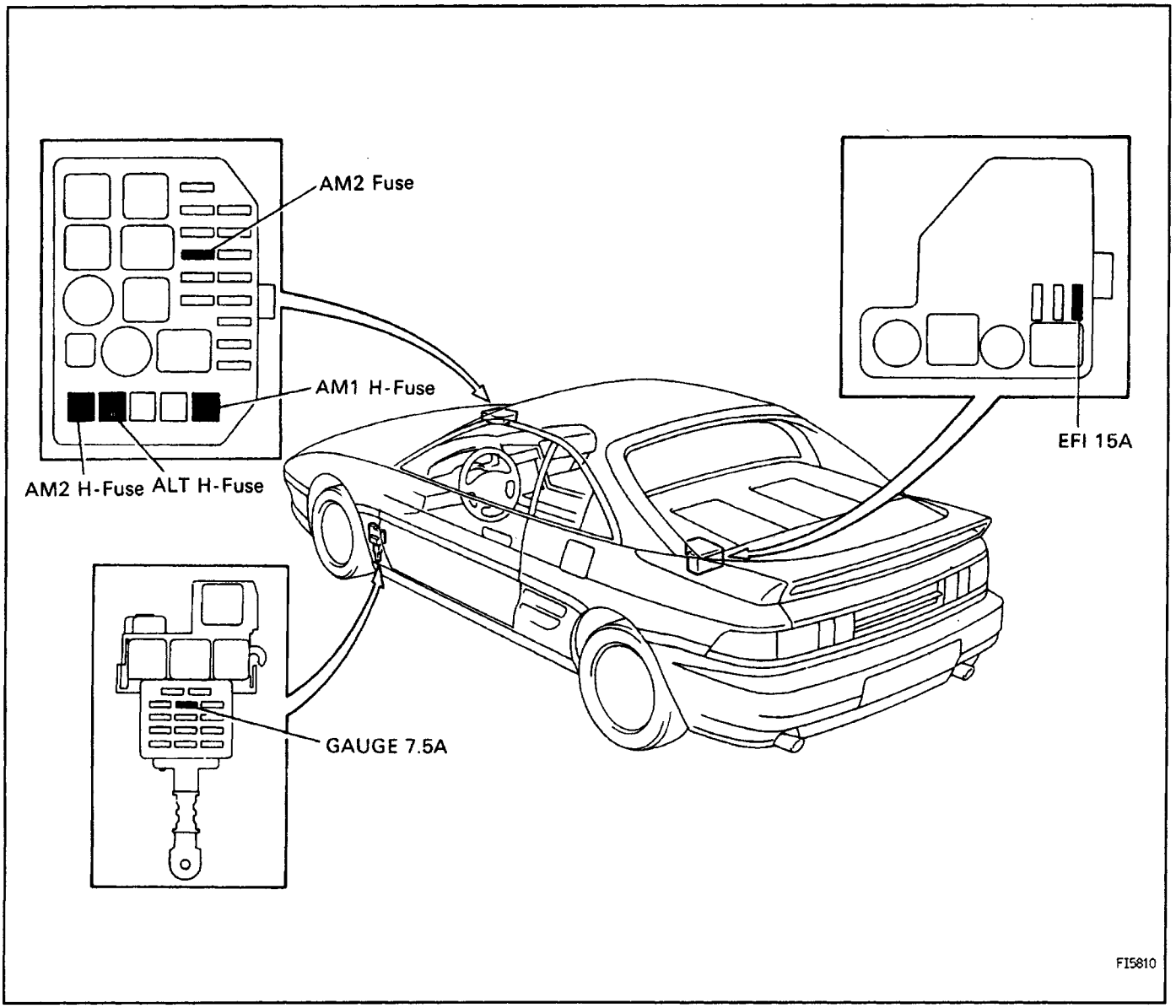
# TROUBLESHOOTING WITH VOLT OHMMETER

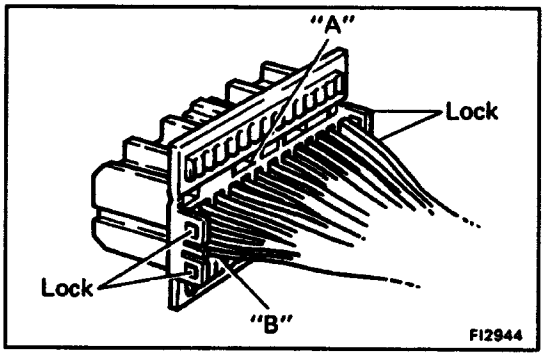
HINT: EG0XT–01

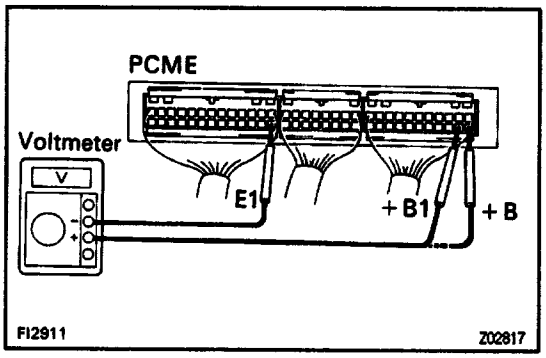
- The following troubleshooting procedures are designed for inspection of each separate system, and therefore the actual procedure may vary somewhat. However, troubleshooting should be performed while referring to the inspection methods described in this manual.
- Before beginning inspection, it is best to first make a simple check of the fuses, H–fuses, fusible link and the condition of the connectors.
- The following troubleshooting procedures are based on the supposition that the trouble lies in either a short or open circuit within the computer.
- If engine trouble occurs even though proper operating voltage is detected in the computer connector, then it can be assumed that the PCME is faulty and should be replaced.

## FUSES, H– FUSES AND FUSIBLE LINK LOCATION

EG0XU–01






# SMPI SYSTEM CHECK PROCEDURE B90XV–01

## PREPARATION

(a) Disconnect the connectors from the PCME.

(b) Remove the locks as shown in the illustration so that the tester probe(s) can easily come in.

**NOTICE: Pay attention to sections 'A' and 'B' in the** Illustration which can be easily broken.

(c) Reconnect the connectors to the PCME.

HINT:

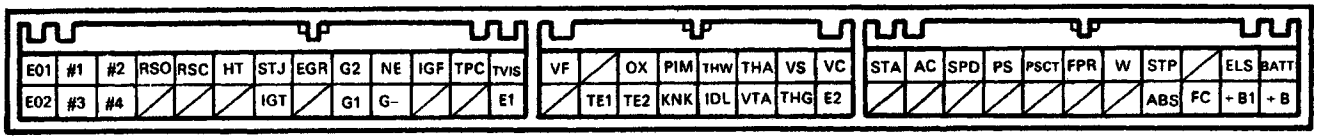
- Perform all voltage measurements with the connectors connected.
- Verify that the battery voltage is 11 V or more when the ignition switch is in the "ON" position.

Using a voltmeter with high impedance (10 kΩ/V minimum), measure the voltage at each terminal of the wiring connectors.

# PCME Wiring Connectors Voltage

| No. | Terminals | Condition | | STD voltage (V) | See page |
|---|---|---|---|---|---|
| 1 | +B, +B1 – E1 | IGS WON | | 9–14 | EG1–296 |
| 2 | BATT – E1 | – | | 9–14 | EG1–297 |
| 3 | IDL – E2 | IG SW ON | Throttle valve open | 9–14 | EG1–298 |
| | VC – E2 | | – | 4.5–5.5 | |
| | VTA – E2 | | Throttle valve fully closed (Throttle opener must be cancelled first) | 0.3–0.8 | |
| | | | Throttle valve fully open | 3.2–4.9 | |
| 4 | VC – E2 | | – | 4.5–5.5 | EG1–300 |
| | VS – E2 | | Measuring plate fully closed | 4.0–5.5 | |
| | | | Measuring plate fully open | 0.2–0.5 | |
| | | Idling | | 1.6–4.1 | |
| | | 3,000 rpm | | 1.0–2.0 | |
| 5 | #1, #2, #3, #4 – E01, E02 | IG SW ON | | 9–14 | EG1–301 |
| 6 | THA – E2 | IG SW ON | Intake air temp. 20°C (68°F) | 0.5–3.4 | EG1–302 |
| 7 | THW – E2 | | Coolant temp. 80°C (176°F) | 0.2–1.0 | EG1–303 |
| 8 | STA – E1 | Cranking | | 6 or more | EG1–304 |
| 9 | IGT – E1 | Idling | | Pulse generation | EG1–305 |
| 10 | RSC, RSO – E1 | IG SW ON | PCME connectors disconnected | 9–14 | EG1–306 |
| 11 | W – E1 | No trouble ("CHECK" engine warning light off) and engine running | | 9–14 | EG1 –307 |
| 12 | PIM – E2 | IG SW ON | | 2.5–4.5 | EG1–308 |
| | VC – E2 | | | 4.5–5.5 | |
| 13 | AC – E1 | IG SW ON | Air conditioning ON | 9–14 | EG1–309 |

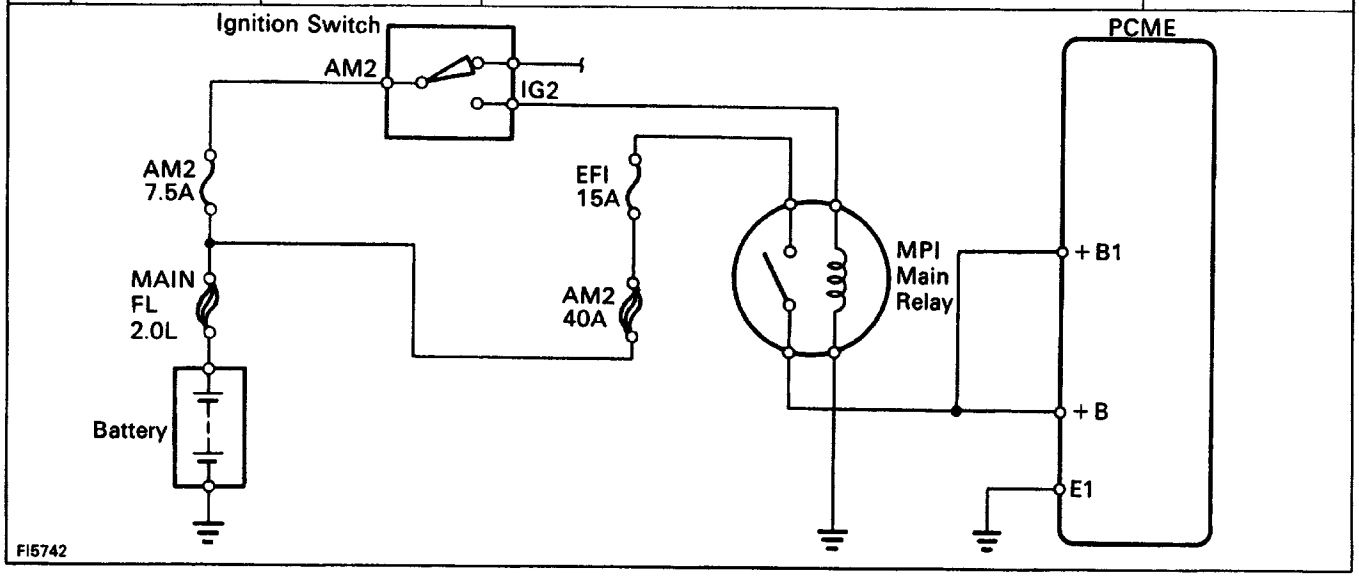
PCM E Terminals

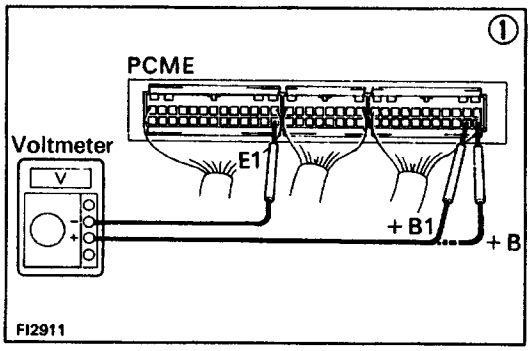


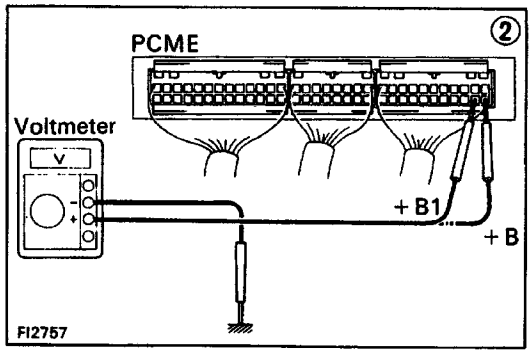

FI2796

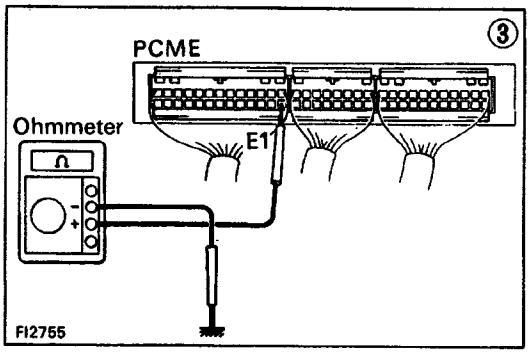
V00894

| No. | Terminals | Trouble | Condition | STD voltage |
|---|---|---|---|---|
| 1 | +B, +B1 – E1 | No voltage | IG SW ON | 9–14V |




**1** There is no voltage between PCME terminals + B or + B1 and E1. (IG SW ON)

↓

**2** Check that there is voltage between PCME terminal + B or + B1 and body ground. (IG SW ON)

NO → OK

**3** Check wiring between PCME terminal E1 and body ground.

OK → Try another PCM E.

BAD → Repair or replace.

Check fuses, N–fuse, fusible link and ignition switch. BAD → Repair or replace.

OK

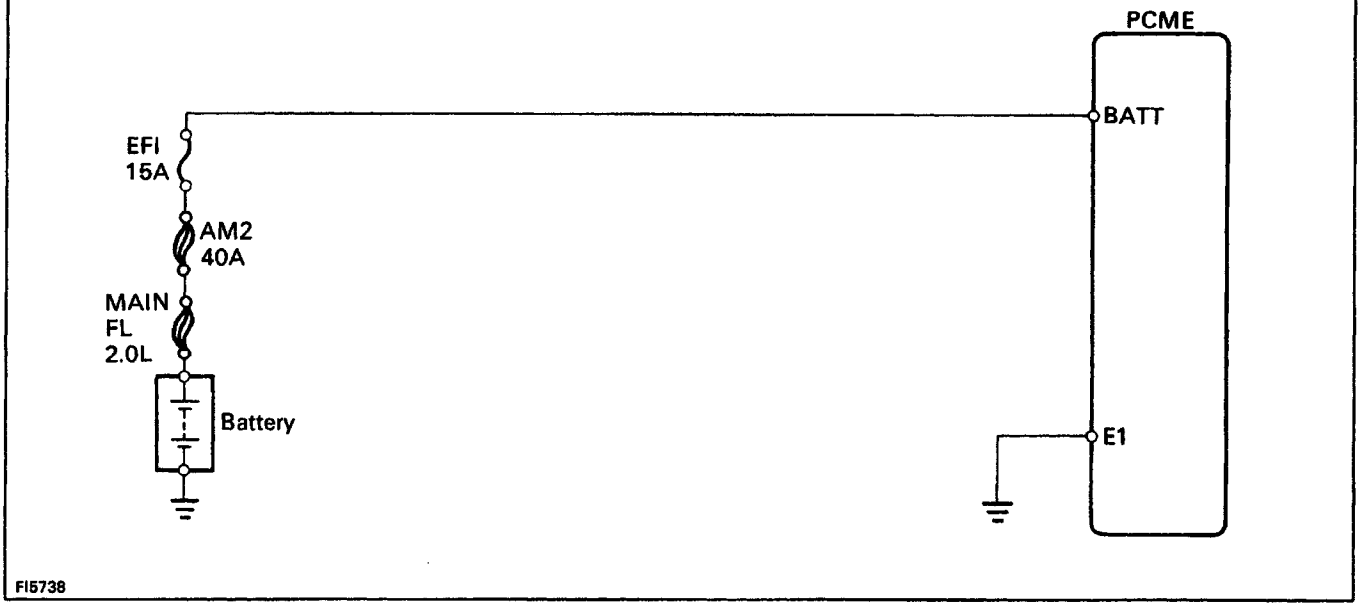
Check M PI main relay. (See page EG1–374) BAD → Replace.

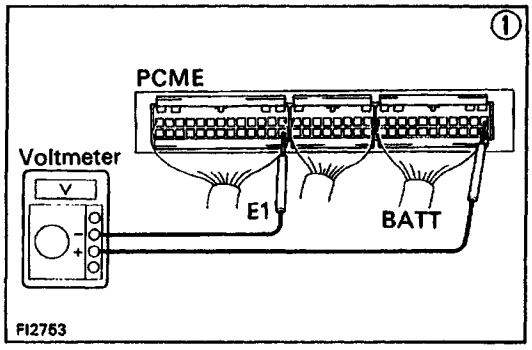
OK

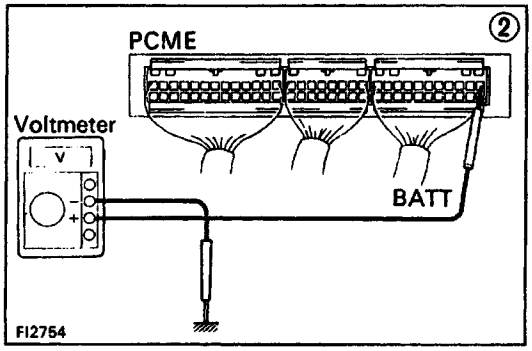
Check wiring between MPI main relay and battery. BAD → Repair or replace.

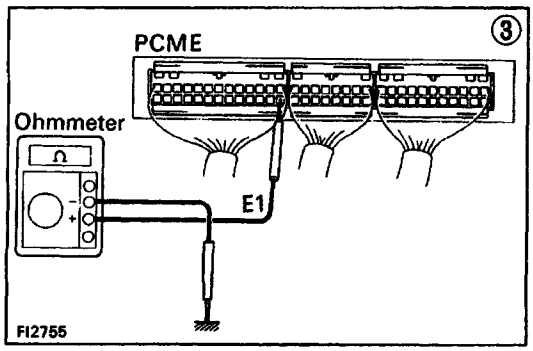
V00895

| No. | Terminals | Trouble | Condition | STD voltage |
|---|---|---|---|---|
| 2 | BATT – E1 | No voltage | – | 9–14V |




**1** There is no voltage between PCME terminals BATT and E1.

**2** Check that there is voltage between PCME terminal BATT and body ground.

NO → OK

**3** Check wiring between PCME terminal E1 and body ground.

OK → Try another PCME.

BAD → Repair or replace.

Check fuse, H–fuse and fusible link.

BAD → Replace.

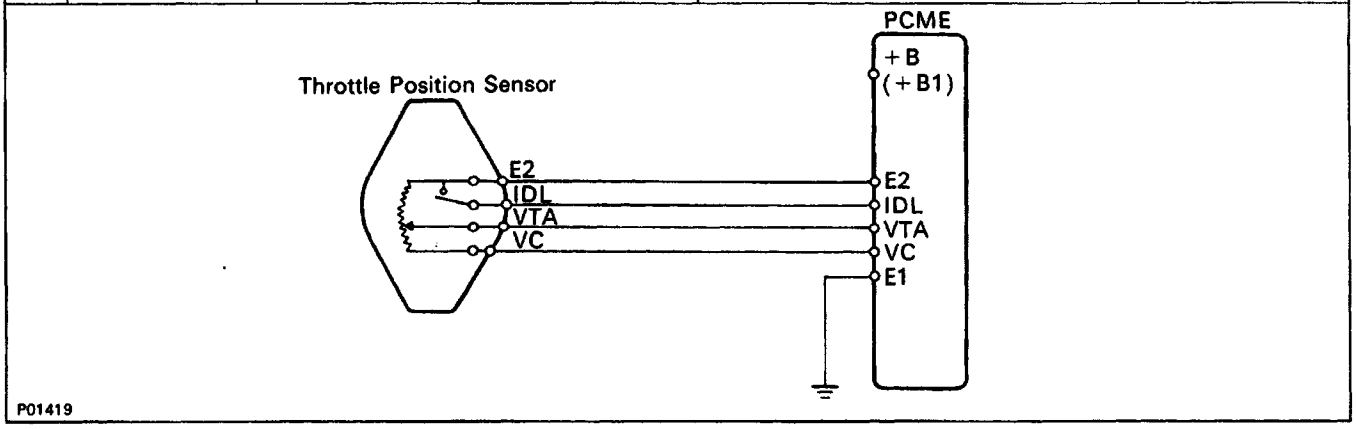
OK

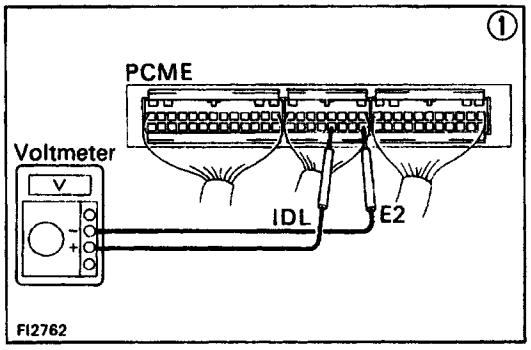
Check wiring between PCME terminal and battery.

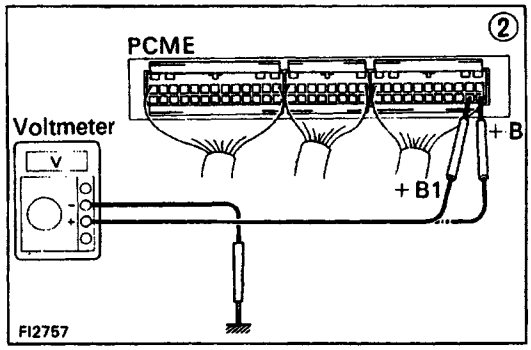
BAD → Repair or replace.

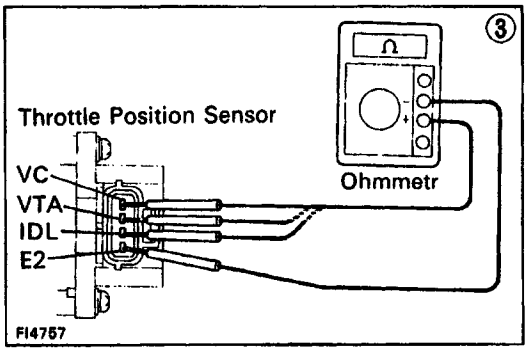
V00896

| No. | Terminals | Trouble | Condition | | STD voltage |
|---|---|---|---|---|---|
| 3 | IDL – E2 | No voltage | IG SW ON | Throttle valve open | 9 – 14 V |
| | VC – E2 | | | | 4.5 – 5.5 V |
| | VTA – E2 | | | Throttle valve fully closed<br>Throttle opener must be cancelled first | 0.3 – 0.8 V |
| | | | | Throttle valve fully open | 3.2 – 4.9 V |




- **IDL – E2**

① There is no voltage between PCME terminals IDL and E2. (IG SW ON) (Throttle valve open)

② Check that there is voltage between PCME terminal + B (+ B1) and body ground. (IG SW ON)

NO

OK

Check wiring between PCME terminal E1 and body ground.

OK

Try another PCM E.

BAD

Repair or replace.

Refer to No. 1. (See page EG1–296)

BAD

Repair or replace.

OK

③ Check throttle position sensor. (See page EG1–362)

BAD

Repair or replace throttle position sensor.

OK

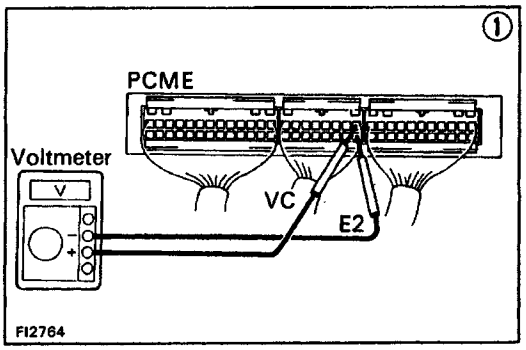
Check wiring between PCME and throttle position sensor.

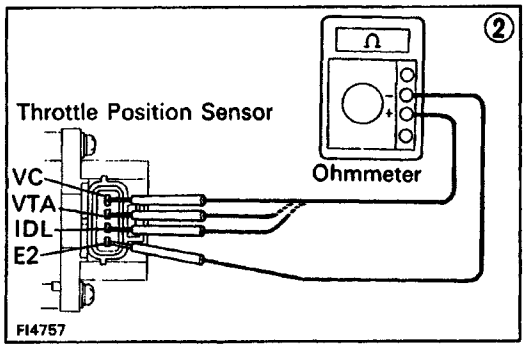
BAD

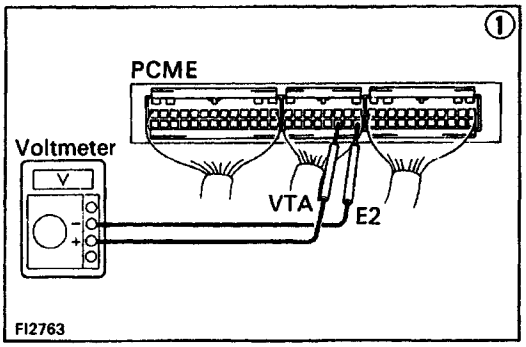
OK

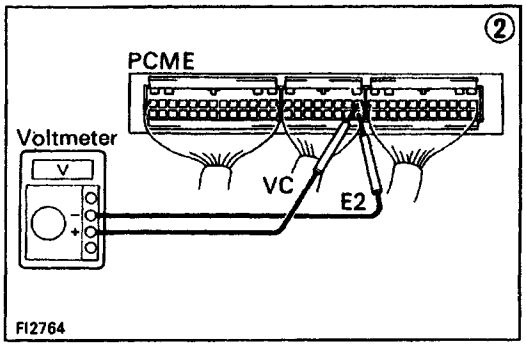
Try another PCME.

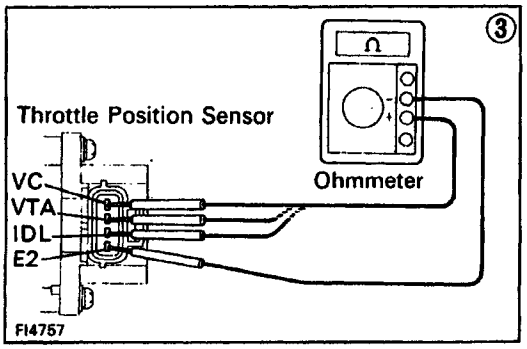
V00897




- **VC–E2**

① There is no voltage between PCME terminals VC and E2. (IG SW ON)

Check that there is voltage between PCME terminal + B (+ B1) and body ground. (IG SW ON)

OK → ② Check throttle position sensor. (See page EG1–362)

NO → Refer to No. 1. (See page EG1–296)

② BAD → Repair or replace.

② OK → Check wiring between PCM E and throttle position sensor.

OK → Try another PCM E.

BAD → Repair or replace wiring.

- **VTA – et**

① There is no specified voltage at PCME terminals VTA and E2. (IG SW ON)

② Check that there is voltage between PCME terminals VC and E2. (IG SW ON)

NO → Refer to VC – E2 trouble section.

OK → ③ Check throttle position sensor. (See page EG1–362)

③ BAD → Repair or replace.

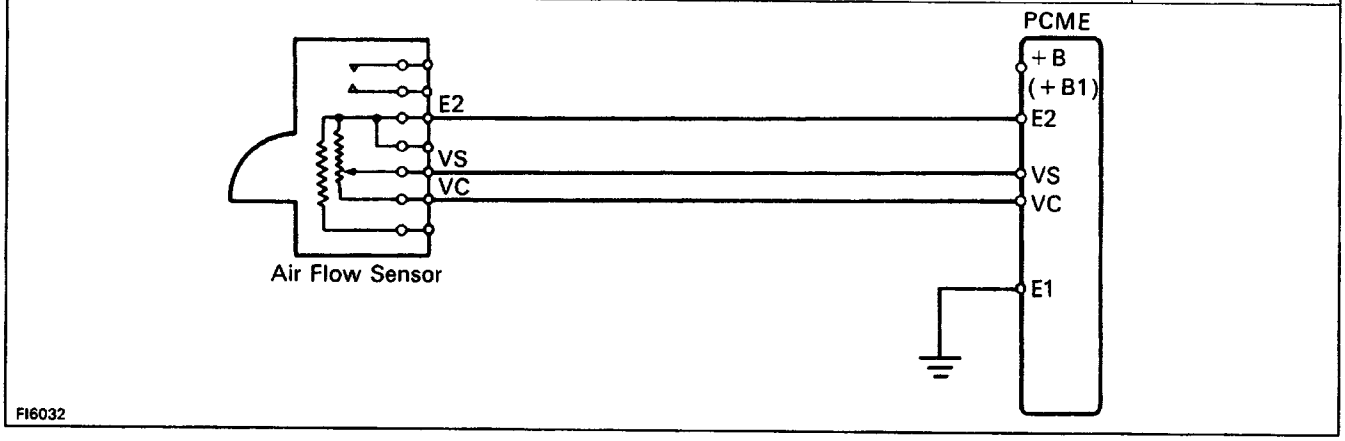
③ OK → Check wiring between PCME and throttle position sensor.

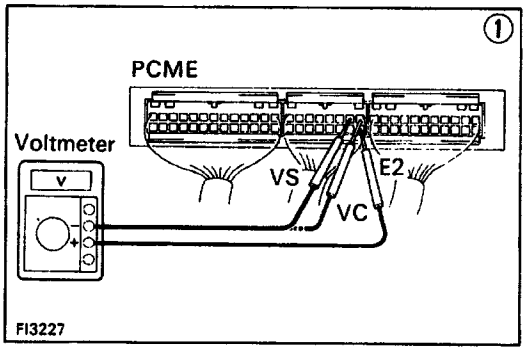
BAD → Repair or replace.

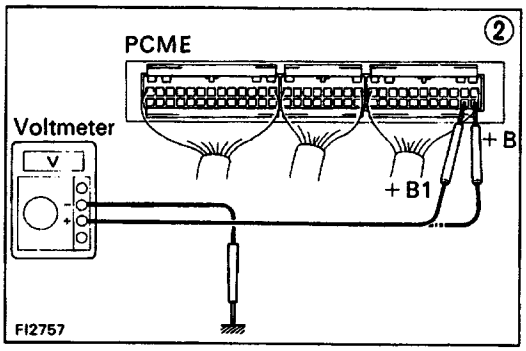
OK → Try another PCME.

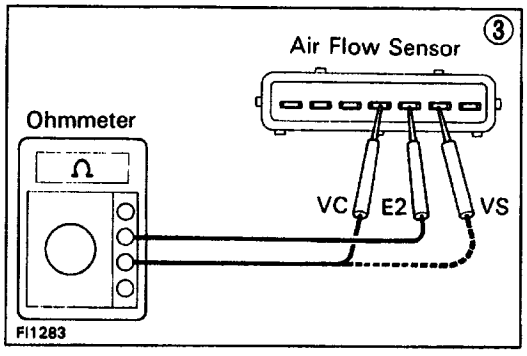
V00898

| No. | Terminals | Trouble | Condition | | STD voltage |
|---|---|---|---|---|---|
| 4 | VC – E2 | No voltage | IG SW ON | – | 4.5 – 5.5 V |
| | VS – E2 | | | Measuring plate fully closed | 4.0 – 5.5 V |
| | | | | Measuring plate fully open | 0.2 – 0.5 V |
| | | | Idle | | 1.6 – 4.1 V |
| | | | 3,000 rpm | | 1.0 – 2.0 V |




**1** There is no specified voltage at PCM E terminals VC or VS and E2. (IG SW ON)

↓

**2** Check that there is voltage between PCM E terminal + B (+ 131) and body ground. (IG SW ON)

OK → ↓

NO → Refer to No. 1. (See page EG1–296)

↓

Check wiring between PCME terminal E1 and body ground.

OK → ↓

BAD → Repair or replace.

↓

**3** Check air flow sensor. (See page EG1–358)

BAD → Repair or replace air flow sensor.

OK → ↓

Check wiring between PCM E and air flow sensor.

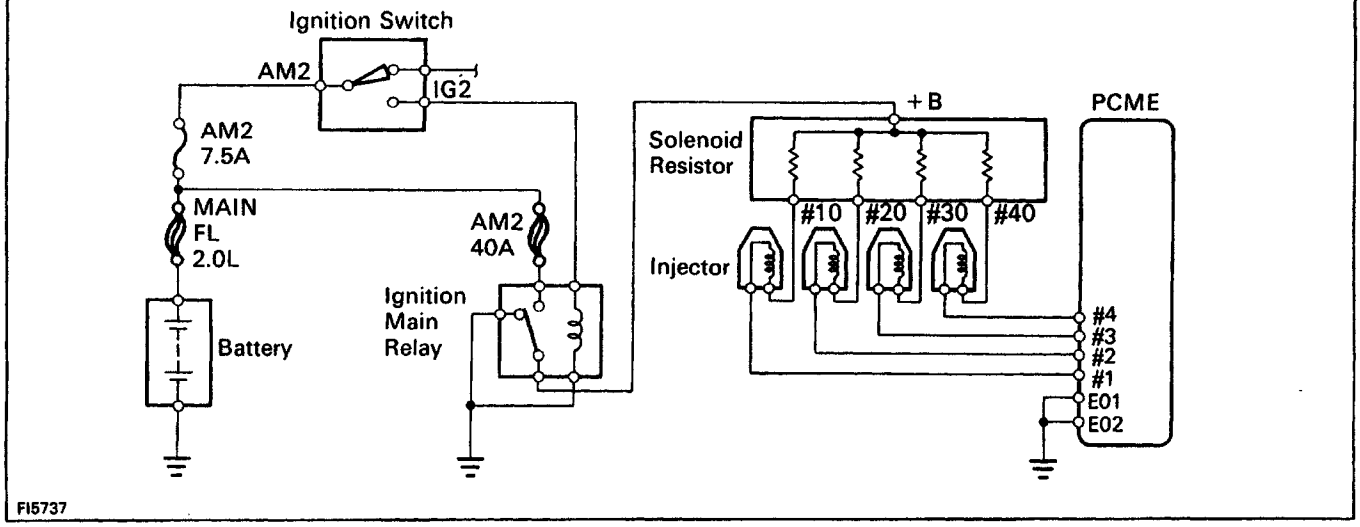
OK → ↓

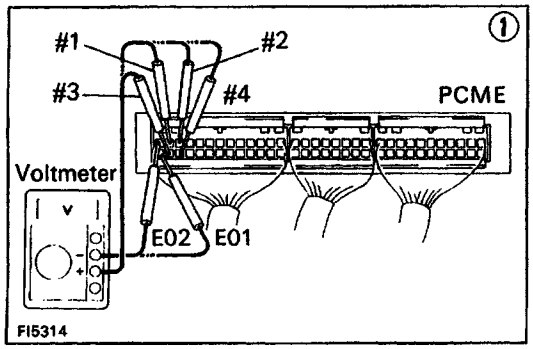
Try another PCM E.

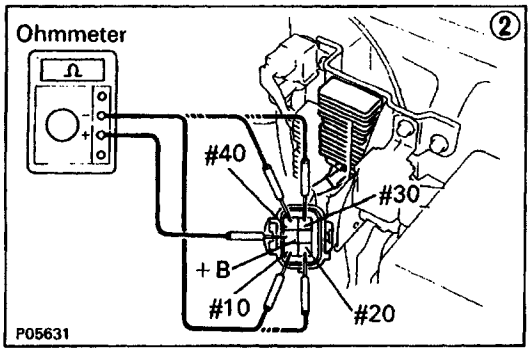
BAD → Repair or replace.

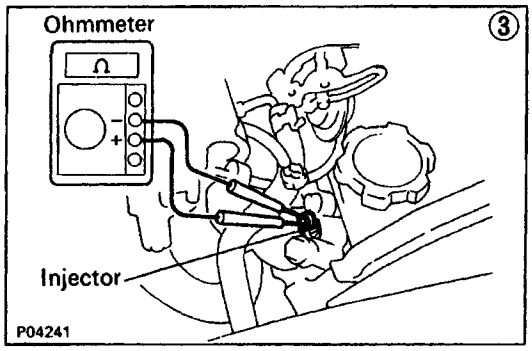
V00899

| No. | Terminals | Trouble | Condition | STD voltage |
|---|---|---|---|---|
| 5 | #1<br>#2 _ E01<br>#3 E02<br>#4 | No voltage | IG SW ON | 9 – 14 V |




There is no voltage between PCME terminals #1, #2, #3 and/or #4 and E01 and/or E02. IG SW ON)

↓

Check that there is specified voltage between solenoid resistor terminal + B and body ground. STD voltage: 9 –14 V

OK ↓ NO

Check fuse, H–fuse, fusible link, wiring, ignition switch and ignition main relay. → BAD → Repair or replace.

↓

Check resistance between +B of solenoid resistor and each other terminal. STD resistance: 4 – 6Ω

OK ↓ NO

Check resistance of each injector. STD resistance: 2 – 4Ω → Replace resistor.

↓ OK

BAD → Replace injector.

↓

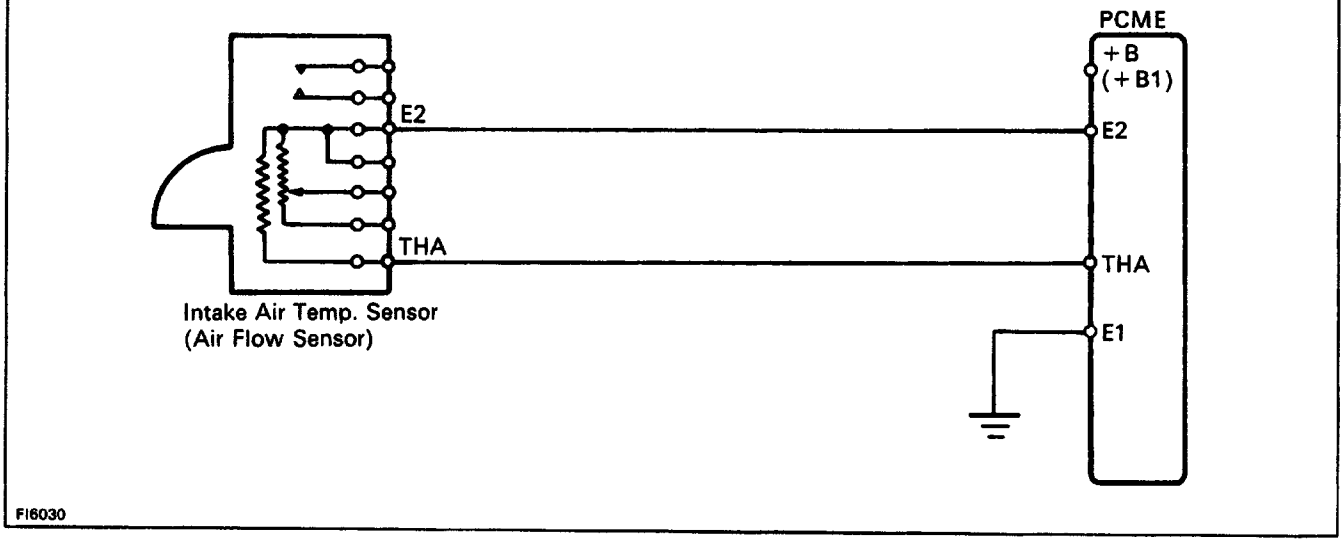
Check wiring between PCME and resistor → BAD → Repair or replace wiring.

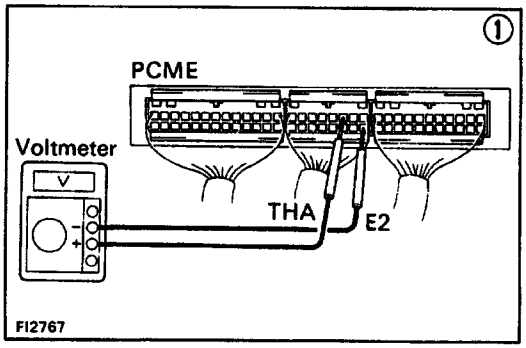
↓ OK

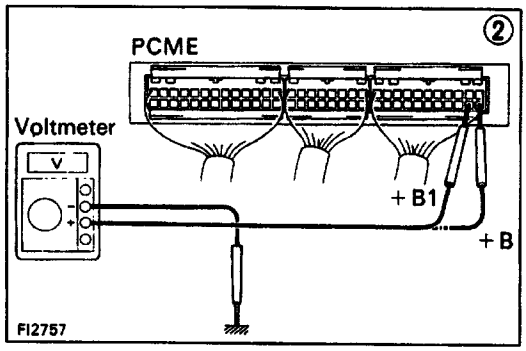
Try another PCME.

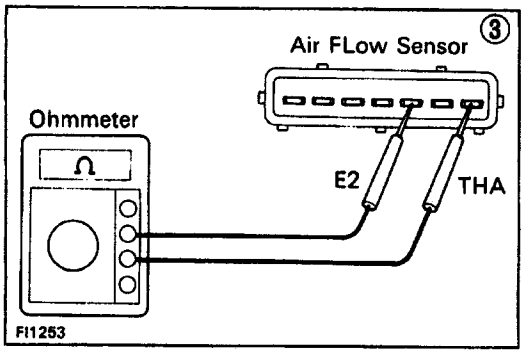
V00900

| No. | Terminals | | Trouble | Condition | STD voltage |
|---|---|---|---|---|---|
| 6 | THA – E2 | No voltage | IG SW ON | Intake air temperature 20˚C | 0.5 – 3.4 V |




① There is no voltage between PCME terminals THA and E2. (IG SW ON)

② Check that there is voltage between PCME terminal + B (+ 131) and body ground. (IG SW ON)

OK → Check wiring between PCME terminal E1 and body ground.

NO → Refer to No.1. (See page EG1–296)

OK → ③ Check intake air temp. sensor (See page EG1–358)

BAD → Repair or replace.

BAD → Replace air flow sensor.

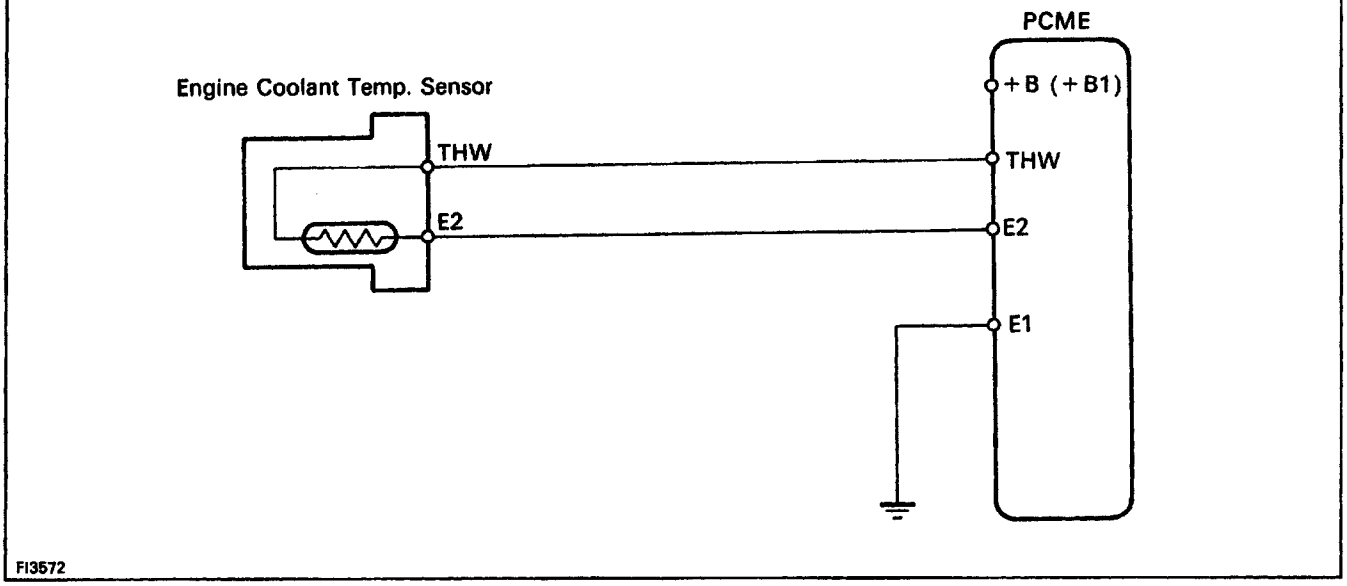
OK → Check wiring between PCME and intake air temp. sensor

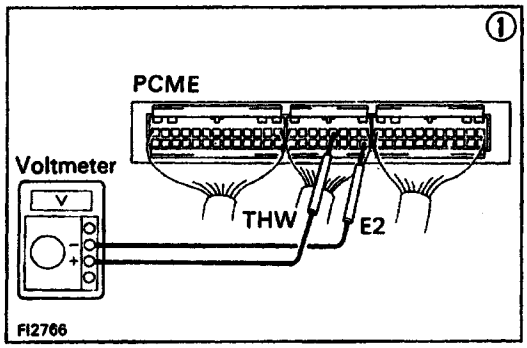
OK → Try another PCME.

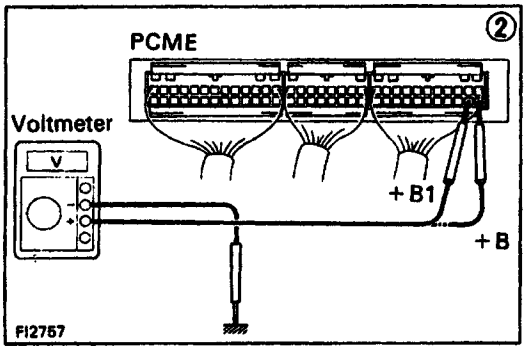
BAD → Repair or replace.

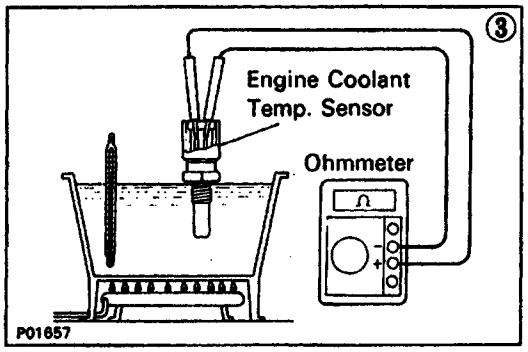
V00901

| No. | Terminals | Trouble | Condition | | STD voltage |
|---|---|---|---|---|---|
| 7 | THW – E2 | No voltage | IG SW ON | Coolant temperature 80°C (176°F) | 0.2 – 1.0 V |




① There is no voltage between PCME terminals THW and E2. (IG SW ON)

② Check that there is voltage between PCME terminal + B (+ B1) and body ground. (IG SW ON)

OK → Check wiring between PCME terminal E1 and body ground.

NO → Refer to No.1. (See page EG1–296)

OK → ③ Check engine coolant temp. sensor. (See page EG1–378)

BAD → Repair or replace.

BAD → Replace engine coolant temp. sensor.

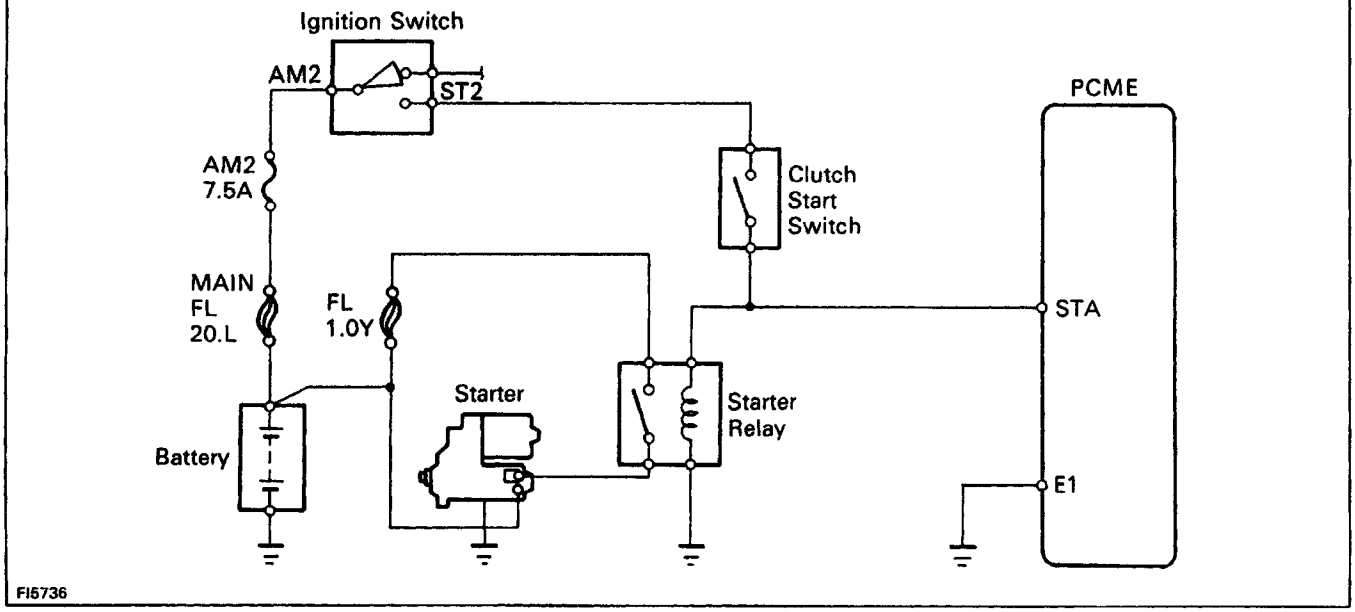
OK → Check wiring between PCME and engine coolant temp. sensor.

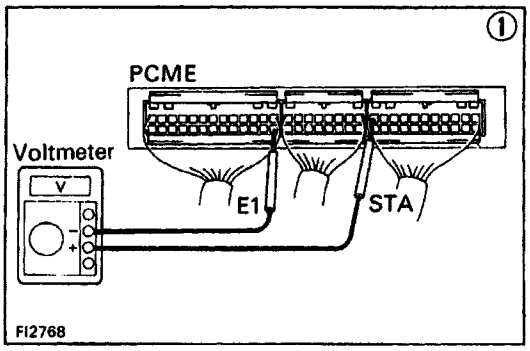
OK → Try another PCME.

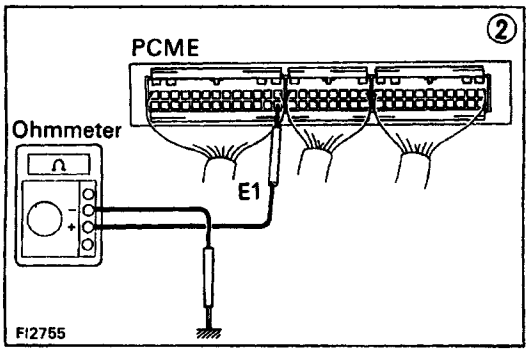
BAD → Repair or replace.

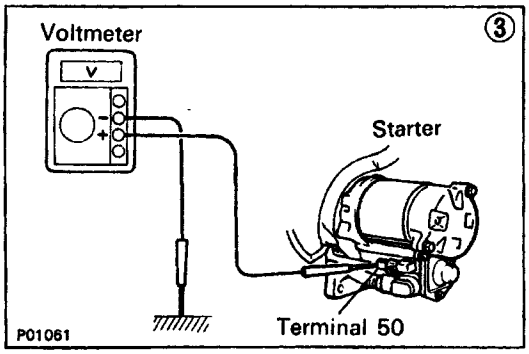
V00902

| No. | Terminals | Trouble | Condition | STD voltage |
|---|---|---|---|---|
| **8** | **STA – E1** | No voltage | Cranking | **6 V or more** |




① There is no voltage between PCME terminals STA and EI. (IG SW ON)

Check starter operation. — OK → Check wiring between PCME terminal STA and ignition switch terminal ST2.

Check starter operation. — BAD → Check fuse, H–fuse, fusible link, battery, wiring, ignition switch, clutch start switch and starter relay.

Check wiring between PCME terminal STA and ignition switch terminal ST2. — OK → ② Check wiring between PCME terminal E1 and body ground.

Check wiring between PCME terminal STA and ignition switch terminal ST2. — BAD → Repair or replace.

② Check wiring between PCME terminal E1 and body ground. — OK → Try another PCME.

② Check wiring between PCME terminal E1 and body ground. — BAD → Repair or replace.

Check fuse, H–fuse, fusible link, battery, wiring, ignition switch, clutch start switch and starter relay. — BAD → Repair or replace.

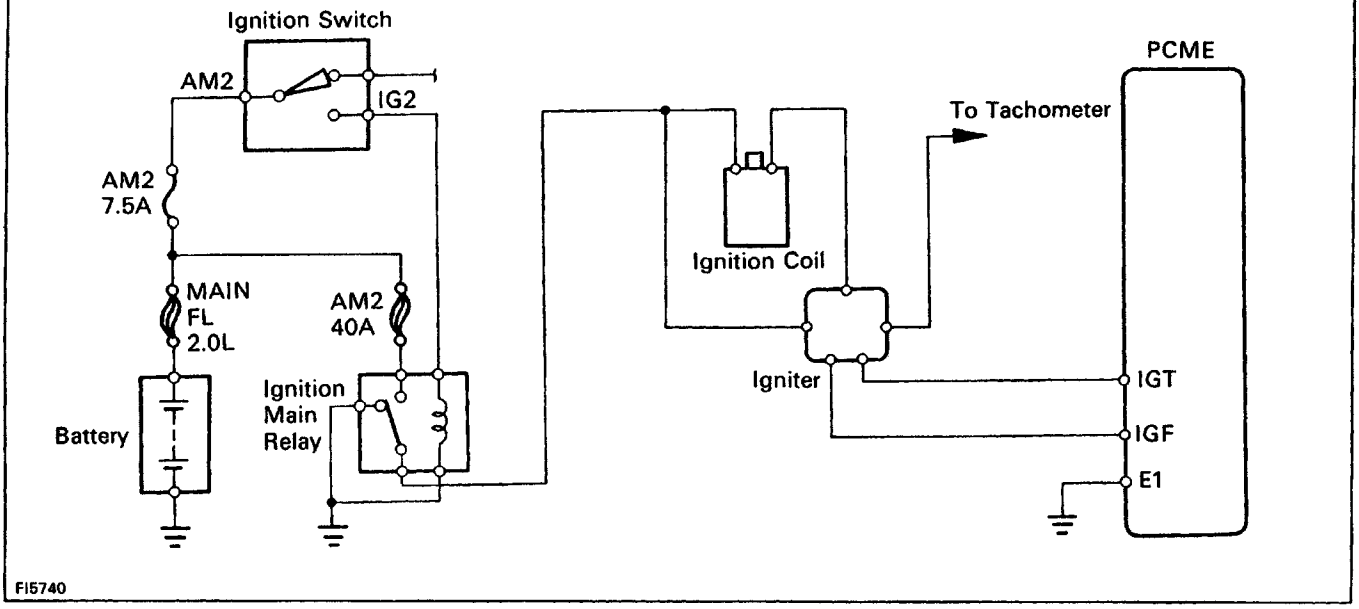
Check fuse, H–fuse, fusible link, battery, wiring, ignition switch, clutch start switch and starter relay. — OK → ③ Check that there is voltage at starter terminal 50. (IG SW START) STD voltage: 6 V or more

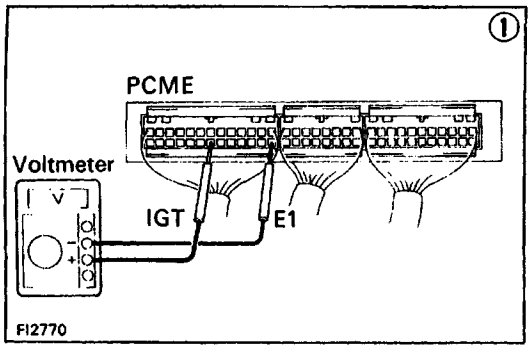
③ Check that there is voltage at starter terminal 50. (IG SW START) STD voltage: 6 V or more — OK → Check starter.

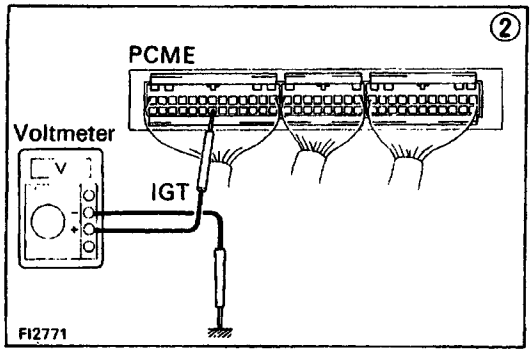
③ Check that there is voltage at starter terminal 50. (IG SW START) STD voltage: 6 V or more — NO → Check wiring between ignition switch terminal ST2 and starter terminal 50.

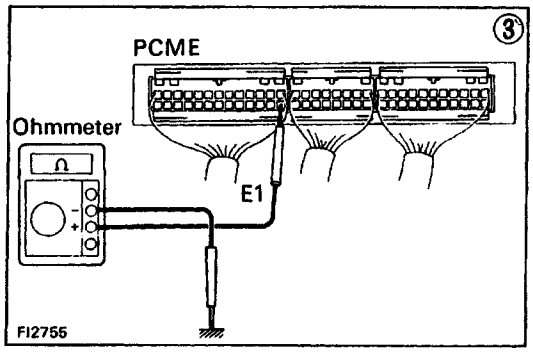
V00903

| No. | Terminals | Trouble | Condition | STD voltage |
|---|---|---|---|---|
| **9** | **IGT – E1** | No voltage | Idling | **Pulse generation** |




**1** There is no voltage between PCME terminals IGT and E1. (Idling)

↓

**2** Check that there is voltage between PCME terminal IGT and body ground. (idling)

NO → OK

NO → ~ Check wiring between PCME terminal E1 and body ground. → BAD → Repair or Replace.

OK → Try another PCME.

OK → Check fuse, H–fuse, fusible link, ignition switch and ignition main relay. → BAD → Repair or replace.

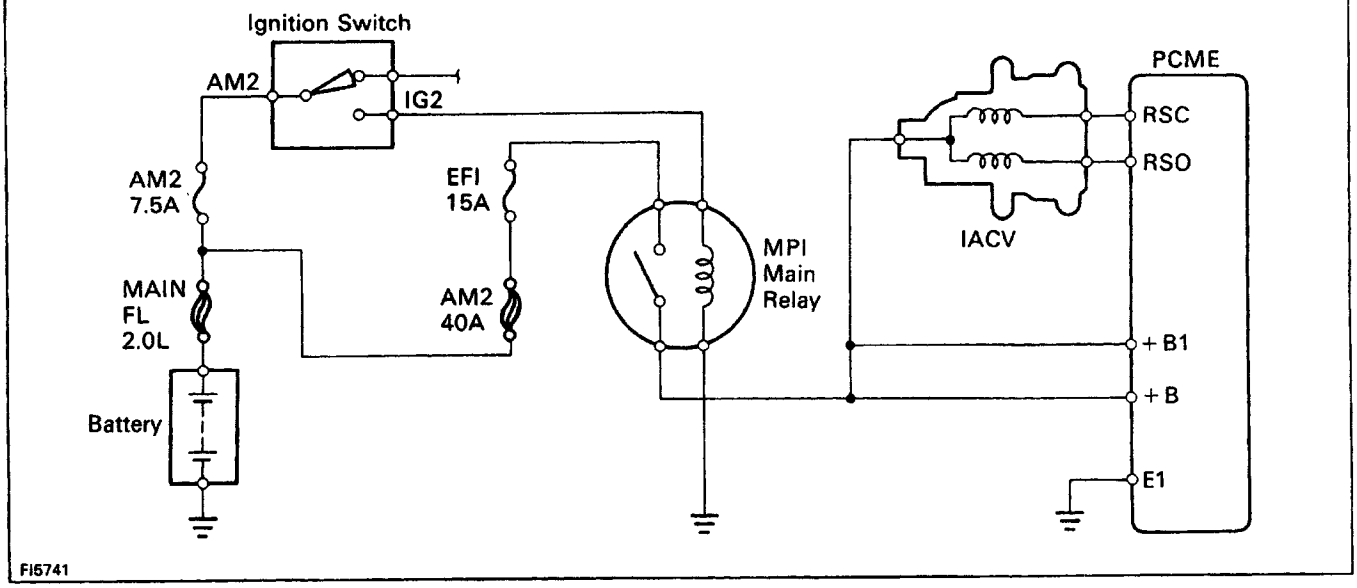
OK → Check distributor. (See IG section) → BAD → Repair or replace.

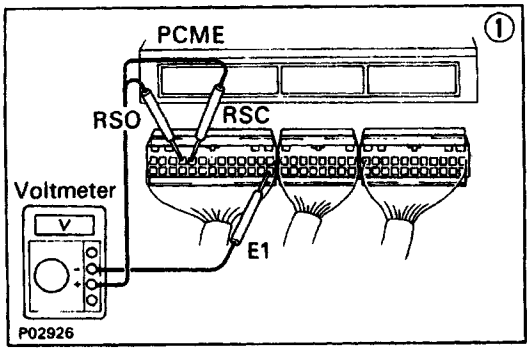
OK → Check wiring between PCME and battery. → BAD → Repair or replace.

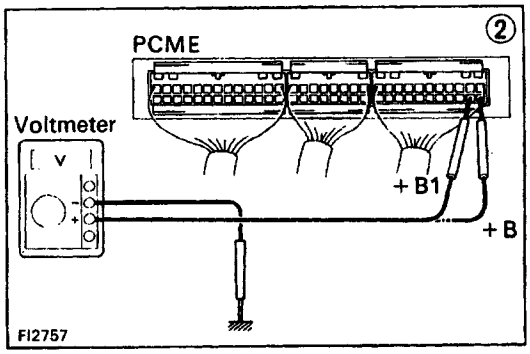
OK → Check igniter. (See IG section) → BAD → Repair or replace.

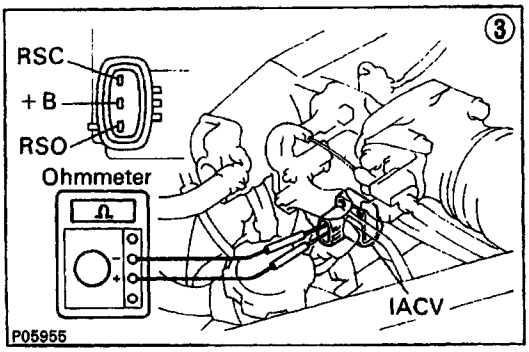
V00904

| No. | Terminals | Trouble | Condition | | STD voltage |
|---|---|---|---|---|---|
| 10 | RSC – E1<br>RSO | No voltage | IG SW O N | PCME connecters disconnected | 9 – 14 V |




① There is no voltage between PCME terminals RSC or RSO and E1. (IG SW ON)

↓

② Check that there is voltage between PCME terminal + B (+ B1) and body ground. (IG SW ON)

OK ↓

NO → Refer to No–1 . (See page EG1–296)

③ Check resistance between IACV terminals + B and RSC or RSO. STD resistance: 17.7 – 23.9 0

BAD → Replace IACV.

OK ↓

Check wiring between PCME and IACV.

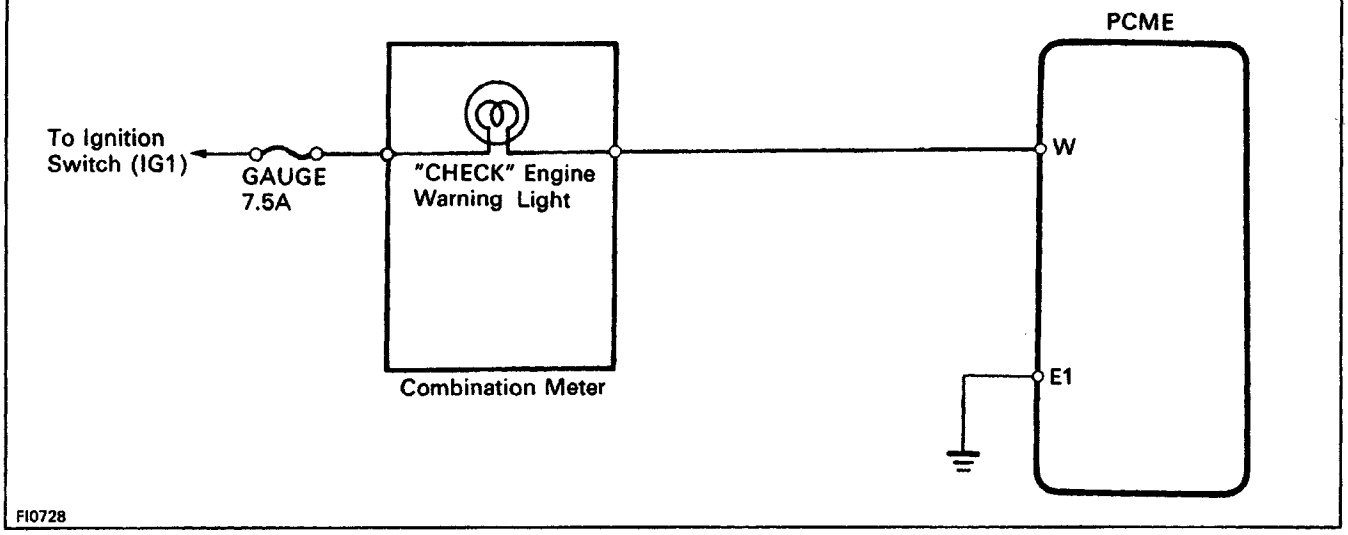
BAD → Repair or replace wiring.

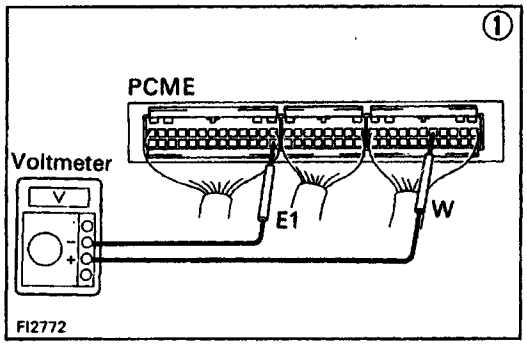
OK ↓

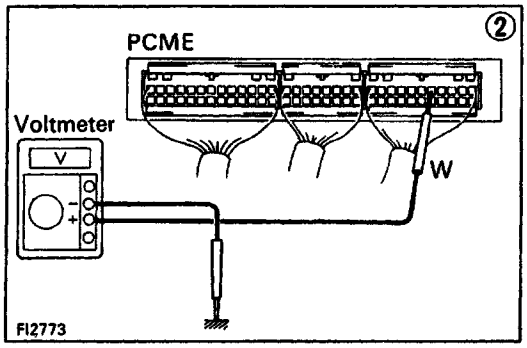
Try another PCME.

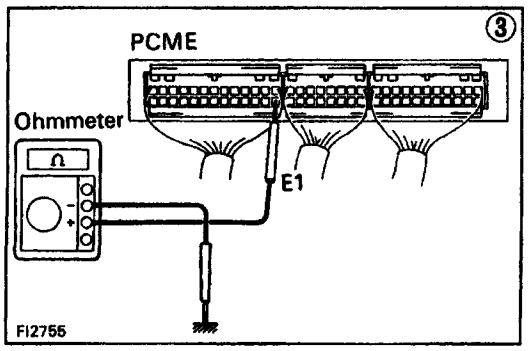
V00905

| No. | Terminals | Trouble | Condition | STD voltage |
|---|---|---|---|---|
| **11** | **W – E1** | No voltage | No trouble ("CHECK" engine warning light off) and engine running. | **9 – 14 V** |




① There is no voltage between PCME terminals W and E1. (Idling)

↓

② Check that there is voltage between PCME terminal w and body ground.

NO ← | → OK

OK: Check wiring between PCME terminal E1 and body ground.

OK → Try another PCME.

BAD → Repair or replace.

Check fuse GAUGE (7.5 A) and check engine warning light.

OK

BAD → Repair or replace.

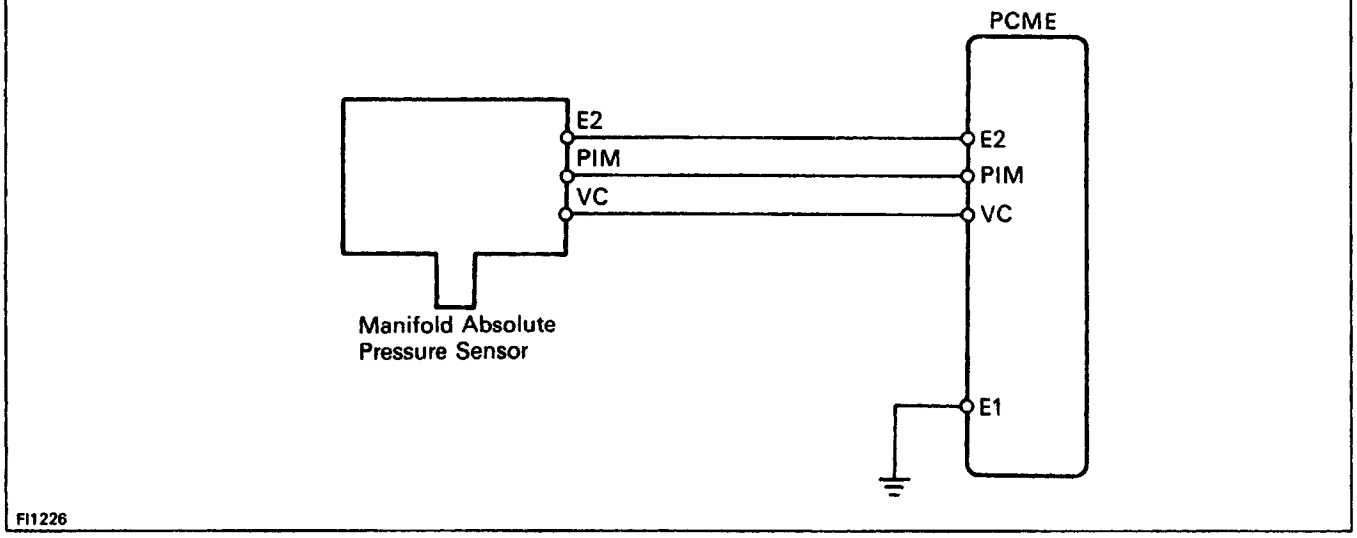
Fuse blows again

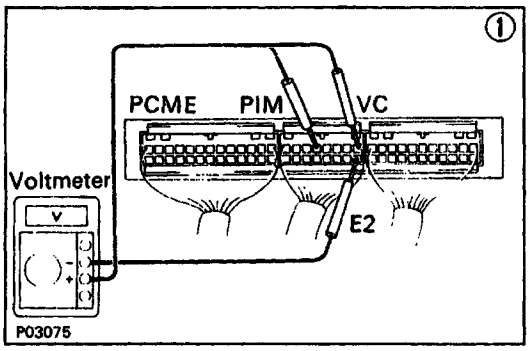
Check wiring between PCME terminal W and fuse.

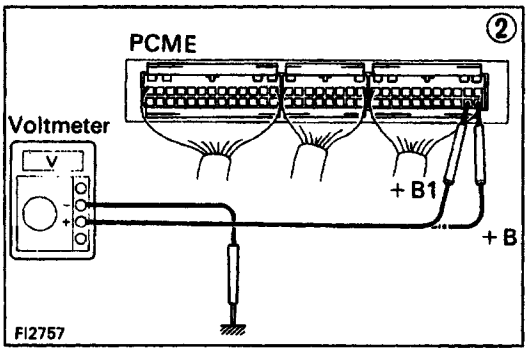
BAD → Repair or replace.

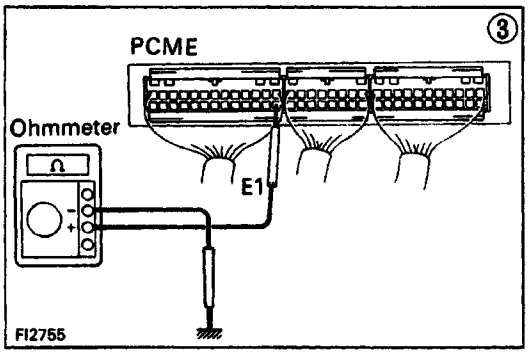
V00906

| No. | Terminals | Trouble | Condition | STD voltage |
|---|---|---|---|---|
| 12 | PIM – E2 | No voltage | IG SW ON | 2.5 – 4.5 V |
| | VC – E2 | | | 4.5 – 5.5 V |




① There is no voltage between PCME terminals PIM or VC and E2. (IG SW ON)

↓

② Check that there is voltage between PCME terminal + B or + 131 and body ground. OG SW ON)

OK → ↓

NO → Refer to No.1. (See page EG1–296)

↓

③ Check wiring between PCME terminal E1 and body ground.

OK → ↓

BAD → Repair or replace.

↓

Check manifold absolute pressure sensor. (See page EG1–400)

BAD → Replace manifold absolute pressure sensor.

OK → ↓

Check wiring between PCME and manifold absolute pressure sensor.

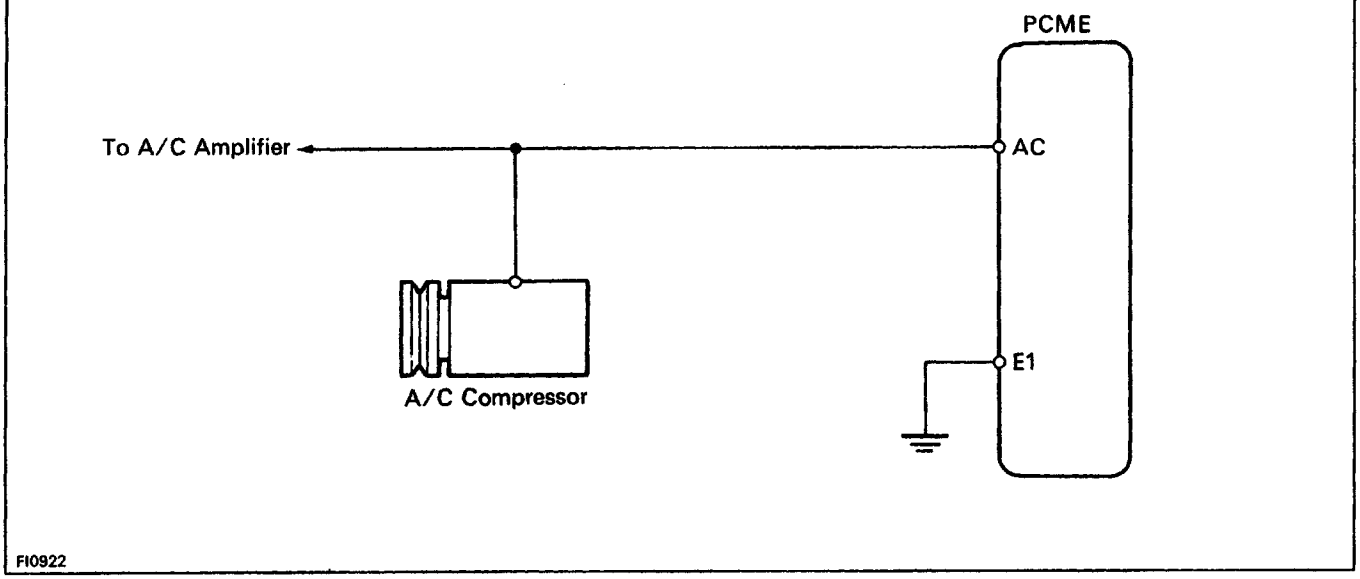
OK → ↓

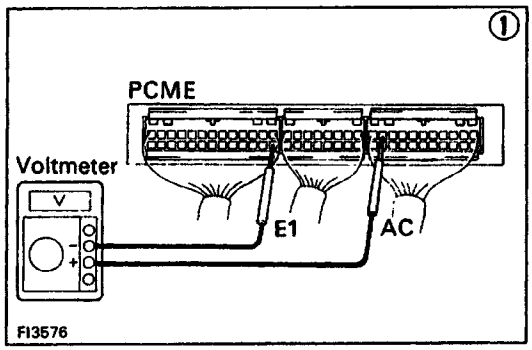
BAD → Repair or replace.

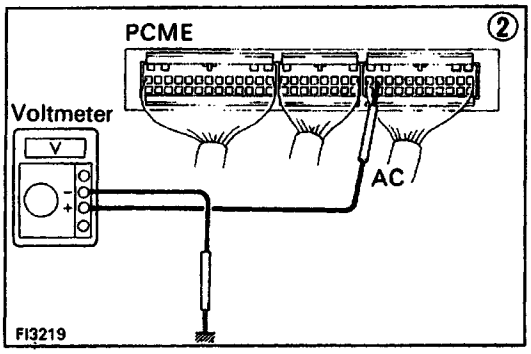
Try another PCME.

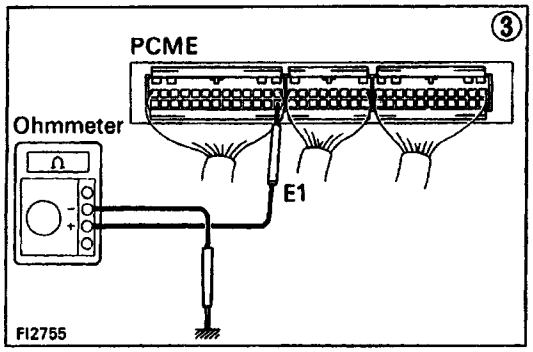
V00907

| No. | Terminals | Trouble | Condition | STD voltage |
|---|---|---|---|---|
| 13 | AC – E1 | No voltage | Air conditioning ON | 9 – 14 V |




**1** There is no voltage between PCME terminals AC and E1.
Air conditioning ON)

**2** Check that there is voltage between PCME terminal AC and body ground.

NO

OK

**3** Check wiring between PCME terminal E1 and body ground.

OK

Try another PCME.

BAD

Repair or replace.

Check compressor running.

OK

Check wiring between PCME terminal AC and amplifier.

BAD

BAD

Repair or replace.

Check that there is voltage between amplifier terminal and body ground.

BAD

Repair or replace.

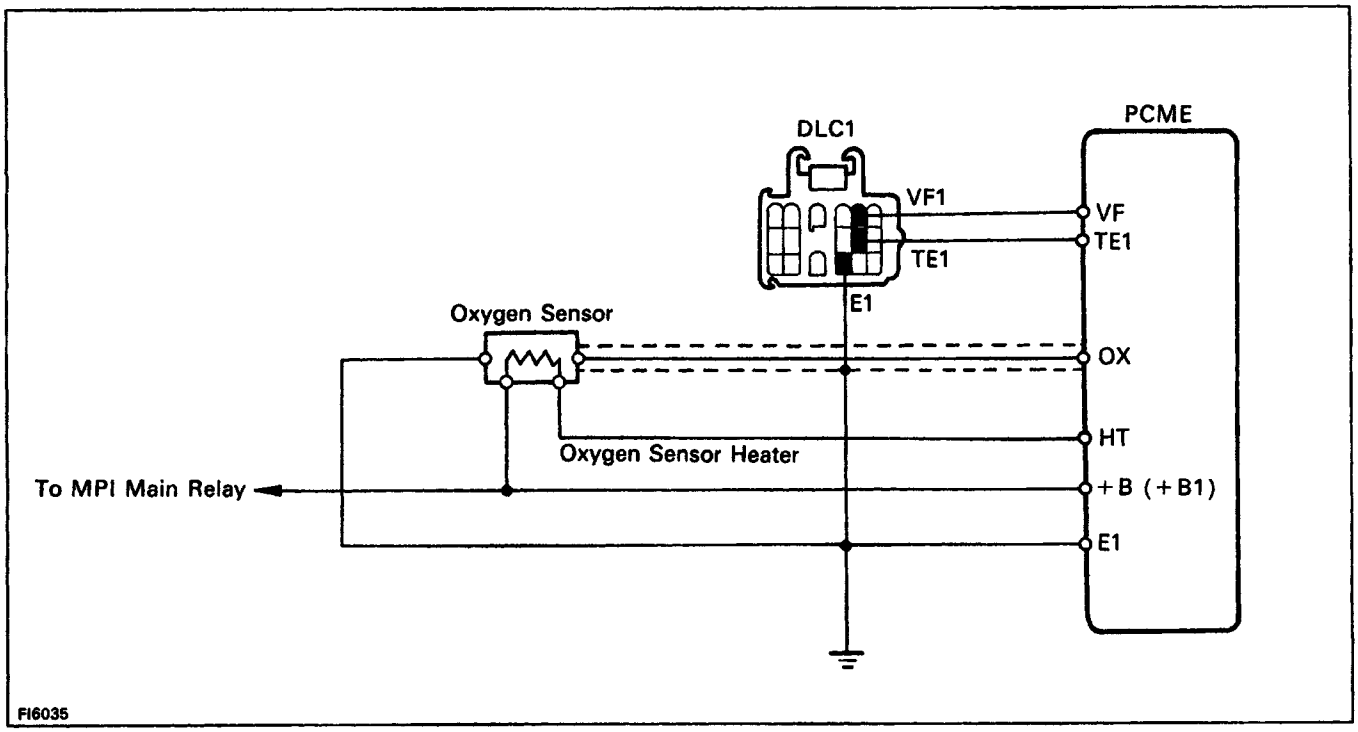
OK

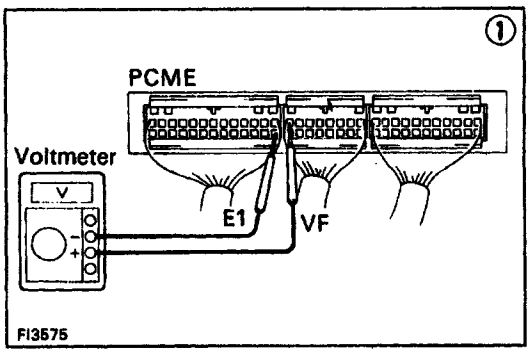
Check wiring between amplifier and PCME or compressor.

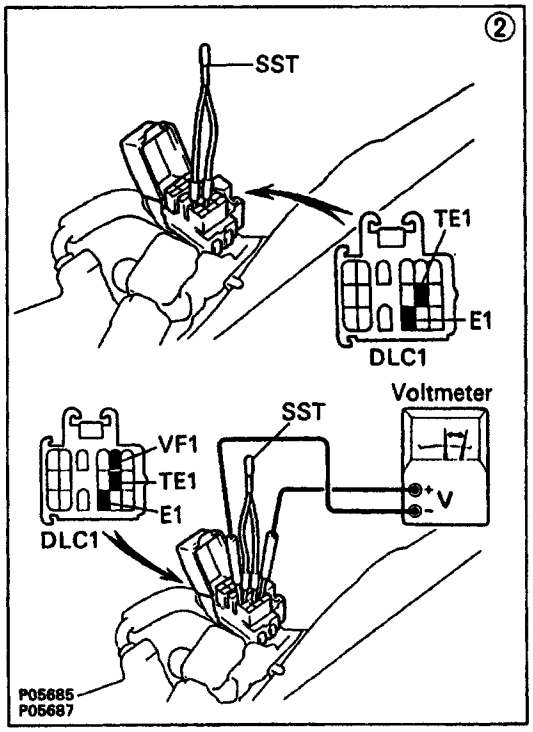
BAD

Repair or replace.

V00908




There is no voltage between PCME terminals VF and E1.

Check that there is specified voltage between PCME terminals VF and body ground.

NO → OK: Check wiring between PCME terminal E1 and body ground.
- BAD → Repair or replace.
- OK → Try another PCME.

Check for air suction into exhaust system.
- BAD → Repair air suction.
- OK ↓

Check for air leak from air intake system.
- BAD → Repair air leak.
- BAD → Repair air leak.
- BAD → Repair air leak.
- OK ↓

Check spark plugs.
- → Repair or replace.
- OK ↓

Check distributor and ignition system.
- → Repair or replace.
- OK ↓

Check fuel pressure.
- BAD → Repair or replace.
- BAD → Repair or replace.
- BAD → Repair or replace.
- OK ↓

Check injectors.
- BAD → Repair or replace.
- OK ↓

Check cold start injector.
- OK → Repair or replace.
- → Repair or replace.
- OK ↓

Check air flow sensor.
- → Repair or replace.
- OK ↓

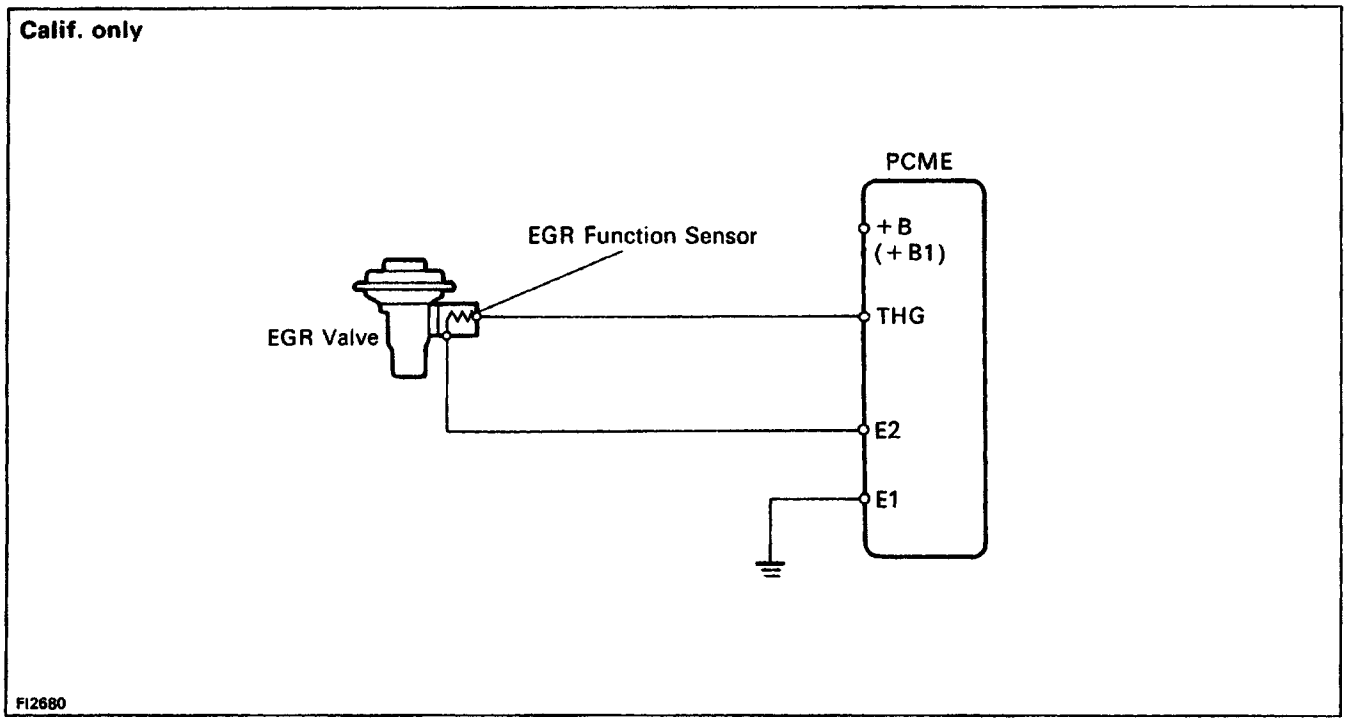
Check operation of oxygen sensor.
- → System normal
- BAD ↓

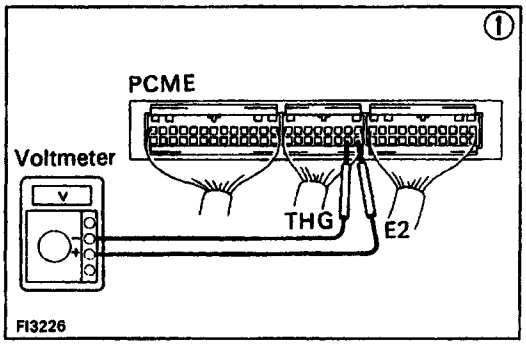
Check wiring between oxygen sensor and PCME connectors.
- BAD → Repair wiring.
- OK ↓

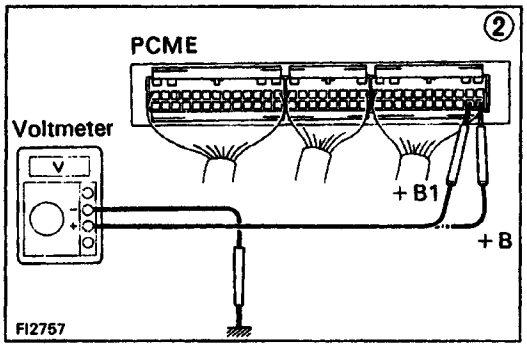
Replace oxygen sensor.

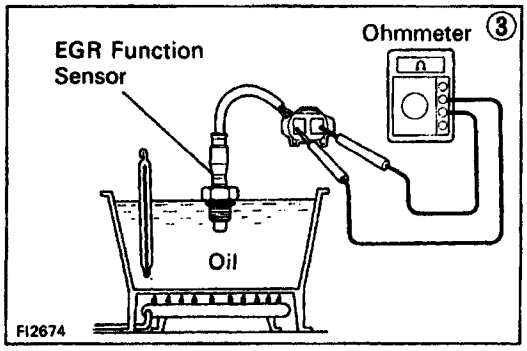
* Rich malfunction only

V00909




① There is no voltage between PCME terminals THG and E2. (IG SW ON)

② Check that there is voltage between PCME terminal + B or + 81 and body ground. (IG SW ON)

OK

NO → Refer to No.1. (See page EG1–296)

Check wiring between PCME terminal E1 and body ground.

OK

BAD → Repair or replace.

Check EGR system (See page EG1–243)

BAD → Repair or replace.

OK

③ Check EGR function sensor. (See page EG1–402)

BAD → Replace EGR function sensor.

OK → Check wiring between PCME and EG R function sensor.

OK → Try another PCME.

BAD → Repair or replace.

V00910