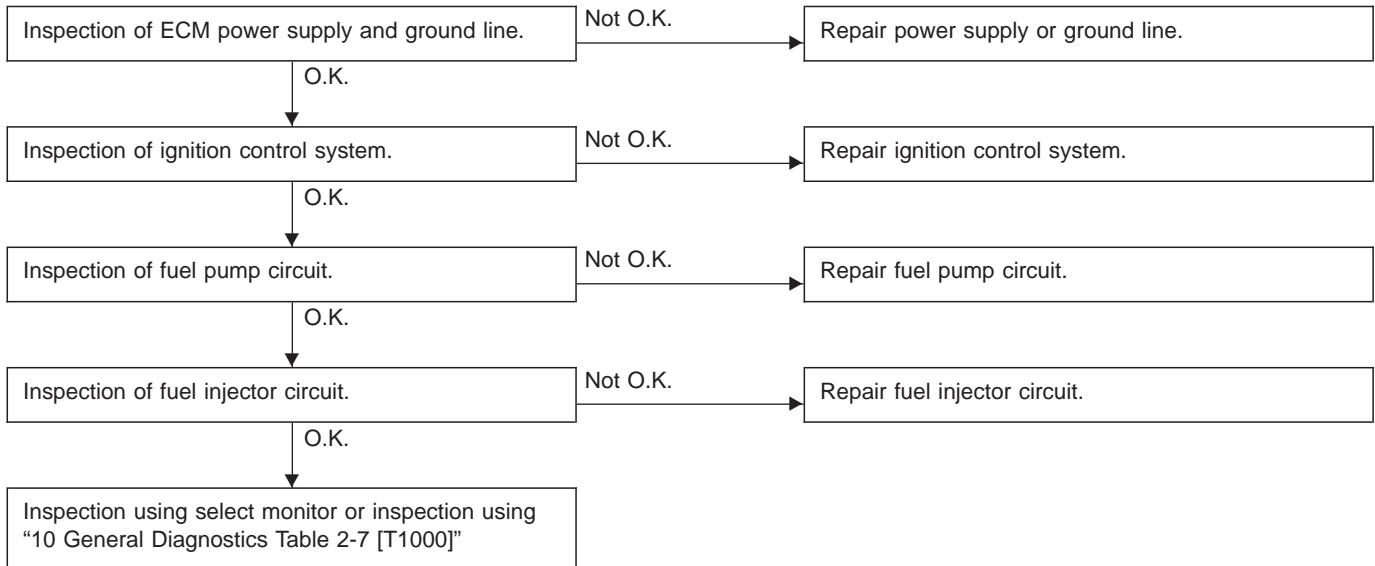


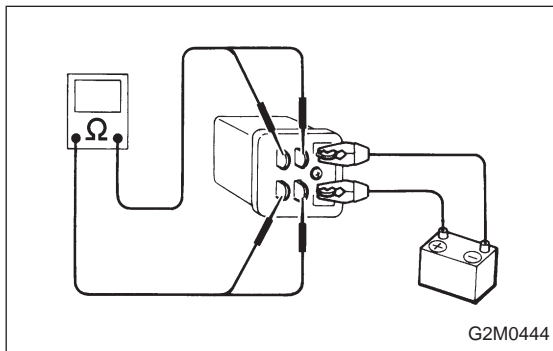
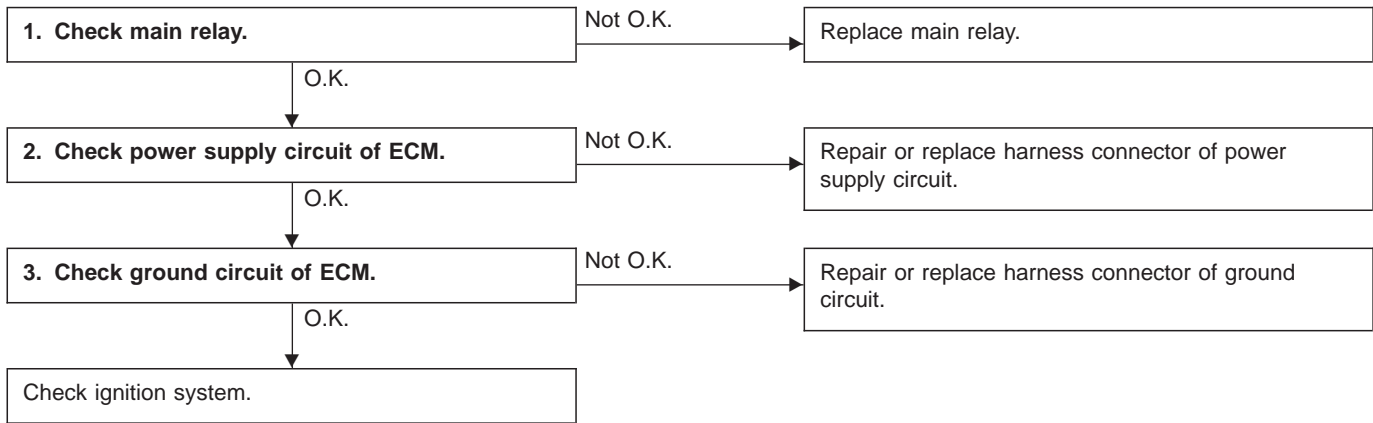
7. Diagnostics Chart for Engine Starting Failure

A: BASIC DIAGNOSTICS CHART

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



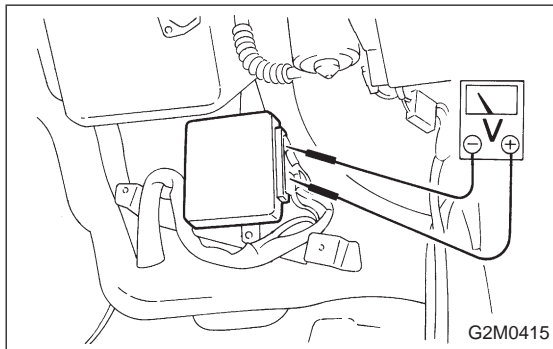
B: CONTROL UNIT POWER SUPPLY AND GROUND LINE



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.

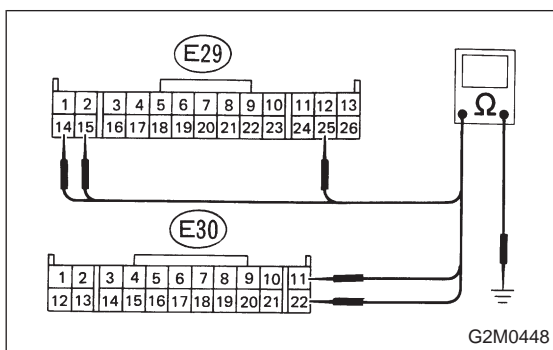
Terminals /Specified resistance:
No. 3 — No. 5/10 Ω, max.
No. 4 — No. 6/10 Ω, max.



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.

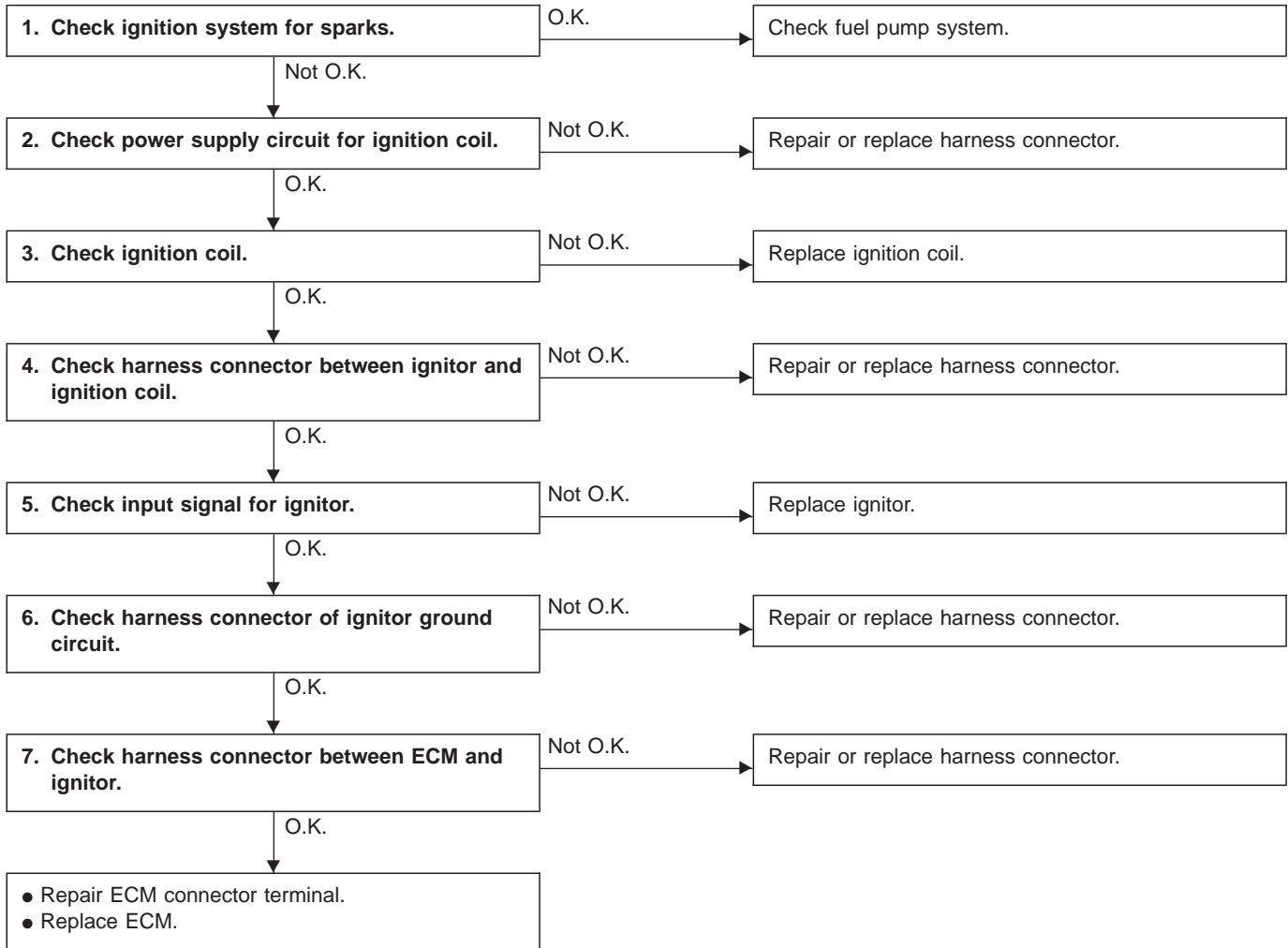


3. CHECK GROUND CIRCUIT OF ECM.

- 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



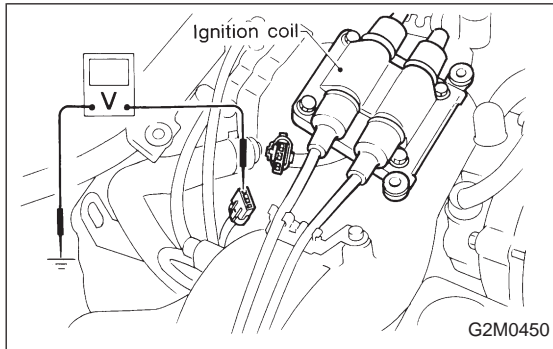
1. CHECK IGNITION SYSTEM FOR SPARKS.

- 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.

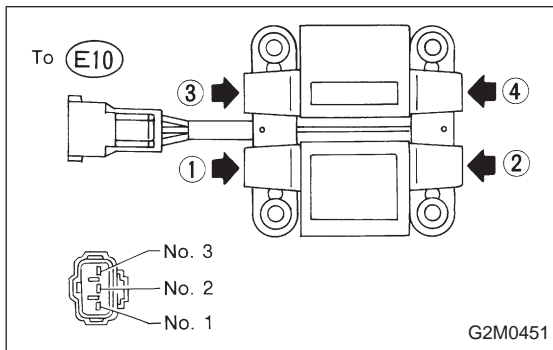
- 3) Contact spark plug's thread portion on engine.
- 4) While opening throttle valve fully, crank engine to check that spark occurs at each cylinder.



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.



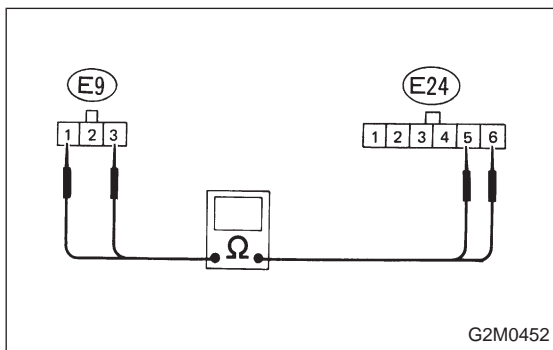
3. CHECK IGNITION COIL.

- 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.

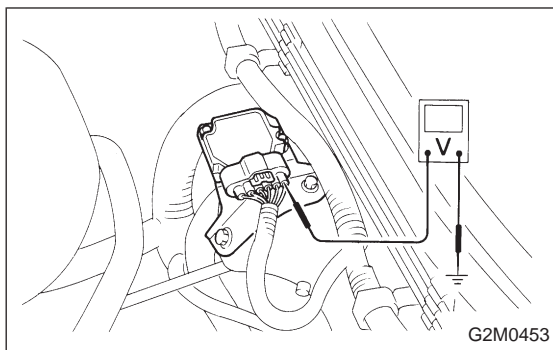
Connector & terminal /Specified resistance:
#1 — #2 /13.8 kΩ
#3 — #4 /13.8 kΩ



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 ignitor and ignition coil.

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



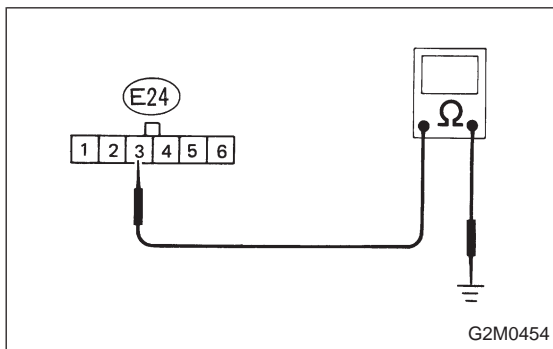
5. CHECK INPUT SIGNAL FOR IGNITOR.

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.

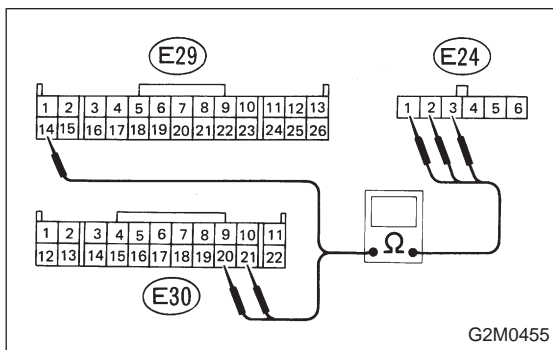


6. CHECK HARNESS CONNECTOR OF IGNITOR GROUND CIRCUIT.

- 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.

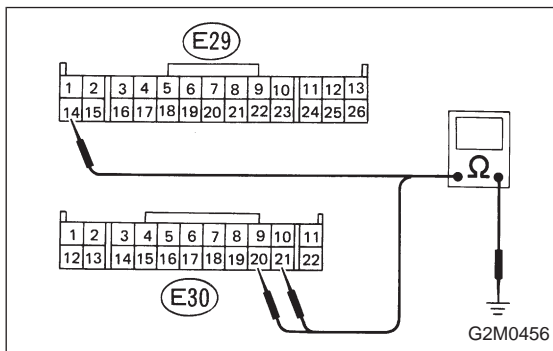
- 1) Disconnect connector from ECM.
- 2) Measure resistance of harness connector between ECM and ignitor.

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.

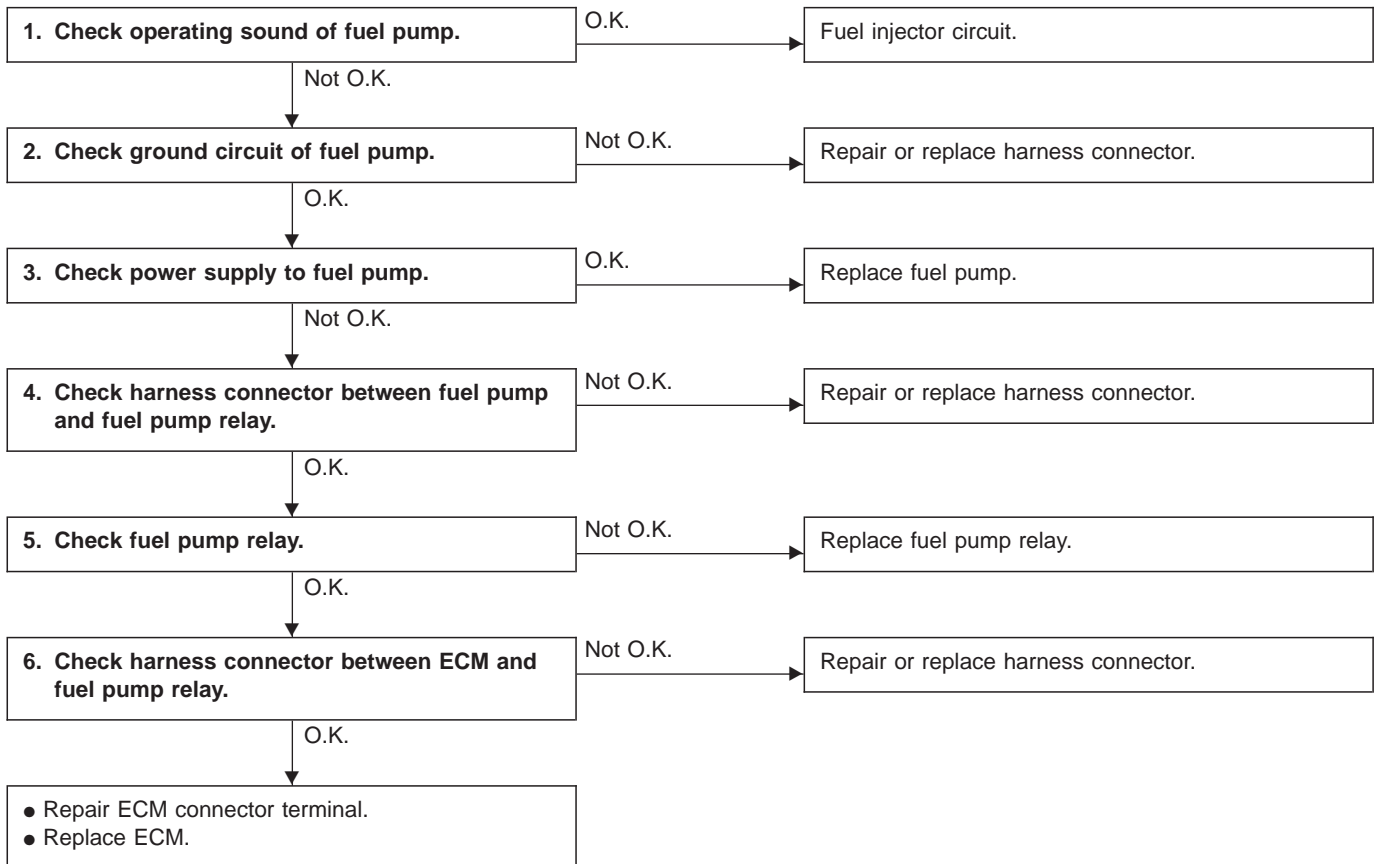
Connector & terminal /Specified resistance:

(E30) No. 20 — Body/1 MΩ, min.

(E30) No. 4 — Body/1 MΩ, min.

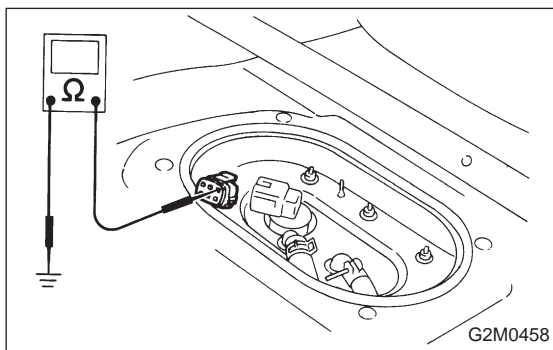
(E29) No. 14 — Body/1 MΩ, min.

D: FUEL PUMP CIRCUIT



1. CHECK OPERATING SOUND OF FUEL PUMP.

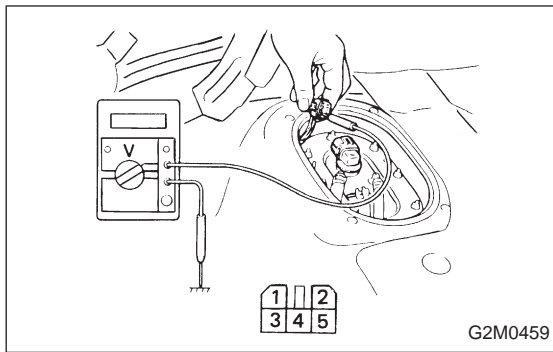
Make sure that fuel pump is in operation for two seconds when turning ignition switch to ON.



2. CHECK GROUND CIRCUIT OF FUEL PUMP.

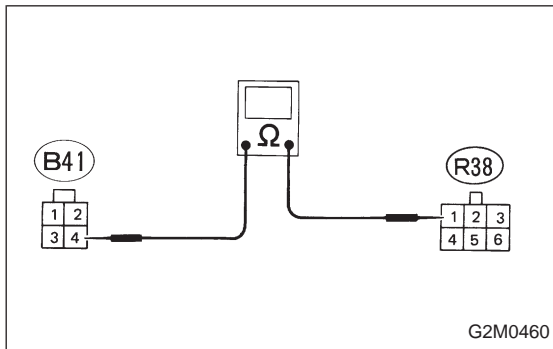
- 1) Turn ignition switch to OFF.
- 2) Disconnect connector from fuel pump.
- 3) Measure resistance of harness connector between fuel pump and body.

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

**3. CHECK POWER SUPPLY TO FUEL PUMP.**

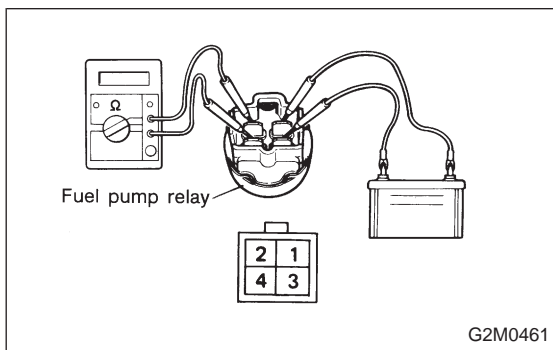
- 1) Turn ignition switch to ON.
- 2) Measure voltage of power supply circuit between fuel pump connector and body.

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

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

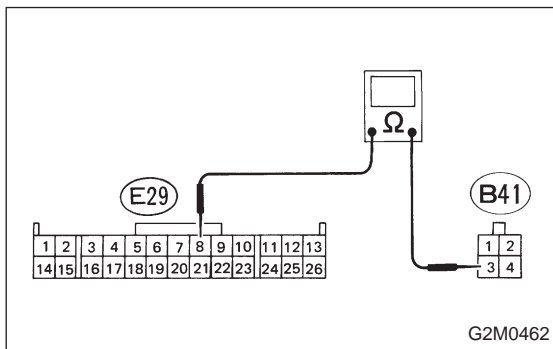
- 1) Turn ignition switch to OFF.
- 2) Measure resistance of harness connector between fuel pump and fuel pump relay.

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.

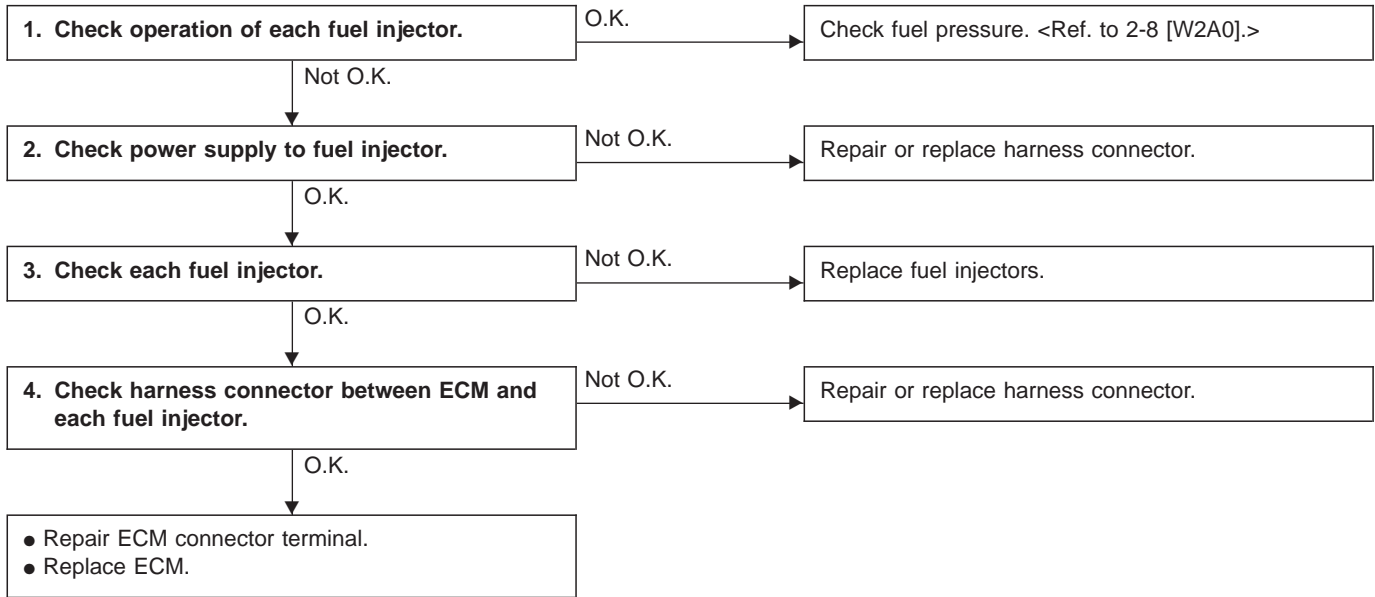
Terminals /Specified resistance:
No. 2 — No. 4/10 Ω, max.

**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.

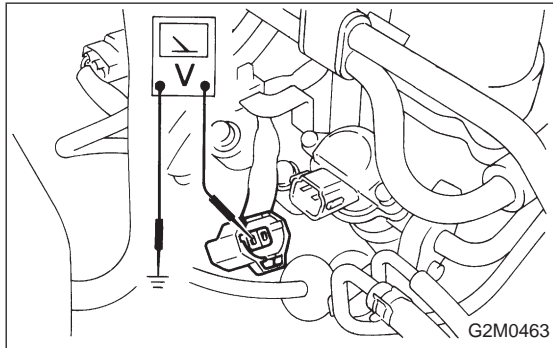
Connector & terminal /Specified resistance:
(E29) No. 8 — (B41) No. 3/10 Ω, max.

E: FUEL INJECTOR CIRCUIT



1. CHECK OPERATION OF EACH FUEL INJECTOR.

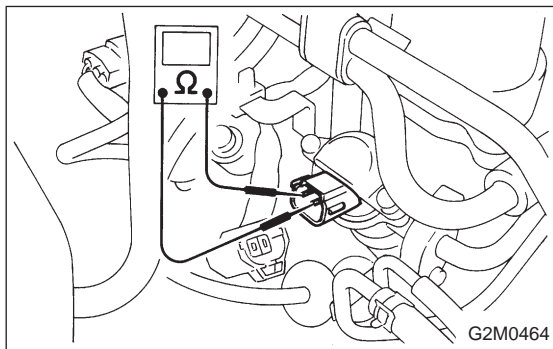
While cranking the engine, check that each fuel injector emits “operating” sound. Use a sound scope or attach a screwdriver to injector for this check.

**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:

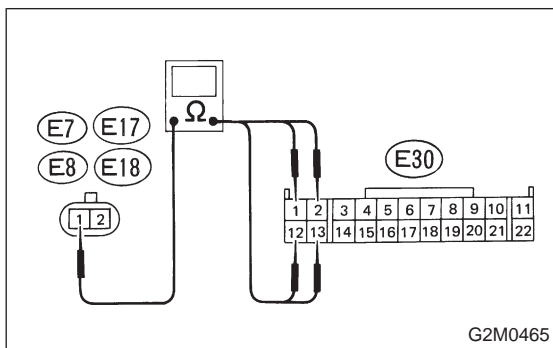
- #1 (E7) No. 2 — Body /10 V, min.
- #2 (E17) No. 2 — Body/10 V, min.
- #3 (E8) No. 2 — Body /10 V, min.
- #4 (E18) No. 2 — Body/10 V, min.

**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.