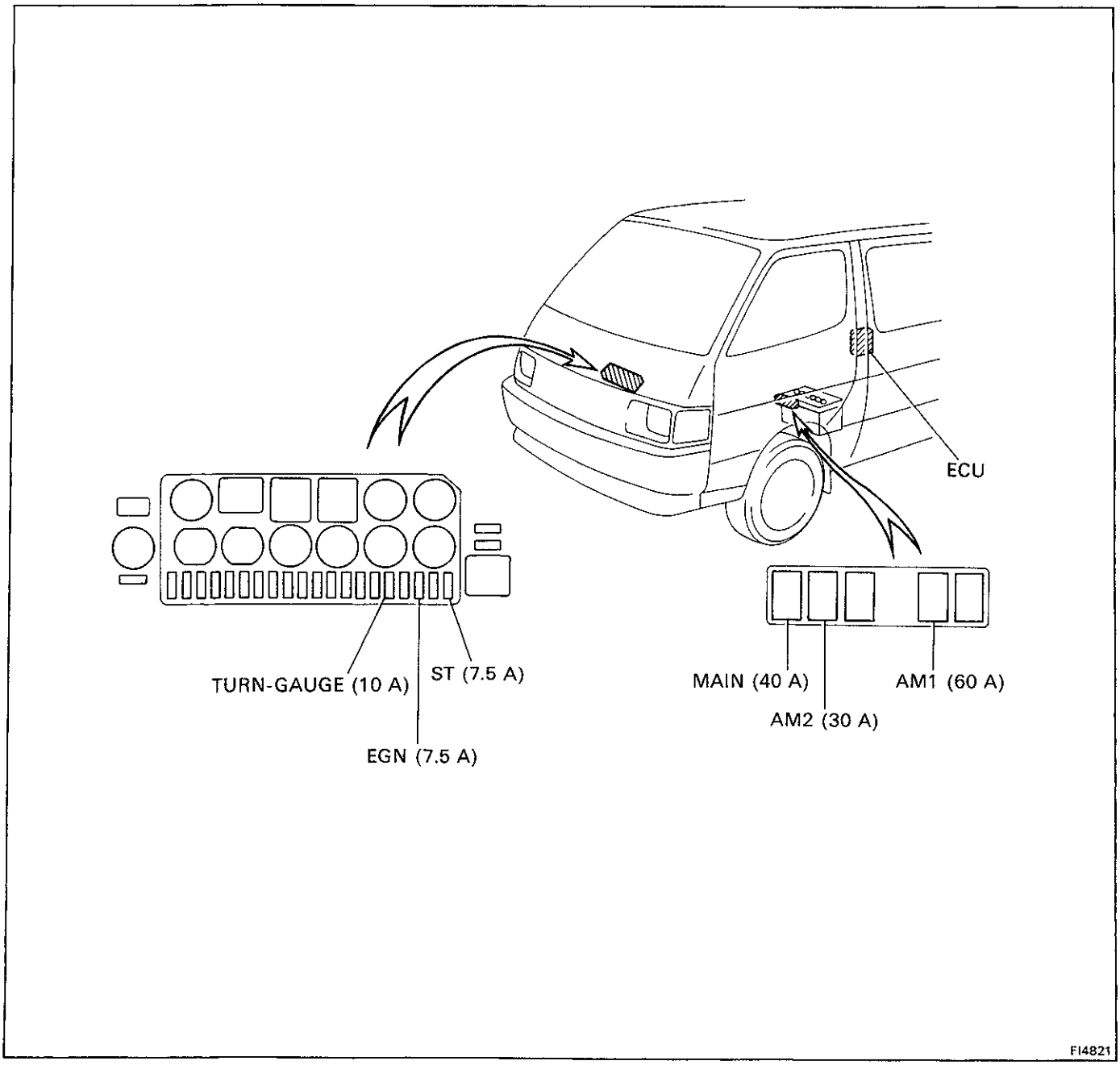
TROUBLESHOOTING FOR EFI ELECTRONIC CIRCUIT WITH VOLT/OHMMETER

HINT: Because the following troubleshooting procedures are designed for inspection of each separate system, the actual troubleshooting procedure may vary somewhat.
However, please refer to these procedures and perform actual troubleshooting, conforming to the inspection methods described.
For example, it is better first to make a simple check of the fuses, fusible links and connecting condition of the connectors before making your inspection according to the procedures listed.

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 through proper operating voltage is detected in the computer connector, then the ECU is faulty and should be replaced.

LOCATION OF FUSES AND FUSIBLE LINKS



PREPARATION

1. **Remove the center piller garnish.**
2. **Remove the ECU with wire harness.**

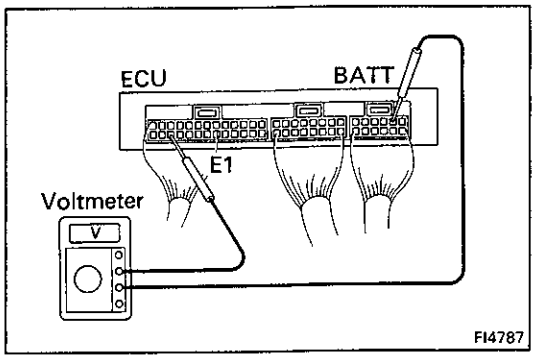
EFI SYSTEM CHECK PROCEDURE

HINT:

- The EFI circuit can be checked by measuring the voltage at the wiring connectors of the ECU.
- Perform all voltage measurements with the connectors connected.
- Verify that the battery voltage is 11V or above when the ignition switch is ON.

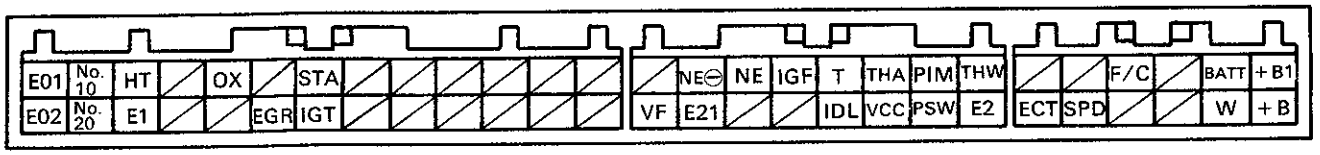
Using a voltmeter with high-impedance (10 k/V minimum), measure the voltage at each terminal of the wiring connector.

HINT: If there is any problem, see TROUBLESHOOTING FOR EFI ELECTRONIC CIRCUIT WITH VOLT/OHMMETER.



Connectors of ECU

Symbol	Terminal Name	Symbol	Terminal Name
E01	ENGINE GROUND	T	CHECK CONNECTOR
E02	ENGINE GROUND	IDL	THROTTLE POSITION SENSOR
No.10	INJECTOR	THA	AIR TEMP. SENSOR
No.20	INJECTOR	VCC	VACUUM SENSOR
HT	OXYGEN SENSOR HEATER	PIM	VACUUM SENSOR
E1	ENGINE GROUND	PSW	THROTTLE POSITION SENSOR
OX	OXYGEN SENSOR	THW	WATER TEMP. SENSOR
EGR	VSV (for EGR)	E2	SENSOR EARTH
STA	IGNITION SWITCH	ECT	ECT ECU
IGT	IGNITER	SPD	SPEED SENSOR
VF	CHECK CONNECTOR	F/C	CIRCUIT OPENING RELAY
NE ⊖	DISTRIBUTOR	BATT	BATTERY +B
E21	SENSOR EARTH	W	CHECK ENGINE WARNING LIGHT
NE	DISTRIBUTOR	+B1	EFI MAIN RELAY
IGF	IGNITER	+B	EFI MAIN RELAY

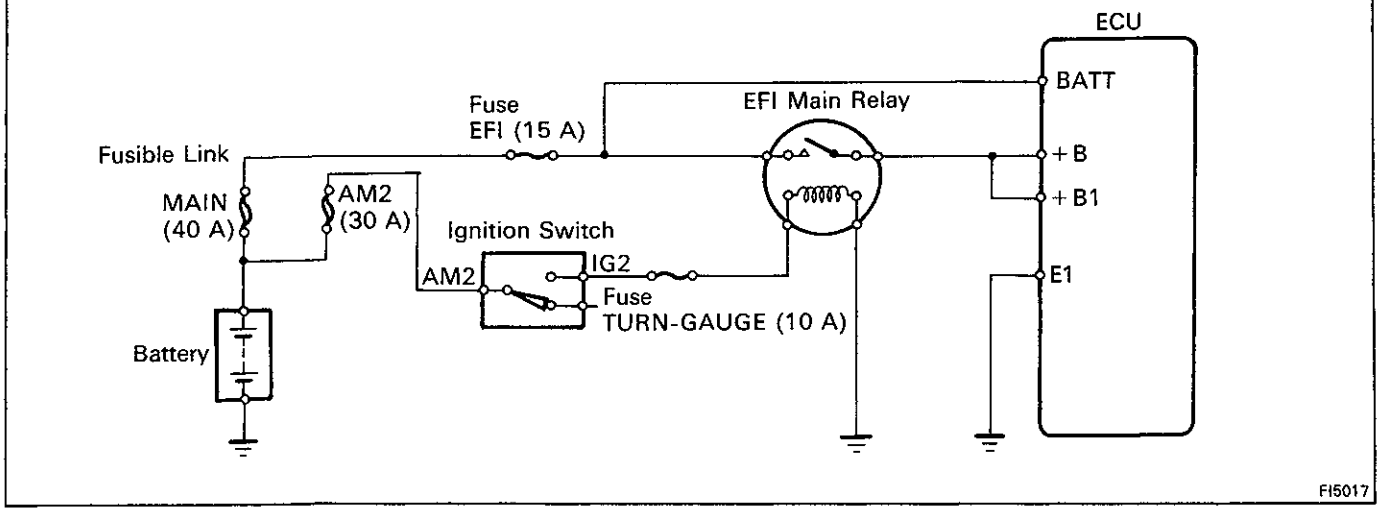


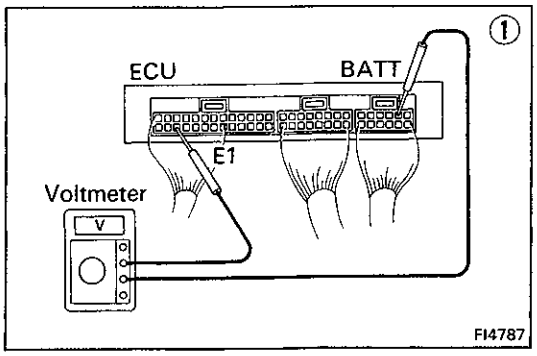
FI4786

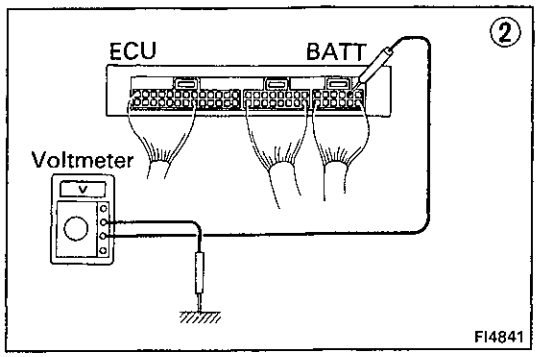
Voltages at ECU wiring connectors

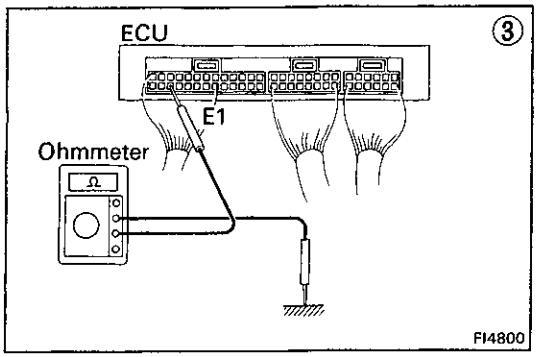
No.	Terminals	STD voltage (V)	Condition		See page
1	BATT – E1	10 – 14	—		FI-30
	+B – E1	10 – 14			
	+B1 – E1	10 – 14	Ignition switch ON		
2	IDL – E1	8 – 14	Ignition switch ON	Throttle valve open	FI-32
	PSW – E1	4.5 – 5.5		Throttle valve fully closed	
3	IGT – E1	0.7 – 1.0	Cranking or idling		FI-34
4	STA – E1	6 – 14	Cranking		FI-35
5	No.10 – E01 No.20 E02	9 – 14	Ignition switch ON		FI-36
6	W – E1	9 – 14	No trouble (Check engine warning light off) and engine running		FI-37
7	PIM – E2 (E21)	3.3 – 3.9	Ignition switch ON		FI-38
	VCC – E2 (E21)	4.5 – 5.5			
8	THA – E2 (E21)	2.0 – 2.8	Ignition switch ON	Intake air temperature 20°C (68°F)	FI-40
9	THW – E2 (E21)	0.4 – 0.8		Coolant temperature 80°C (176°F)	FI-41

No.	Terminals	Trouble	Condition	STD Voltage
1	BATT – E1	No voltage	—	10 – 14 V
	+B – E1		Ignition switch ON	
	+B1 – E1			









● **BATT – E1**

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

③ OK → Try another ECU.

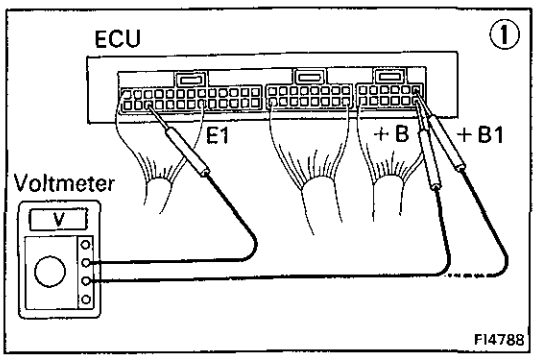
③ BAD → Repair or replace

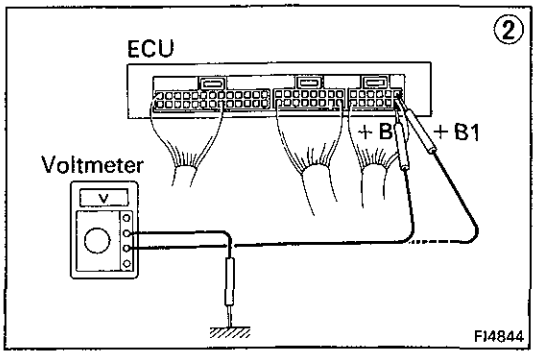
② NO → Check fuse and fusible link.

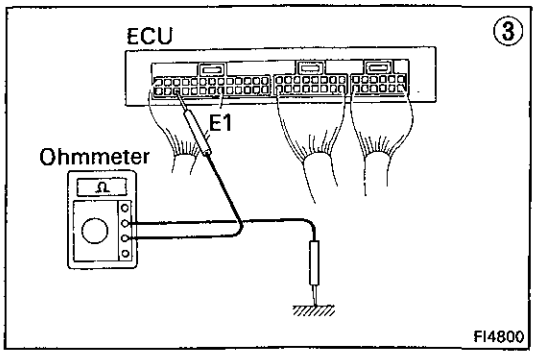
Check fuse and fusible link. BAD → Replace

Check fuse and fusible link. OK → Check wiring between fuse and ECU.

Check wiring between fuse and ECU. BAD → Repair or replace







● **+B (+B1) – E1**

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

OK

③ Check wiring between ECU terminal E1 and body ground.

OK → Try another ECU.

BAD → Repair or replace

Check fuse, fusible link and ignition switch. — BAD → Repair or replace

OK

Check EFI main relay. — BAD → Replace

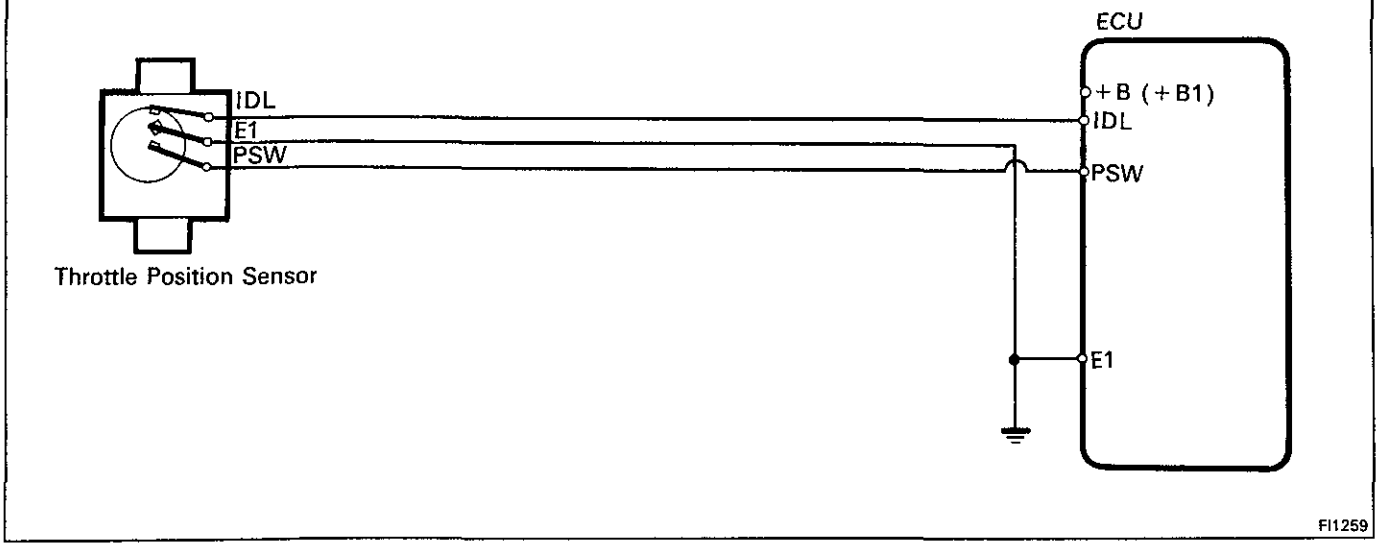
OK

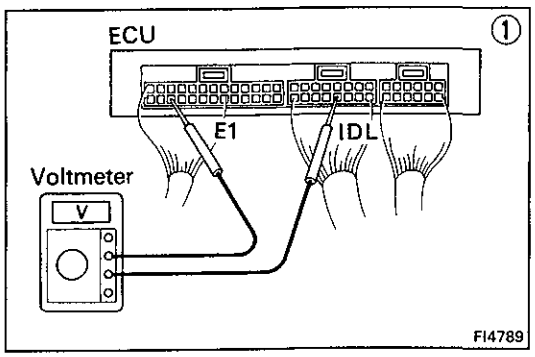
Check wiring between EFI main relay and battery. — BAD → Repair or replace

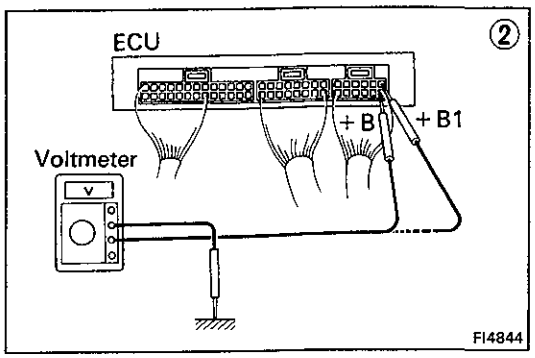
OK

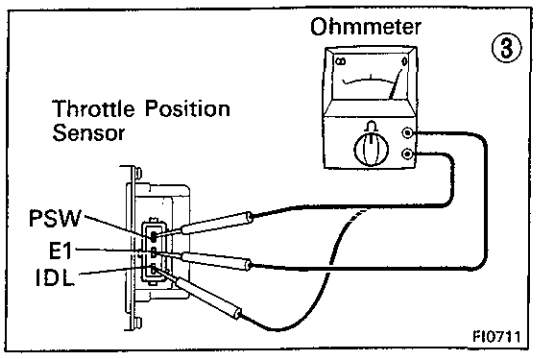
Check wiring between EFI main relay and ECU terminal +B (+B1). — BAD → Repair or replace

No.	Terminals	Trouble	Condition		STD Voltage
2	IDL – E1	No voltage	IG SW ON	Throttle valve open	8 – 14 V
	PSW – E1			Throttle valve fully closed	4.5 – 5.5 V









● **IDL – E1**

① No voltage between ECU terminals IDL and E1. **(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 and body ground.

BAD → Repair or replace.

Refer to No.1. (See page FI-31) → BAD → Repair or replace.

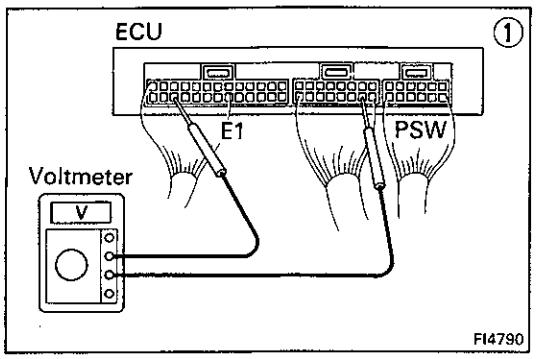
OK → ③ Check throttle position sensor. (See page FI-59)

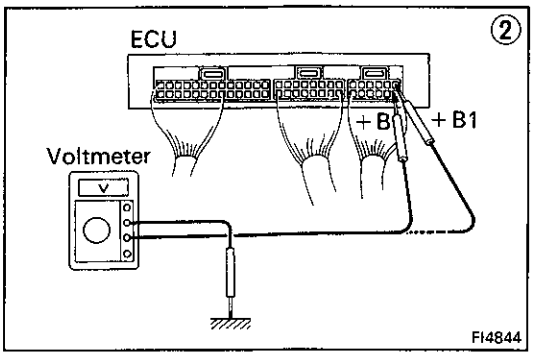
BAD → Replace or repair throttle position sensor.

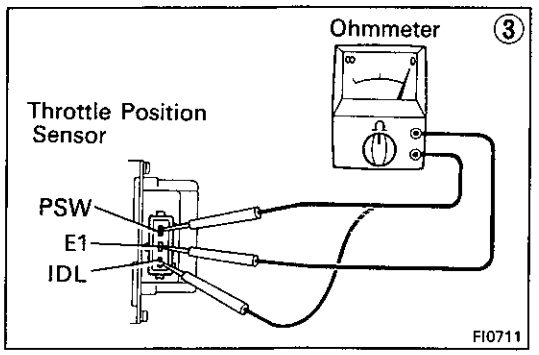
OK → Check wiring between ECU and throttle position sensor.

BAD → Repair or replace.

OK → Try another ECU.







• **PSW – E1**

① No voltage between ECU terminals PSW and E1. **(IG SW ON)**

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

NO

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

BAD → Repair or replace.

Refer to No.1. (See page FI-31)

BAD → Repair or replace.

OK

③ Check throttle position sensor. (See page FI-59)

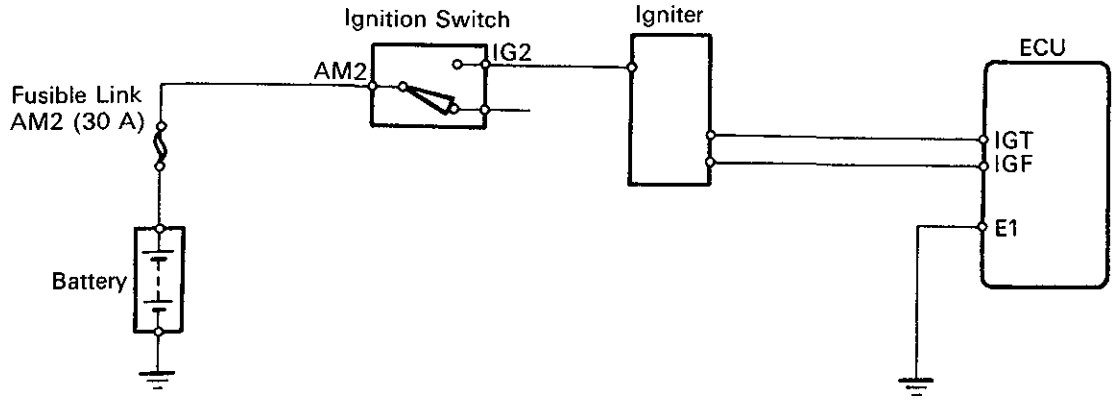
BAD → Replace or repair throttle position sensor.

OK → Check wiring between ECU and throttle position sensor.

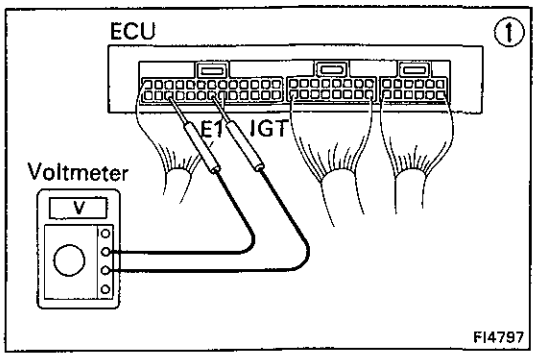
BAD

OK → Try another ECU.

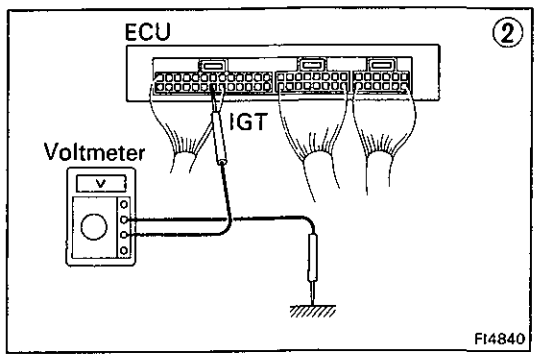
No.	Terminals	Trouble	Condition	STD Voltage
3	IGT – E1	No voltage	Idling	0.7 – 1.0 V



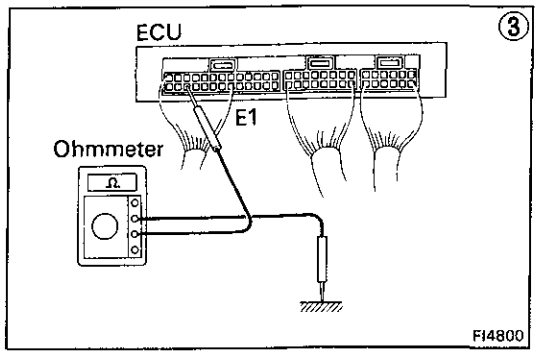
FI5019



FI4797



FI4840



FI4800

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)**

NO ↓ / OK →

③ Check wiring between ECU terminal E1 and body ground.

BAD → Repair or replace.

↓ NO

Refer to No.1. — BAD → Repair or replace.

↓ OK

Check wiring between igniter and distributor. — BAD → Repair or replace.

↓ OK

Check distributor. — BAD → Replace.

↓ OK

Check wiring between ECU and igniter. — BAD → Repair or replace.

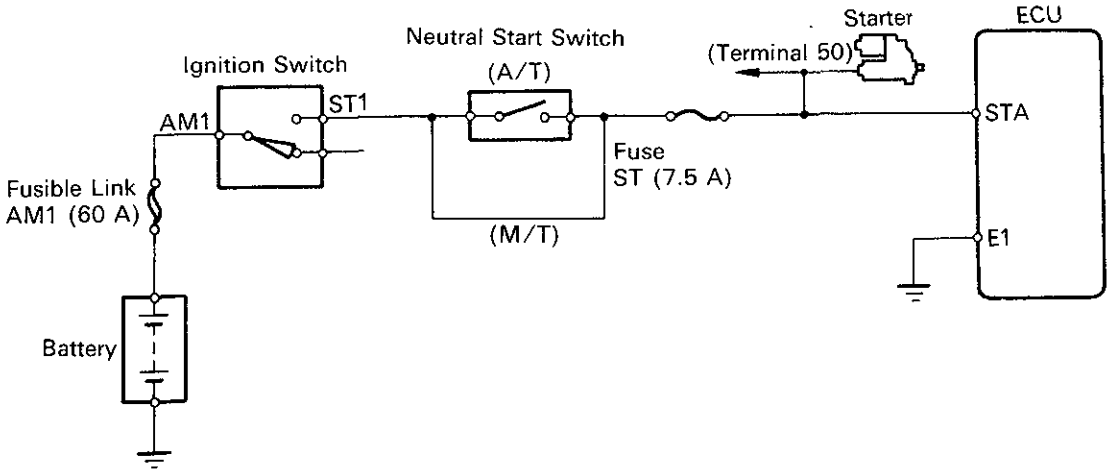
↓ OK

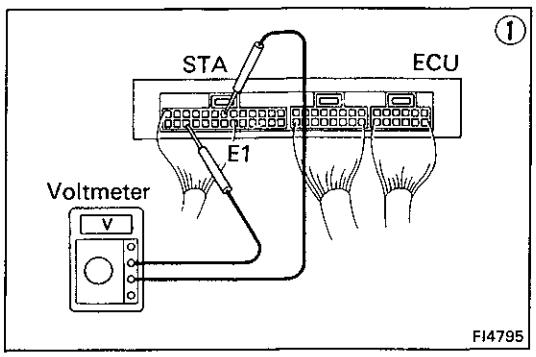
Check igniter. — BAD → Repair or replace.

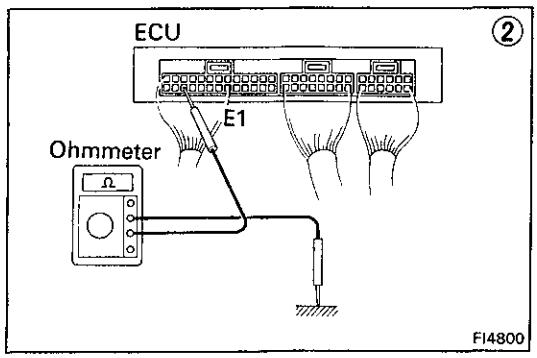
↓ OK

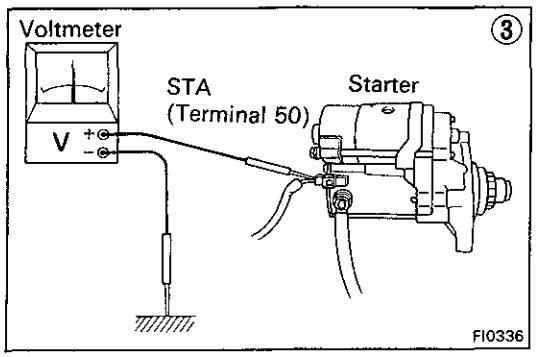
Try another ECU.

No.	Terminals	Trouble	Condition	STD Voltage
4	STA – E1	No voltage	Ignition switch ST position	6 – 12V





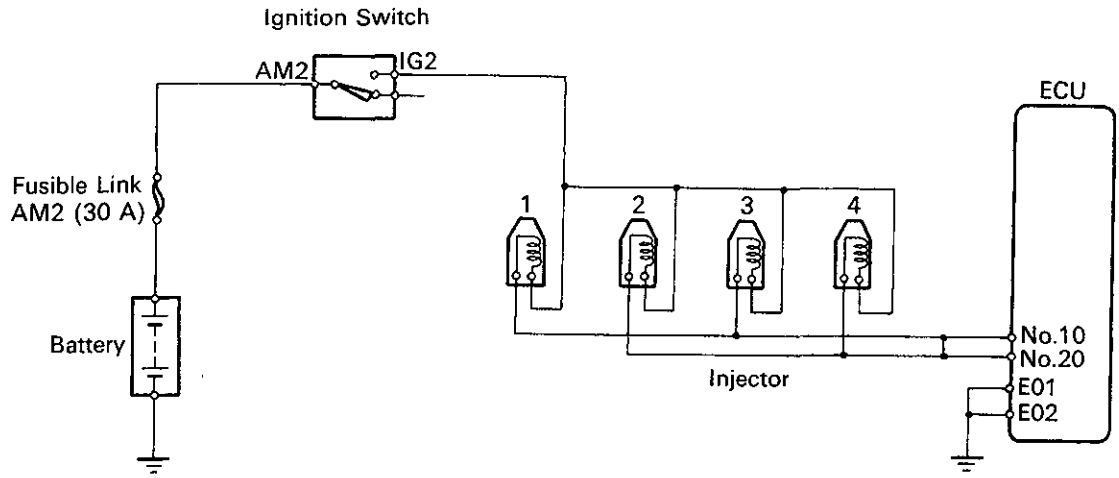


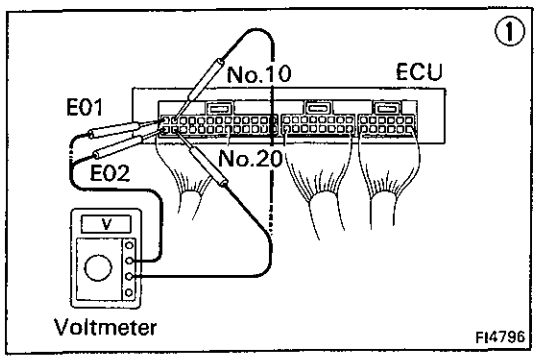


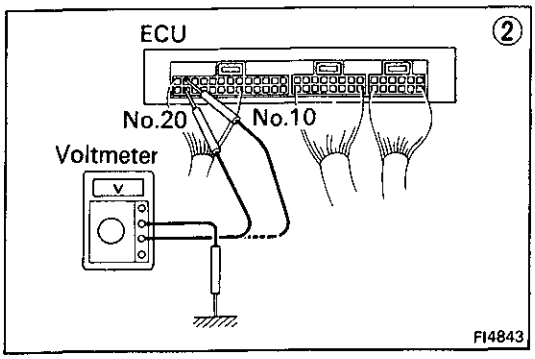
① There is no voltage between ECU terminals STA and E1. **(IG SW ST)**

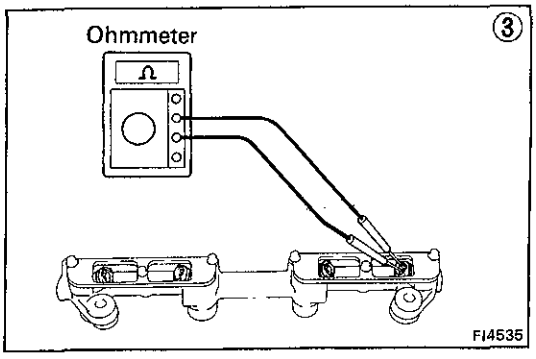
Check starter operation.
- OK → Check wiring between ECU and ignition switch terminal ST.
  - OK → ② Check wiring between ECU terminal E1 and body ground.
    - OK → Try another ECU.
    - BAD → Repair or replace
  - BAD → Repair or replace
- BAD → Check fusible link, battery, wiring and ignition switch.
  - BAD → Repair or replace
  - OK → ③ Check that there is voltage at STA (50) terminal of starter. **(IG SW ST) STD voltage: 6 – 12 V**
    - OK → Check starter. (See page ST-3)
    - NO → Check wiring between ignition switch ST terminal and starter STA (50) terminal.

No.	Terminals	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 ← ② → OK

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

Check wiring between ECU terminal E01 and/or E02 and body ground. → OK → Try another ECU.

Check wiring between ECU terminal E01 and/or E02 and body ground. → BAD → Repair or replace.

Check fusible link and ignition switch. → BAD → Repair or replace.

Check fusible link and ignition switch. → OK

↓

③ Check resistance of magnetic coil in each injector.
STD resistance: 13.4 – 14.2 Ω

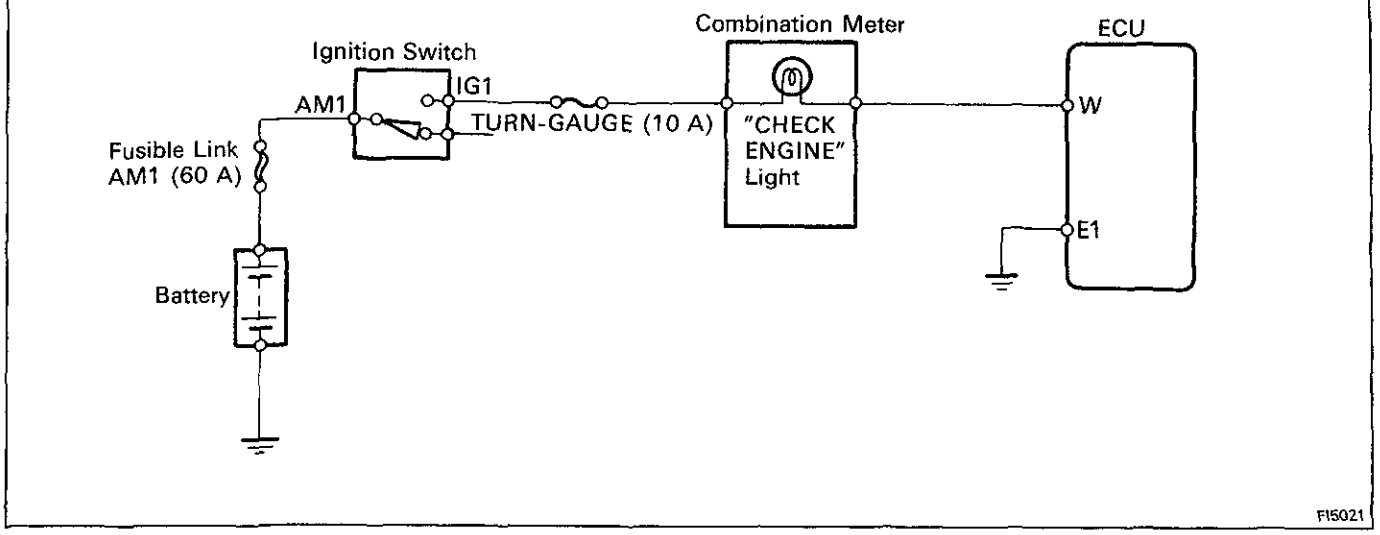
③ → OK

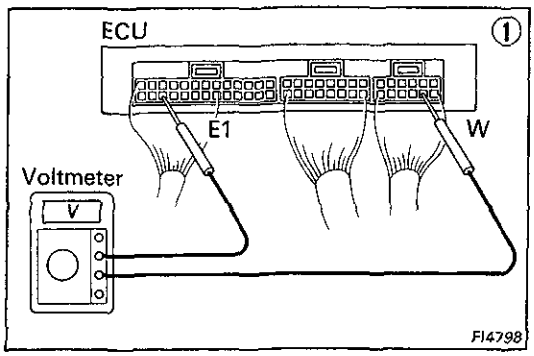
③ → BAD → Replace injector.

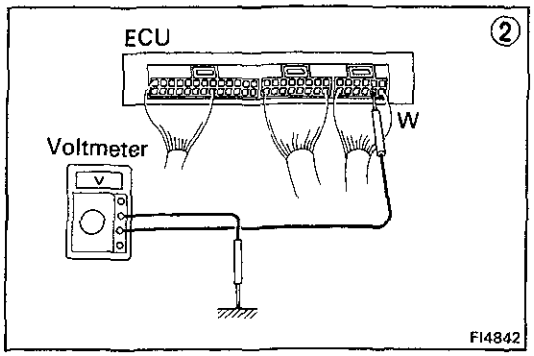
OK →

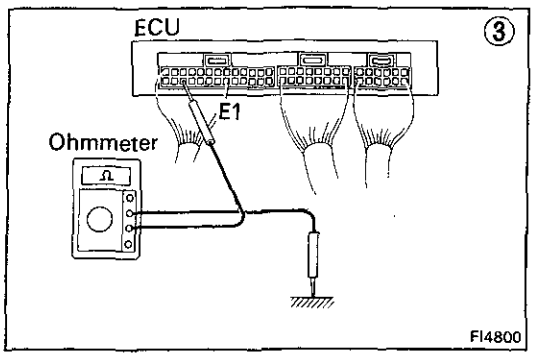
Check wiring between ECU terminal No.10 and/or No.20 and battery. → BAD → Repair or replace.

No.	Terminals	Trouble	Condition	STD Voltage
6	W – E1	No voltage	No trouble (CHECK ENGINE 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.

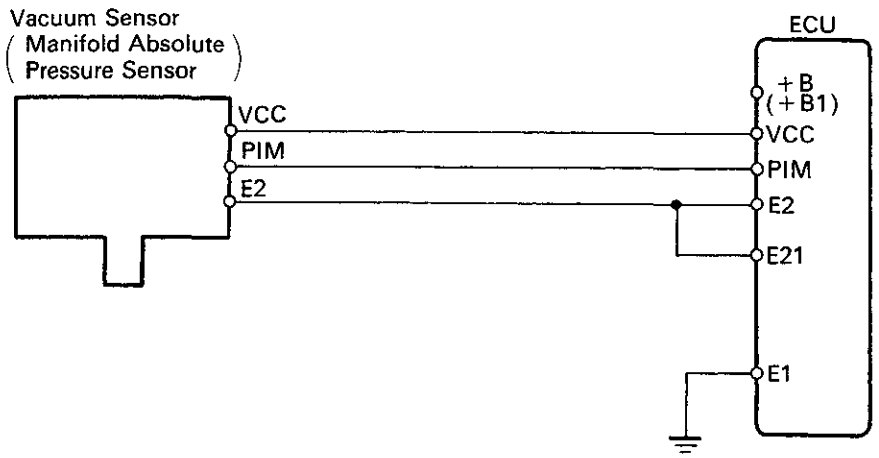
BAD → Repair or replace

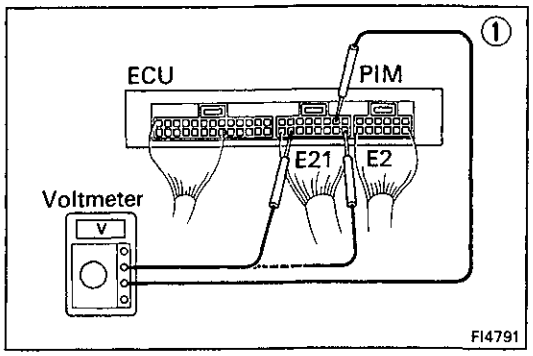
Check TURN-GAUGE (10 A) and CHECK ENGINE light. → BAD → Repair or replace

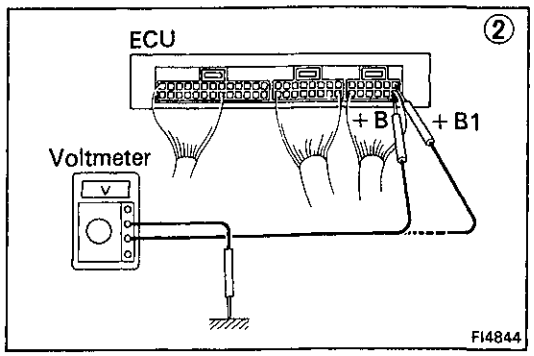
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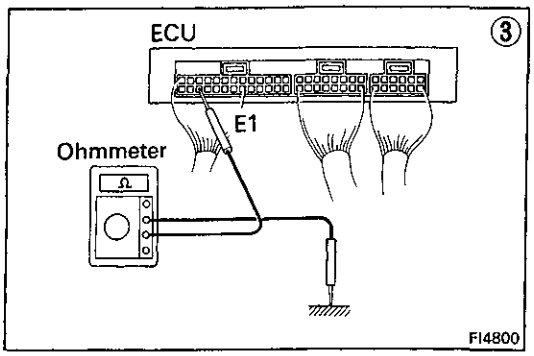
Check wiring between ECU terminal W and CHECK ENGINE light. → BAD → Repair or replace

No.	Terminals	Trouble	Condition	STD Voltage
7	PIM – E2 (E21)	No voltage	IG SW ON	3.3 – 3.9 V
	VCC – E2 (E21)			4.5 – 5.5 V









● **PIM – E2 (E21)**

① No voltage at ECU terminals PIM and E2 (E21). **(IG SW ON)**

↓

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

NO → ↓ OK

③ Check wiring between ECU terminal E1 and body ground.

↓ BAD → Repair or replace.

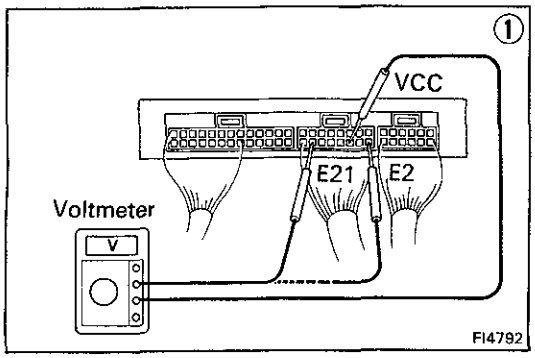
Refer to No.1. (See page FI-31) → BAD → Repair or replace.

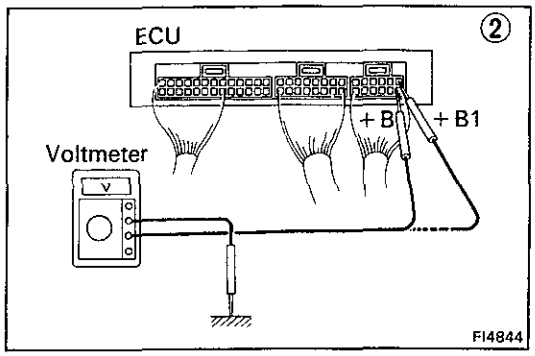
↓ OK

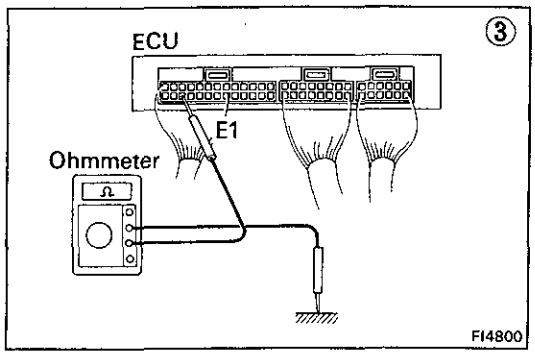
Check wiring between ECU vacuum sensor. → BAD → Repair or replace.

↓ OK

Try another ECU.







• **VCC – E2 (E21)**

① No voltage at ECU terminals VCC and E2 (E21). **(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.
- BAD → Repair or replace.

OK ↓

Refer to No.1. (See page FI-31)
- BAD → Repair or replace.

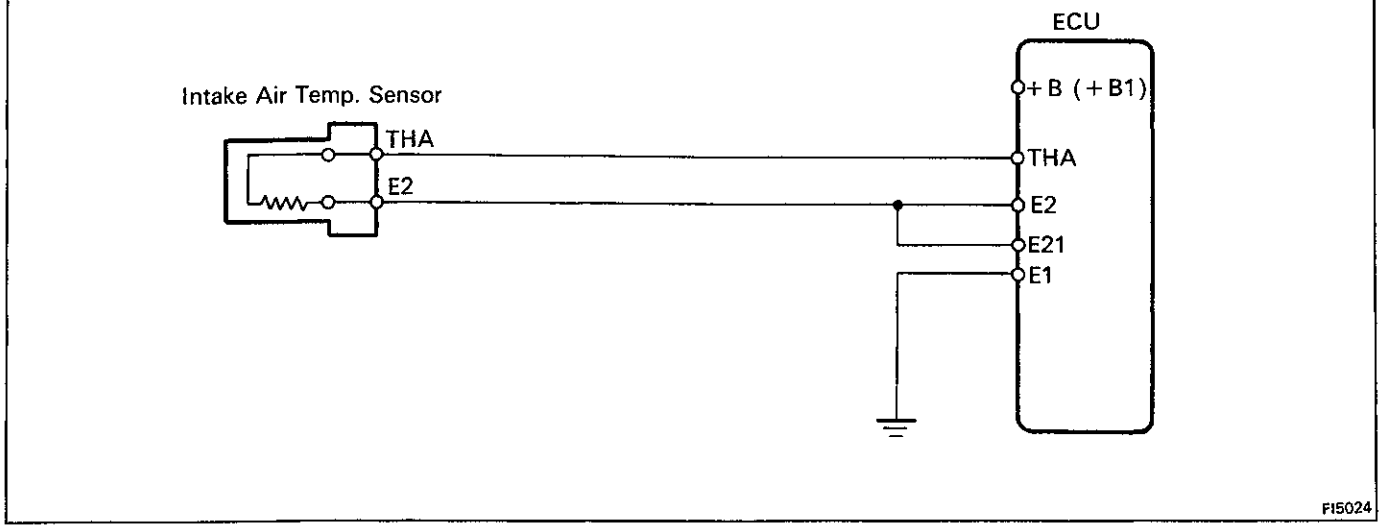
OK ↓

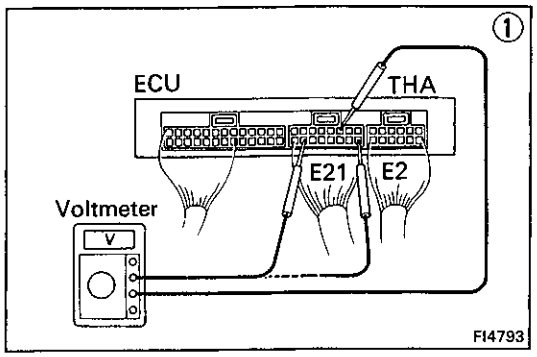
Check wiring between ECU vacuum sensor.
- BAD → Repair or replace.

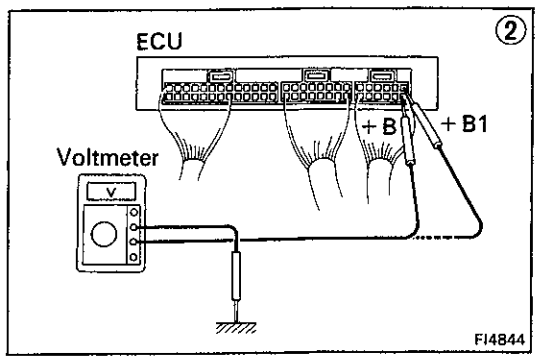
OK ↓

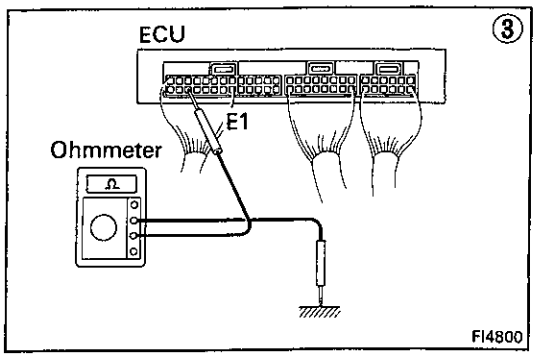
Try another ECU.

No.	Terminals	Trouble	Condition		STD Voltage
8	THA – E2 (E21)	No voltage	IG SW ON	Intake air temp. 20°C (68°F)	2.0 – 2.8 V









① No voltage between ECU terminals THW and E2 (E21). **(IG SW ON)**

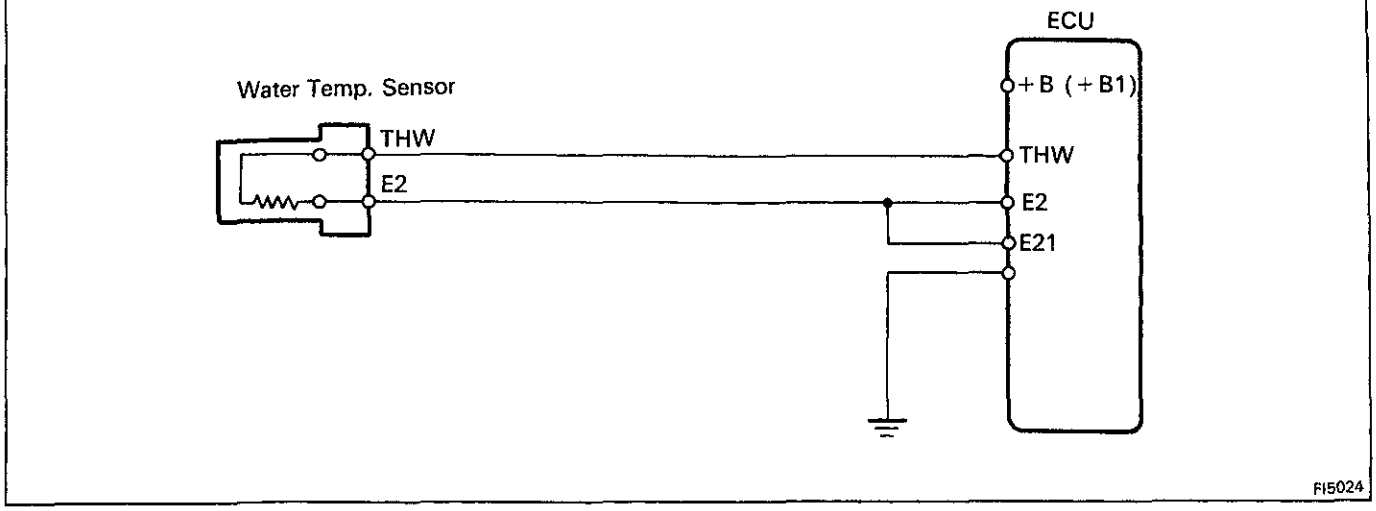
② Check that there is voltage between ECU terminal +B (+B1) and body ground. **(IG SW ON)**

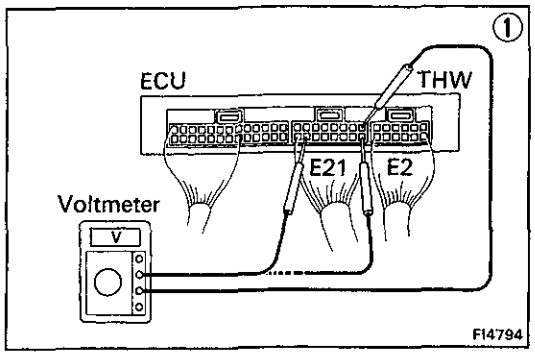
- NO → Refer to No.1. (See page FI-31)
- OK →

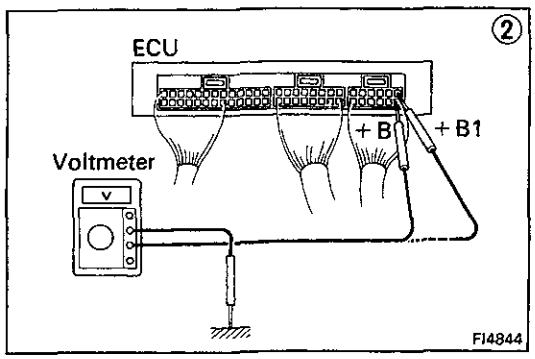
③ Check wiring between ECU terminal E1 and body ground.

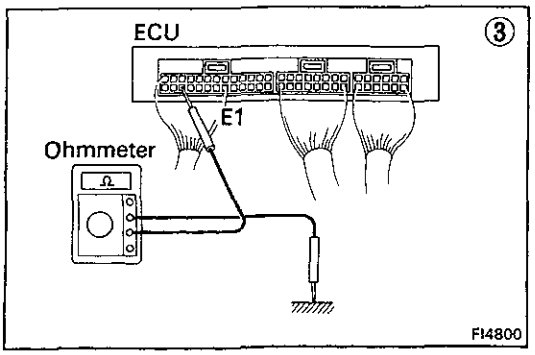
- BAD → Repair or replace.
- OK → Check air temp. sensor. (See page FI-70)
  - BAD → Repair air temp. sensor.
  - OK → Check wiring between ECU and air temp. sensor.
    - BAD → Repair or replace wiring.
    - OK → Try another ECU.

No.	Terminals	Trouble	Condition		STD Voltage
9	THW – E2 (E21)	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 (E21). **(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 terminals E1 and body ground.

NO → Refer to No.1. (See page FI-31)

Check wiring between ECU terminals E1 and body ground.

OK → ③ Check water temp. sensor.

BAD → Repair or replace.

③ Check water temp. sensor.

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.