1. Supplemental Restraint System “Airbag”

Airbag system wiring harness is routed near the engine control module (ECM), main relay and fuel pump relay.

CAUTION:

- **All Airbag system wiring harness and connectors are colored yellow. Do not use electrical test equipment on these circuit.**
- **Be careful not to damage Airbag system wiring harness when servicing the engine control module (ECM), main relay and fuel pump relay.**

2. Precautions

1) Never connect the battery in reverse polarity.

- The ECM will be destroyed instantly.
- The fuel injector and other part will be damaged in just a few minutes more.

2) Do not disconnect the battery terminals while the engine is running.

- A large counter electromotive force will be generated in the alternator, and this voltage may damage electronic parts such as ECM, etc.

3) Before disconnecting the connectors of each sensor and the ECM, be sure to turn OFF the ignition switch.

4) Before removing ECM from the located position, disconnect two cables on battery.
● Otherwise, the ECM may be damaged.
5) The connectors to each sensor in the engine compartment and the harness connectors on the engine side and body side are all designed to be waterproof. However, it is still necessary to take care not to allow water to get into the connectors when washing the vehicle, or when servicing the vehicle on a rainy day.
6) Every MFI-related part is a precision part. Do not drop them.
7) Observe the following cautions when installing a radio in MFI equipped models.

CAUTION:

● The antenna must be kept as far apart as possible from the control unit.
(The ECM is located under the steering column, inside of the instrument panel lower trim panel.)
● The antenna feeder must be placed as far apart as possible from the ECM and MFI harness.
● Carefully adjust the antenna for correct matching.
● When mounting a large power type radio, pay special attention to items a. thru c. above.
● Incorrect installation of the radio may affect the operation of the ECM.

8) Before disconnecting the fuel hose, disconnect the fuel pump connector and crank the engine for more than five seconds to release pressure in the fuel system. If engine starts during this operation, run it until it stops.

3. Pre-inspection

Before performing diagnostics, check the following items which might affect engine problems:

1. POWER SUPPLY

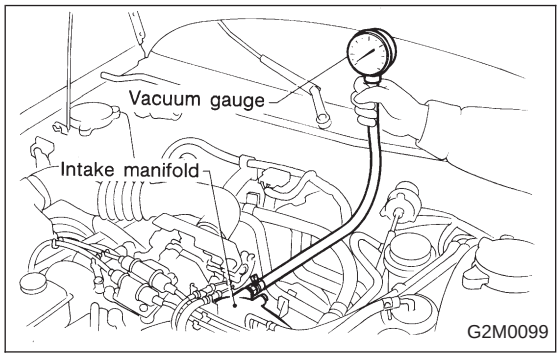
1) Measure battery voltage and specific gravity of electrolyte.

Standard voltage: 12 V
Specific gravity: Above 1.260

2) Check the condition of the main and other fuses, and harnesses and connectors. Also check for proper grounding.

2. CAPS AND PLUGS

1) Check that the fuel cap is properly closed.
2) Check that the oil filler cap is properly closed.
3) Check that the oil level gauge is properly inserted.



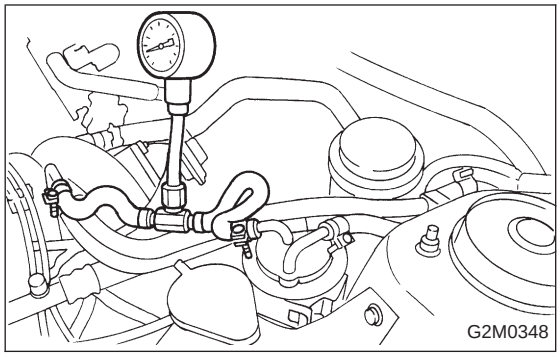
3. INTAKE MANIFOLD VACUUM PRESSURE

1) After warming-up the engine, measure intake manifold vacuum pressure while at idle.

Standard vacuum pressure:
More than −66.7 kPa (−500 mmHg, −19.69 inHg)

<Ref. to 2-2 [05A0].>

2) Unusual vacuum pressure occurs because of air leaks, fuel or engine problems. In such a case, engine idles roughly.



4. FUEL PRESSURE

1) Release fuel pressure

<Ref. to 2-8 [W1A0].>

2) Connect fuel pressure gauge between fuel filter and hose, and measure fuel pressure at idling.

<Ref. to 2-8 [W2A0].>

Fuel pressure:

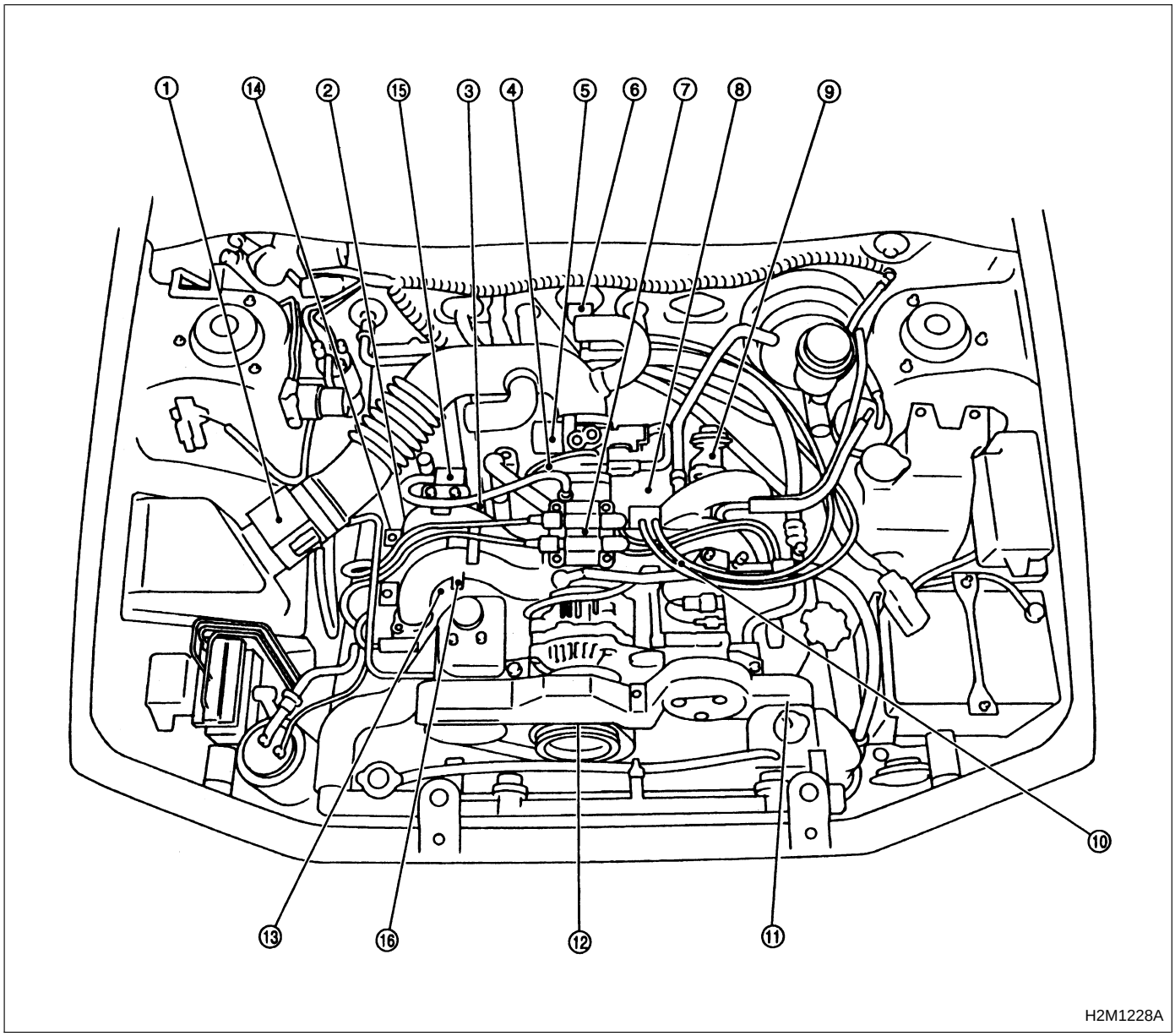
177 — 206 kPa (1.8 — 2.1 kg/cm², 26 — 30 psi)

5. ENGINE GROUNDING

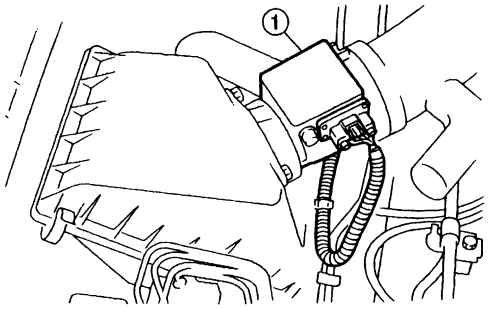
Make sure the engine grounding terminal is properly connected to the engine.

4. Electrical Unit Location

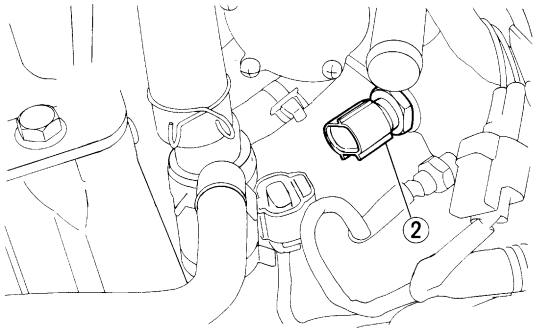
1. SENSOR AND SOLENOID VALVE



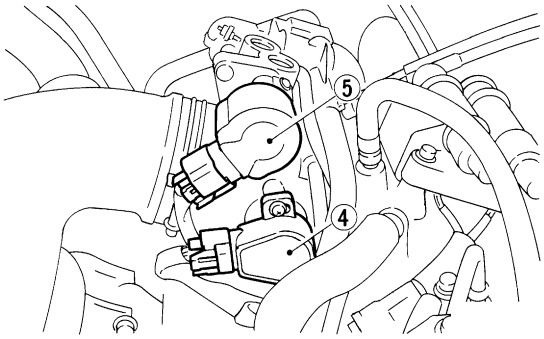
① Mass air flow sensor
② Engine coolant temperature sensor
③ Air suction solenoid valve
④ Throttle position sensor
⑤ Idle air control solenoid valve
⑥ Ignitor
⑦ Ignition coil
⑧ Recirculation gas temperature sensor
⑨ EGR valve
⑩ EGR solenoid valve
⑪ Camshaft position sensor
⑫ Crankshaft position sensor
⑬ Purge control solenoid valve
⑭ Air suction valve
⑮ FICD solenoid valve (With A/C model)
⑯ Purge control solenoid valve (California FWD model)



H2M1229A



G2M0406



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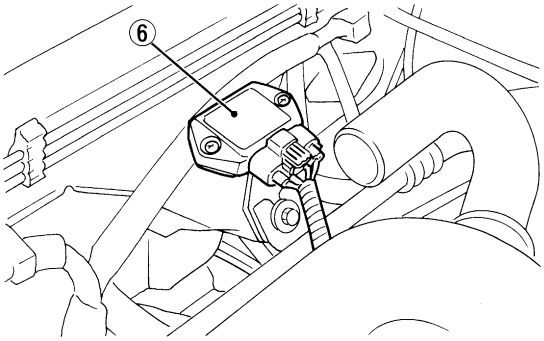

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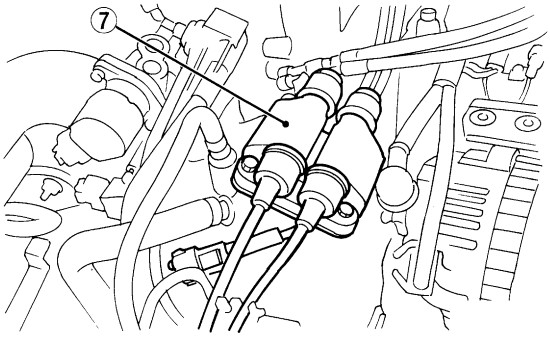

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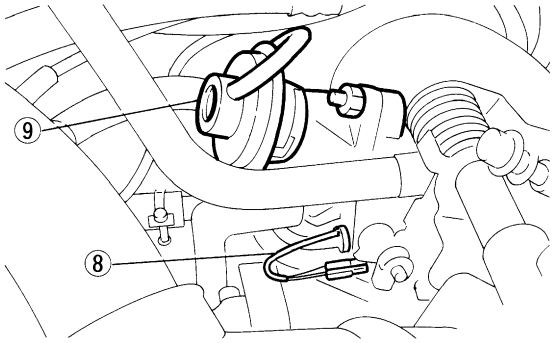

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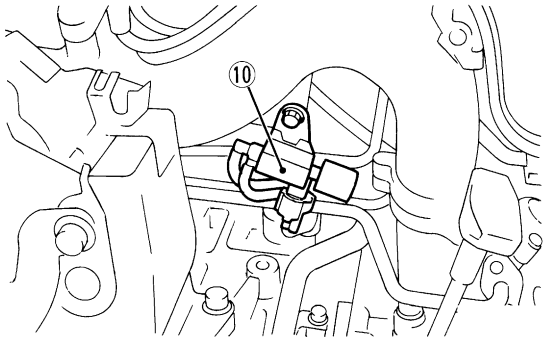

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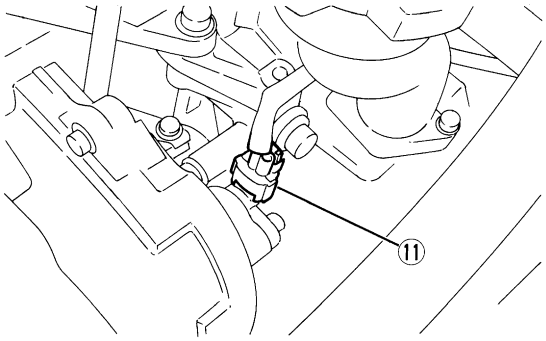

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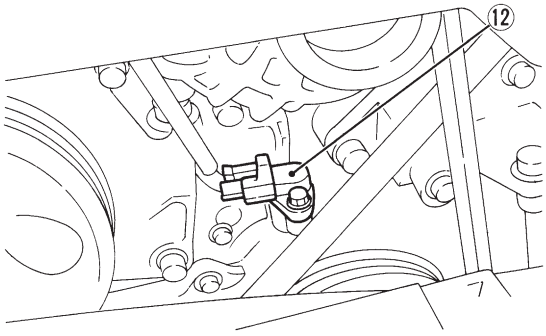

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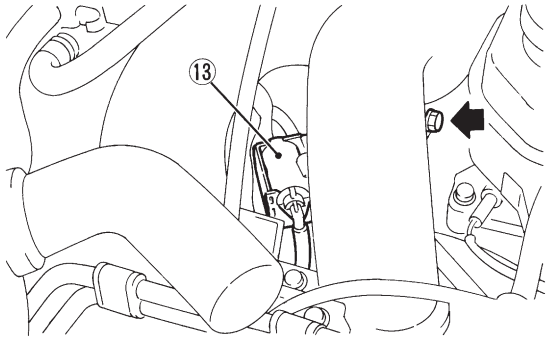

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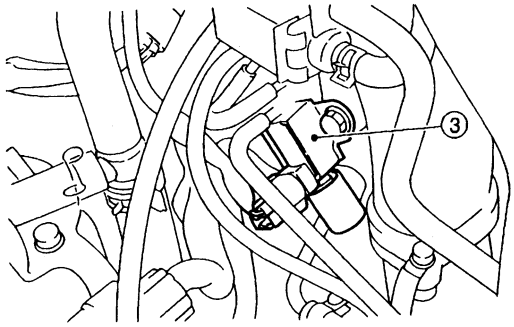

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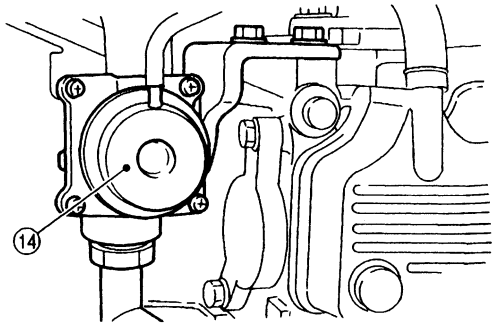

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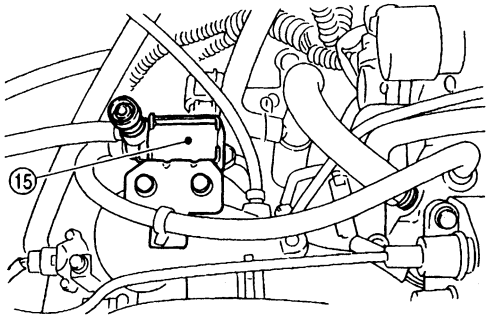

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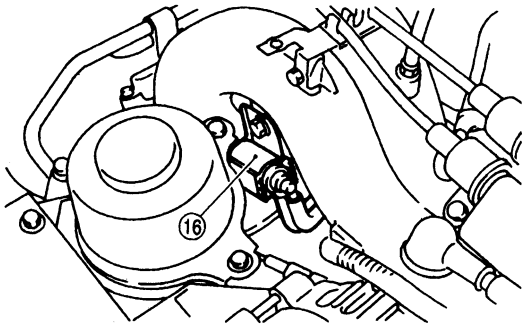

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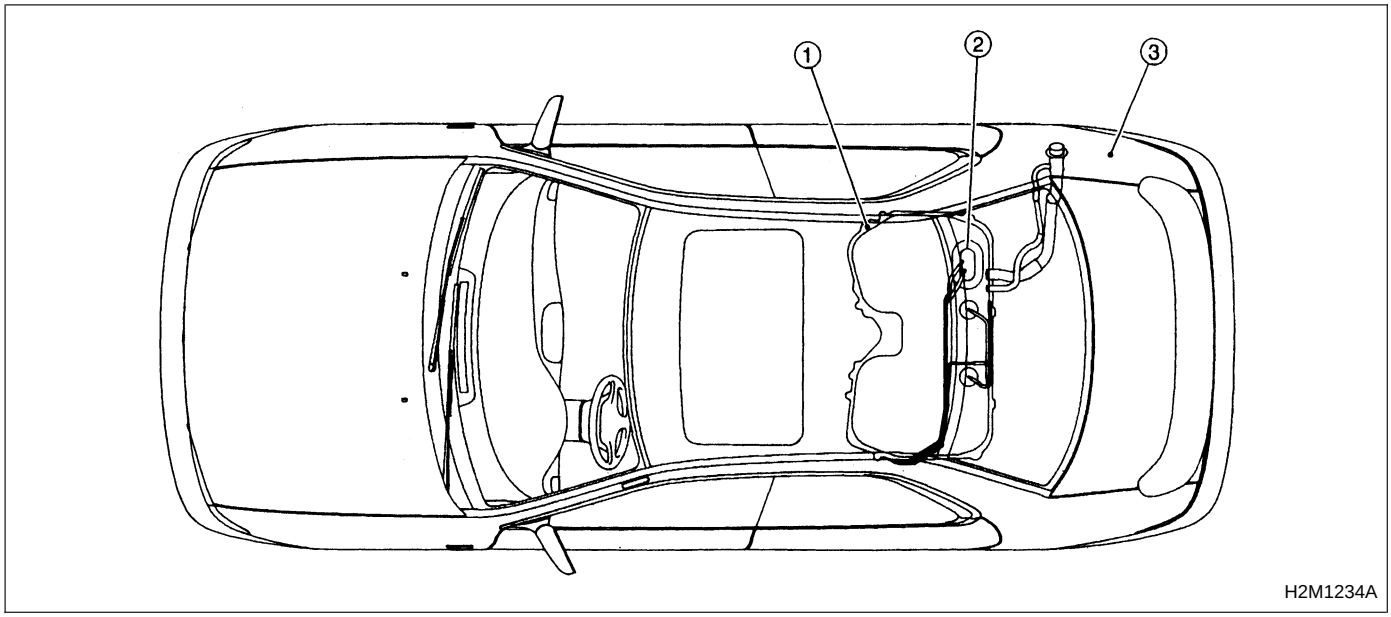
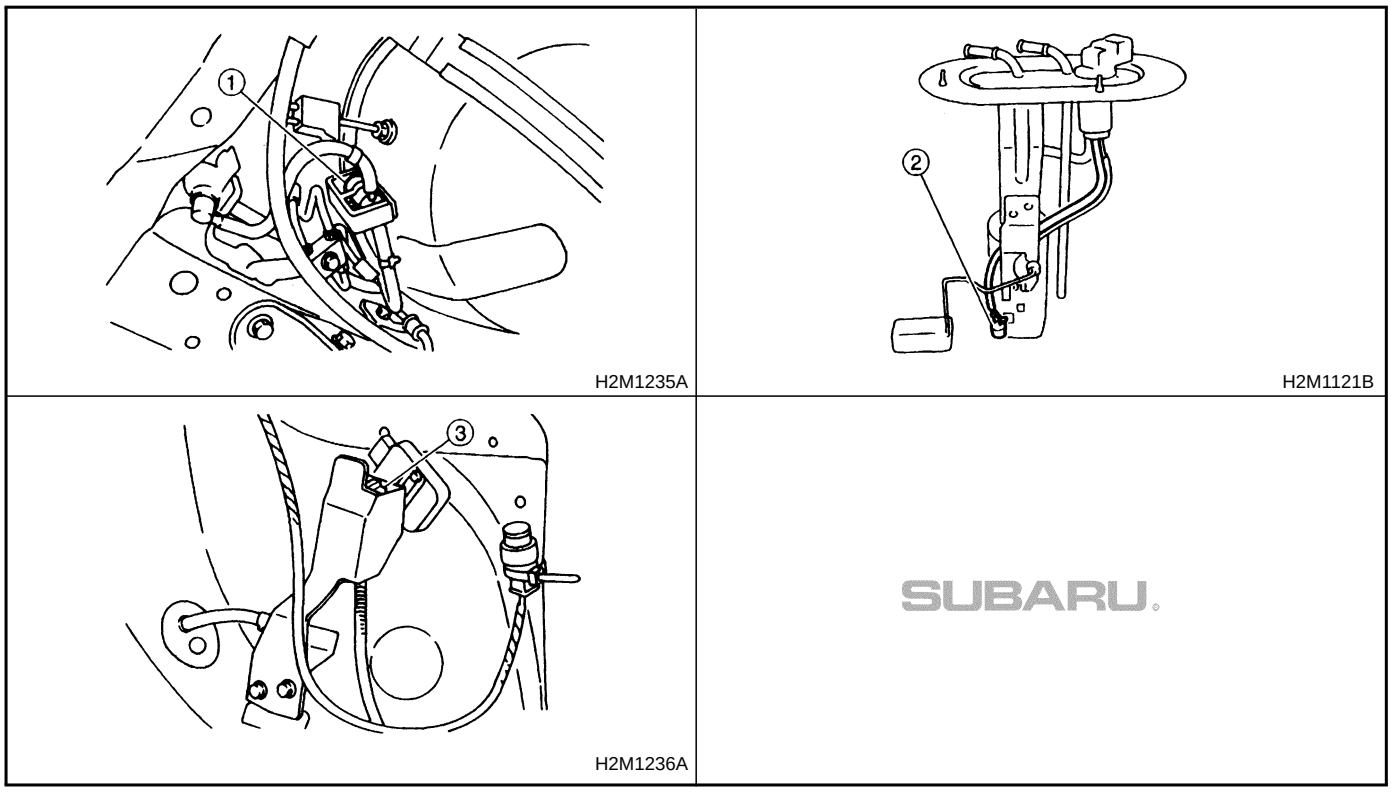
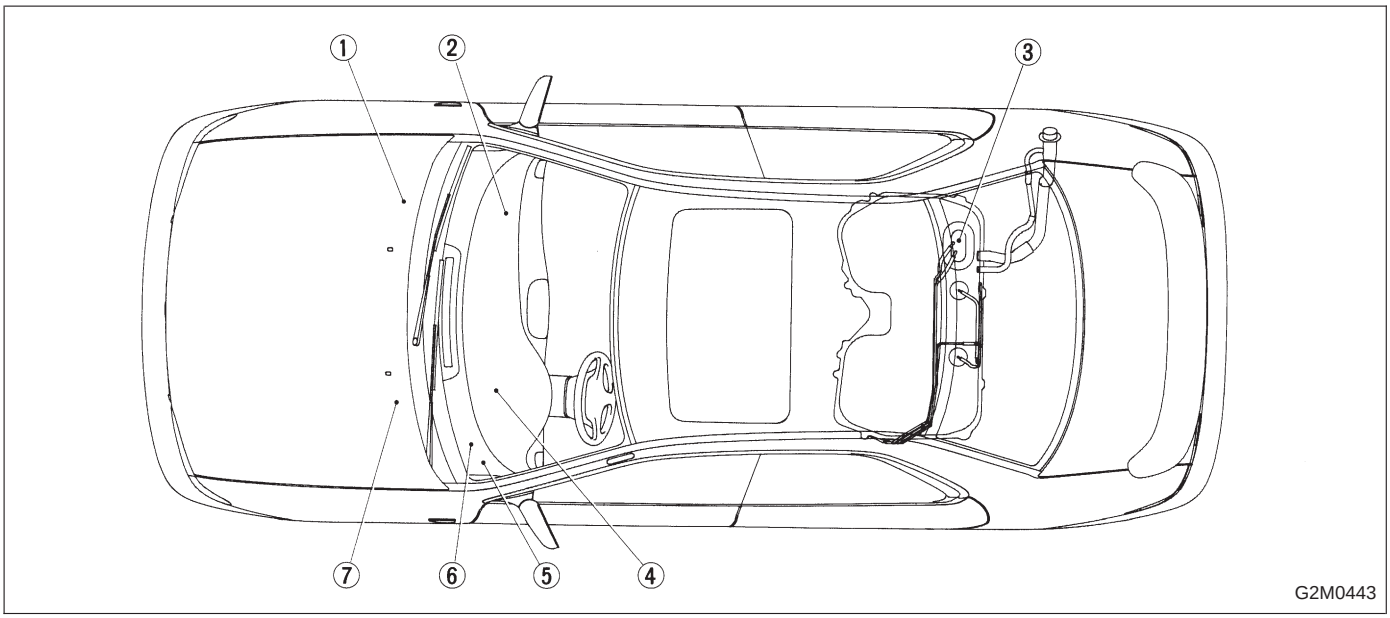


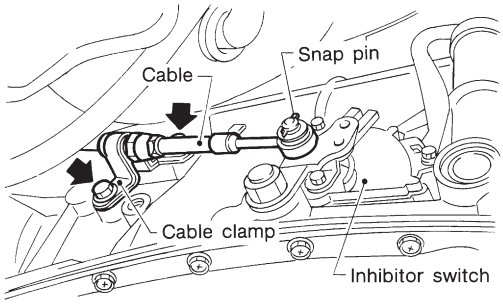
① Fuel tank pressure control solenoid valve
② Fuel temperature sensor
③ Fuel tank pressure sensor



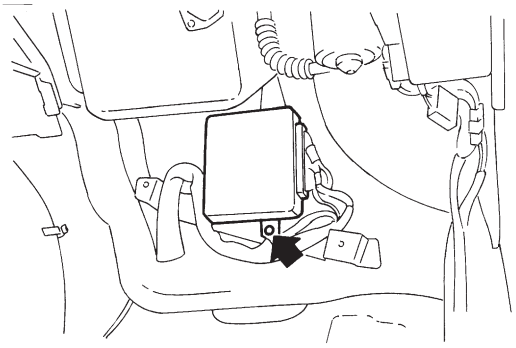
2. MODULE AND RELAY



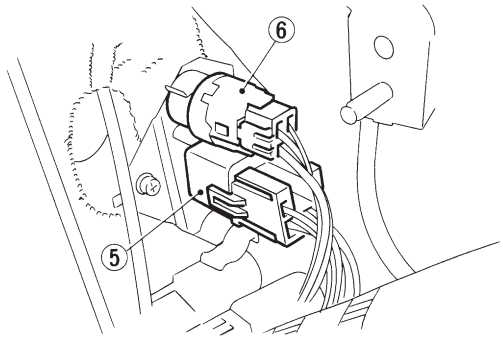
① Inhibitor switch
② ECM
③ Fuel pump
④ TCM
⑤ Main relay
⑥ Fuel pump relay
⑦ Starter
⑧ Read memory connector
⑨ Test mode connector
⑩ Data link connector



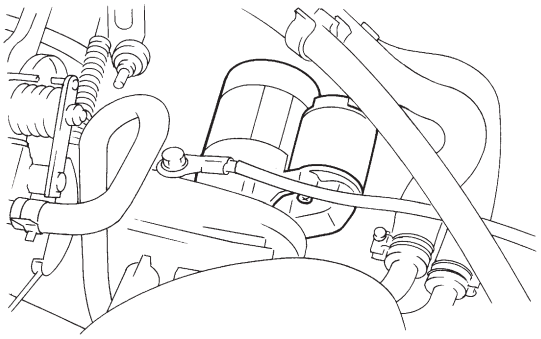
G3M0699



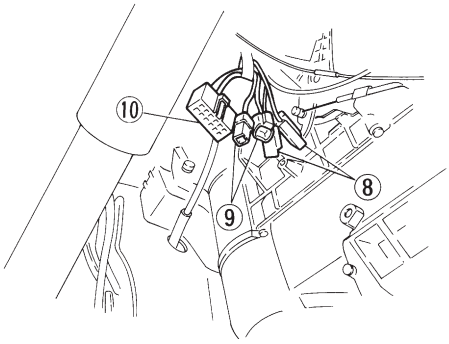
G2M0435



G2M0568



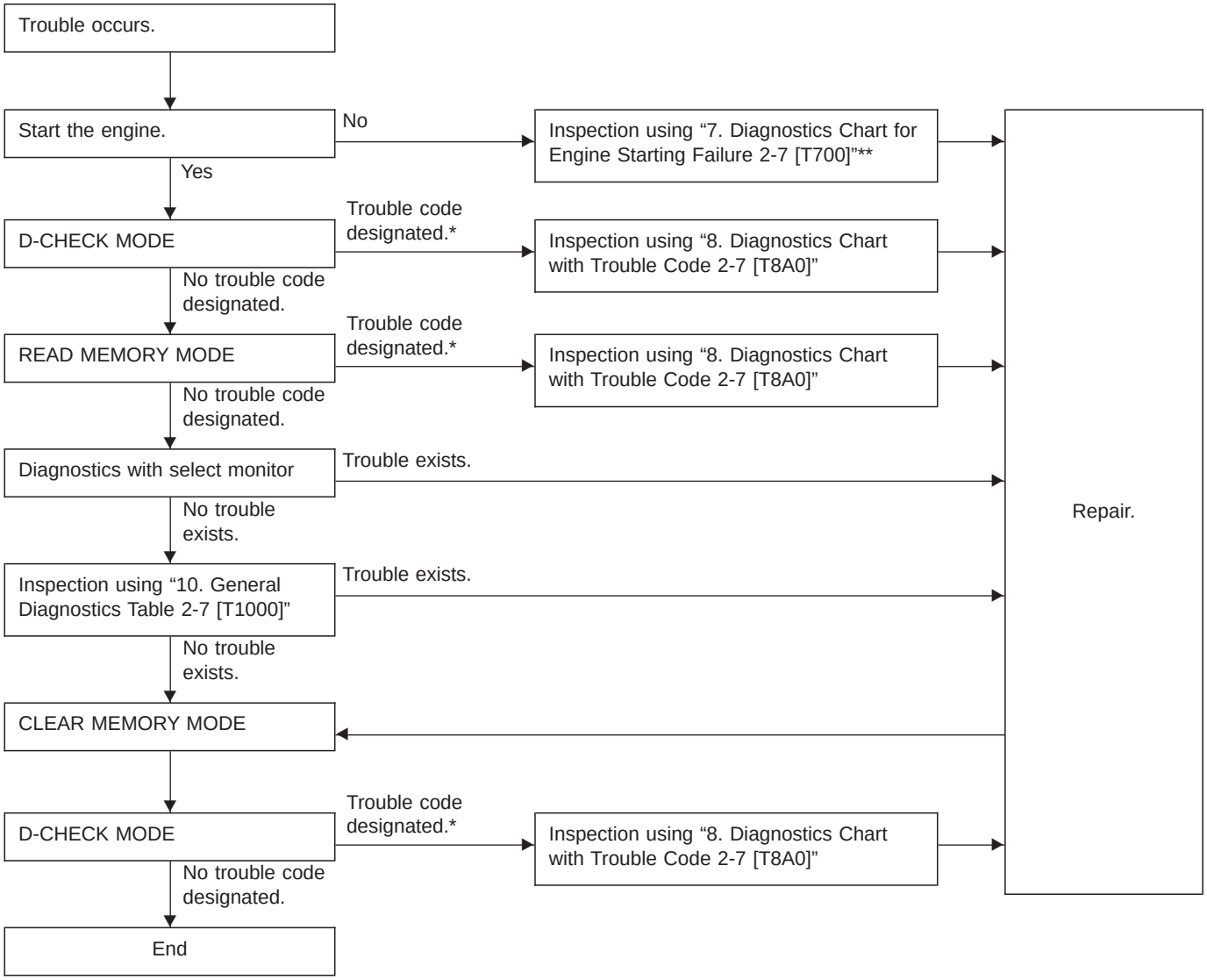
G2M0569



G2M0449

5. Diagnostics Chart for On-board Diagnosis System

A: BASIC DIAGNOSTICS PROCEDURE



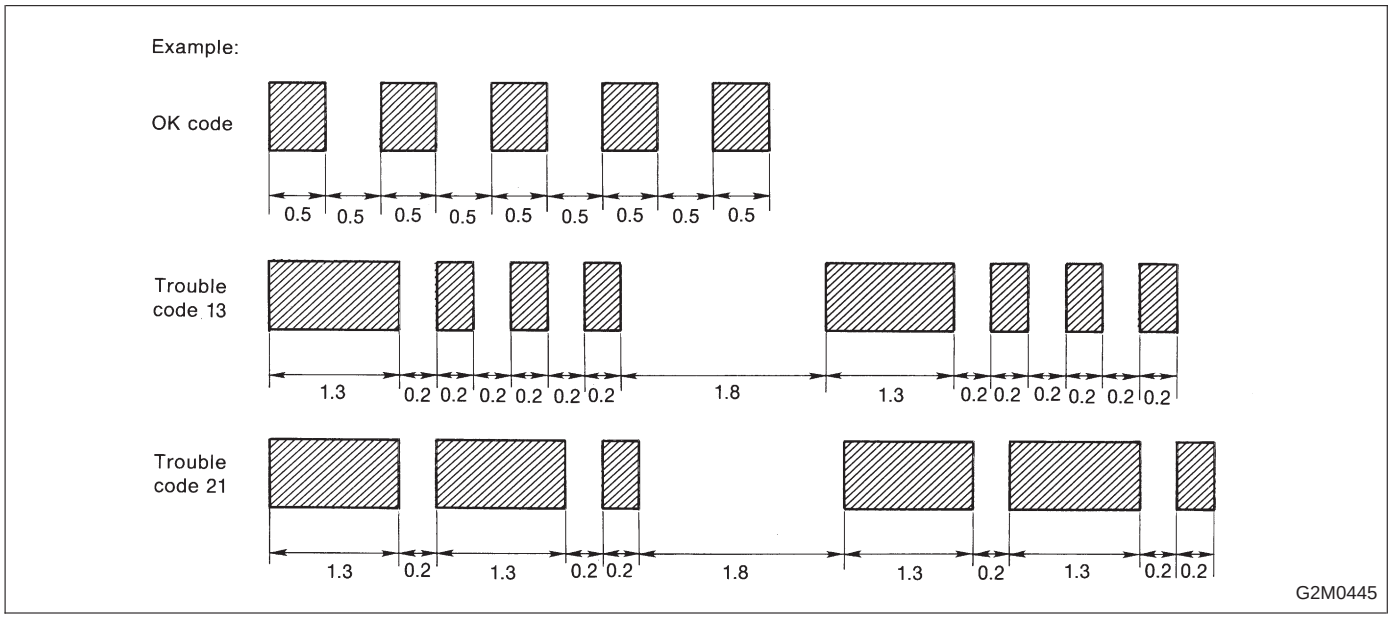
*: When more than one trouble code is out-putted, begin diagnostics with the smallest trouble code number and proceed to the next higher code.
After correcting each problem, conduct the D-CHECK and ensure that the corresponding trouble code no longer appears.
**: When a trouble code is displayed in the READ MEMORY MODE, conduct diagnostics measures which correspond with the code.

CAUTION:
- **Check the connector while it is connected unless specified otherwise.**
- **Be sure to check again from the beginning in order to prevent secondary trouble caused by repair work.**

B: TROUBLE CODE

1. HOW TO READ TROUBLE CODE

The malfunction indicator lamp flashes the code corresponding to the faulty parts. The long segment (1.3 seconds ON) indicates a “ten”, and the short segment (0.2 seconds ON) signifies “one”. And middle segment (0.5 seconds ON) means OK code.

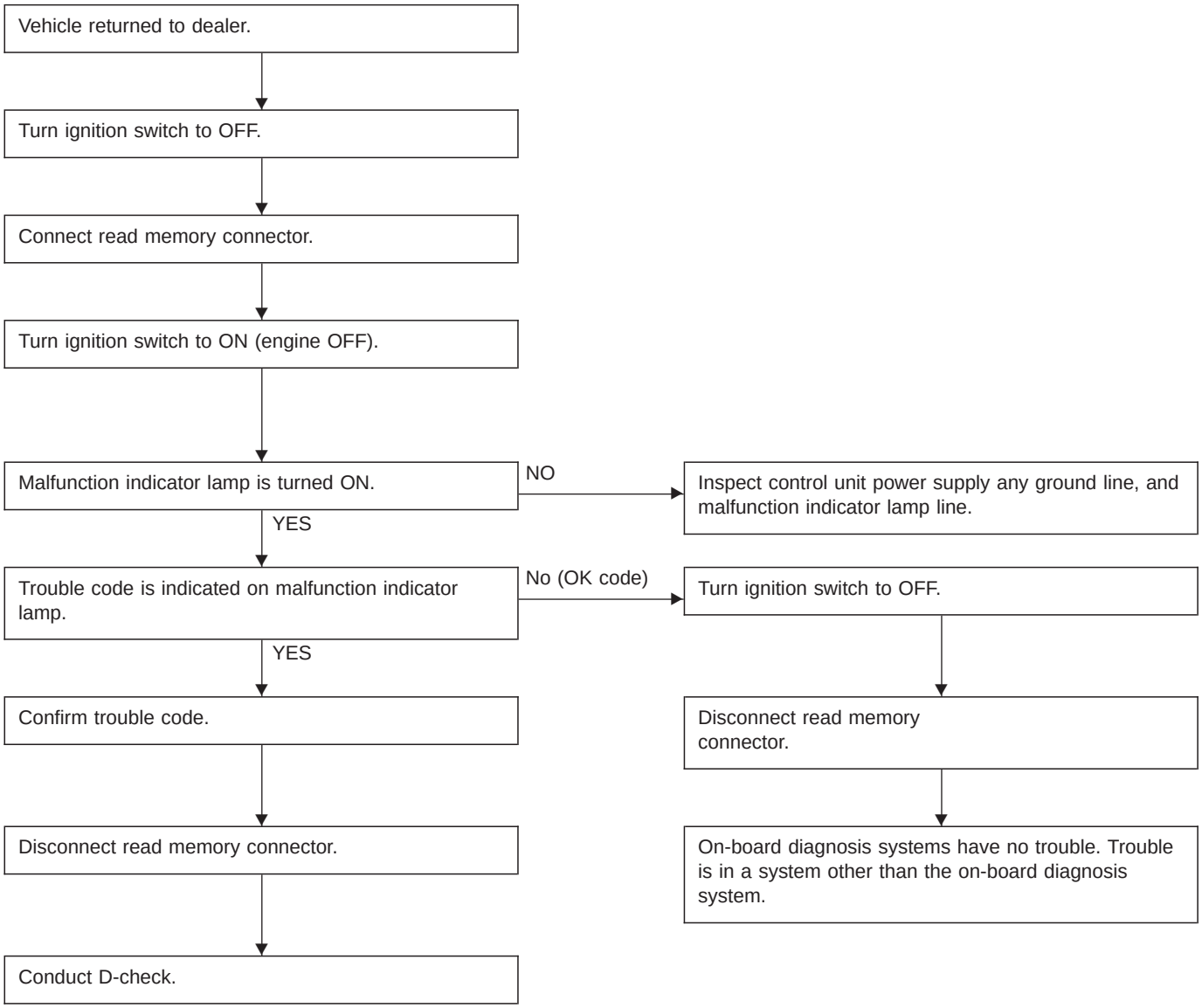


2. LIST OF TROUBLE CODE

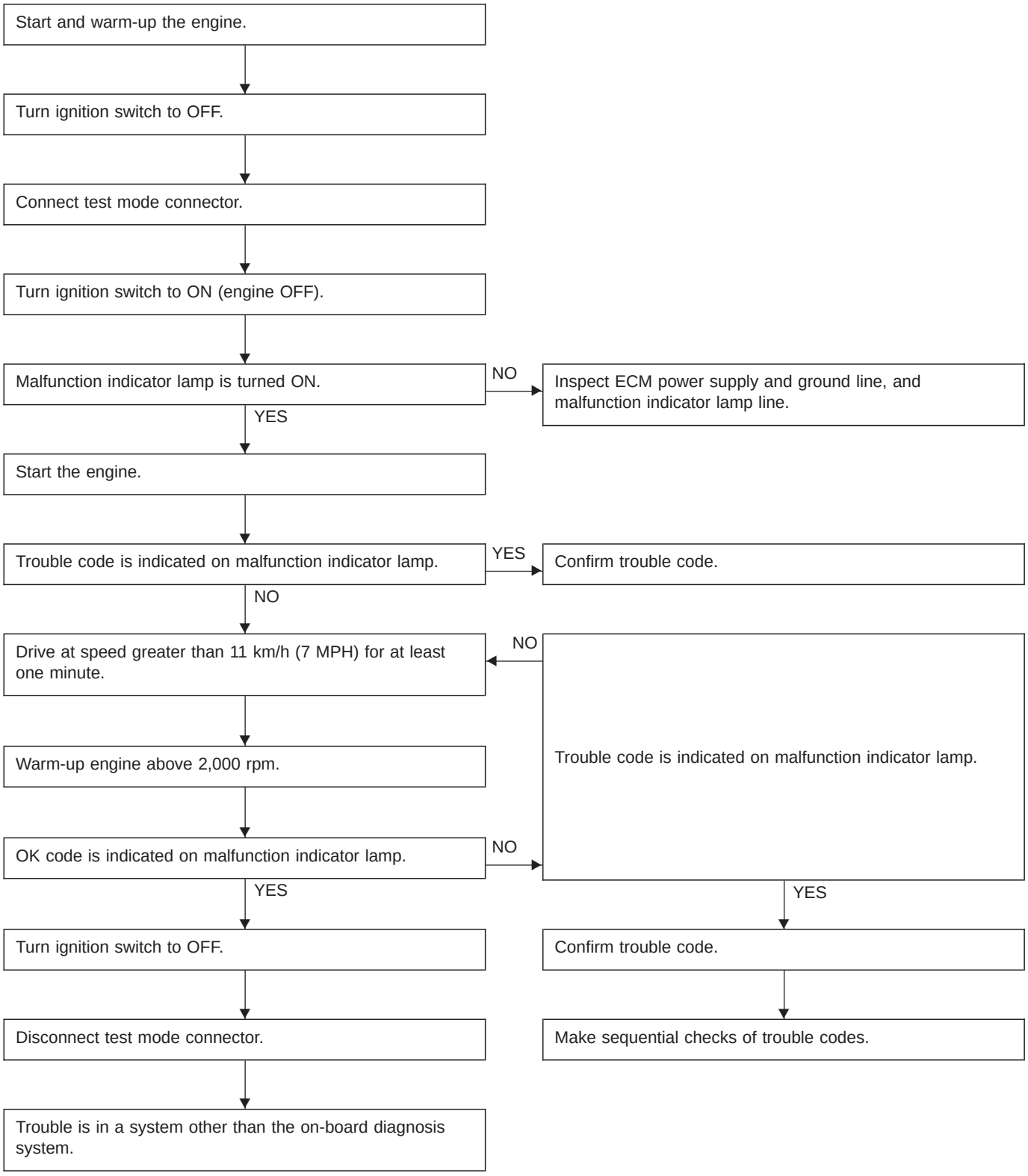
Trouble code	Item	Contents of diagnosis
11	Crankshaft position sensor	No signal entered from crankshaft position sensor, but signal entered from camshaft position sensor.
12	Starter switch	● The starter switch signal is abnormal. ● The harness connector between ECM and starter switch is in short or open.
13	Camshaft position sensor	No signal entered from camshaft position sensor, but signal entered from crankshaft position sensor.
14	Fuel injector # 1	Fuel injection is not in function. (Abnormal signal emitted from monitor circuit.)
15	Fuel injector # 2	
16	Fuel injector # 3	
17	Fuel injector # 4	
21	Engine coolant temperature sensor	● The engine coolant temperature sensor signal is abnormal. ● The harness connector between ECM and engine coolant temperature sensor is in short or open.
23	Mass air flow sensor	● The mass air flow sensor signal is abnormal. ● The harness connector between ECM and mass air flow sensor is in short or open.
24	Idle air control solenoid valve	● The idle air control solenoid valve is not in function. ● The harness connector between ECM and idle air control solenoid valve is in short or open.
31	Throttle position sensor	● The throttle position sensor signal is abnormal. ● The harness connector between ECM and throttle position sensor is in short or open.
32	Oxygen sensor	● The oxygen sensor is not in function. ● The harness connector between ECM and oxygen sensor is in short or open.
33	Vehicle speed sensor 2	● The vehicle speed sensor 2 is not in function. ● The harness connector between ECM and vehicle speed sensor 2 is in short or open.
34	EGR solenoid valve	● The EGR solenoid valve is not in function. ● The harness connector between ECM and EGR solenoid valve is in short or open.
35	Purge control solenoid valve	● The purge control solenoid valve is not in function. ● The harness connector between ECM and purge control solenoid valve is in short or open.
36	Air suction solenoid valve	● The air suction solenoid valve is not in function. ● The harness connector between ECM and air suction solenoid valve is in short or open.
41	A/F (air/fuel) learning control	Faulty leaning control function
51	Neutral position switch (MT)	● The neutral position switch signal is abnormal. ● The harness connector between ECM and neutral position switch is in short or open.
	Inhibitor switch (AT)	● The inhibitor switch signal is abnormal. ● The harness connector between ECM and inhibitor switch is in short or open.
55	Recirculation gas temperature sensor	● Recirculation gas temperature sensor is not in function. ● The harness connector between ECM and recirculation gas temperature sensor is in short or open.
56	EGR system	Faulty EGR system function

Trouble code	Item	Contents of diagnosis
61	Fuel tank pressure control solenoid valve (California FWD model only)	● The fuel tank pressure control solenoid valve is not in function. ● The harness connector between ECM and fuel tank pressure control solenoid valve is in short or open.
62	Fuel temperature sensor (California FWD model only)	● The fuel temperature sensor signal is abnormal. ● The harness connector between ECM and fuel temperature sensor is in short or open.
63	Fuel tank pressure sensor (California FWD model only)	● The fuel tank pressure sensor signal is abnormal. ● The harness connector between ECM and fuel tank pressure sensor is in short or open.

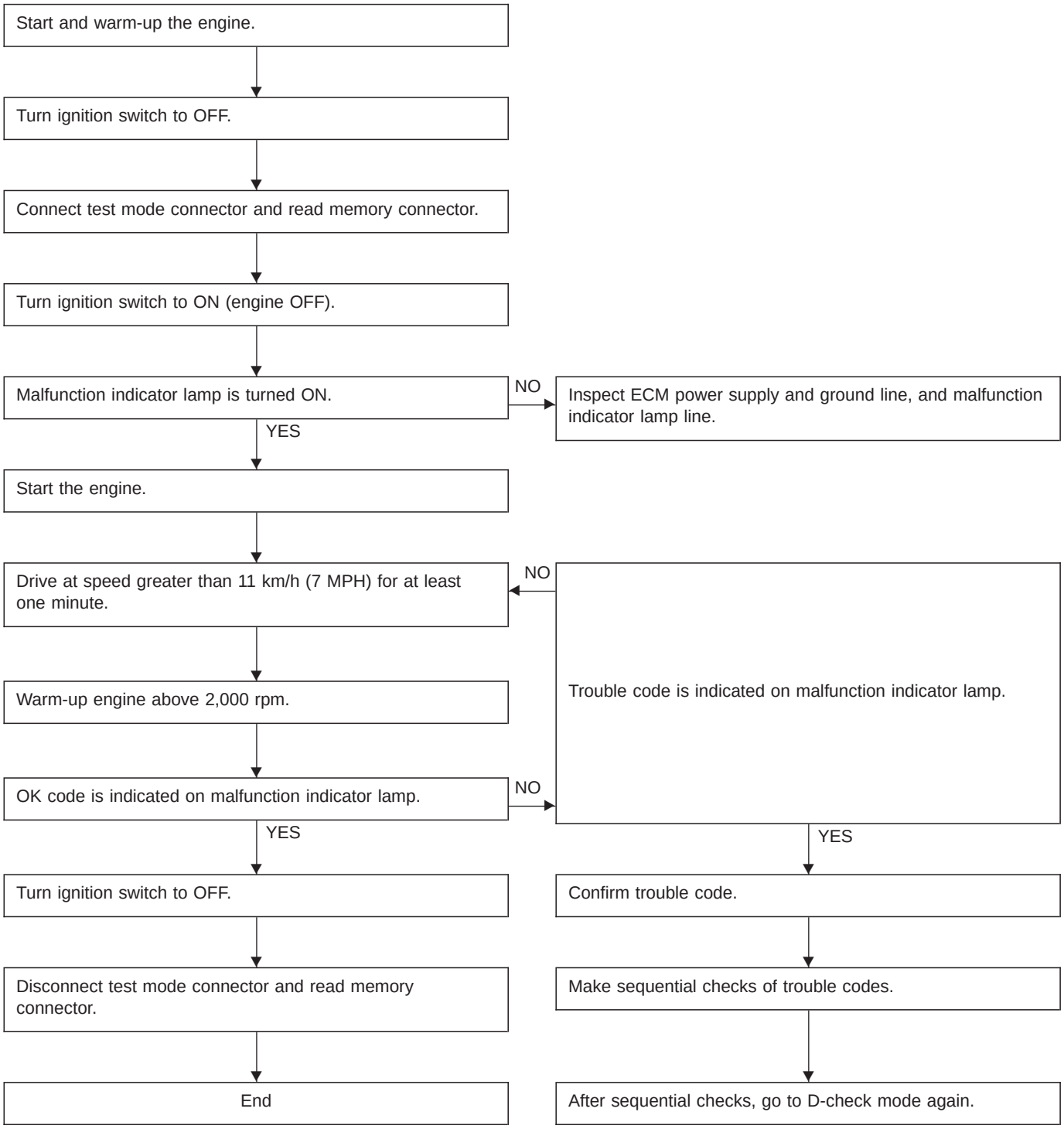
C: READ MEMORY MODE



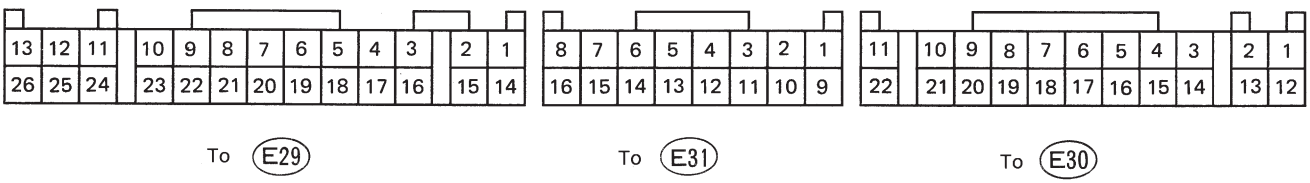
D: D-CHECK MODE



E: CLEAR MEMORY MODE



6. Control Module I/O Signal



G2M0446

Content		Connector No.	Terminal No.	Signal (V)		Note
				Ig SW ON (Engine OFF)	Engine ON (Idling)	
Crankshaft position sensor	Signal (+)	E30	6	0	±6	Sensor output waveform
	Signal (−)	E30	7	0	0	—
	Shield	E30	11	0	0	—
Camshaft position sensor	Signal (+)	E30	8	0	±2.7	Sensor output waveform
	Signal (−)	E30	9	0	0	—
	Shield	E30	11	0	0	—
Mass air flow sensor	Signal	E30	5	0 — 0.3	0.8 — 1.2	—
	GND	E31	1	0	0	—
	Shield	E30	11	0	0	—
Throttle position sensor	Signal	E30	4	Fully closed: 0.2 — 1.0 Fully opened: 4.2 — 4.5		—
	Power supply	E30	15	5	5	—
	GND	E30	11	0	0	—
Oxygen sensor	Signal	E30	10	0	Rich mixture: 0.7 Lean mixture: 0	—
	Shield	E30	11	0	0	—
Engine coolant temperature sensor		E30	3	0.7 — 1.0	0.7 — 1.0	After warm-up
Vehicle speed sensor 2		E29	4	0 or 5	0 or 5	“5” and “0” are repeatedly displayed when vehicle is driven.
Starter switch		E29	12	0	0	Cranking: 10 — 14
A/C switch		E29	11	ON: 10 — 13 OFF: 0	ON: 13 — 14 OFF: 0	—
Ignition switch		E29	10	10 — 13	13 — 14	—
Neutral position switch (MT)		E29	16	ON: 0 OFF: 10 — 13		● On MT model; switch is ON when gear is in neutral position. ● On AT model; switch is ON when shift is in “P” or “N” position.
Park/Neutral position switch (AT)						
Test mode connector		E29	20	5	5	When connected: 0
Read memory connector		E29	19	5	5	When connected: 0
AT/MT identification		E29	17	(AT) 5 (MT) 0	(AT) 5 (MT) 0	When measuring voltage between ECM and body.
Back-up power supply		E29	26	10 — 13	13 — 14	—
Control unit power supply		E29	13	10 — 13	13 — 14	—

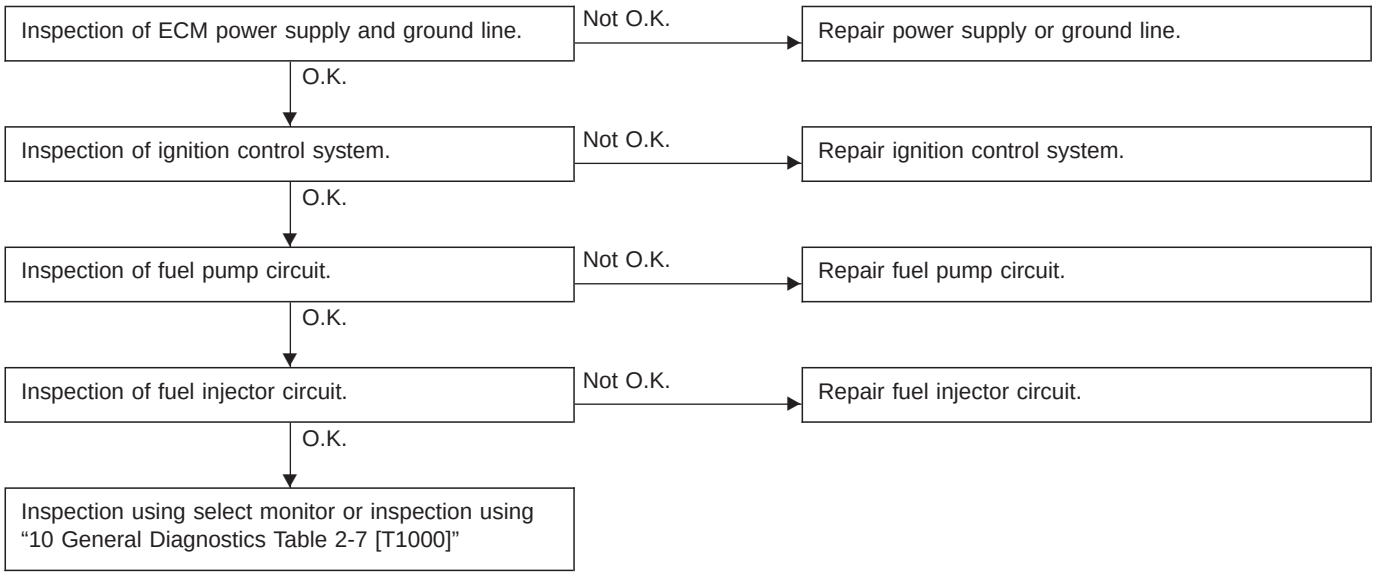
Content		Connector No.	Terminal No.	Signal (V)		Note
				Ig SW ON (Engine OFF)	Engine ON (Idling)	
Ignition control	# 1, # 2	E30	21	0	3.4, max.	—
	# 3, # 4	E30	20	0	3.4, max.	—
Fuel injector	# 1	E30	2	10 — 13	13 — 14	Waveform
	# 2	E30	1	10 — 13	13 — 14	Waveform
	# 3	E30	13	10 — 13	13 — 14	Waveform
	# 4	E30	12	10 — 13	13 — 14	Waveform
Idle air control solenoid valve	OPEN end	E29	2	—	1, max. — 13, min.	Waveform
	CLOSE end	E29	1	—	13, min. — 1, max.	Waveform
Fuel pump relay control		E29	8	ON: 0 OFF: 10 — 13	0	—
A/C relay control		E29	9	ON: 0 OFF: 10 — 13	ON: 0 OFF: 13 — 14	—
Radiator fan relay 1 control		E29	23	ON: 0 OFF: 10 — 13	ON: 0 OFF: 13 — 14	—
Radiator fan relay 2 control		E29	7	ON: 0 OFF: 10 — 13	ON: 0 OFF: 13 — 14	—
Self-shutoff control		E29	18	10 — 13	13 — 14	—
Malfunction indicator lamp		E29	22	—	—	● Light “ON”: 1, or less ● Light “OFF”: 10 — 14
Engine speed output		E29	3	—	0 — 13, min.	Waveform
EGR solenoid valve		E30	18	ON: 0 OFF: 10 — 13	ON: 0 OFF: 13 — 14	—
Air suction solenoid valve		E31	3	ON: 0 OFF: 10 — 13	ON: 0 OFF: 13 — 14	—
FICD solenoid valve		E29	24	ON: 0 OFF: 10 — 13	ON: 0 OFF: 13 — 14	A/C equipped model
Purge control solenoid valve		E30	19	ON: 0 OFF: 10 — 13	ON: 0 OFF: 13 — 14	—
Power steering pressure		E30	14	5	5	● Steering wheel turned to extreme end of travel: 0 ● When driving straight forward: 5
Recirculation gas temperature sensor		E31	4	—	—	—
Fuel temperature sensor (California FWD model only)		E31	8	2.5 — 3.8	2.5 — 3.8	Ambient temperature: 25°C (77°F)
Tank pressure control solenoid valve (California FWD model only)		E29	21	ON: 0 OFF: 10 — 13	ON: 0 OFF: 13 — 14	—
Fuel tank pressure sensor (California FWD model only)	Signal	E31	5	2.3 — 2.7	2.3 — 2.7	The value obtained after the fuel filler cap was removed once and recapped.
	Power supply	E30	15	5	5	—
	GND	E30	11	0	0	—
GND (sensors)		E30	11	0	0	—
GND (injectors)		E29	15	0	0	—
GND (ignition system)		E29	14	0	0	—

Content	Connector No.	Terminal No.	Signal (V)		Note
			Ig SW ON (Engine OFF)	Engine ON (Idling)	
GND (power supply)	E29	25	0	0	—
GND (control systems)	E30	22	0	0	—
Select Monitor Signal	E29	6	—	—	—
	E29	5	—	—	—

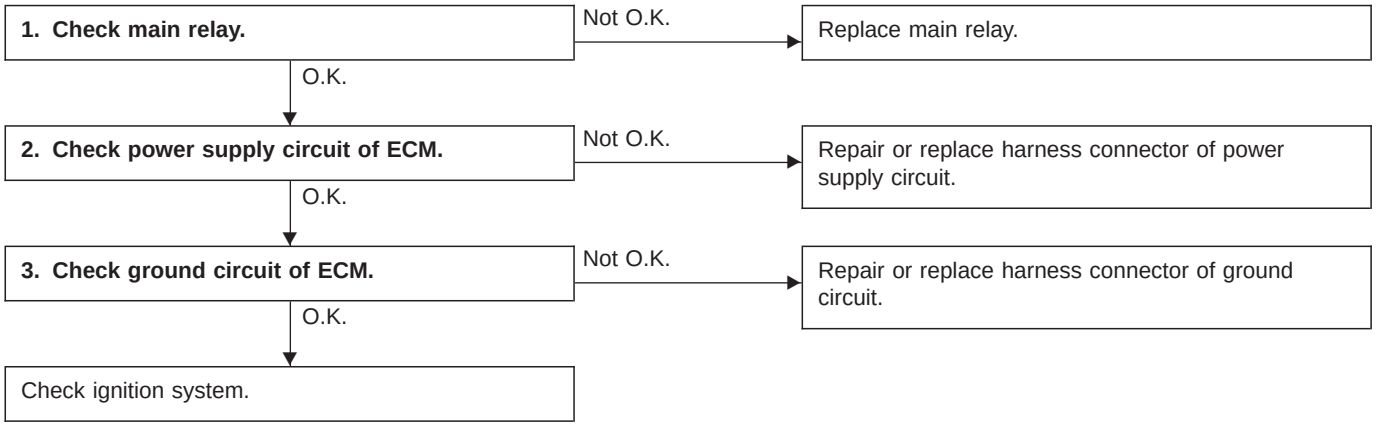
7. Diagnostics Chart for Engine Starting Failure

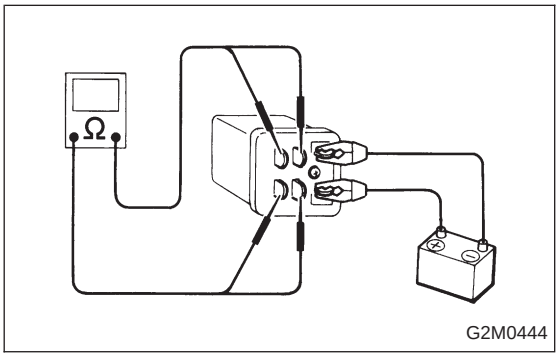
A: BASIC DIAGNOSTICS CHART

When engine cranks but does not start, perform diagnostics in accordance with the following chart.



B: CONTROL UNIT POWER SUPPLY AND GROUND LINE

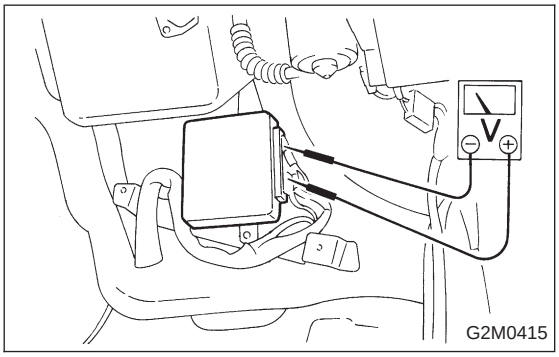




1. CHECK MAIN RELAY.

1) Turn the ignition switch to OFF.
2) Remove main relay.
3) Connect battery to main relay terminals No. 1 and No. 2.
4) Measure resistance between main relay terminals.

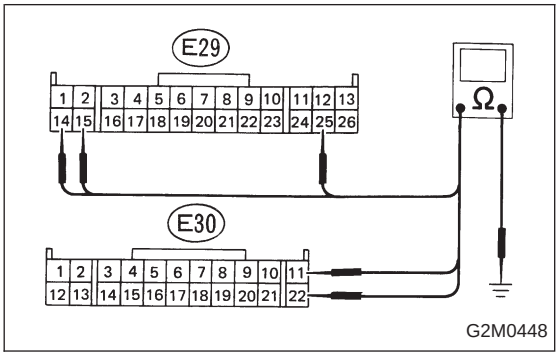
Terminals /Specified resistance:
No. 3 — No. 5/10 Ω, max.
No. 4 — No. 6/10 Ω, max.



2. CHECK POWER SUPPLY CIRCUIT OF ECM.

1) Install main relay.
2) Disconnect connectors from ECM.
3) Turn ignition switch to ON.
4) Measure power supply voltage between ECM connector terminals and body.

Connector & terminal /Specified voltage:
(E29) No. 13 — Body/10 V, min.
(E29) No. 26 — Body/10 V, min.

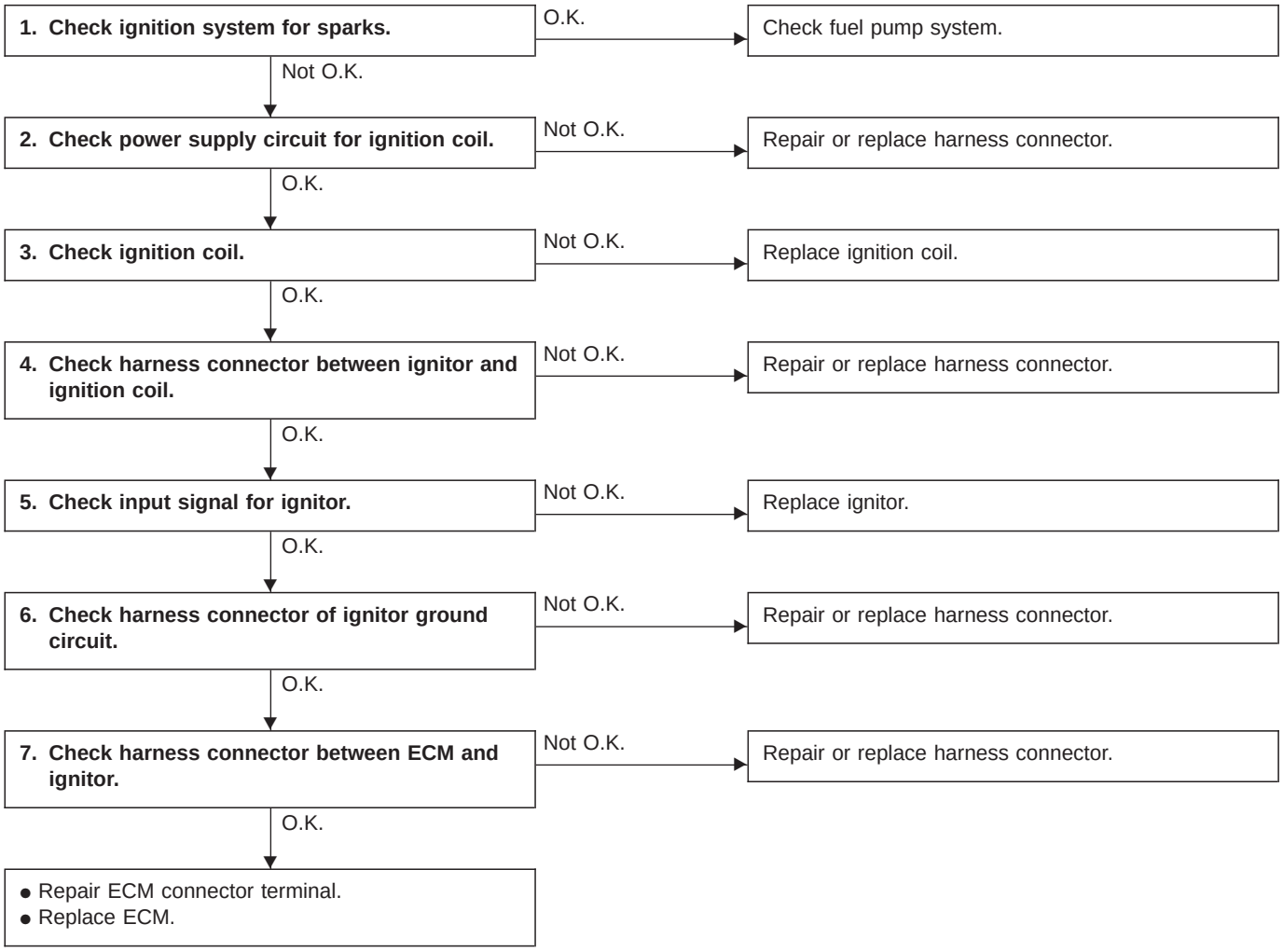


3. CHECK GROUND CIRCUIT OF ECM.

1) Turn ignition switch to OFF.
2) Measure resistance of harness connector between ECM and body.

Connector & terminal /Specified resistance:
(E29) No. 25 — Body/10 Ω, max.
(E29) No. 14 — Body/10 Ω, max.
(E29) No. 15 — Body/10 Ω, max.
(E30) No. 11 — Body/10 Ω, max.
(E30) No. 22 — Body/10 Ω, max.

C: IGNITION CONTROL SYSTEM

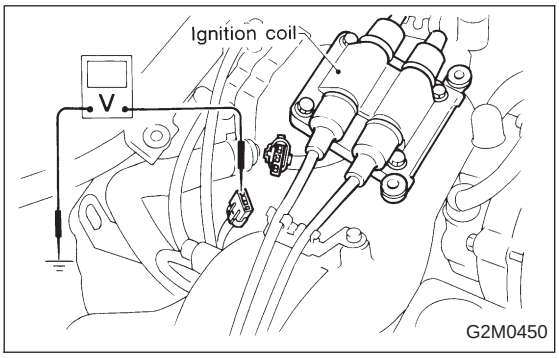


1. CHECK IGNITION SYSTEM FOR SPARKS.

1) Remove plug cord cap from each spark plug.
2) Install new spark plug on plug cord cap.

CAUTION:
Do not remove spark plug from engine.

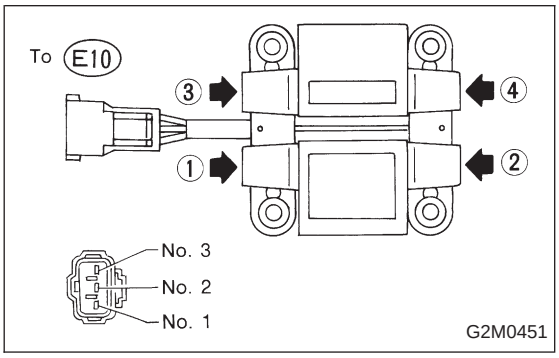
3) Contact spark plug's thread portion on engine.
4) While opening throttle valve fully, crank engine to check that spark occurs at each cylinder.



2. CHECK POWER SUPPLY CIRCUIT FOR IGNITION COIL.

1) Turn ignition switch to OFF.
2) Disconnect connector from ignition coil.
3) Turn ignition switch to ON.
4) Measure power supply voltage between ignition coil connector terminal and body.

Connector & terminal /Specified voltage:
(E9) No. 2 — Body/10 V, min.



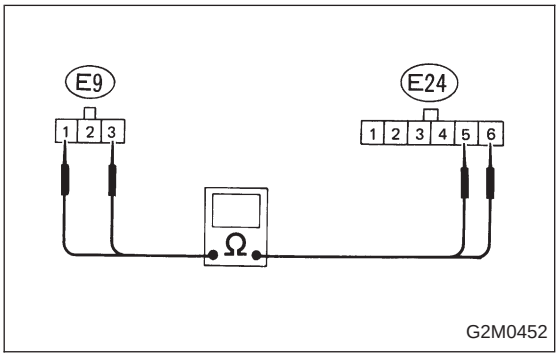
3. CHECK IGNITION COIL.

1) Measure resistance between ignition coil terminals to check primary coil.

Terminals /Specified resistance:
No. 2 — No. 1/0.7 Ω
No. 2 — No. 3/0.7 Ω

2) Measure resistance between spark plug cord contact portions to check secondary coil.

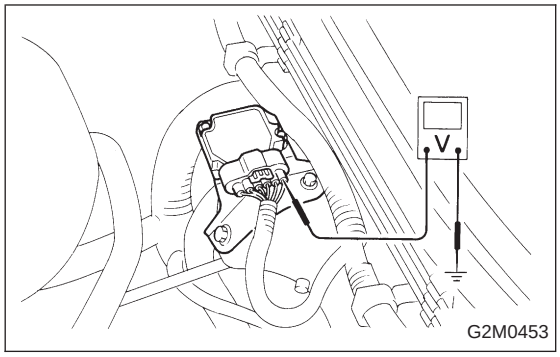
Connector & terminal/Specified resistance:
#1 — #2 /13.8 kΩ
#3 — #4 /13.8 kΩ



4. CHECK HARNESS CONNECTOR BETWEEN IGNITOR AND IGNITION COIL.

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

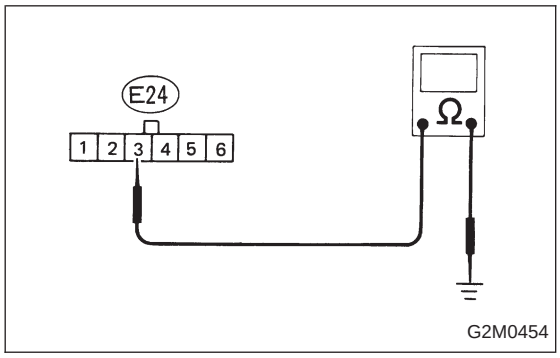
Connector & terminal /Specified resistance:
(E24) No. 5 — (E9) No. 1/10 Ω, max.
(E24) No. 6 — (E9) No. 3/10 Ω, max.



5. CHECK INPUT SIGNAL FOR IGNITOR.

Check if voltage varies synchronously with engine speed when cranking, while monitoring voltage between igniter connector and body.

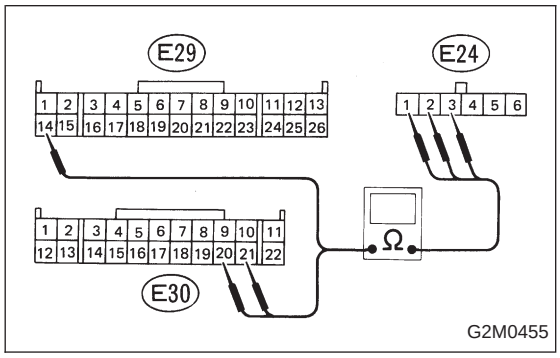
Connector & terminal /Specified voltage:
(E24) No. 1 — Body/0.1 V, min. — 3.4 V, max.
(E24) No. 2 — Body/0.1 V, min. — 3.4 V, max.



6. CHECK HARNESS CONNECTOR OF IGNITOR GROUND CIRCUIT.

1) Turn ignition switch to OFF.
2) Measure resistance between ignitor and body.

Connector & terminal /Specified resistance:
(E24) No. 3 — Body/10 Ω, max.

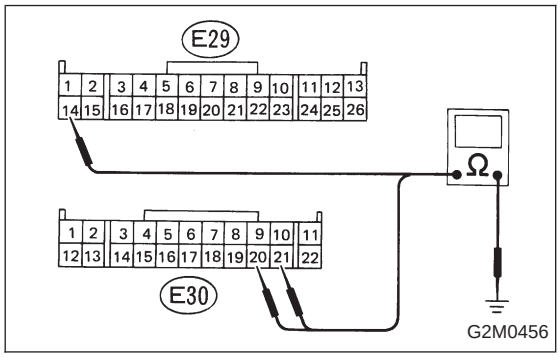


7. CHECK HARNESS CONNECTOR BETWEEN ECM AND IGNITOR.

1) Disconnect connector from ECM.

2) Measure resistance of harness connector between ECM and ignitor.

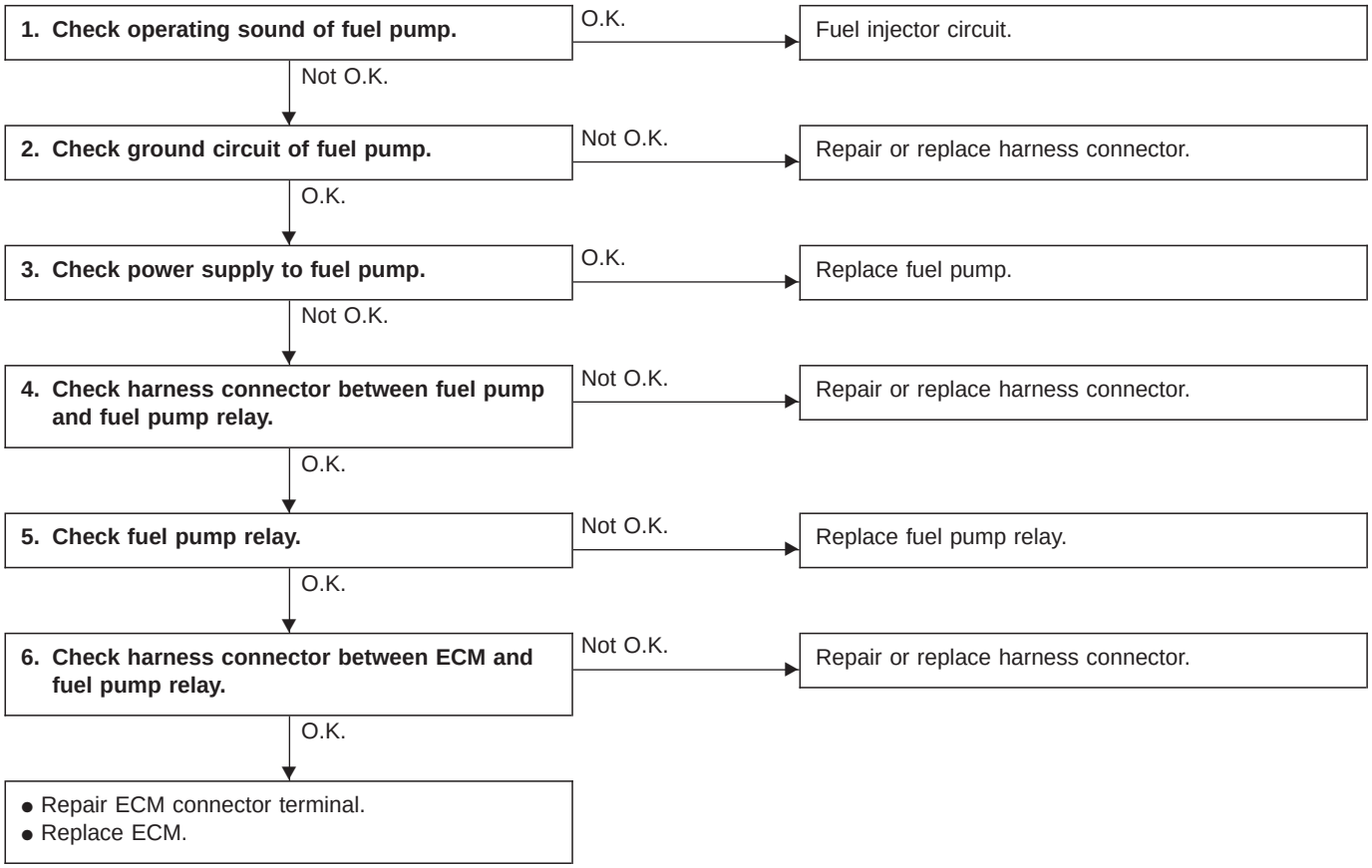
Connector & terminal /Specified resistance:
(E30) No. 20 — (E24) No. 1/10 Ω, max.
(E30) No. 21 — (E24) No. 2/10 Ω, max.
(E29) No. 14 — (E24) No. 3/10 Ω, max.



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

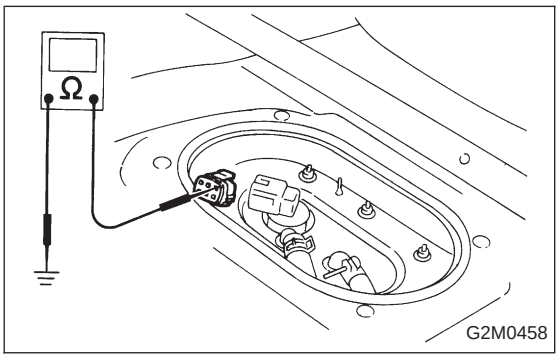
Connector & terminal /Specified resistance:
(E30) No. 20 — Body/1 MΩ, min.
(E30) No. 4 — Body/1 MΩ, min.
(E29) No. 14 — Body/1 MΩ, min.

D: FUEL PUMP CIRCUIT



1. CHECK OPERATING SOUND OF FUEL PUMP.

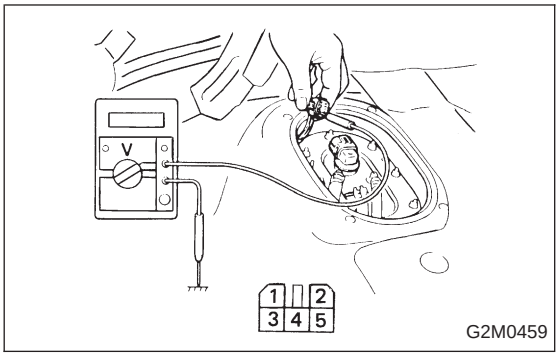
Make sure that fuel pump is in operation for two seconds when turning ignition switch to ON.



2. CHECK GROUND CIRCUIT OF FUEL PUMP.

1) Turn ignition switch to OFF.
2) Disconnect connector from fuel pump.
3) Measure resistance of harness connector between fuel pump and body.

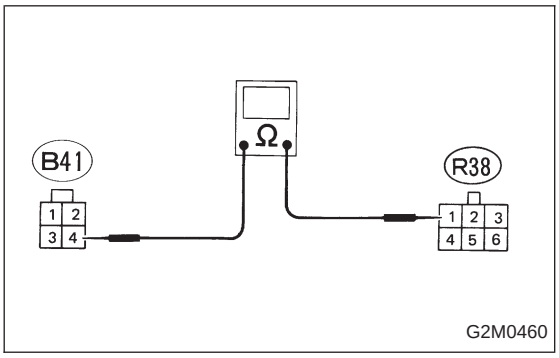
Connector & terminal /Specified resistance:
(R38) No. 3 — Body/10 Ω, max.



3. CHECK POWER SUPPLY TO FUEL PUMP.

1) Turn ignition switch to ON.
2) Measure voltage of power supply circuit between fuel pump connector and body.

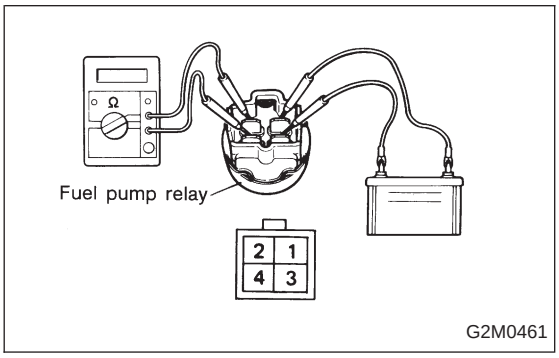
Connector & terminal /Specified voltage:
(R38) No. 1 — Body/10 V, min.



4. CHECK HARNESS CONNECTOR BETWEEN FUEL PUMP AND FUEL PUMP RELAY.

1) Turn ignition switch to OFF.
2) Measure resistance of harness connector between fuel pump and fuel pump relay.

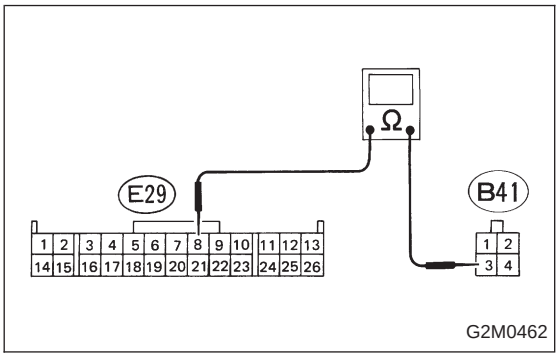
Connector & terminal /Specified resistance:
(R38) No. 1 — (B41) No. 4/10 Ω, max.



5. CHECK FUEL PUMP RELAY.

1) Disconnect connectors from fuel pump relay and main relay.
2) Remove fuel pump relay and main relay with bracket.
3) Connect battery to fuel pump relay connector terminals No. 1 and No. 3.
4) Measure resistance between connector terminals of fuel pump relay.

Terminals /Specified resistance:
No. 2 — No. 4/10 Ω, max.

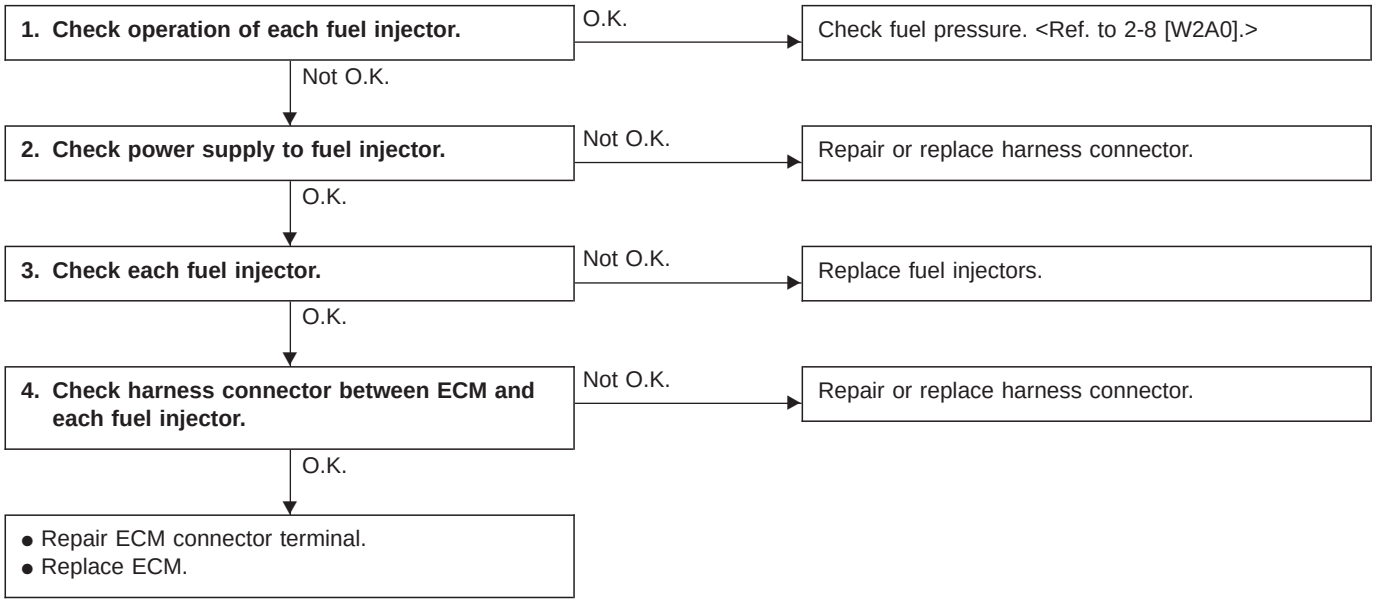


6. CHECK HARNESS CONNECTOR BETWEEN ECM AND FUEL PUMP RELAY.

1) Disconnect connectors from ECM.
2) Measure resistance of harness connector between ECM and fuel pump relay.

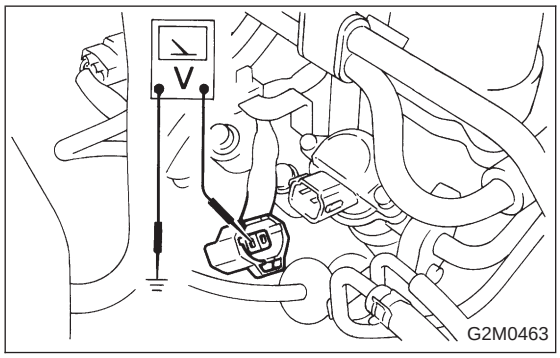
Connector & terminal /Specified resistance:
(E29) No. 8 — (B41) No. 3/10 Ω, max.

E: FUEL INJECTOR CIRCUIT



1. CHECK OPERATION OF EACH FUEL INJECTOR.

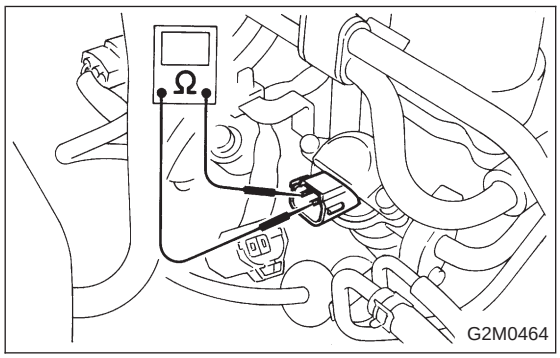
While cranking the engine, check that each fuel injector emits “operating” sound. Use a sound scope or attach a screwdriver to injector for this check.



2. CHECK POWER SUPPLY TO FUEL INJECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from each injector.
3) Turn ignition switch to ON.
4) Measure voltage between each fuel injector connector terminal and body.

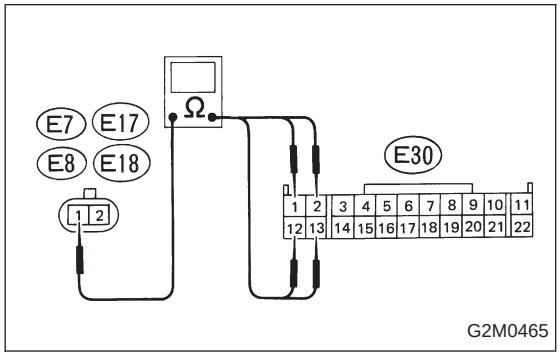
Connector & terminal /Specified voltage:
#1 (E7) No. 2 — Body /10 V, min.
#2 (E17) No. 2 — Body/10 V, min.
#3 (E8) No. 2 — Body /10 V, min.
#4 (E18) No. 2 — Body/10 V, min.



3. CHECK EACH FUEL INJECTOR.

Measure resistance between fuel injector terminals.

Terminals /Specified resistance:
No. 1 — No. 2/11 — 12 Ω



4. CHECK HARNESS CONNECTOR BETWEEN ECM AND EACH FUEL INJECTOR.

1) Disconnect connector from ECM.
2) Measure resistance of harness connector between ECM and each fuel injector.

Connector & terminal /Specified resistance:
(E30) No. 2 — (E7) No. 1 /10 Ω, max.
(E30) No. 1 — (E17) No. 1 /10 Ω, max.
(E30) No. 13 — (E8) No. 1 /10 Ω, max.
(E30) No. 12 — (E18) No. 1 /10 Ω, max.

8. Diagnostics Chart with Trouble Code

A: TROUBLE CODE

Trouble code	Item	Contents of diagnosis	Page
11	Crankshaft position sensor	● No signal entered from crankshaft position sensor, but signal entered from camshaft position sensor. ● The harness connector between ECM and crankshaft position sensor is in short or open.	33
12	Starter switch	● The starter switch signal is abnormal. ● The harness connector between ECM and starter switch is in short or open.	35
13	Camshaft position sensor	● No signal entered from camshaft position sensor, but signal entered from crankshaft position sensor. ● The harness connector between ECM and camshaft position sensor is in short or open.	37
14	Fuel injector #1	● The fuel injector is not in function. ● The harness connector between ECM and each fuel injector is in short or open.	39
15	Fuel injector #2		
16	Fuel injector #3		
17	Fuel injector #4		
21	Engine coolant temperature sensor	● The engine coolant temperature sensor signal is abnormal. ● The harness connector between ECM and engine coolant temperature sensor is in short or open.	41
23	Mass air flow sensor	● The mass air flow sensor signal is abnormal. ● The harness connector between ECM and mass air flow sensor is in short or open.	43
24	Idle air control solenoid valve	● The idle air control solenoid valve is not in function. ● The harness connector between ECM and idle air control solenoid valve is in short or open.	45
31	Throttle position sensor	● The throttle position sensor signal is abnormal. ● The throttle position sensor is installed abnormally. ● The harness connector between ECM and throttle position sensor is in short or open.	47
32	Oxygen sensor	● The oxygen sensor is not in function. ● The harness connector between ECM and oxygen sensor is in short or open.	50
33	Vehicle speed sensor 2	● The vehicle speed sensor 2 is not in function. ● The harness connector between ECM and vehicle speed sensor 2 is in short or open.	52
34	EGR solenoid valve	● The EGR solenoid valve is not in function. ● The harness connector between ECM and EGR solenoid valve is in short or open.	54
35	Purge control solenoid valve	● The purge control solenoid valve is not in function. ● The harness connector between ECM and purge control solenoid valve is in short or open.	56
36	Air suction solenoid valve	● The air suction solenoid valve is not in function. ● The harness connector between ECM and air suction solenoid valve is in short or open.	58
41	A/F (air/fuel) learning control	● Faulty leaning control function	60
51	Neutral position switch (MT)	● The neutral position switch signal is abnormal. ● The harness connector between ECM and neutral position switch is in short or open.	61
	Inhibitor switch (AT)	● The park/neutral position signal is abnormal. ● The shift cable is connected abnormally. ● The harness connector between ECM and inhibitor switch is in short or open.	63
55	Recirculation gas temperature sensor	● The recirculation gas temperature sensor is not in function. ● The harness connector between ECM and recirculation gas temperature sensor is in short or open.	65
56	EGR system	● Faulty EGR system function	66
61	Fuel tank pressure control solenoid valve (California FWD model only)	● The fuel tank pressure control solenoid valve is not in function. ● The harness connector between ECM and fuel tank pressure control solenoid valve is in short or open.	67

Trouble code	Item	Contents of diagnosis	Page
62	Fuel temperature sensor (California FWD model only)	● The fuel temperature sensor signal is abnormal. ● The harness connector between ECM and fuel temperature sensor is in short or open.	71
63	Fuel tank pressure sensor (California FWD model only)	● The fuel tank pressure sensor signal is abnormal. ● The harness connector between ECM and fuel tank pressure sensor is in short or open.	75

B: TROUBLE CODE (11)

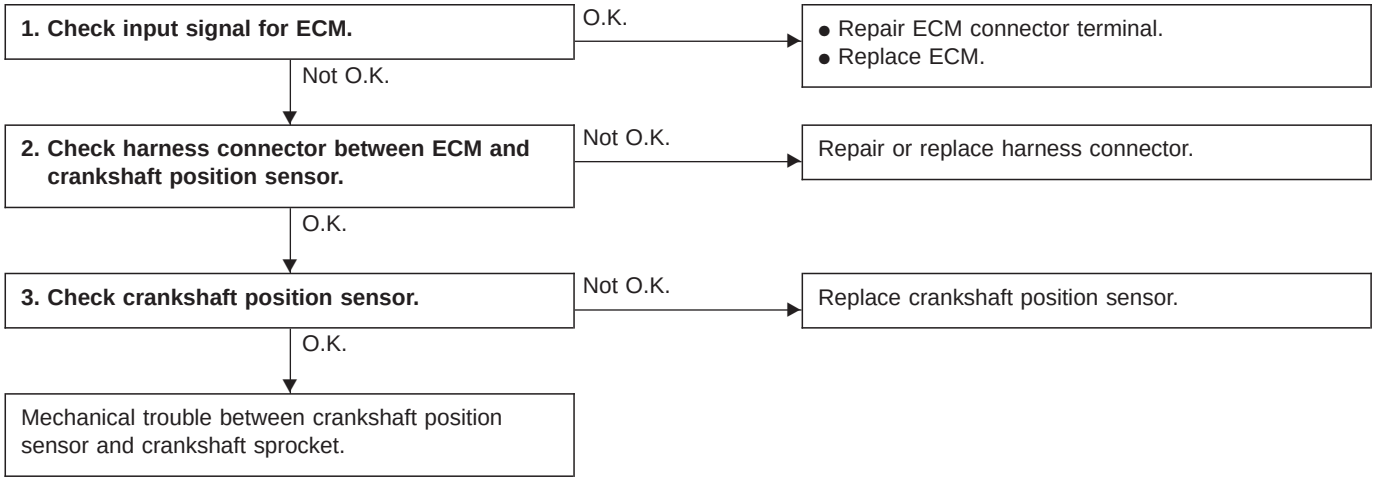
— CRANKSHAFT POSITION SENSOR —

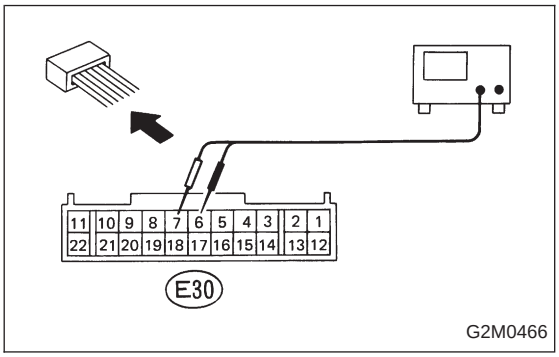
DIAGNOSIS:

- No signal entered from crankshaft position sensor, but signal entered from camshaft position sensor.
- The harness connector between ECM and crankshaft position sensor is in short or open.

TROUBLE SYMPTOM:

- Engine stalls.
- Restarting impossible

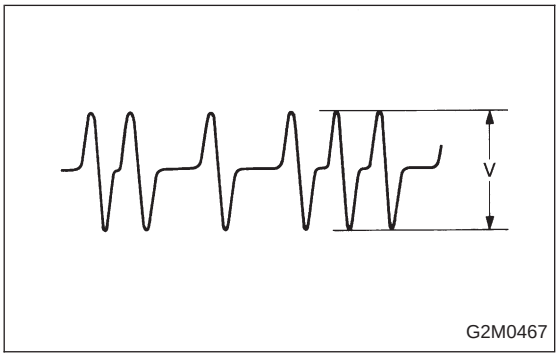




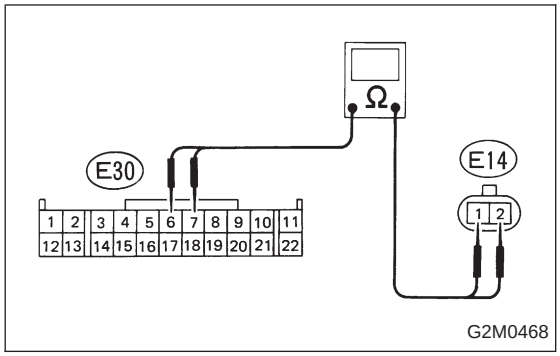
1. CHECK INPUT SIGNAL FOR ECM.

1) Set the positive (+) probe and earth lead of oscilloscope at ECM connector terminals.

Connector & terminal / (E30) No. 6 — (E30) No. 7



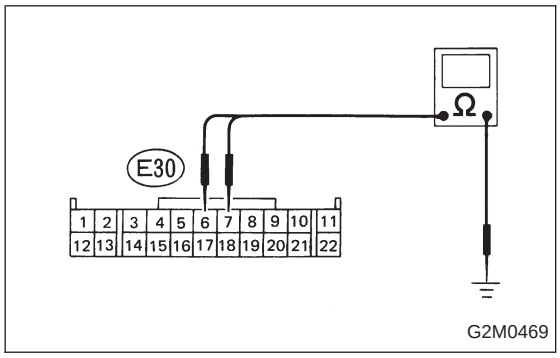
2) Measure signal voltage indicated on oscilloscope while cranking the engine.



2. CHECK HARNESS CONNECTOR BETWEEN ECM AND CRANKSHAFT POSITION SENSOR.

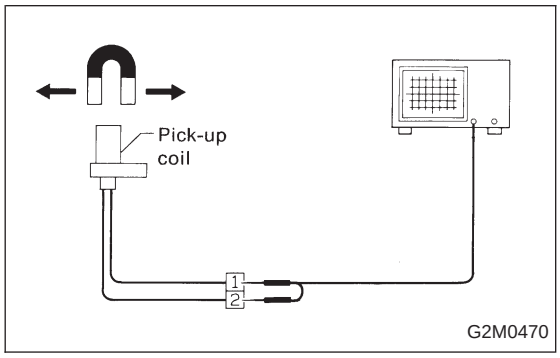
1) Turn ignition switch to OFF.
2) Disconnect connectors from ECM and crankshaft position sensor.
3) Measure resistance of harness connector between ECM and crankshaft position sensor.

Connector & terminal /Specified resistance:
(E30) No. 6 — (E14) No. 1 /10 Ω, max.
(E30) No. 7 — (E14) No. 2 /10 Ω, max.



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

Connector & terminal /Specified resistance:
(E30) No. 6 — Body /1 MΩ, min.
(E30) No. 7 — Body /1 MΩ, min.
(E30) No. 11 — Body/1 MΩ, min.



3. CHECK CRANKSHAFT POSITION SENSOR.

1) Remove crankshaft position sensor.
2) Set the position (+) probe at sensor connector terminal No. 1, and set earth lead at terminal No. 2.
3) Check that a wave profile appears crossing a magnet near the pick-up coil of crankshaft position sensor.

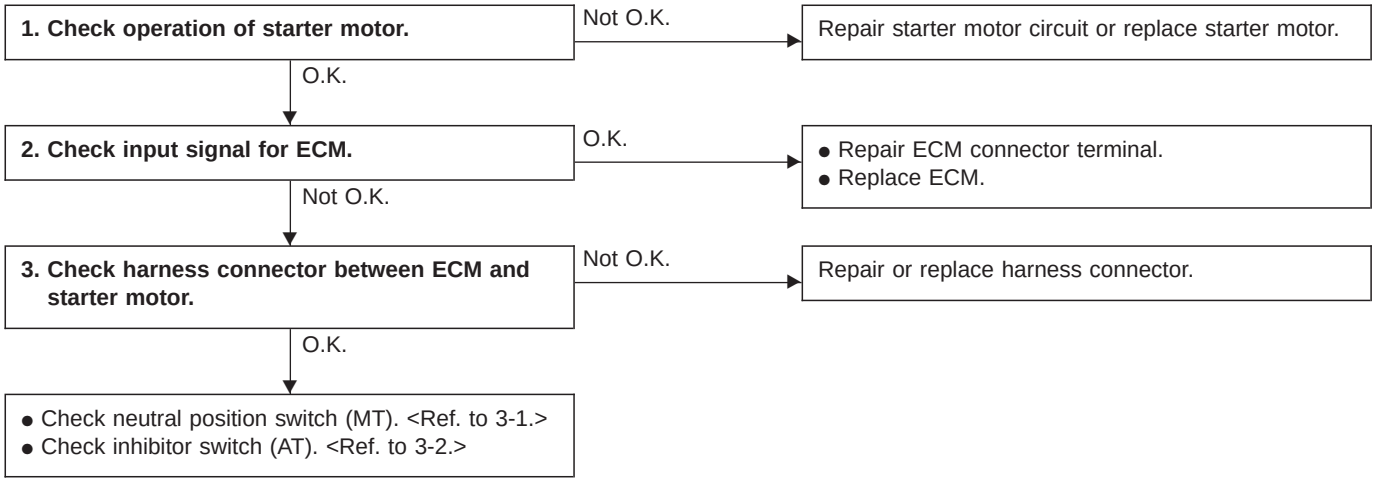
C: TROUBLE CODE (12) — STARTER SWITCH —

DIAGNOSIS:

- The starter switch signal is abnormal.
- The harness connector between ECM and starter switch is in short or open.

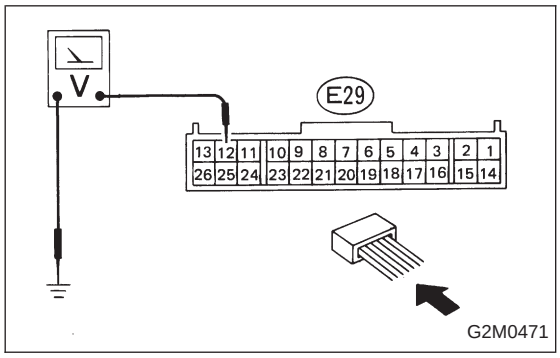
TROUBLE SYMPTOM:

- Failure of engine to start



1. CHECK OPERATION OF STARTER MOTOR.

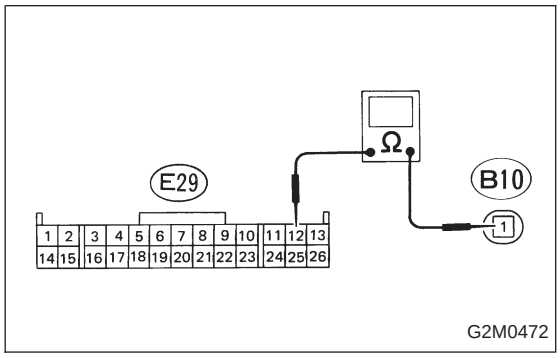
Turn ignition switch to “ST” to ensure that starter motor functions.



2. CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM and body while cranking the engine.

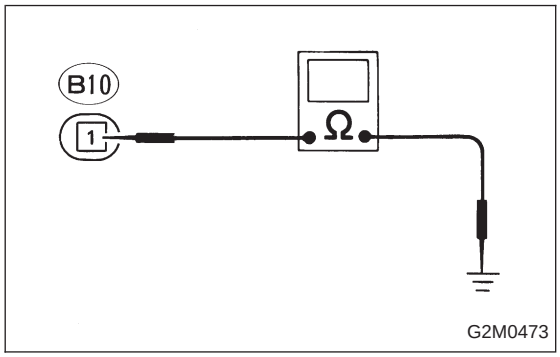
Connector & terminal /Specified voltage:
(E29) No. 12 — Body/13 — 14 V



3. CHECK HARNESS CONNECTOR BETWEEN ECM AND STARTER MOTOR.

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

Connector & terminal /Specified resistance:
(E29) No. 12 — (B10) No. 1/0 Ω



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

Connector & terminal /Specified resistance:
(B10) No. 1 — Body/1 MΩ, min.

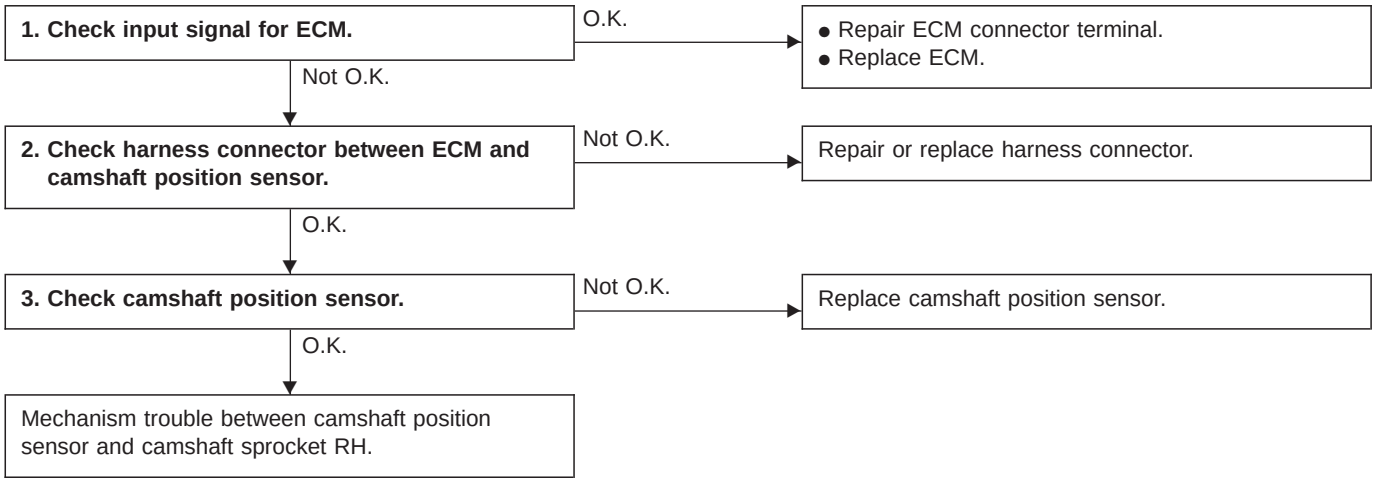
D: TROUBLE CODE (13) — CAMSHAFT POSITION SENSOR —

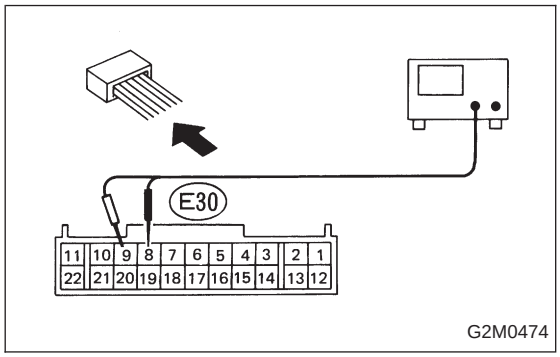
DIAGNOSIS:

- No signal entered from camshaft position sensor, but signal entered from crankshaft position sensor.
- The harness connector between ECM and camshaft position sensor is short or open.

TROUBLE SYMPTOM:

- Engine stalls
- Failure of engine to start

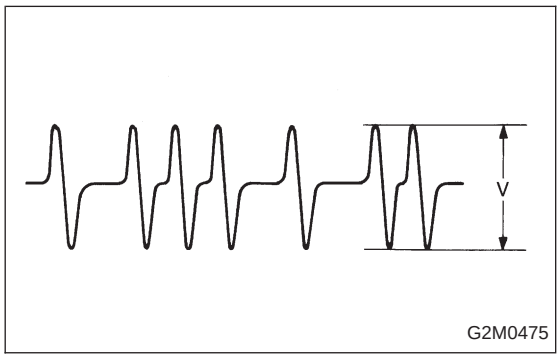




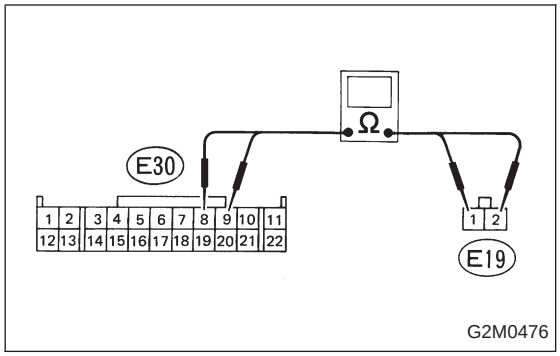
1. CHECK INPUT SIGNAL FOR ECM.

1) Set the positive (+) probe and earth lead of oscilloscope at ECM connector terminals.

Connector & terminal / (E30) No. 8 — (E30) No. 9



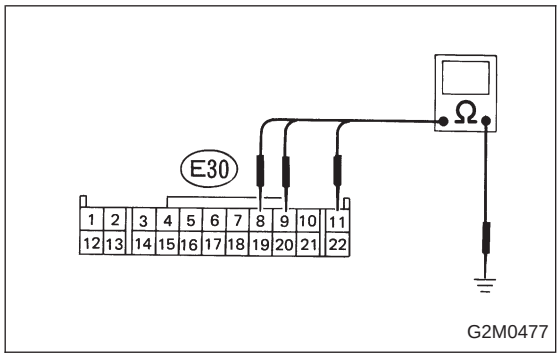
2) Measure signal voltage indicated on oscilloscope, while cranking the engine.



2. CHECK HARNESS CONNECTOR BETWEEN ECM AND CAMSHAFT POSITION SENSOR.

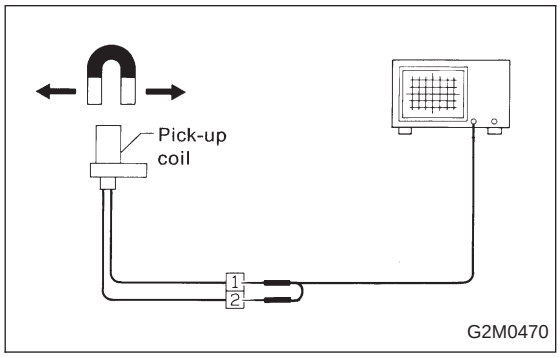
1) Turn ignition switch to OFF.
2) Disconnect connectors from ECM and camshaft position sensor.
3) Measure resistance of harness connector between ECM and camshaft position sensor.

Connector & terminal /Specified resistance:
(E30) No. 8 — (E19) No. 1 /10 Ω, max.
(E30) No. 9 — (E19) No. 2 /10 Ω, max.



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

Connector & terminal /Specified resistance:
(E30) No. 8 — Body /1 MΩ, min.
(E30) No. 9 — Body /1 MΩ, min.
(E30) No. 11 — Body/1 MΩ, min.



3. CHECK CAMSHAFT POSITION SENSOR.

1) Remove camshaft position sensor.
2) Set the position (+) probe at sensor connector terminal No. 1, and set earth lead at terminal No. 2.
3) Check that a wave profile appears crossing a magnet near the pick-up coil of crankshaft position sensor.

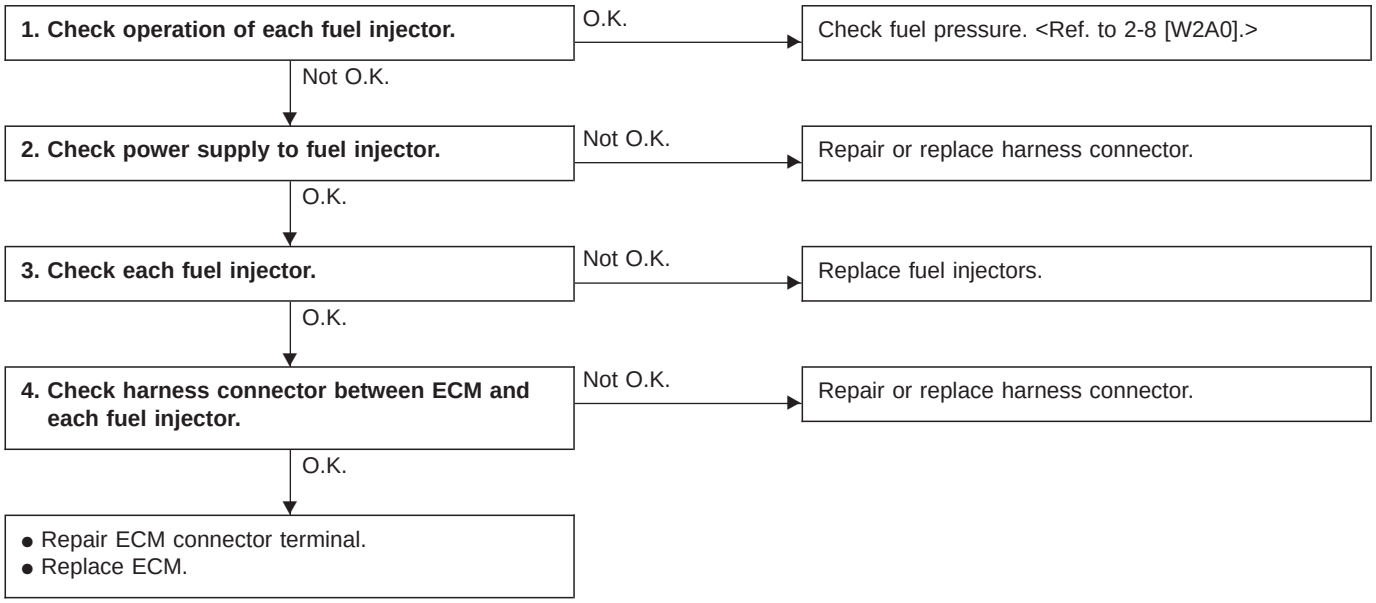
E: TROUBLE CODE 14, 15, 16, 17 — FUEL INJECTOR —

DIAGNOSIS:

- The fuel injector is not in function.
- The harness connector between ECM and each fuel injection is in short or open.

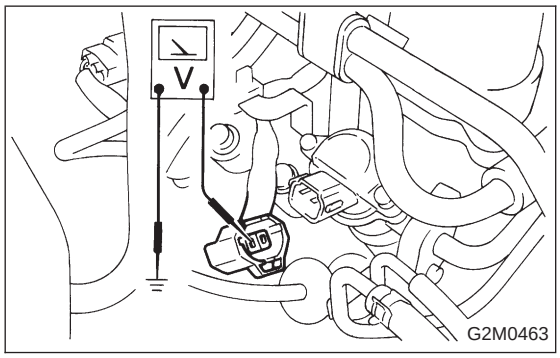
TROUBLE SYMPTOM:

- Engine stalls.
- Erroneous idling
- Rough driving



1. CHECK OPERATION OF EACH FUEL INJECTOR.

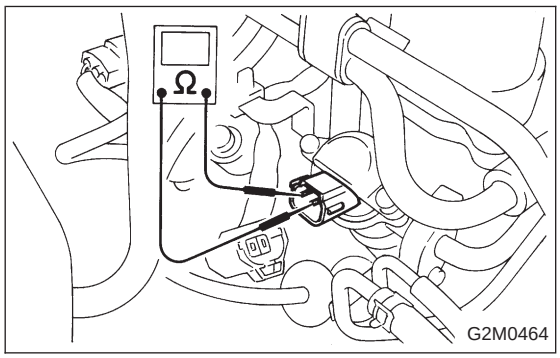
While cranking the engine, check that each fuel injector emits “operating” sound. Use a sound scope or attach a screwdriver to injector for this check.



2. CHECK POWER SUPPLY TO FUEL INJECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from each injector.
3) Turn ignition switch to ON.
4) Measure voltage between each injector connector terminal and body.

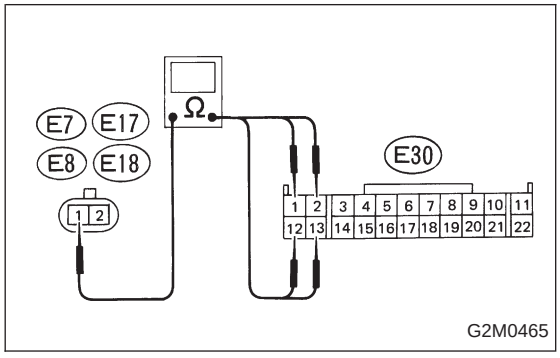
Connector & terminal /Specified voltage:
#1 (E7) No. 2 — Body /10 V, min.
#2 (E17) No. 2 — Body/10 V, min.
#3 (E8) No. 2 — Body /10 V, min.
#4 (E18) No. 2 — Body/10 V, min.



3. CHECK EACH FUEL INJECTOR.

Measure resistance between fuel injector terminals.

Terminals /Specified resistance:
No. 1 — No. 2/11 — 12 Ω



4. CHECK HARNESS CONNECTOR BETWEEN ECM AND EACH FUEL INJECTOR.

1) Disconnect connector from ECM.
2) Measure resistance of harness connector between ECM connector and each fuel injector.

Connector & terminal /Specified resistance:
(E30) No. 2 — (E7) No. 1 /10 Ω, max.
(E30) No. 1 — (E17) No. 1 /10 Ω, max.
(E30) No. 13 — (E8) No. 1 /10 Ω, max.
(E30) No. 12 — (E18) No. 1/10 Ω, max.

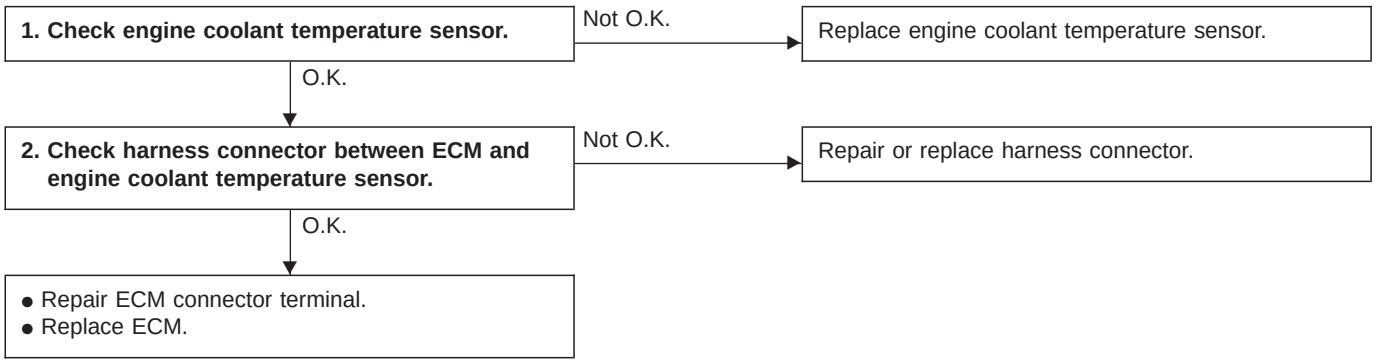
F: TROUBLE CODE (21) — ENGINE COOLANT TEMPERATURE SENSOR —

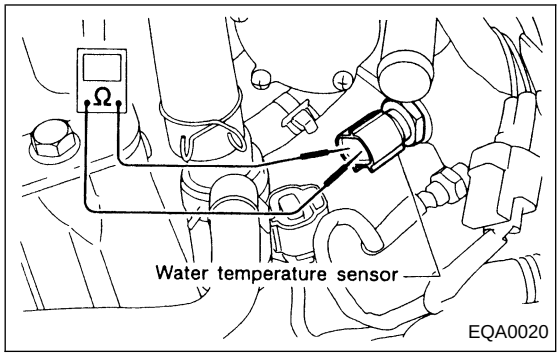
DIAGNOSIS:

- The engine coolant temperature sensor signal is abnormal.
- The harness connector between ECM and engine coolant temperature sensor is in short or open.

TROUBLE SYMPTOM:

- Hard to start
- Erroneous idling
- Poor driving performance

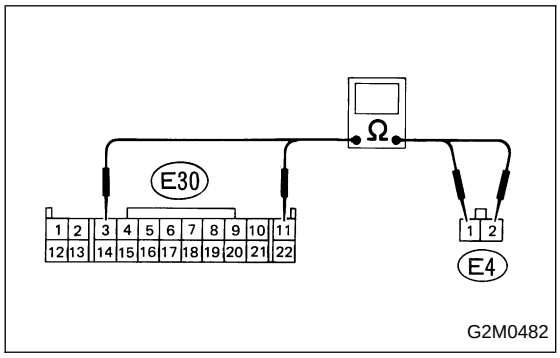




1. CHECK ENGINE COOLANT TEMPERATURE SENSOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from engine coolant temperature sensor.
3) Measure resistance between engine coolant temperature sensor terminals.

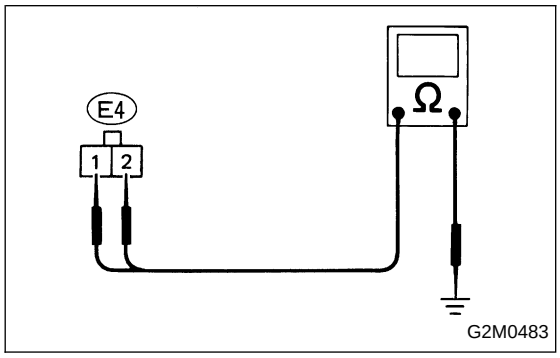
Terminals /Specified resistance:
No. 1 — No. 2/2.0 — 3.0 kΩ at 20°C (68°F)
No. 1 — No. 2/270 — 370 Ω at 80°C (176°F)



2. CHECK HARNESS CONNECTOR BETWEEN ECM AND ENGINE COOLANT TEMPERATURE SENSOR.

1) Disconnect connector from ECM.
2) Measure resistance of harness connector between ECM and engine coolant temperature connector.

Connector & terminal /Specified resistance:
(E30) No. 3 — (E4) No. 1 /10 Ω, max.
(E30) No. 11 — (E4) No. 2/10 Ω, max.



3) Measure resistance of harness connector between engine coolant temperature sensor and body to make sure that circuit does not short.

Connector & terminal /Specified resistance:
(E4) No. 1 — Body/1 MΩ, min.
(E4) No. 2 — Body/1 MΩ, min.

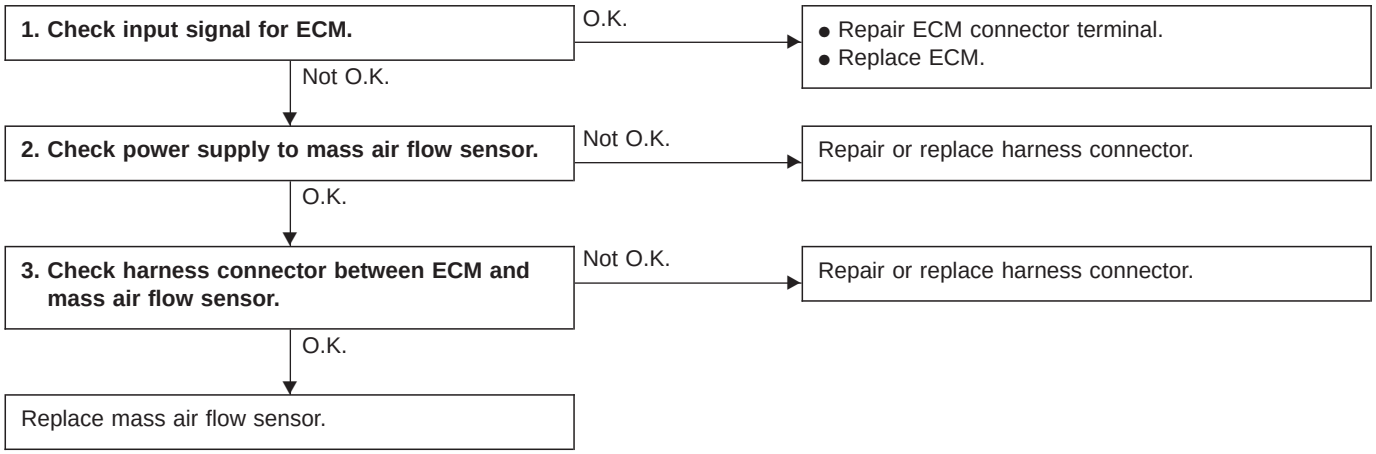
G: TROUBLE CODE (23) — MASS AIR FLOW SENSOR —

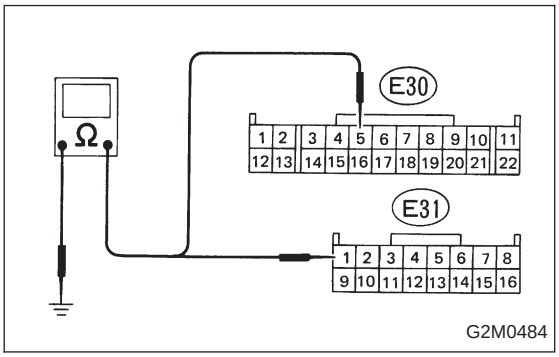
DIAGNOSIS:

- The mass air flow sensor signal is abnormal.
- The harness connector between ECM and mass air flow sensor is in short or open.

TROUBLE SYMPTOM:

- Erroneous idling
- Engine stalls.
- Poor driving performance





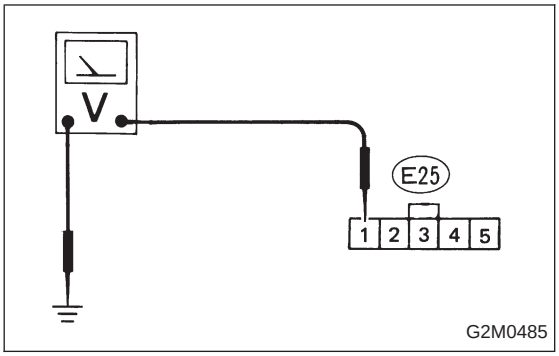
1. CHECK INPUT SIGNAL FOR ECM.

1) Turn ignition switch to ON.
2) Measure voltage between ECM and body.

Connector & terminal /Specified voltage:
(E30) No. 5 — Body/0 — 0.3 V
(E31) No. 1 — Body/0 V

3) Start engine, and idle it.
4) Measure voltage between ECM and body while engine is idling.

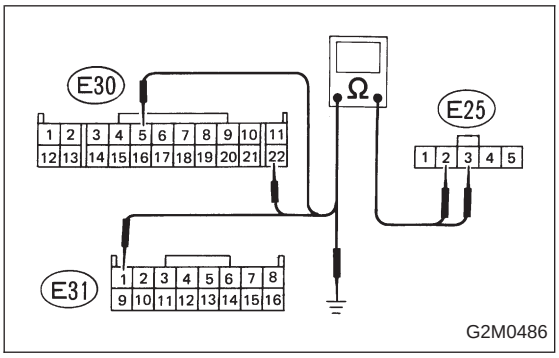
Connector & terminal /Specified voltage:
(E30) No. 5 — Body/0.8 — 1.2 V
(E31) No. 1 — Body/0 V



2. CHECK POWER SUPPLY TO MASS AIR FLOW SENSOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from mass air flow sensor.
3) Turn ignition switch to ON.
4) Measure voltage between mass air flow sensor connector and body.

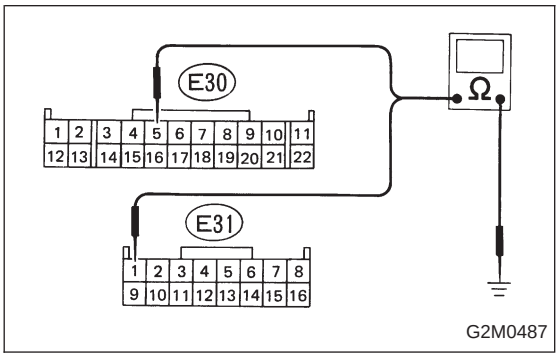
Connector & terminal /Specified voltage:
(E25) No. 1 — Body/10 — 13 V



3. CHECK HARNESS CONNECTOR BETWEEN ECM AND MASS AIR FLOW SENSOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from ECM.
3) Measure resistance of harness connector between ECM and mass air flow sensor.

Connector & terminal /Specified resistance:
(E30) No. 5 — (E25) No. 2 /10 Ω, max.
(E30) No. 22 — (E25) No. 3 /10 Ω, max.
(E25) No. 3 — Body /10 Ω, max.



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

Connector & terminal /Specified resistance:
(E30) No. 5 — Body/1 MΩ, min.
(E31) No. 1 — Body/1 MΩ, min.

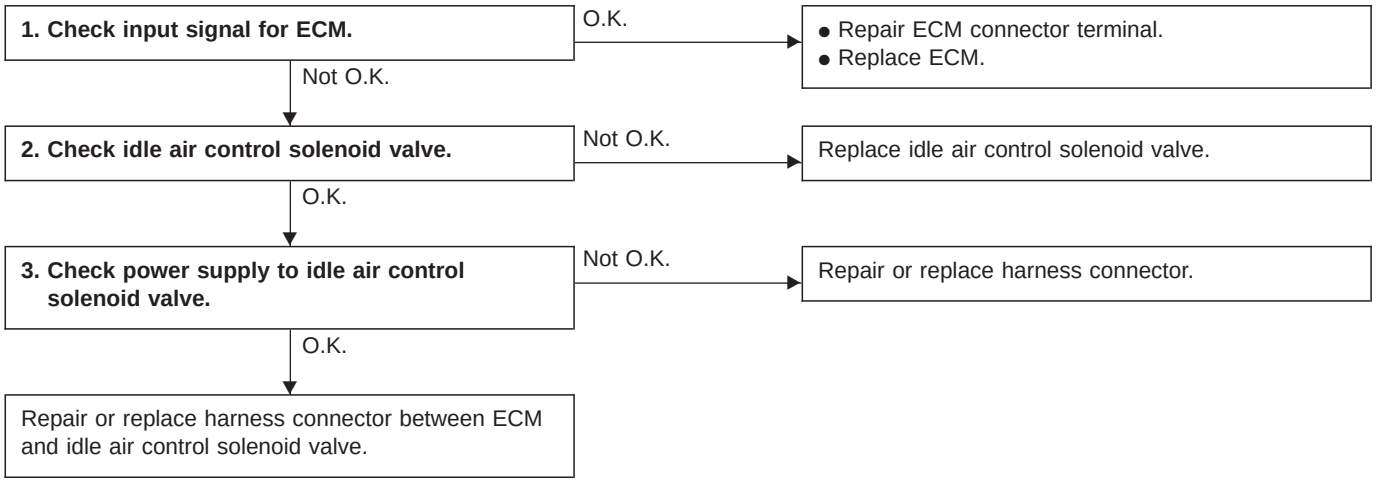
H: TROUBLE CODE (24) — IDLE AIR CONTROL SOLENOID VALVE —

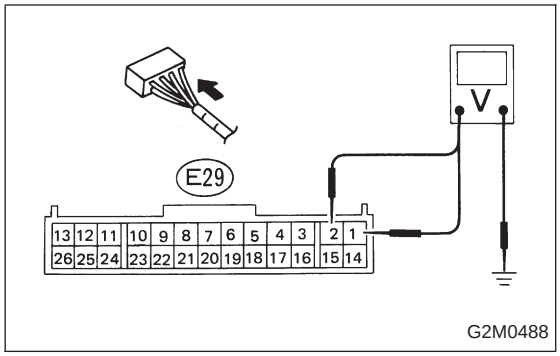
DIAGNOSIS:

- The idle air control solenoid valve is not in function.
- The harness connector between ECM and idle air control solenoid valve is in short or open.

TROUBLE SYMPTOM:

- Erroneous idling
- Engine stalls.
- Engine breathing

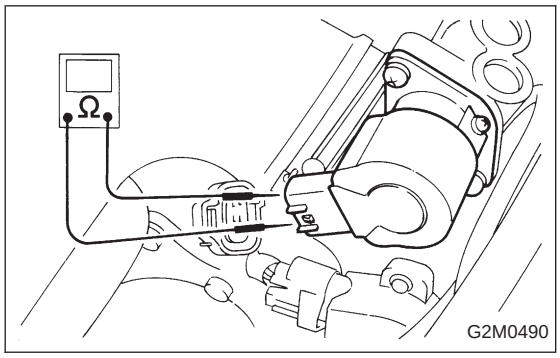




1. CHECK INPUT SIGNAL FOR ECM.

1) Turn ignition switch to ON.
2) Measure voltage between ECM and body.

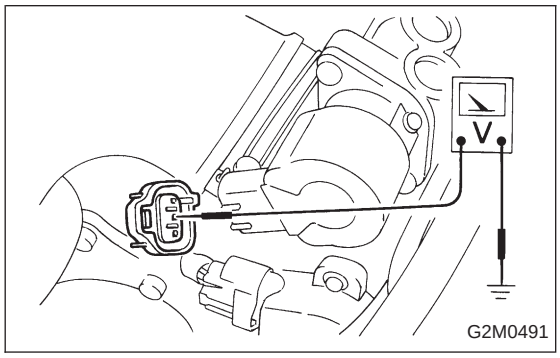
Connector & terminal /Specified voltage:
(E29) No. 2 — Body/0 V → 13 V
(E29) No. 1 — Body/13 V → 0 V



2. CHECK IDLE AIR CONTROL SOLENOID VALVE.

1) Turn ignition switch to OFF.
2) Disconnect connector from idle air control solenoid valve.
3) Measure resistance between solenoid valve terminals.

Terminals /Specified resistance:
No. 1 — No. 2/32 Ω
No. 2 — No. 3/32 Ω



3. CHECK POWER SUPPLY TO IDLE AIR CONTROL SOLENOID VALVE.

1) Turn ignition switch to ON.
2) Measure voltage between idle air control solenoid valve and body.

Connector & terminal /Specified voltage:
(E11) No. 2 — Body/10 V, min.

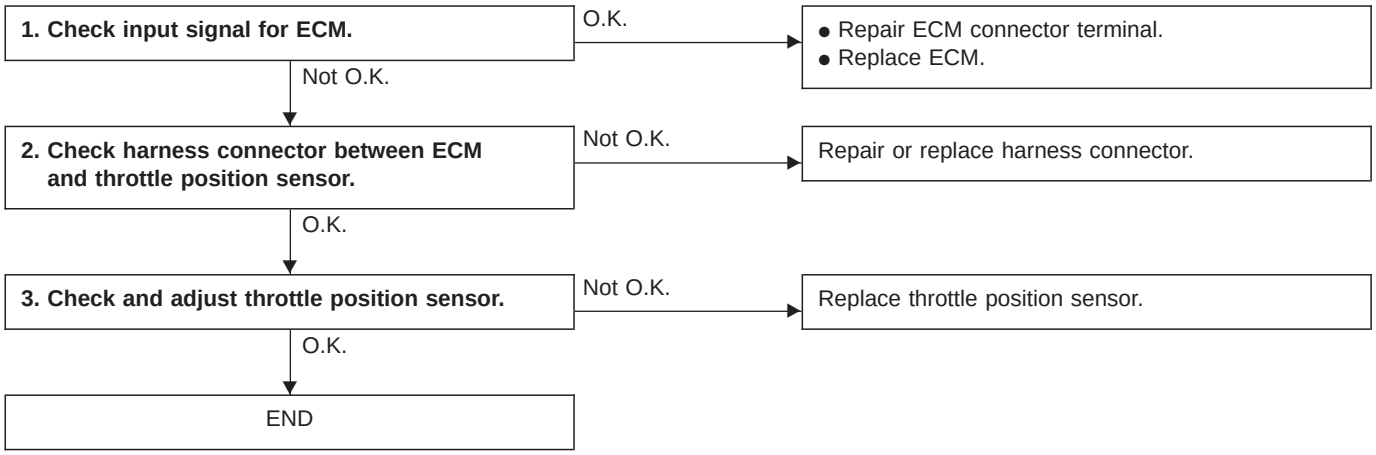
I: TROUBLE CODE (31) — THROTTLE POSITION SENSOR —

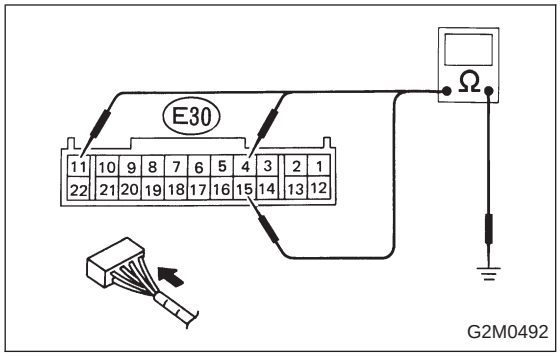
DIAGNOSIS:

- The throttle position sensor signal is abnormal.
- The throttle position sensor is installed abnormally.
- The harness connector between ECM and throttle position sensor is in short or open.

TROUBLE SYMPTOM:

- Erroneous idling
- Engine stalls.
- Poor driving performance





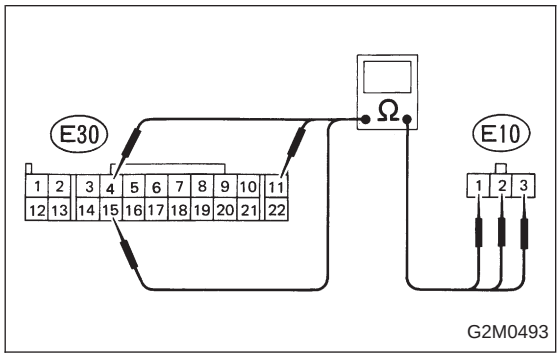
1. CHECK INPUT SIGNAL FOR ECM.

1) Turn ignition switch to ON.
2) Measure signal voltage between ECM and body while throttle valve is fully closed.

Connector & terminal /Specified voltage:
(E30) No. 15 — Body/4.4 — 5.5 V
(E30) No. 4 — Body /0.4 — 0.5 V
(E30) No. 11 — Body/0 V

3) Measure signal voltage between ECM and body while throttle valve is fully opened.

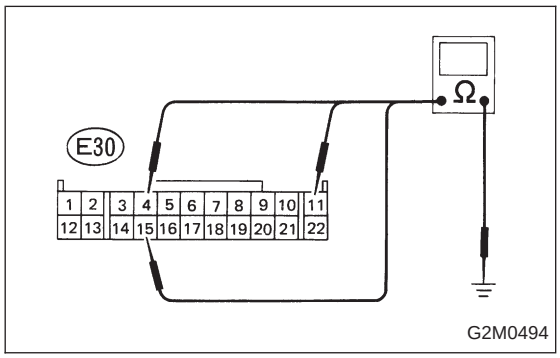
Connector & terminal /Specified voltage:
(E30) No. 15 — Body/4.4 — 5.5 V
(E30) No. 4 — Body /3.5 — 4.3 V
(E30) No. 11 — Body/0 V



2. CHECK HARNESS CONNECTOR BETWEEN ECM AND THROTTLE POSITION SENSOR.

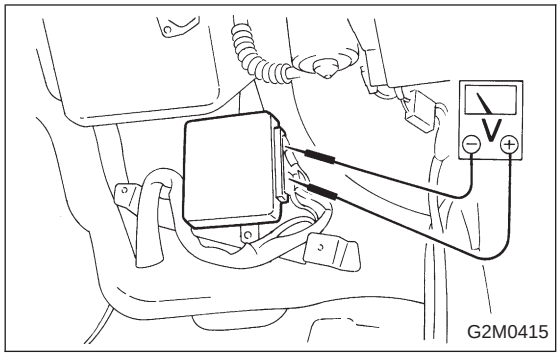
1) Turn ignition switch to OFF.
2) Disconnect connectors from ECM and throttle position sensor.
3) Measure resistance of harness connector between ECM and throttle position sensor.

Connector & terminal /Specified resistance:
(E30) No. 15 — (E10) No. 1/10 Ω, max.
(E30) No. 4 — (E10) No. 2 /10 Ω, max.
(E30) No. 11 — (E10) No. 3/10 Ω, max.



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

Connector & terminal /Specified resistance:
(E30) No. 15 — Body/1 MΩ, min.
(E30) No. 4 — Body /1 MΩ, min.
(E30) No. 11 — Body/1 MΩ, min.



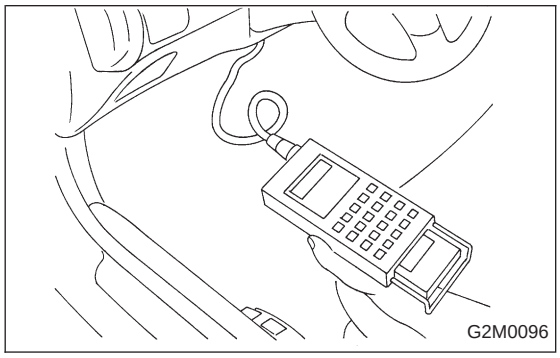
3. CHECK AND ADJUST THROTTLE POSITION SENSOR.

1) Connect all connectors.
2) Loosen throttle position sensor installing screws.
3) Adjust throttle position sensor while throttle valve is fully closed.

- Using voltage meter:
  (1) Turn ignition switch to ON.
  (2) Adjust throttle position sensor to specified voltage between ECM connector terminals.

Connector & terminal /Specified voltage:
(E30) No. 15 — (E30) No. 4/0.45 — 0.55 V

(3) Tighten throttle position sensor installing screws.



- Using select monitor:
  (1) Attach select monitor.
  (2) Turn ignition switch to ON.
  (3) Select mode “F10”.
  (4) Adjust throttle position sensor to specified data.

Conditions /Specified data:
Throttle valve fully closed/0.50 V

(5) Tighten throttle position sensor installing screws.

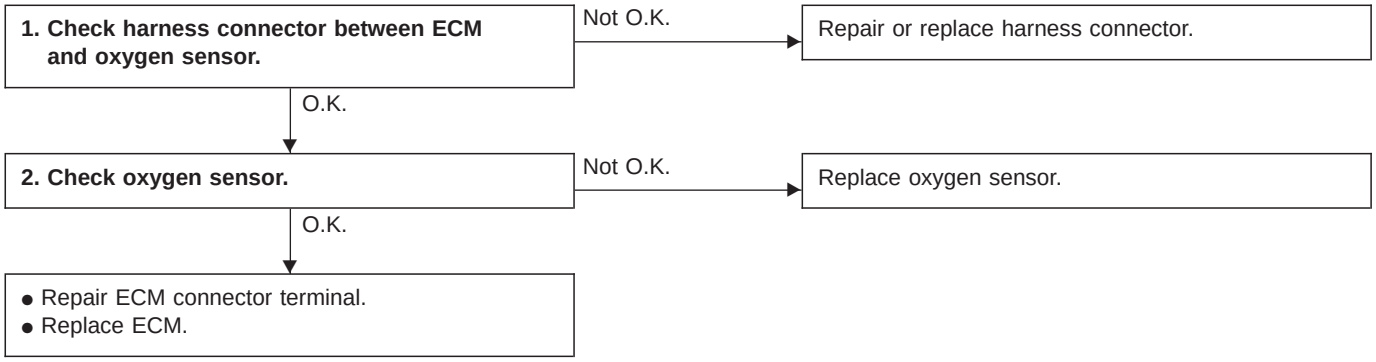
J: TROUBLE CODE (32) — OXYGEN SENSOR —

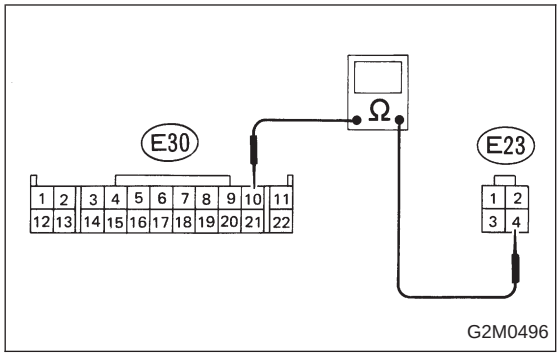
DIAGNOSIS:

- The oxygen sensor is not in function.
- The harness connector between ECM and oxygen sensor is in short or open.

TROUBLE SYMPTOM:

- Failure of engine to start
- Erroneous idling
- Poor driving performance
- Engine stalls.
- Idle mixture is out of specifications.

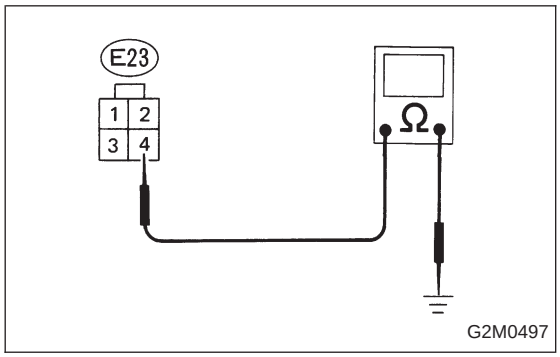




1. CHECK HARNESS CONNECTOR BETWEEN ECM AND OXYGEN SENSOR.

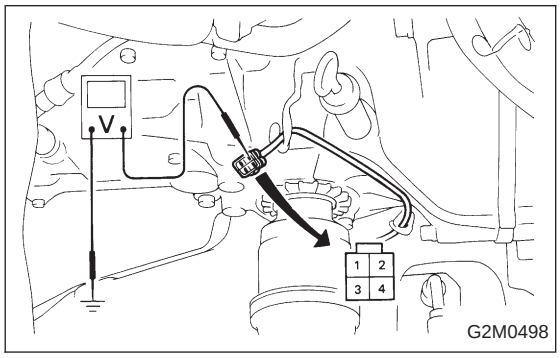
1) Disconnect connectors from ECM and oxygen sensor.
2) Measure resistance of harness connector between ECM and oxygen sensor.

Connector & terminal /Specified resistance:
(E30) No. 10 — (E23) No. 4/0 Ω



3) Measure resistance of harness connector between oxygen sensor and body to make sure that circuit does not short.

Connector & terminal /Specified resistance:
(E23) No. 4 — Body /1 MΩ, min.



2. CHECK OXYGEN SENSOR.

1) Idle engine.
2) Disconnect oxygen sensor connector.
3) Measure voltage between oxygen sensor terminal and body.

Connector & terminal/Specified voltage:
No. 4 — Body /0.1 — 1.0 V

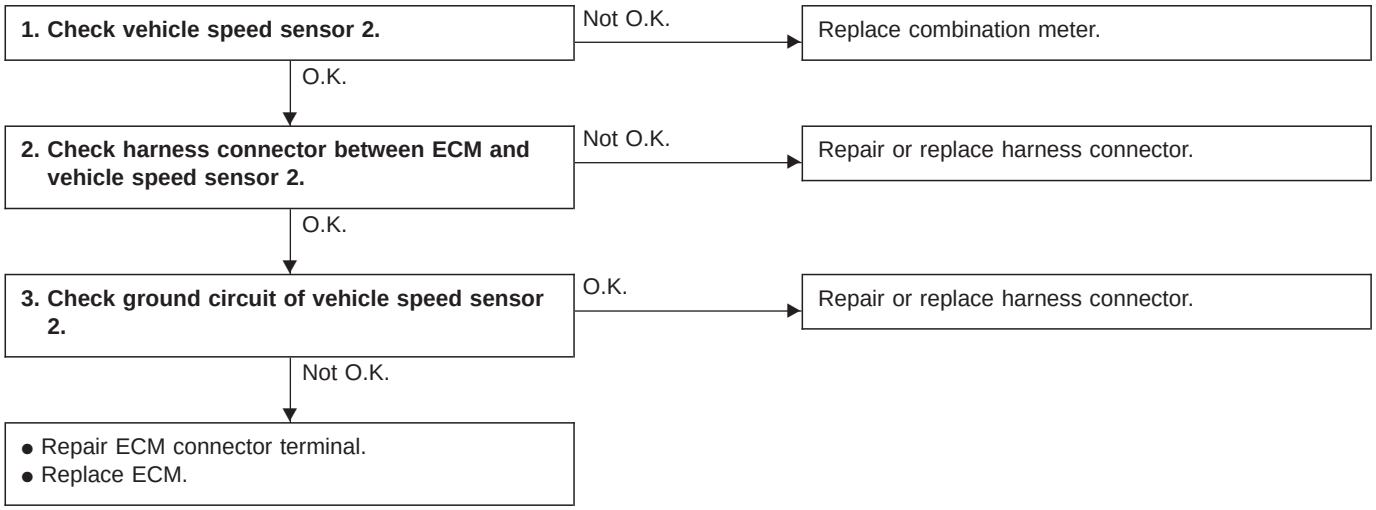
K: TROUBLE CODE (33) — VEHICLE SPEED SENSOR 2 —

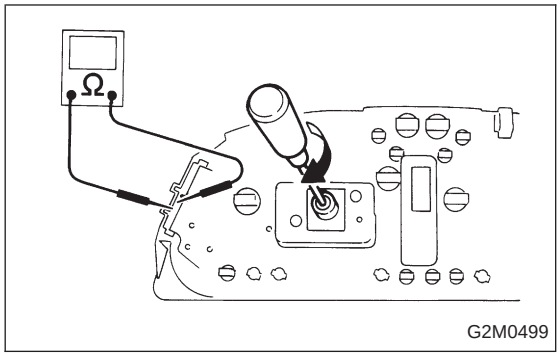
DIAGNOSIS:

- The vehicle speed sensor 2 is not in function.
- The harness connector between ECM and vehicle speed sensor 2 is in short or open.

TROUBLE SYMPTOM:

- Erroneous idling
- Engine stalls.
- Poor driving performance

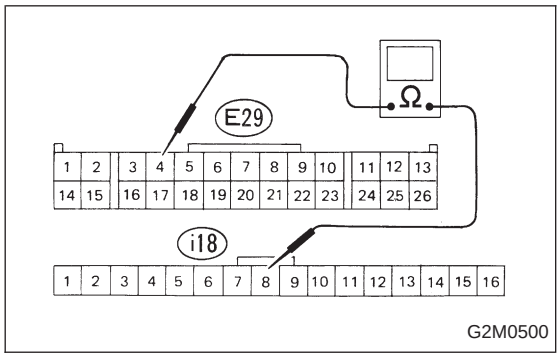




1. CHECK VEHICLE SPEED SENSOR 2.

1) Remove combination meter.
2) Measure resistance between connector terminals of combination meter by rotating rotor of speedometer cable hole with screwdriver.

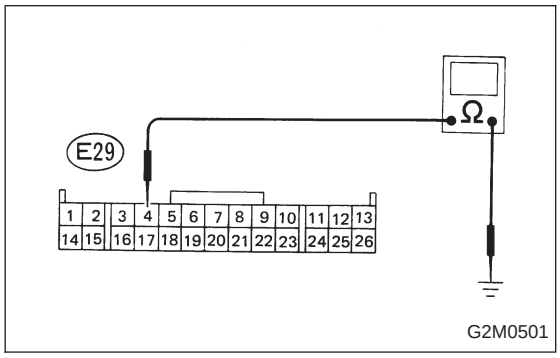
Terminals /Specified resistance:
No. 11 — No. 8/10 Ω, max. ↔ 1 MΩ, min.
(Four times per rotation)



2. CHECK HARNESS CONNECTOR BETWEEN ECM AND VEHICLE SPEED SENSOR 2.

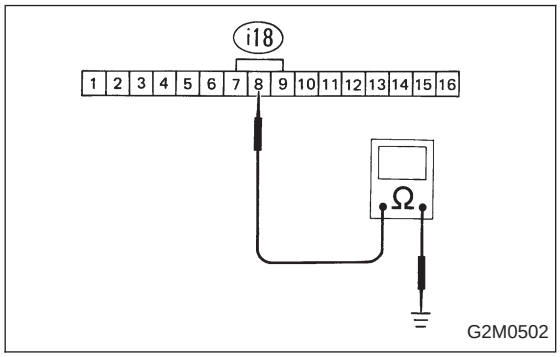
1) Turn ignition switch to OFF.
2) Disconnect connector from ECM.
3) Measure resistance of harness connector between ECM and combination meter.

Connector & terminal /Specified resistance:
(E29) No. 4 — (i18) No. 8/10 Ω, max.



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

Connector & terminal /Specified resistance:
(E29) No. 4 — Body /1 MΩ, min.



3. CHECK GROUND CIRCUIT OF VEHICLE SPEED SENSOR 2.

Measure resistance between combination meter and body.

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

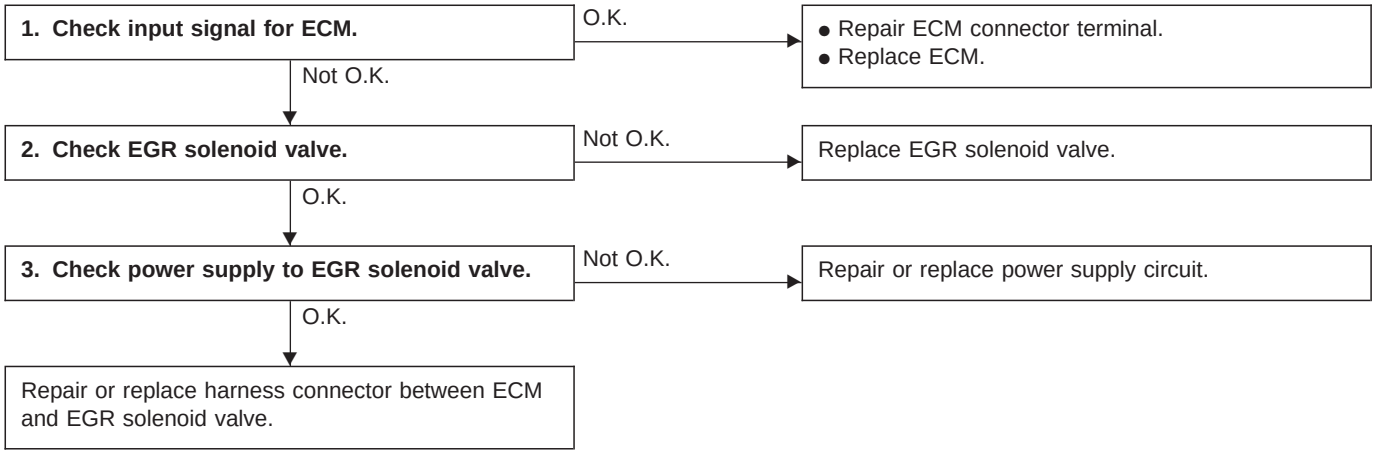
L: TROUBLE CODE (34) — EGR SOLENOID VALVE —

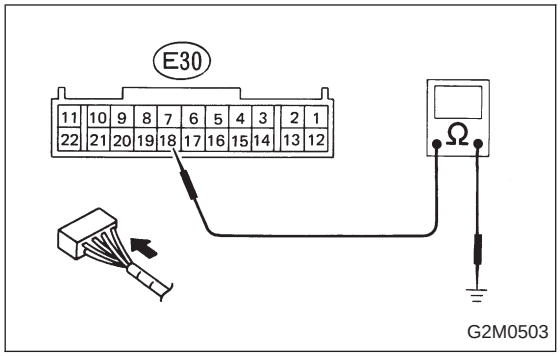
DIAGNOSIS:

- The EGR solenoid valve is not in function.
- The harness connector between ECM and EGR solenoid valve is in short or open.

TROUBLE SYMPTOM:

- Poor driving performance on low engine speed





1. CHECK INPUT SIGNAL FOR ECM.

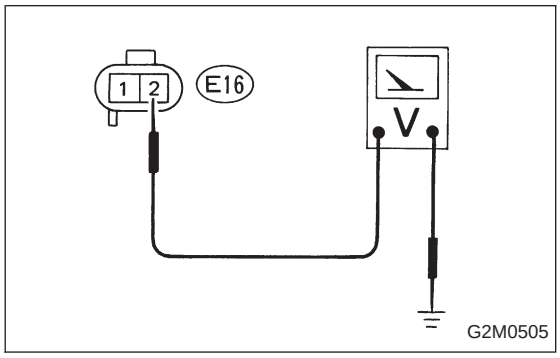
1) Turn ignition switch to ON.
2) Measure signal voltage between ECM and body.

Connector & terminal /Specified voltage:
(E30) No. 18 — Body/10 V, max.

2. CHECK EGR SOLENOID VALVE.

1) Turn ignition switch to OFF.
2) Disconnect connector from EGR solenoid valve.
3) Measure resistance between connector terminals of EGR solenoid valve.

Terminals /Specified resistance:
No. 1 — No. 2/36 Ω at 20°C (68°F)



3. CHECK POWER SUPPLY TO EGR SOLENOID VALVE.

1) Turn ignition switch to ON.
2) Measure voltage between EGR solenoid valve connector and body.

Connector & terminal /Specified voltage:
(E16) No. 2 — Body/10 V, max.

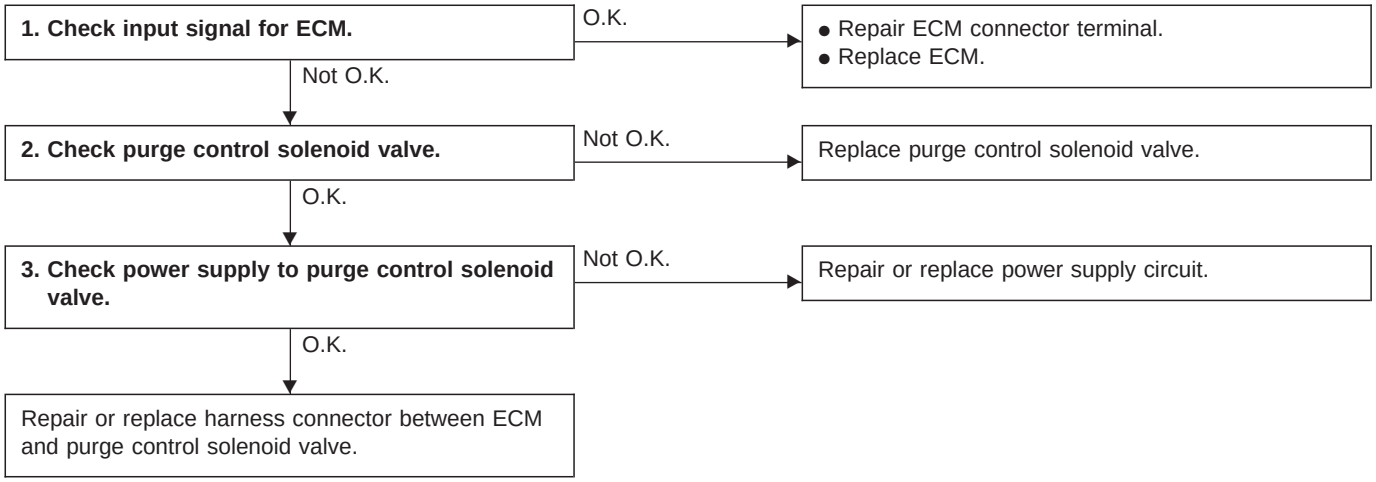
M: TROUBLE CODE (35) — PURGE CONTROL SOLENOID VALVE —

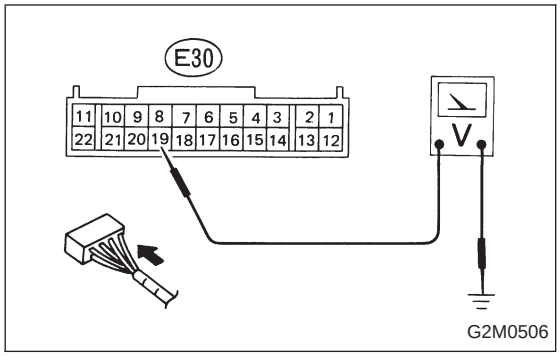
DIAGNOSIS:

- The purge control solenoid valve is not in function.
- The harness connector between ECM and purge control solenoid valve is in short or open.

TROUBLE SYMPTOM:

- Erroneous idling





1. CHECK INPUT SIGNAL FOR ECM.

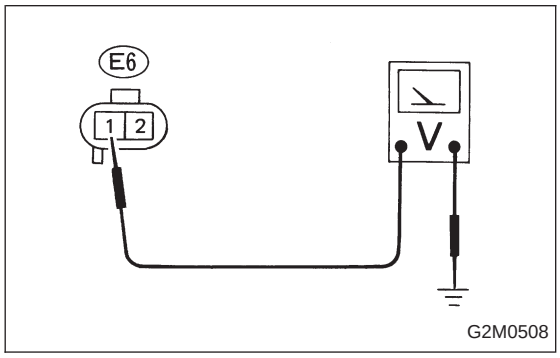
1) Turn ignition switch to ON.
2) Measure voltage between ECM connector terminal and body.

Connector & terminal /Specified voltage:
(E30) No. 19 — Body/10 — 13 V

2. CHECK PURGE CONTROL SOLENOID VALVE.

1) Turn ignition switch to OFF.
2) Remove purge control solenoid valve.
3) Measure resistance between solenoid valve terminals.

Terminals/Specified resistance:
No. 1 — No. 2/36 Ω [at 20°C (68°F)]



3. CHECK POWER SUPPLY TO PURGE CONTROL SOLENOID VALVE.

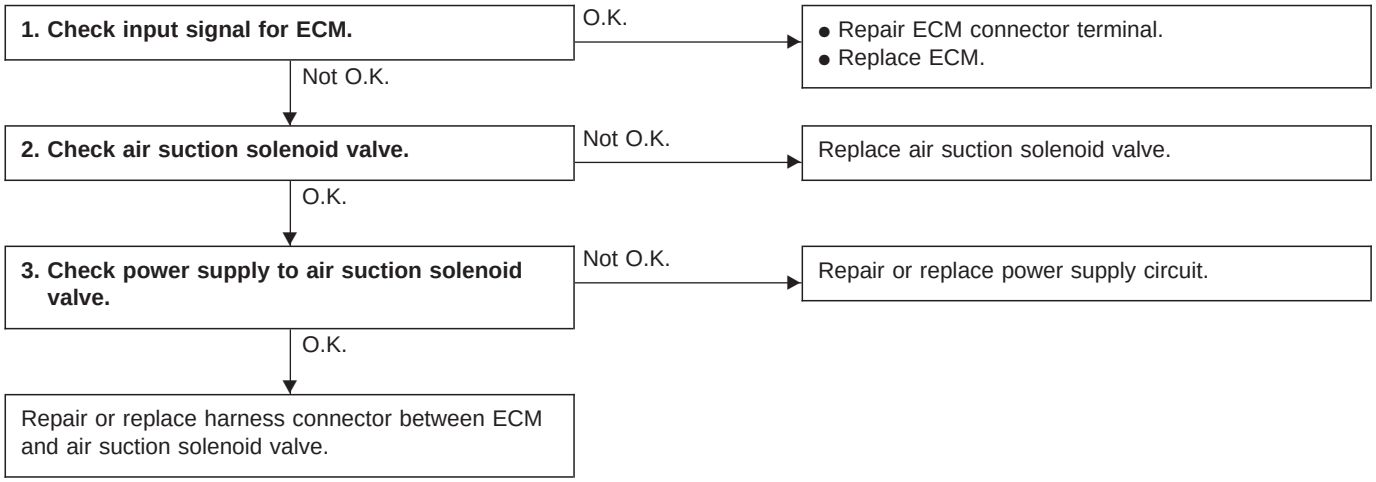
1) Turn ignition switch to ON.
2) Measure voltage between purge control solenoid valve connector and body.

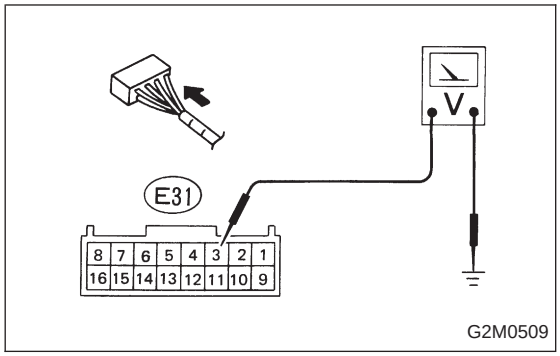
Connector & terminal /Specified voltage:
(E6) No. 1 — Body/10 V, min.

N: TROUBLE CODE (36) — AIR SUCTION SOLENOID VALVE —

DIAGNOSIS:

- The air suction solenoid valve is not in function.
- The harness connector between ECM and air suction solenoid valve is in short or open.

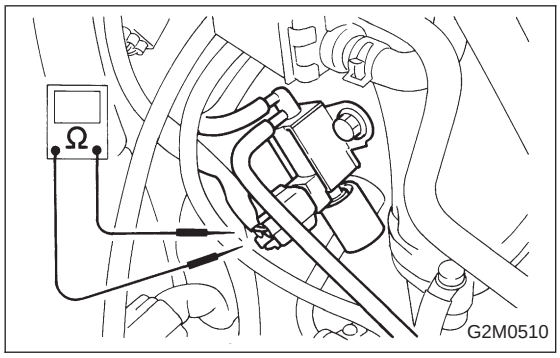




1. CHECK INPUT SIGNAL FOR ECM.

1) Turn ignition switch to ON.
2) Measure signal voltage between ECM and body.

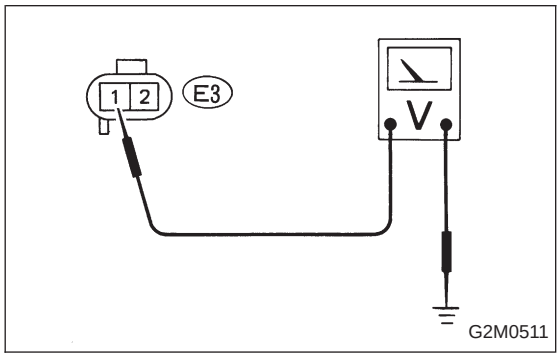
Connector & terminal /Specified voltage:
(E31) No. 3 — Body/10 V, max.



2. CHECK AIR SUCTION SOLENOID VALVE.

1) Turn ignition switch to OFF.
2) Disconnect connector from air suction solenoid valve.
3) Measure resistance between connector terminals of air suction solenoid valve.

Terminals /Specified resistance:
No. 1 — No. 2/36 Ω at 20°C (68°F)



3. CHECK POWER SUPPLY TO AIR SUCTION SOLENOID VALVE.

1) Turn ignition switch to ON.
2) Measure voltage between air suction solenoid valve connector and body.

Connector & terminal /Specified voltage:
(E3) No. 1 — Body/10 V, max.

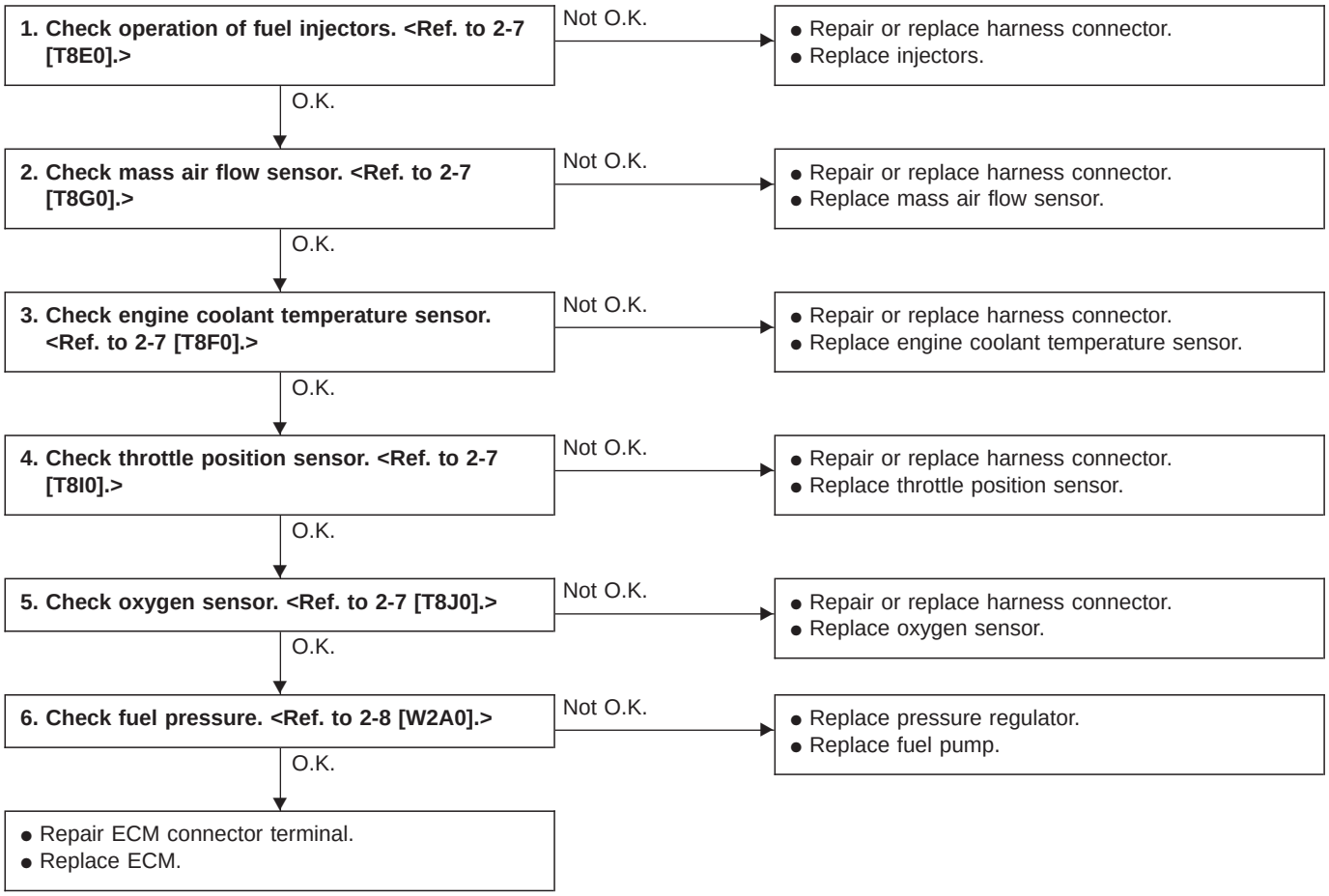
O: TROUBLE CODE (41)
— A/F (AIR/FUEL) LEARNING CONTROL —

DIAGNOSIS:

- Faulty learning control function

TROUBLE SYMPTOM:

- Erroneous idling
- Engine stalls.



P: TROUBLE CODE (51)

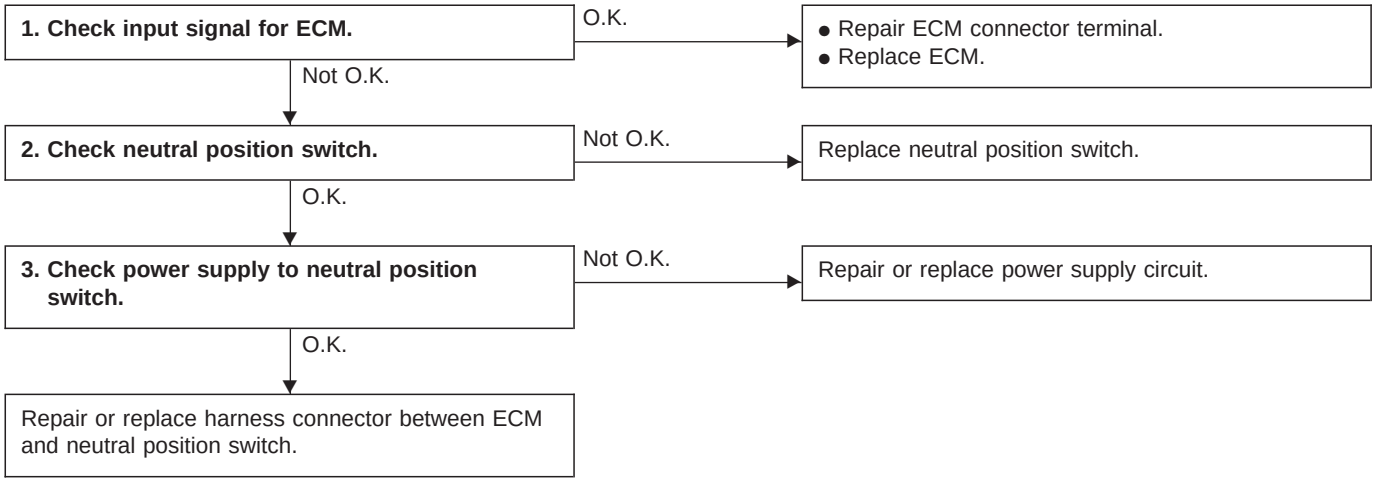
— NEUTRAL POSITION SWITCH (MT) —

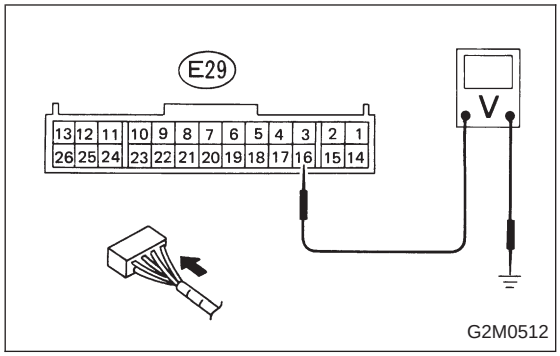
DIAGNOSIS:

- The neutral position switch signal is abnormal.
- The harness connector between ECM and neutral position switch is in short or open.

TROUBLE SYMPTOM:

- Erroneous idling

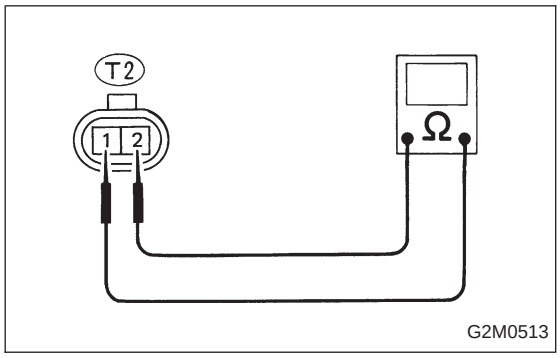




1. CHECK INPUT SIGNAL FOR ECM.

1) Turn ignition switch to ON.
2) Measure voltage between ECM and body.

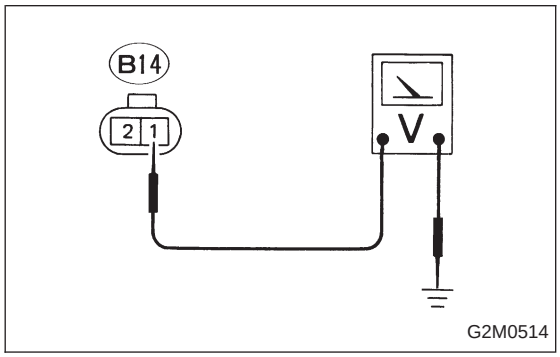
Connector & terminal /Specified voltage:
(E29) No. 16 — Body/10 — 14 V (Neutral position)
0 V (Other positions)



2. CHECK NEUTRAL POSITION SWITCH.

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

Connector & terminal /Specified resistance:
(T2) No. 1 — (T2) No. 2 /1 MΩ, min.
(Neutral position)
10 Ω, max.
(Other positions)



3. CHECK POWER SUPPLY TO NEUTRAL POSITION SWITCH.

1) Turn ignition switch to ON.
2) Measure voltage between neutral position switch connector and body.

Connector & terminal /Specified voltage:
(B14) No. 1 — Body/10 V, min.

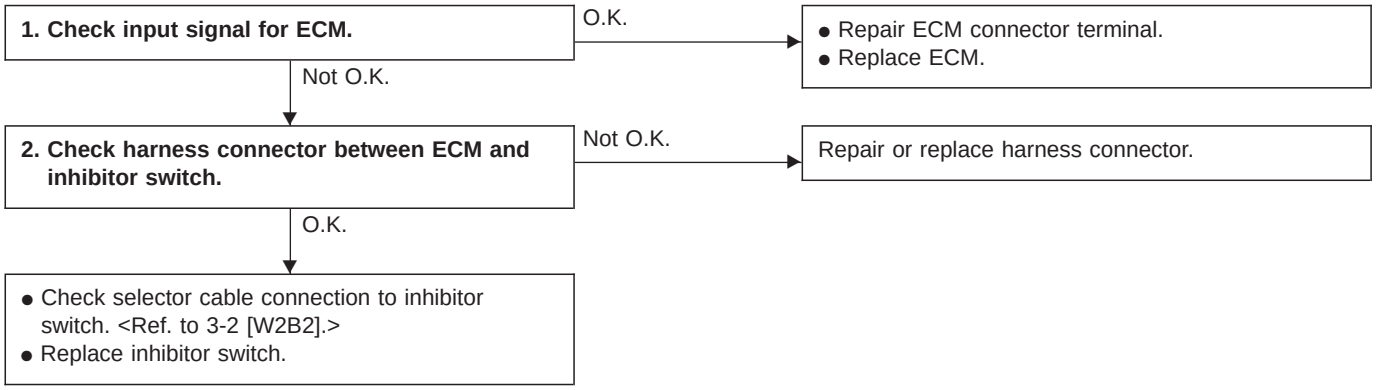
Q: TROUBLE CODE (51) — INHIBITOR SWITCH (AT) —

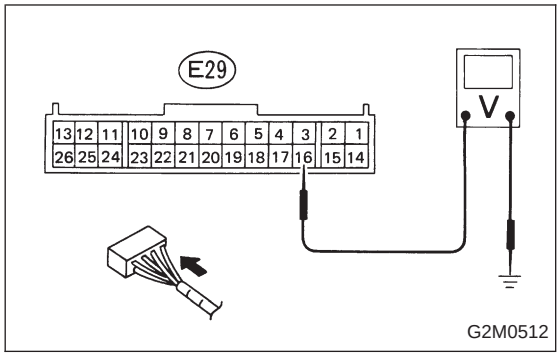
DIAGNOSIS:

- The park/neutral position switch signal is abnormal.
- The shift cable is connected abnormally.
- The harness connector between ECM and inhibitor switch is in short or open.

TROUBLE SYMPTOM:

- Erroneous idling

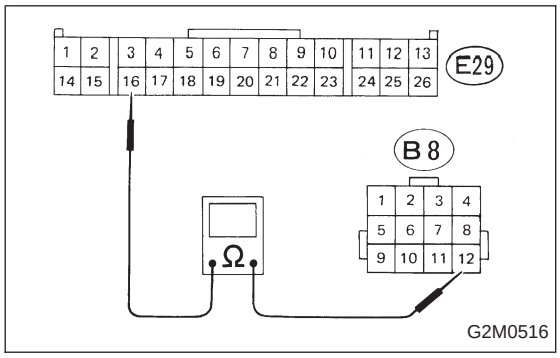




1. CHECK INPUT SIGNAL FOR ECM.

1) Turn ignition switch to ON.
2) Measure voltage between ECM and body.

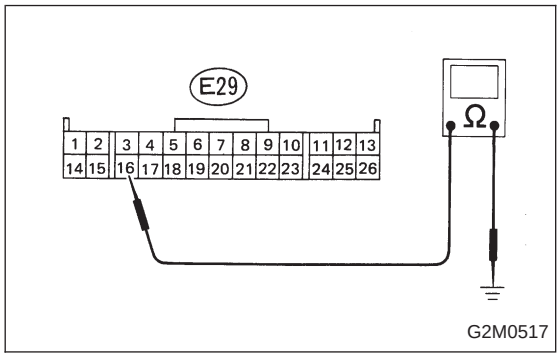
Connector & terminal /Specified voltage:
(E29) No. 16 — Body/10 — 14 V
("P" or "N" position)
0 V (Other positions)



2. CHECK HARNESS CONNECTOR BETWEEN ECM AND INHIBITOR SWITCH.

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

Connector & terminal /Specified resistance:
(E29) No. 16 — (B8) No. 1/10 Ω, max.
(E29) No. 16 — (B8) No. 3/10 Ω, max.



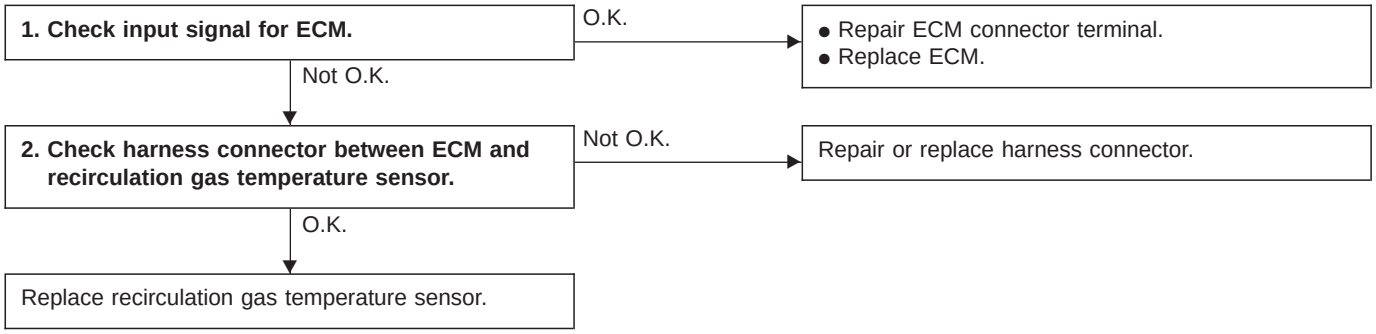
4) Measure resistance harness connector between ECM and body to make sure that circuit does not short.

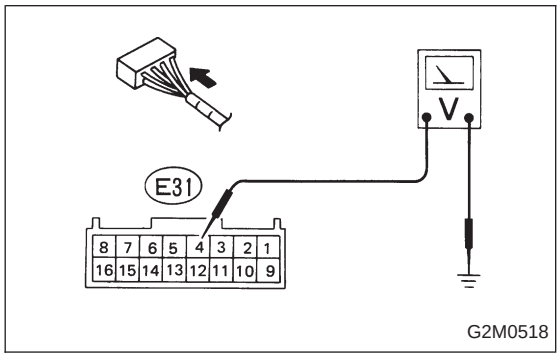
Connector & terminal /Specified resistance:
(E29) No. 16 — Body/1 MΩ, min.

R: TROUBLE CODE (55) — RECIRCULATION GAS TEMPERATURE SENSOR —

DIAGNOSIS:

- The recirculation gas temperature sensor is not in function.
- The harness connector between ECM and recirculation gas temperature sensor is in short or open.

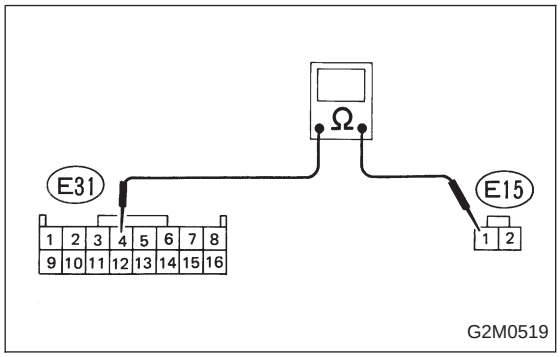




1. CHECK INPUT SIGNAL FOR ECM.

1) Turn ignition switch to ON.
2) Measure signal voltage between ECM and body.

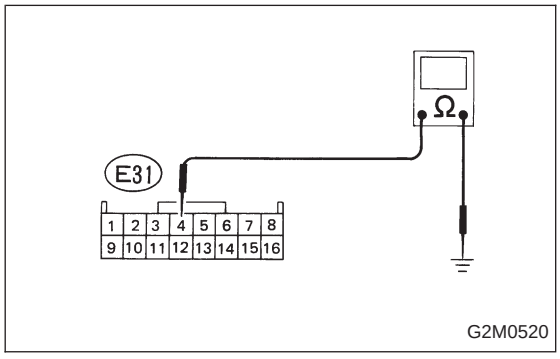
Connector & terminal /Specified voltage:
(E31) No. 4 — Body/4 — 4.8 V at 20°C (68°F)
(E31) No. 4 — Body/0.4 — 1.2 V at 100°C (212°F)



2. CHECK HARNESS CONNECTOR BETWEEN ECM AND RECIRCULATION GAS TEMPERATURE SENSOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from recirculation gas temperature sensor.
3) Measure resistance of harness connector between ECM and recirculation gas temperature sensor.

Connector & terminal /Specified resistance:
(E31) No. 4 — (E15) No. 1/10 Ω, max.



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

Connector & terminal /Specified resistance:
(E31) No. 4 — Body/1 MΩ, max.

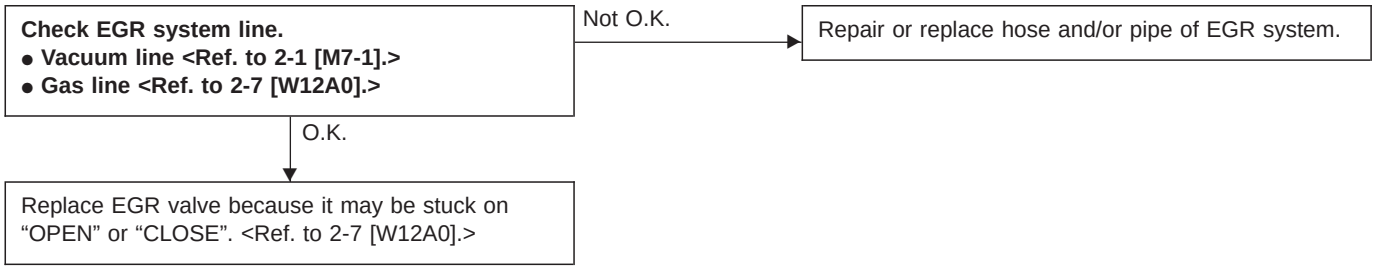
S: TROUBLE CODE (56) — EGR SYSTEM —

DIAGNOSIS:

● Faulty EGR system function

TROUBLE SYMPTOM:

● Poor driving performance on low engine speed

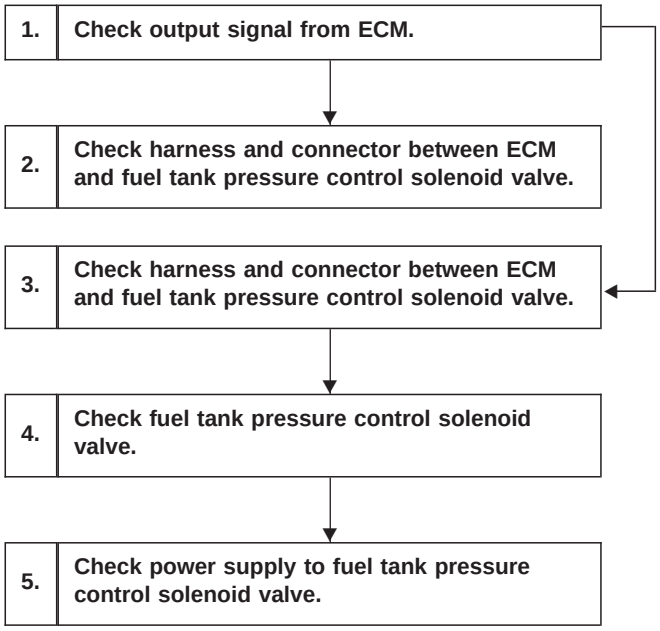


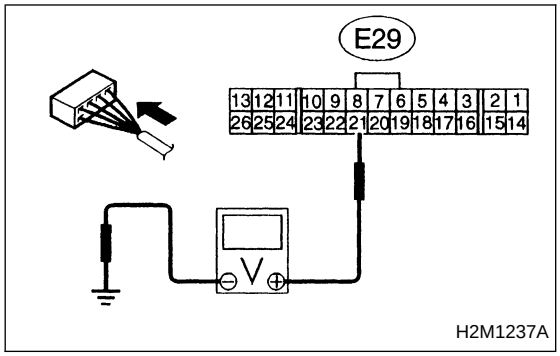
T: TROUBLE CODE (61)

— FUEL TANK PRESSURE CONTROL SOLENOID VALVE —

DIAGNOSIS:

● The fuel tank pressure control solenoid valve is not in function.
● The harness connector between ECM and fuel tank pressure control solenoid valve is in short or open.





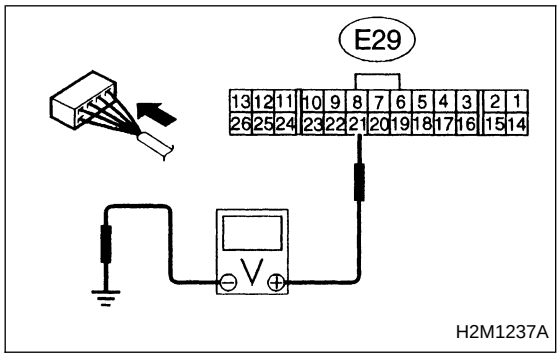
1. CHECK OUTPUT SIGNAL FROM ECM.

1) Turn ignition switch to ON.
2) Measure voltage between ECM connector and body.

CHECK ***: Connector & terminal (E29) No. 21 — Body/10 V, or more***

YES : Go to step 2.

NO : Go to step 3.



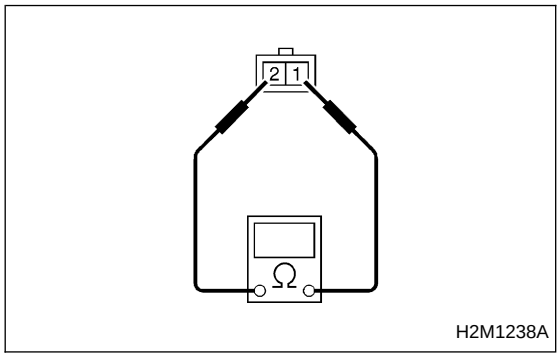
2. CHECK HARNESS AND CONNECTOR BETWEEN ECM AND FUEL TANK PRESSURE CONTROL SOLENOID VALVE.

1) Turn ignition switch to OFF.
2) Disconnect connector from fuel tank pressure control solenoid valve.
3) Turn ignition switch to ON.
4) Measure voltage between ECM and body.

CHECK ***: Connector & terminal (E29) No. 21 — Body/10 V, or more***

YES : Repair short circuit of harness between ECM and fuel tank pressure control solenoid valve connector. After repair, replace ECM with a new one.

NO : Go to next step.



5) Turn ignition switch to OFF.
6) Measure resistance between fuel tank pressure control solenoid valve terminals.

CHECK ***: Connector & terminal No. 1 — No. 2/1 Ω, or less***

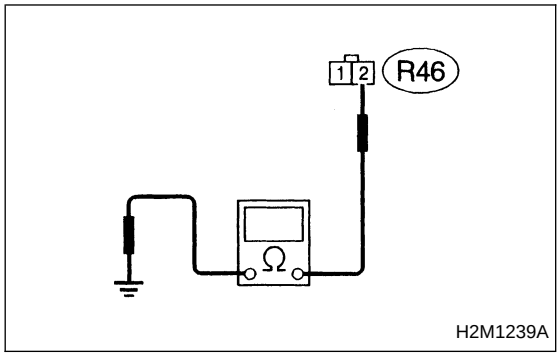
YES : Replace fuel tank pressure control solenoid valve and ECM.

NO : Go to next CHECK .

CHECK ***: Is there poor contact in ECM connector?***

YES : Repair poor contact in ECM connector.

NO : Replace ECM with a new one.



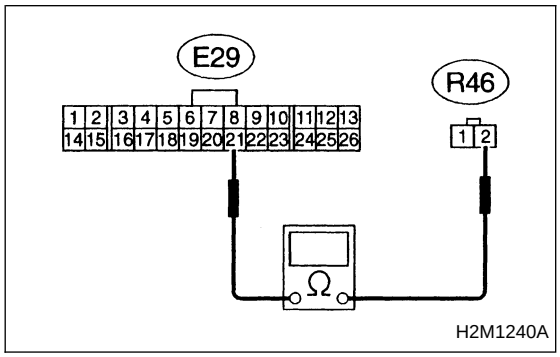
3. CHECK HARNESS AND CONNECTOR BETWEEN ECM AND FUEL TANK PRESSURE CONTROL SOLENOID VALVE.

1) Turn ignition switch to OFF.
2) Disconnect connectors from fuel tank pressure control solenoid valve and ECM.
3) Measure resistance between fuel tank pressure control solenoid valve connector and body.

CHECK ***: Connector & terminal***
(R46) No. 2 — Body/10 Ω, or less

YES : Repair short circuit of harness between ECM and fuel tank pressure control solenoid valve connector.

NO : Go to next step.



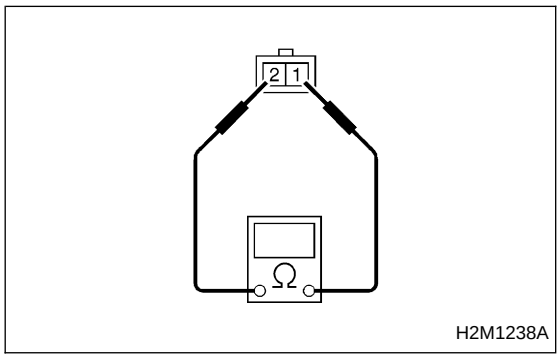
4) Measure resistance of harness between ECM and fuel tank pressure control solenoid valve connector.

CHECK ***: Connector & terminal***
(E29) No. 21 — (R46) No. 2/1 Ω, or less

YES : Go to step 4.

NO : In this case, repair the following items.

- Open circuit of harness between ECM and fuel tank pressure control solenoid valve connector
- Poor contact in ECM connector
- Poor contact in fuel tank pressure control solenoid valve connector
- Poor contact in coupling connectors (B74, B85 and R45)



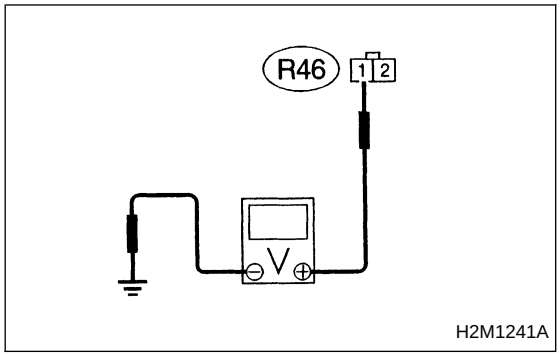
4. CHECK FUEL TANK PRESSURE CONTROL SOLENOID VALVE.

Measure resistance between fuel tank pressure control solenoid valve terminals.

CHECK ***: Terminals***
No. 1 — No. 2/10 — 100 Ω

YES : Go to step 5.

NO : Replace fuel tank pressure control solenoid valve with a new one.



5. CHECK POWER SUPPLY TO FUEL TANK PRESSURE CONTROL SOLENOID VALVE.

1) Connect connector to ECM.
2) Turn ignition switch to ON.
3) Measure voltage between fuel tank pressure control solenoid valve connector and body.

CHECK ***: Connector & terminal (R46) No. 1 — Body/10 V, or more***

YES : Go to next CHECK .

NO : In this case, repair the following items.

- Open circuit of harness between main relay and fuel tank pressure control solenoid valve connector
- Poor contact in main relay connector
- Poor contact in coupling connectors (B85 and R39)

CHECK ***: Is there poor contact in fuel tank pressure control solenoid valve connector?***

YES : Repair poor contact in fuel tank pressure control solenoid valve connector.

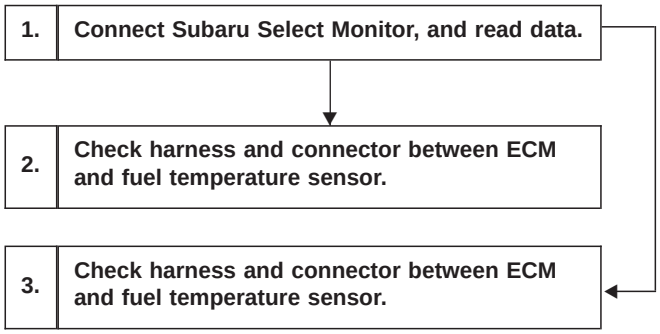
NO : Contact with SOA service.

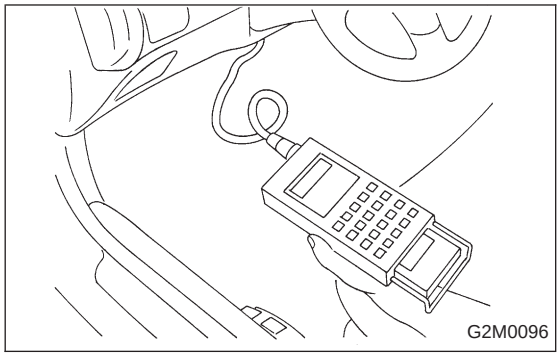
NOTE:
Inspection by DTM is required.

U: TROUBLE CODE (62) — FUEL TEMPERATURE SENSOR —

DIAGNOSIS:

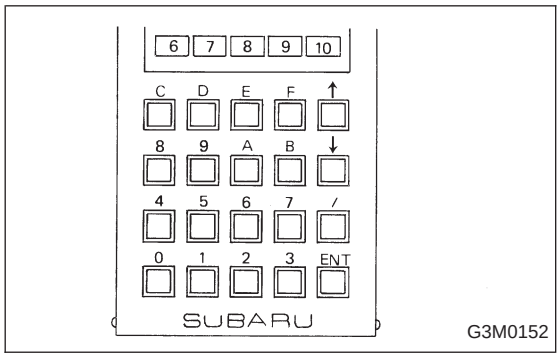
- The fuel temperature sensor signal is abnormal.
- The harness connector between ECM and fuel temperature sensor is in short or open.




G2M0096

1. CONNECT SUBARU SELECT MONITOR, AND READ DATA.

1) Turn ignition switch to OFF.
2) Connect Subaru Select Monitor to data link connector.

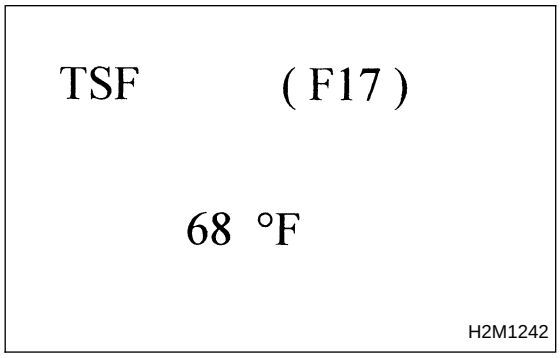


G3M0152

3) Turn ignition switch to ON and Subaru Select Monitor switch to ON.
4) Start engine.
5) Read data on Subaru Select Monitor.
● Subaru Select Monitor
Designate mode using function key.

Function mode: F17

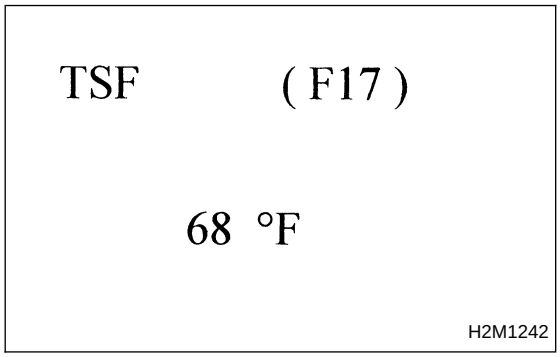
● F17: Fuel temperature is indicated in "°F".



H2M1242

CHECK ***: Is the value greater than 300°F with function mode F17?***

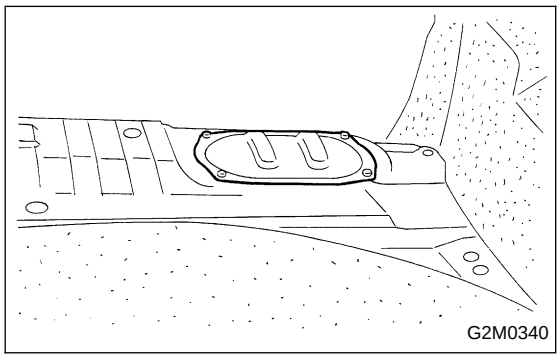
YES : Go to step 2.
NO : Go to next CHECK .



H2M1242

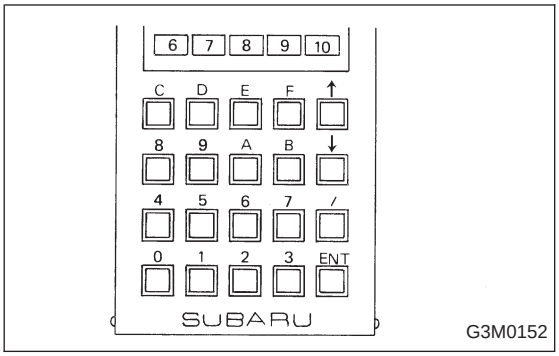
CHECK ***: Is the value less than −40°F with function mode F17?***

YES : Go to step 3.
NO : In this case, repair the following items.
● Poor contact in ECM connector
● Poor contact in fuel pump connector
● Poor contact in coupling connectors (B74, B84, B85 and R45)


G2M0340

2. CHECK HARNESS AND CONNECTOR BETWEEN ECM AND FUEL TEMPERATURE SENSOR.

1) Turn ignition switch to OFF.
2) Remove access hole lid.

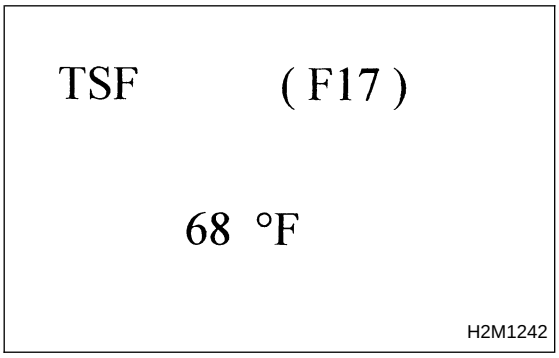


G3M0152

3) Disconnect connector from fuel pump.
4) Turn ignition switch to ON and Subaru Select Monitor switch to ON.
5) Read data on Subaru Select Monitor.
● Subaru Select Monitor
Designate mode using function key.

Function mode: F17

● F17: Fuel temperature is indicated in "°F".

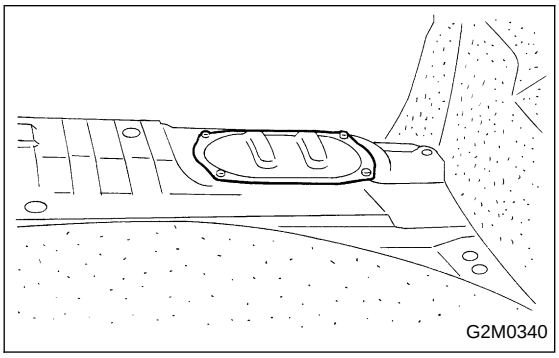


H2M1242

CHECK ***: Is the value less than −40°F with function mode F17?***

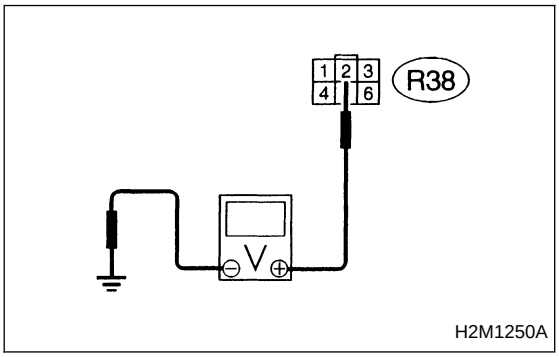
YES : Replace fuel temperature sensor.

NO : Repair short circuit of harness between ECM and fuel pump connector.


G2M0340

3. CHECK HARNESS AND CONNECTOR BETWEEN ECM AND FUEL TEMPERATURE SENSOR.

1) Turn ignition switch to OFF.
2) Remove access hole lid.



H2M1250A

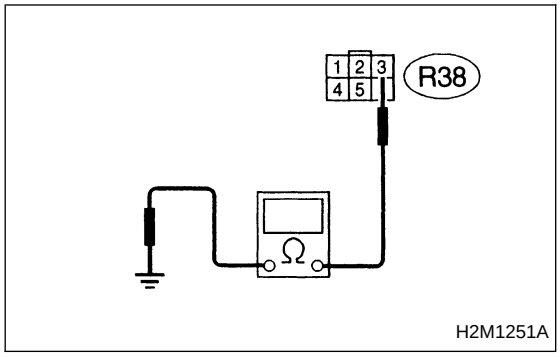
3) Disconnect connector from fuel pump.
4) Turn ignition switch to ON.
5) Measure voltage between fuel pump connector and body.

CHECK ***: Connector & terminal (R38) No. 2 — Body/4 V, or more***

YES : Go to next step.

NO : In this case, repair the following items.

● Repair open circuit of harness between ECM and fuel pump connector.
● Poor contact in ECM connector
● Poor contact in fuel pump connector
● Poor contact in coupling connectors (B74, B85 and R45)



6) Turn ignition switch to OFF.
7) Measure resistance of harness between fuel pump connector and body.

CHECK ***: Connector & terminal (R38) No. 3 — Body/5 Ω, or less***

YES : Replace fuel temperature sensor.

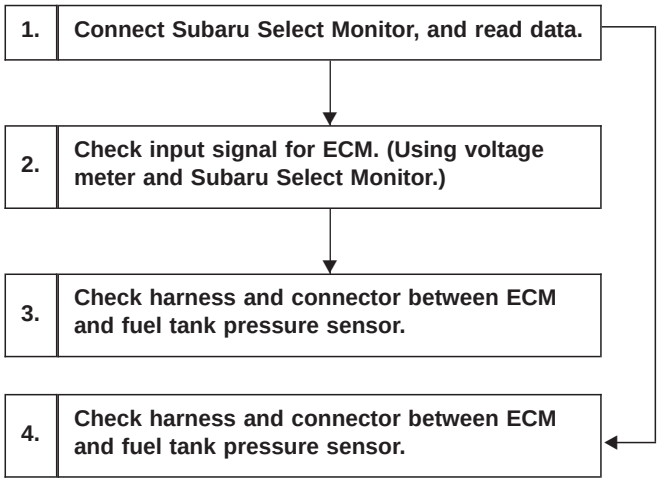
NO : In this case, repair the following items.

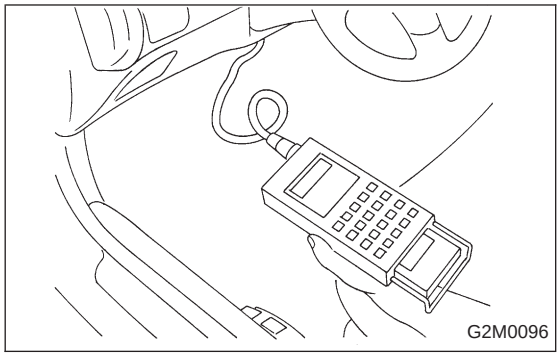
- Repair open circuit of harness between ECM and fuel pump connector.
- Poor contact in ECM connector
- Poor contact in fuel pump connector
- Poor contact in coupling connectors (B74, B84 and R45)

V: TROUBLE CODE (63) — FUEL TANK PRESSURE SENSOR —

DIAGNOSIS:

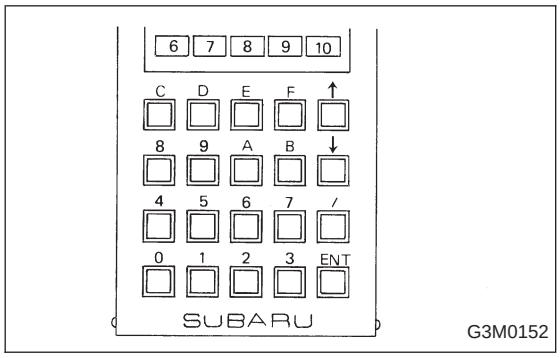
- The fuel tank pressure sensor signal is abnormal.
- The harness connector between ECM and fuel tank pressure sensor is in short or open.




G2M0096

1. CONNECT SUBARU SELECT MONITOR, AND READ DATA.

1) Turn ignition switch to OFF.
2) Remove fuel filler cap.
3) Install fuel filler cap.
4) Connect Subaru Select Monitor to data link connector.

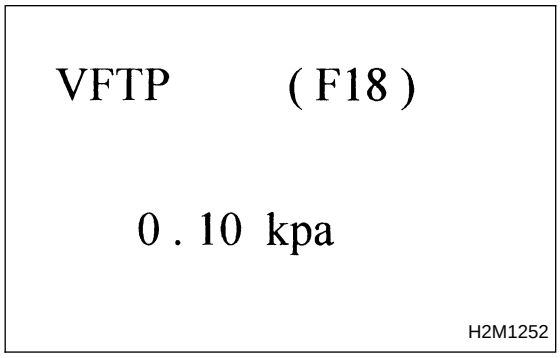


G3M0152

5) Turn ignition switch to ON and Subaru Select Monitor switch to ON.
6) Read data on Subaru Select Monitor.
● Subaru Select Monitor
Designate mode using function key.

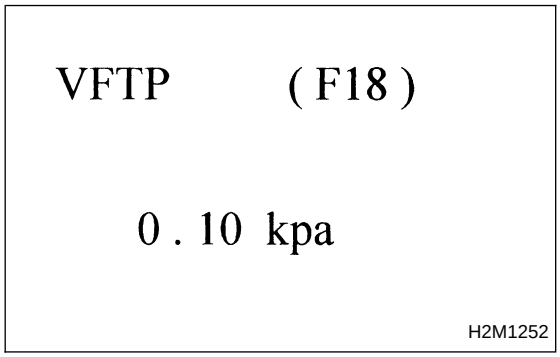
Function mode: F18

● F18: Fuel tank pressure sensor output signal is indicated.



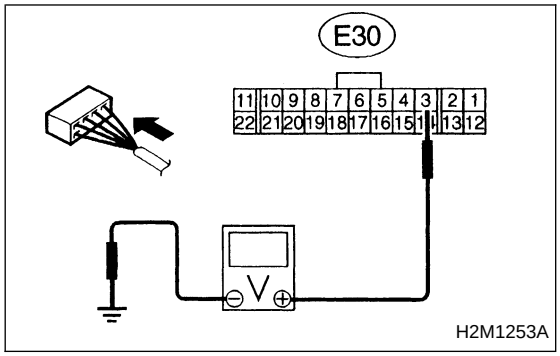
H2M1252

CHECK ***: Is the value less than −7.2 kPa?***
YES : Go to step 2.
NO : Go to next CHECK .



H2M1252

CHECK ***: Is the value more than 7.2 kPa?***
YES : Go to step 4.
NO : In this case, repair the following items.
● Open circuit of harness between ECM and fuel tank pressure sensor connector
● Poor contact in ECM connector
● Poor contact in fuel tank pressure sensor connector
● Poor contact in coupling connectors (B74, B84 and B85)



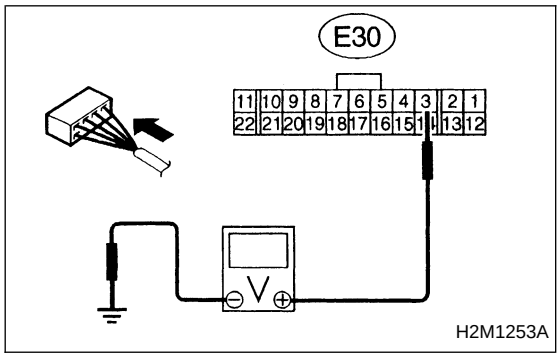
2. CHECK INPUT SIGNAL FOR ECM. (USING VOLTAGE METER AND SUBARU SELECT MONITOR.)

1) Measure voltage between ECM connector and body.

CHECK : ***Connector & terminal (E30) No. 3 — Body/4.5 V, or more***

YES : Go to next step.

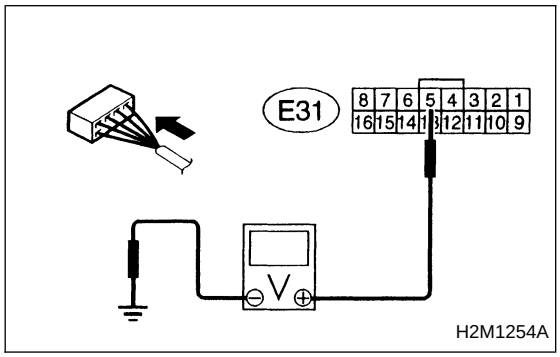
NO : Go to next CHECK .



CHECK : ***Does the voltage change more than 4.5 V by shaking harness and connector of ECM while monitoring the value with voltage meter?***

YES : Repair poor contact in ECM connector.

NO : Replace ECM with a new one.

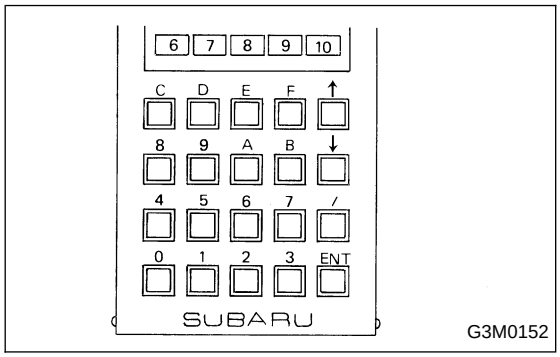


2) Measure voltage between ECM connector and body.

CHECK : ***Connector & terminal (E31) No. 5 — Body/0.2 V, or less***

YES : Go to step 3.

NO : Go to next step.



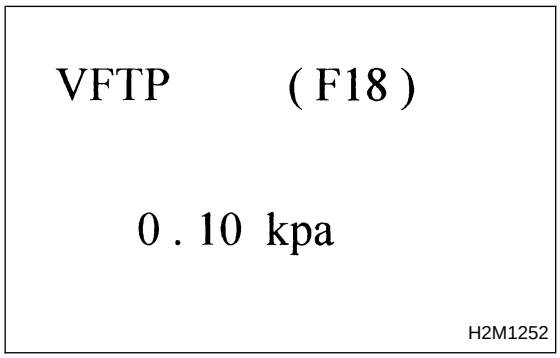
3) Read data on Subaru Select Monitor.

● Subaru Select Monitor

Designate mode using function key.

Function mode: F18

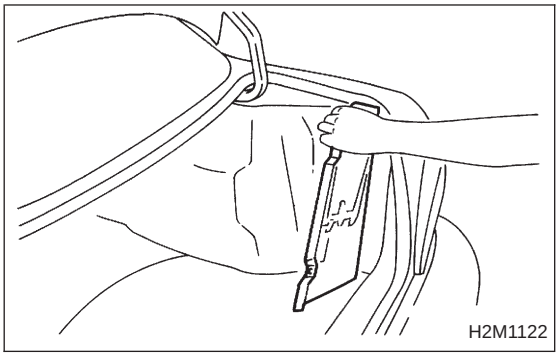
● F18: Fuel tank pressure sensor output signal is indicated.



CHECK : ***Does the value change more than −7.2 kPa by shaking harness and connector of ECM while monitoring the value with Subaru Select Monitor?***

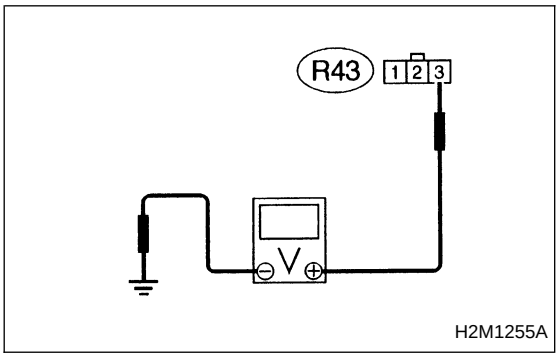
YES : Repair poor contact in ECM connector.

NO : Go to step 3.



3. CHECK HARNESS AND CONNECTOR BETWEEN ECM AND FUEL TANK PRESSURE SENSOR.

1) Turn ignition switch to OFF.
2) Remove right side rear quarter trim.



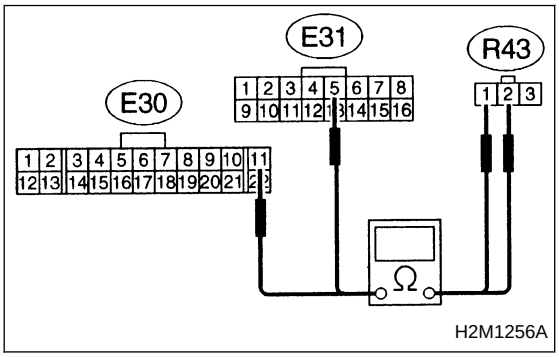
3) Disconnect connector from fuel tank pressure sensor.
4) Turn ignition switch to ON.
5) Measure voltage between fuel tank pressure sensor connector and body.

CHECK ***: Connector & terminal***
(R43) No. 3 — Body/4.5 V, or more

YES : Go to next CHECK .

NO : In this case, repair the following items.

- Open circuit of harness between ECM and fuel tank pressure sensor connector
- Poor contact in ECM connector
- Poor contact in fuel tank pressure sensor connector
- Poor contact in coupling connectors (B74 and B85)



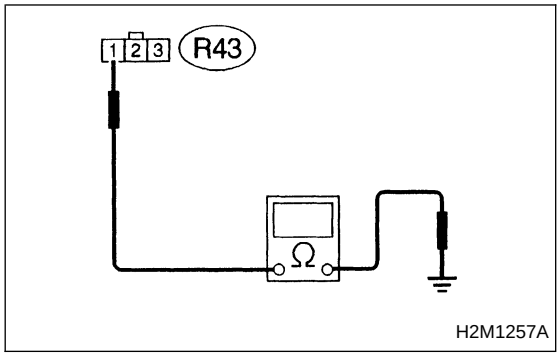
6) Turn ignition switch to OFF.
7) Disconnect connector from ECM.
8) Measure resistance of harness between ECM and fuel tank pressure sensor connector.

CHECK ***: Connector & terminal***
(E31) No.5 — (R43) No. 1/1 Ω, or less
(E30) No. 11 — (R43) No. 2/1 Ω, or less

YES : Go to next step.

NO : In this case, repair the following items.

- Open circuit of harness between ECM and fuel tank pressure sensor connector
- Poor contact in ECM connector
- Poor contact in fuel tank pressure sensor connector
- Poor contact in coupling connectors (B74 and B84)



9) Measure resistance between fuel tank pressure sensor connector and body.

CHECK ***: Connector & terminal (R43) No. 1 — Body/500 kΩ, or more***

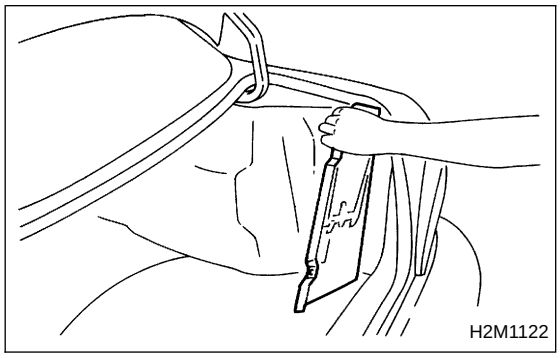
YES : Go to next CHECK .

NO : Repair short circuit of harness between ECM and fuel tank pressure sensor connector.

CHECK ***: Is there poor contact in fuel tank pressure sensor connector?***

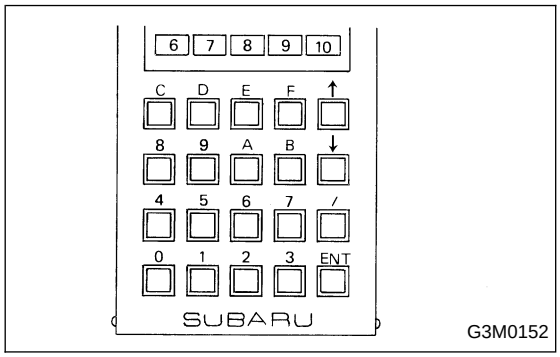
YES : Repair poor contact in fuel tank pressure sensor connector.

NO : Replace fuel tank pressure sensor with a new one.



4. CHECK HARNESS AND CONNECTOR BETWEEN ECM AND FUEL TANK PRESSURE SENSOR.

1) Turn ignition switch to OFF.
2) Remove right side rear quarter trim.



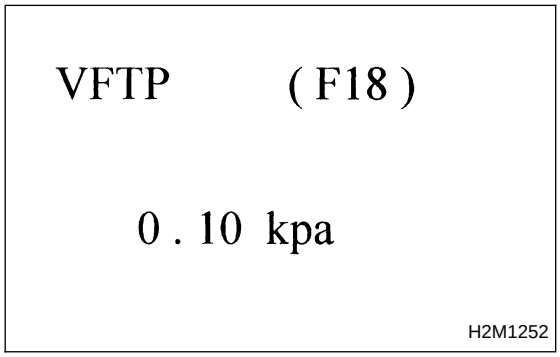
3) Disconnect connector from fuel tank pressure sensor.
4) Turn ignition switch to ON.
5) Read data on Subaru Select Monitor.

● Subaru Select Monitor

Designate mode using function key.

Function mode: F18

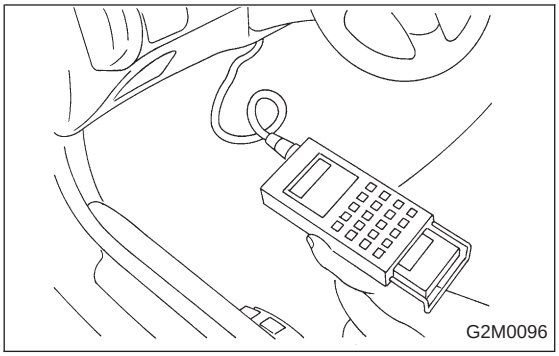
● F18: Fuel tank pressure sensor output signal is indicated.



CHECK ***: Is the value more than 7.2 kPa with function mode F18?***

YES : Repair short circuit of harness between ECM and fuel tank pressure sensor connector.

NO : Replace fuel tank pressure sensor with a new one.

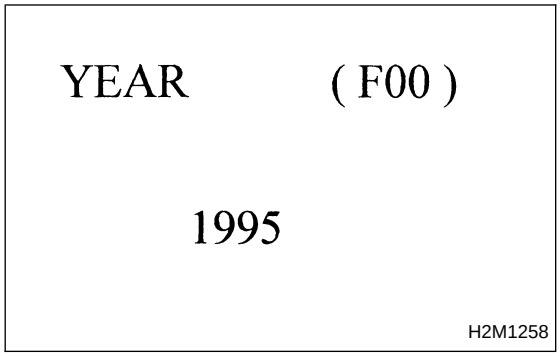


9. Diagnostics Chart with Select Monitor

A: FUNCTION MODE

Applicable cartridge of select monitor: No. 498345500

Function mode	Contents	Abbreviation	Unit of measure	Page
F00	ROM ID number	YEAR	—	81
F01	Battery voltage	VB	V	81
F02	Vehicle speed signal	VSP	MPH	82
F03	Vehicle speed signal	VSP	km/h	82
F04	Engine speed signal	EREV	rpm	83
F05	Engine coolant temperature signal	TW	deg F	84
F06	Engine coolant temperature signal	TW	deg C	84
F07	Ignition signal	ADVS	deg	84
F08	Mass air flow signal	QA	V	85
F09	Load data	LDATA	—	85
F10	Throttle position signal	THV	V	86
F11	Injector pulse width	TIM	mS	87
F12	Idle air control signal	ISC	%	88
F13	Oxygen sensor output signal	O_2	V	88
F14	Oxygen sensor MAX. output signal	O_2 MAX.	V	89
F15	Oxygen sensor MIN. output signal	O_2 MIN.	V	89
F16	A/F correction coefficient	ALPHA	%	90
F17	Fuel temperature signal	TSF	°F	90
F18	Fuel tank pressure signal	VFTP	kpa	90
F19	Purge control signal	CPCD	%	91
F22	Recirculation gas temperature	EGRT	deg C	91
FA0	ON ↔ OFF signal	—	—	92
FA1	ON ↔ OFF signal	—	—	92
FA2	ON ↔ OFF signal	—	—	93



B: MODE F00 — ROM ID NUMBER (YEAR) —

CONDITION:

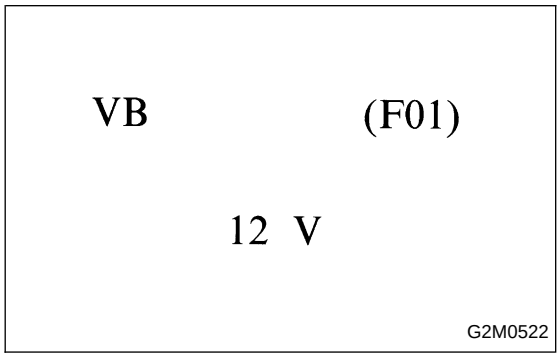
Ignition switch “ON”

SPECIFIED DATA:

Presentation display

- Probable cause (Item outside “specified data”)

1. Error 1	Check for loose or disconnected connector, and discontinued circuit, etc.
2. Error 2	Check for poor contact of cartridge, or different type cartridge.



C: MODE F01 — BATTERY VOLTAGE (VB) —

CONDITION:

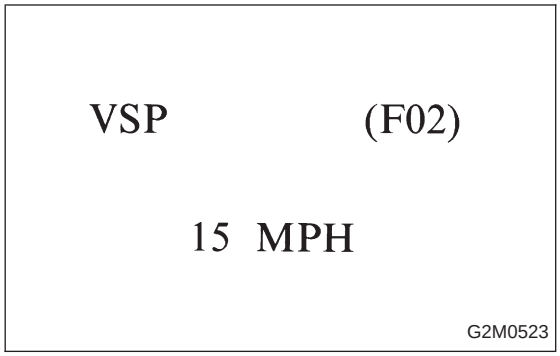
(1) Ignition switch “ON”
(2) Idling after warm-up

SPECIFIED DATA:

(1) 10 — 12 V
(2) 12 — 14 V

- Probable cause (Item outside “specified data”)

1. Battery	Check battery voltage and electrolyte’s specific gravity.
2. Charging system	● Check regulating voltage. (On no-load) ● Check alternator.
3. Power supply line	● Check main relay. <Ref. to 2-7 [T7B1].> ● Check harness connector of ECM power supply line. <Ref. to 2-7 [T7B2], [T7B3].>



D: MODE F02 AND F03 — VEHICLE SPEED SIGNAL (VSP) —

CONDITION:

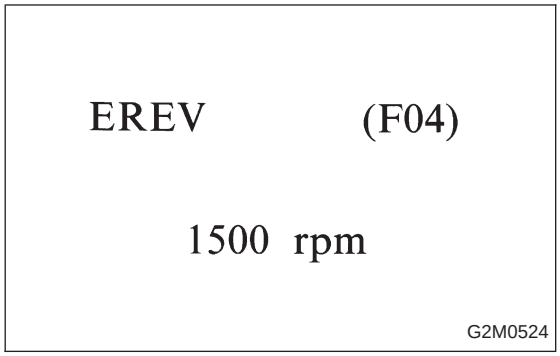
Driving at constant speed.

SPECIFIED DATA:

Compare speedometer with monitor indications.
- F02: Vehicle speed is indicated in mile per hour (MPH).
- F03: Vehicle speed is indicated in kilometer per hour (km/h).

- Probable cause (Item outside “specified data”)

1. Vehicle speed sensor 2	Check vehicle speed sensor line. <Ref. to 2-7 [T8K0].>



E: MODE F04
— ENGINE SPEED SIGNAL (EREV) —

CONDITION:

Operate engine at constant speed.

SPECIFIED DATA:

Compare engine speed indicated at tachometer.

- Probable cause (Item outside “specified data”)

1. Camshaft position sensor	Check camshaft position sensor line. <Ref. to 2-7 [T8D0].>
2. Crankshaft position sensor	Check crankshaft position sensor line. <Ref. to 2-7 [T8B0].>
3. Engine coolant temperature sensor	Check “MODE F05” or “MODE F06”. <Ref. to 2-7 [T9F0].>
4. Power steering pressure switch	Check “MODE FA0”. <Ref. to 2-7 [T9U0].>
5. Throttle position sensor	Check “MODE F10”. <Ref. to 2-7 [T9J0].>
6. Idle air control solenoid valve	Check “MODE F12”. <Ref. to 2-7 [T9L0].>
7. FICD solenoid valve (with A/C model)	Check “MODE FA1”. <Ref. to 2-7 [T9V0].>

F: MODE F05 AND F06 — ENGINE COOLANT TEMPERATURE SIGNAL (TW) —

CONDITION:

Idling after warm-up.

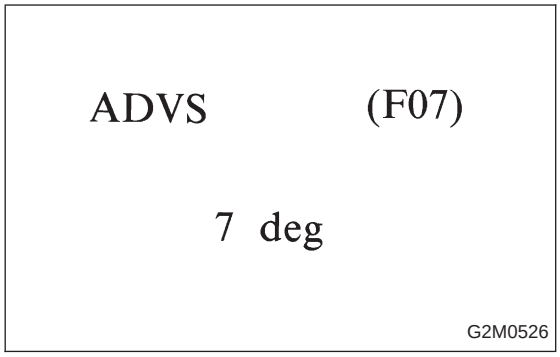
SPECIFIED DATA:

F05: 158 — 194 deg F
F06: 70 — 90 deg C

- F05: Water temperature is indicated in “deg F”.
- F06: Water temperature is indicated in “deg C”.

- Probable cause (Item outside “specified data”)

1. Cooling system	• Check coolant level. <Ref. to 1-5 [05A2].> • Check thermostat. <Ref. to 2-5 [W2B0].> • Check operation of radiator fan.
2. Engine coolant temperature sensor	• Check engine coolant temperature sensor. <Ref. to 2-7 [T8F0].>



G: MODE F07 — IGNITION SIGNAL (ADVS) —

CONDITION:

- Idling after warm-up.
- Shift lever is in Neutral position on MT model.
- Selector lever is in Neutral or Parking position on AT model.

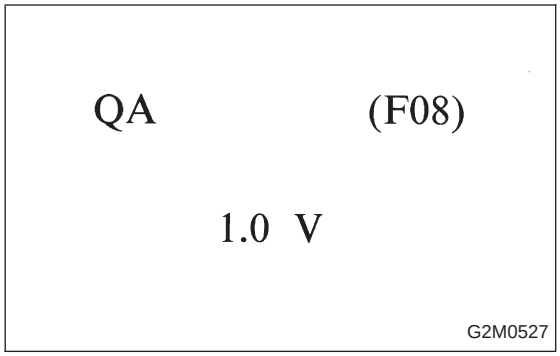
SPECIFIED DATA:

12 — 28 deg

- Probable cause (Item outside “specified data”)

1. Engine under load	Check “MODE F09”. <Ref. to 2-7 [T9I0].>
2. Mass air flow sensor	Check “MODE F08”. <Ref. to 2-7 [T9H0].>
3. Throttle position sensor	Check “MODE F10”. <Ref. to 2-7 [T9J0].>

NOTE:
The ignition timing value displayed in mode F07 is a value computed by ECM and will not always correspond with the value measured with a timing light.



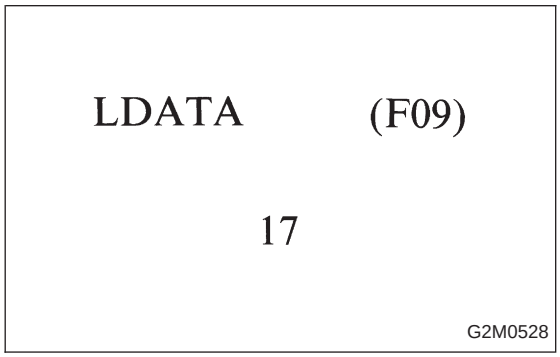
H: MODE F08
— MASS AIR FLOW SIGNAL (QA) —

CONDITION:
Idling after warm-up.

SPECIFIED DATA:
0.8 — 1.2 V

- Probable cause (Item outside “specified data”)

1. Mass air flow sensor	Check mass air flow sensor line. <Ref. to 2-7 [T8G0].>



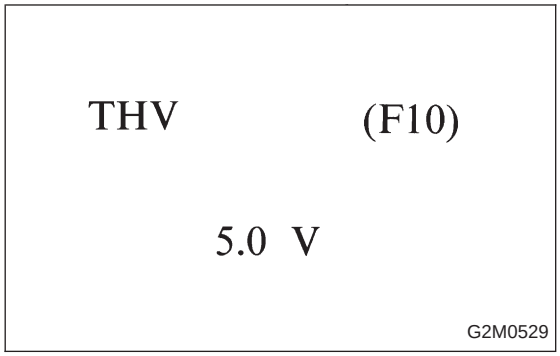
I: MODE F09
— LOAD DATA (LDATA) —

CONDITION:
Idling after warm-up.

SPECIFIED DATA:
15 — 20

- Probable cause (Item outside “specified data”)

1. Mass air flow sensor	Check “MODE F08”. <Ref. to 2-7 [T9H0].>
2. Engine speed	Check “MODE F04”. <Ref. to 2-7 [T9E0].>
3. Camshaft position sensor	Check camshaft position sensor line. <Ref. to 2-7 [T8D0].>
4. Crankshaft position sensor	Check crankshaft position sensor line. <Ref. to 2-7 [T8B0].>



J: MODE F10 — THROTTLE POSITION SIGNAL (THV) —

CONDITION:

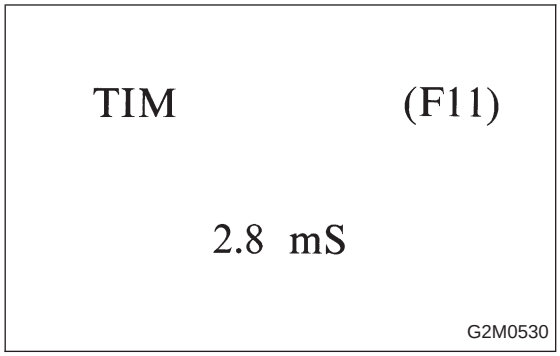
Check voltage while throttle valve is changing from “fully closed” to “fully opened”.

SPECIFIED DATA:

5.0 — 1.5 V

- Probable cause (Item outside “specified data”)

1. Throttle position sensor	→ Check throttle position sensor line. <Ref. to 2-7 [T8I0].>



K: MODE F11
— INJECTOR PULSE WIDTH (TIM) —

CONDITION:

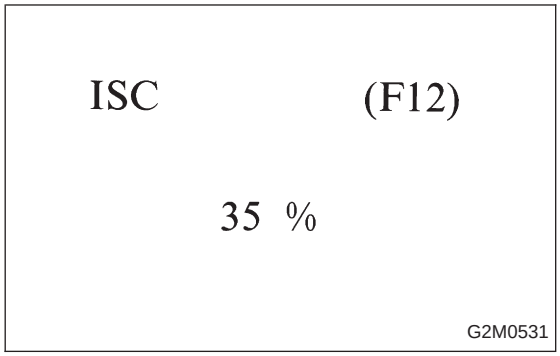
- Idling after warm-up.
- Electric load item and blower fan is turned OFF.
- Radiator fan is not in operation.

SPECIFIED DATA:

2.0 — 3.5 mS

- Probable cause (Item outside “specified data”)

1. Engine under load	Check “MODE F09”. <Ref. to 2-7 [T9I0].>
2. A/F correction coefficient	Check “MODE F16”. <Ref. to 2-7 [T9P0].>
3. Engine coolant temperature sensor	Check “MODE F05” or “MODE F06”. <Ref. to 2-7 [T9F0].>
4. Oxygen sensor	Check “MODE F13”. <Ref. to 2-7 [T9M0].>
5. Vehicle speed sensor 2	Check “MODE F02” or “MODE F03”. <Ref. to 2-7 [T9D0].>
6. Mass air flow sensor	Check “MODE F08”. <Ref. to 2-7 [T9H0].>
7. Idle air control solenoid valve	Check “MODE F12”. <Ref. to 2-7 [T9L0].>
8. Battery voltage	Check “MODE F01”. <Ref. to 2-7 [T9C0].>



L: MODE F12 — IDLE AIR CONTROL SIGNAL (ISC) —

CONDITION:

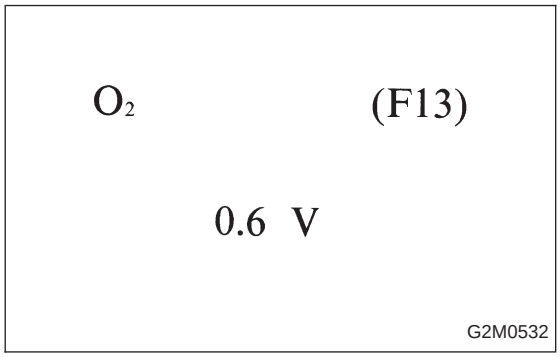
- Idling after warm-up.
- A/C is turned OFF.
- Radiator fan is not in operation.
- Battery voltage is above 13 volts.
- Vehicle is at sea level. (Not high altitudes)

SPECIFIED DATA:

25 — 40 %

- Probable cause (Item outside “specified data”)

1. Engine coolant temperature sensor	Check “MODE F05” or “MODE F06”. <Ref. to 2-7 [T9F0].>
2. Throttle position sensor	Check “MODE F10” <Ref. to 2-7 [T9J0].>
3. Neutral position switch (MT model)	Check neutral position switch line. <Ref. to 2-7 [T8P0].>
4. Park/Neutral position switch (AT model)	Check Park/Neutral position switch line. <Ref. to 2-7 [T8Q0].>



M: MODE F13 — OXYGEN SENSOR OUTPUT SIGNAL (O_2) —

CONDITION:

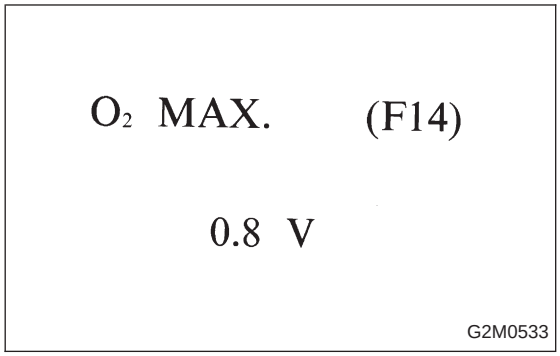
- Idling after warm-up.
- A/C is turned OFF.

SPECIFIED DATA:

0 — 1.0 V

- Probable cause (Item outside “specified data”)

1. Injection plus width	Check “MODE F11”. <Ref. to 2-7 [T9K0].>
2. Oxygen sensor	Check oxygen sensor line. <Ref. to 2-7 [T8J0].>



N: MODE F14 — OXYGEN SENSOR MAX. OUTPUT SIGNAL (O_2 MAX.) —

CONDITION:

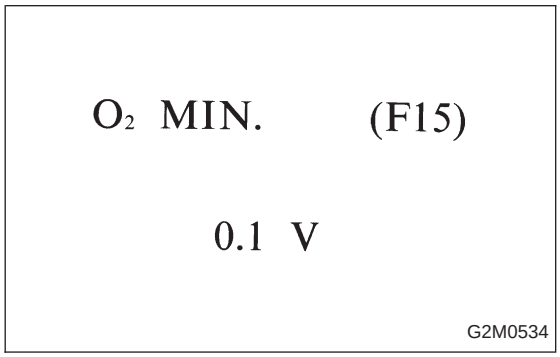
- Idling after warm-up.
- A/C is turned OFF.

SPECIFIED DATA:

0.7 — 1.0 V

- Probable cause (Item outside “specified data”)

1. Injection plus width	Check “MODE F11”. <Ref. to 2-7 [T9K0].>
2. Oxygen sensor	Check oxygen sensor line. <Ref. to 2-7 [T8J0].>



O: MODE F15 — OXYGEN SENSOR MIN. OUTPUT SIGNAL (O_2 MIN.) —

CONDITION:

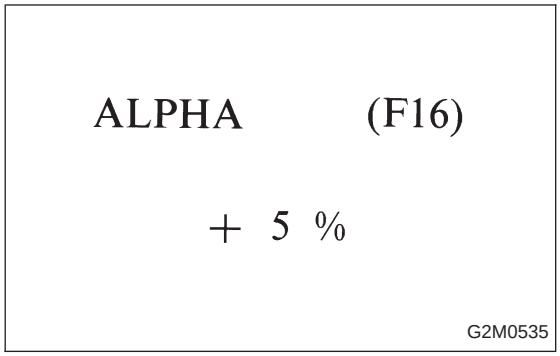
- Idling after warm-up.
- A/C is turned OFF.

SPECIFIED DATA:

0 — 0.2 V

- Probable cause (Item outside “specified data”)

1. Injection plus width	Check “MODE F11”. <Ref. to 2-7 [T9K0].>
2. Oxygen sensor	Check oxygen sensor line. <Ref. to 2-7 [T8J0].>



P: MODE F16 — A/F CORRECTION COEFFICIENT (ALPHA) —

CONDITION:

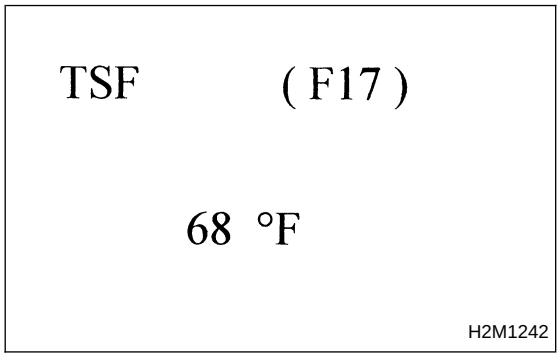
Idling after warm-up.

SPECIFIED DATA:

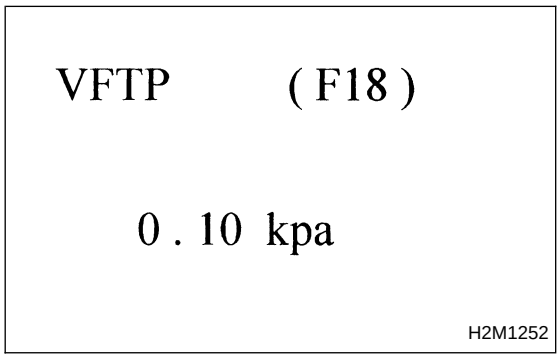
−10 to +10 %

- Probable cause (Item outside “specified data”)

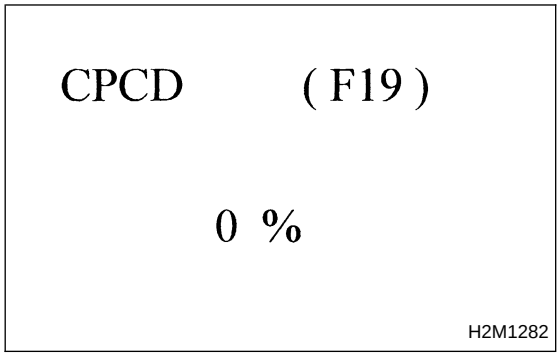
1. Injection plus width	Check “MODE F11”. <Ref. to 2-7 [T9K0].>
2. Oxygen sensor	Check oxygen sensor line. <Ref. to 2-7 [T8J0].>
3. Throttle position sensor	Check throttle position sensor line. <Ref. to 2-7 [T8I0].>



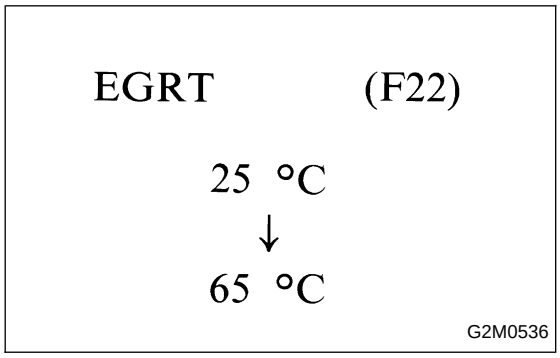
Q: MODE F17 — FUEL TEMPERATURE SIGNAL (TSF) —



R: MODE F18 — FUEL TANK PRESSURE SIGNAL (VFTP) —



S: MODE F19
— PURGE CONTROL SIGNAL (CPCD) —



T: MODE F22
— RECIRCULATION GAS TEMPERATURE (EGRT) —

CONDITION:

Idling after warm-up.

SPECIFIED DATA:

(1) Make sure to recirculate gas temperature when engine is idling.
(2) Open EGR valve by force.
(3) Make sure that indicated temperature rises.

- Probable cause (Item outside “specified data”)

1. Recirculation gas temperature sensor	→ Check recirculation gas temperature sensor line. <Ref. to 2-7 [T8R0].>

LED No.	Signal name	Display
1	Ignition switch	IG
2	Identification of AT model	AT
3	Test mode connector	UD
4	Read memory connector	RM
5	Fuel tank pressure control solenoid valve	PC
6	—	—
7	Park/Neutral position switch	NT
8	Power steering pressure	SS
9	—	—
10	Oxygen sensor signal	O2

IG	AT	UD	RM	PC
——	NT	SS	——	O2

1	2	3	4	5
6	7	8	9	10

U: MODE FA0

— ON ↔ OFF SIGNAL —

Requirement for LED “ON”.
LED No. 1 Ignition switch is turned ON.
LED No. 2 Vehicle is AT model.
LED No. 3 Test mode connector is connected.
LED No. 4 Read memory connector is connected.
LED No. 5 Fuel tank pressure control solenoid valve is in function.
LED No. 7 ● On MT model, gear position is in neutral.
● On AT model, shift position is in “P” or “N”.
LED No. 8 Steering is turned.
LED No. 10 Mixture ratio is rich.

NOTE:
● When LED Nos. 3 and 4 blink with the test mode connector connected and the ignition switch turned to ON, the corresponding parts are functioning properly.

LED No.	Signal name	Display
1	FICD solenoid valve	AF
2	A/C switch	AC
3	A/C relay	AR
4	Radiator fan relay 1	R1
5	Radiator fan relay 2	R2
6	—	—
7	—	—
8	—	—
9	—	—
10	Oxygen sensor signal	O2

AF	AC	AR	R1	R2
——	——	——	——	O2

1	2	3	4	5
6	7	8	9	10

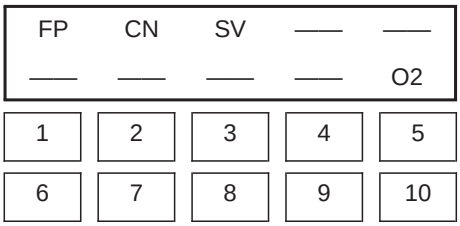
V: MODE FA1

— ON ↔ OFF SIGNAL —

Requirement for LED “ON”.
LED No. 1 FICD solenoid valve is in function.
LED No. 2 A/C switch is turned ON.
LED No. 3 A/C relay is turned ON.
LED No. 4 Radiator fan relay 1 is turned ON.
LED No. 5 Radiator fan relay 2 is turned ON.
LED No. 10 Mixture ratio is rich.

NOTE:
When LED No. 1 blinks with the test mode connector connected and the ignition switch turned to ON, the corresponding part is functioning properly.

LED No.	Signal name	Display
1	Fuel pump relay	FP
2	Purge control solenoid valve	CN
3	Air suction solenoid valve	SV
4	—	—
5	—	—
6	—	—
7	—	—
8	—	—
9	—	—
10	Oxygen sensor signal	O2



W: MODE FA2

— ON ↔ OFF SIGNAL —

Requirement for LED “ON”.
LED No. 1 Fuel pump relay is turned ON.
LED No. 2 Purge control solenoid valve is in function.
LED No. 3 Air suction solenoid valve is in function.
LED No. 10 Mixture ratio is rich.

NOTE:
● When LED Nos. 2 and 3 blink with the test mode connector connected and the ignition switch turned to ON, the corresponding parts are functioning properly.

10. General Diagnostics Table

		ECM power supply	Mass air flow sensor	Engine coolant temperature sensor	Throttle position sensor	Crankshaft position sensor	Camshaft position sensor	Vehicle speed sensor 2	Oxygen sensor	Ignition coil	Ignitor	Spark plug	Fuel pump	Pressure regulator	Fuel injector	Idle air control solenoid valve	FICD solenoid valve (models with A/C)	Engine ground terminal	Test mode or read memory connectors are connected.	Accelerator cable is out of adjustment.	Transmission Control Module (TCM)	Air leak in air intake system
Failure of engine to start	Internal combustion does not occur.	1		3		2	2			3	3	3	2	2	3	3		1				
	Internal combustion occurs.	1	3	2								1	3	2	3	3	3					
	Engine stalls after internal combustion.	1		2						3		2	3	3	3	3	3					
Engine stalls.		3	3		3	3		3		3		2	3			3				2	2	
Rough idling		3	2	2	3				3			1	3	2	3	2	2		3			2
Hard to drive at constant speed.			3	3	3								3	1	2							
Poor acceleration /deceleration			3	3	2					2		1	2	2	2	3						
Poor return to idling			3	3	2											2	3			1		
Back fire										3	3	1	3	3	2							
Knocking			3	3									2	2								
Excessive fuel consumption			1	1										2								
Shocks while driving.		2			2									1								
Poor engine revving			2	2	2								2	1								
Remarks		*1												*2		*2	*2					*2

*1: Include ECM grounding circuit.
*2: Check hoses.