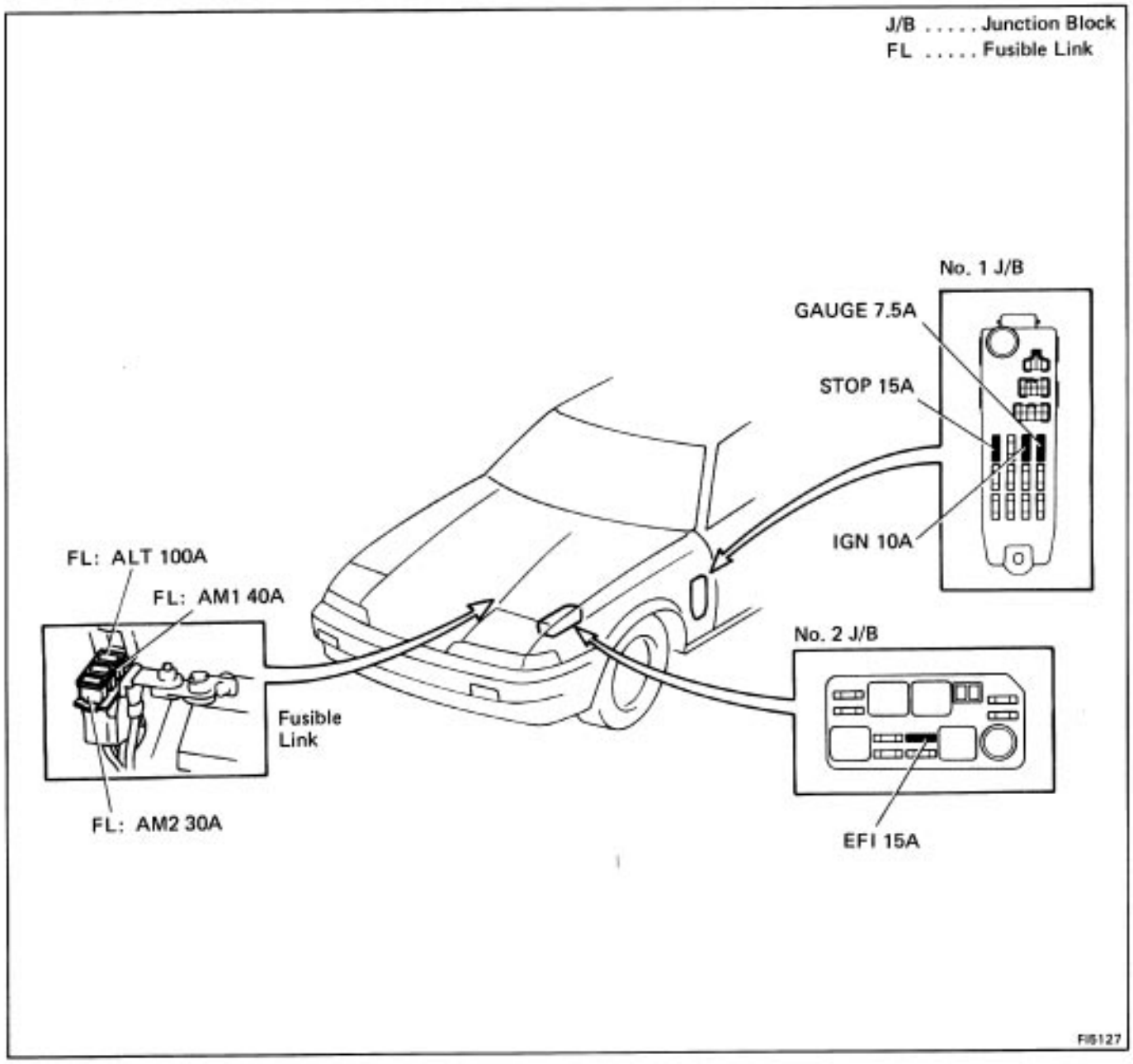
TROUBLESHOOTING EFI ELECTRONIC CIRCUIT WITH VOLT OHMMETER

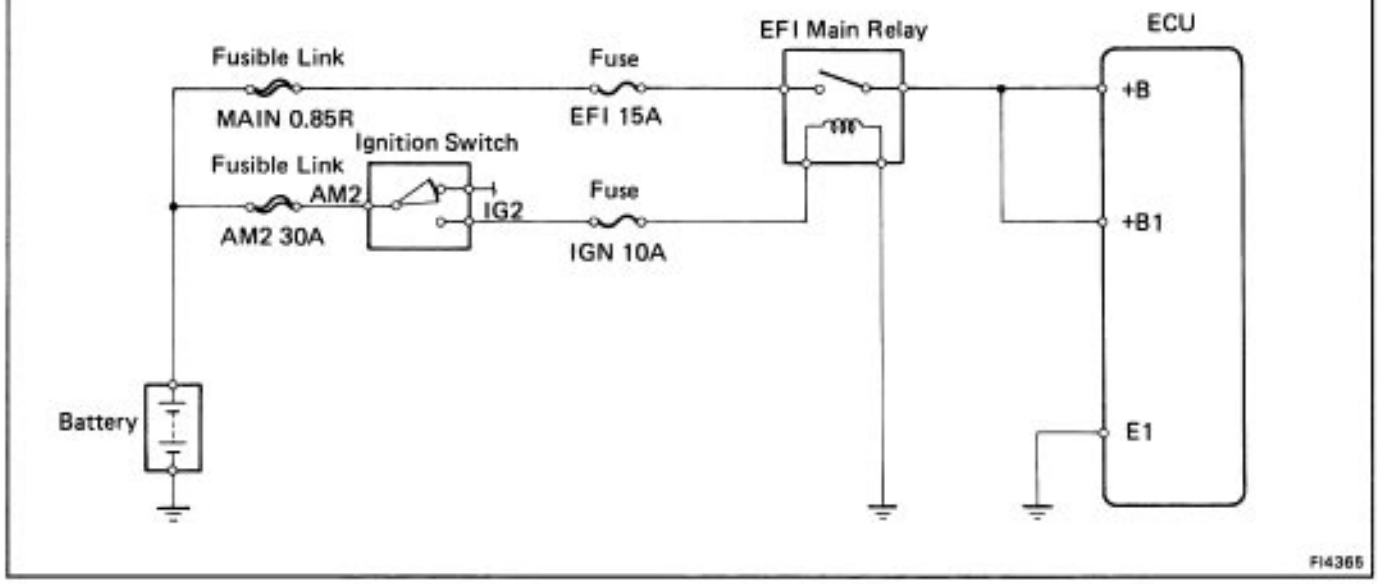
HINT: The following troubleshooting procedures are designed for inspection of each separate sys–tem, therefore, the procedure may vary somewhat. However, troubleshooting should be performed while referring to the inspection methods described in this manual.
Before beginning inspection, it is best to first make a simple check of the fuses, fusible links and the condition of the connectors.

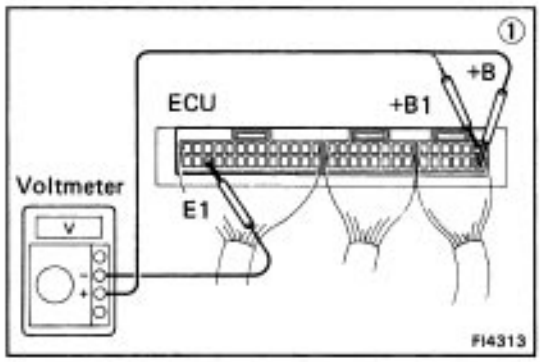
The following troubleshooting procedures are based on the supposition that the trouble lies in either a short or open circuit in a component outside the computer or a short circuit within the computer.
If engine trouble occurs even though proper oper ating voltage is detected in the computer connec–tor, then it can be assumed the computer is faulty and should be replaced.

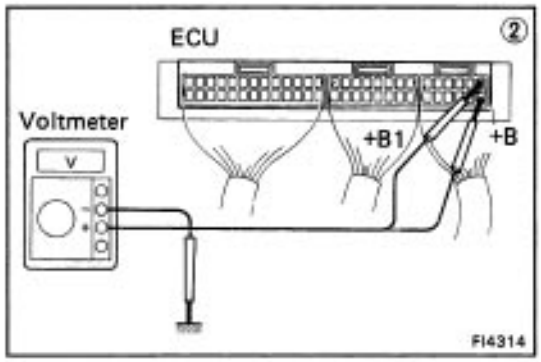
LOCATION OF FUSES AND FUSIBLE LINKS

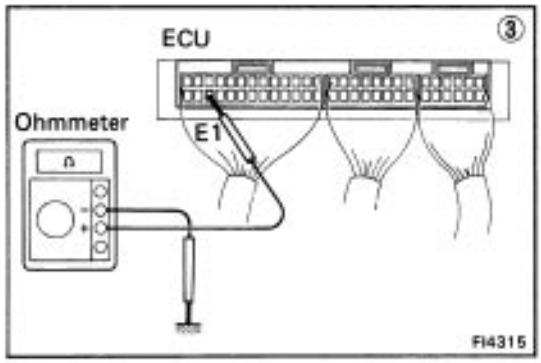


No.	Terminal	Trouble	Condition	STD voltage
1	+B, +B1 – E1	No voltage	IG SW ON	10 – 14 V









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

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

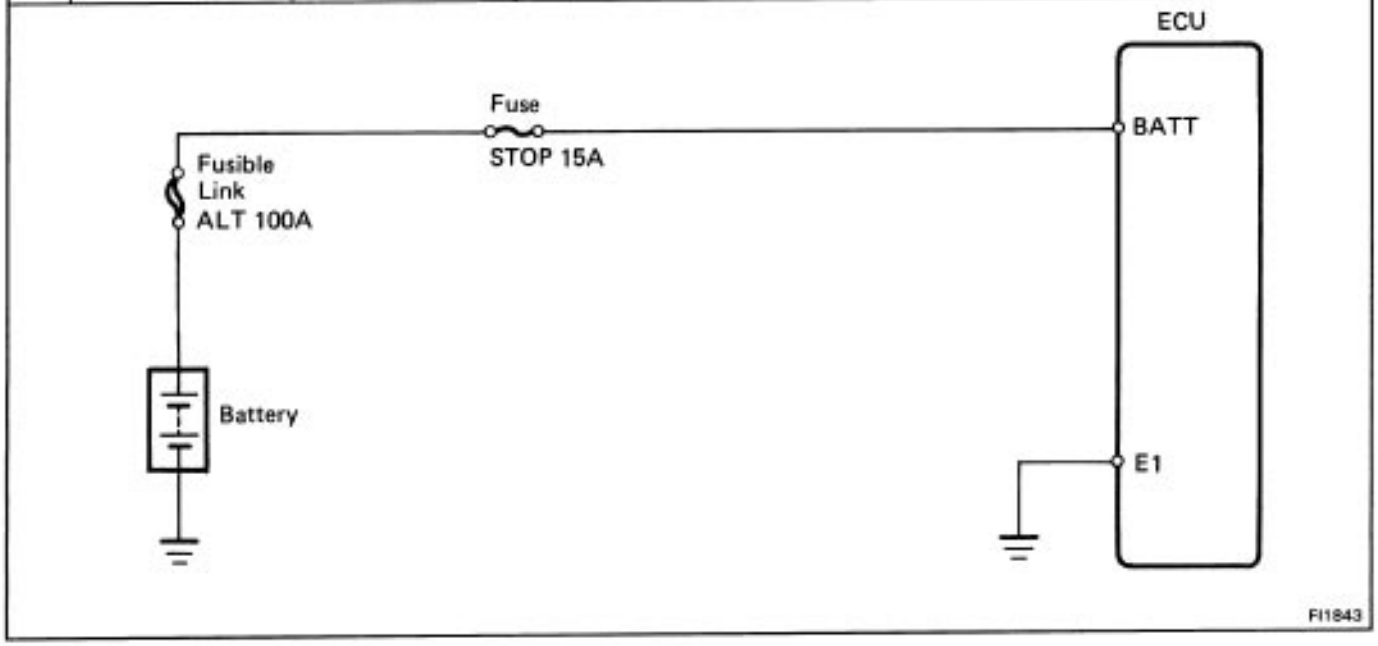
NO → ③ Check wiring between ECU terminal E1 and body ground.
- OK → Try another ECU.
- BAD → Repair or replace.

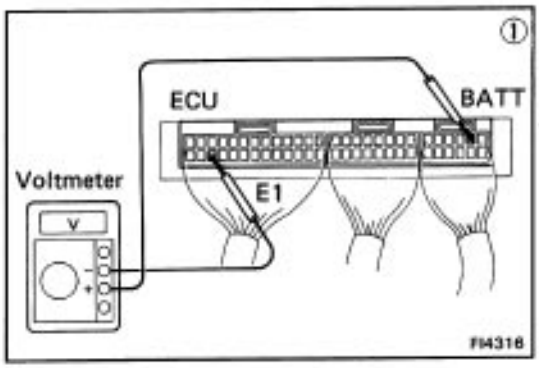
OK → Check fuses, fusible links and ignition switch.
- BAD → Repair or replace.

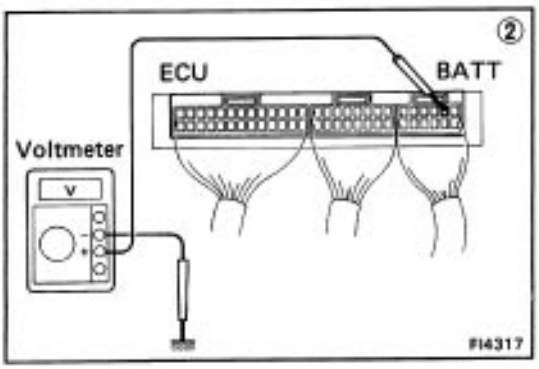
OK → Check EFI main relay. (See page FI–156)
- BAD → Replace.

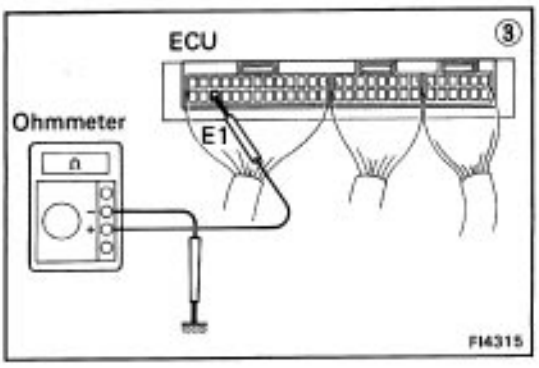
OK → Check wiring between EFI main relay and battery.
- BAD → Repair or replace.

No.	Terminal	Trouble	Condition	STD voltage
2	BATT – E1	No voltage	–	10 – 14 V









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

↓

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

NO → OK

OK → ③ Check wiring between ECU terminal E1 and body ground

OK → Try another ECU.

BAD → Repair or replace.

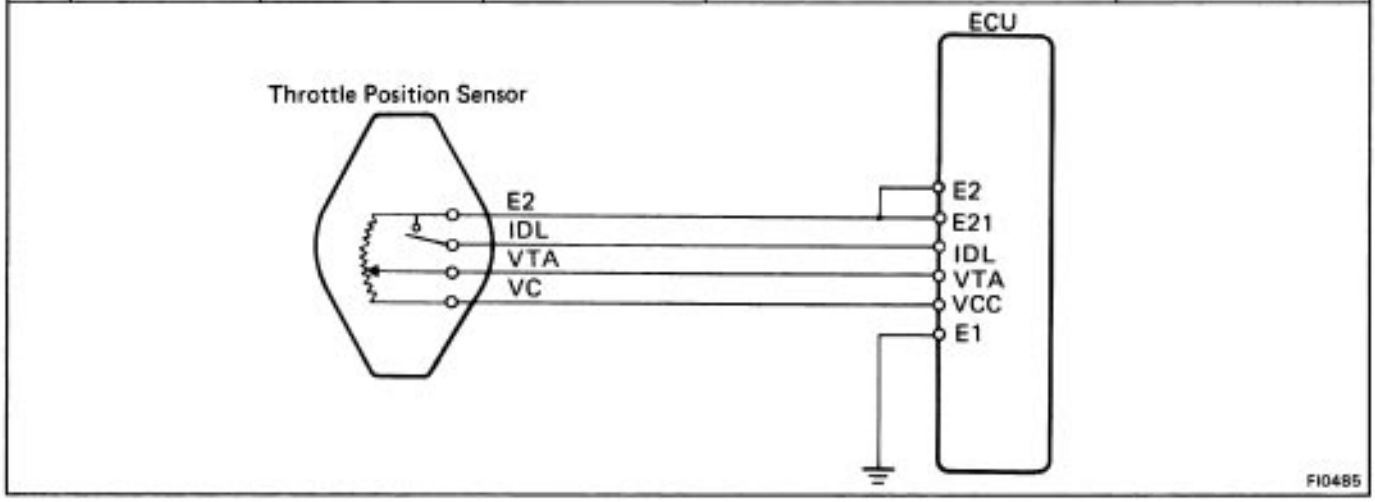
NO → Check fuse and fusible link.

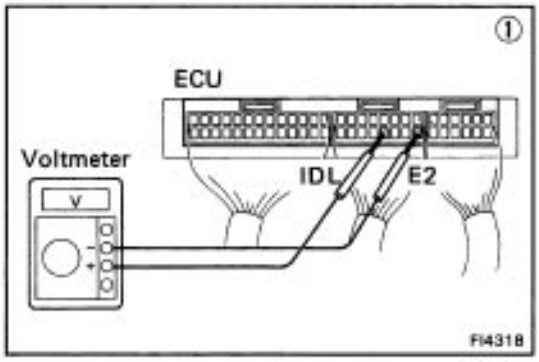
BAD → Replace.

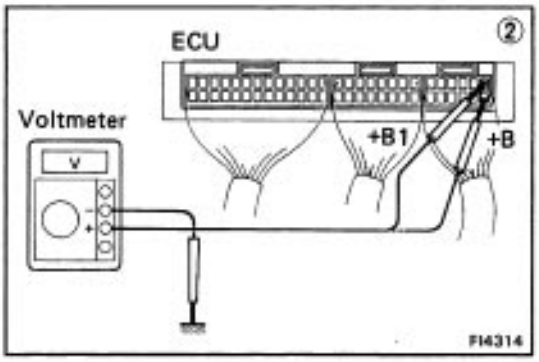
OK → Check wiring between ECU terminal and battery.

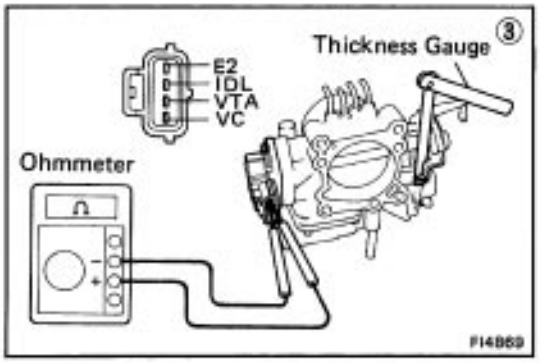
BAD → Repair or replace.

No.	Terminal	Trouble	Condition		STD voltage
3	IDL – E2	No voltage	Ignition switch ON	Throttle valve open	10 – 14 V
	VTA – E2			Throttle valve fully closed	0.1 – 1.0 V
				Throttle valve fully open	4 – 5 V
	VCC – E2			–	4 – 6 V









- **IDL – E2**

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

↓

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

NO → OK

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

OK → Try another ECU.

BAD → Repair or replace.

NO → Refer to +B – E1 trouble section. (No.1). (See page FI–114)

BAD → Repair or replace.

OK →

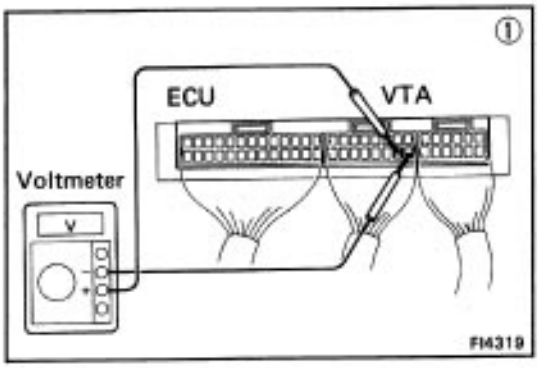
③ Check throttle position sensor. (See page FI–149)

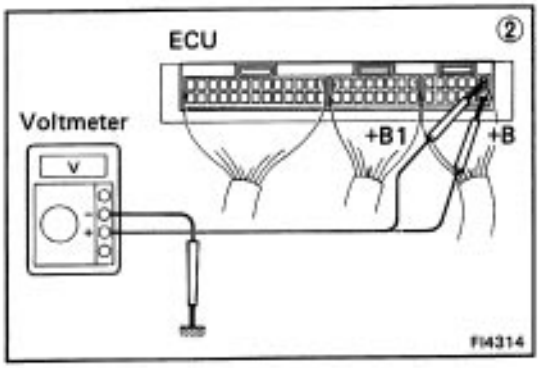
BAD → Repair or replace throttle position sensor.

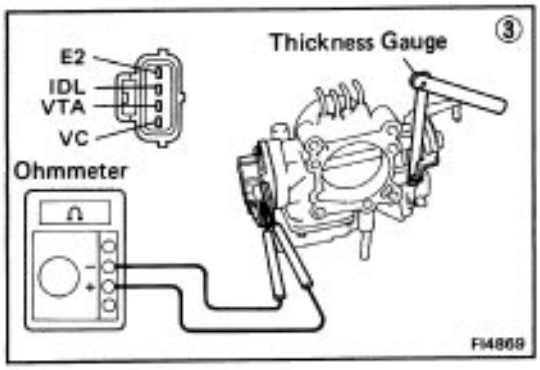
OK → Check wiring between ECU and throttle position sensor.

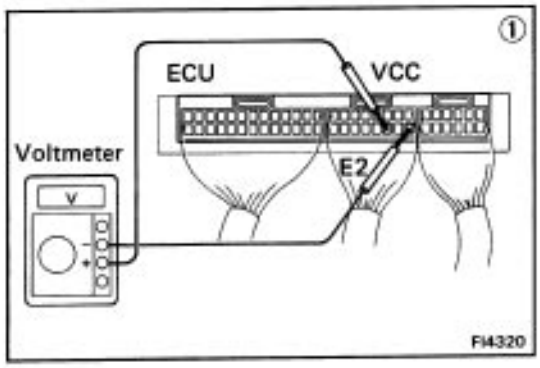
BAD → Repair or replace.

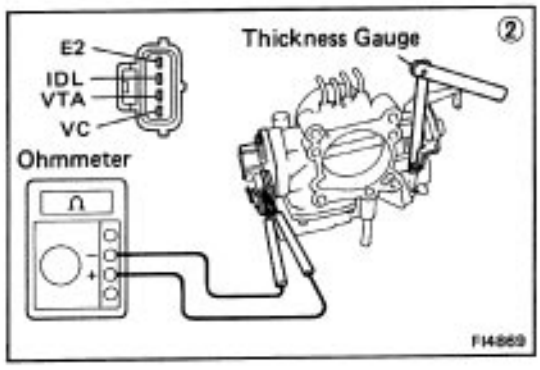
OK → Try another ECU.











- **VTA – E2**

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

↓

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

NO → ↓

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

BAD → Repair or replace.

↓

Refer to + B – E1 trouble section (No. 1). (See page FI–114)

BAD → Repair or replace.

OK ↓

(3) Check throttle position sensor.

BAD → Repair or replace.

OK ↓

Check wiring between ECU and throttle position sensor.

BAD → Repair or replace.

OK ↓

Try another ECU.

- **VC – E2**

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

↓

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

OK → ↓

NO → Refer to + B – E1 trouble section (No. 1) . (See page FI–114)

② Check throttle position sensor.

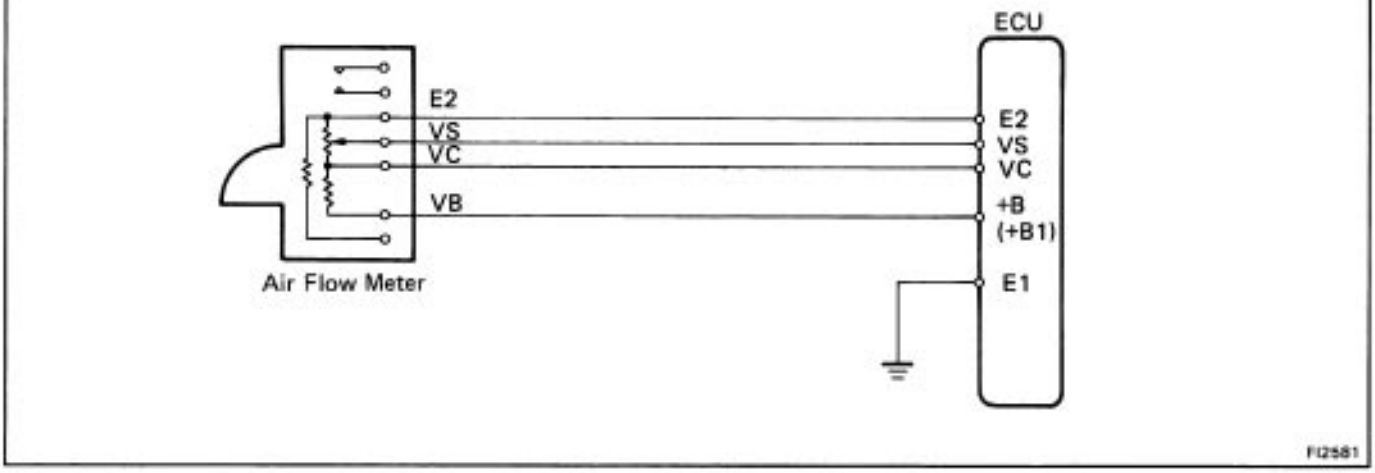
BAD → Repair or replace.

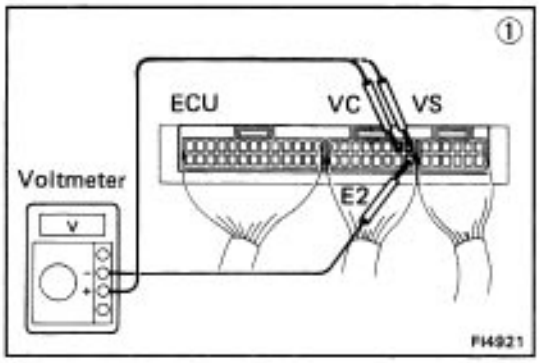
OK → Check wiring between ECU and‘ throttle position sensor.

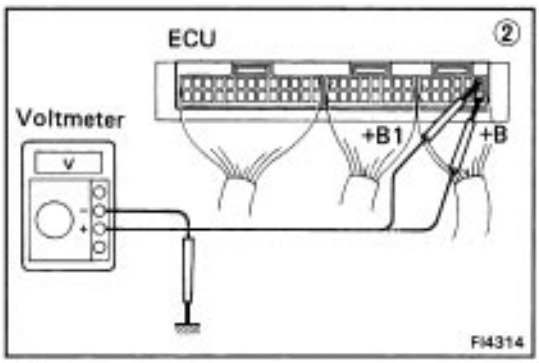
OK → Try another ECU .

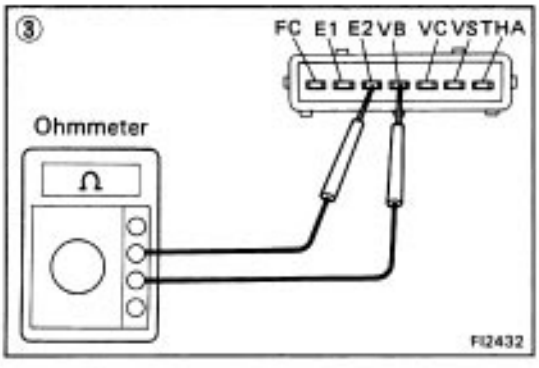
BAD → Repair or replace wiring.

No.	Terminal	Trouble	Condition		STD Voltage
4	+B1 – E2	No voltage	Ignition switch ON	–	10 – 14 V
	VC – E2			–	6 – 10 V
	VS – E2			Measuring plate fully closed	2 – 5.5 V
				Measuring plate fully open	6 – 9 V
			Idling	–	2 – 8 V









① There is no specified voltage at 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 → Check wiring between ECU terminal E1 and body ground.

NO → Refer to +B – E1 trouble section (No. 1) (See page FI–114)

OK → ③ Check air flow meter. (See page FI–147)

BAD → Repair or replace.

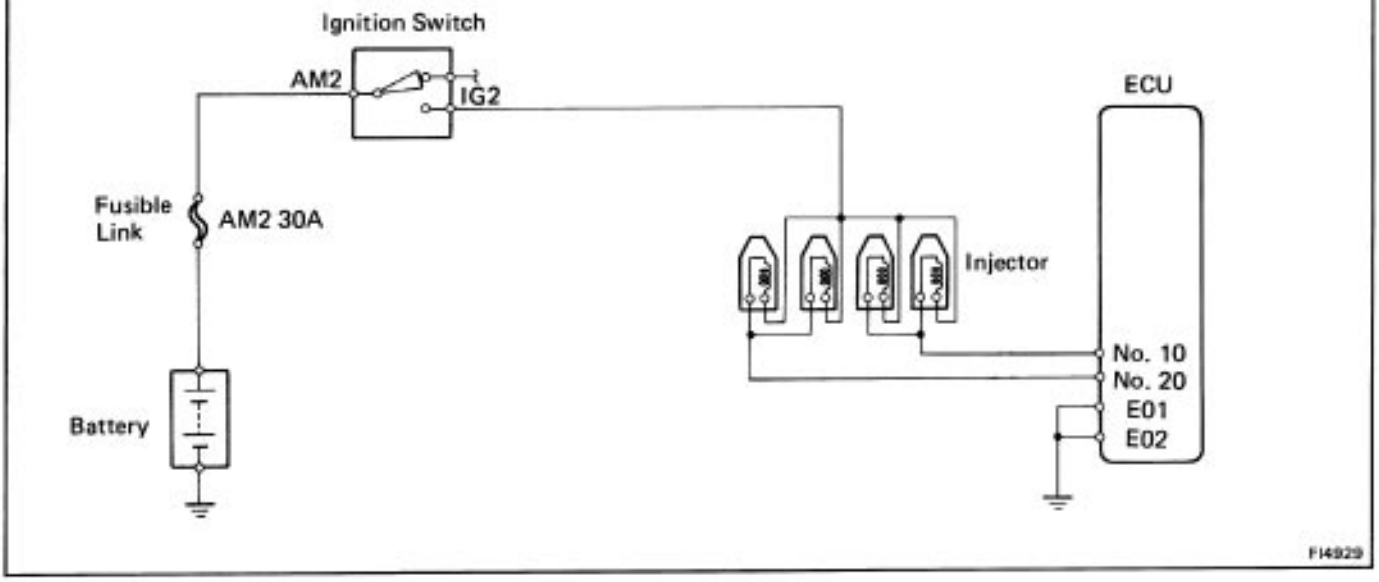
BAD → Replace air flow meter.

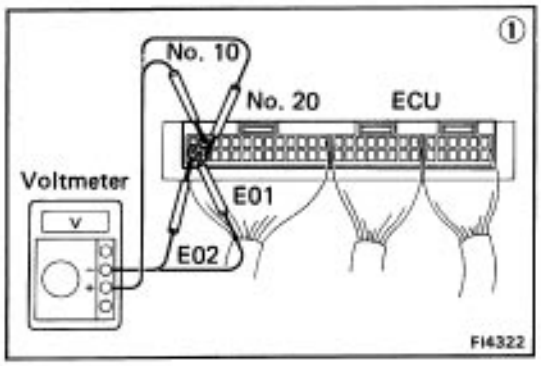
OK → Check wiring between ECU and air flow meter.

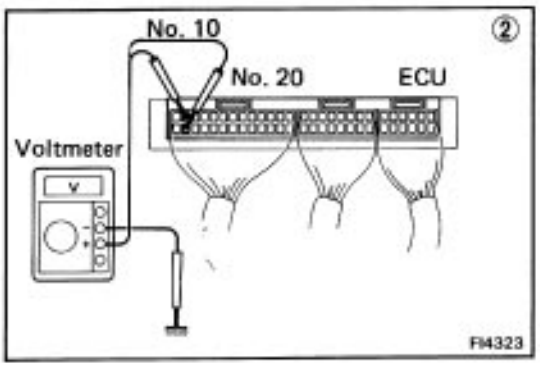
OK → Try another ECU.

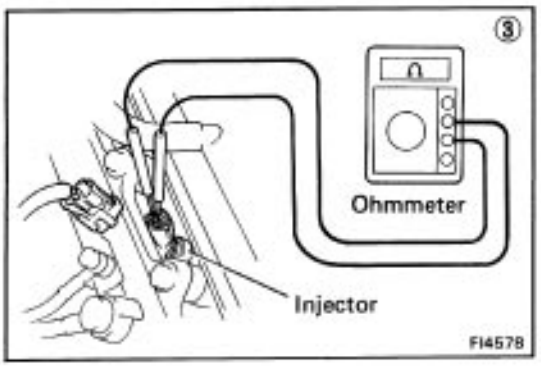
BAD → Repair or replace.

No.	Terminal	Trouble	Condition	STD voltage
5	No.10 – E01 No.20 – E02	No voltage	Ignition switch ON	10 – 14 V









(1) There is no voltage between ECU terminals No. 10 and/or No. 20 and E01 and/or E02. **(IG SW ON)**

↓

(2) Check that there is voltage between ECU terminal No. 10 and/or No. 20 and body ground.

NO → OK

↓

Check wiring between ECU terminal E01 and/or E02 and body ground.

OK → Try another ECU.

BAD → Repair or replace.

↓

Check fuse, fusible link and ignition switch.

BAD → Repair or replace.

↓ OK

(3) Check resistance of magnetic coil in each injector.
STD resistance: Approx. 13.8Ω

OK ↓

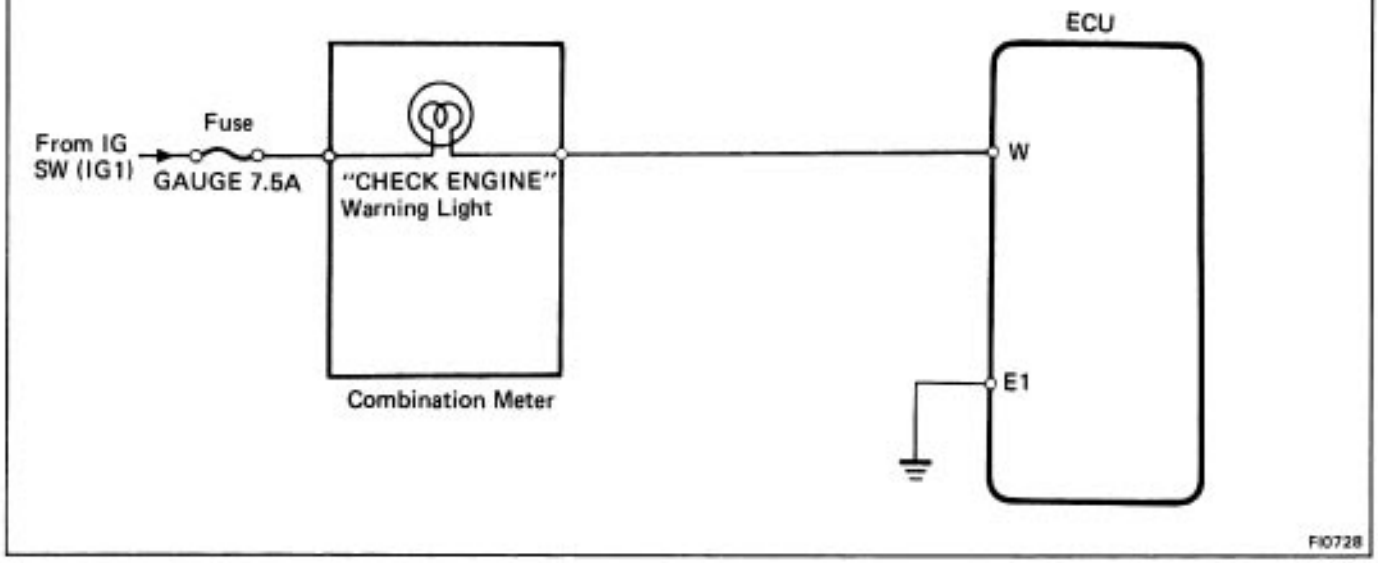
BAD → Replace injector.

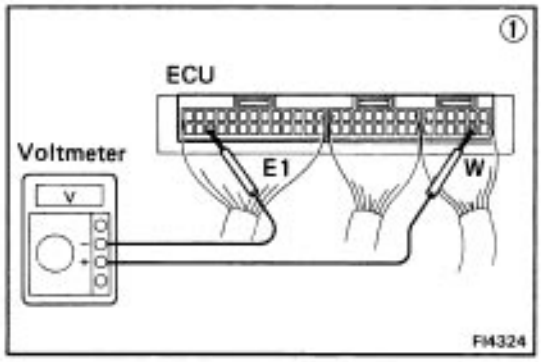
↓

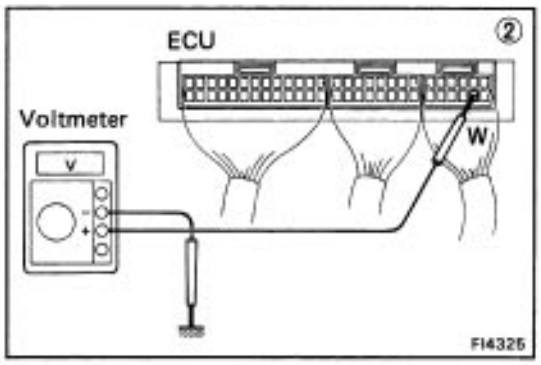
Check wiring between ECU terminal No. 10 and/or No. 20 and battery.

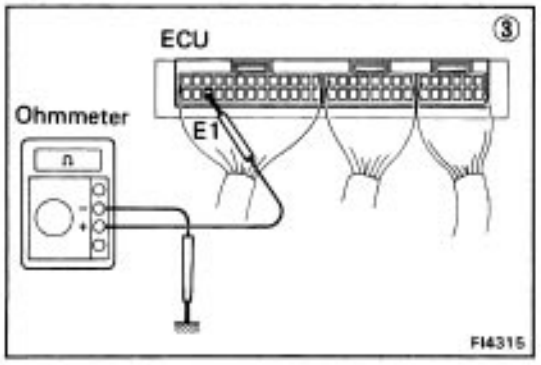
BAD → Repair or replace.

No.	Terminal	Trouble	Condition	STD voltage
6	W – E1	No voltage	No trouble (”CHECK ENGINE” warning light off) and engine running.	10 – 14 V









① There is no voltage between ECU terminals W and E1. **(idling)**

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

NO → OK

③ Check wiring between ECU terminal E1 and body ground.

OK → Try another ECU.

BAD → Repair or replace.

Check GAUGE fuse and check engine warning light.

OK

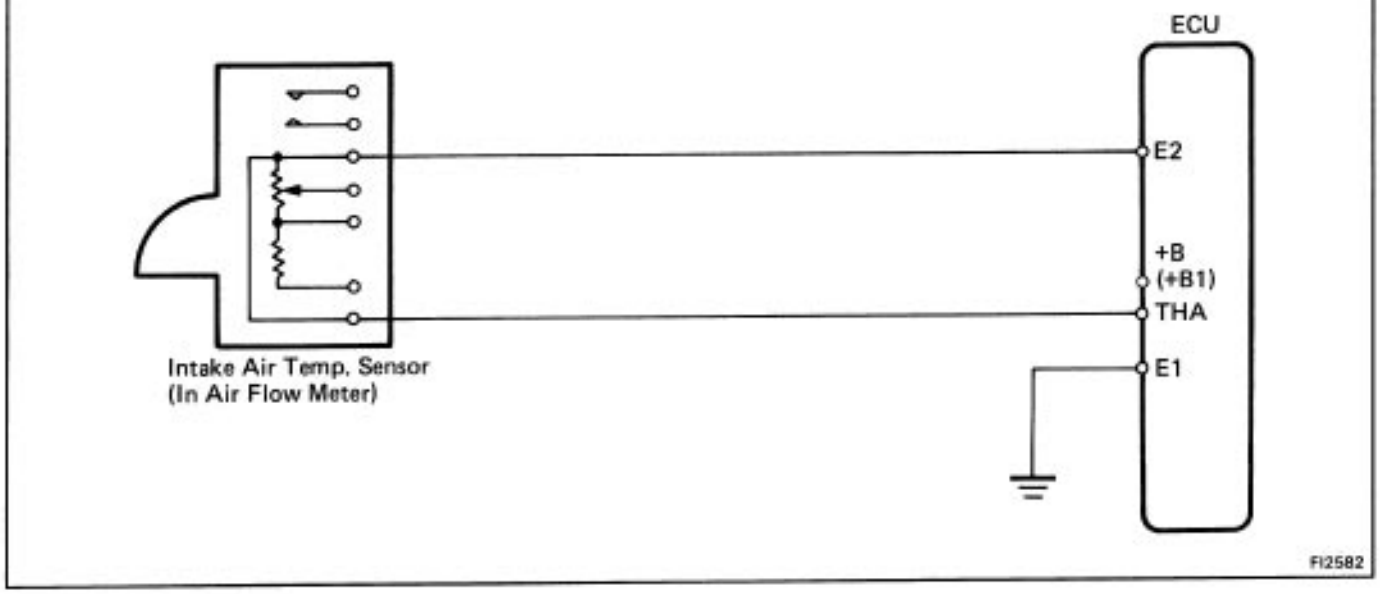
BAD → Repair or replace.

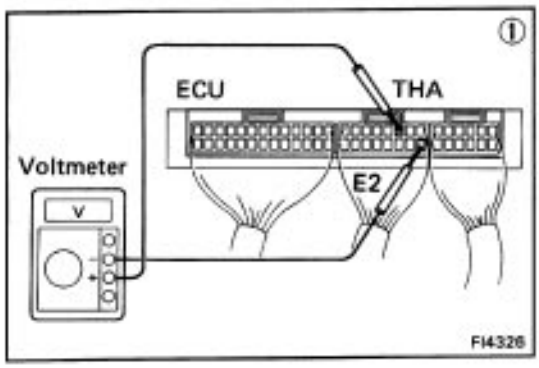
Fuse blows again

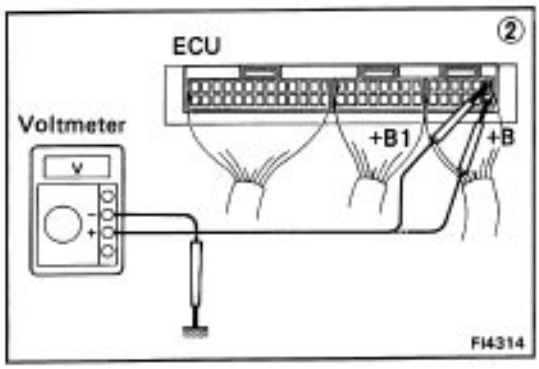
Check wiring between ECU terminal W and fuse.

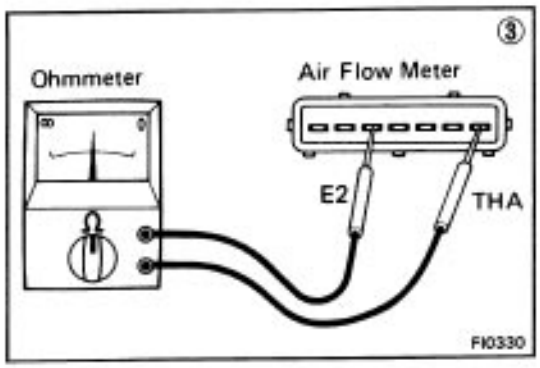
BAD → Repair or replace.

No.	Terminal	Trouble	Condition		STD Voltage
7	THA – E2	No voltage	Ignition switch ON	Intake air temperature 20˚C (68˚F)	1 – 3 V









① There is no specified 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 + B – E1 trouble section (No 1). (See page FI–114)

↓

Check wiring between ECU terminal E1 and body ground.

OK → ↓

BAD → Repair or replace.

↓

③ Check air flow meter. (See page FI–117)

BAD → Replace air flow meter.

OK → ↓

Check wiring between ECU and air temp. sensor.

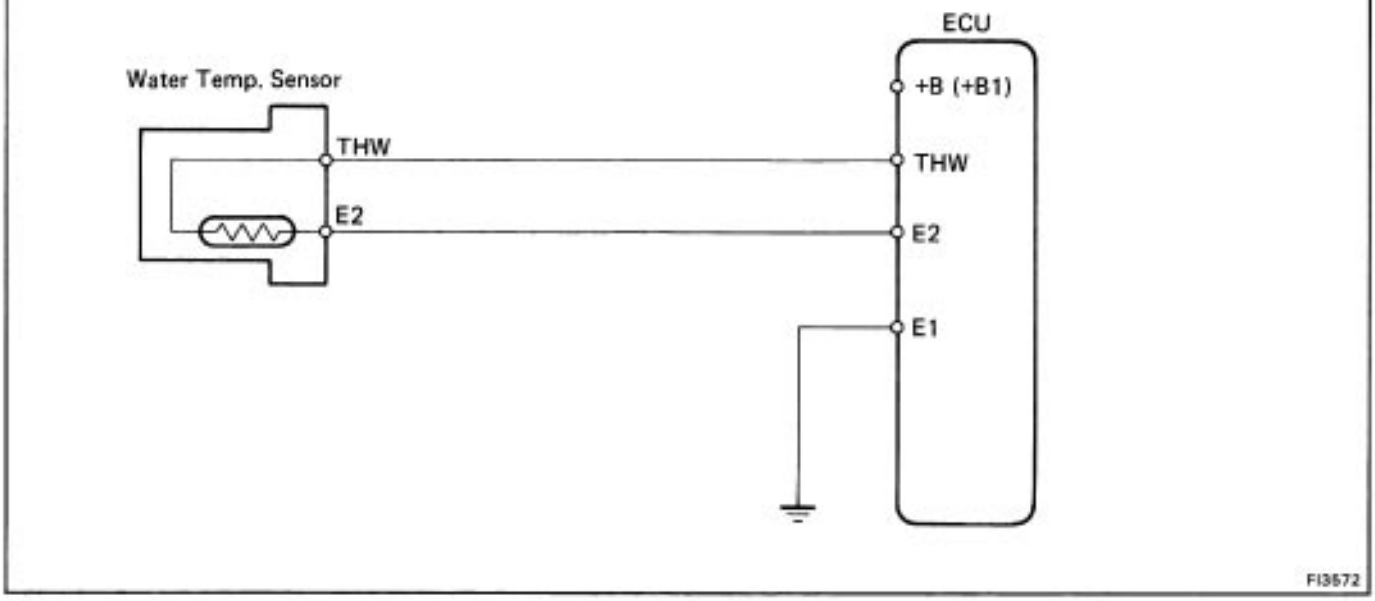
OK → ↓

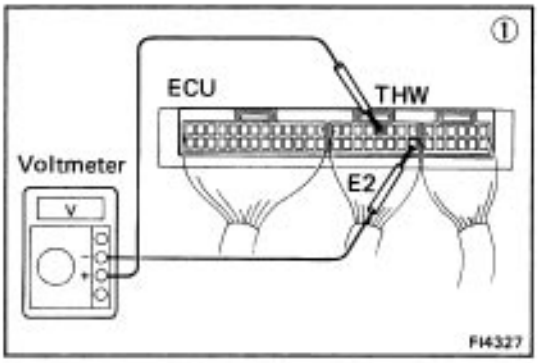
BAD → Repair or replace.

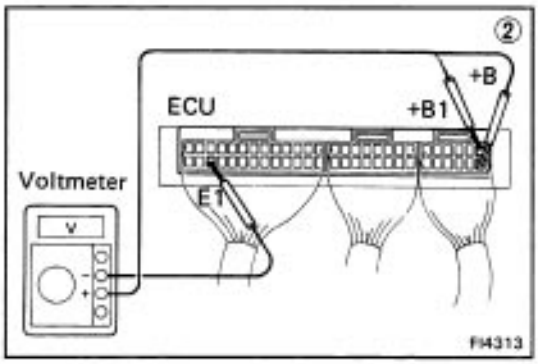
↓

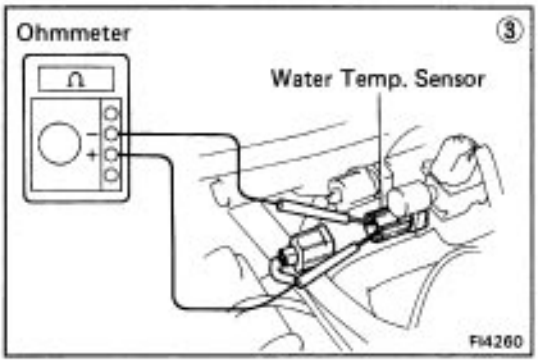
Try another ECU.

No.	Terminal	Trouble	Condition		STD Voltage
8	THW – E2	No voltage	Ignition switch ON	Coolant temperature 80˚C (176˚F)	0.1 – 1.0 V









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 → Check wiring between ECU terminal E1 and body ground.

NO → Refer to +B – E1 trouble section (No. 1). (See page FI–114)

Check wiring between ECU terminal E1 and body ground.

OK → ③ Check water temp. sensor. (See page FI–159)

BAD → Repair or replace.

③ Check water temp. sensor. (See page FI–159)

BAD → Replace water temp. sensor.

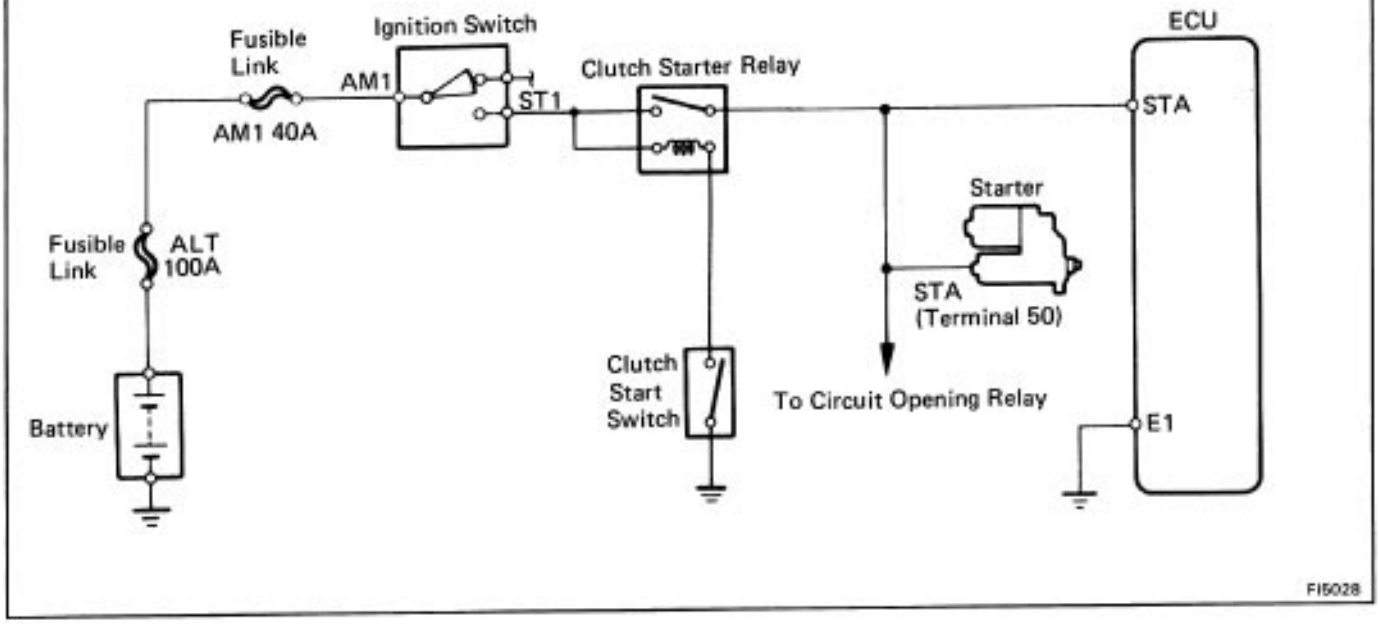
OK → Check wiring between ECU and water temp. sensor.

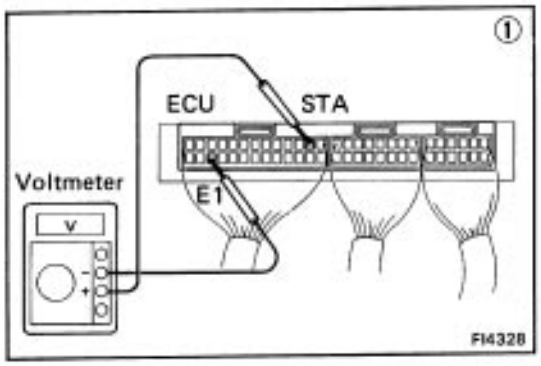
Check wiring between ECU and water temp. sensor.

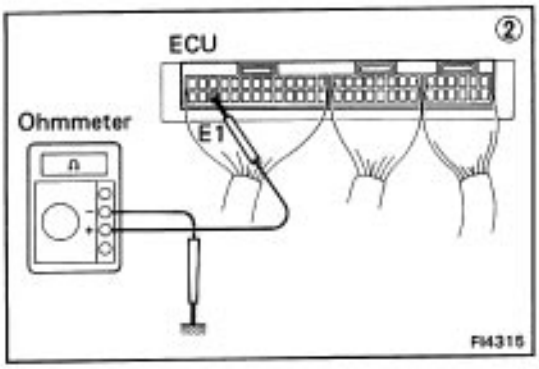
OK → Try another ECU.

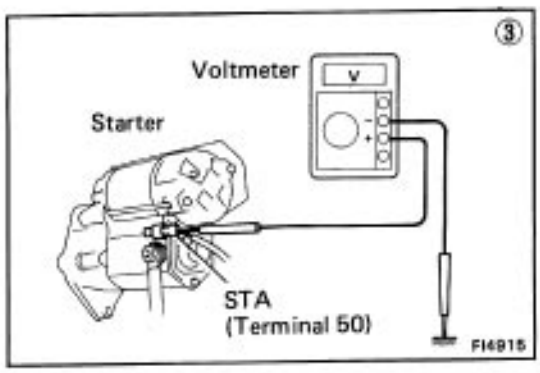
BAD → Repair or replace.

No.	Terminal	Trouble	Condition	STD voltage
9	STA – E1	No voltage	Cranking	6 – 14 V





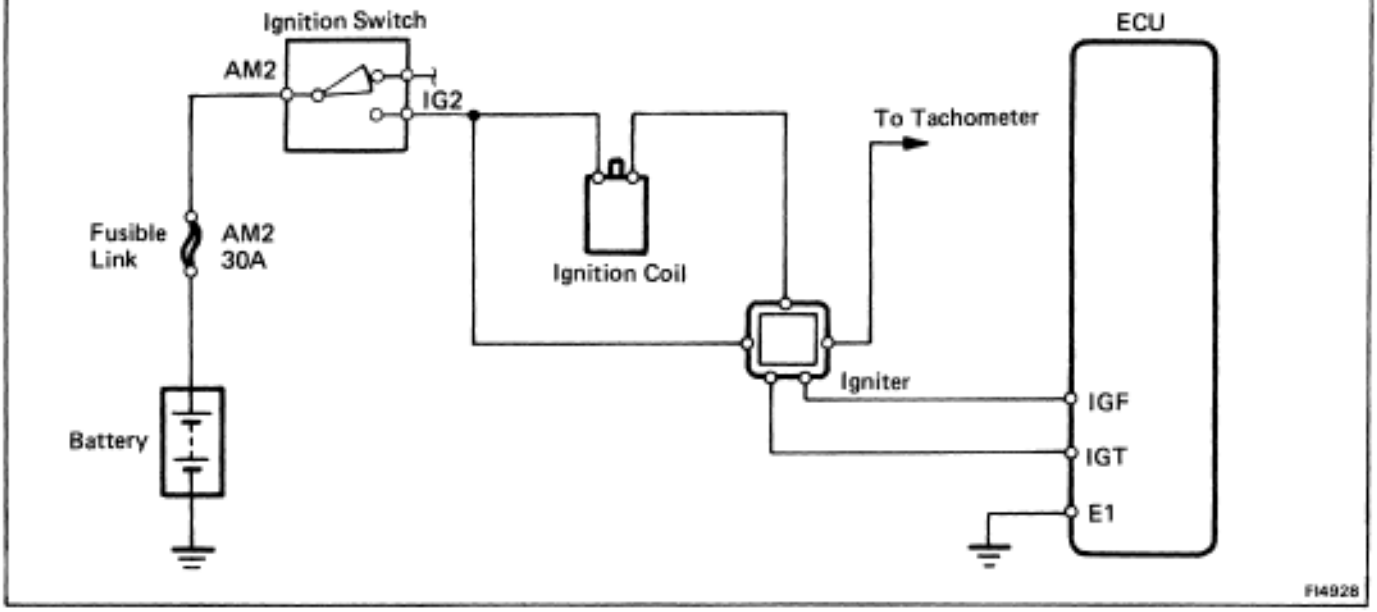


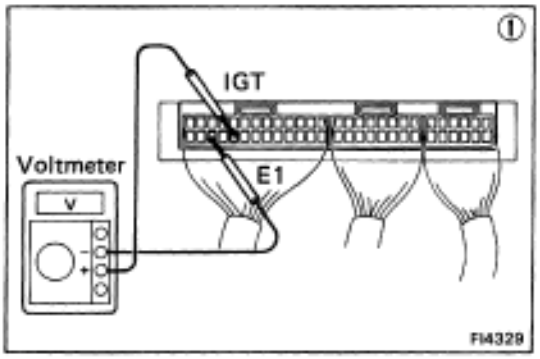


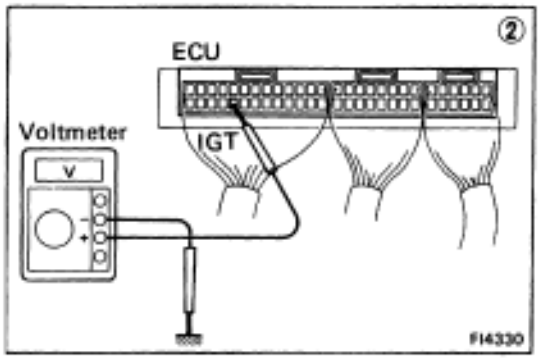
① There is no voltage between ECU terminals STA and E1. **(IG SW START)**

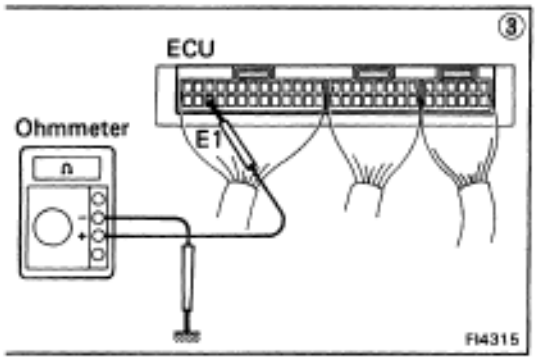
Check starter operation.
- OK → Check wiring between ECU terminal STA and ignition switch terminal ST1.
  - BAD → Repair or replace.
  - OK → ② Check wiring between ECU terminal E1 and body ground.
    - OK → Try another ECU.
    - BAD → Repair or replace.
- BAD → Check fusible link, battery, wiring and ignition switch.
  - BAD → Repair or replace.
  - OK → ③ Check that there is voltage at STA (50) terminal of starter. **(IG SW START) STD voltage: 6 – 14 V**
    - OK → Check starter.
    - NO → Check wiring between ignition switch terminal ST1 and starter terminal STA (50).

No.	Terminal	Trouble	Condition	STD voltage
10	IGT – E1	No voltage	Idling	0.7 – 1.0 V









① There is no voltage between ECU terminals IGT and E1. **(idling)**

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

OK → (3) Check wiring between ECU terminal E1 and Check ground.

BAD → Repair or replace.

Refer to + B – E1 trouble section (No. 1). (See page FI–114)

BAD → Repair or replace.

OK

Check wiring between ECU and distributor.

BAD → Repair or replace.

OK

Check distributor.

BAD → Replace.

OK

Check wiring between ECU and igniter.

BAD → Repair or replace.

OK

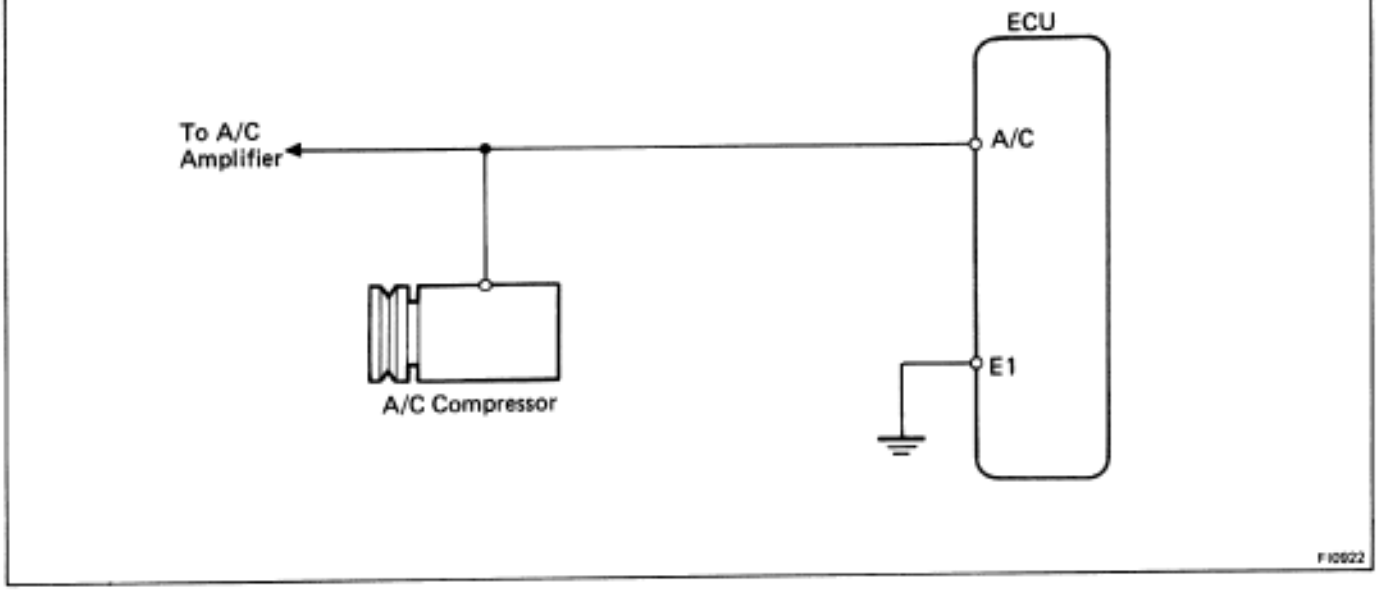
Check igniter. (See page IG–8)

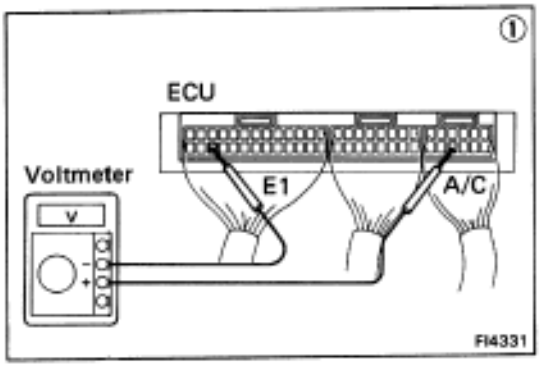
BAD → Repair or replace.

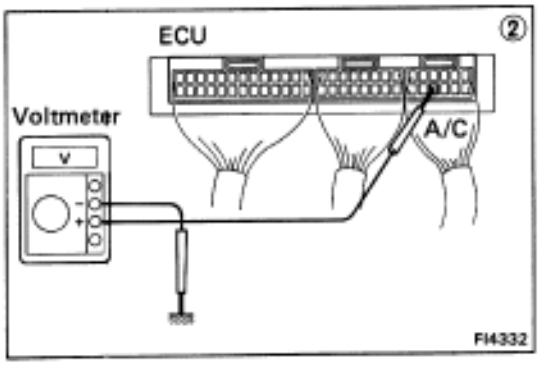
OK

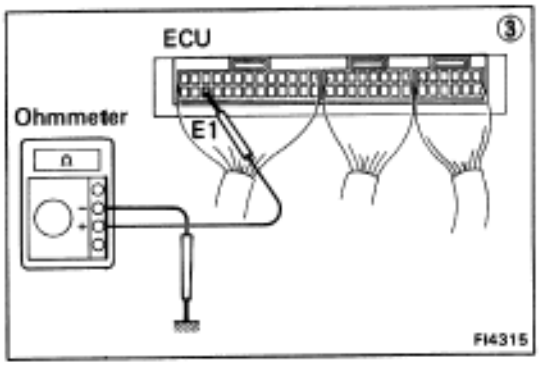
Try another ECU .

No.	Terminal	Trouble	Condition	STD Voltage
11	A/C – E1	No voltage	Air conditioning ON	5 – 14 V









① There is no voltage between ECU terminals A/C and E1. **(Air conditioning ON)**

② Check that there is voltage between ECU terminal A/C and body ground.

NO → OK

③ Check wiring between ECU terminal E1 and body ground.

OK → Try another ECU .

BAD → Repair or replace.

Check compressor running.

OK → Check wiring between ECU terminal A/C and amplifier.

BAD → Repair or replace.

BAD

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

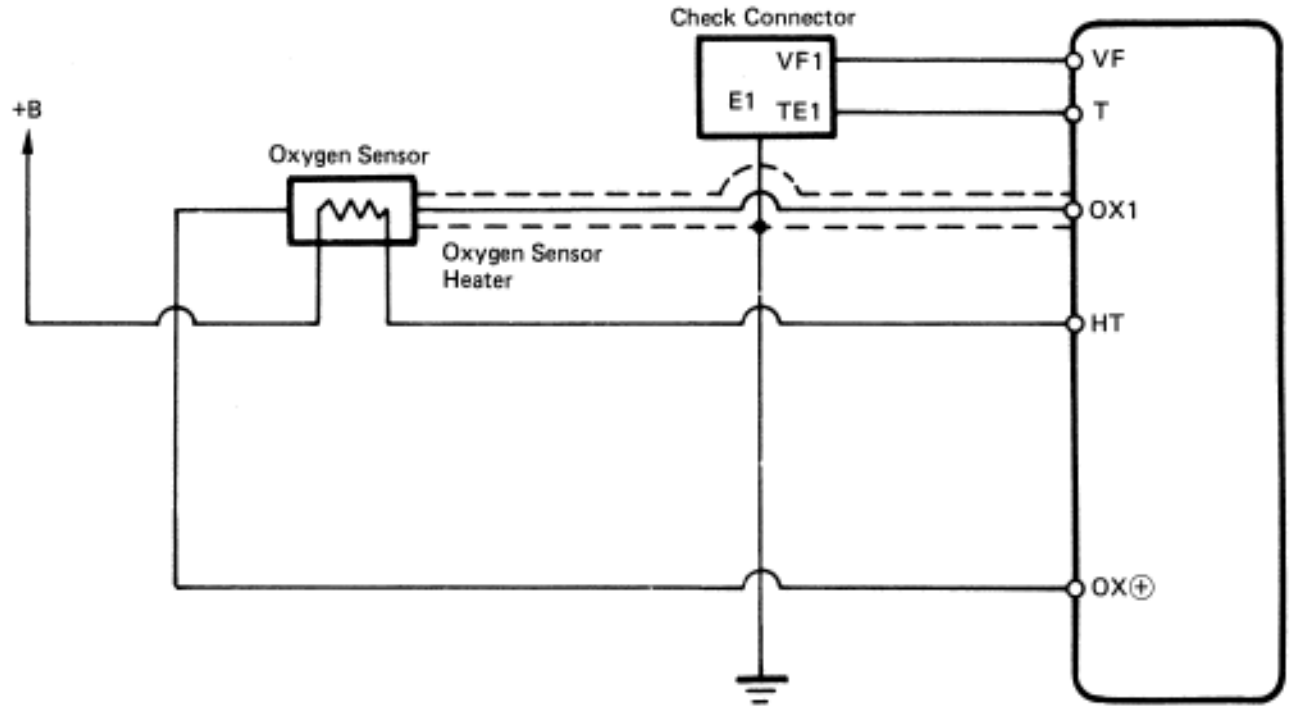
BAD → Repair or replace.

OK

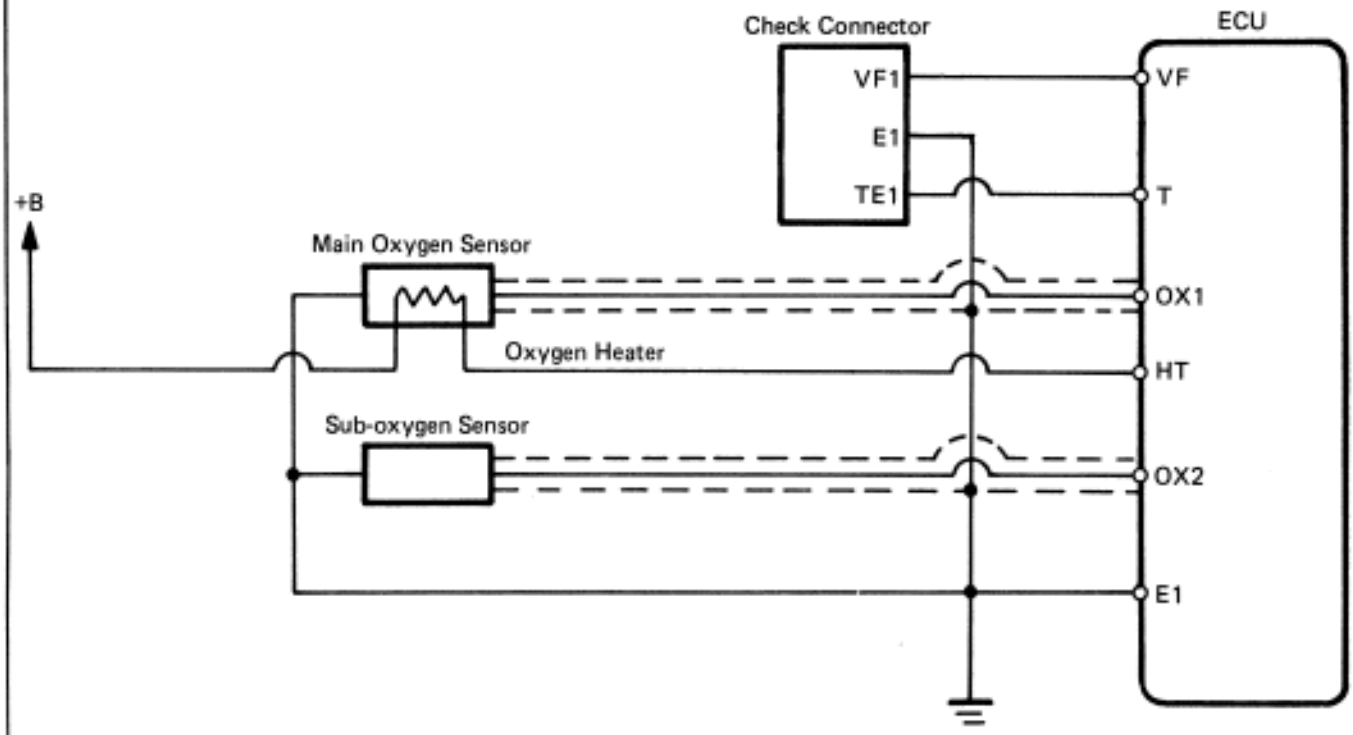
Check wiring between amplifier and ECU or compressor.

BAD → Repair or replace.

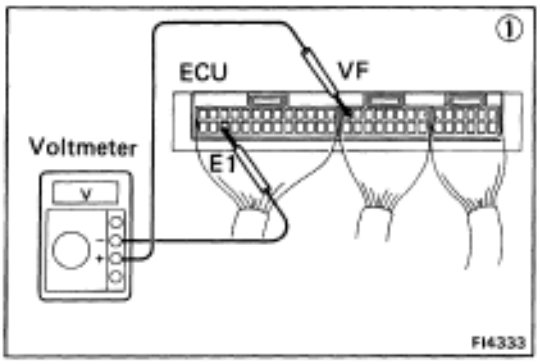
Federal and Canada

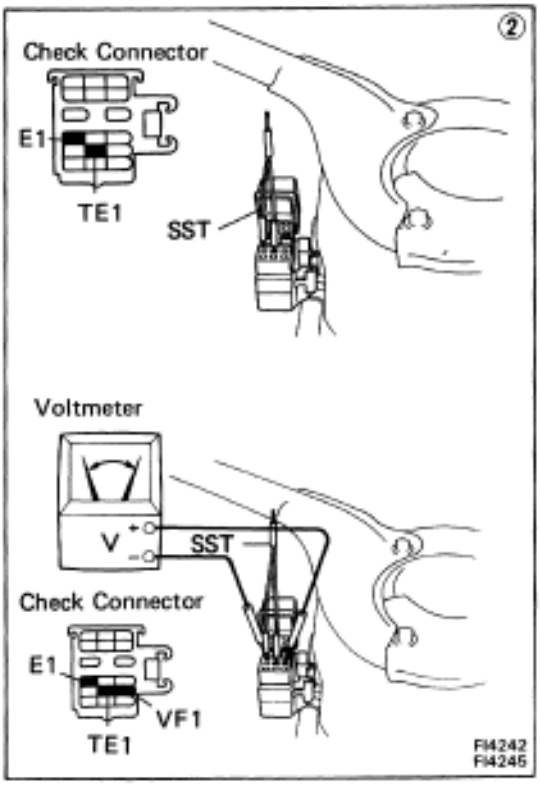


California



FI2678
FI3599





① There is no voltage between ECU terminals VF and E1.

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

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

OK →

Is air leaking into air intake system?
- BAD → Repair air leak.

OK →

Check spark plugs.
- BAD → Repair or replace.

OK →

Check distributor and ignition system.
- BAD → Repair or replace.

OK →

Check fuel pressure.
- BAD → Repair or replace.

OK →

Check injector.
- BAD → Repair or replace.

OK →

Check cold start injector. *
- BAD → Repair or replace.

OK →

Check air flow meter.
- BAD → Repair or replace.

OK →

② Check operation of oxygen sensor.
- OK → System normal.

BAD →

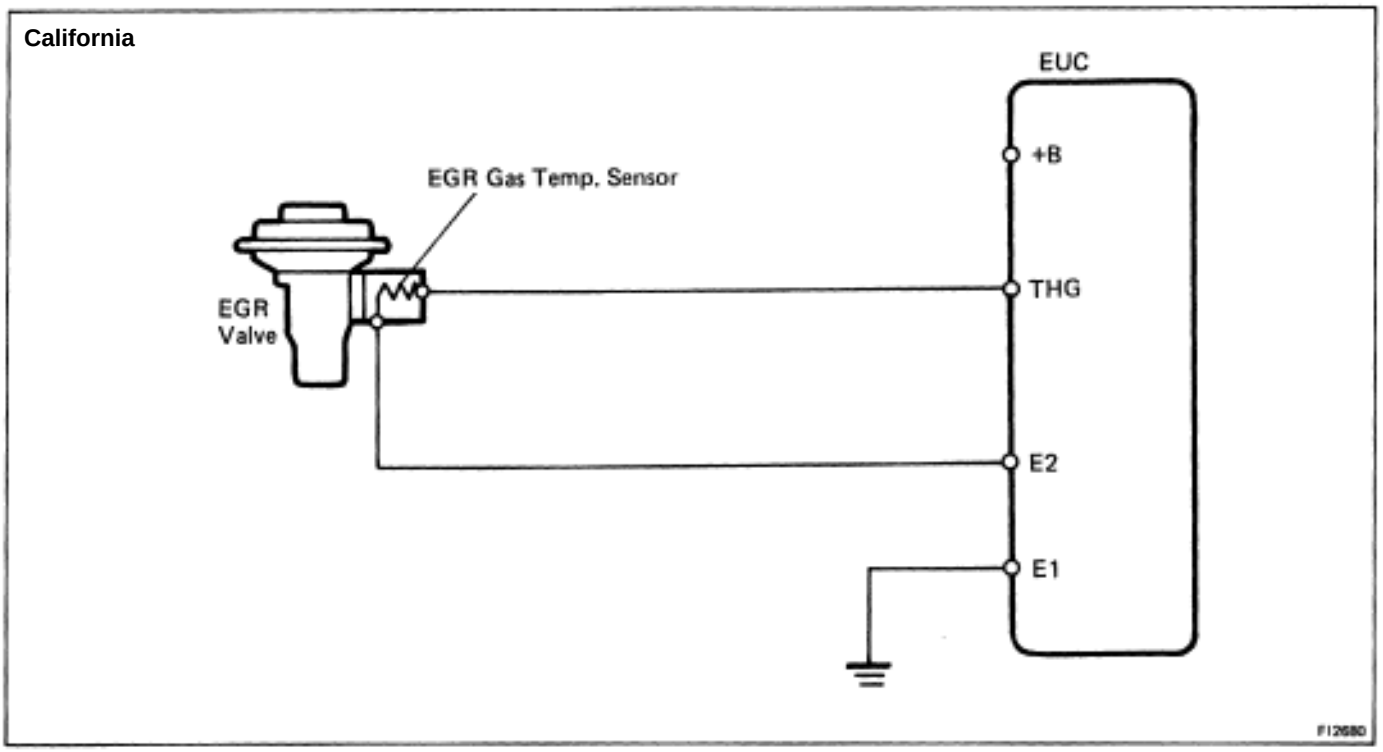
Check wiring between oxygen sensor and ECU connector.
- BAD → Repair wiring.

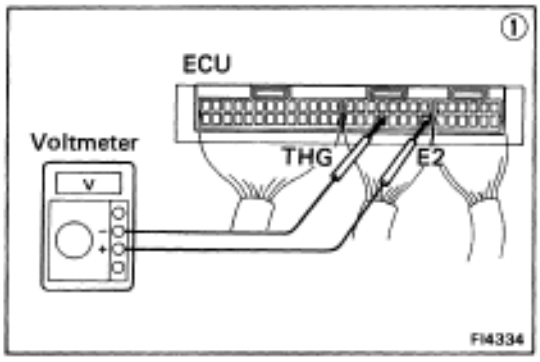
OK →

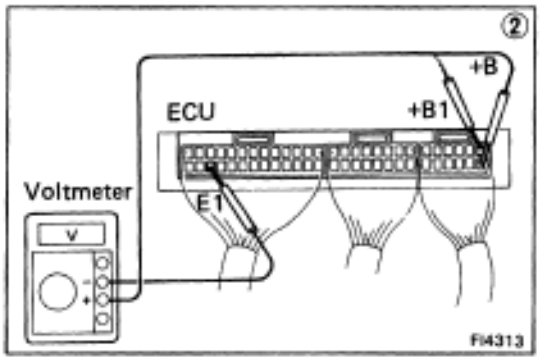
Replace oxygen sensor.

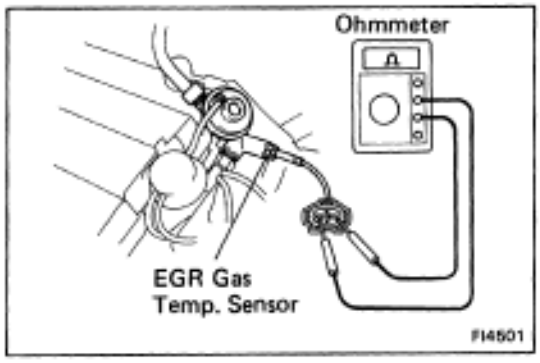
* Rich malfunction only

California









① There is 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 → Check wiring between ECU terminal E1 and body ground.

NO → Refer to +B – E1 trouble section (No. 1). (See page FI–114)

Check wiring between ECU terminal E1 and body ground.

OK → Check EGR system.

BAD → Repair or replace.

BAD → Repair or replace.

OK → ③ Check EGR gas temp. sensor. (See page FI–160)

BAD → Replace EGR gas temp. sensor.

OK → Check wiring between ECU and EGR gas temp. sensor.

OK → Try another ECU.

BAD → Repair or replace.