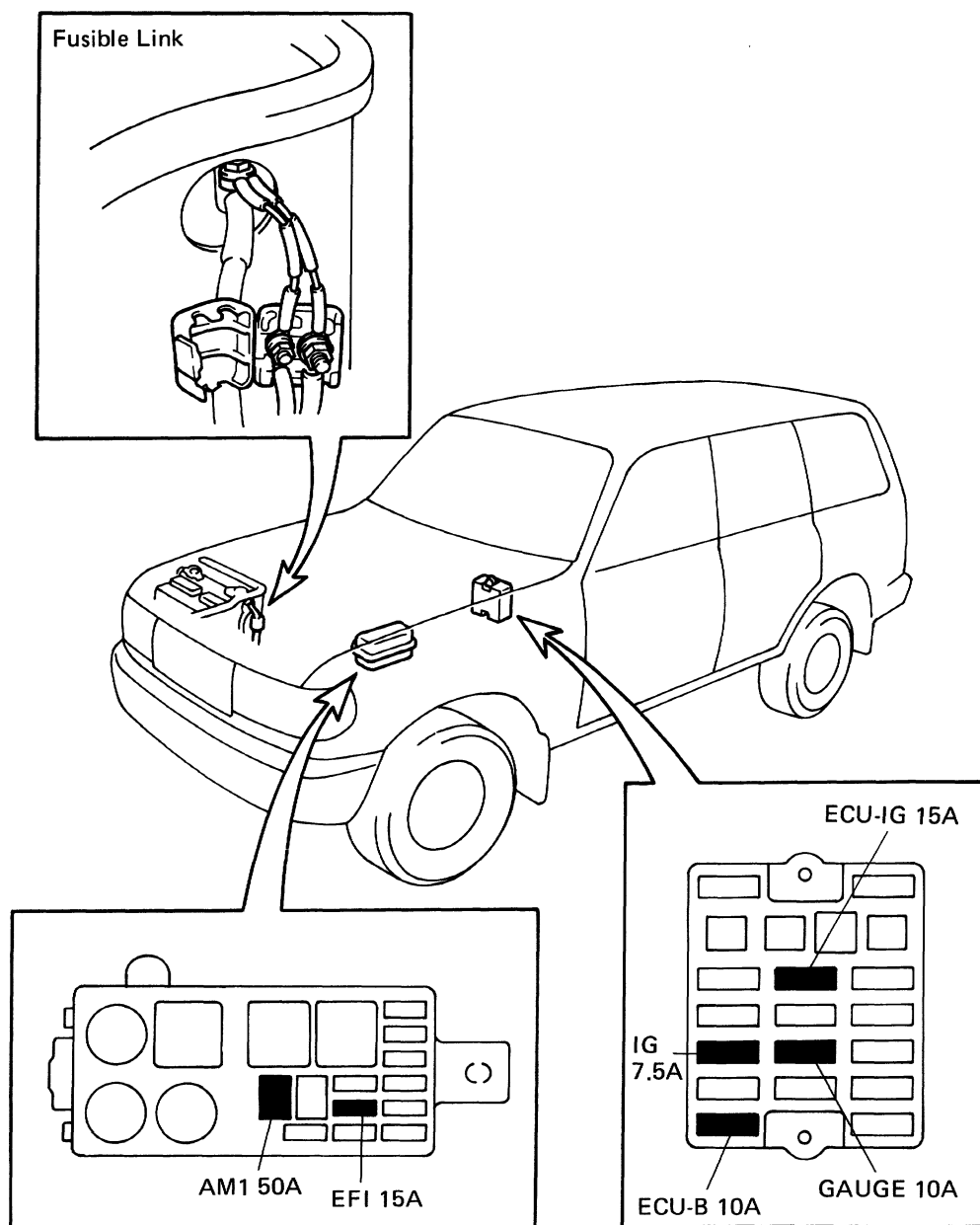


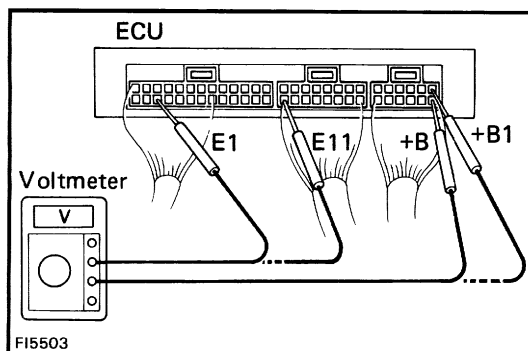
## TROUBLESHOOTING WITH VOLT OHMMETER

**HINT:** 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 referring to the inspection methods described in this manual. Before beginning inspection, it is best to first make a simple check of the fuses, fusible links and condition of the connectors.

The following troubleshooting procedures are based on the supposition that the trouble lies in either a short or open circuit in a component outside the computer or a short 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 ECU is faulty and should be replaced.

### LOCATION OF FUSES AND FUSIBLE LINKS





## EFI SYSTEM CHECK PROCEDURE

### HINT:

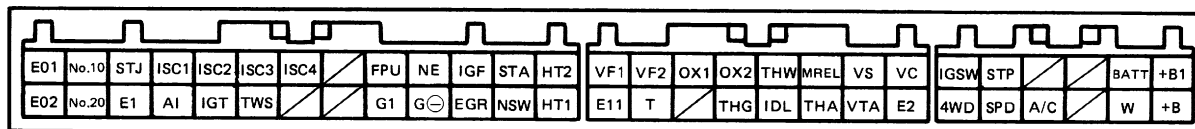
- Perform all voltage measurements with the connectors connected.
- Verify that the battery voltage is 11 V or more when the ignition switch is "ON".

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

## Terminals of ECU

| Symbol | Terminal Name         | Symbol | Terminal Name            | Symbol | Terminal Name                              |
|--------|-----------------------|--------|--------------------------|--------|--------------------------------------------|
| E01    | ENGINE GROUND         | G —    | DISTRIBUTOR              | M-REL  | EFI MAIN RELAY                             |
| E02    | ENGINE GROUND         | IGF    | IG N ITER                | THA    | AIR TEMP. SENSOR                           |
| No.10  | INJECTOR (No.1, 2, 3) | EGR    | EGR VSV                  | VS     | AIR FLOW METER                             |
| No.20  | INJECTOR (No.4, 5, 6) | STA    | STARTER SWITCH           | VTA    | THROTTLE POSITION SENSOR                   |
| STJ    | COLD START INJECTOR   | NSW    | NEUTRAL START SWITCH     | VC     | AIR FLOW METER or THROTTLE POSITION SENSOR |
| E1     | COMPUTER GROUND       | HT2    | OXYGEN SENSOR HEATER     | E2     | SENSOR GROUND                              |
| ISC1   | ISC MOTOR No.1 COIL   | HT1    | OXYGEN SENSOR HEATER     | IG SW  | IGNITION SWITCH                            |
| AI     | AI VSV                | VFI    | CHECK CONNECTOR          | 4WD    | CENTER DIFFLOCK INDICATOR                  |
| ISC2   | ISC MOTOR No.2 COIL   | E11    | COMPUTER GROUND          | STP    | STOP LIGHT SWITCH                          |
| IGT    | IGNITER               | VF2    | CHECK CONNECTOR          | SPD    | SPEED SENSOR                               |
| ISC3   | ISC MOTOR No.3 COIL   | T      | CHECK CONNECTOR          | A/C    | A/C MAGNET SWITCH                          |
| TWS    | WATER TEMP. SWITCH    | OX1    | OXYGEN SENSOR            | BATT   | BATTERY                                    |
| ISC4   | ISC MOTOR No.4 COIL   | OX2    | OXYGEN SENSOR            | W      | WARNING LIGHT                              |
| FPU    | FPU VSV               | *THG   | EGR GAS TEMP. SENSOR     | +B     | EFI MAIN RELAY                             |
| G1     | DISTRIBUTOR           | THW    | WATER TEMP. SENSOR       | +B1    | EFI MAIN RELAY                             |
| NE     | DISTRIBUTOR           | IDL    | THROTTLE POSITION SENSOR |        |                                            |

### ECU Terminals

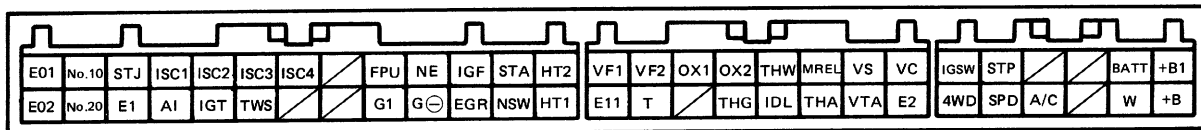


\*California vehicles only

## Voltage at ECU Wiring Connectors

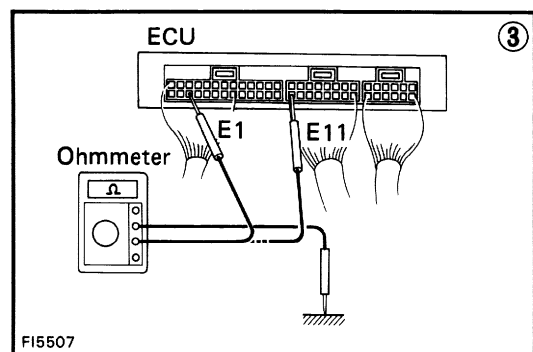
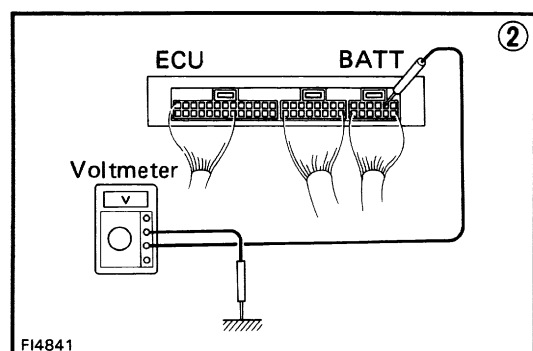
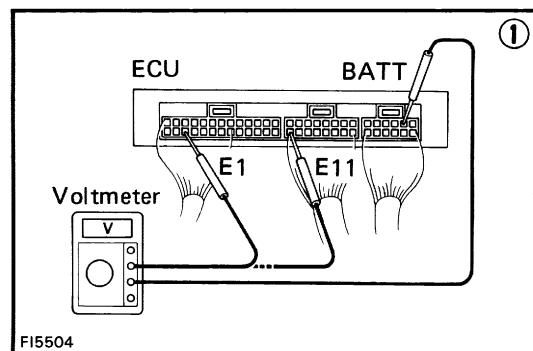
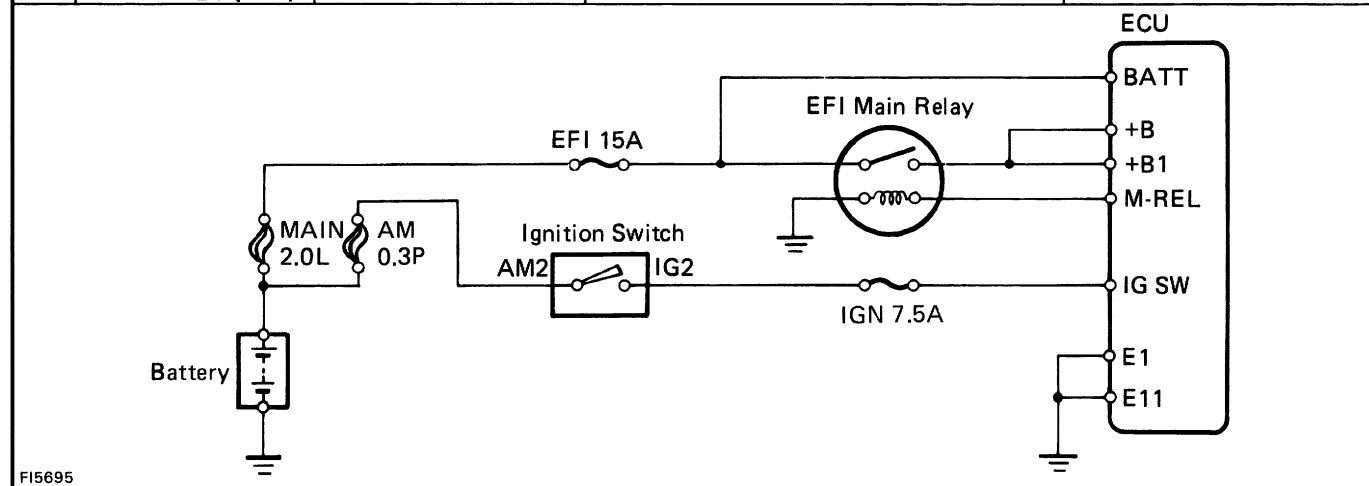
| No. | Terminals                   | Condition                                                        |                                    | STD Voltage | See page |
|-----|-----------------------------|------------------------------------------------------------------|------------------------------------|-------------|----------|
| 1   | BATT—E1 (E11)               | —                                                                |                                    | 10 – 14     | FI-34    |
|     | IG SW—E1 (E11)              | Ignition switch ON                                               |                                    | 10 – 14     | FI-35    |
|     | M-REL—E1 (E11)              |                                                                  |                                    |             |          |
|     | +B (+B1)—E1 (E11)           |                                                                  |                                    |             | FI-36    |
| 2   | IDL—E2                      | Ignition switch ON                                               | Throttle valve open                | 4 – 6       | FI-37    |
|     | VC—E2                       |                                                                  | —                                  | 4 – 6       | FI-38    |
|     | VTA—E2                      |                                                                  | Throttle valve fully closed        | 0.1 – 1.0   |          |
|     |                             |                                                                  | Throttle valve fully open          | 3 – 5       |          |
| 3   | VC—E2                       | Ignition switch ON                                               | —                                  | 4 – 6       | FI-39    |
|     | VS—E2                       |                                                                  | Measuring plate fully closed       | 4 – 5       |          |
|     |                             |                                                                  | Measuring plate fully open         | 0.02 – 0.08 |          |
|     |                             | Idling                                                           | 2 – 4                              |             |          |
|     |                             | 3,000 rpm                                                        | 0.3 – 1.0                          |             |          |
| 4   | THA—E2                      | Ignition switch ON                                               | Intake air temperature 20°C (68°F) | 1 – 3       | FI-40    |
| 5   | THW—E2                      | Ignition switch ON                                               | Coolant temperature 80°C (176°F)   | 0.1 – 1.0   | FI-41    |
| 6   | No.10—E01<br>No.20—E02      | Ignition switch ON                                               |                                    | 10 – 14     | FI-42    |
| 7   | STA—E1 (E11)                | Cranking                                                         |                                    | 6 – 14      | FI-43    |
| 8   | ISC1<br>} —E1 (E11)<br>ISC4 | Ignition switch ON                                               |                                    | 10 – 14     | FI-44    |
| 9   | IGT—E1 (E11)                | Idling                                                           |                                    | 0.7 – 1.0   | FI-45    |
| 10  | W—E1 (E11)                  | No trouble ("CHECK" engine warning light off) and engine running |                                    | 10 – 14     | FI-46    |
| 11  | A/C—E1 (E11)                | Air conditioning ON                                              |                                    | 10 – 14     | FI-47    |

### ECU Terminals



\* California vehicles only

| No. | Terminals                     | Trouble    | Condition          | STD Voltage      |
|-----|-------------------------------|------------|--------------------|------------------|
| 1   | <b>BATT—E1 (E11)</b>          | No voltage |                    | <b>10 – 14 V</b> |
|     | <b>IG SW—E1 (E11)</b>         | No voltage | Ignition switch ON | <b>10 – 14 V</b> |
|     | <b>M-REL—E1 (E11)</b>         | No voltage | Ignition switch ON | <b>10 – 14 V</b> |
|     | <b>+B (+B1)<br/>—E1 (E11)</b> | No voltage | Ignition switch ON | <b>10 – 14 V</b> |



### • BATT-E1 (E11)

① There is no voltage between ECU terminals BATT and E1 (E11).

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

NO

OK

③ Check wiring between ECU terminal E1 (E11) and body ground.

OK

BAD

Try another ECU.

Repair or replace.

Check fuse and fusible link.

BAD

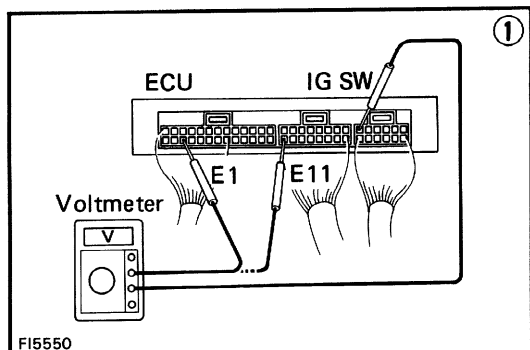
Replace.

OK

Check wiring between ECU terminal and battery.

BAD

Repair or replace.



### • IG SW-E1 (E11)

① There is no voltage between ECU terminals IG SW and E1 (E11). (**IG SW ON**)

② Check that there is voltage between ECU terminal IG SW and body ground. (**IG SW ON**)

NO

OK

Check wiring between ECU terminal E1 (E11) and body ground.

OK

BAD

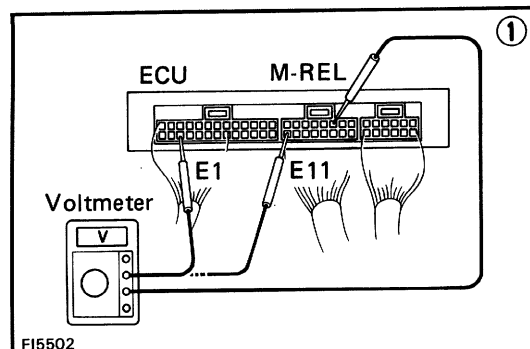
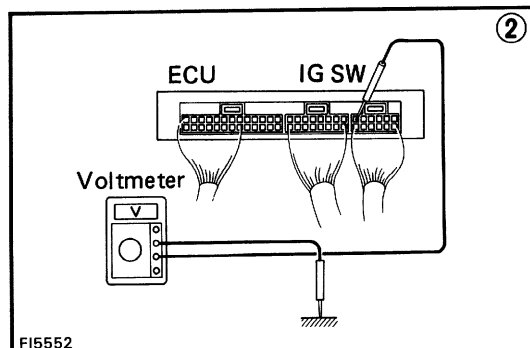
Try another ECU.

Replace or repair.

Check fuse, fusible link and ignition switch.

BAD

Repair or replace.



### • M-REL-E1 (E11)

① There is no voltage between ECU terminals M-REL and E1 (E11). (**IG SW ON**)

② Check that there is voltage between ECU terminal M-REL and body ground. (**IG SW ON**)

NO

OK

Check wiring between ECU terminal E1 (E11) and body ground.

OK

BAD

Try another ECU.

Replace or repair.

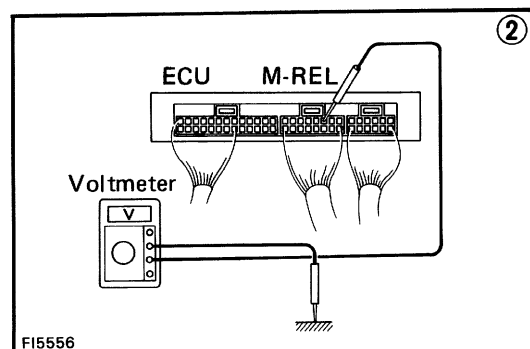
Check EFI main relay and wiring harness. (See page FI-79)

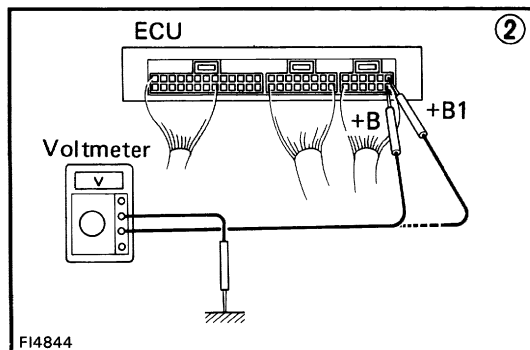
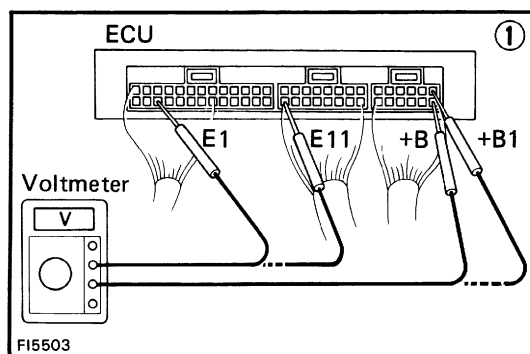
BAD

Replace.

OK

Try another ECU.





• **+B (+B1) -E1 (E11)**

① There is no voltage between ECU terminals +B (+B1) and E1 (E11). **(IG SW ON)**

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

NO

OK

Check wiring between ECU terminal E1 (E11) and body ground.

OK

BAD

Try another ECU.

Replace or repair.

Check fuse, fusible link and wiring harness.

BAD

Repair or replace.

OK

Check EFI main relay.

BAD

Replace.

OK

Refer to M-REL-E1 (E11) trouble section.

| No. | Terminals | Trouble    | Condition          |                             | STD Voltage |
|-----|-----------|------------|--------------------|-----------------------------|-------------|
| 2   | IDL – E2  | No voltage | Ignition switch ON | Throttle valve open         | 4 – 6 V     |
|     | VC – E2   |            |                    |                             | 4 – 6 V     |
|     | VTA – E2  |            |                    | Throttle valve fully closed | 0.1 – 1.0 V |
|     |           |            |                    | Throttle valve fully open   | 3 – 5 V     |

Throttle Position Sensor

ECU

+B (+B1)

E2

IDL

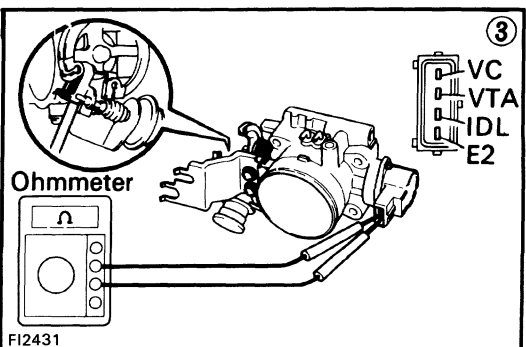
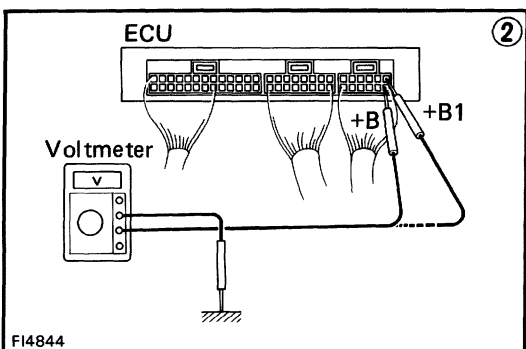
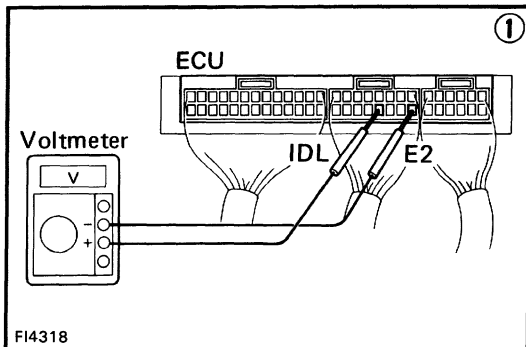
VTA

VC

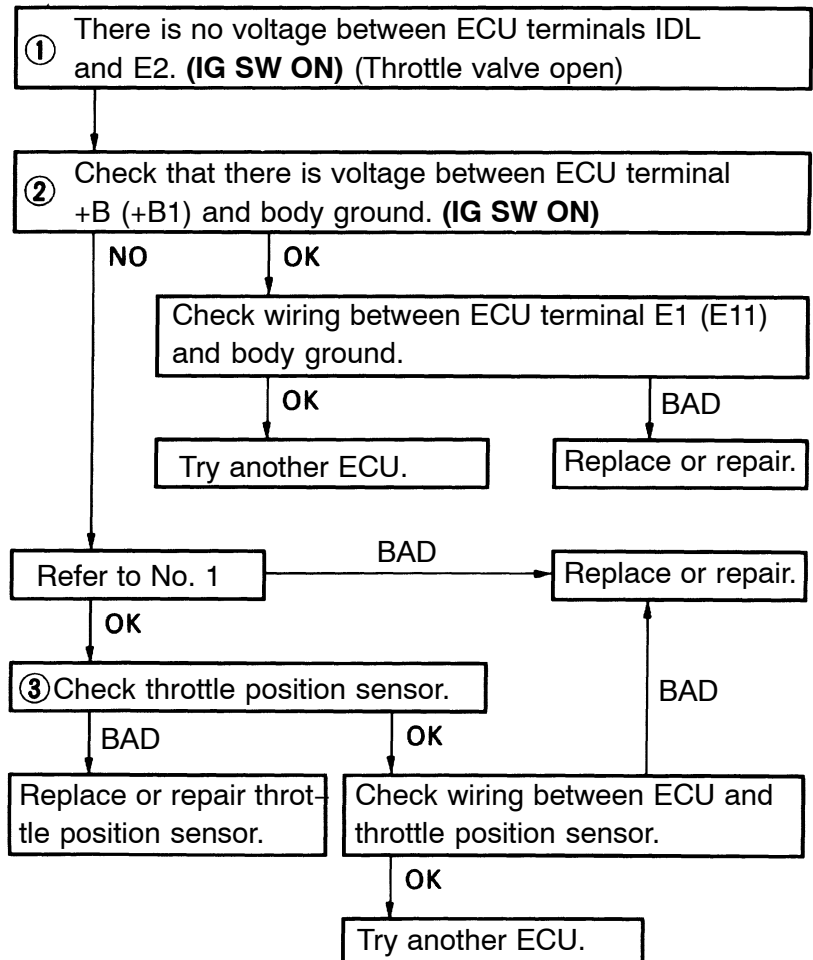
E1

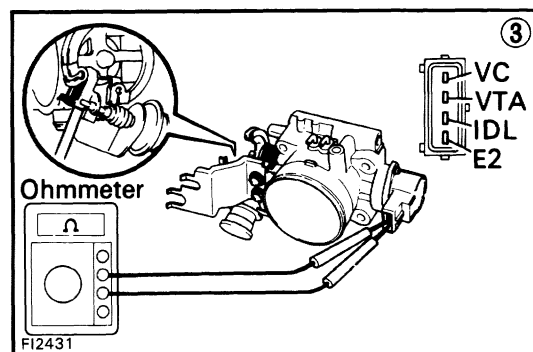
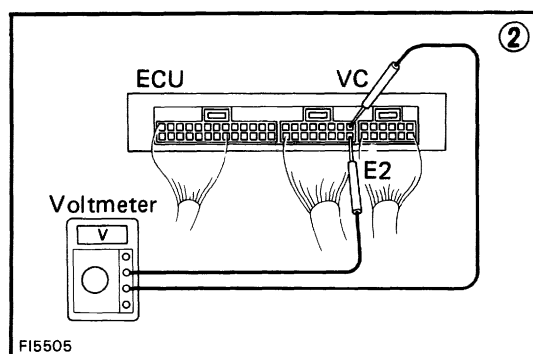
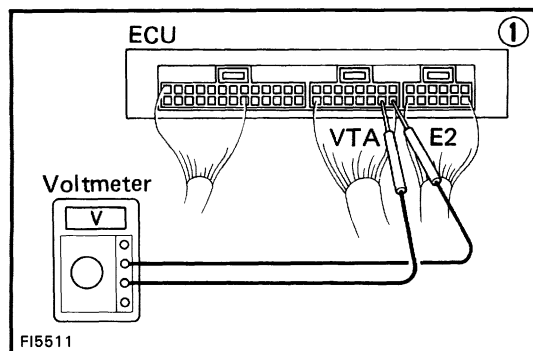
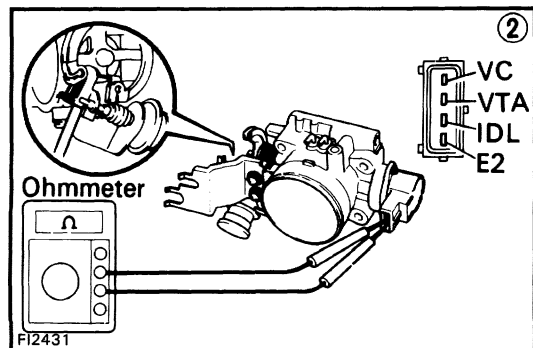
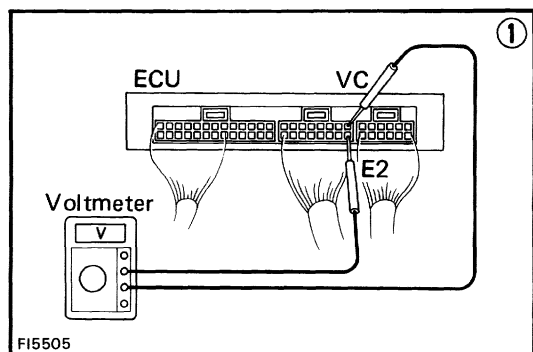
E11

FI5489

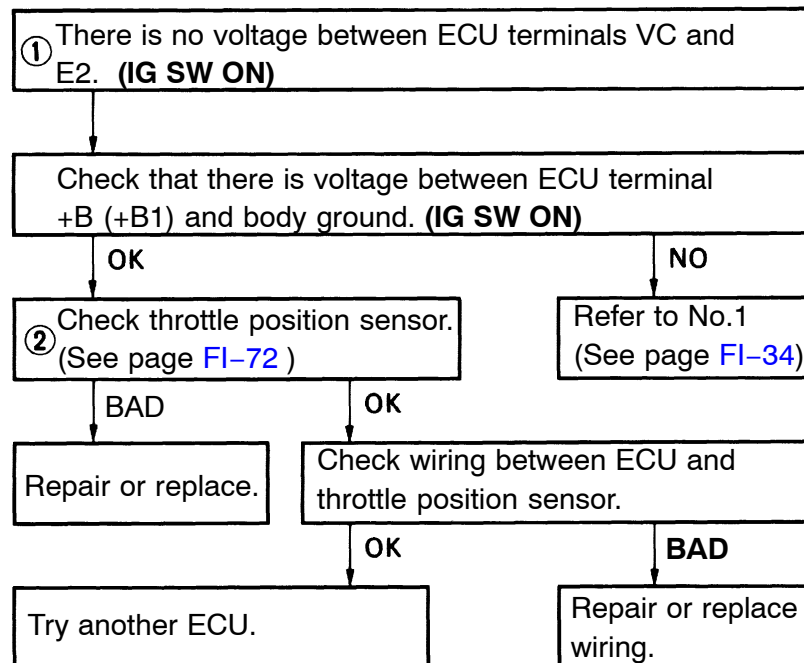


### • IDL-E2

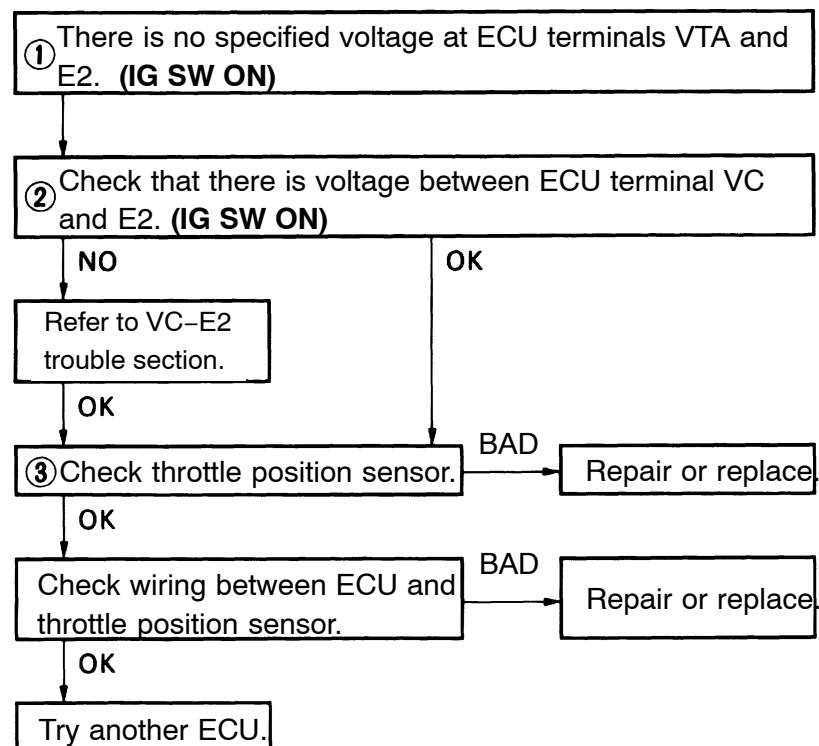




### • VC-E2

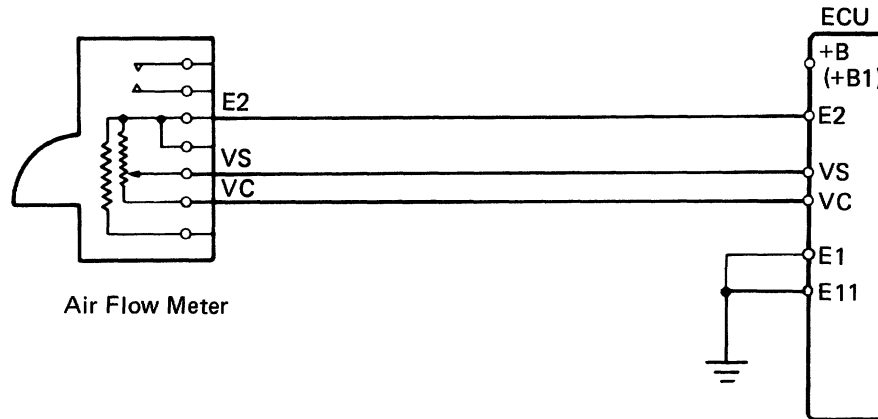


### • VTA-E2

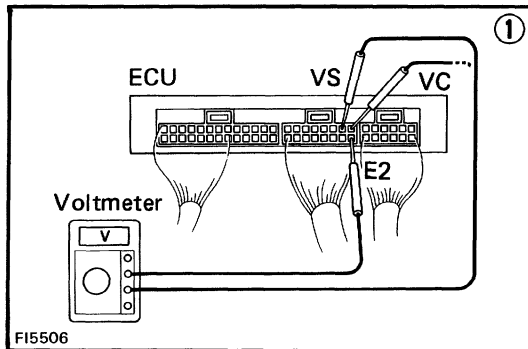




| No. | Terminals | Trouble    | Condition          |                              | STD Voltage   |
|-----|-----------|------------|--------------------|------------------------------|---------------|
| 3   | VC – E2   | No voltage | Ignition switch ON |                              | 4 – 6 V       |
|     | VS – E2   |            |                    | Measuring plate fully closed | 4 – 5 V       |
|     | VS – E2   |            |                    | Measuring plate fully open   | 0.02 – 0.08 V |
|     | VS – E2   |            | Idling             |                              | 2 – 4 V       |
|     | VS – E2   |            | 3,000 rpm          |                              | 0.3 – 1.0 V   |



FI5488



FI5506

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

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

OK

NO

Refer to No. 1.  
(See page FI-34)

Check wiring between ECU terminal E1 (E11) and body ground.

OK

BAD

③ Check air flow meter.  
(See page FI-70)

BAD

Replace air flow meter.

OK

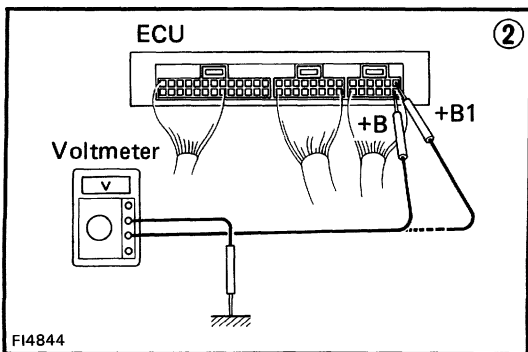
Check wiring between ECU and air flow meter.

OK

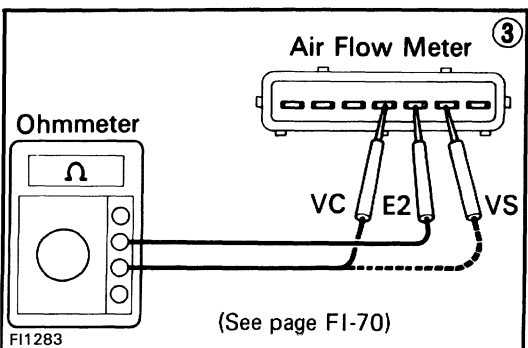
BAD

Try another ECU.

Repair or replace.



FI4844



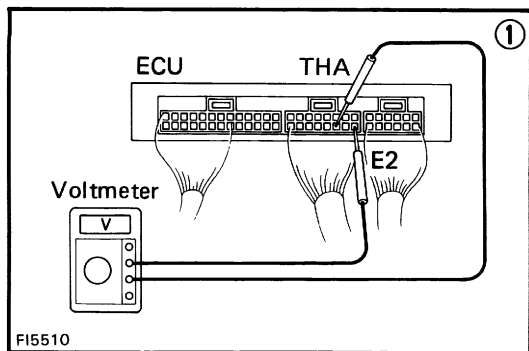
FI1283

| No. | Terminals | Trouble    | Condition          |                                    | STD Voltage |
|-----|-----------|------------|--------------------|------------------------------------|-------------|
| 4   | THA – E2  | No voltage | Ignition switch ON | Intake air temperature 20°C (68°F) | 1 – 3 V     |

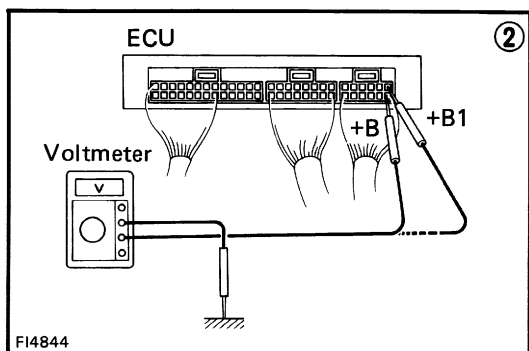
  

Diagram showing the wiring for the Air Temp. Sensor (Air Flow Meter) connected to the ECU. The sensor has terminals E2 and THA. The ECU has terminals +B (+B1), E2, THA, E1, and E11. The wiring shows E2 connected to +B (+B1), THA connected to E1, and E11 grounded.

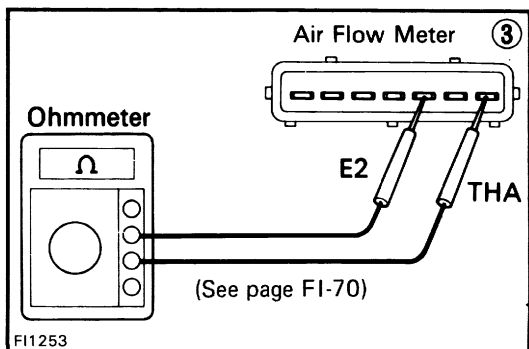
FI5486



FI5510



FI4844



FI1253

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

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

OK

NO

Refer to No. 1.  
(See page FI-34)

Check wiring between ECU terminal E1 (E11) and body ground.

OK

BAD

③ Check air temp. sensor. (See page FI-70)

BAD

Replace air flow meter.

OK

Check wiring between ECU and air temp. sensor.

Repair or replace.

OK

BAD

Try another ECU.

Repair or replace.

| No. | Terminals | Trouble    | Condition          |                                  | STD Voltage |
|-----|-----------|------------|--------------------|----------------------------------|-------------|
| 5   | THW - E2  | No voltage | Ignition switch ON | Coolant temperature 80°C (176°F) | 0.1 - 1.0 V |

Water Temp. Sensor

ECU

+B (+B1)

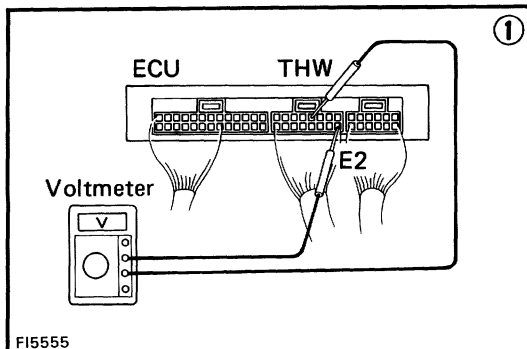
THW

E2

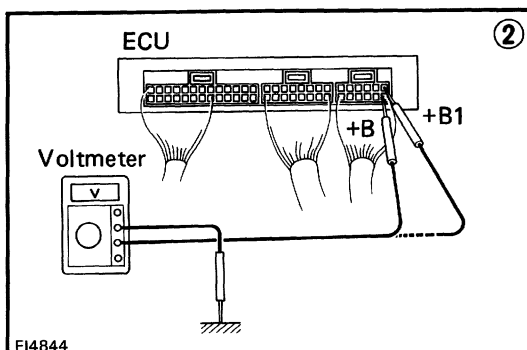
E1

E11

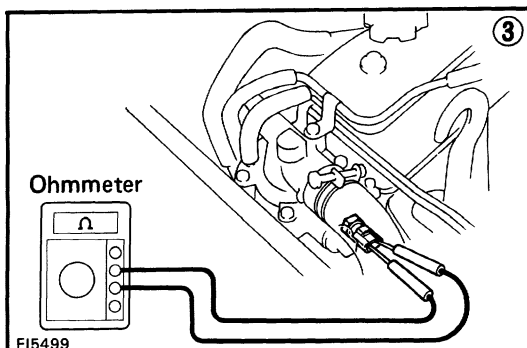
FI5492



FI5555



FI4844



FI5499

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

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

OK

NO

Refer to No.1  
(See page FI-34)

Check wiring between ECU terminal E1 (E11) and body ground.

OK

BAD

③ Check water temp. sensor.  
(See page FI-82)

BAD

OK

Repair or replace.

Replace water temp. sensor.

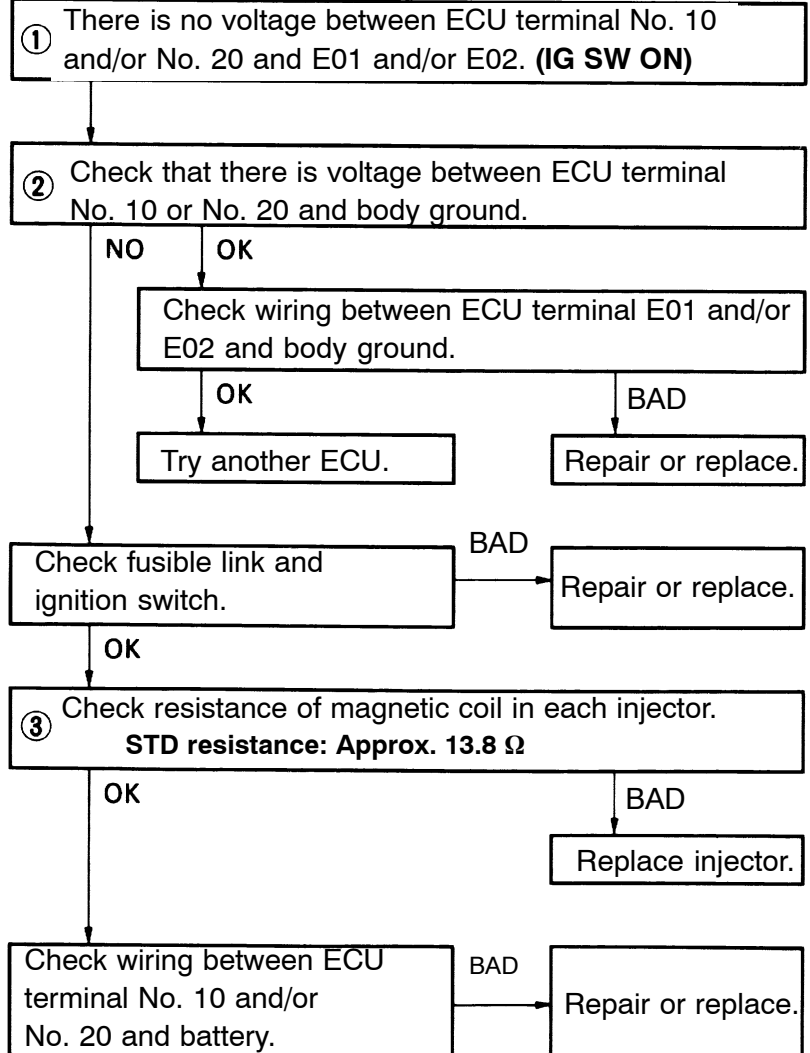
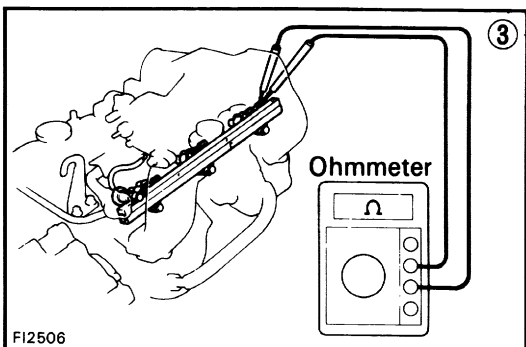
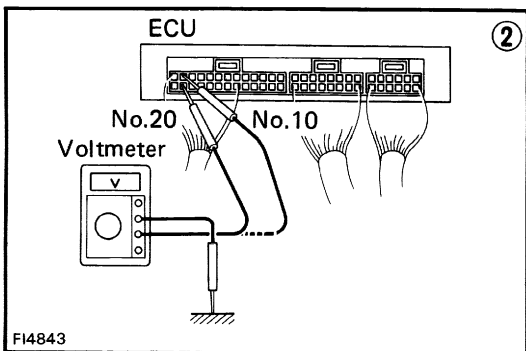
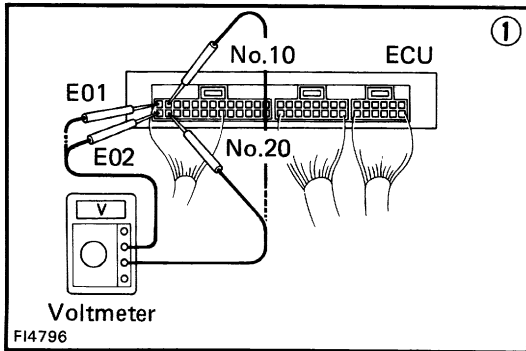
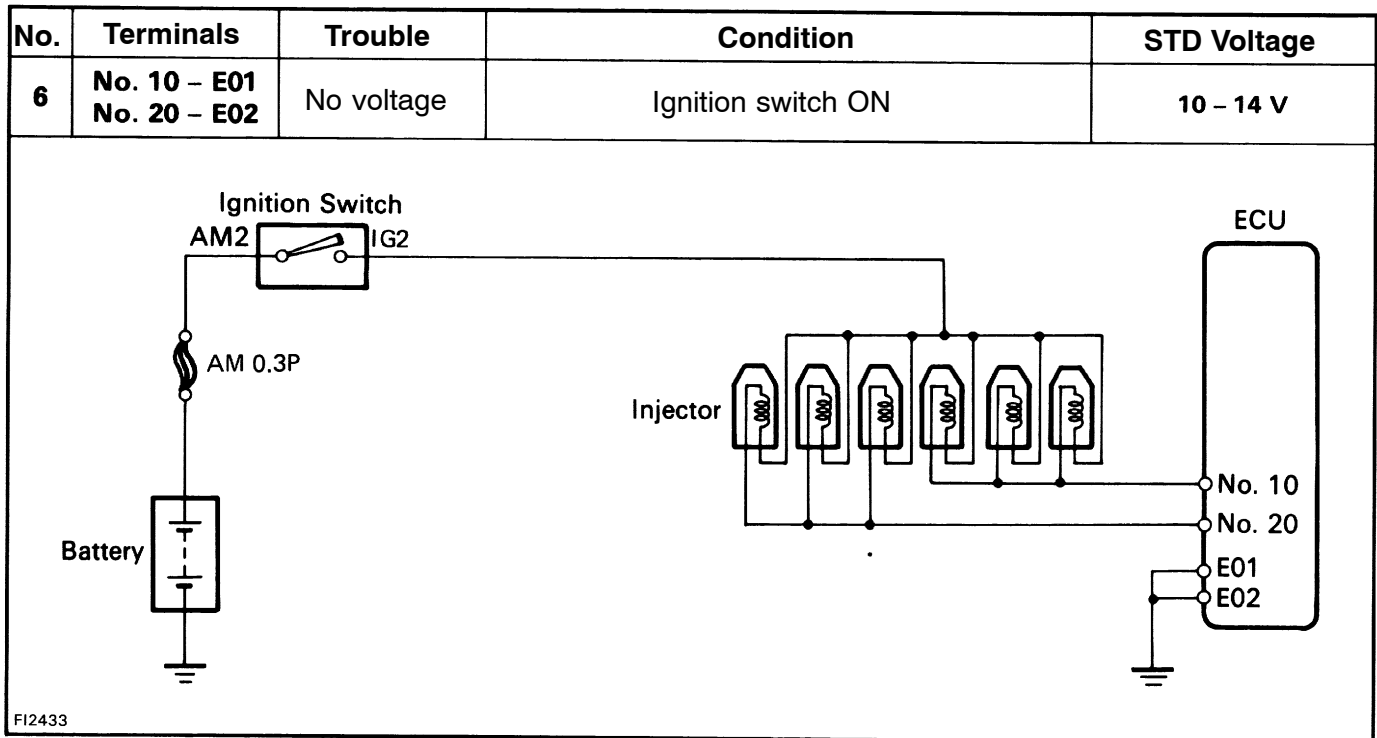
Check wiring between ECU and water temp. sensor.

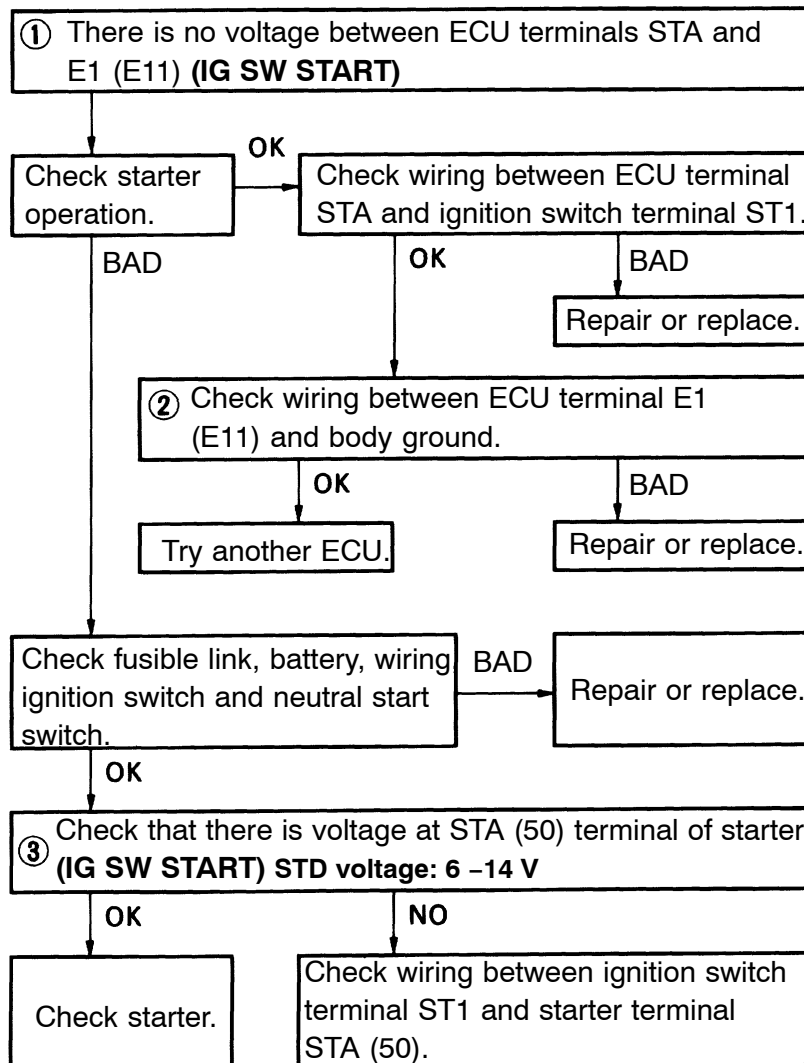
OK

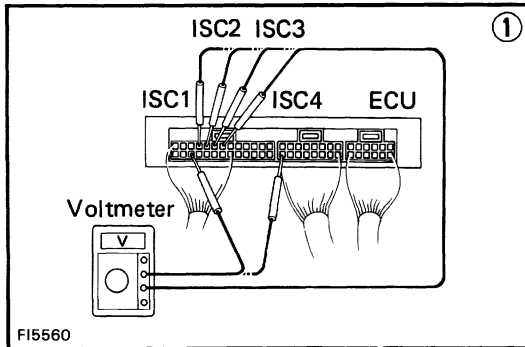
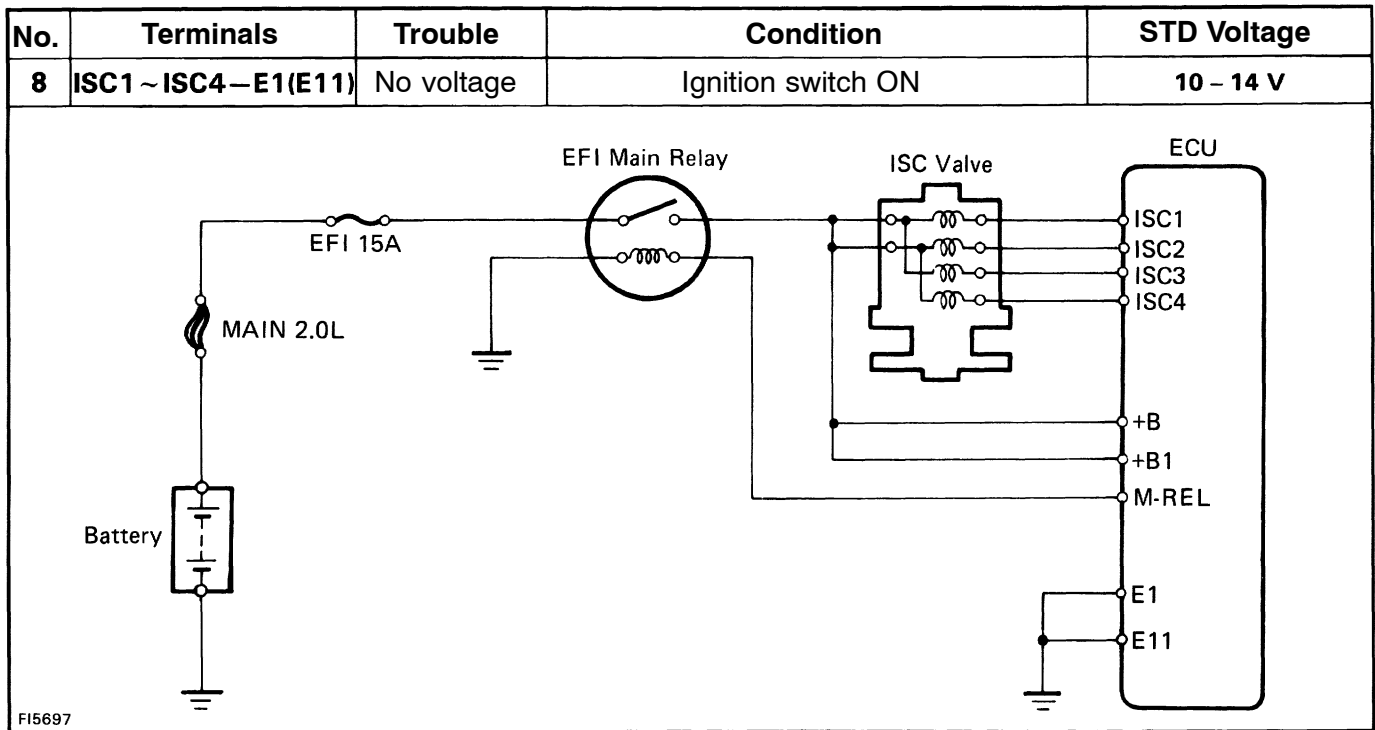
BAD

Try another ECU.

Repair or replace.







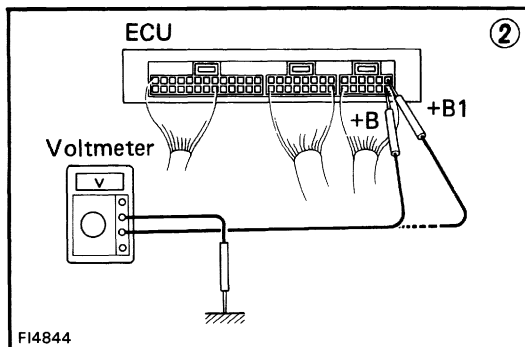
① There is no voltage between ECU terminals ISC1 ~ ISC4 and E1 (E11). (IG SW ON)

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

OK

NO

Refer to No. 1.  
(See page FI-34)



Check wiring between ECU terminal E1 (E11) and body ground.

OK

BAD

③ Check ISC valve.  
(See page FI-76)

BAD

OK

Replace ISC valve.

Repair or replace.

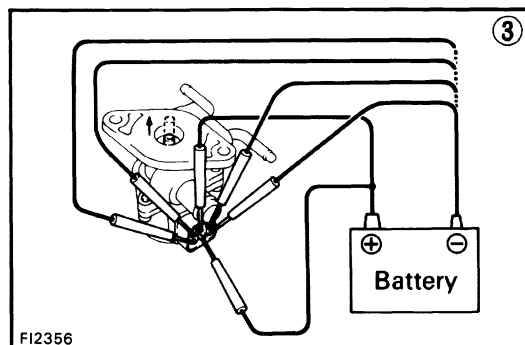
Check wiring between ECU and EFI main relay.

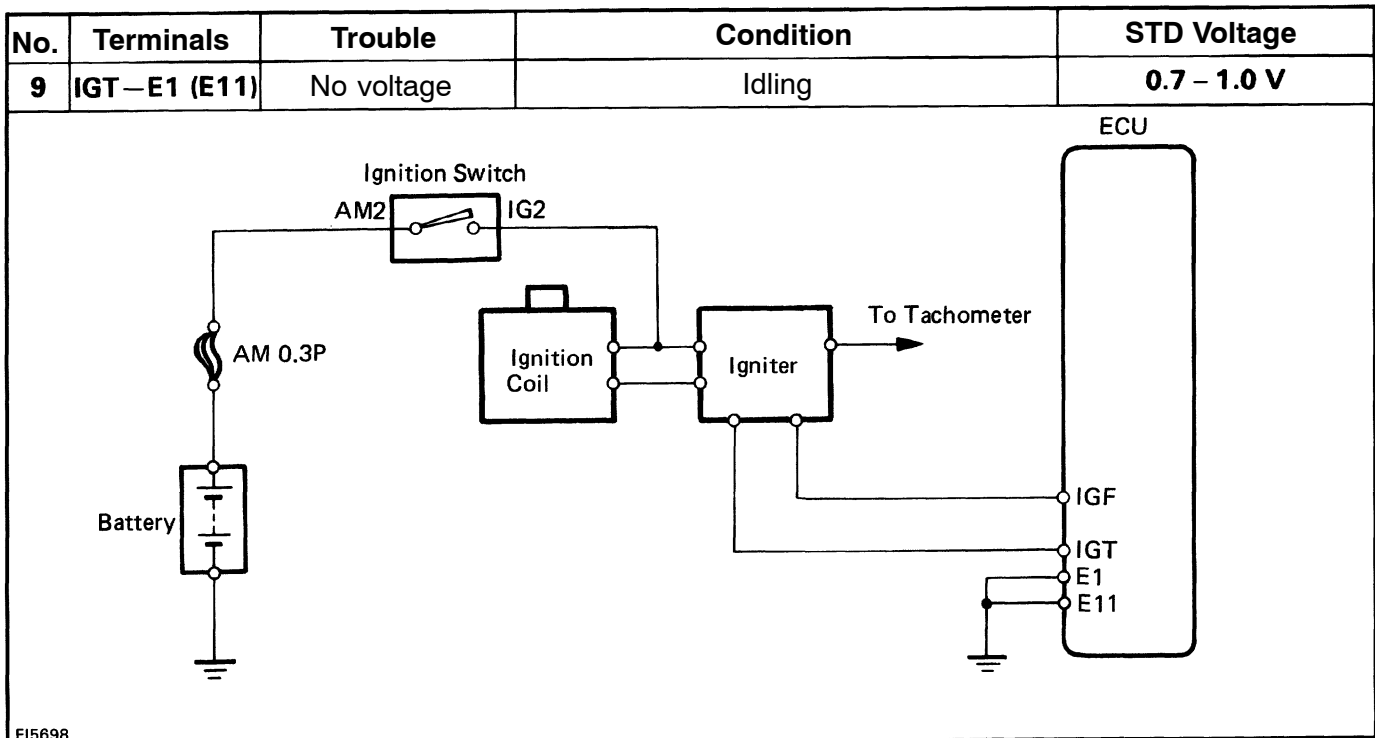
OK

BAD

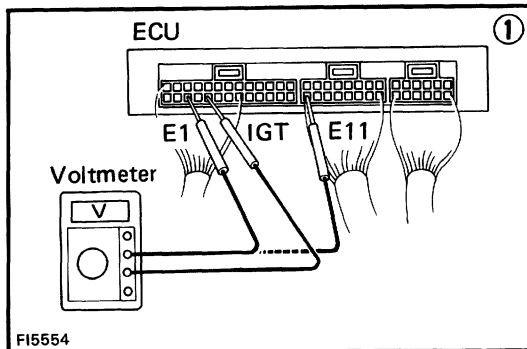
Try another ECU.

Repair or replace.

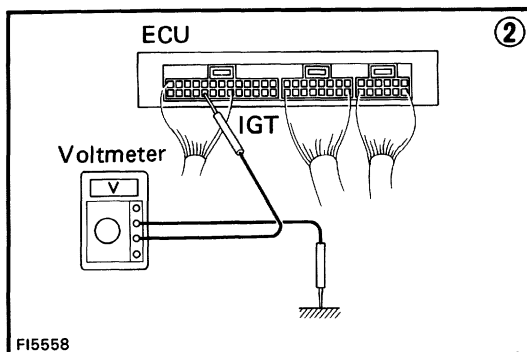




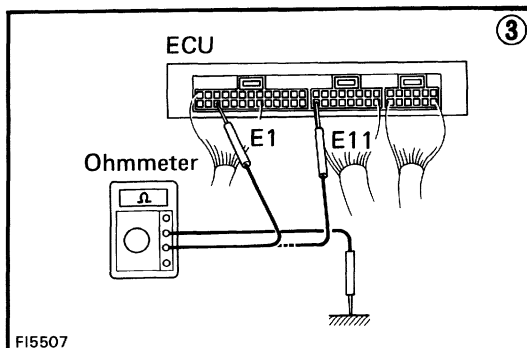
FI5698



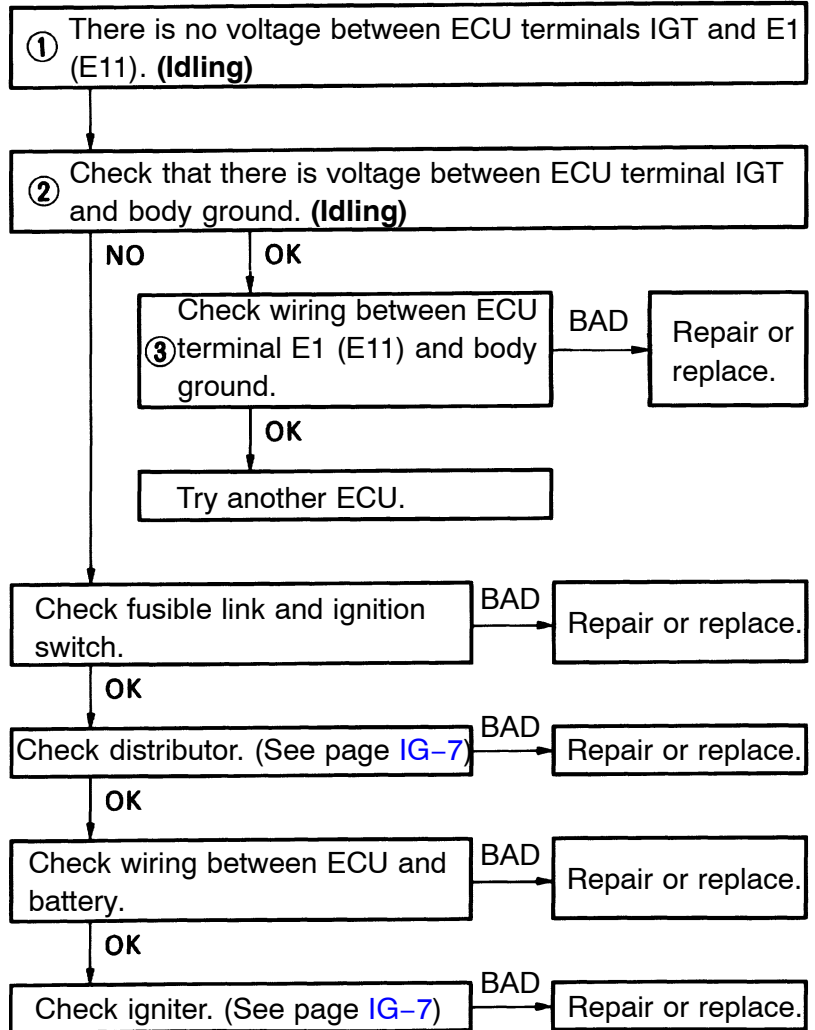
FI5554



FI5558



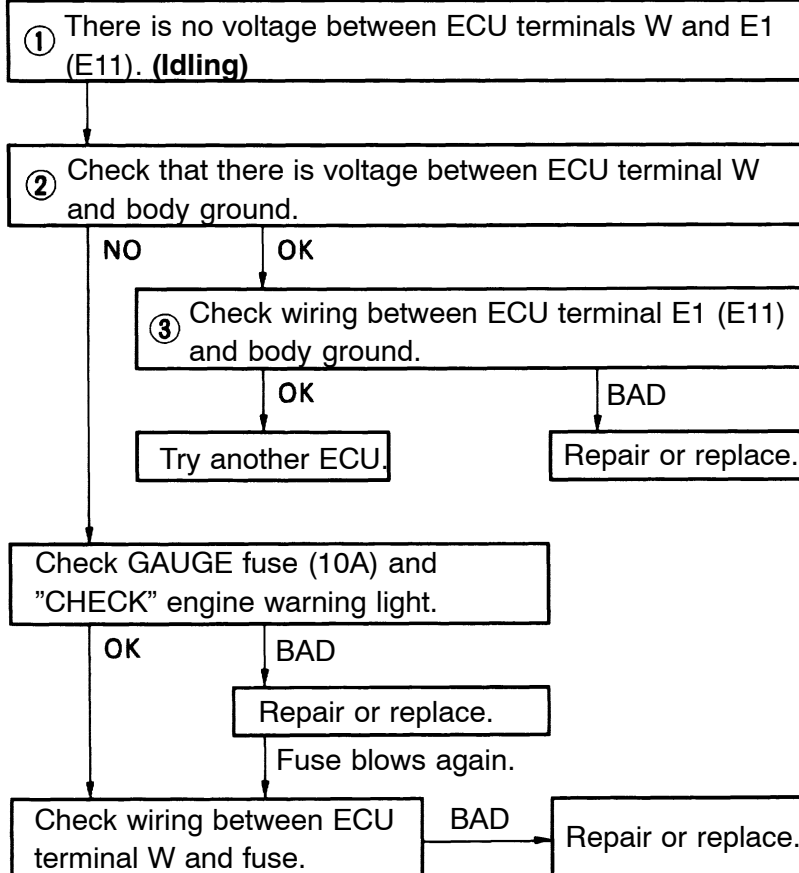
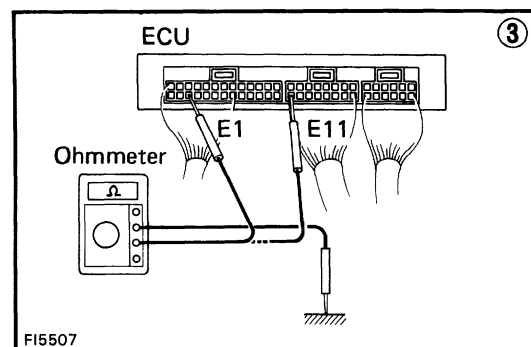
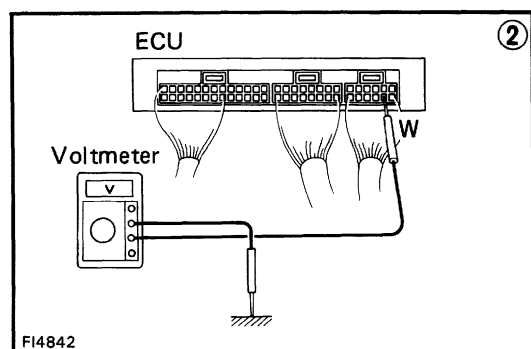
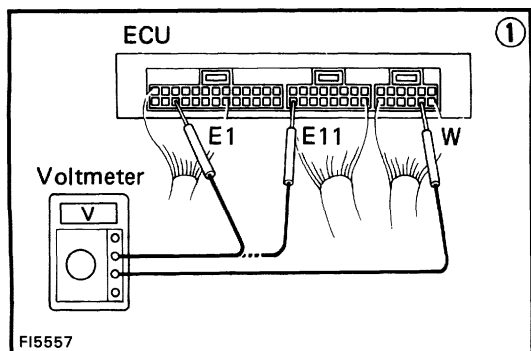
FI5507



| No. | Terminals  | Trouble    | Condition                                                        | STD Voltage |
|-----|------------|------------|------------------------------------------------------------------|-------------|
| 10  | W—E1 (E11) | No voltage | No trouble ("CHECK" engine warning light off) and engine running | 10 – 14 V   |

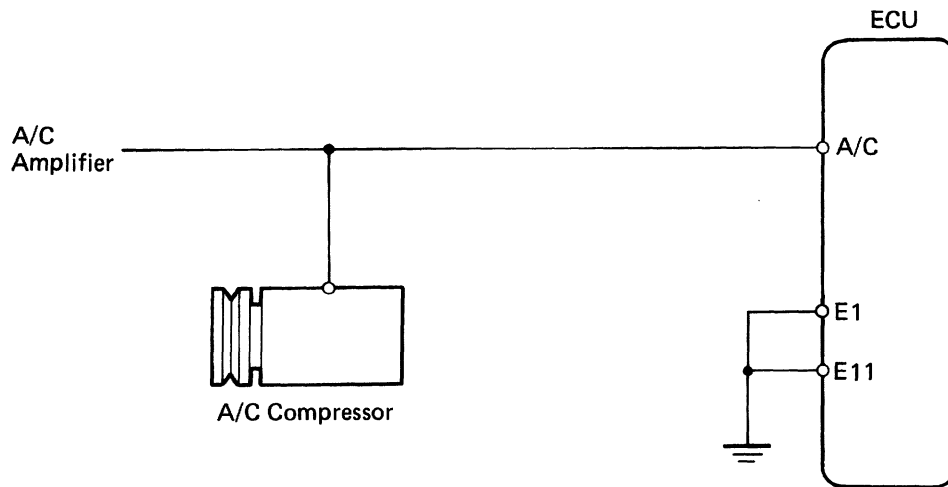
  

FI5487

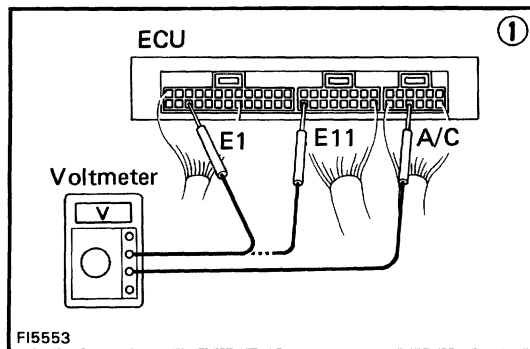




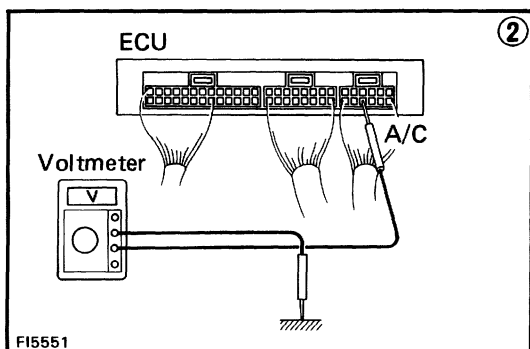
| No. | Terminals   | Trouble    | Condition           | STD Voltage |
|-----|-------------|------------|---------------------|-------------|
| 11  | A/C—E1(E11) | No voltage | Air conditioning ON | 10 – 14 V   |



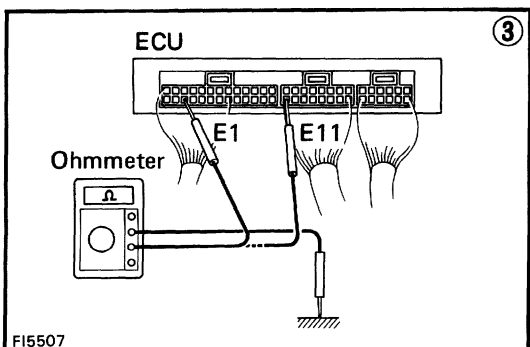
FI5490



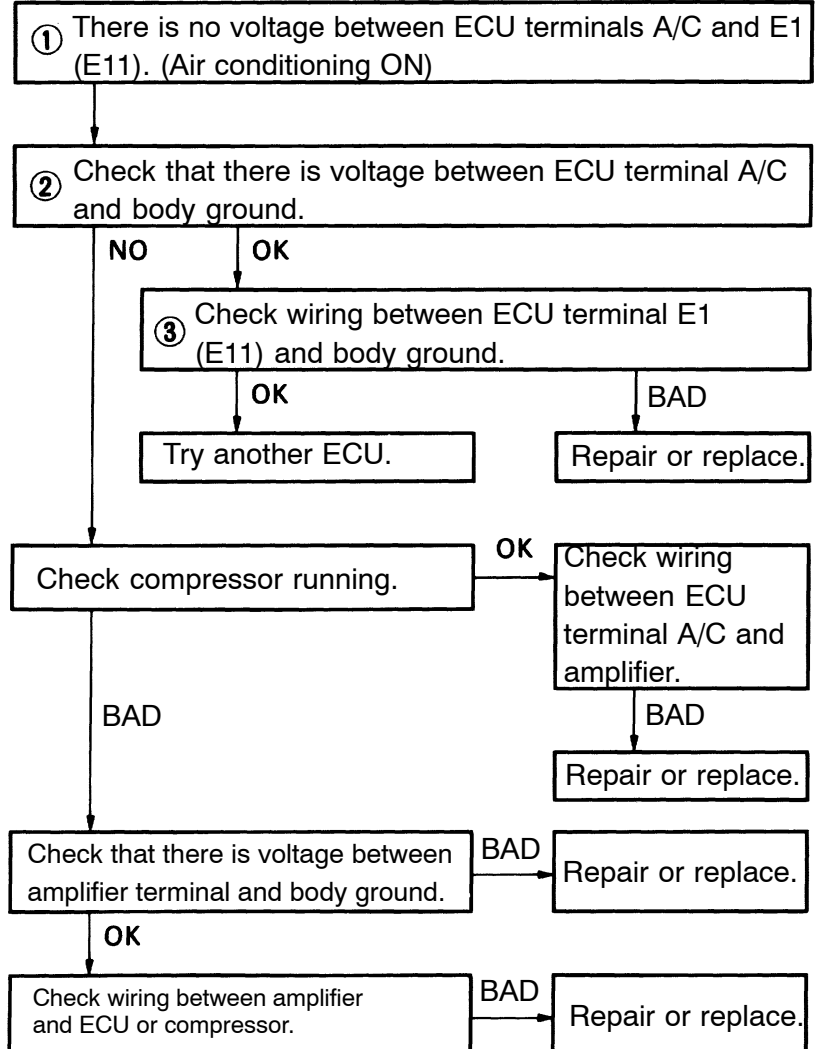
FI5553

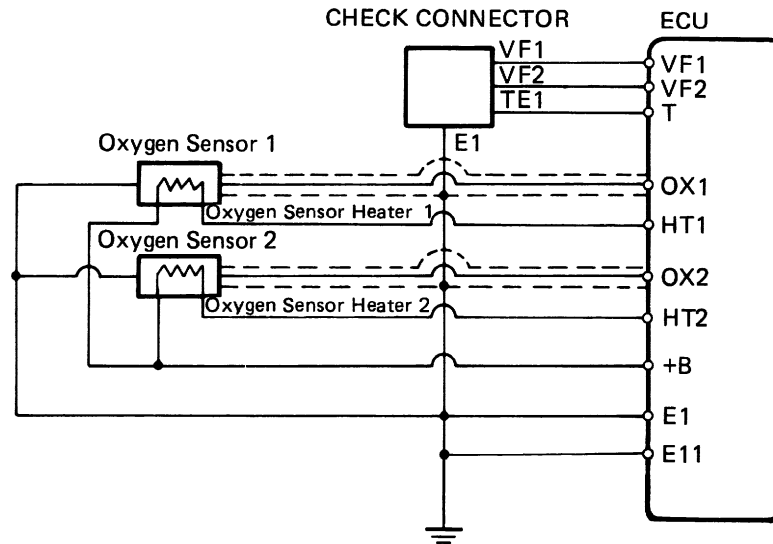


FI5551

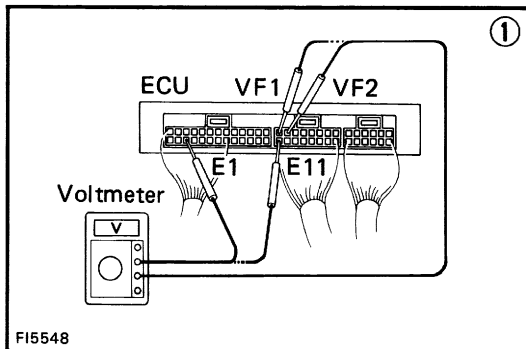


FI5507

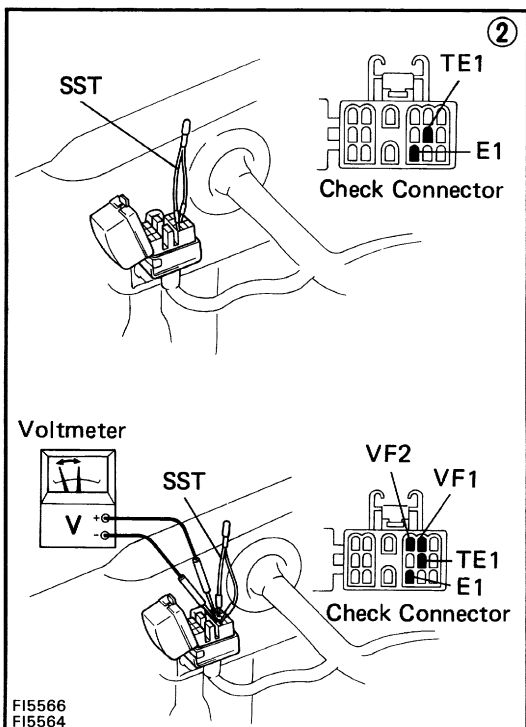
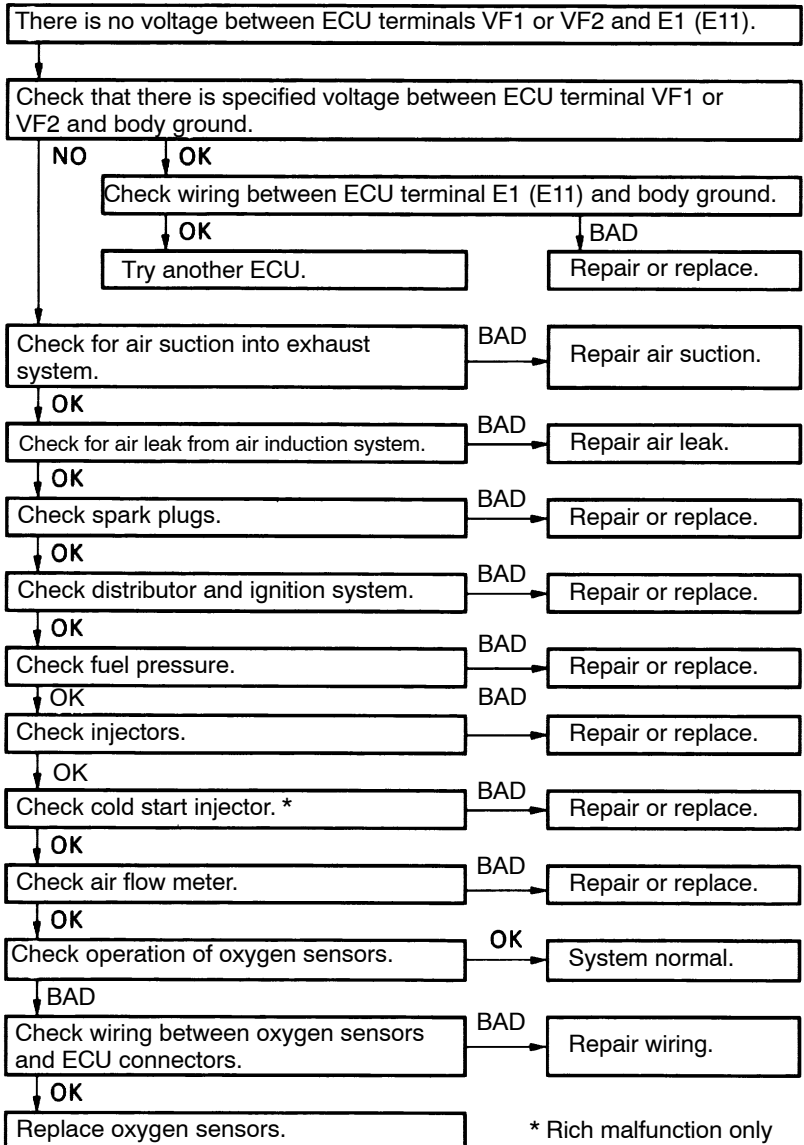


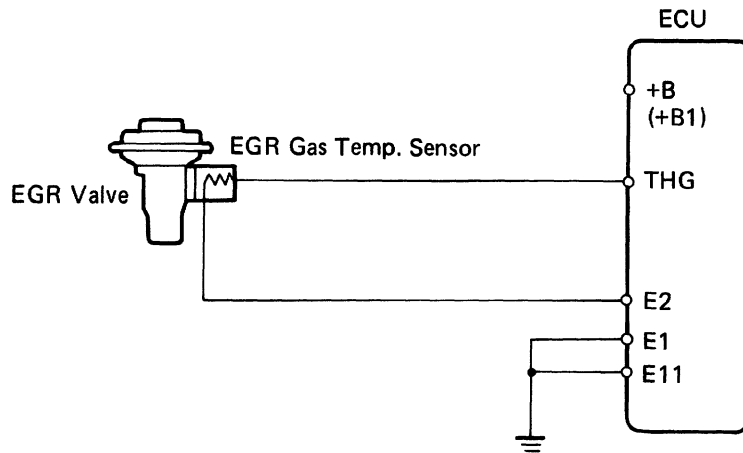


FI5485

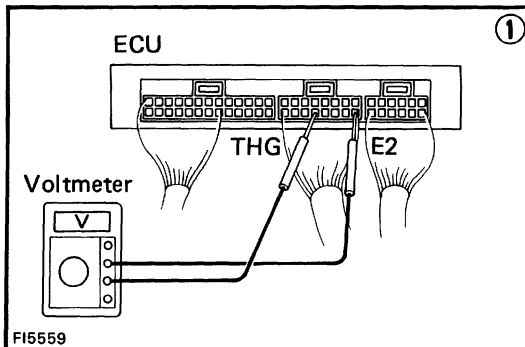


FI5548

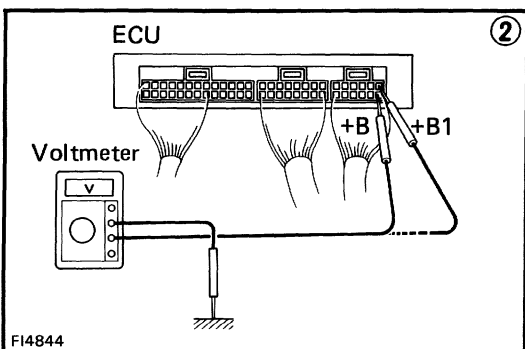
FI5566  
FI5564

**California vehicles only**

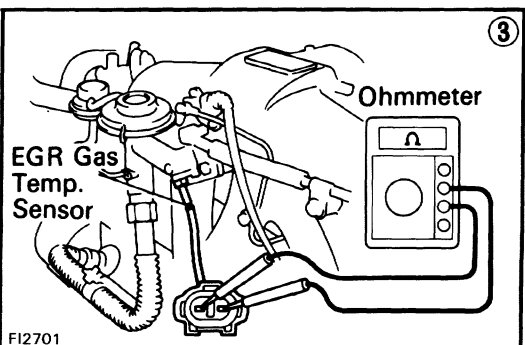
FI5491



FI5559



FI4844



FI2701

① No voltage between ECU terminals THG and E2. (IG SW ON)

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

OK

NO

Refer to No. 1.  
(See page FI-34)

Check wiring between ECU terminal E1 (E11) and body ground.

OK

BAD

Repair or replace.

Check EGR system.

BAD

Repair or replace.

OK

③ Check EGR gas temp. sensor. (See page FI-84)

BAD

OK

Replace EGR gas temp. sensor.

Check wiring between ECU and EGR gas temp. sensor.

OK

BAD

Try another ECU.

Repair or replace.