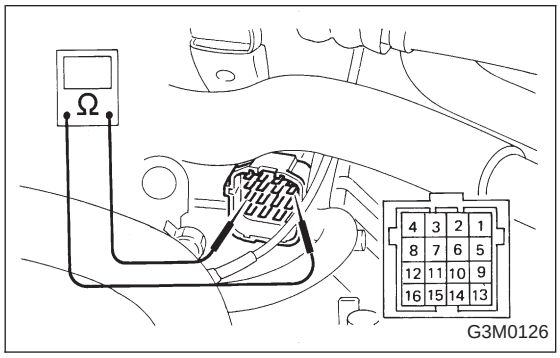
Mode: F08 or F07
Condition:
Warm-up the engine to increase ATF temperature.
Specified data:
ATFT F08 or F07
(Temperature shown on display increases.)



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

1) Disconnect connector from TCM.
2) Disconnect connector from transmission.
3) Measure resistance between TCM connector and transmission connector, and between TCM connector and body.

Connector & terminal / Specified resistance:
(B53) No. 19 — (B9) No. 5 / 1 Ω, max.
(B53) No. 19 — Body / 1 MΩ, min.
(B53) No. 4 — (B9) No. 12 / 1 Ω, max.



3. CHECK ATF TEMPERATURE SENSOR.

1) Disconnect connector from transmission.
2) 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°C (68°F)]

3) Connect connector to transmission, and warm-up the engine to increase ATF temperature.
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°C (176°F)]

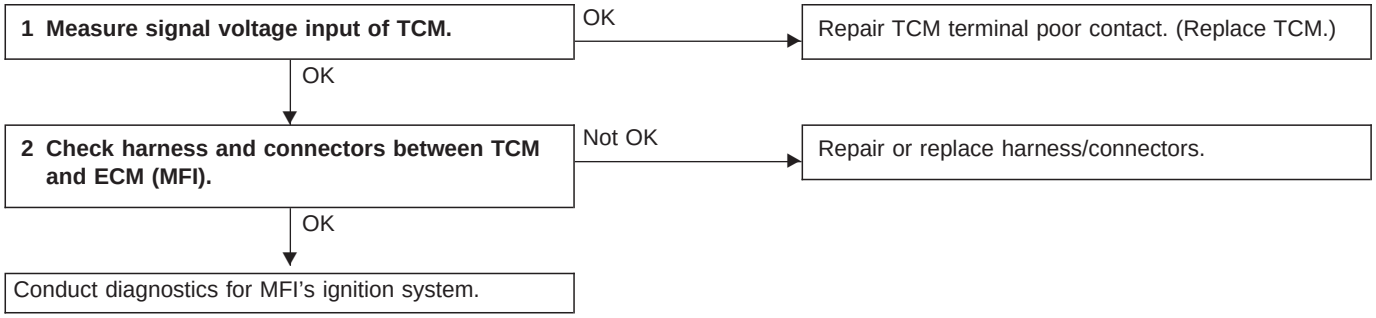
G: TROUBLE CODE 23 — ENGINE SPEED SIGNAL —

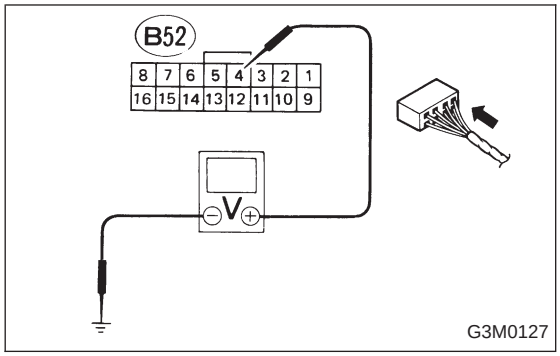
DIAGNOSIS:

Engine speed input signal circuit is open or shorted.

TROUBLE SYMPTOM:

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





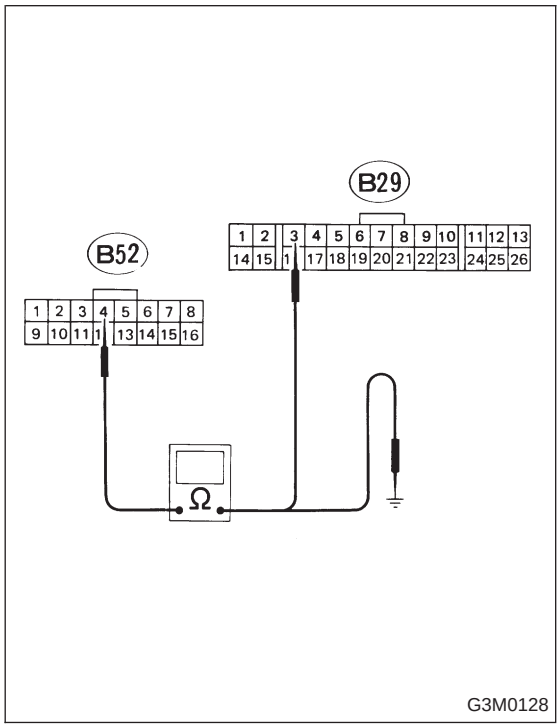
1. MEASURE SIGNAL VOLTAGE INPUT OF TCM.

1) Turn ignition switch ON (with engine OFF).
2) Measure signal voltage input of TCM.

Connector & terminal / Specified voltage:
(B52) No. 4 — Body / 10.5 V, min.

● SELECT MONITOR FUNCTION MODE

Mode: F06
Condition:
After warming-up the engine
Specified data: EREV F06
(Engine speed is shown in rpm.)



2. CHECK HARNESS AND CONNECTORS BETWEEN TCM AND ECM (MFI).

1) Disconnect connector from TCM.
2) Disconnect connector from ECM (MFI).
3) Measure resistance between TCM connector and ECM (MFI) connector.

Connector & terminal / Specified resistance:
(B52) No. 4 — (B29) No. 3 / 1 Ω, max.
(B52) No. 4 — Body / 1 MΩ, min.

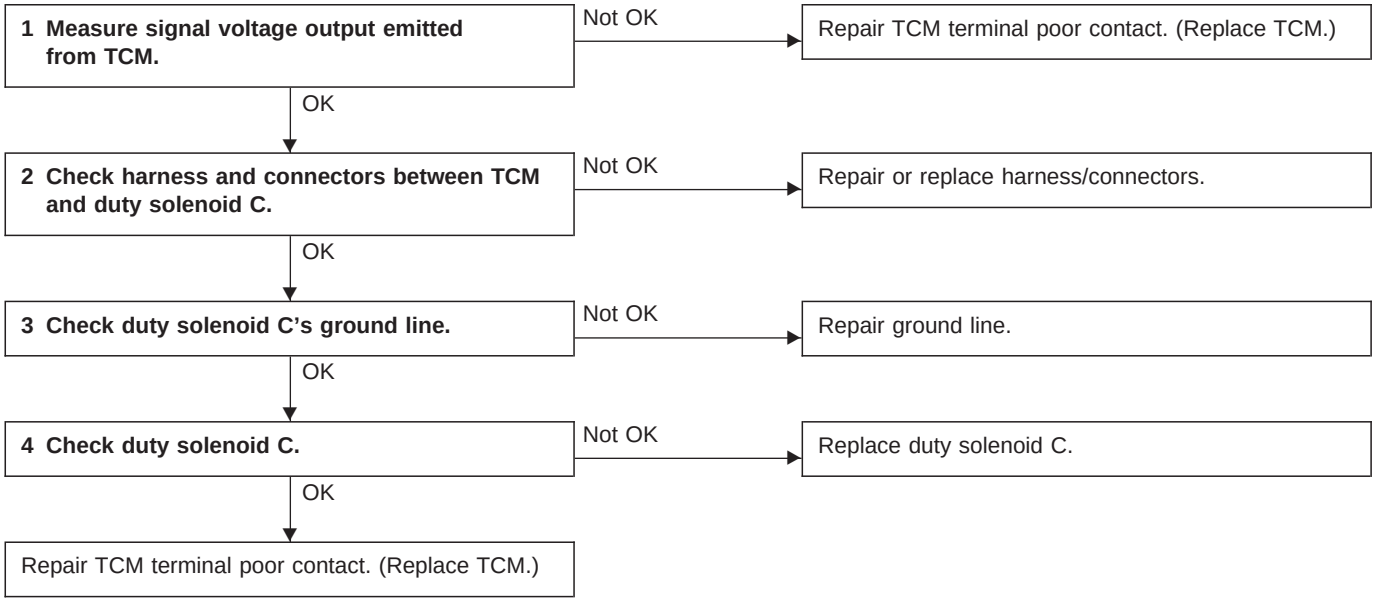
H: TROUBLE CODE 24 — DUTY SOLENOID C —

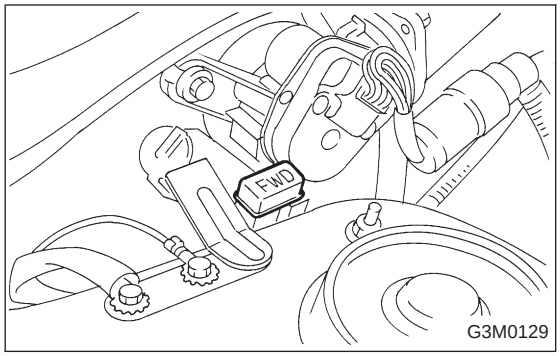
DIAGNOSIS:

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

TROUBLE SYMPTOM:

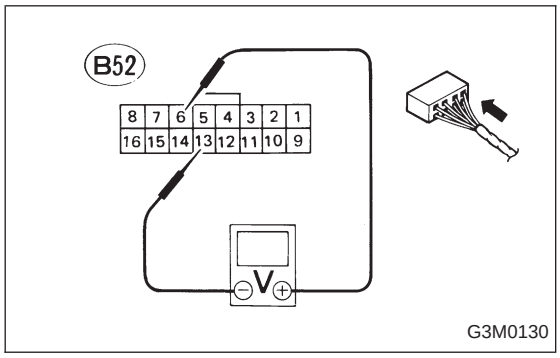
Excessive “braking” in tight corners





1. MEASURE SIGNAL VOLTAGE OUTPUT EMITTED FROM TCM.

1) Install spare fuse on FWD switch and set in FWD mode.



2) Turn ignition switch ON (with engine OFF).
3) Move select lever to “D”.
4) Measure voltage output emitted from TCM (with accelerator pedal released).

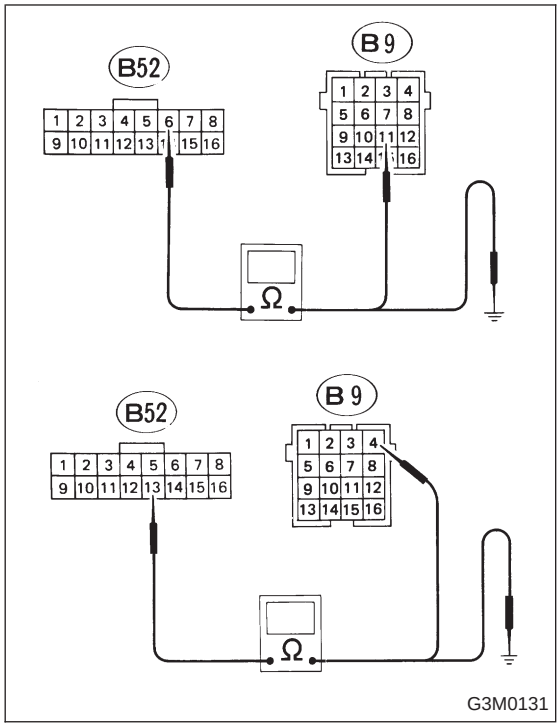
Connector & terminal / Specified voltage:
(B52) No. 6 — No. 13 / 8.5 V, min.

5) Turn ignition switch OFF.
6) Remove spare fuse from FWD switch.
7) Turn ignition switch ON (with engine OFF).
8) Move select lever to “D”.
9) Measure voltage output emitted from TCM (with accelerator pedal fully depressed).

Connector & terminal / Specified voltage:
(B52) No. 6 — No. 13 / 0.5 V, max.

● **SELECT MONITOR FUNCTION MODE**

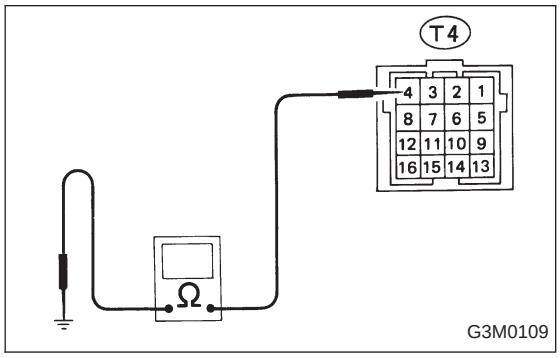
Mode: F13
Condition:
Ignition switch ON (Engine OFF)
Specified data:
4WDTY F13
95% (FWD mode)
25%, max. (AWD mode, D-range, full throttle)



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

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

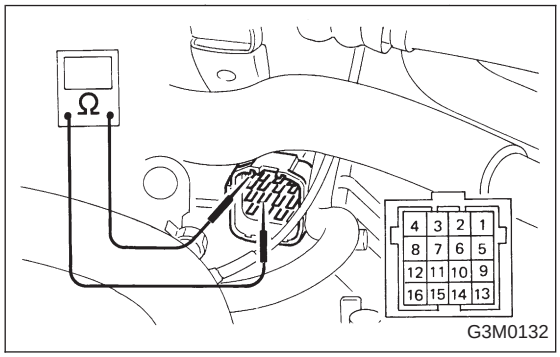
Connector & terminal / Specified resistance:
(B52) No. 6 — (B9) No. 11 / 1 Ω, max.
(B52) No. 6 — Body / 1 MΩ, min.
(B52) No. 13 — (B9) No. 4 / 1 Ω, max
(B52) No. 13 — Body / 1 MΩ, min.



3. CHECK DUTY SOLENOID C'S GROUND LINE.

1) Disconnect connector from transmission.
2) Measure resistance between transmission connector receptacle and transmission case.

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



4. CHECK DUTY SOLENOID C.

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

Connector & terminal / Specified resistance:
(T4) No. 11 — No. 4 / 10 — 17 Ω

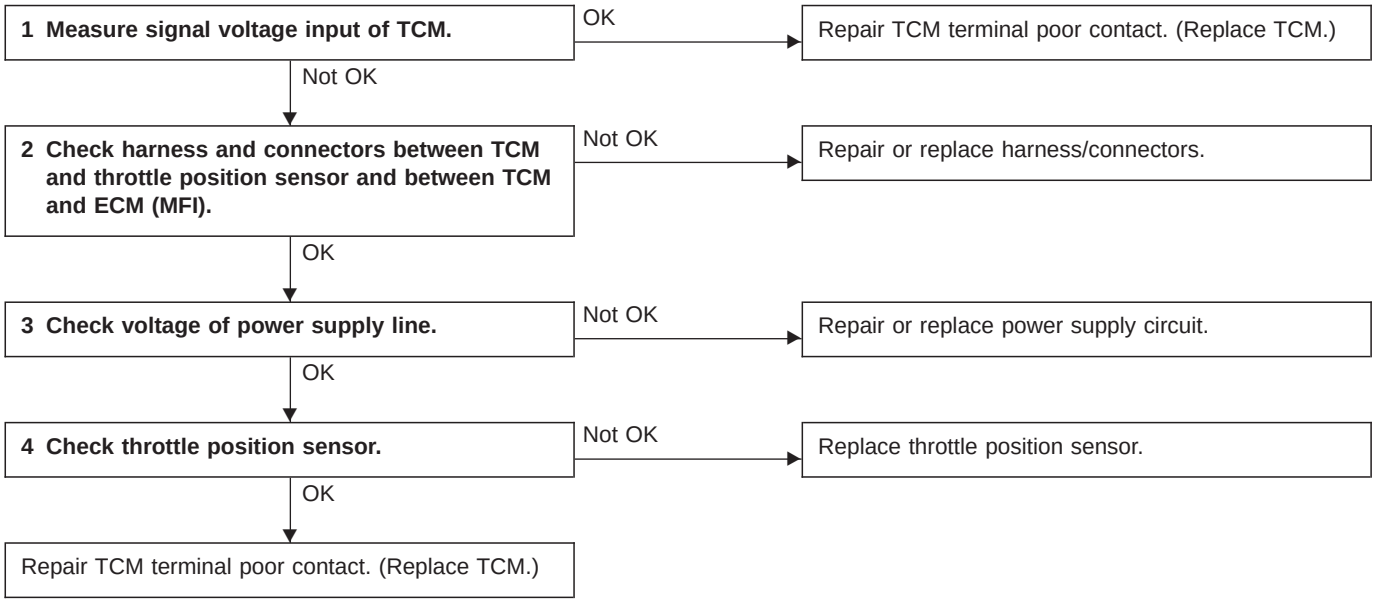
I: TROUBLE CODE 31 — THROTTLE POSITION SENSOR —

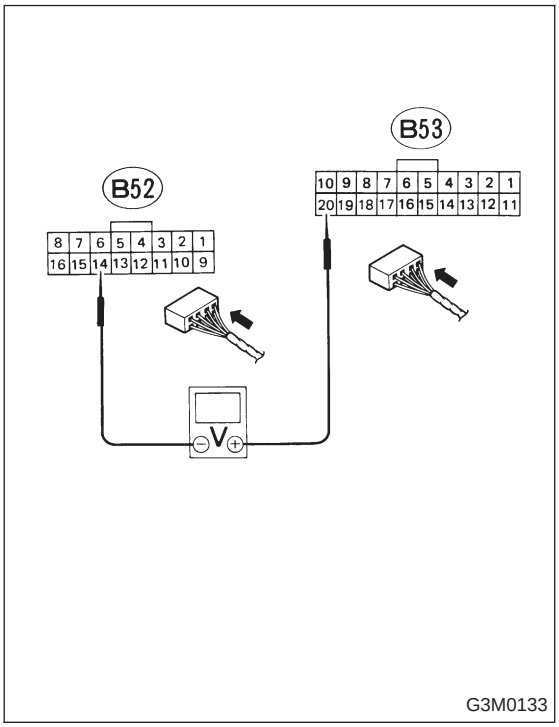
DIAGNOSIS:

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”





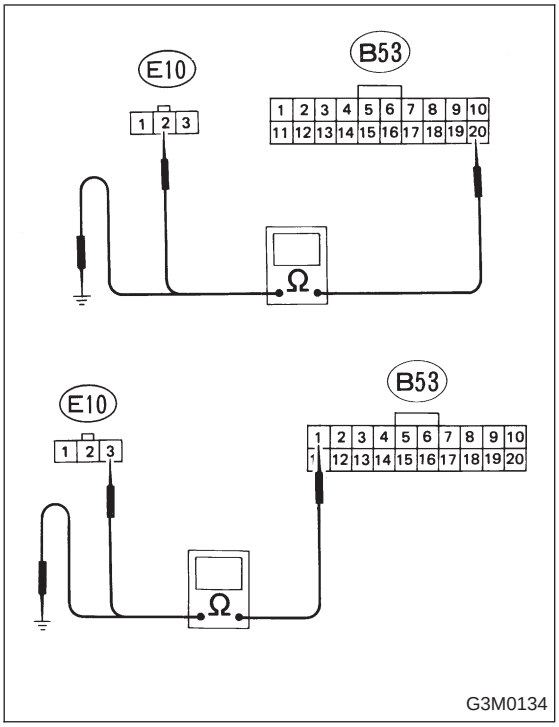
1. MEASURE SIGNAL VOLTAGE INPUT OF TCM.

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

Connector & terminal / Specified voltage:
(B53) No. 20 — (B52) No. 14 /
0.3 — 0.7 V (Throttle fully closed.)
3.9 — 4.3 V (Throttle fully open.)

- **SELECT MONITOR FUNCTION MODE**

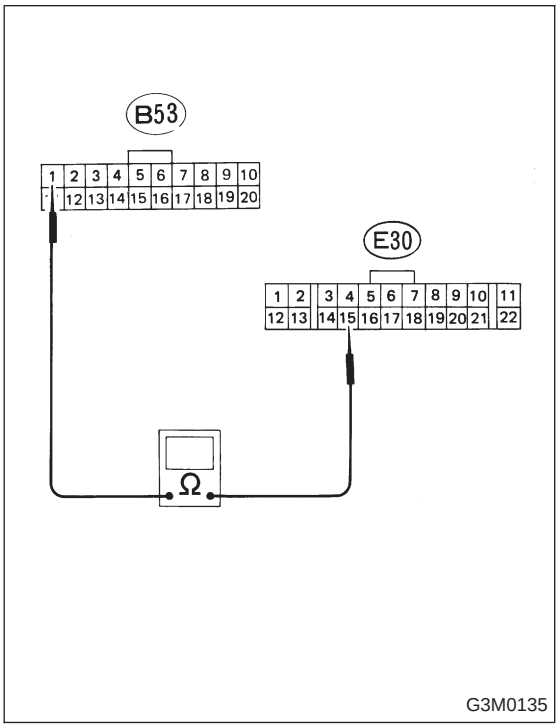
Mode: F09
Condition:
Ignition switch ON (Engine OFF)
Specified data:
THV F09
0.3 — 0.7 V (Throttle fully closed.)
3.9 — 4.3 V (Throttle fully open.)
[Must be changed correspondingly with accelerator pedal operation (from “released” to “depressed” position).]



2. CHECK HARNESS AND CONNECTORS BETWEEN TCM AND THROTTLE POSITION SENSOR AND BETWEEN TCM AND ECM (MFI).

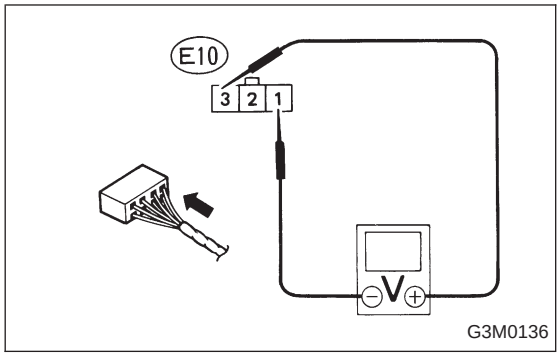
1) Disconnect connector from TCM.
2) Disconnect connector from ECM (MFI).
3) Disconnect connector from throttle position sensor.
4) Measure resistance between TCM and throttle position sensor connectors.

Connector & terminal / Specified resistance:
(B53) No. 20 — (E10) No. 2 / 1 Ω, max.
(B53) No. 20 — Body / 1 MΩ, min.
(B53) No. 1 — (E10) No. 3 / 1 Ω, max.
(B53) No. 1 — Body /1 MΩ, min.



5) Measure resistance between TCM and ECM (MFI) connectors.

Connector & terminal / Specified resistance:
(B53) No. 1 — (E30) No. 15 / 1 Ω, max.



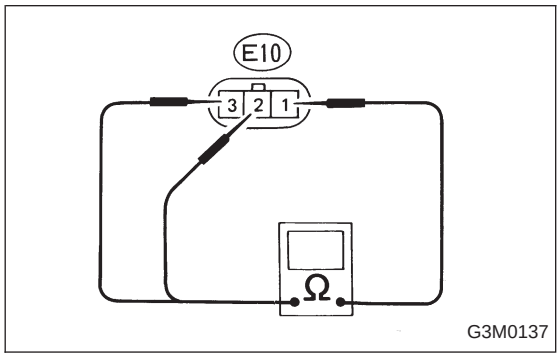
3. CHECK VOLTAGE OF POWER SUPPLY LINE.

1) Turn ignition switch ON (with engine OFF).
2) Measure voltage of throttle position sensor connector.

Connector & terminal / Specified voltage:
(E10) No. 3 — No. 1 / 4.8 — 5.3 V

- **SELECT MONITOR FUNCTION MODE**

Mode: F14
Condition:
Ignition switch ON (Engine OFF)
Specified data:
THVCC F14
4.8 — 5.3 V
(Throttle position sensor power supply voltage is indicated.)



4. CHECK THROTTLE POSITION SENSOR.

1) Disconnect connector from throttle position sensor.
2) Measure resistance between throttle position sensor terminals.

Terminal / Specified resistance:
(E10) No. 1 — No. 2 /
500 Ω (Throttle fully closed.)
4 — 4.5 kΩ (Throttle fully open.)
(E10) No. 1 — No. 3 / 5 kΩ

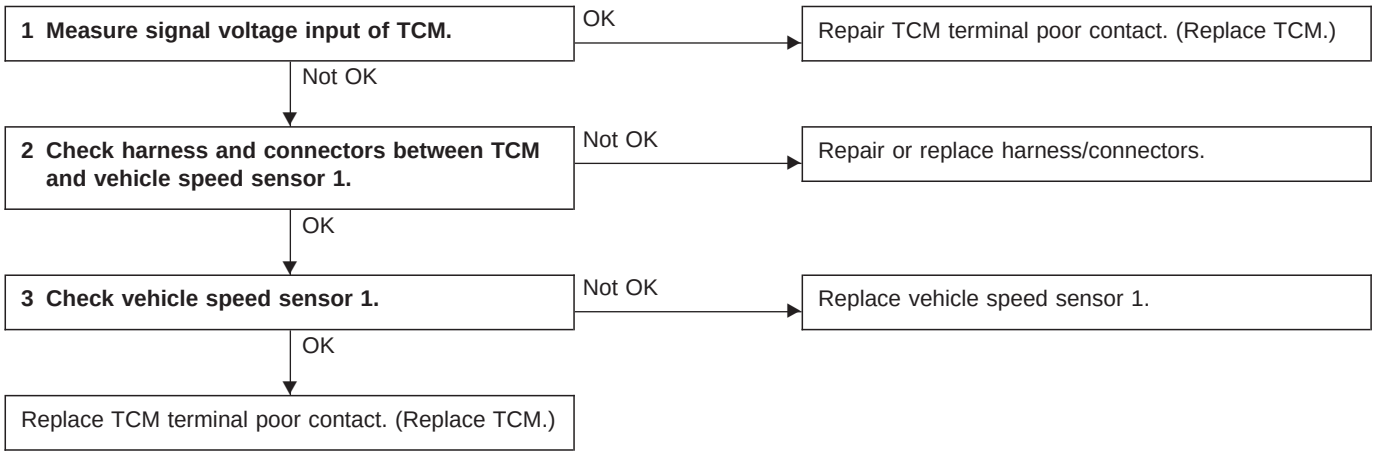
J: TROUBLE CODE 32 — VEHICLE SPEED SENSOR 1 —

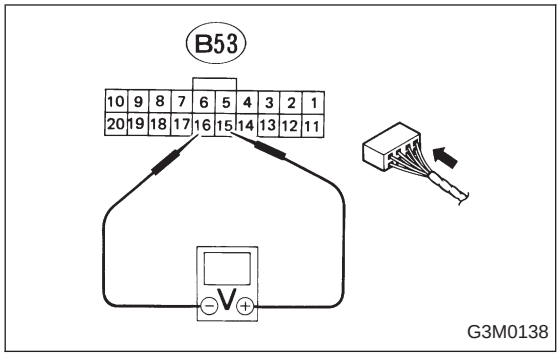
DIAGNOSIS:

Input signal circuit of TCM is open or shorted.

TROUBLE SYMPTOM:

No shift or excessive tight corner “braking”





1. MEASURE SIGNAL VOLTAGE INPUT OF TCM.

1) Raise vehicle and place safety stands.

CAUTION:

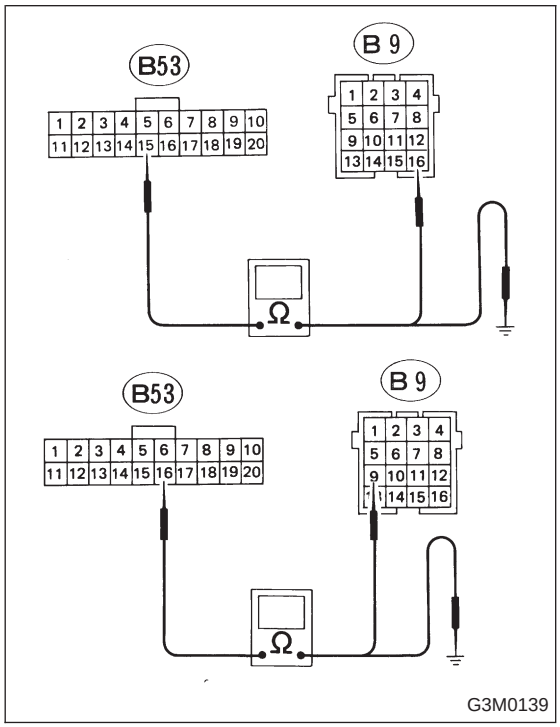
On AWD models, raise all wheels off floor.

2) Start the engine. Set vehicle in 12 miles/h condition.
3) Measure signal voltage input of TCM.

Connector & terminal / Specified voltage:
(B53) No. 15 — No. 16 / AC 1 V, min.

- **SELECT MONITOR FUNCTION MODE**

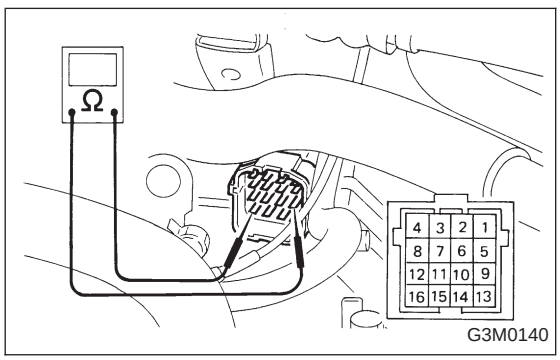
Mode: F02
Condition:
Simulated driving
Specified data:
VSP1 F02
(Vehicle speed) miles/h
Mode F03: "km/h" indication



2. CHECK HARNESS AND CONNECTORS BETWEEN TCM AND VEHICLE SPEED SENSOR 1.

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

Connector & terminal / Specified resistance:
(B53) No. 15 — (B9) No. 16 / 1 Ω, max.
(B53) No. 15 — Body / 1 MΩ, min.
(B53) No. 16 — (B9) No. 9 / 1 Ω, max.
(B53) No. 16 — Body / 1 MΩ, min.



3. CHECK VEHICLE SPEED SENSOR 1.

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

Connector & terminal / Specified resistance:
(T4) No. 16 — No. 9 / 450 — 650 Ω

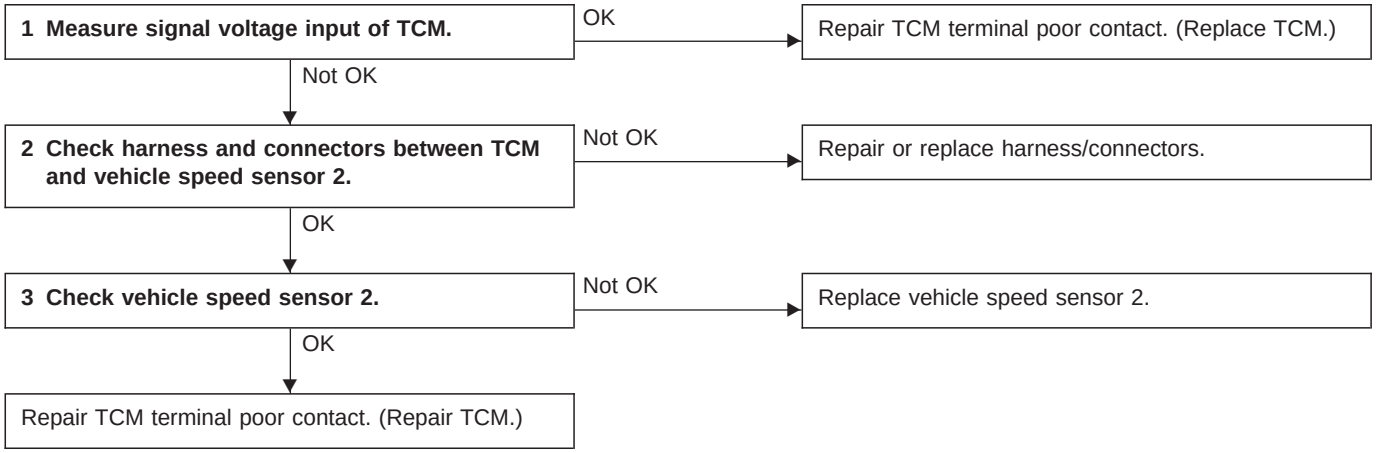
K: TROUBLE CODE 33 — VEHICLE SPEED SENSOR 2 —

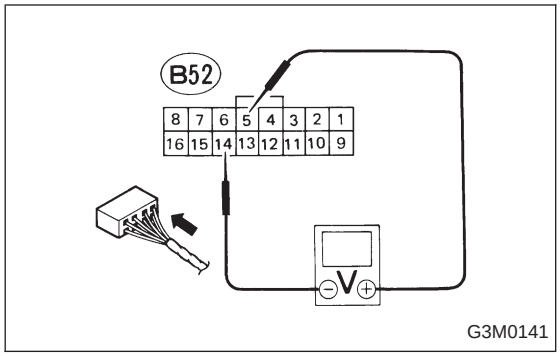
DIAGNOSIS:

Input signal circuit of vehicle speed sensor 2 is open or shorted.

TROUBLE SYMPTOM:

Improper shift points





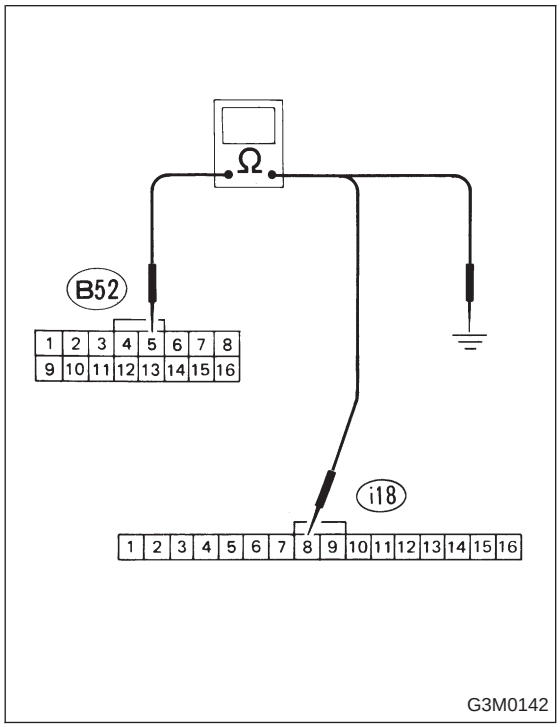
1. MEASURE SIGNAL VOLTAGE INPUT OF TCM.

1) Turn ignition switch ON (with engine OFF).
2) Move select lever to “N” and slowly move vehicle by pushing it.
3) While vehicle is slowly moving, measure signal voltage input of TCM.

Connector & terminal / Specified voltage:
(B52) No. 5 — No. 14 / repetition of 1 volt (max.) — 4 volts (min.)

- **SELECT MONITOR FUNCTION MODE**

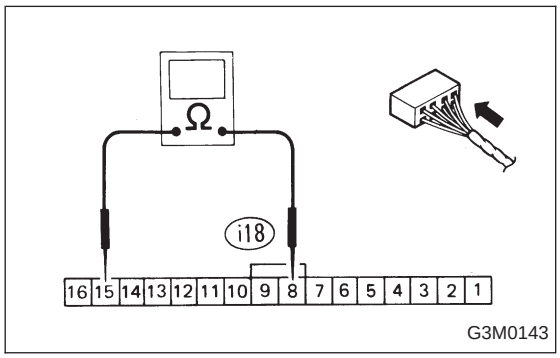
Mode: F04
Condition:
Simulated driving
Specified data:
VSP2 04
(vehicle speed) miles/h
Mode F05: “km/h” indication



2. CHECK HARNESS AND CONNECTORS BETWEEN TCM AND VEHICLE SPEED SENSOR 2.

1) Disconnect connector from TCM.
2) Disconnect connector from rear of combination meter.
3) Measure resistance between TCM connector and combination meter cable connector.

Connector & terminal / Specified resistance:
(B52) No. 5 — (i18) No. 8 / 1 Ω, max.
(B52) No. 5 — Body / 1 MΩ, min.



3. CHECK VEHICLE SPEED SENSOR 2.

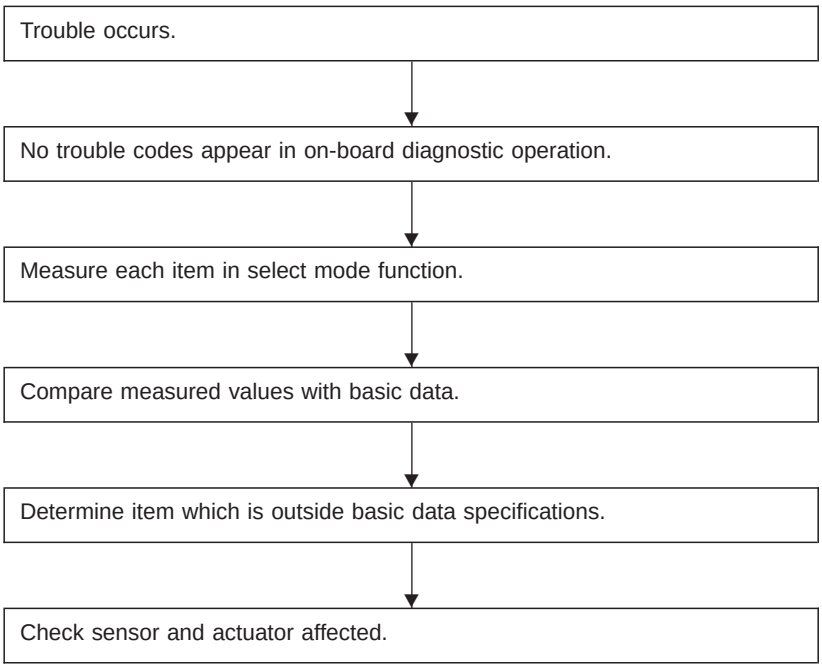
1) Remove combination meter from instrument panel.
2) Rotate combination meter with a screwdriver inserted into rear of combination meter at cable location.
3) Check that resistance across combination meter cable connector terminals changes (from 0 to more than 1 MΩ) four times per rotation.

Connector & terminal / Specified resistance:
(i18) No. 8 — (i18) No. 15 / 0 ↔ More than 1 MΩ

6. 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)	39
F01	Battery voltage	VB	V	Battery voltage applied to control unit.	39
F02	Vehicle speed sensor 1	VSP1	m/h	Vehicle speed (miles/h) sent from vehicle speed sensor 1.	40
F03	Vehicle speed sensor 1	VSP1	km/h	Vehicle speed (km/h) sent from vehicle speed sensor 1.	—
F04	Vehicle speed sensor 2	VSP2	m/h	Vehicle speed (miles/h) sent from vehicle speed sensor 2.	40
F05	Vehicle speed sensor 2	VSP2	km/h	Vehicle speed (km/h) sent from vehicle speed sensor 2.	—
F06	Engine speed	EREV	rpm	Engine speed sent from EGI unit.	41
F07	ATF temperature sensor	ATFT	°F	ATF temperature (°F) sent from ATF temperature sensor.	41
F08	ATF temperature sensor	ATFT	°C	ATF temperature (°C) sent from ATF temperature sensor.	—
F09	Throttle position sensor	THV	V	Voltage sent from throttle position sensor.	42
F10	Gear position	GEAR	—	Transmission gear position.	43
F11	Line pressure duty	PLDTY	%	Duty ratio flowing through duty solenoid A.	44
F12	Lock-up duty	LUDTY	%	Duty ratio flowing through duty solenoid B.	45
F13	AWD duty	4WDTY	%	Duty ratio flowing through duty solenoid C.	46
F14	Throttle position sensor power supply voltage	THVCC	V	Battery voltage applied to throttle position sensor.	47

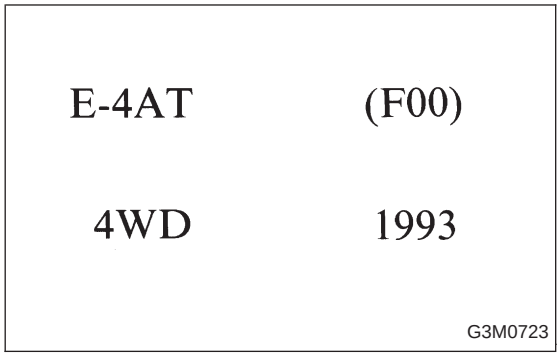
2. ON ←→ OFF SIGNAL LIST

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.	50
	8	—	—		—
	9	—	—		—
	10	—	—		—

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

3. DIAGNOSIS MODE

Mode	Contents	Abbr.	Contents of display	Page
FB0	On-board diagnostics	DIAG.U	Current trouble code determined by on-board diagnostics.	52
FB1	On-board diagnostics	DIAG.M	Previous trouble code stored in memory by on-board diagnostics.	53
FC0	Back-up clear	—	Function of clearing trouble code stored in memory.	54



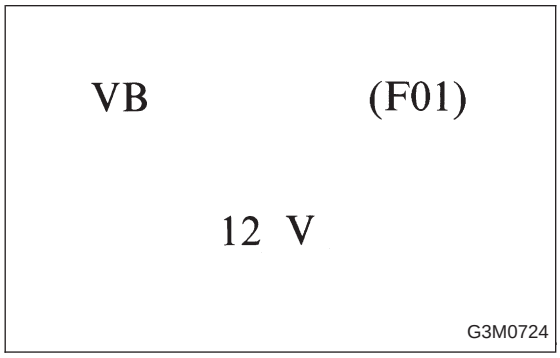
C: MODE F00 — MODE DISPLAY —

SPECIFIED DATA:

Following data should be indicated.

Probable cause (if outside “specified data”)

1	Communication failure (No communication method can be confirmed with power ON.)	→	(1) (2)	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) —

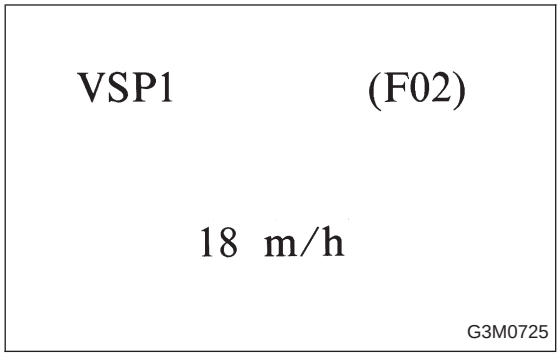
CONDITION:

- Ignition switch ON
- Engine idling after warm-up

SPECIFIED DATA:

VB: 10 — 15 V

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



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

CONDITION:

Raise vehicle off ground and operate at constant speed.

SPECIFIED DATA:

- Compare speedometer with monitor indications.
- Probable cause (if indications are different)

Probable cause (if outside “specified data”)

1	Vehicle speed sensor 1	→ Check performance characteristics of vehicle speed sensor 1. <Ref. to 3-2 [T5J0].> → OK → Check TCM and replace if necessary.

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

CONDITION:

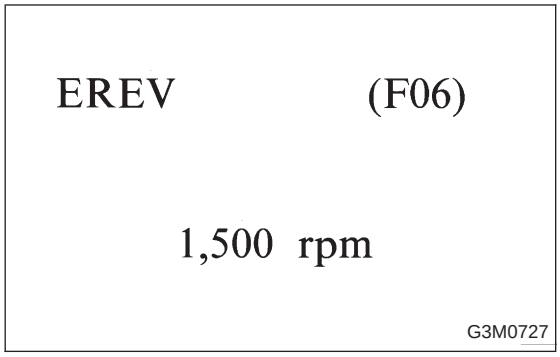
Raise vehicle off ground and operate at constant speed.

SPECIFIED DATA:

- Compare speedometer with monitor indications.
- Probable cause (if indications are different)

Probable cause (if outside “specified data”)

1	Vehicle speed sensor 2	→ Check performance characteristics of vehicle speed sensor 2. <Ref. to 3-2 [T5K0].> → 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) —

CONDITION:

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

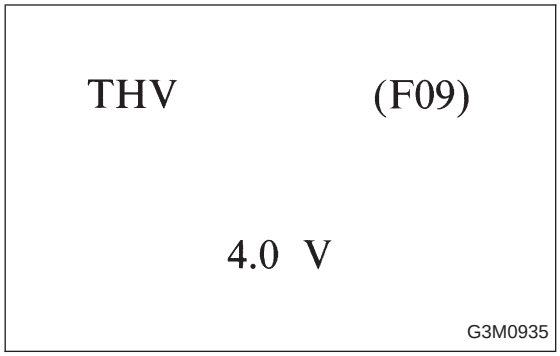
SPECIFIED DATA:

- Ambient temperature: ±50°F (±10°C)
- ATF temperature: 158 — 230°F (70 — 110°C)
- 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.
		OK ↓	
			Check TCM and replace if necessary.

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



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

CONDITION:

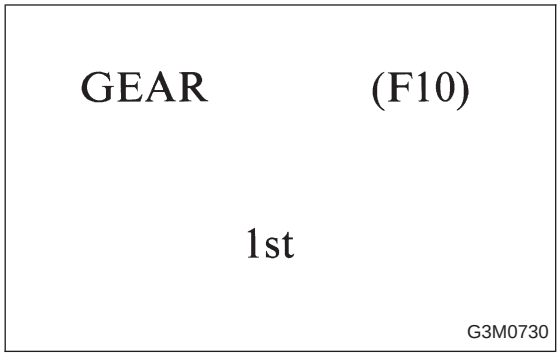
- Ignition switch ON (with engine OFF)
- Measure voltage while operating throttle valve from a fully closed position to a fully open position.

SPECIFIED DATA:

- Fully closed position: 0.3 — 0.7 V
- Fully open position: 3.9 — 4.3 V
- From fully closed to fully open position: Voltage must smoothly decrease.
- Open harness: 4.7 — 5.3 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 3-2 [T5I0].> → 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 (Ref. to shift performance characteristics chart <Ref. to 3-2 [W200], [W300].>.)

Probable cause (item outside “specified data”)

1	Shift solenoid 1	Check performance characteristics of shift solenoid 1. <Ref. to 3-2 [T5E0].>
2	Shift solenoid 2	Check performance characteristics of shift solenoid 2. <Ref. to 3-2 [T5D0].>
3	Shift solenoid 3	Check performance characteristics of shift solenoid 3. <Ref. to 3-2 [T5C0].>

OK

OK

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:

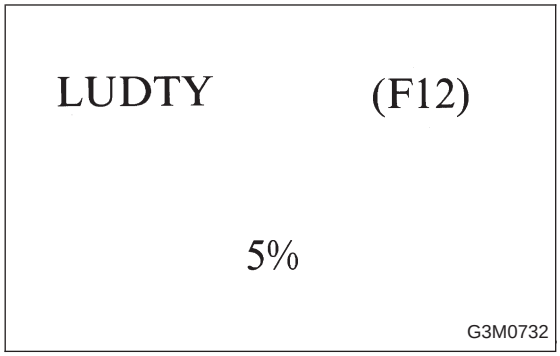
- Throttle fully closed: 100%
- Throttle fully open: Less than 25%

Probable cause (if outside “specified data”)

1	Throttle position sensor	Check in F09 mode. <Ref. to 3-2 [T6I0].>
2	Vehicle speed sensor 1	Check in F02 mode. <Ref. to 3-2 [T6E0].>
3	Vehicle speed sensor 2	Check in F04 mode. <Ref. to 3-2 [T6F0].>
4	Engine speed	Check in F06 mode. <Ref. to 3-2 [T6G0].>
5	ATF temperature sensor	Check in F07 mode. <Ref. to 3-2 [T6H0].>
6	Inhibitor switch	Check for operation.
7	Manual 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 75 km/h (47 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 3-2 [T6I0].>
2	Vehicle speed sensor 1	Check in F02 mode. <Ref. to 3-2 [T6E0].>
3	Vehicle speed sensor 2	Check in F04 mode. <Ref. to 3-2 [T6F0].>
4	Engine speed	Check in F06 mode. <Ref. to 3-2 [T6G0].>
5	Inhibitor switch	Check for operation.

OK

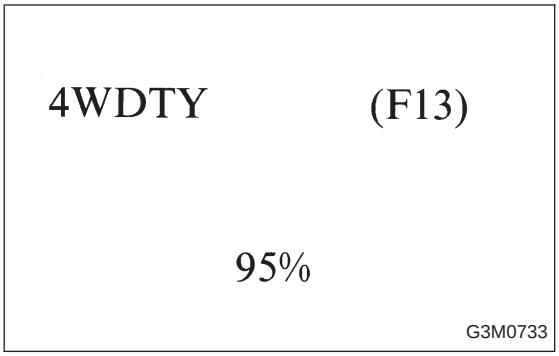
OK

OK

OK

OK

Check TCM and replace if necessary.



M: MODE F13 — AWD DUTY (4WDTY) —

CONDITION:

- After sufficient warm-up
- Ignition switch ON (engine OFF)
- FWD mode
- AWD mode, D range, full throttle

SPECIFIED DATA:

- 95% (FWD model)
- 25%, max. (vehicle speed 0 m/h)

Probable cause (if outside “specified data”)

1	Throttle position sensor	Check in F09 mode. <Ref. to 3-2 [T6I0].>
2	Vehicle speed sensor 1	Check in F02 mode. <Ref. to 3-2 [T6E0].>
3	Vehicle speed sensor 2	Check in F04 mode. <Ref. to 3-2 [T6F0].>
4	ATF temperature sensor	Check in F07 mode. <Ref. to 3-2 [T6H0].>
5	Inhibitor switch	Check for operation. <Ref. to 3-2 [W2B2].>
6	A.B.S. signal	Check A.B.S. system for operation.

OK

OK

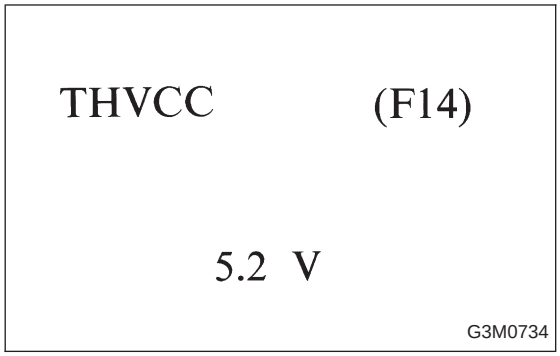
OK

OK

OK

OK

Check TCM and replace if necessary.



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

CONDITION:

Ignition switch ON (engine OFF)

SPECIFIED DATA:

4.8 — 5.3 V

Probable cause (if outside “specified data”)

1	Throttle position sensor

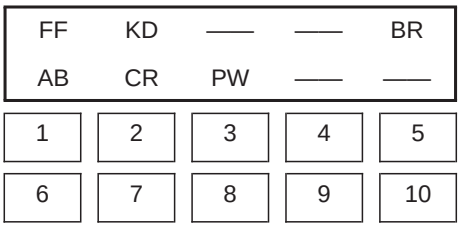
→ Check performance characteristics of throttle position sensor. <Ref. to 3-2 [T5I0].>

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 switch	BR
6	ABS switch	AB
7	Cruise control set	CR
8	Power switch	PW
9	—	—
10	—	—



O: MODE FA0 — SWITCH 1 (SW1) —

Reference values

- Lights up when the fuse is installed in FWD switch (No. 1).
- Lights up when the brake switch is turned ON (No. 5).
- Lights up when the A.B.S. signal is entered (No. 6).
- Lights up when the cruise control is set (No. 7).

P: MODE FA1 — SWITCH 2 (SW2) —

DISPLAY

LED No.	Signal name	Symbol
1	P/N 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	—	—

NP	RR	RD	R3	R2
R1	SS	——	——	——

1	2	3	4	5
6	7	8	9	10

Reference values

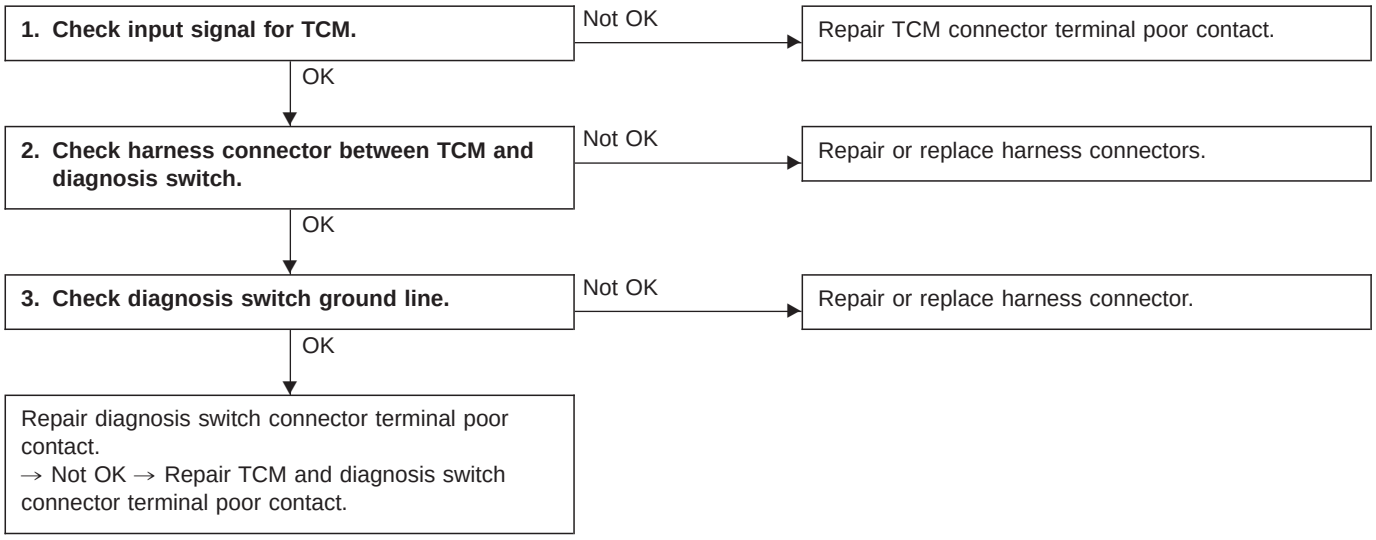
- Lights up when the N or P range is selected (No. 1).
- Lights up when the R range is selected (No. 2).
- Lights up when the D range is selected (No. 3).
- Lights up when the 3 range is selected (No. 4).
- Lights up when the 2 range is selected (No. 5).
- Lights up when the 1 range is selected (No.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

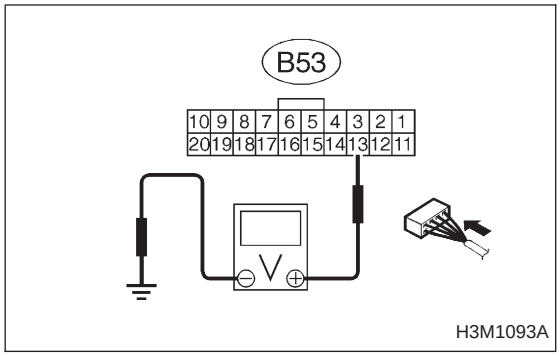
Q: MODE FA1
— LED No. 7, DIAGNOSIS SWITCH —

DIAGNOSIS:

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

Probable cause (if outside “specified data”)

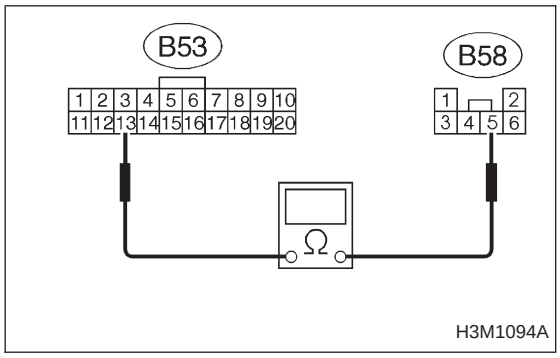




1. CHECK INPUT SIGNAL FOR TCM.

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

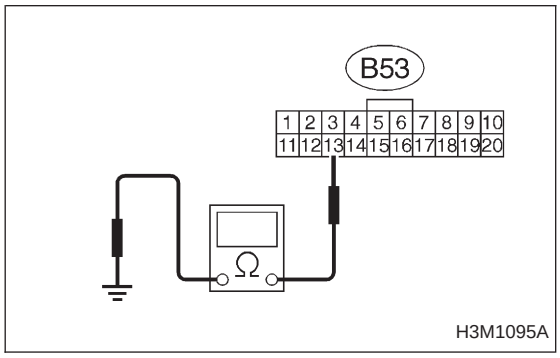
Connector & terminal / Specified voltage:
(B53) No. 13 — Body / Less than 1 V (Connected)
More than 6 V (Disconnected)



2. CHECK HARNESS CONNECTOR BETWEEN TCM AND DIAGNOSIS SWITCH.

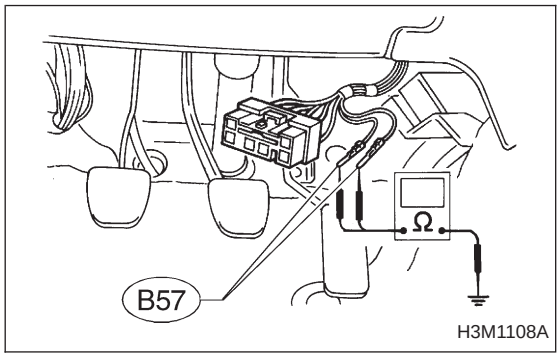
1) Turn ignition switch OFF.
2) Disconnect connector from TCM.
3) Measure resistance of harness connector between TCM and diagnosis switch.

Connector & terminal / Specified resistance:
(B53) No. 13 — (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.

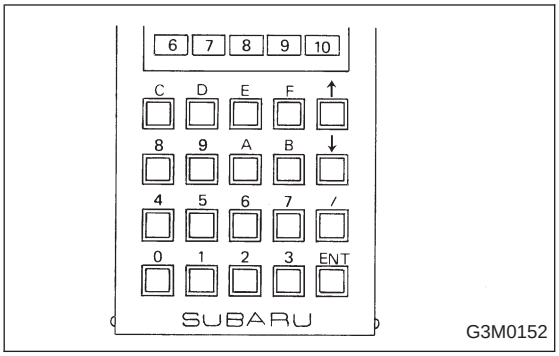
Connector & terminal / Specified resistance:
(B53) No. 13 — Body / 1 M Ω, or more



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



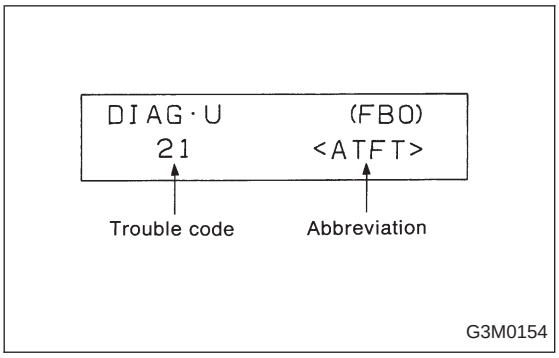
G3M0152

R: MODE FB0
— ON-BOARD DIAGNOSTICS (DIAG. U) —

DISPLAY:

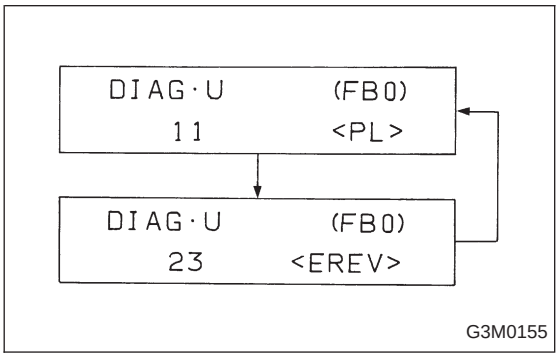
Current trouble code determined by on-board diagnostics.

1) Connect select monitor.
2) Designate mode using function key.
Press [F] [B] [0] [ENT] in that order.



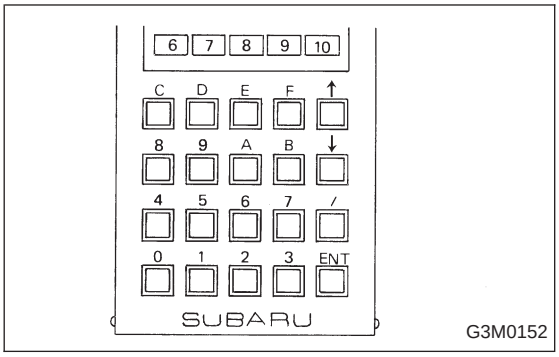
G3M0154

3) Ensure displayed trouble code(s).
- When there is only one trouble code



G3M0155

- When there are multiple trouble codes



G3M0152

S: MODE FB1
— ON-BOARD DIAGNOSTICS (DIAG. M) —

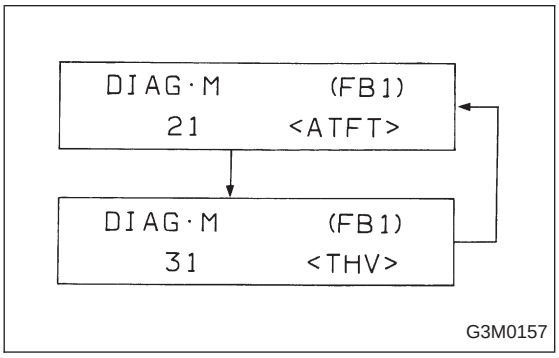
DISPLAY:

Previous trouble code stored in by on-board diagnostics.

1) Connect select monitor.
2) Designate mode using function key.
Press [F] [B] [1] [ENT] in that order.

G3M0156

3) Ensure displayed trouble code(s).
- When there is only one trouble code



G3M0157

- When there are multiple trouble codes

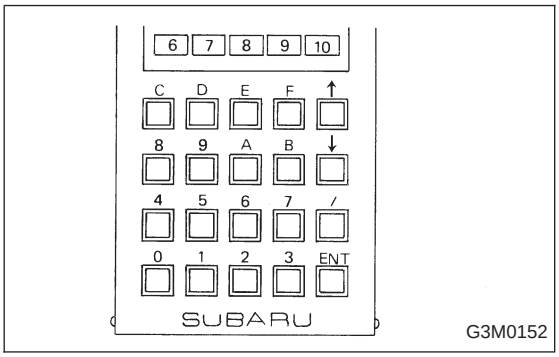
T: MODE FC0 — BACK-UP CLEAR —

DISPLAY:

Function of clearing trouble code stored in memory.

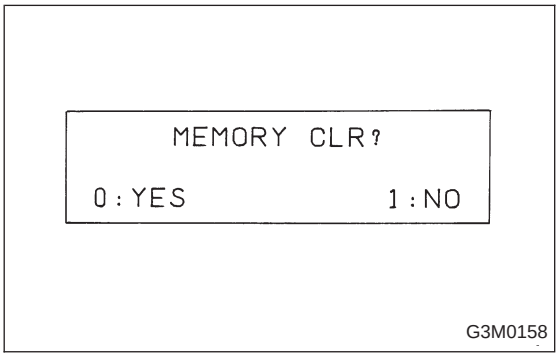
The current trouble history code is deleted from the monitor when the ignition switch is turned OFF after performing on-board diagnostics. However, past trouble history code are stored in TCM. They remain in memory even when the ignition switch is turned OFF, because there is a memory back-up battery. The current trouble history code can be displayed again when on-board diagnostics is performed after driving, provided that no inspection or repair has been made.
To delete past trouble history codes, first perform on-board diagnostics after inspection and repair using the current trouble history code, then confirm that no trouble code is displayed. Next, select and execute a particular mode on the select monitor.

NOTE:
● Since the past trouble history is deleted, it is necessary when erasing the trouble code to inspect and make repairs according to the trouble code, and ensure that no trouble code is indicated in on-board diagnostics.
● The past trouble history will not be not lost, provided inspection and repairs are performed according to the current trouble history code, and that no trouble remains.



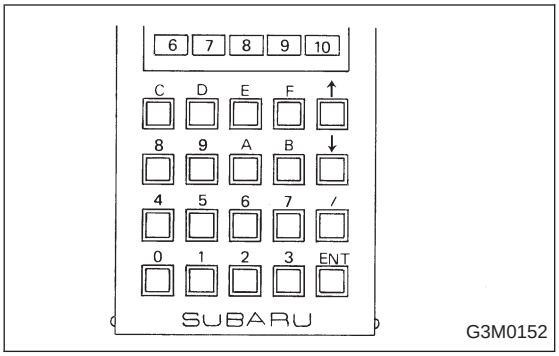
G3M0152

1) Connect select monitor.
2) Designate mode using function key.
Press [F] [C] [0] [ENT] in that order.



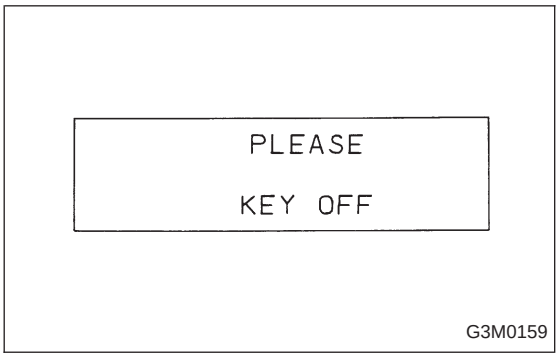
G3M0158

3) Ensure displayed message.



G3M0152

4) Press [ENT] key.
● When executing, (YES)
Press [0] [ENT] in that order.
● When not executing, (NO)
Press [1] [ENT] in that order.



G3M0159

5) When executed, the indication as shown here appears for approximately four seconds, and the past trouble history is deleted.

6) After the display is gone, turn ignition switch to OFF.

7. 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	

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

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 / Problem parts
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	
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	