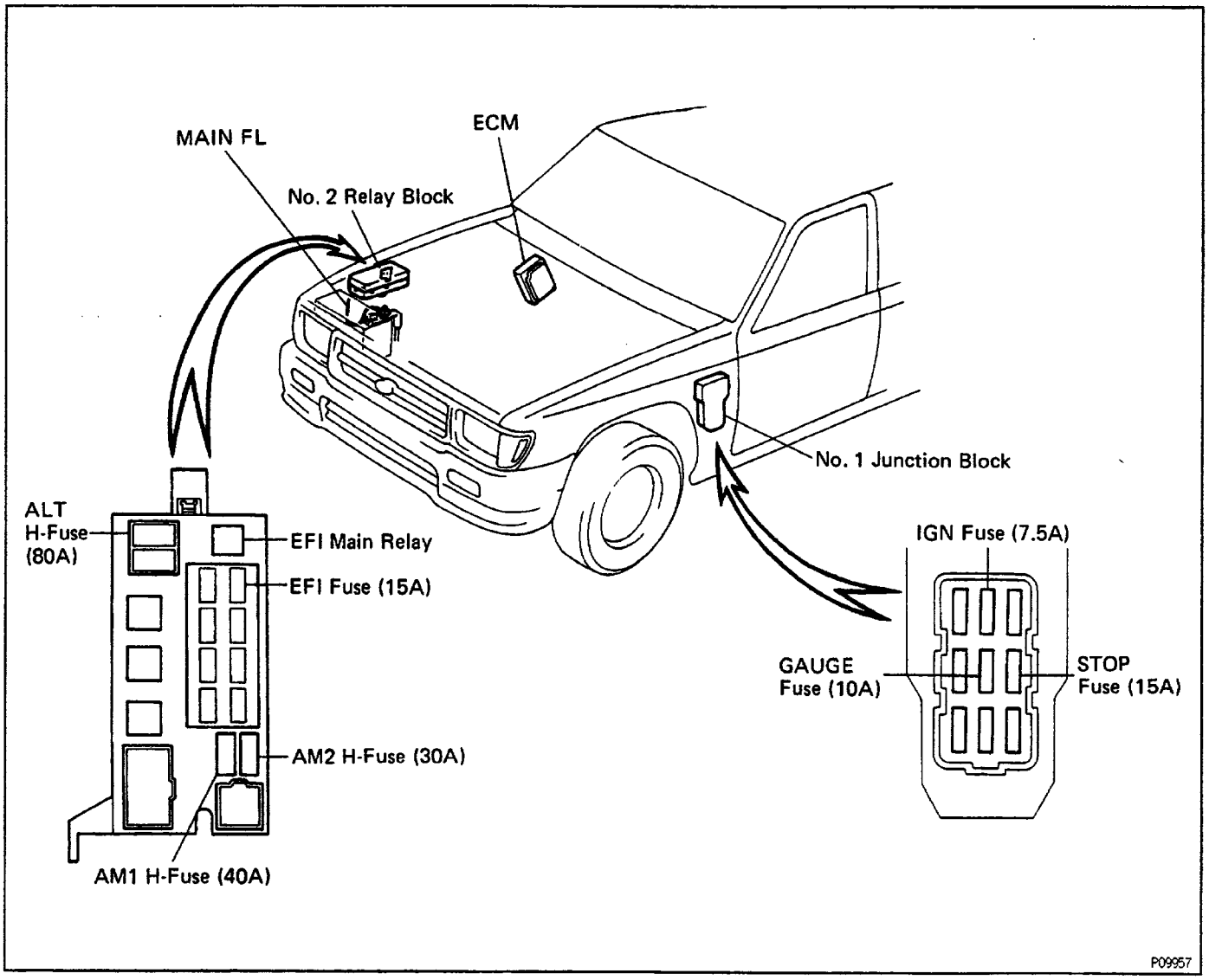
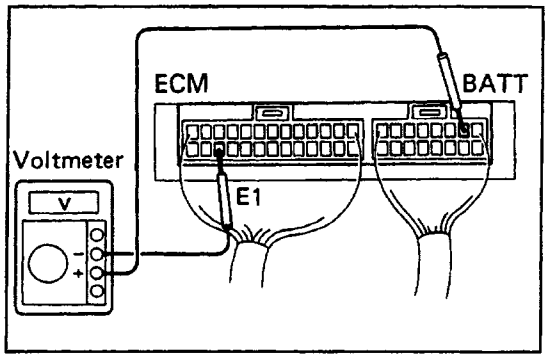
TROUBLESHOOTING WITH VOLT OHMMETER

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 to first 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 though proper operating voltage is detected in the computer connector, then the ECM is faulty and should be replaced.

FUSES, H–FUSES AND FUSIBLE LINK LOCATION

EG1XG–01





SYSTEM CHECK PROCEDURE (2WD)

EG1XH–01

HINT:

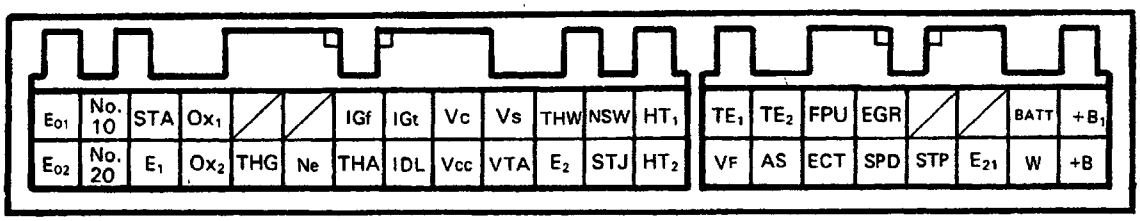
- Perform all voltage measurements with the connec–tors connected.
- Verify that the battery voltage is 11 V or more when the ignition switch is in ”ON” position.
  Using a voltmeter with high impedance (l0 kΩ/V minimum), measure the voltage at each terminal of the wiring connectors.

Terminals of ECM (2WD)

Symbol	Terminal Name	Symbol	Terminal Name
E_{01}	ENGINE GROUND	E_2	SENSOR GROUND
E_{02}	ENGINE GROUND	*2 NSW	PNP SWITCH
No.10	INJECTOR	STJ	COLD START INJECTOR
No.20	INJECTOR	HT_1	OXYGEN SENSOR HEATER (MAIN)
STA	STARTER SWITCH	*1 HT_2	OXYGEN SENSOR HEATER (SUB)
E_1	ENGINE GROUND	TE_1	DLC 1
Ox_1	OXYGEN SENSOR (MAIN)	V_F	DLC 1
*1 Ox_2	OXYGEN SENSOR (SUB)	TE_2	DLC 1
*1 THG	EGR GAS TEMP. SENSOR	AS	PAIR VALVE
Ne	DISTRIBUTOR	Fpu	FUEL PRESSURE CONTROL VSV
IGf	IGNITER	*2 ECT	OD relay
THA	INTAKE AIR TEMP. SENSOR	*1 EGR	EAR VSV
IGt	IGNITER	SPD	SPEED SENSOR
IDL	THROTTLE POSITION SENSOR	STP	STOP LIGHT SWITCH
Vc	VOLUME AIR FLOW METER	E_{21}	SENSOR GROUND
Vcc	THROTTLE POSITION SENSOR	BATT	BATTERY POSITIVE VOLTAGE
Vs	VOLUME AIR FLOW METER	W	MALFUNCTION INDICATOR LAMP
VTA	THROTTLE POSITION SENSOR	$+B_1$	MAIN RELAY
THW	ENGINE COOLANT TEMP. SENSOR	+B	MAIN RELAY

*1: California only *2: A/T only

ECM Terminals



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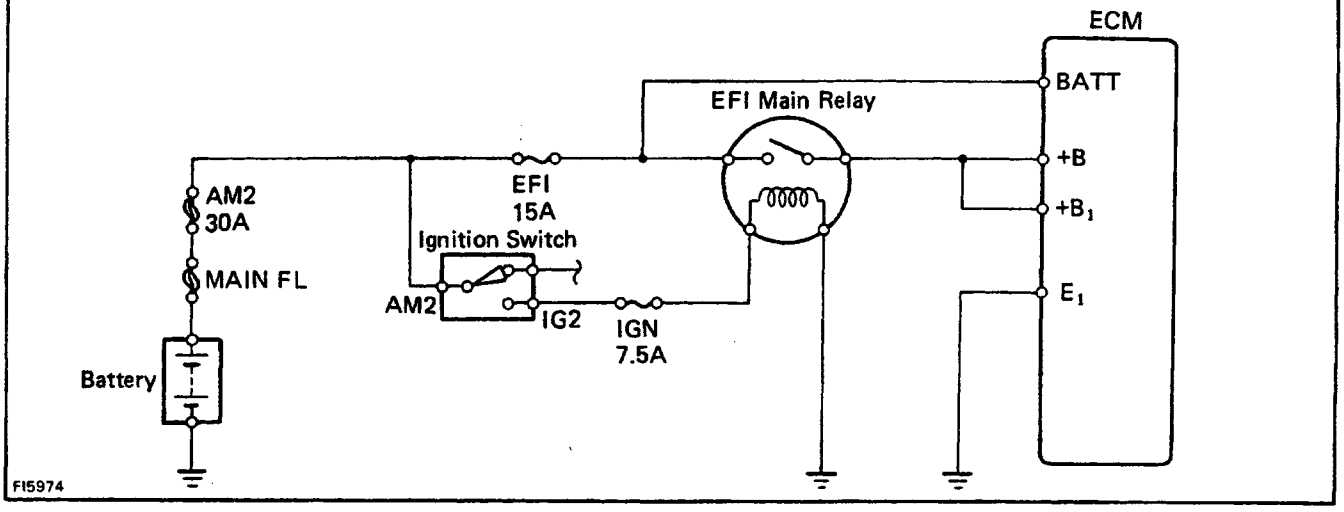
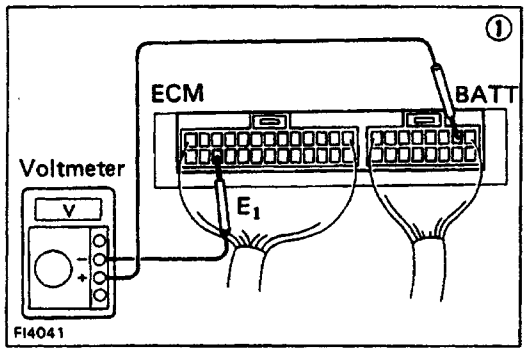
Voltage at ECM Wiring Connectors (2WD)

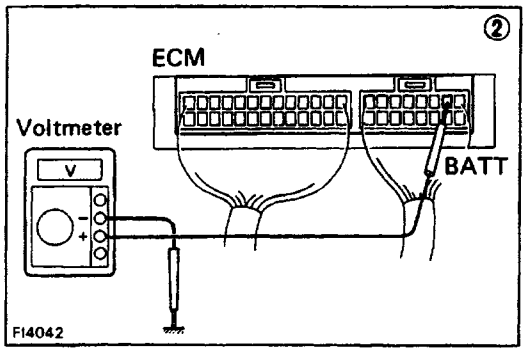
No.	Terminals	Condition		STD voltage	See page
1	BATT – E_1	–		9 – 14	EG1–125
	+B – E_1	Ignition switch ON			
	$+B_1$ – E_1				
2	IDL – E_2 (E_{21})	Ignition switch ON	Throttle valve open	9 – 14	EG1–127
	Vcc – E_2 (E_{21})		–	4.5 – 5.5	
	VTA – E_2 (E_{21})		Throttle valve fully closed	0.3 – 0.8	
			Throttle valve fully open	3.2 – 4.9	
3	Vc – E_2 (E_{21})	Ignition switch ON	–	6 – 10	EG1–129
	Vs – E_2 (E_{21})		Measuring plate fully closed	0.5 – 2.5	
			Measuring plate fully open	5 – 10	
		Idling		2 – 8	
	THA – E_2 (E_{21})	Ignition switch ON	Intake air temperature 20°C (68° F)	0.5 – 3.4	
4	THW – E_2 (E_{21})	Ignition switch ON	Coolant temperature 80°C (176° F)	0.2 – 1.0	EG1–131
5	STA – E_1	Ignition switch START position		6 – 12	EG1–132
6	No. 10 – E_{01} No. 20 – E_{02}	Ignition switch ON		9 – 14	EG1–133
7	IGt – E_1	Idling		0.7 – 1.0	EG1–134
8	W – E_1	No trouble (MIL off) and engine running		9 – 14	EG1–135
9	STJ – E_1	Ignition switch START position	Coolant temperature 80 °C (176°F)	6 – 12	EG1–136
10	STP – E_1	Stop light switch ON		7.5 – 14	EG1–137

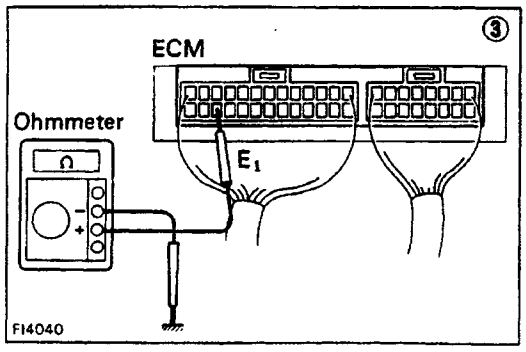
V01795

No.	Terminals	Trouble	Condition	STD Voltage
1	**BATT – E_1**	No voltage	–	**9 – 14 V**
	+B – E_1		Ignition switch ON	
	+B_1 – E_1			









- **BATT – E 1**

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

(2) Check that there is voltage between ECM terminal BATT and body ground.

NO → OK

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

OK → Try another ECM.

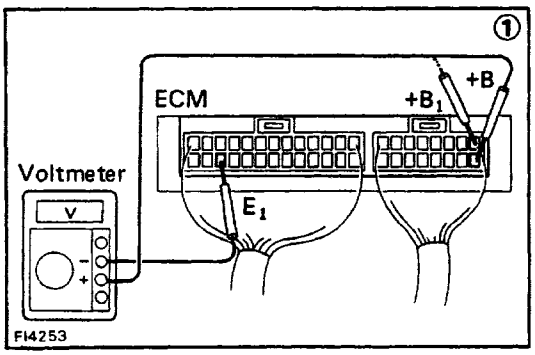
BAD → Repair or replace.

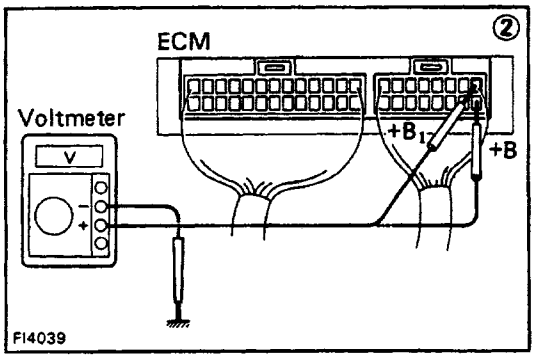
Check fuse and fusible link. BAD → Replace.

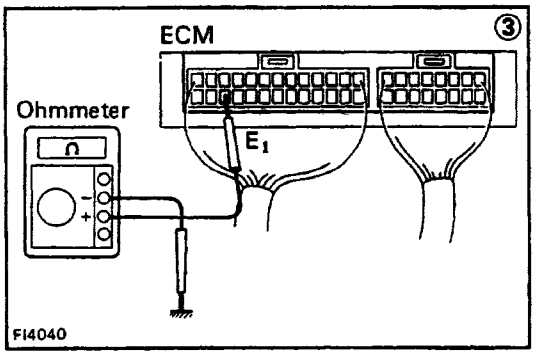
OK

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

V01796







- **+B (+B1) – E 1**

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

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

NO → **OK**

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

OK → Try another ECM.

BAD → Repair or replace.

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

OK

Check EFI main relay. BAD → Replace.

OK

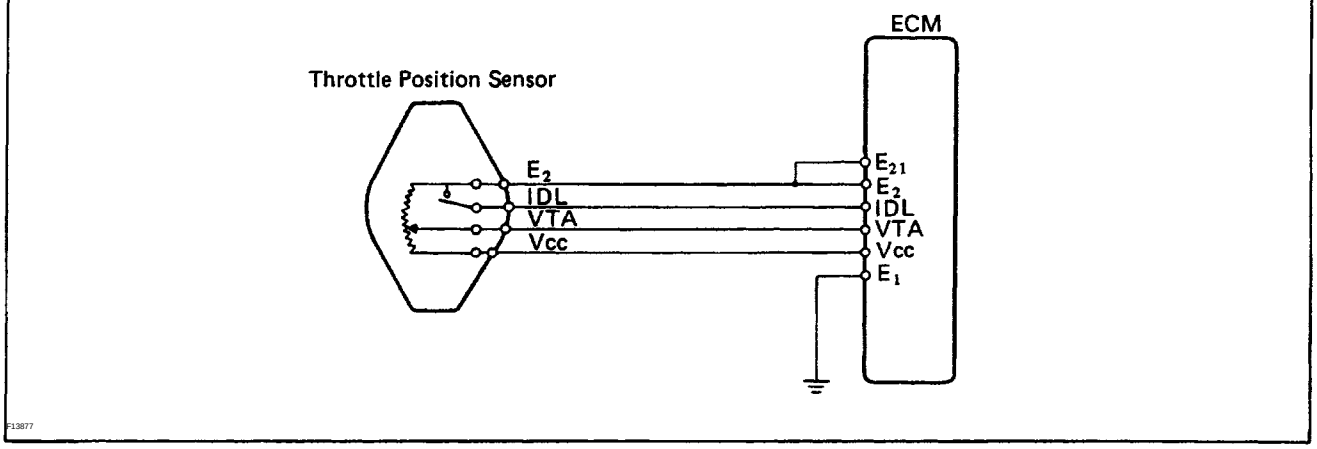
Check wiring between EFI main relay and battery. BAD → Repair or replace.

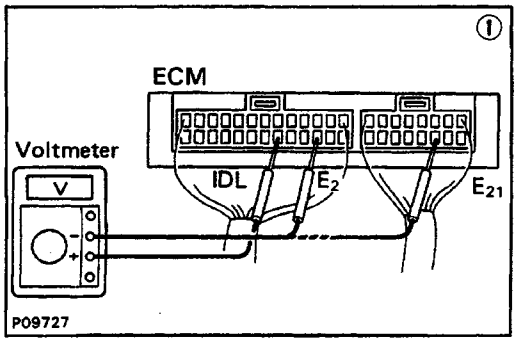
OK

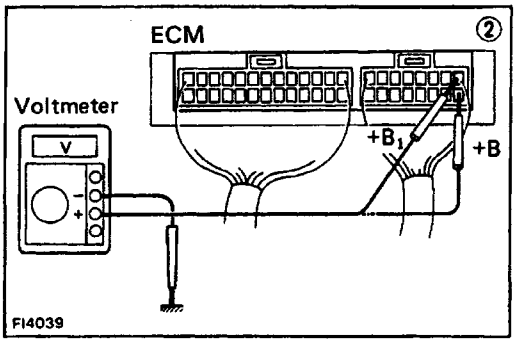
Check wiring between EFI main relay and ECM terminal +B (+B1). BAD → Repair or replace.

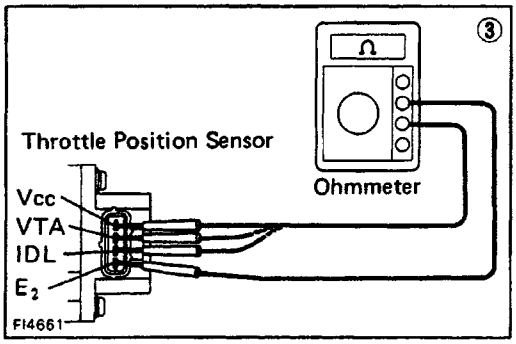
V01797

No.	Terminals	Trouble	Condition		STD Voltage
2	IDL – E_2 (E_{21})	No voltage	Ignition switch ON	Throttle valve open	9 – 14 V
	Vcc – E_2 (E_{21})			–	4.5 – 5.5 V
	VTA – E_2 (E_{21})			Throttle valve fully closed	0.3 – 0.8 V
				Throttle valve fully open	3.2 – 4.9 V









- **IDL – E2 (E21)**

(1) There is no voltage between ECM terminals IDL and E2 (E21). **(IG SW ON)** (Throttle valve open)

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

NO → Refer to No. 1. → BAD → Replace or repair.

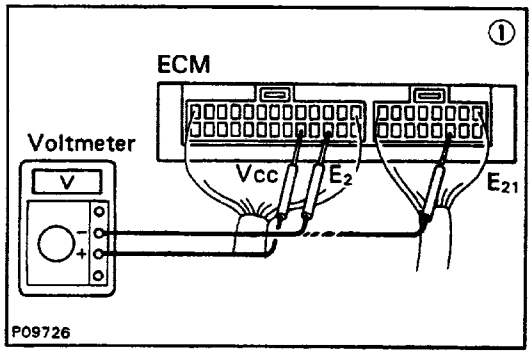
OK → Check wiring between ECM terminal E1 and body ground.

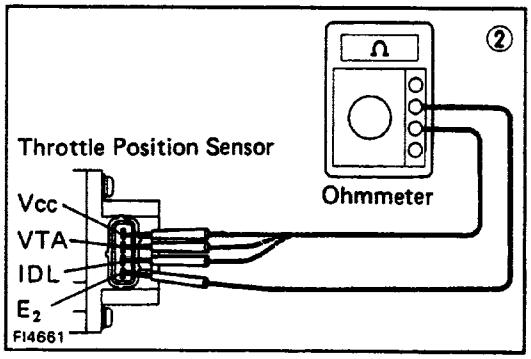
OK → Check throttle position sensor.

BAD → Replace or repair.

OK → Check wiring between ECM and throttle position sensor.

OK → Try another ECM.





- **Vcc – E2 (E21)**

(1)There is no voltage between ECM terminals Vcc and E2(E21) **(IG SW ON)**

Check that there is voltage between ECM terminals + B (+ B1) and E1. **(IG SW ON)**

OK → (2) Check throttle position sensor.

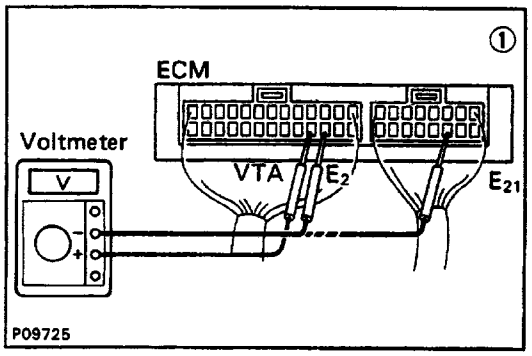
NO → Refer to No. 1.

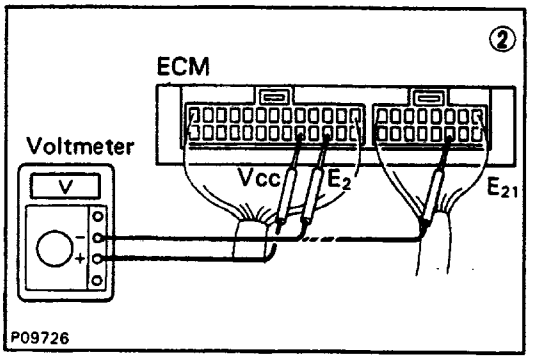
BAD → Repair or replace.

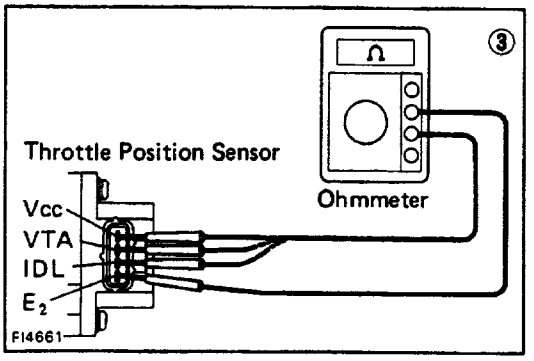
OK → Check wiring between ECM and throttle position sensor.

OK → Try another ECM.

BAD → Repair or replace wiring.







- **VTA – E2 (E21)**

(1) There is no voltage between ECM terminals VTA and E2 (E21). **(IG SW ON)**

(2) Check that there is voltage between ECM terminals Vcc and E2 (E21). **(IG SW ON)**

OK → Check throttle position sensor.

NO → Perform inspection of Vcc – E2(E21).

BAD → Repair or replace.

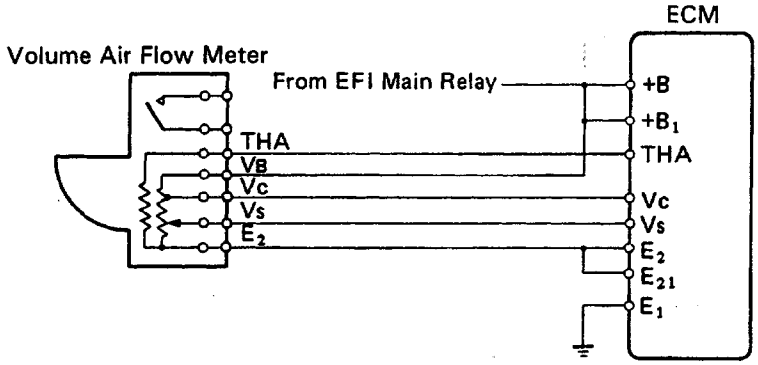
OK → Check wiring between ECM and throttle position sensor.

BAD → Repair or replace.

OK → Try another ECM.

V01799

No.	Terminals	Trouble	Condition		STD Voltage
3	**Vc – E_2 (E_{21})**	No voltage	Ignition switch	–	**6 – 10 V**
	Vs – E_2 (E_{21})			Measuring plate fully closed	**0.5 – 2.5 V**
				Measuring plate fully open	**5 – 10 V**
			ON	Idling	**2 – 8 V**
	THA – E_2 (E_{21})		Ignition switch ON	Intake air temperature 20°C (68° F)	**0.5 – 3.4 V**



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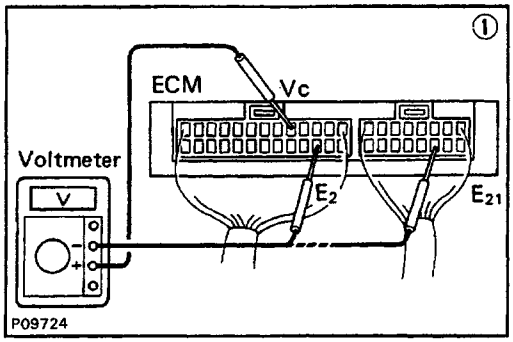

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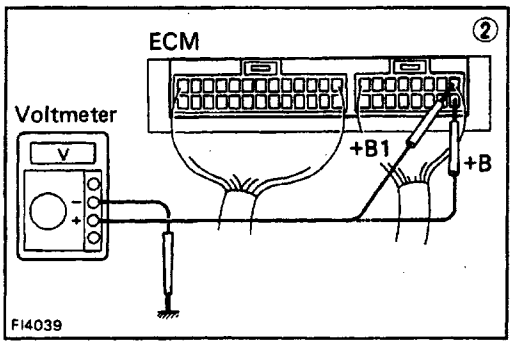

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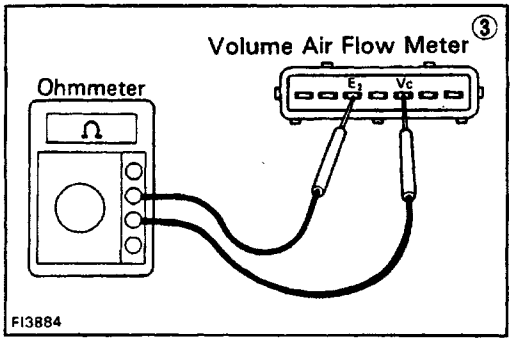

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- **Vc–E2 (E21)**

(1) There is no voltage between ECM terminals Vc and E2 (E21). **(IG SW ON)**

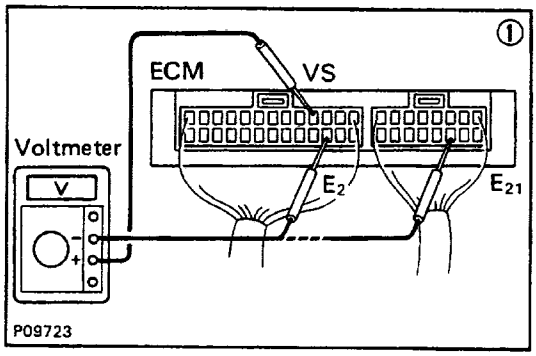
↓

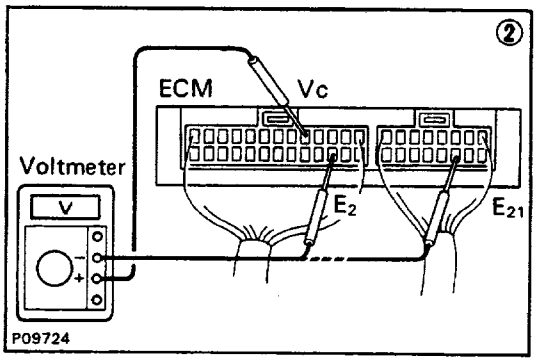
(2) Check that there is voltage between ECM terminals + B (+ B1) and E1. **(IG SW ON)**

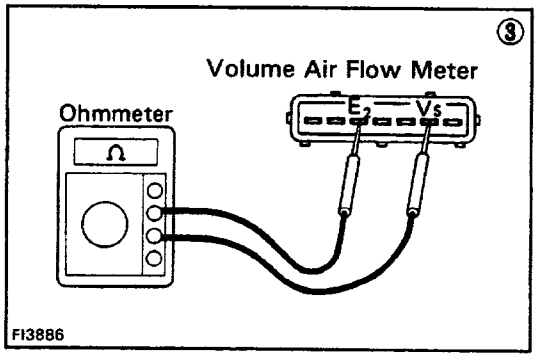
↓ OK → (3) Check volume air flow meter.

- BAD → Replace or repair volume air flow meter.
- OK → Check wiring between ECM and volume air flow meter.
  - OK → Try another ECM.
  - BAD → Replace or repair wiring.

NO → Refer to No. 1.







- **Vs – E2 (E21)**

(1) There is no voltage between ECM terminals Vs and E2 (E21) **(IG SW ON)**

(2) Check that there is voltage between ECM terminals Vc and E2 (E12). **(IG SW ON)**

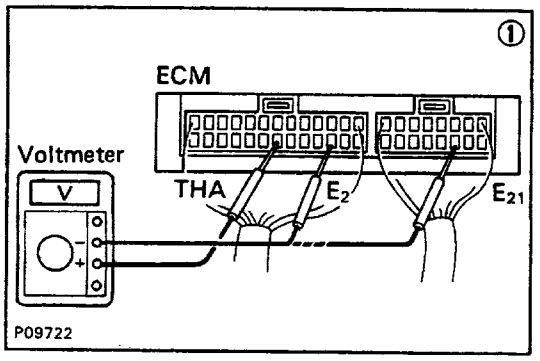
OK → (3) Check volume air flow meter.

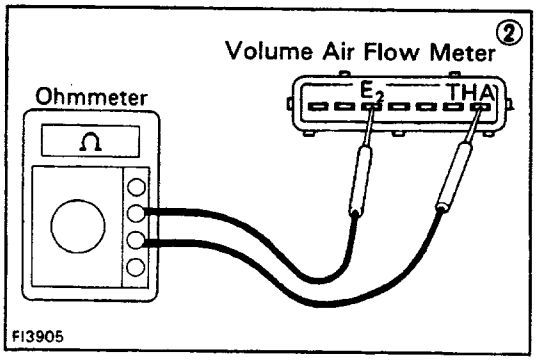
NO → Refer to Vc – E2 (E21). BAD → Repair or replace.

(3) Check volume air flow meter. BAD → Repair or replace.

OK → Check wiring between ECM and volume air flow meter. BAD → Repair or replace.

OK → Try another ECM.





- **THA – E2 (E21)**

(1) There is no voltage between ECM terminals THA and E2(E21). **(IG SW ON)**

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

OK → Check intake air temp. sensor.

NO → Refer to No. 1.

Check intake air temp. sensor.

BAD → Replace volume air flow meter.

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

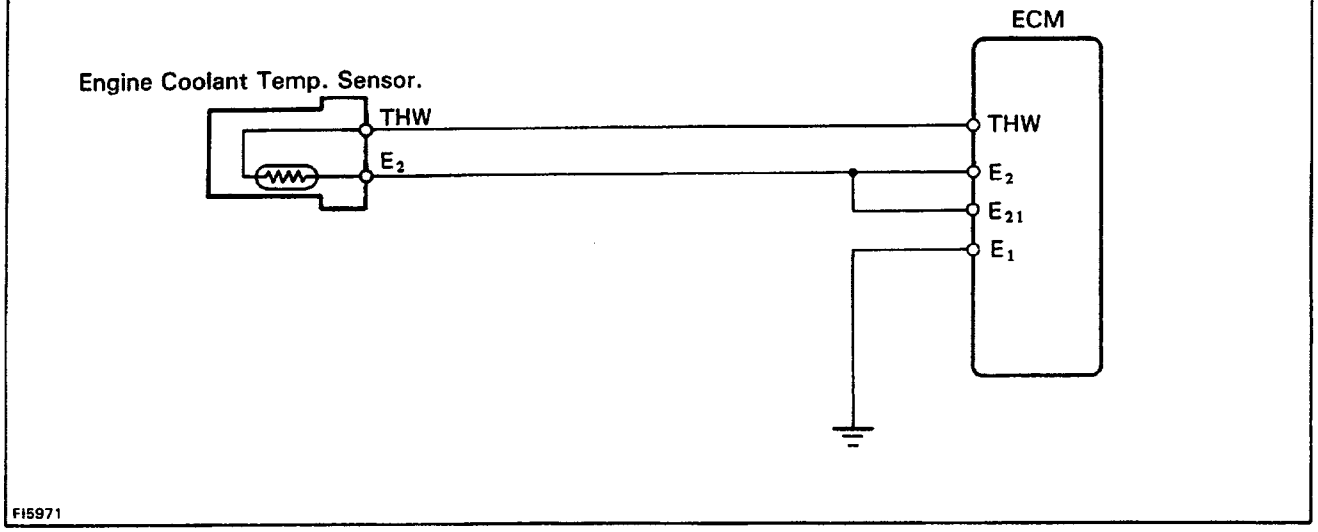
Check wiring between ECM and intake air temp. sensor.

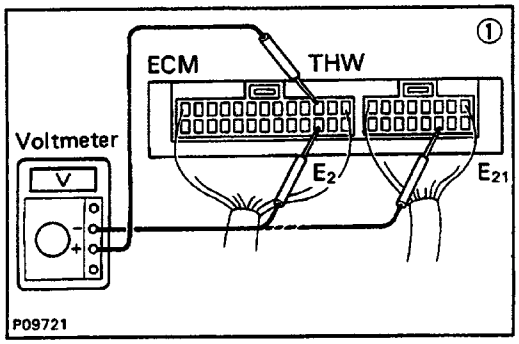
OK → Try another ECM.

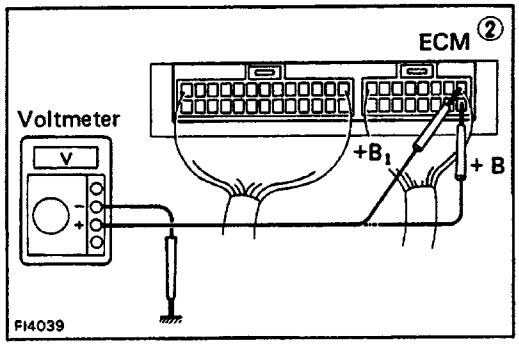
BAD → Repair or replace wiring.

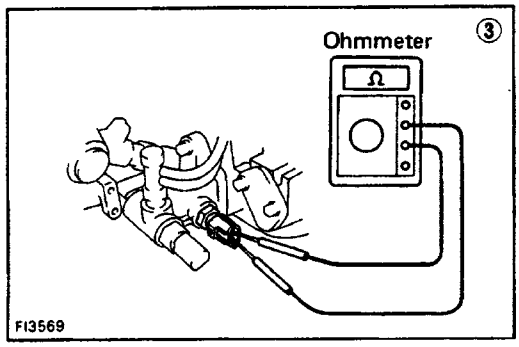
V01801

No.	Terminals	Trouble	Condition		STD Voltage
4	**THW – E_2 (E_{21})**	No voltage	Ignition switch ON	Coolant temperature 80°C (176° F)	**0.2 – 1.0 V**









(1) There is no voltage between ECM terminals THW and E2 (E21) **(IG SW ON)**

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

OK — **NO** → Refer to No. 1.

Check wiring between ECM terminal E1 and body ground.

OK — BAD → Repair or replace.

(3) Check engine coolant temp. sensor.

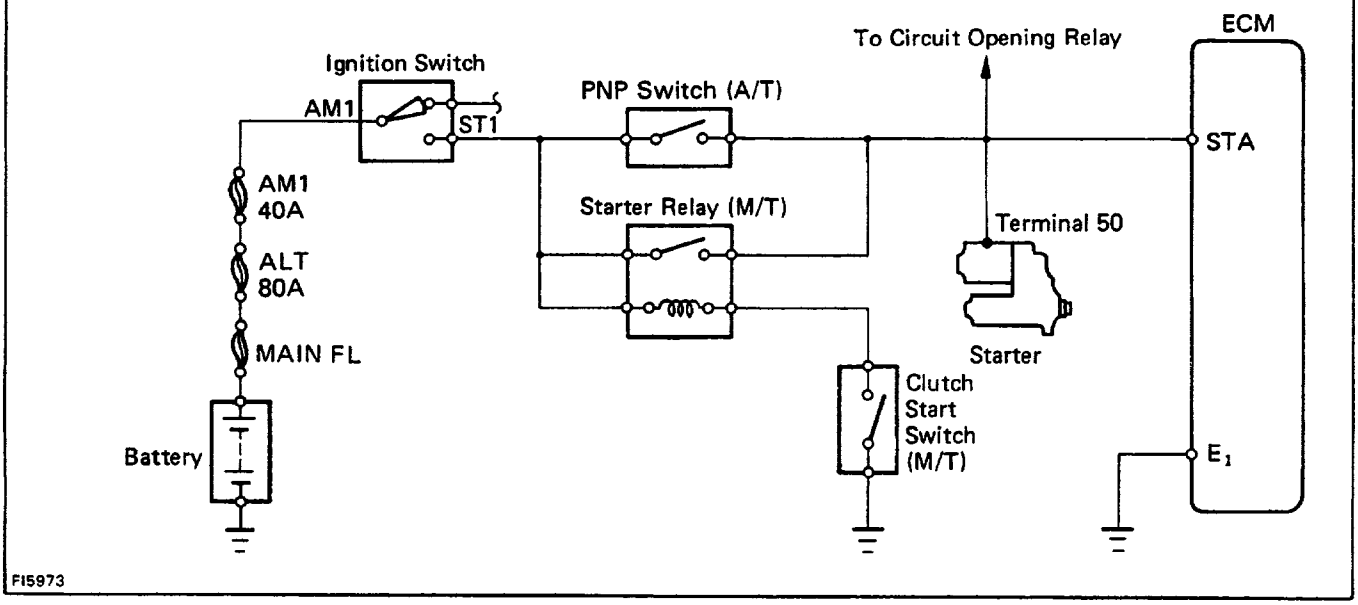
BAD → Replace engine coolant temp. sensor.

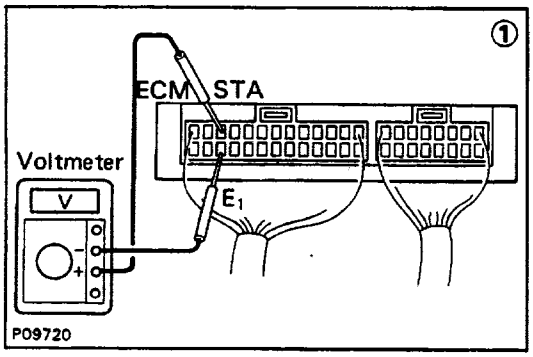
OK → Check wiring between ECM and engine coolant temp. sensor.

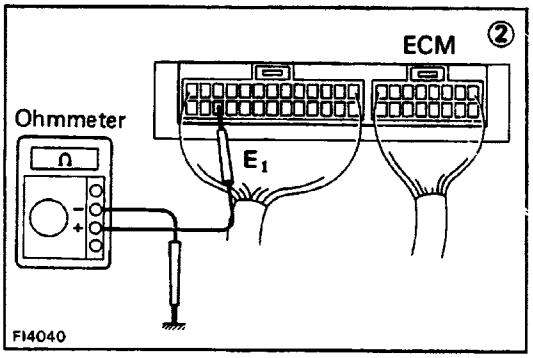
OK → Try another ECM

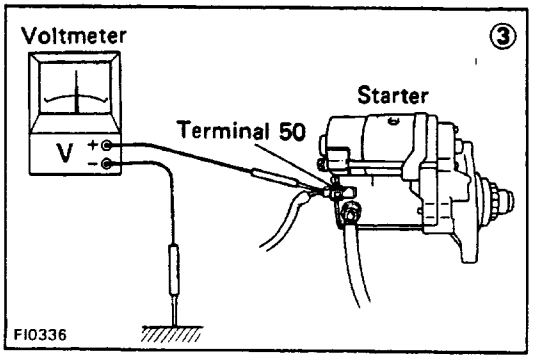
BAD → Repair or replace.

No.	Terminals	Trouble	Condition	STD Voltage
5	STA – E 1	No voltage	Ignition switch START position	6 –12v







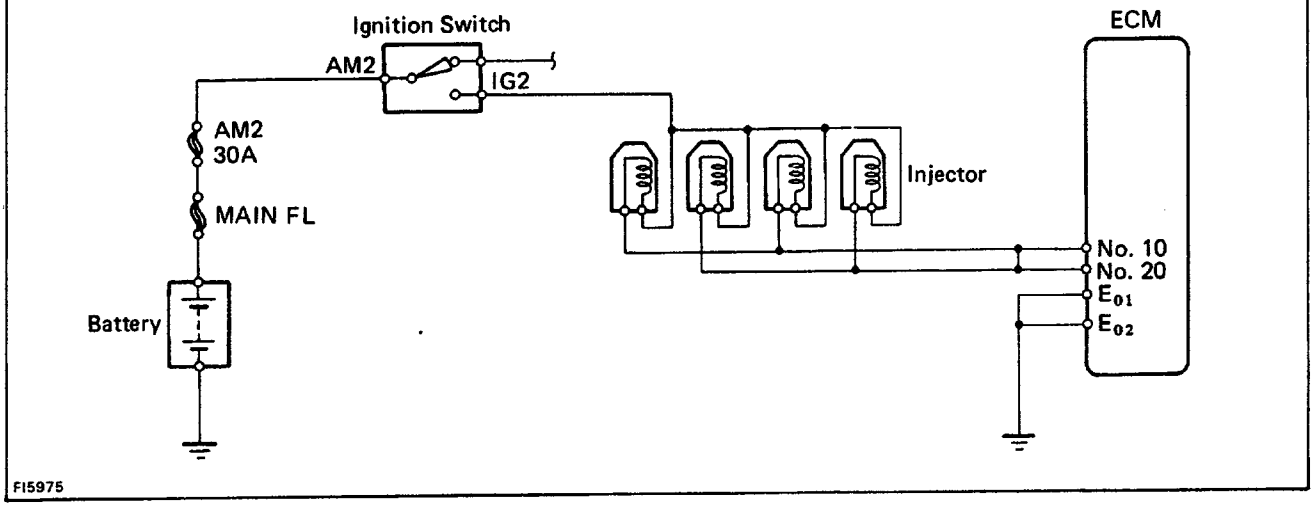


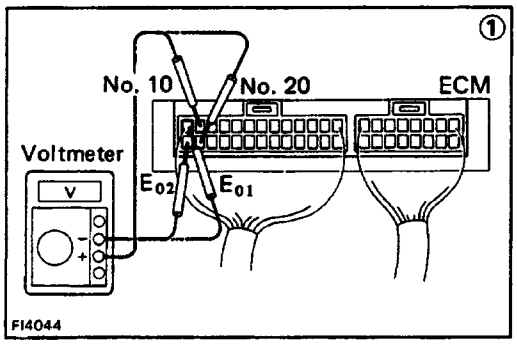
(1) There is no voltage between ECM terminals STA and E1 **(IG SW START)**

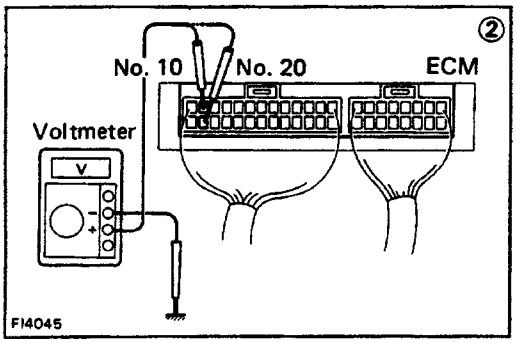
Check starter operation.
- OK → Check wiring between ECM and ignition switch terminal ST.
  - OK → (2) Check wiring between ECM terminal E1 an body ground.
    - OK → Try another ECM.
    - BAD → Repair or replace.
  - BAD → Repair or replace.
- BAD → Check fusible link, battery, wiring and ignition switch.
  - BAD → Repair or replace.
  - OK → (3) Check that there is voltage at terminal 50 of starter. **(IG SW START) STD Voltage: 6 –12 V**
    - OK → Check starter. (See ST section)
    - NO → Check wiring between ignition switch ST1 terminal and starter terminal 50.

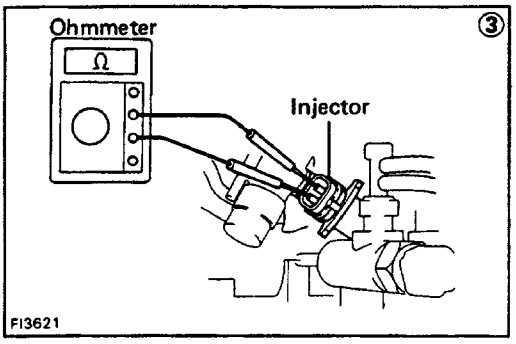
V01803

No.	Terminals	Trouble	Condition	STD Voltage
6	No. 10 _ E_{01} No. 20 E_{02}	.No voltage	Ignition switch ON	9 – 14 V









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

↓

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

NO → OK

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

OK → Try another ECM.

BAD → Repair or replace.

NO → Check fusible link and ignition switch.

BAD → Repair or replace.

OK →

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

OK →

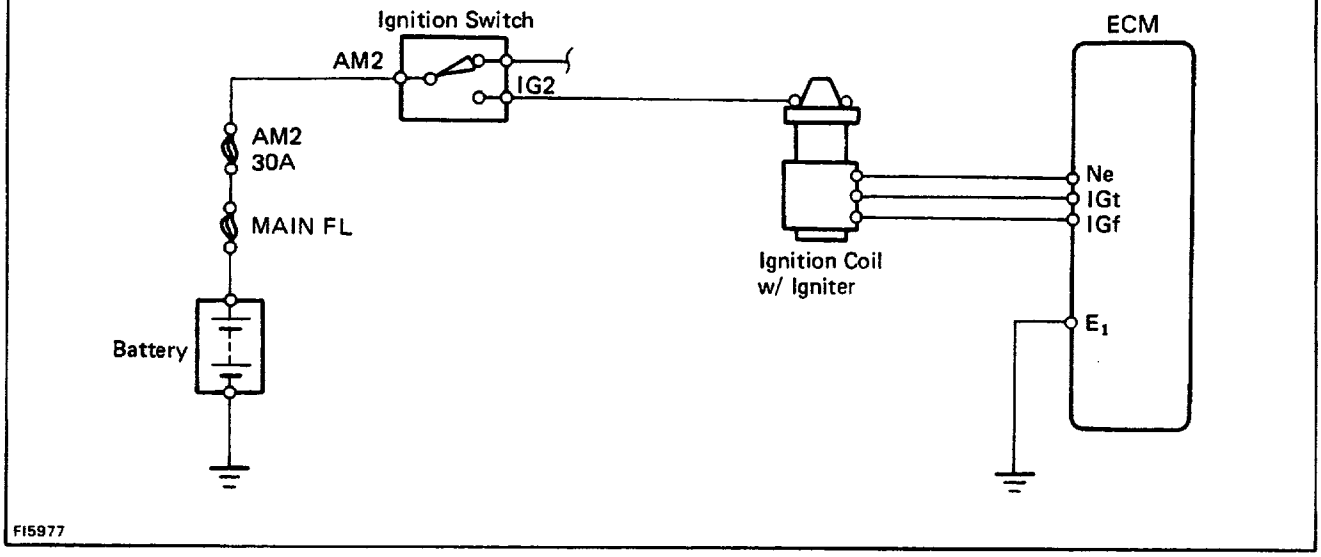
NO → Replace injector.

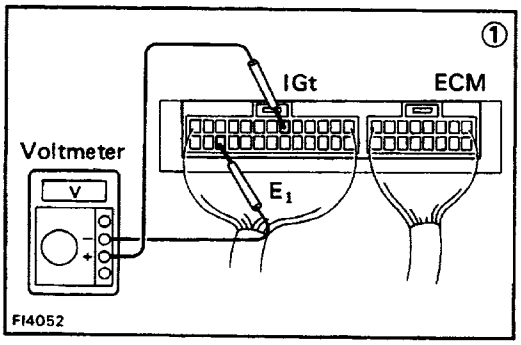
Check wiring between ECM terminal No. 10 and/or No. 20 and battery.

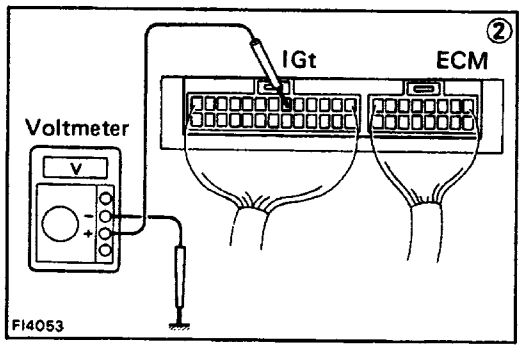
BAD → Repair or replace.

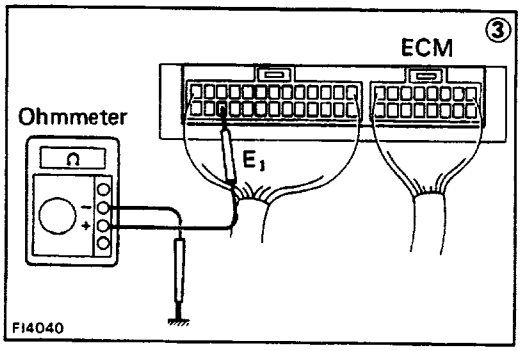
V01804

No.	Terminals	Trouble	Condition	STD Voltage
7	IGt – E1	No voltage	Idling	0.7 – 1.0 v









(1) There is no voltage between ECM terminals IGt and E1. **(idling)**

↓

(2) Check that there is voltage between ECM terminal IGt and body ground. **(Idling)**

NO → Refer to No. 1.

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

BAD → Repair or replace.

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 ECM and igniter. → BAD → Repair or replace.

OK ↓

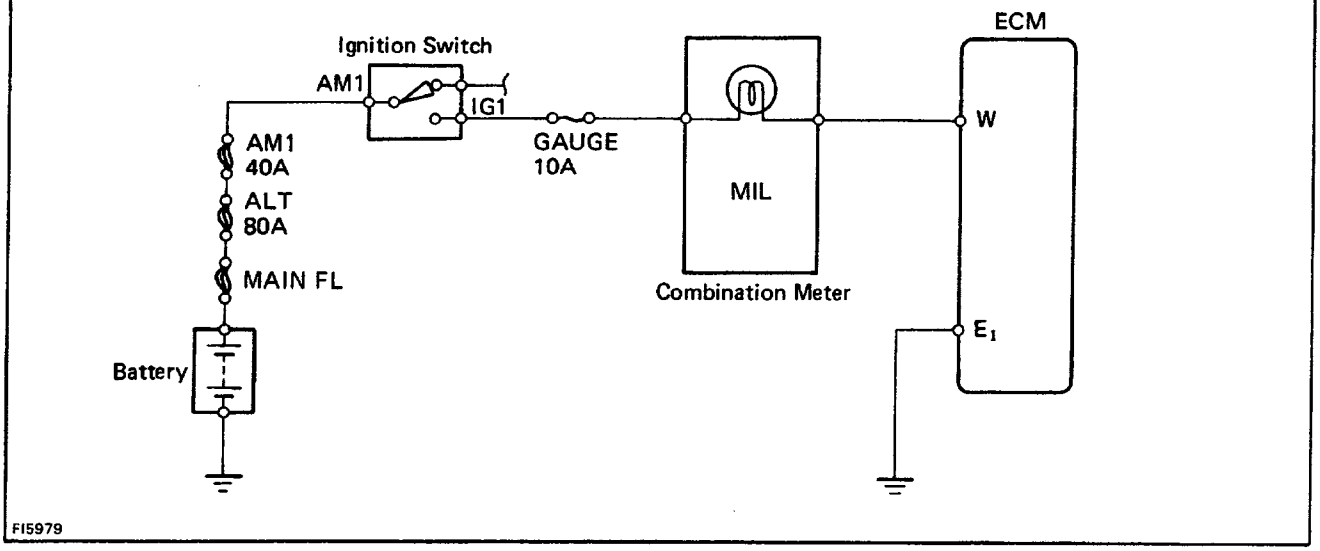
Check igniter. → BAD → Repair or replace.

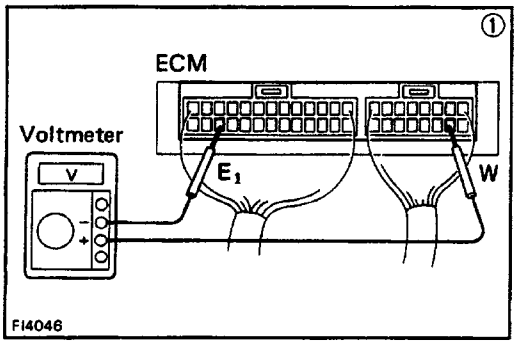
OK ↓

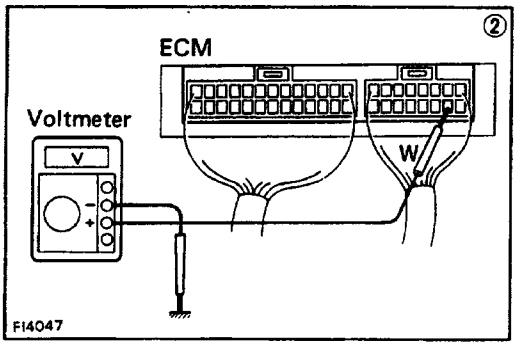
Try another ECM.

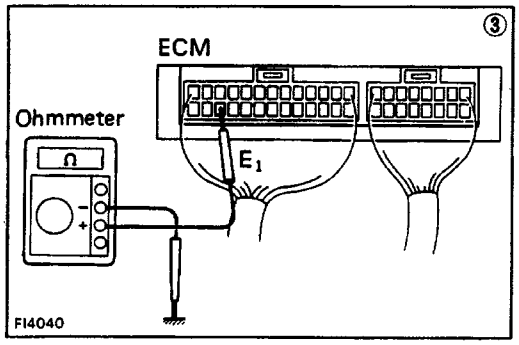
V01805

No.	Terminals	Trouble	Condition	STD Voltage
8	W – E1	No voltage	No trouble (MIL off) and engine running	9 – 14V









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

↓

(2) Check that there is voltage between ECM terminal W and body ground.

NO → ↓

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

OK → Try another ECM.

BAD → Repair or replace.

↓

Check GAUGE fuse (10 A) and MIL.

OK → ↓

BAD → Repair or replace.

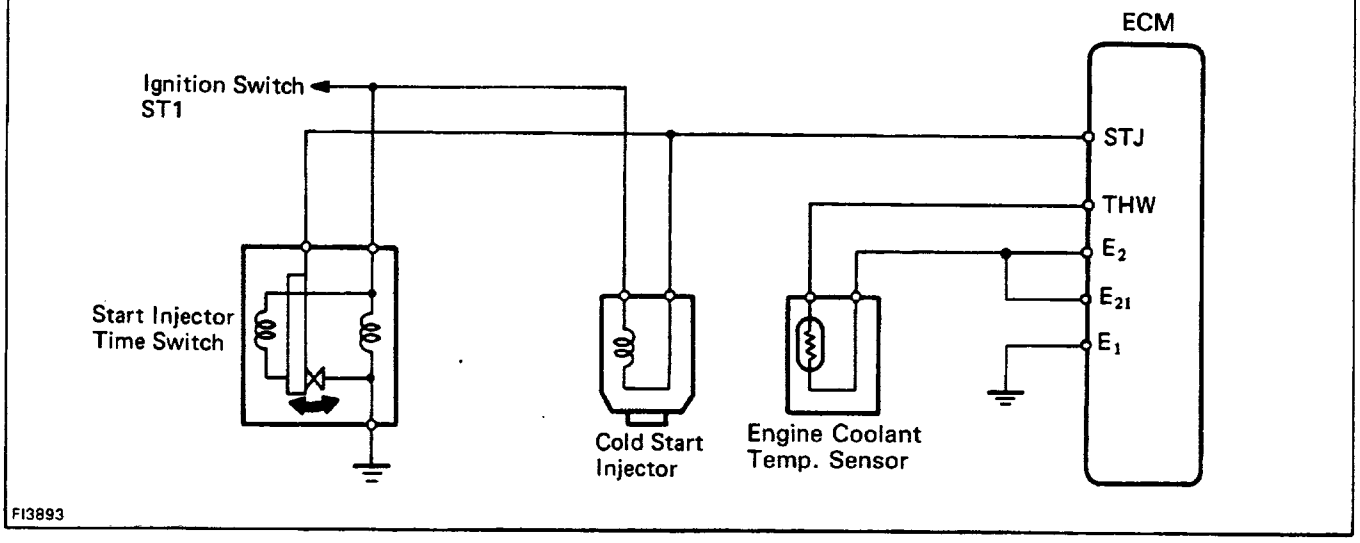
Fuse blows again → ↓

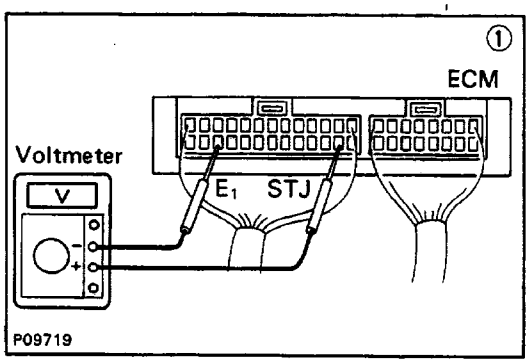
Check wiring between ECM terminal W and fuse.

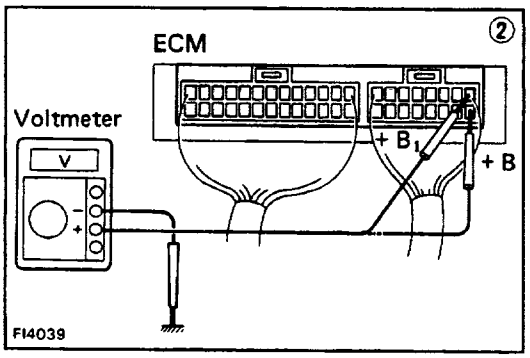
BAD → Repair or replace.

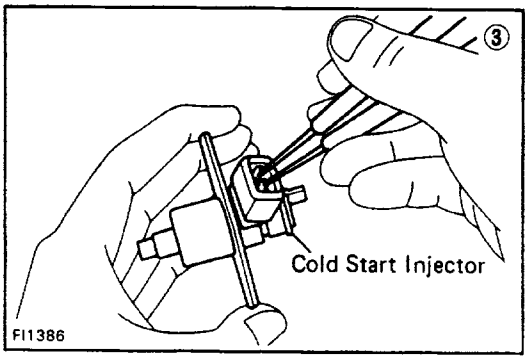
V01806

No.	Terminal	Trouble	Condition		STD Voltage
9	STJ – E 1	No voltage	Ignition switch . START position	Coolant temperature 80°C (176° F)	6 –12V









(1) There is no voltage between ECM terminals STJ and E1. (IG SW START)

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

OK

NO

(3) Check cold start injector.

Refer to No. 1.

BAD

OK

Replace cold start injector.

Check wiring between ECM and cold start injector.

OK

BAD

Check wiring between ECM terminal E1 and body ground.

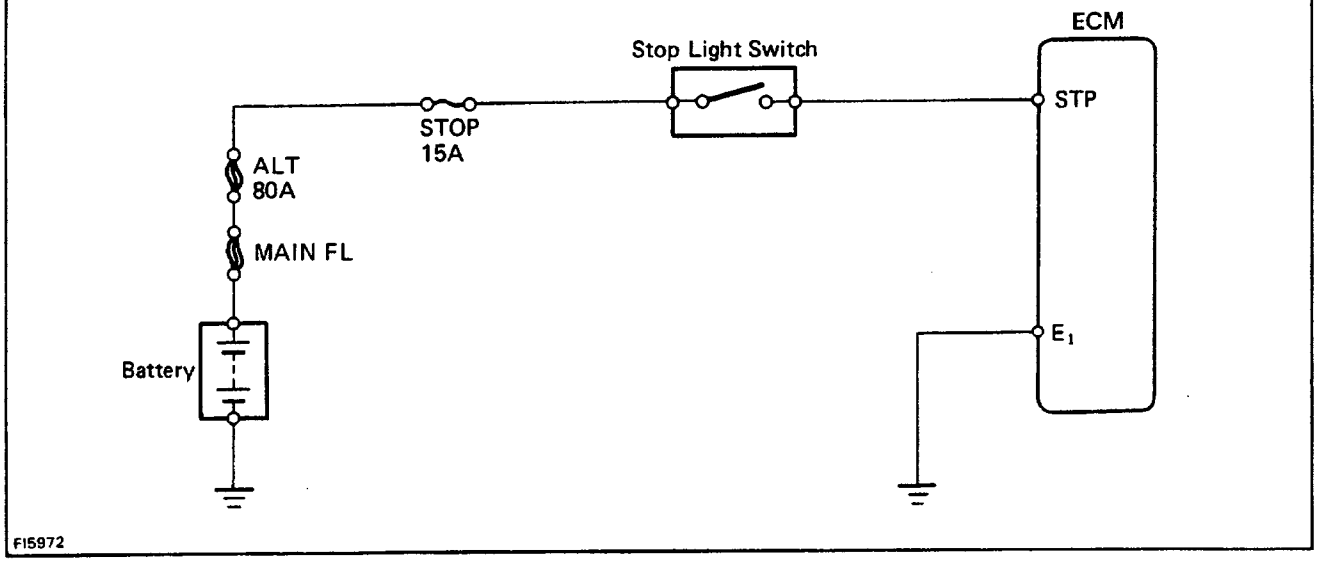
OK

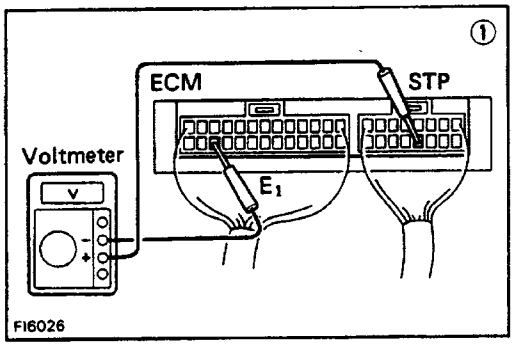
Try another ECM.

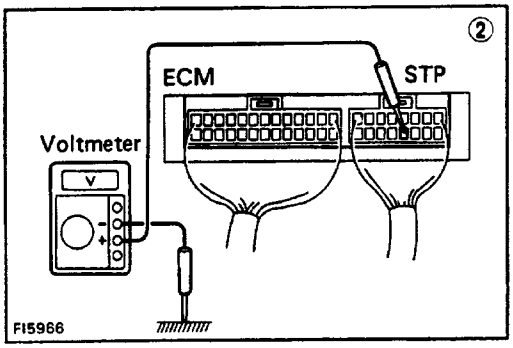
Repair or replace wiring.

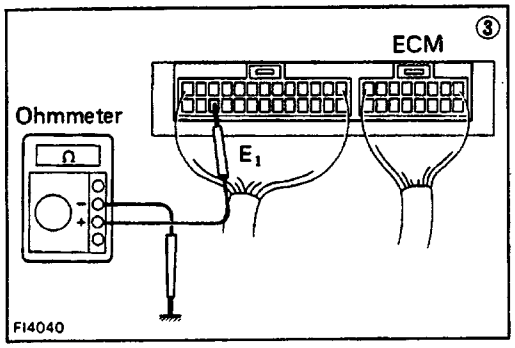
V01807

No.	Terminals	Trouble	Condition	STD Voltage
10	STP – E1	No voltage	Stop light switch ON	7.5 – 14 V









(1) There is no voltage between ECM terminals STP and E1.

↓

(2) Check that there is voltage between ECM terminal STP and body ground when the brake pedal is depressed.

NO → OK

↓

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

OK → Try another ECM.

BAD → Repair or replace.

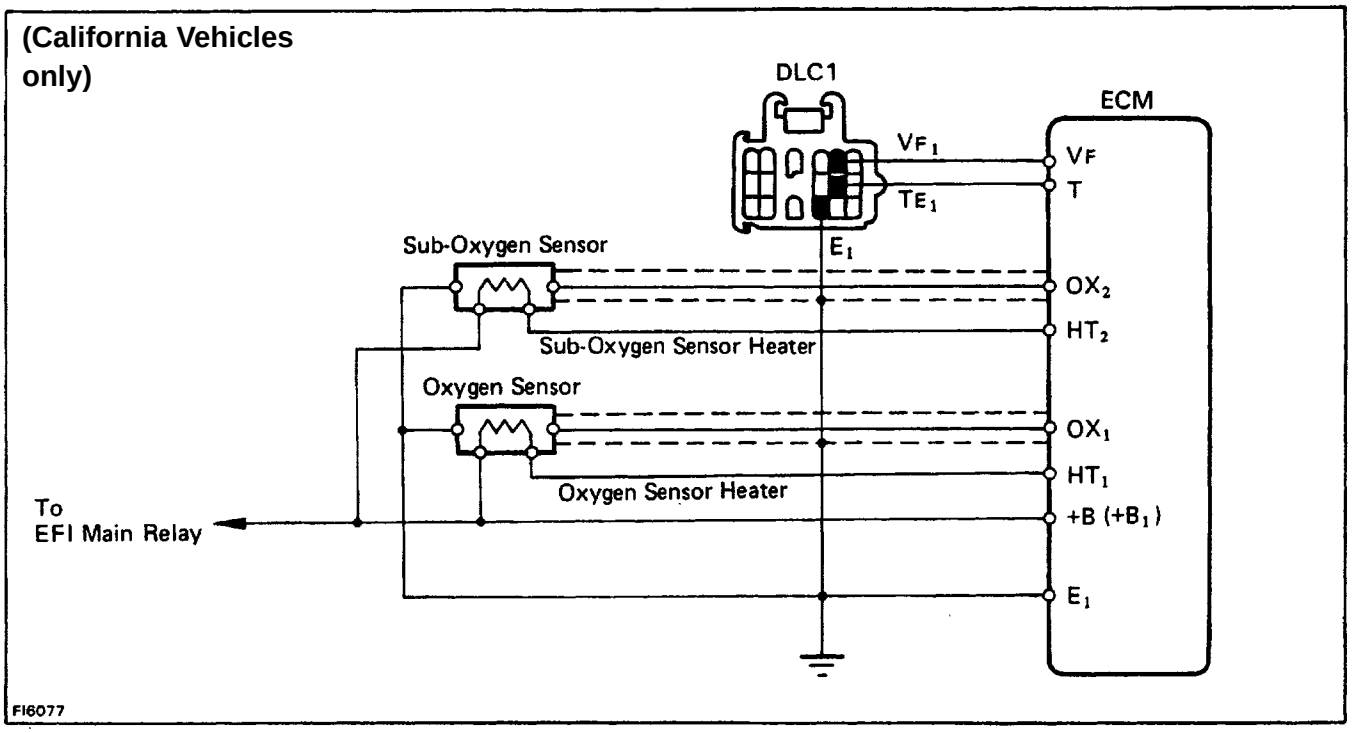
NO → Check STOP fuse (15A) and stop light switch.

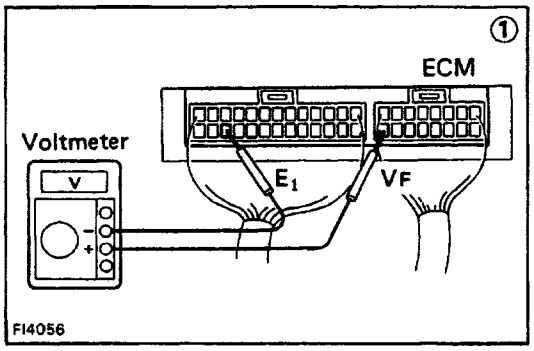
BAD → Repair or replace.

OK → Check wiring between ECM terminal STP and battery.

BAD → Repair or replace.

V01808





(1) There is no voltage between ECM terminals VF and E1.

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

NO

OK

Check wiring between ECM terminal E1 and body ground.

OK

BAD

Try another ECM.

Repair or replace.

Is air leaking into air induction system?

YES

Repair air leak.

NO

Check spark plugs.

BAD

Repair or replace.

OK

Check distributor and ignition system.

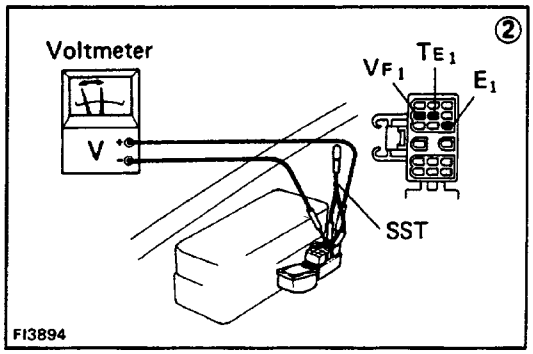
BAD

Repair or replace.

OK

CONTINUED ON PAGE EG1–139

V01809



CONTINUED FROM PAGE EG1–138

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 volume air flow meter. — BAD → Repair or replace.

OK

(2) Check operation of oxygen sensor. — OK → System normal.

BAD

Check wiring between oxygen sensor and ECM connector. — BAD → Repair wiring.

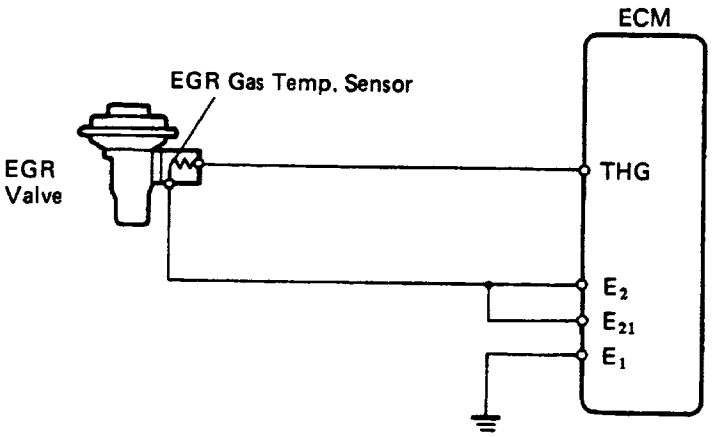
OK

Replace oxygen sensor.

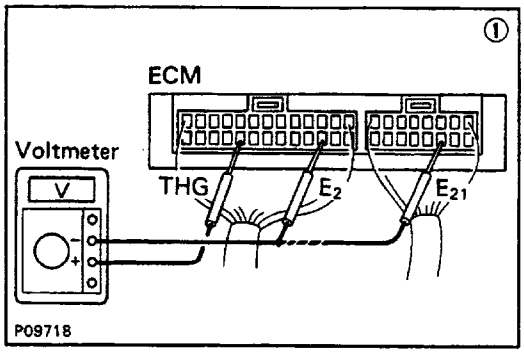
*Rich malfunction only.

V01810

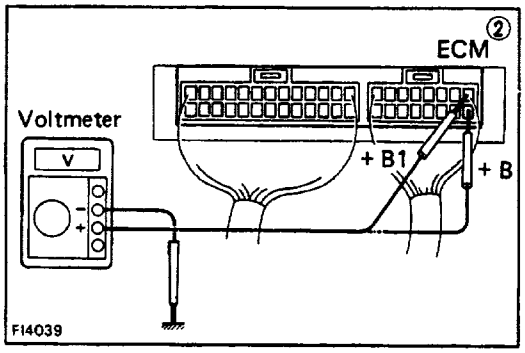
(California Vehicles only)



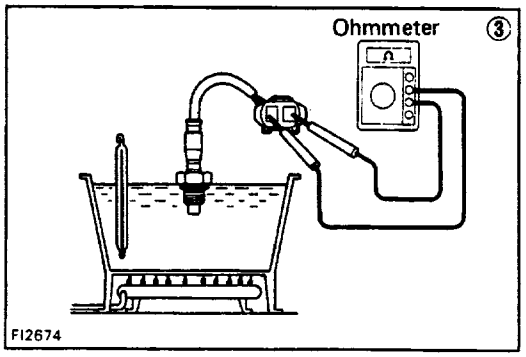
FI3895



P09718



FI4039



FI2674

(1) There is no voltage between ECM terminals THG and E2 (E21). **(Engine running at 2,000 rpm)**

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

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

NO → Refer to No. 1.

OK → Check EGR system.

BAD → Repair or replace.

OK → (3) Check EGR gas temp. sensor.

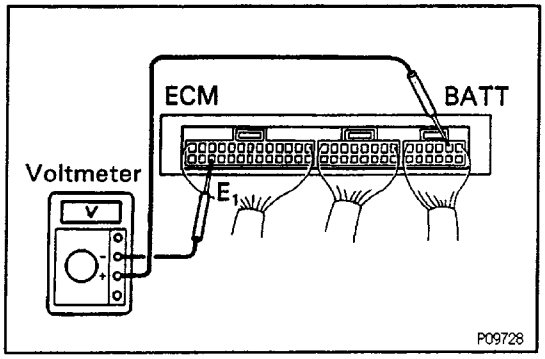
BAD → Replace EGR gas temp. sensor.

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

OK → Try another ECM.

BAD → Repair or replace.

V01811



MFI SYSTEM CHECK PROCEDURE (4WD M/T)

HINT:

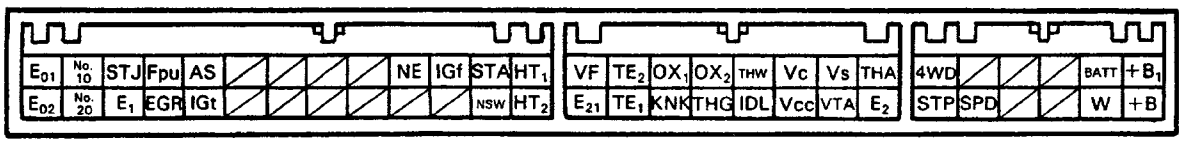
- Perform all voltage measurements with the connec–tors connected.
- Verify that the battery voltage is 11 V or more when the ignition switch is in ”ON” position.
  Using a voltmeter with high impedance (10 kΩ/V minimum), measure the voltage at each terminal of the wiring connector.

Terminals of ECM KWD M/T)

Symbol	Terminal Name	Symbol	Terminal Name
E_{01}	ENGINE GROUND	Ox_1	OXYGEN SENSOR (MAIN)
E_{02}	ENGINE GROUND	KNK	KNOCK SENSOR
No. 10	INJECTOR	* Ox_2	OXYGEN SENSOR (SUB)
No. 20	INJECTOR	* THG	EGR GAS TEMP. SENSOR
STJ	COLD START INJECTOR	THW	ENGINE COOLANT TEMP. SENSOR
E_1	ENGINE GROUND	IDL	THROTTLE POSITION SENSOR
Fpu	FUEL PRESSURE CONTROL VSV	Vc	VOLUME AIR FLOW METER
* EGR	EGR VSV	Vcc	THROTTLE POSITION SENSOR
AS	PAIR VSV	Vs	VOLUME AIR FLOW METER
IGt	IGNITER	VTA	–THROTTLE POSITION SENSOR
Ne	DISTRIBUTOR	THA	INTAKE AIR TEMP. SENSOR
IGf	IGNITER	E_2	SENSOR GROUND
STA	STARTER SWITCH	4WD	4WD SWITCH
NSW	PNP SWITCH	STP	STOP LIGHT SWITCH
HT_1	OXYGEN SENSOR HEATER (MAIN)	SPD	SPEED SENSOR
* HT_2	OXYGEN SENSOR HEATER (SUB)	BATT	BATTERY POSITIVE VOLTAGE
VF	DLC 1	W	MALFUNCTION INDICATOR LAMP
E_{21}	SENSOR GROUND	$+B_1$	MAIN RELAY
TE_2	D LC 1	+B	MAIN RELAY
TE_1	D LC 1		

* : California only

ECM Terminals



P09752

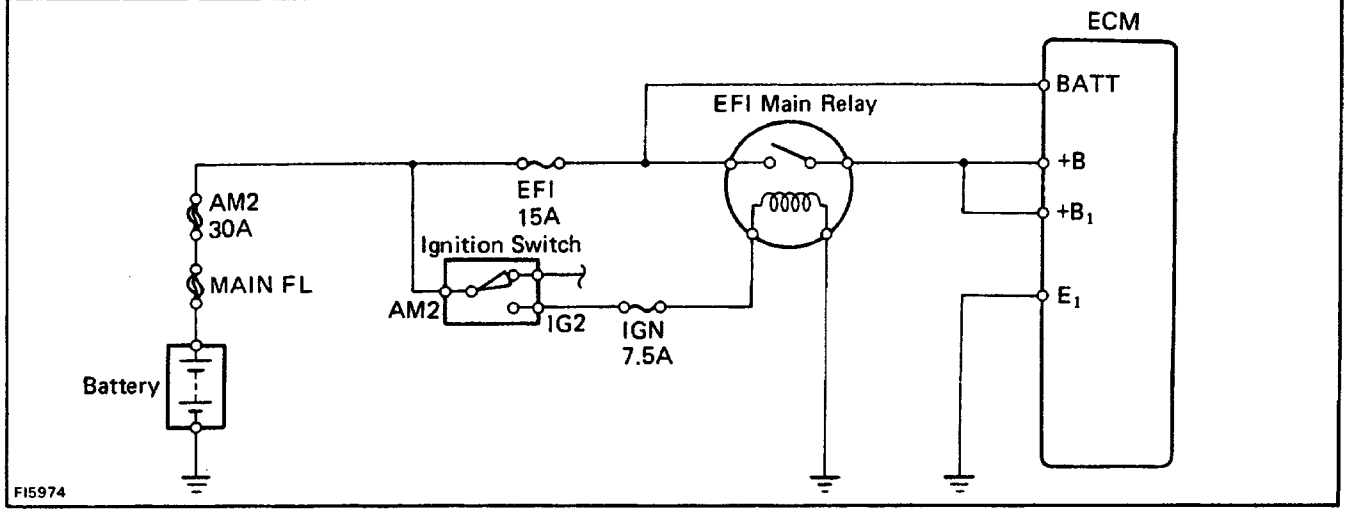
V01812

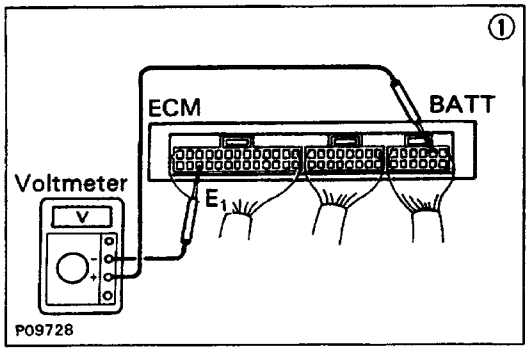
Voltage at ECM Wiring Connectors (4WD M/T)

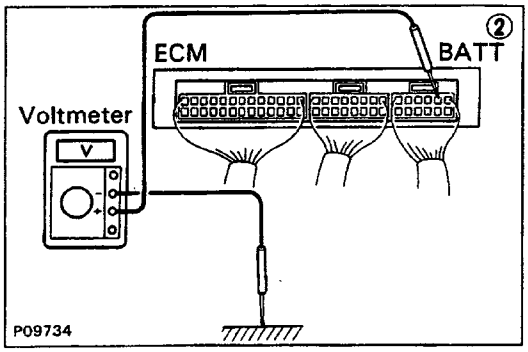
No.	Terminals	Condition		STD voltage	See page
1	BATT — E_1	—		9 — 14	EG1–143
	+B — E_1	Ignition switch ON			
	$+B_1$ — E_1				
2	IDL — E_2 (E_{21})	Ignition switch ON	Throttle valve open	9 — 14	EG1–145
	Vcc — E_2 (E_{21})		—	4.5 — 5.5	
	VTA — E_2 (E_{21})		Throttle valve fully closed	0.3 — 0.8	
			Throttle valve fully open	3.2 — 4.9	
3	Vc — E_2 (E_{21})	Ignition switch ON	—	6—10	EG1–147
	Vs — E_2 (E_{21})		Measuring plate fully closed	0.5—2.5	
			Measuring plate fully open	5—10	
		Idling		2—8	
	THA — E_2 (E_{21})	Ignition switch ON	Intake air temperature 20°C (68°F)	0.5 — 3.4	
4	THW — E_2 (E_{21})	Ignition switch ON	Coolant temperature 80°C (176°F)	0.2 — 1.0	EG1–149
5	STA — E_1	Ignition switch START position		6—12	EG1–150
6	No. 10 — E_{01} No. 20 — E_{02}	Ignition switch ON		9 — 14	EG1–151
7	IGt — E_1	Idling		0.7—1.0	EG1–152
8	W — E_1	No trouble (MIL off) and engine running		9 — 14	EG1–153
9	STJ — E_1	Ignition switch START position	Coolant temperature 80°C (1 76°F)	6—12	EG1–154
10	STP — E_1	Stop light switch ON		7.5 — 14	EG1–155

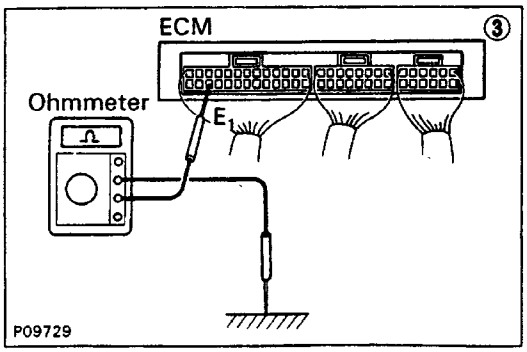
V01813

No.	Terminals	Trouble	Condition	STD Voltage
1	BATT – E_1	No voltage	–	9 – 14 V
	+B – E_1		Ignition switch ON	
	$+B_1$ – E_1			









- **BATT – E 1**

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

↓

(2) Check that there is voltage between ECM terminal BATT and body ground.

NO → ↓ OK

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

OK → Try another ECM.

BAD → Repair or replace.

↓

Check fuse and fusible link.

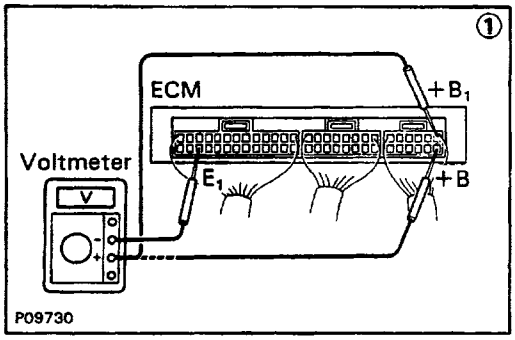
BAD → Replace.

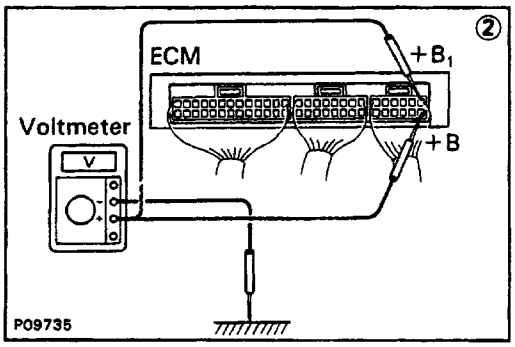
↓ OK

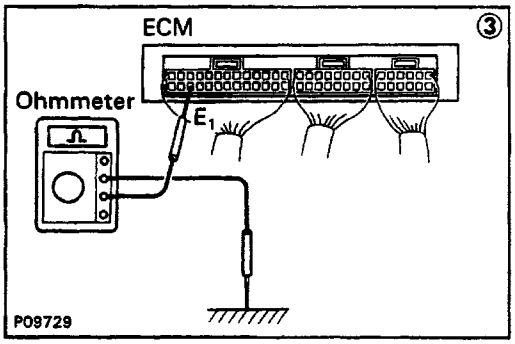
Check wiring between fuse and ECM.

BAD → Repair or replace.

V01815







- **+B (B1) – E1**

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

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

NO → OK

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

OK → Try another ECM.

BAD → Repair or replace.

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

OK

Check EFI main relay. BAD → Replace.

OK

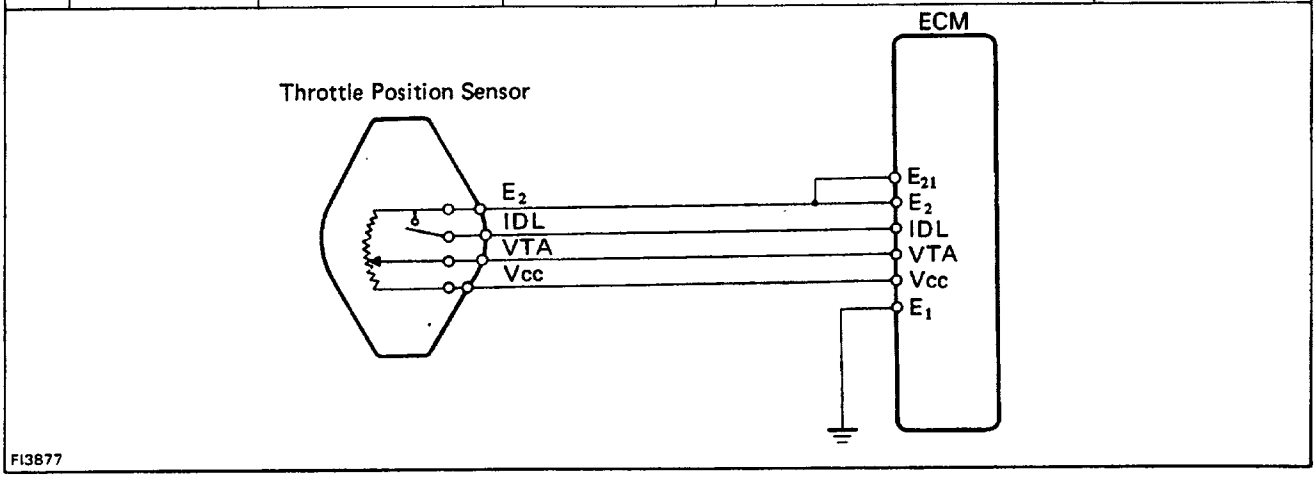
Check wiring between EFI main relay and battery. BAD → Repair or replace.

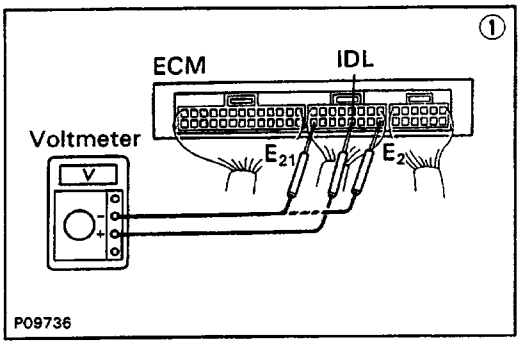
OK

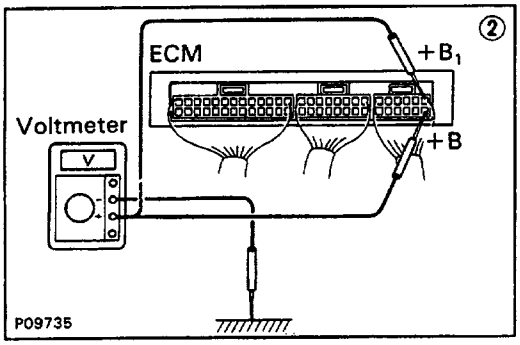
Check wiring between EFI main relay and ECM terminal + B (+ B1). BAD → Repair or replace.

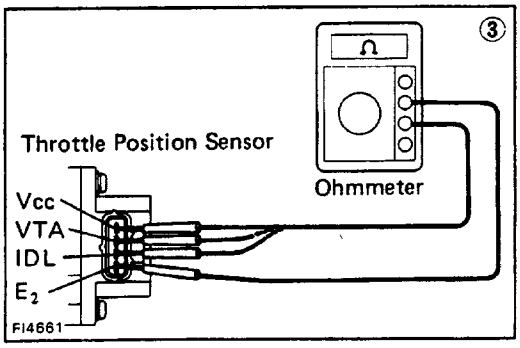
V01814

No.	Terminals	Trouble	Condition		STD Voltage
2	IDL – E_2 (E_{21})	No voltage	Ignition switch ON	Throttle valve open	9 – 14 V
	Vcc – E_2 (E_{21})			–	4.5 – 5.5 V
	VTA – E_2 (E_{21})			Throttle valve fully closed	0.3 – 0.8 V
				Throttle valve fully open	3.2 – 4.9 V









- **IDL – E2 (E21)**

(1) There is no voltage between ECM terminals IDL and E2 (E21). **(IG SW ON)**

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

NO

Refer to No. 1. — BAD → Replace or repair.

OK

OK

Check wiring between ECM terminal E1 and body ground.

OK

BAD

Replace or repair.

BAD

(3) Check throttle position sensor.

BAD

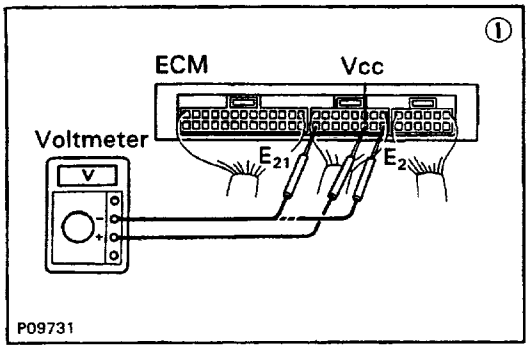
OK

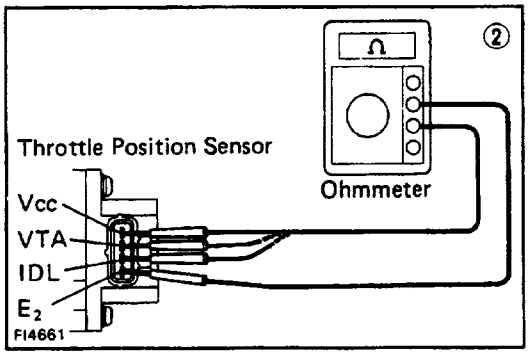
Replace or repair throttle position sensor.

Check wiring between ECM and throttle position sensor.

OK

Try another ECM.





- **Vcc – E2 (E21)**

(1) There is no voltage between ECM terminals Vcc and E2 (E21). **(IG SW ON)**

↓

Check that there is voltage between ECM terminals + B (+ B1) and E1. (IG SW ON)

OK → (2) Check throttle position sensor.

NO → Refer to No. 1.

(2) Check throttle position sensor.

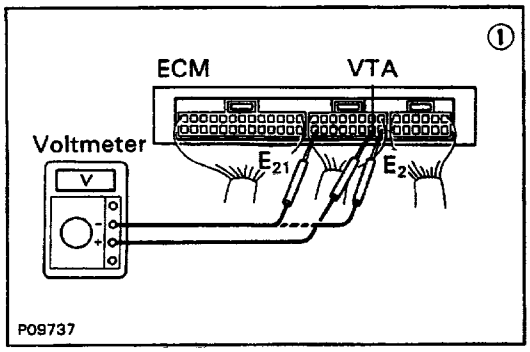
BAD → Repair or replace.

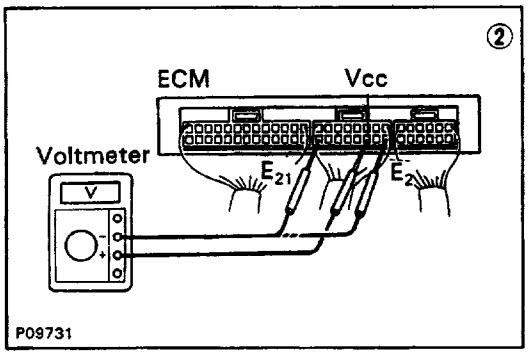
OK → Check wiring between ECM and throttle position sensor.

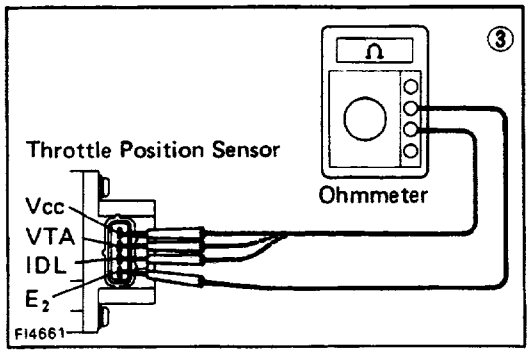
Check wiring between ECM and throttle position sensor.

OK → Try another ECM.

BAD → Repair or replace wiring.







- **VTA – E2 (E21)**

(1) There is no specified voltage between ECM terminals VTA and E2 (E21).**(IG SW ON)**

↓

(2) Check that there is voltage between ECM terminals Vcc and E2 (E21). **(IG SW ON)**

OK → (3) Check throttle position sensor.

NO → Perform inspection of Vcc – E1 (E21)

(3) Check throttle position sensor.

BAD → Repair or replace.

OK → Check wiring between ECM and throttle position sensor.

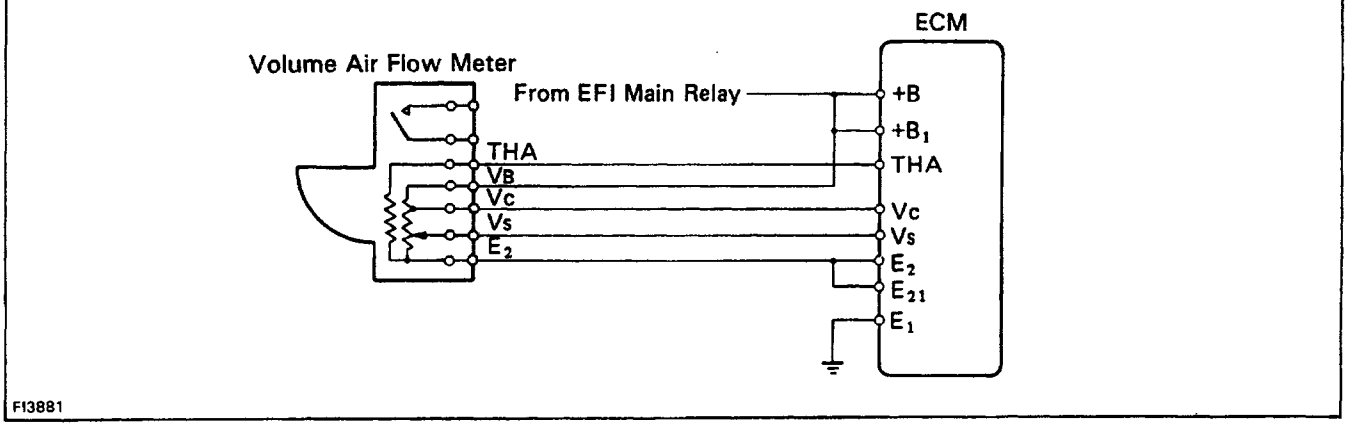
Check wiring between ECM and throttle position sensor.

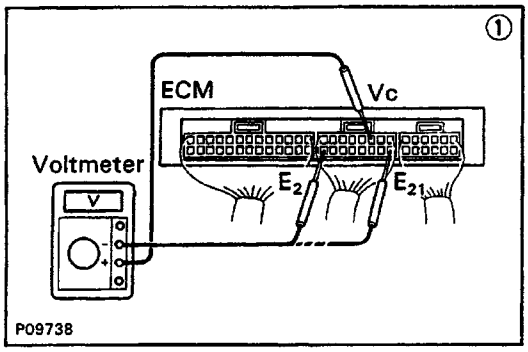
BAD → Repair or replace.

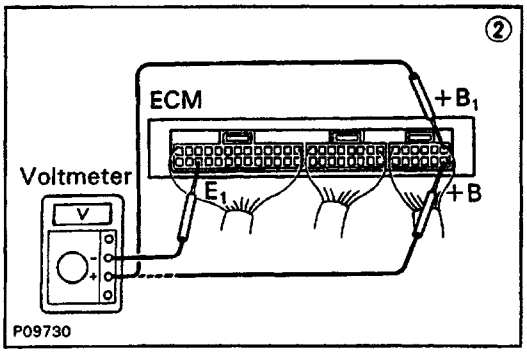
OK → Try another ECM.

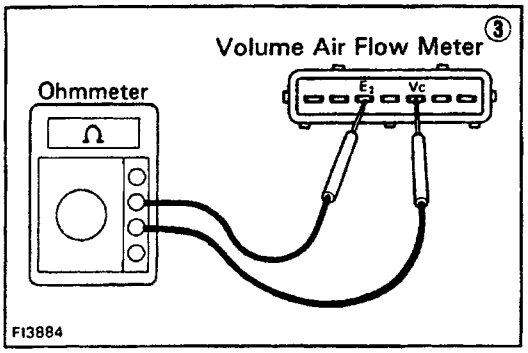
V01817

No.	Terminals	Trouble	Condition		STD Voltage
3	**Vc – E_2 (E_{21})**	No voltage	Ignition switch ON	–	**6 – 10 V**
	Vs – E_2 (E_{21})			Measuring plate fully closed	**0.5 – 2.5 V**
				Measuring plate fully open	**5 – 10 V**
			Idling		**2 – 8 V**
	THA – E_2 (E_{21})		Ignition switch ON	Intake air temperature 20°C (68° F)	**0.5 – 3.4 V**









- **Vc –E2 (E21)**

(1) There is no voltage between ECM terminals Vc and E2 (E21). **(IG SW ON)**

(2) Check that there is voltage between ECM terminals + B (+ B1) and E1. **(IG SW ON)**

OK → (1) Check volume air flow meter.

NO → Refer to No. 1.

(1) Check volume air flow meter.

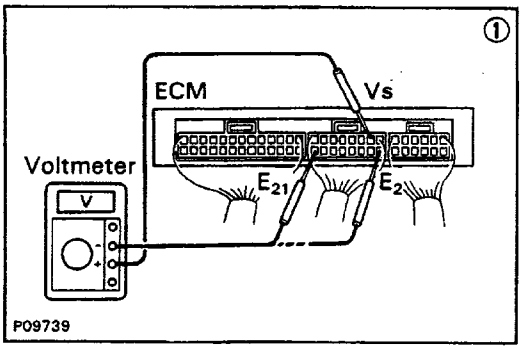
BAD → Replace or repair volume air flow meter.

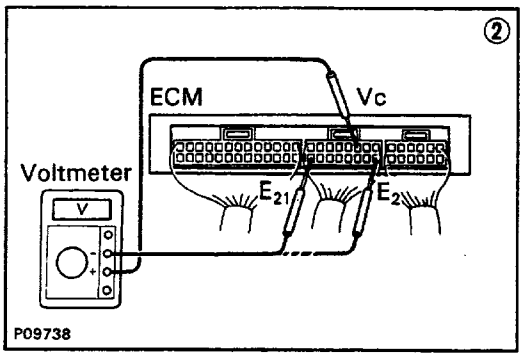
OK → Check wiring between ECM and volume air flow meter.

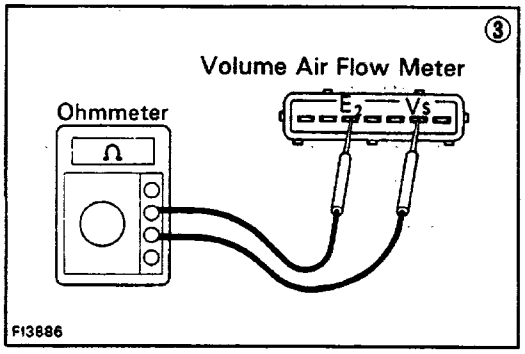
Check wiring between ECM and volume air flow meter.

OK → Try another ECM.

BAD → Replace or repair wiring.







- **Vs – E2 (E21)**

(1) There is no voltage between ECM terminals Vs and E2 (E21). **(IG SW ON)**

↓

(2) Check that there is voltage between ECM terminals Vc and E2 (E21). **(IG SW ON)**

OK ↓ / NO → Refer to Vc – E2 (E21) → BAD → Repair– or replace.

↓

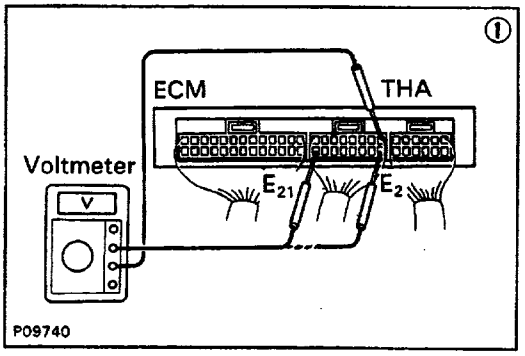
(3) Check volume air flow meter. → BAD → Repair or replace.

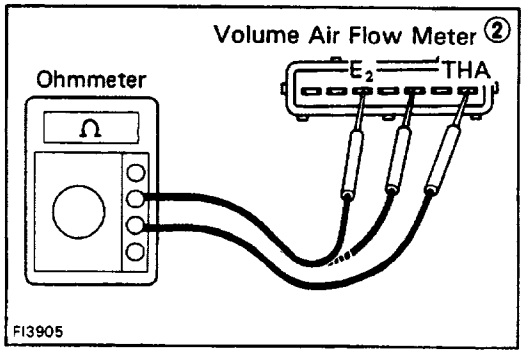
↓ OK

Check wiring between ECM and volume air flow meter. → BAD → Repair or replace.

↓ OK

Try another ECM.





- **THA – E2 (E21).**

(1) There is no voltage between ECM terminals THA and E2 (E21). **(IG SW ON)**

↓

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

OK ↓ / NO → Refer to No. 1.

↓

(2) Check intake air temp. sensor.

BAD ↓ / OK →

Replace volume air flow meter.

Check wiring between ECM and intake air temp. sensor.

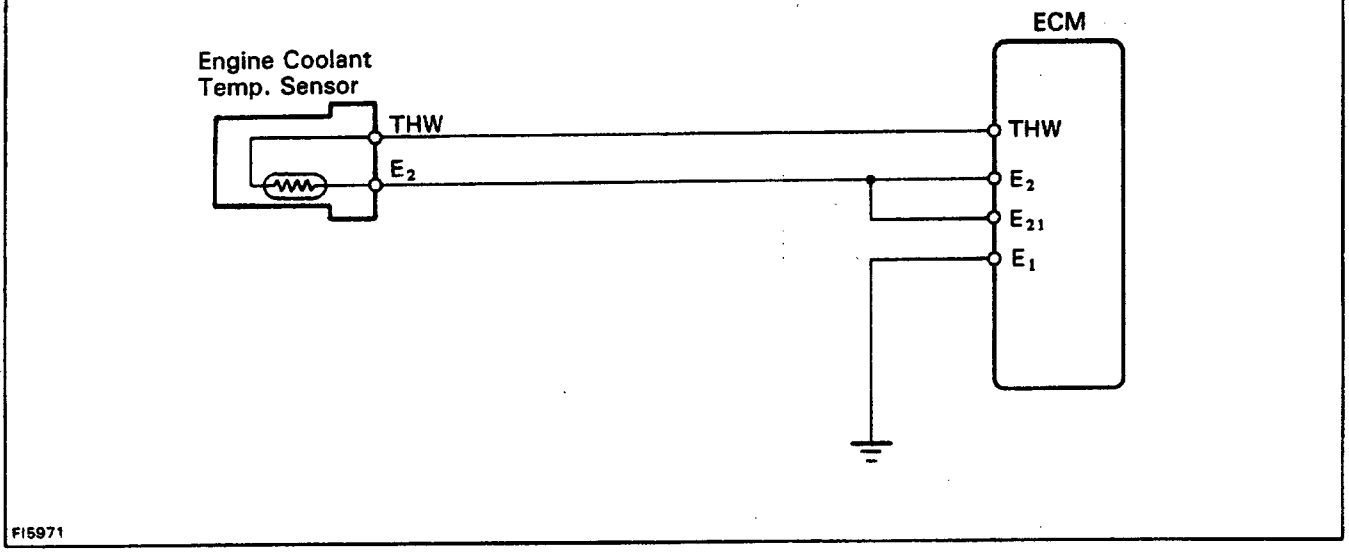
OK ↓ / BAD →

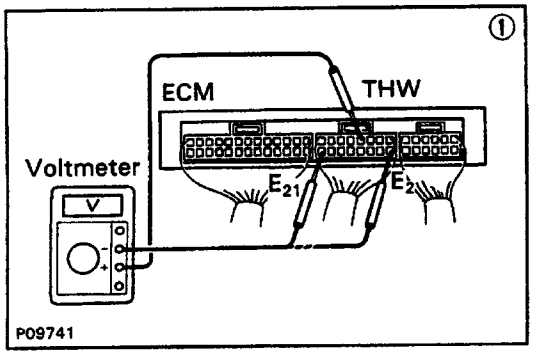
Try another ECM.

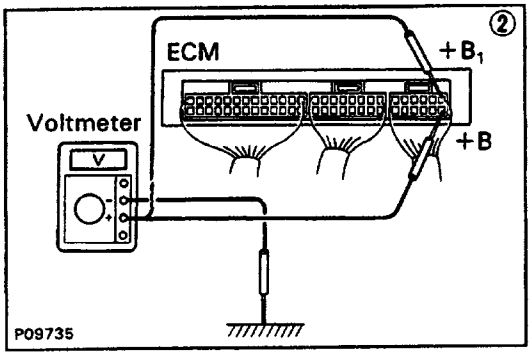
Repair or replace wiring.

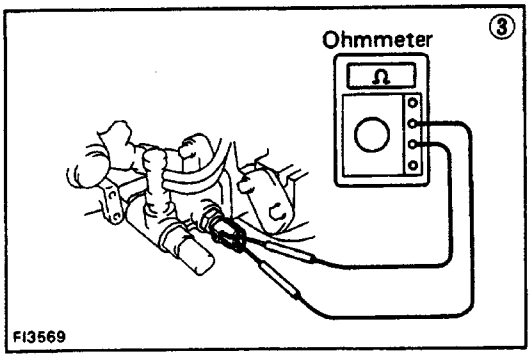
V01819

No.	Terminals	Trouble	Condition		STD– Voltage
4	**THW – E_2 (E_{21})**	No voltage	Ignition switch ON	Coolant temperature 80°C (176°)	**0.2 – 1.0 V**









(1) There is no voltage between ECM terminals THW and E2 (E21). **(IG SW ON)**

↓

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

OK ↓ / NO → Refer to No. 1.

↓

Check wiring between ECM terminal E1 and body ground.

OK ↓ / BAD → Repair or replace.

↓

Check engine coolant temp. sensor.

BAD ↓ / OK →

Replace engine coolant temp. sensor.

Check wiring between ECM and engine coolant temp. sensor.

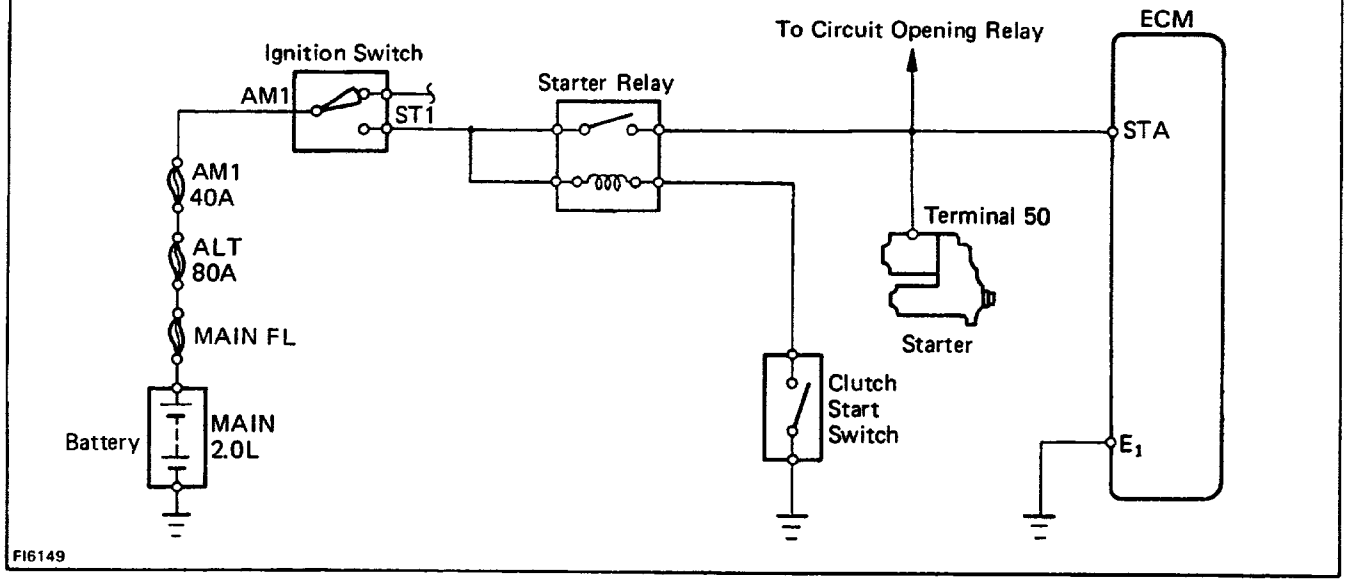
OK ↓ / BAD → Repair or replace.

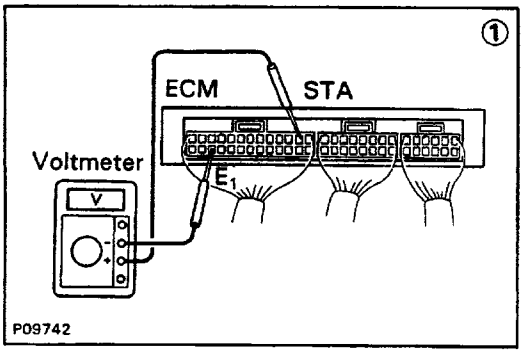
↓

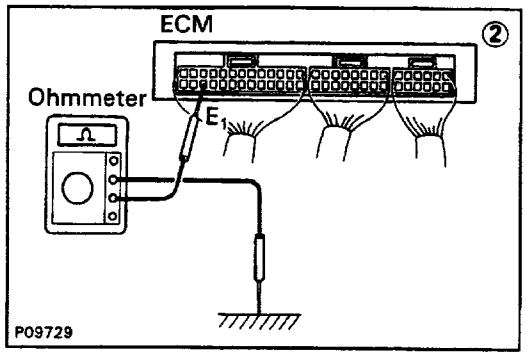
Try another ECM.

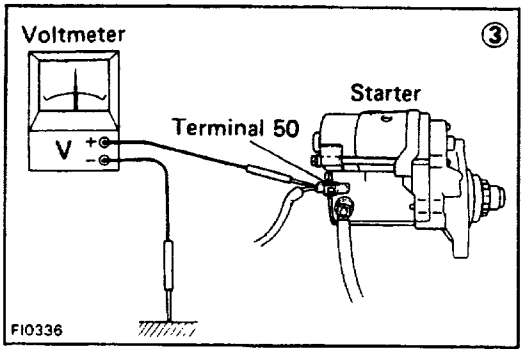
V01820

No.	Terminals	Trouble	Condition	STD Voltage
5	**STA – E_1**	No voltage	Ignition switch START position	**6 – 12 V**









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

Check starter operation.
- OK. → Check wiring between ECM and ignition switch terminal ST.
  - BAD → Repair or replace.
- BAD

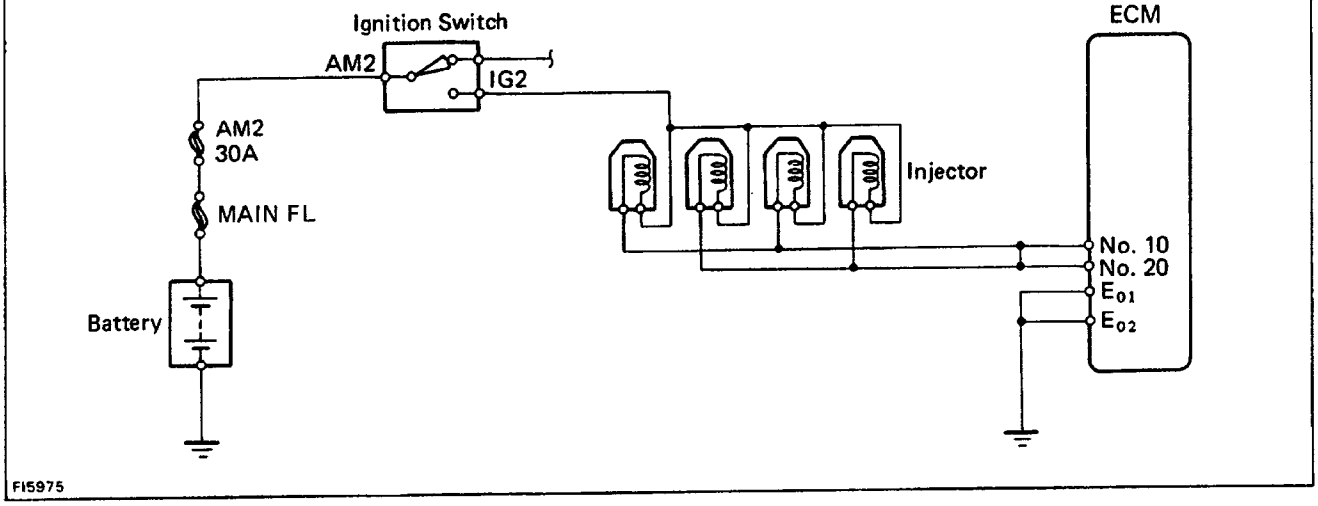
(2) Check wiring between ECM terminal E1 and body ground.
- OK → Try another ECM.
- BAD → Repair or replace.

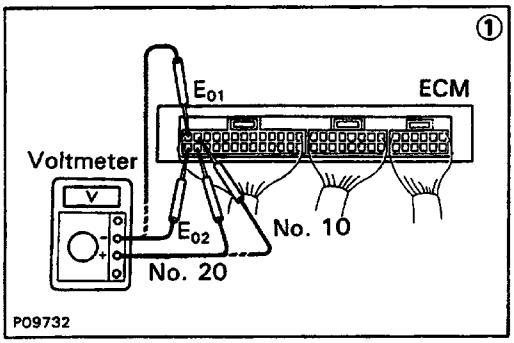
Check fusible link, battery, wiring and ignition switch.
- BAD → Repair or replace.
- OK

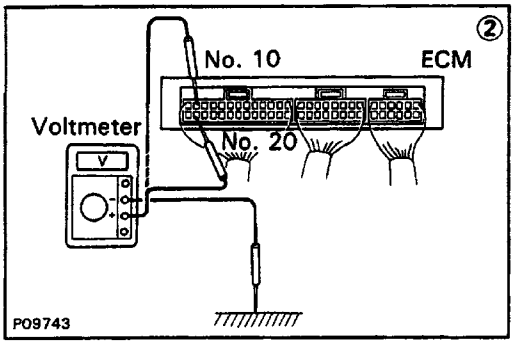
(3) Check that there is voltage at terminal 50 of starter.
(IG SW START) STD voltage: 6 –12 V
- OK → Check starter. (See ST section)
- NO → Check wiring between ignition switch ST1 terminal and starter terminal 50.

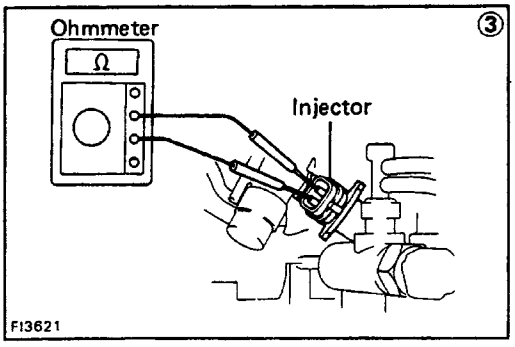
V01821

No.	Terminals	Trouble	Condition	STD Voltage
6	No. 10 – E_{01} No. 20 – E_{02}	No voltage	Ignition switch ON	9 – 14 V









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

↓

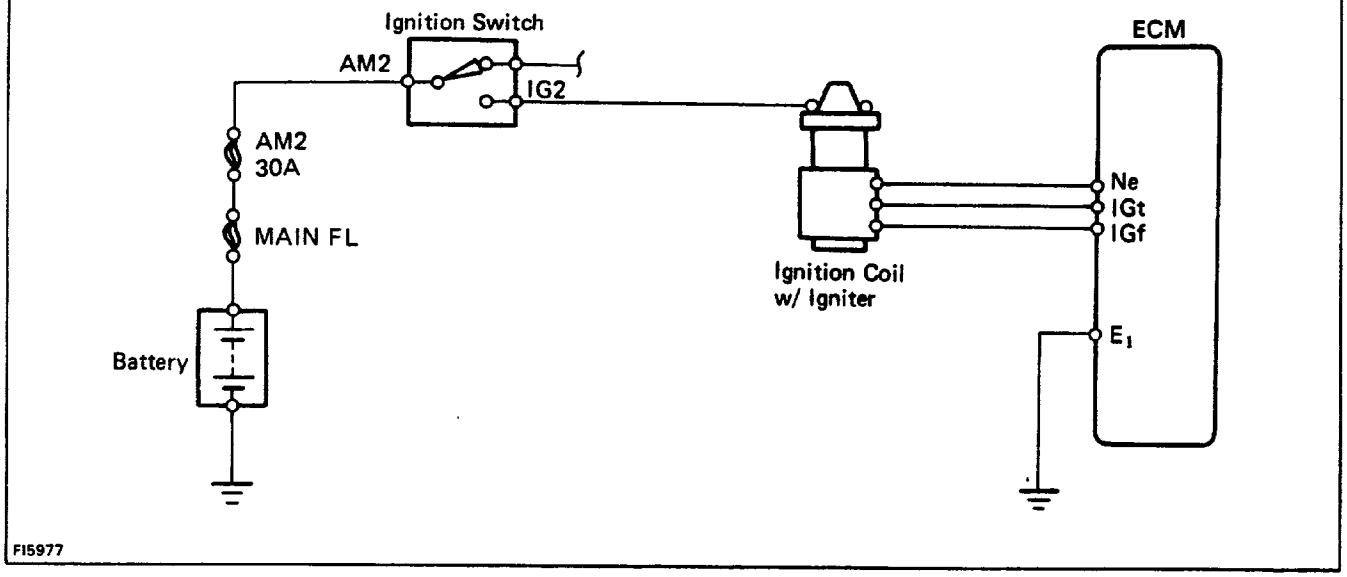
(2) Check that there is voltage between ECM terminal No. 10 and/or No. 20 and body ground.

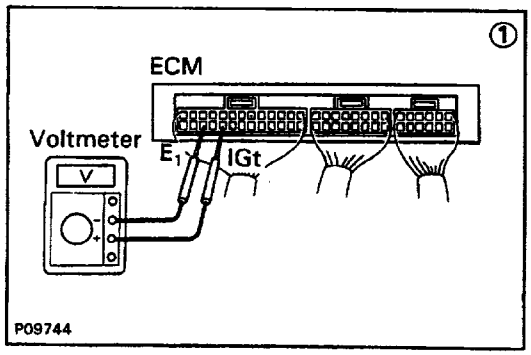
NO → Check fusible link and ignition switch.
- BAD → Repair or replace.
- OK → (3) Check resistance of magnetic coil in each injector. **STD resistance: 13.4 – 14.2Ω**
  - NO → Replace injector.
  - OK → Check wiring between ECM terminal No. 10 and/or No. 20 and battery.
    - BAD → Repair or replace.

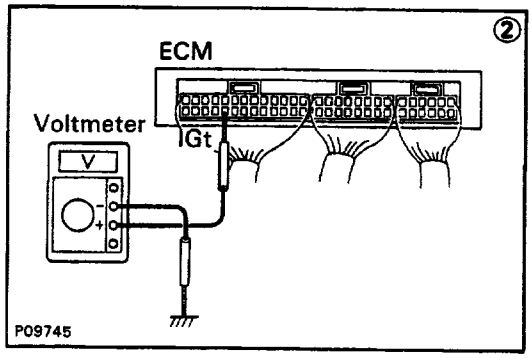
OK → Check wiring between E01, and/or E02 and body ground.
- BAD → Repair or replace.
- OK → Try another ECM.

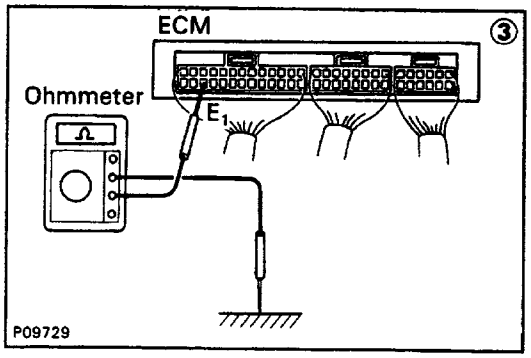
V01822

No.	Terminals	Trouble	Condition	STD Voltage
7	IGt – E_1	No voltage	Idling	0.7 – 1.0 V









(1) There is no voltage between ECM terminals IGt and E1. **(Idling)**

(2) Check that there is voltage between ECM terminal IGt an body ground. **(Idling)**

NO

OK

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

BAD

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 ECM and igniter. — BAD → Repair or replace.

OK

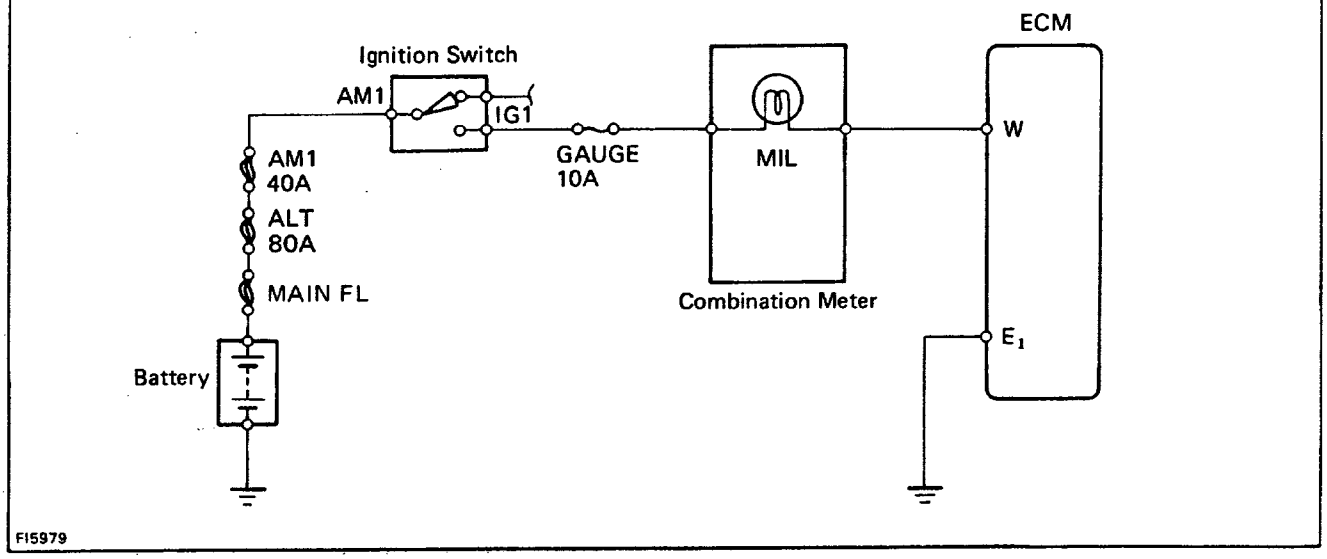
Check igniter. — BAD → Repair or replace.

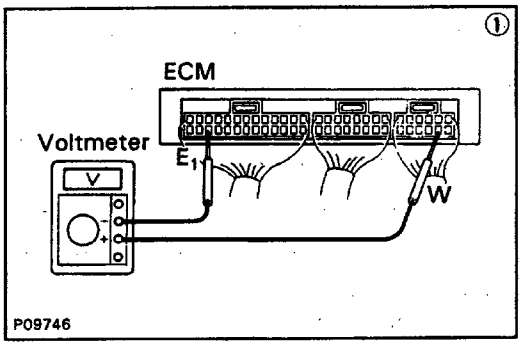
OK

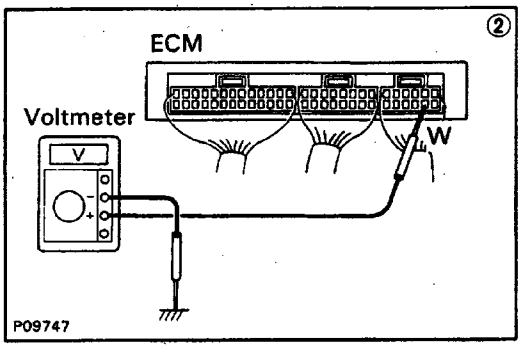
Try another ECM.

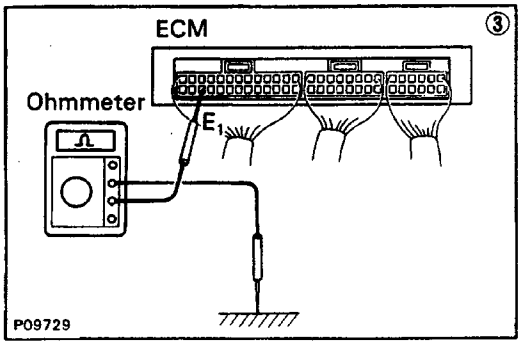
V01823

No.	Terminals	Trouble	Condition	STD Voltage
8	**W – E_1**	No voltage	No trouble (MIL off) and engine running	**9 – 14 V**









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

↓

(2) Check that there is voltage between ECM terminal W and body ground.

NO → (1) There is no voltage between ECM terminals W and E1. **(Idling)**

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

- OK → Try another ECM.
- BAD → Repair or replace.

↓

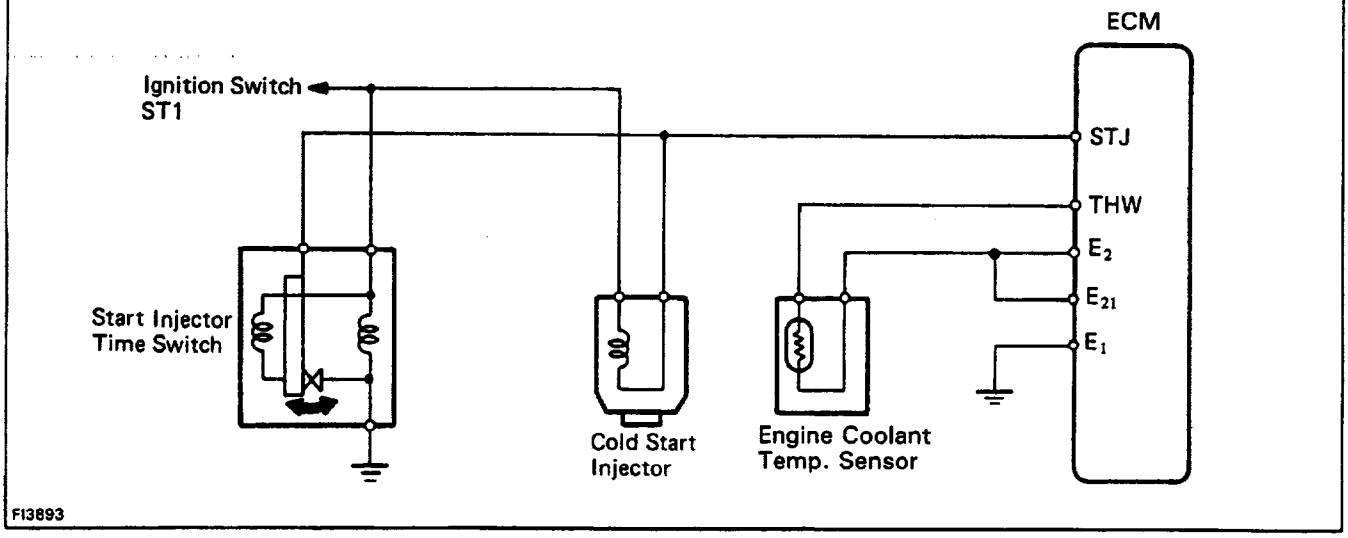
Check GAUGE fuse (10 A) and MIL.

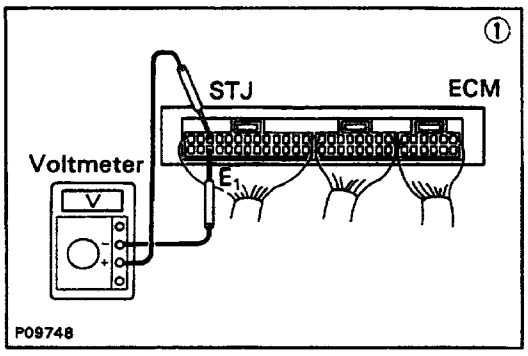
- OK → Check wiring between ECM terminal W and fuse.
  - BAD → Repair or replace.
- BAD → Repair or replace.

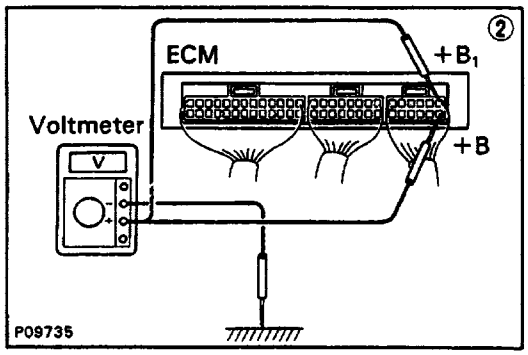
Fuse blows again → Check wiring between ECM terminal W and fuse.

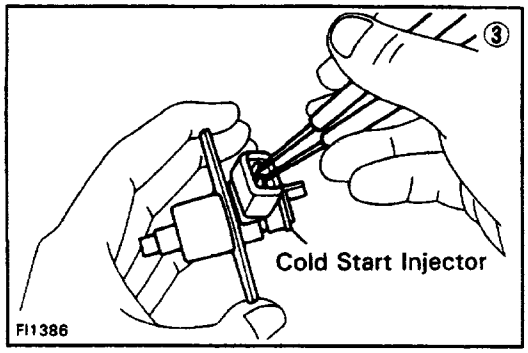
V01824

No.	Terminal	Trouble	Condition		STD Voltage
9	STJ – E_1	No voltage	Ignition switch ST position	Coolant temperature 80°C (176° F)	6 – 12 V









(1) There is no voltage between ECM terminals STJ and E1 **(IG SW ON)**

↓

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

OK → ↓

NO → Refer to No. 1.

(3) Check cold start injector.

BAD → Replace cold start injector.

OK → Check wiring between ECM and cold start injector.

OK → ↓

BAD → Repair or replace wiring.

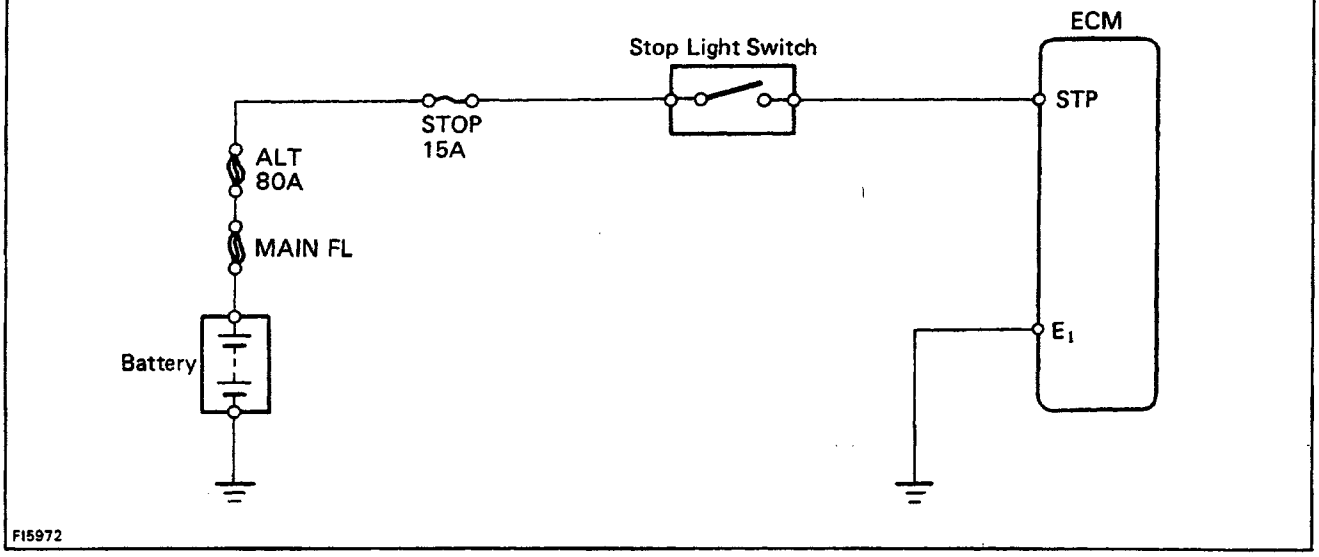
Check wiring between ECM terminal E1 and body ground.

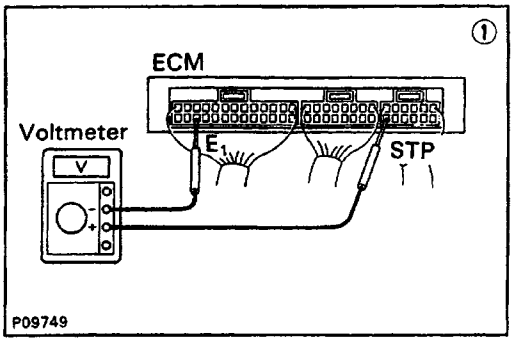
OK → ↓

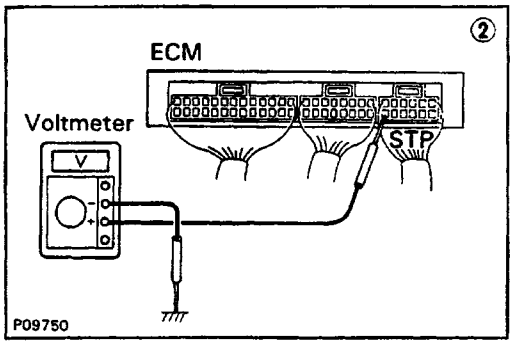
Try another ECM.

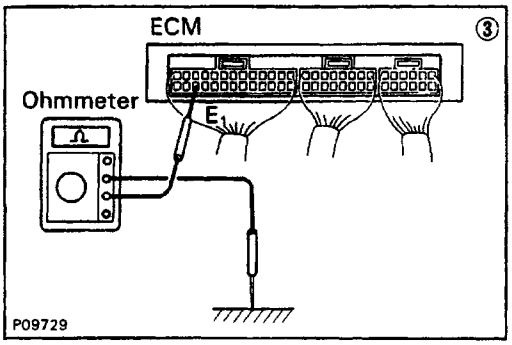
V01825

No.	Terminals	Trouble	Condition	STD Voltage
10	STP – E_1	No voltage	Stop tight switch ON	7.5 – 14 V









(1) There is no voltage between ECM terminals STP and E1.

↓

(2) Check that there is voltage between ECM terminal STP an body ground when the brake pedal is depressed.

NO → ↓ OK

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

OK → Try another ECM.

BAD → Repair or replace.

Check STOP fuse (15A) and stop light switch.

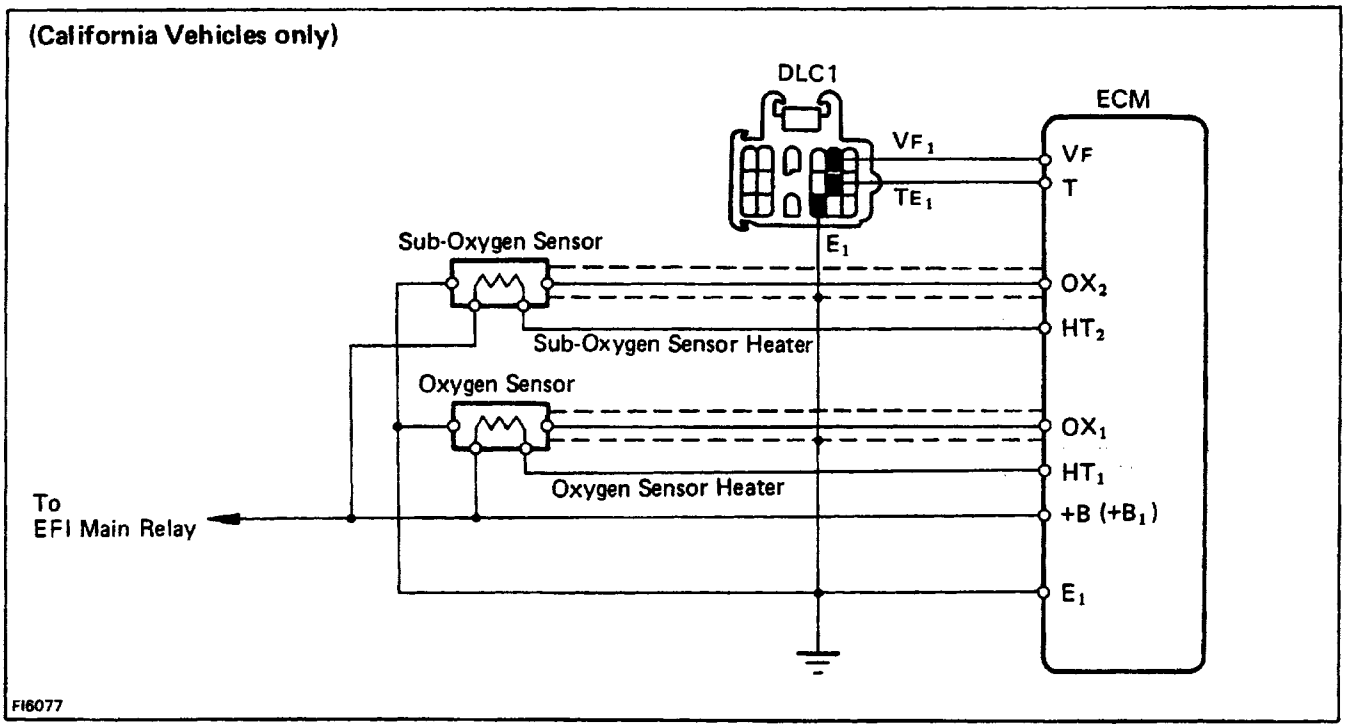
BAD → Repair or replace.

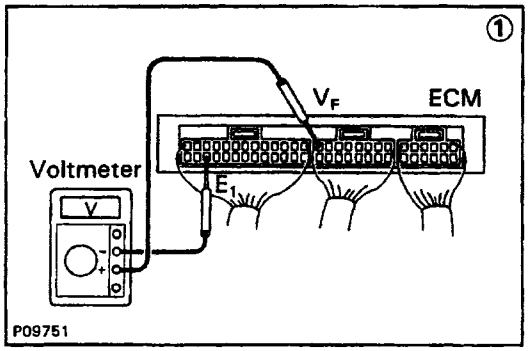
↓ OK

Check wiring between ECM terminal STP and battery.

BAD → Repair or replace.

V01826





(1) There is no voltage between ECM terminals VF and E1.

(2) Check that there is voltage between ECM terminal VF and body ground.

NO

OK

Check wiring between ECM terminal E1 and body ground.

OK

BAD

Try another ECM.

Repair or replace.

Is air leaking into air induction system?

YES

Repair air leak.

NO

Check spark plugs.

BAD

Repair or replace.

OK

Check distributor and ignition system.

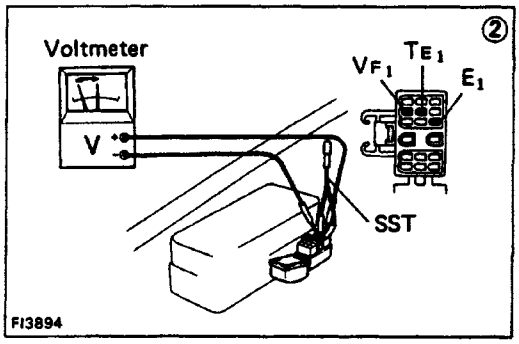
BAD

Repair or replace.

OK

CONTINUED ON PAGE EG1–157

V01827



CONTINUED FROM PAGE EG1–156

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 volume air flow meter. → BAD → Repair or replace.

OK

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

BAD

Check wiring between oxygen sensor and ECM connector. → BAD → Repair wiring.

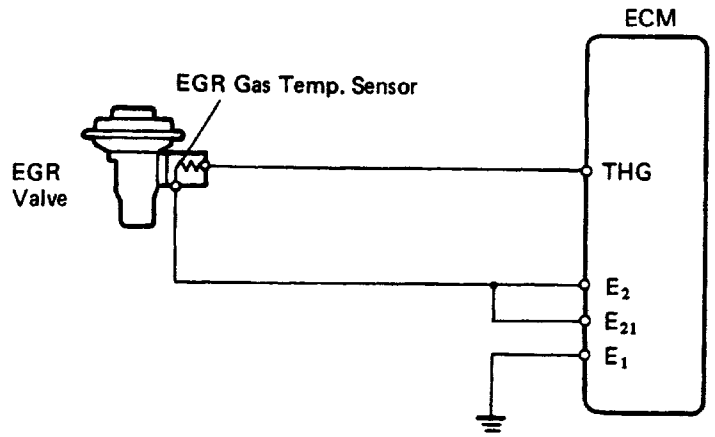
OK

Replace oxygen sensor.

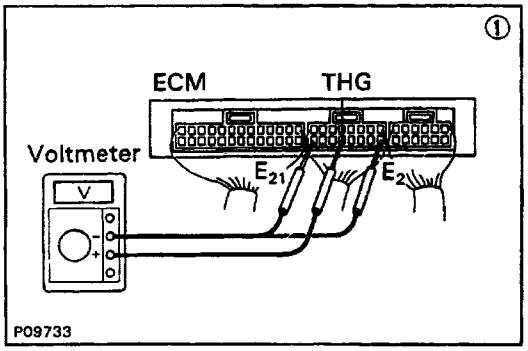
*Rich malfunction only.

V01829

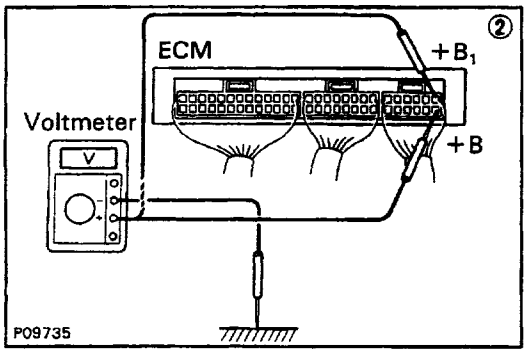
(California Vehicles only)



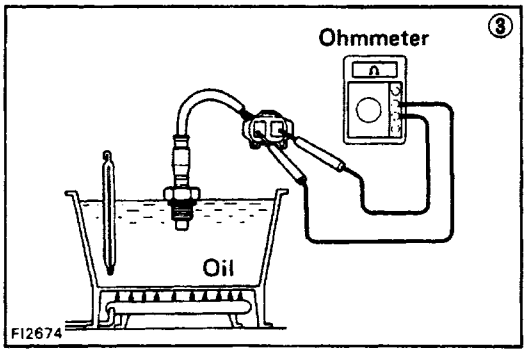
FI3895



P09733



P09735



FI2674

(1) There is no voltage between ECM terminals THG and E2 (E21) **(Engine running at 2,000 rpm)**

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

OK → Check wiring between ECM terminal E, and body ground.

NO → Refer to No. 1.

OK → Check EGR system.

BAD → Repair or replace.

OK → (3) Check EGR gas temp. sensor.

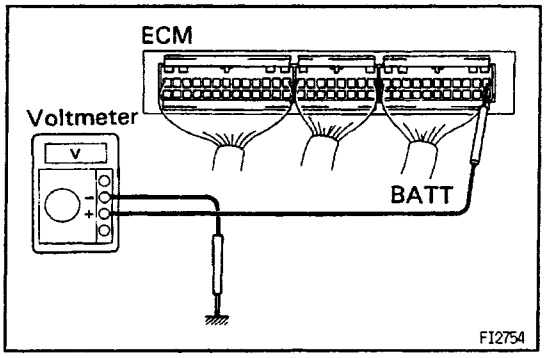
BAD → Replace EGR gas temp. sensor.

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

OK → Try another ECM.

BAD → Repair or replace.

V01828



MFI SYSTEM CHECK PROCEDURE (4WD A/T)

HINT:

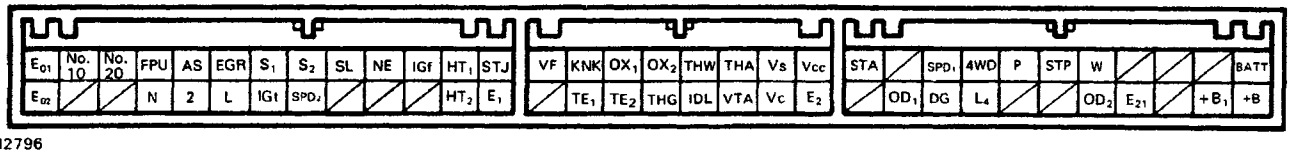
- Perform all voltage measurements with the connec–tors connected.
- Verify that the battery voltage is 11 V or more when the ignition switch is in ”ON” position.
  Using a voltmeter with high impedance (10 kΩ/V minimum), measure the voltage at each terminal of the wiring connector.

Terminals of ECM (4WD A/T)

Symbol	Terminal Name	Symbol	Terminal Name
E_{01}	ENGINE GROUND	TE_2	DLC 1
E_{02}	ENGINE GROUND	* Ox_2	OXYGEN SENSOR (SUB)
No.10	INJECTOR	* THG	EGR GAS TEMP. SENSOR
No.20	INJECTOR	THW	ENGINE COOLANT TEMP. SENSOR
Fpu	FUEL PRESSURE CONTROL VSV	IDL	THROTTLE POSITION SENSOR
N	PNP SWITCH	THA	INTAKE AIR TEMP. SENSOR
AS	PAIR VALVE	VTA	THROTTLE POSITION SENSOR
2	PNP SWITCH	Vs	VOLUME AIR FLOW METER
* EGR	EGR VSV	Vc	VOLUME AIR FLOW METER
L	PNP SWITCH	Vcc	THROTTLE POSITION SENSOR
S_1	No.1 SOLENOID	E_2	SENSOR GROUND
IGt	IGNITER	STA	STARTER SWITCH
S_2	No.2 SOLENOID	OD_1	CRUISE CONTROL COMPUTER
SPD_2	SPEED SENSOR	SPD_1	SPEED SENSOR
S_L	SL .SOLENOID	DG	DLC 1
Ne	DISTRIBUTOR	4WD	4WD SWITCH
IGf	IGNITER	L_4	TRANSFER POSITION SWITCH
HT_1	OXYGEN SENSOR HEATER (MAIN)	P	PATTERN SELECT SWITCH
* HT_2	OXYGEN SENSOR HEATER (SUB)	STP	STOP LIGHT SWITCH
STJ	COLD START INJECTOR	W	MALFUNCTION INDICATOR LAMP
E_1	ENGINE GROUND	OD_2	CRUISE CONTROL COMPUTER
V_F	DLC 1	E_{21}	SENSOR GROUND
KNK	KNOCK SENSOR	$+B_1$	MAIN RELAY
TE_1	DLC 1	BATT	BATTERY POSITIVE VOLTAGE
Ox_1	OXYGEN SENSOR (MAIN)	+B	MAIN RELAY

* : California only

ECM Terminals

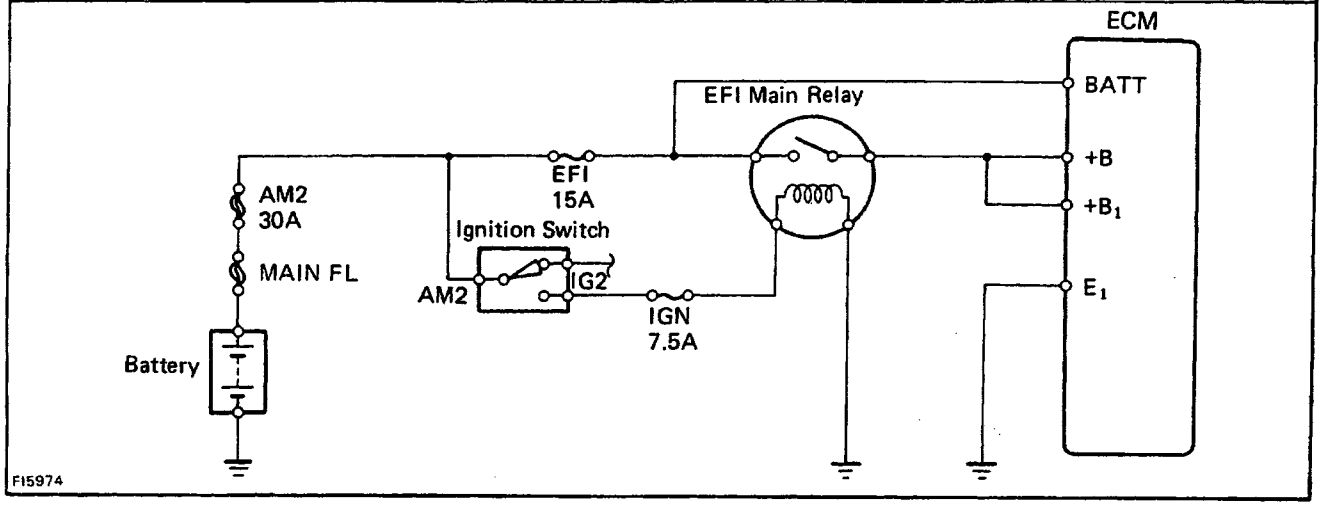


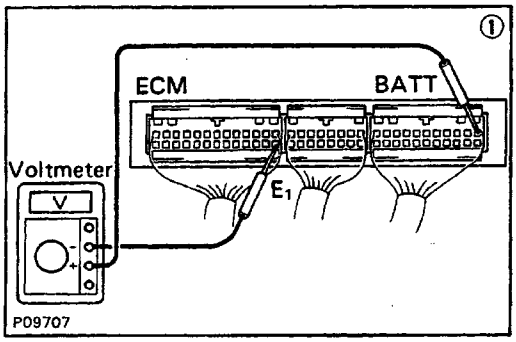
Voltage at ECM Connectors (4WD A/T)

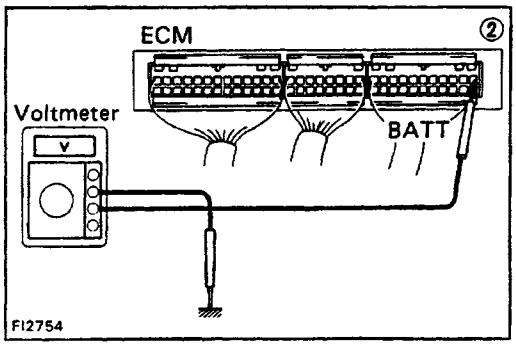
No.	Terminals	Condition		STD voltage	See page
1	BATT – E_1	–		9 – 14	EG1–161
	+B – E_1	Ignition switch ON			
	+B_1 – E_1				
2	IDL – E_2 (E_{21})	Ignition switch ON	Throttle valve open	9 – 14	EG1–163
	Vcc – E_2 (E_{21})		–	4.5 – 5.5	
	VTA – E_2 (E_{21})		Throttle valve fully closed	0.3 – 0.8	
			Throttle valve fully open	3.2 – 4.9	
3	Vc – E_2 (E_{21})	Ignition switch ON	–	6 – 10	EG1–165
	Vs – E_2 (E_{21})		Measuring plate fully closed	0.5 – 2.5	
			Measuring plate fully open	5 – 10	
		Idling		2 – 8	
	THA – E_2 (E_{21})	Ignition switch ON	Intake air temperature 20°C (68°F)	0.5 – 3.4	
4	THW – E_2 (E_{21})	Ignition switch ON	Coolant temperature 80°C (176°F)	0.2 – 1.0	EG1–167
5	STA – E_1	Ignition switch START position		6 – 12	EG1–168
6	No. 10 – E_{01} No. 20 – E_{02}	Ignition switch ON		9 – 14	EG1–169
7	IGt – E_1	Idling		0.7 – 1.0	EG1–170
8	W – E_1	No trouble (MIL off) and engine running		9 – 14	EG1–171
9	STJ – E_1	Ignition switch START position	Coolant temperature 80°C (176°F)	6 – 12	EG1–172
10	STP – E_1	Stop light switch ON		7.5 – 14	EG1–173

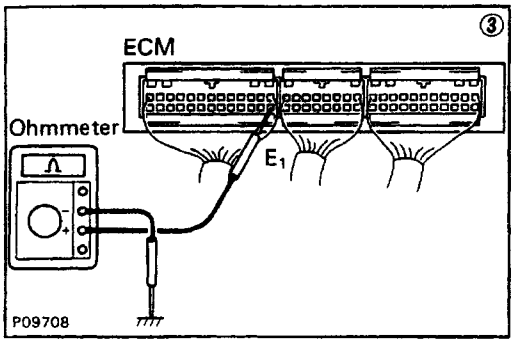
V01831

No.	Terminals	Trouble	Condition	STD Voltage
1	BATT – E_1	No voltage	–	9 – 14 V
	+B – E_1		Ignition switch ON	
	$+B_1$ – E_1			









- **BATT – E 1**

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

↓

(2) Check that there is voltage between ECM terminal BATT and body ground.

NO → ↓ OK

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

OK → Try another ECM.

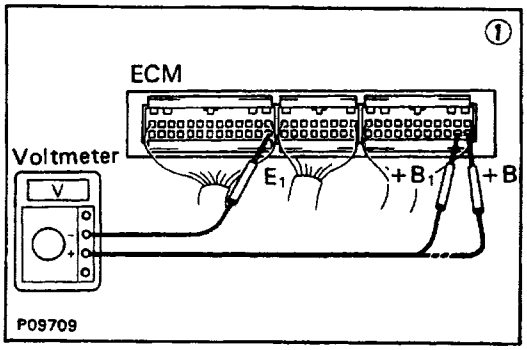
BAD → Repair or replace.

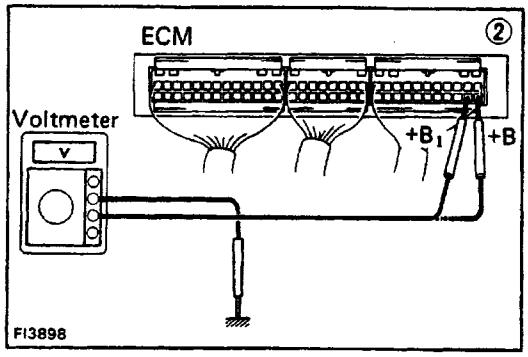
↓

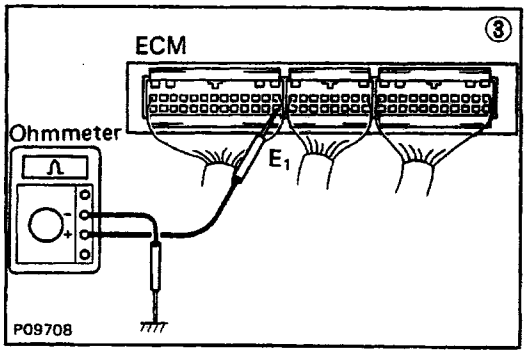
Check fuse and fusible link. BAD → Replace.

↓ OK

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







- **+B (B+) –E1**

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

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

NO — **OK**

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

OK — Try another ECM.

BAD — Repair or replace.

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

OK

Check EF I main relay. — BAD → Replace.

OK

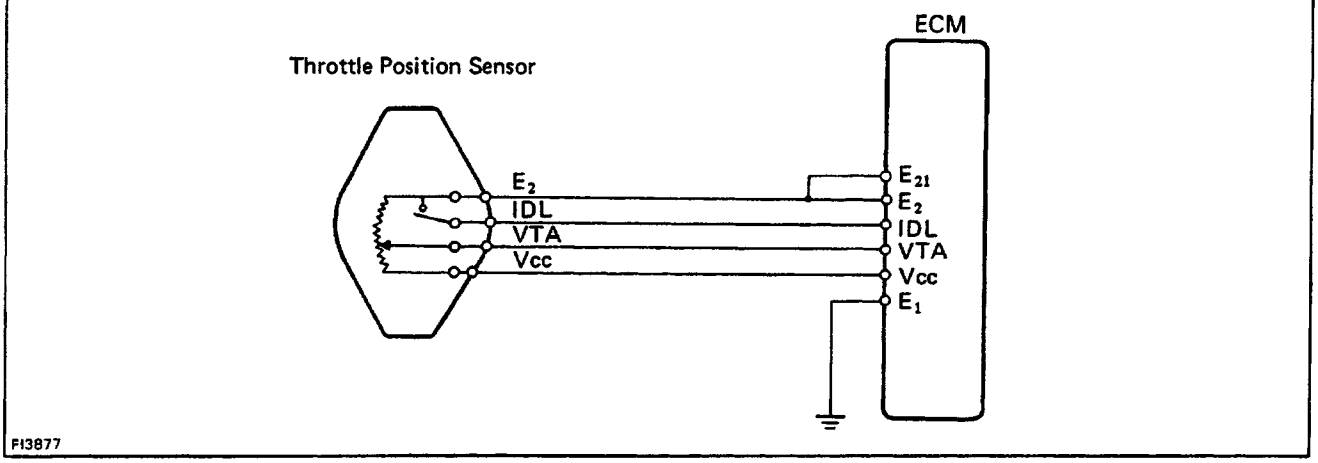
Check wiring between EFI main relay and battery. — BAD → Repair or replace.

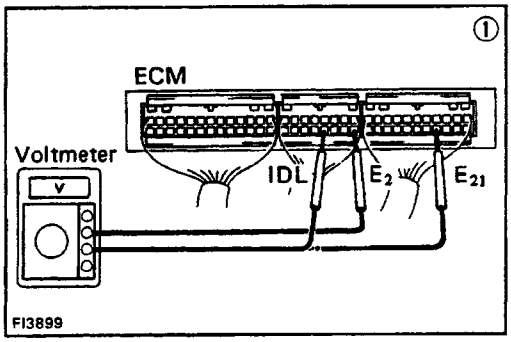
OK

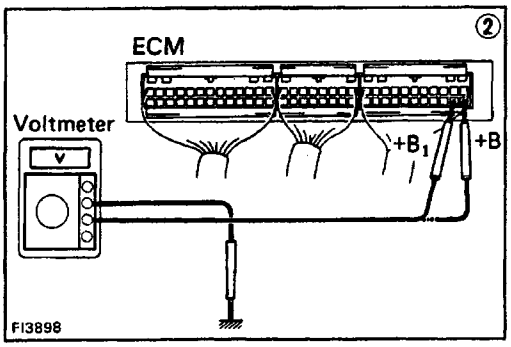
Check wiring between EM main relay and ECM terminal +B (+B1). — BAD → Repair or replace.

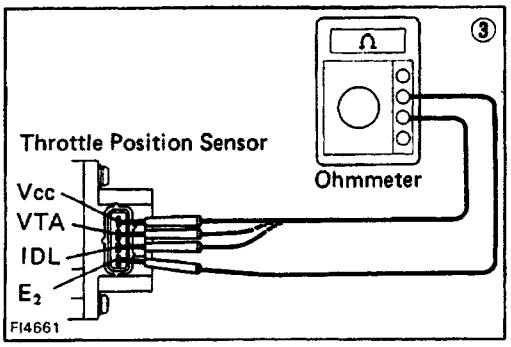
V01832

No.	Terminals	Trouble	Condition		STD Voltage
2	IDL – E_2 (E_{21})	No voltage	Ignition switch ON	Throttle valve open	9 – 14V
	Vcc – E_2 (E_{21})			–	4.5 – 5.5 V
	VTA – E_2 (E_{21})			Throttle valve fully dosed	0.3 – 0.8 V
				Throttle valve fully open	3.2 – 4.9 V









- **IDL – E2 (E21)**

(1) There is no voltage between ECM terminals IDL and E2 (E21). **(IG SW ON)** (Throttle valve open)

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

NO

OK

Refer to No. 1.

BAD

Replace or repair.

OK

Check wiring between ECM terminal E1 and body ground.

OK

BAD

Replace or repair.

BAD

(3) Check throttle position sensor.

BAD

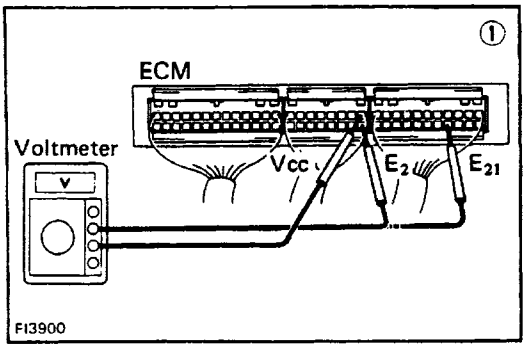
OK

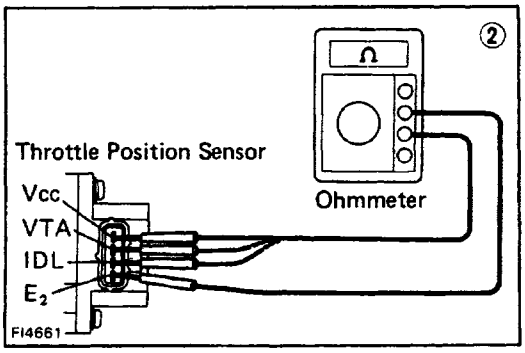
Replace or repair throttle position sensor.

Check wiring between ECM and throttle position sensor.

OK

Try another ECM.





- **Vcc – E2 (E21)**

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

(1) Check that there is voltage between ECM terminals + B (+ B1) and E1. **(IG SW ON)**

OK → Check throttle position sensor.

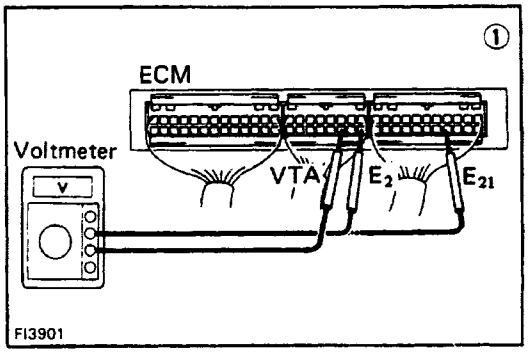
NO → Refer to No. 11 .

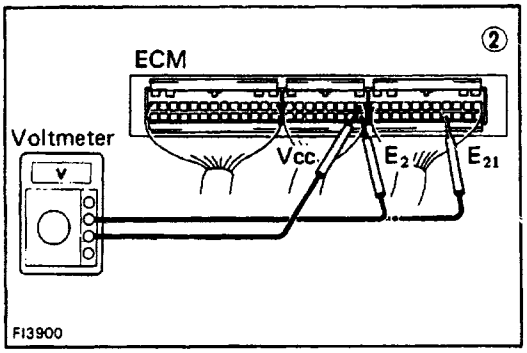
BAD → Repair or replace.

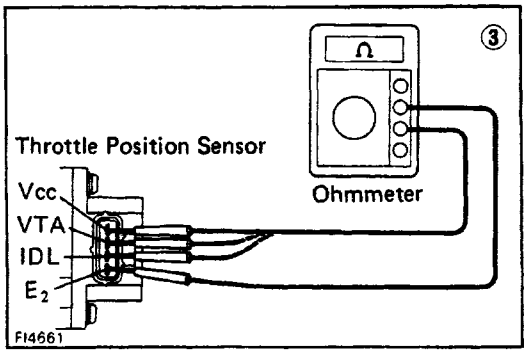
OK → Check wiring between ECM and throttle position sensor.

OK → Try another ECM.

BAD → Repair or replace wiring.







- **VTA – E2 (E21)**

(1) There is no voltage between ECM terminals VTA and E2 (E21). **(IG SW ON)**

(2) Check that there is voltage between ECM terminals Vcc and E2 (E21). **(IG SW ON)**

OK → (3) Check throttle position sensor.

NO → Perform inspection of Vcc – E2 (E21).

BAD → Repair or replace.

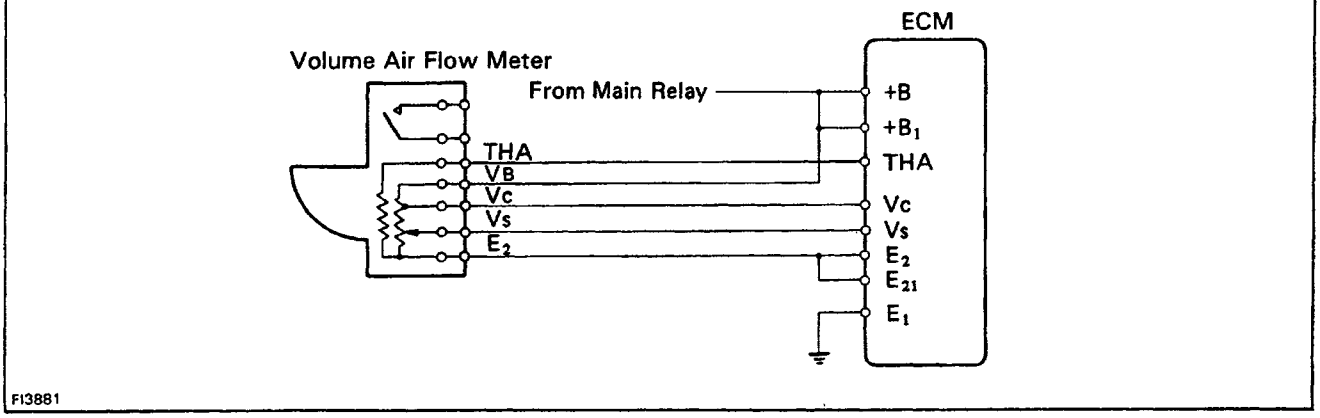
OK → Check wiring between ECM and throttle position sensor.

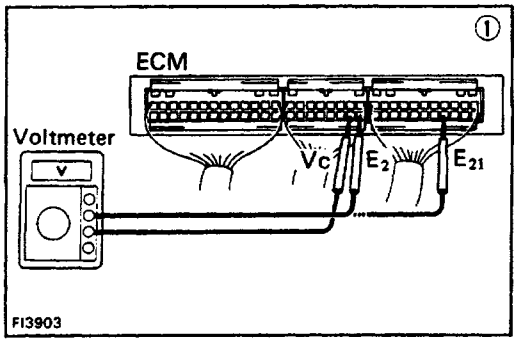
BAD → Repair or replace.

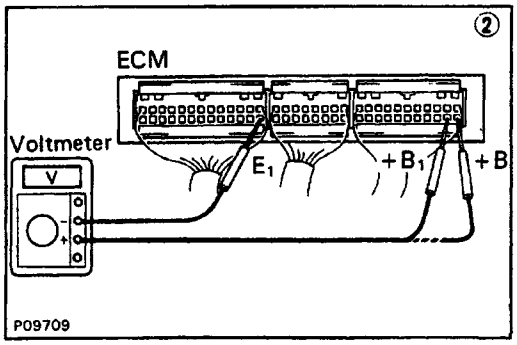
OK → Try another ECM.

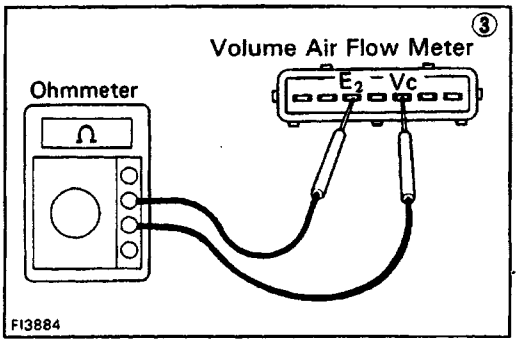
V01835

No.	Terminals	Trouble	Condition		STD Voltage
3	**Vc – E_2 (E_{21})**	No voltage	Ignition switch ON	–	**6 – 10 V**
	Vs – E_2 (E_{21})			Measuring plate fully closed	**0.5 – 2.5 V**
				Measuring plate fully open	**5 – 10 V**
			Idling		**2 – 8 V**
	THA – E_2 (E_{21})		Ignition switch ON	Intake air temperature 20°C (68°F)	**0.5 – 3.4 V**









- **Vc – E2 (E21)**

(1) There is no voltage between ECM terminals Vc and E2 (E21). **(IG SW ON)**

↓

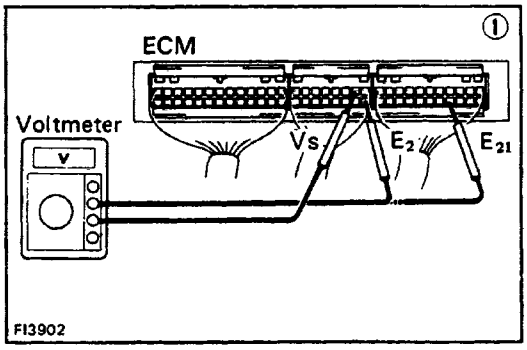
(2) Check that there is voltage between ECM terminals +B (+ B1) and E1. **(IG SW ON)**

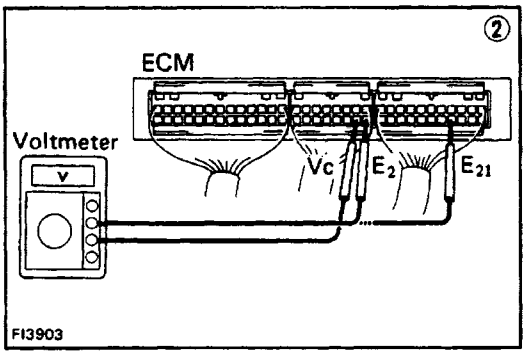
↓ OK → (3) Check volume air flow meter.

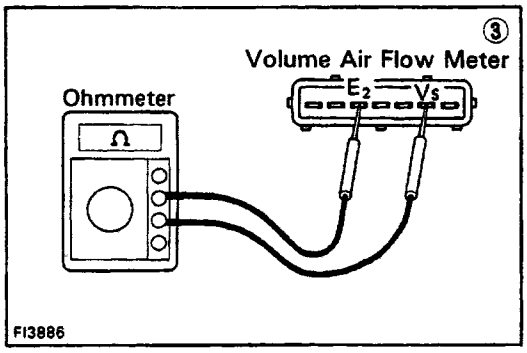
- BAD → Replace or repair volume air flow meter.
- OK → Check wiring between ECM and volume air flow meter.
  - OK → Try another ECM.
  - BAD → Replace or repair wiring.

NO → Refer to No. 1.

V01836







- **Vs – E2 (E21)**

(1) There is no voltage between ECM terminals Vs and E2 (E21). **(IG SW ON)**

↓

(2) Check that there is voltage between ECM terminals Vc and E2 (E201). **(IG SW ON)**

OK ↓ / NO → Refer to Vcc – E2 (E21). BAD → Repair or replace.

↓

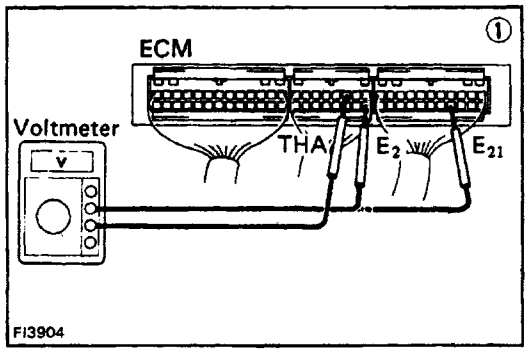
Check volume air flow meter. BAD → Repair or replace.

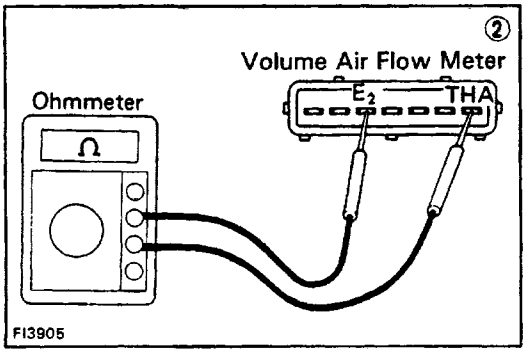
↓ OK

Check wiring between ECM and volume air flow meter. BAD → Repair or replace.

↓ OK

Try another ECM.





- **THA – E2 (E21)**

(1) There is no voltage between ECM terminals THA and E2 (E21). **(IG SW ON)**

↓

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

OK ↓ / NO → Refer to No. 1.

↓

(2) Check intake air temp. sensor.

BAD ↓ / OK →

Replace volume air flow meter.

Check wiring between ECM and intake air temp. sensor.

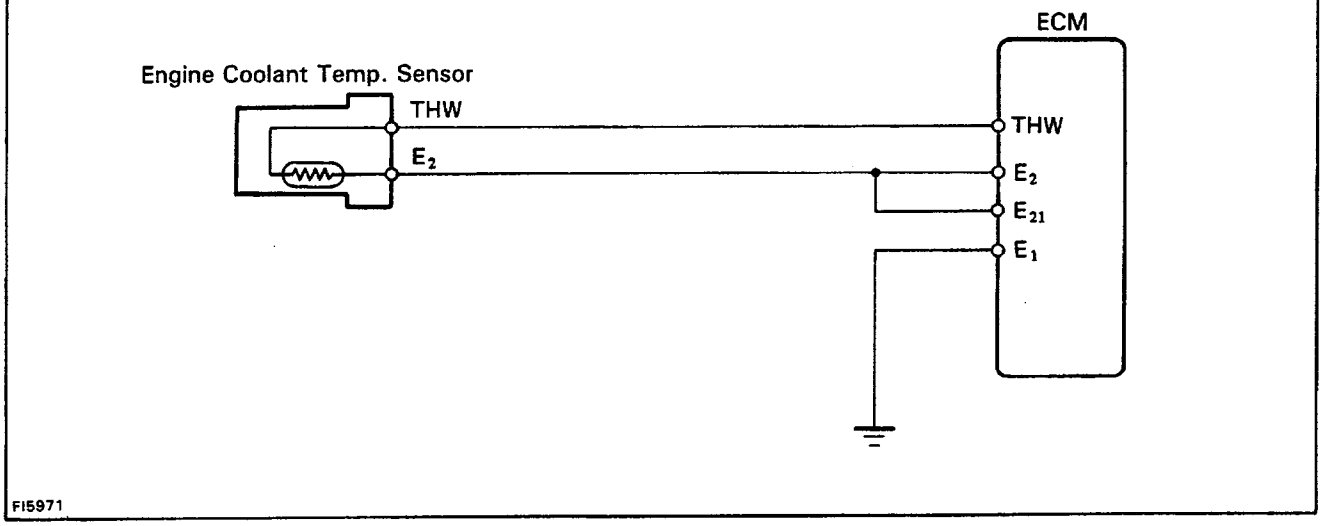
OK ↓ / BAD →

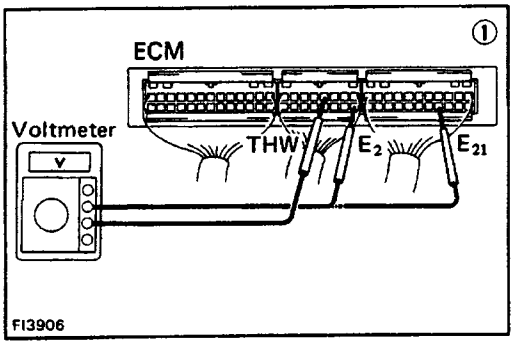
Try another ECM.

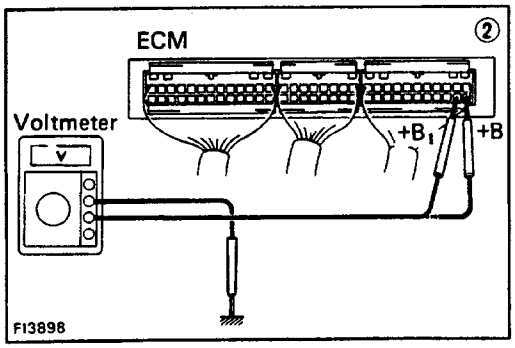
Repair or replace wiring.

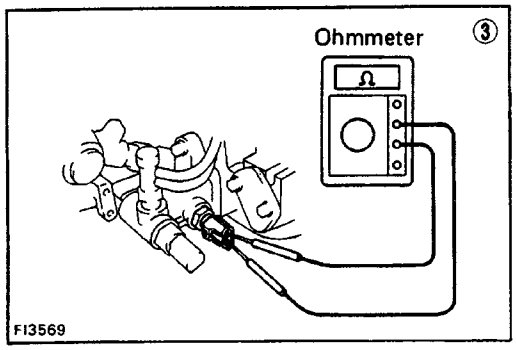
V01837

No.	Terminals	Trouble	Condition		STD Voltage
4	**THW – E_2 (E_{21})**	No voltage	Ignition switch ON	Coolant temperature 80°C (176°F)	**0.2 – 1.0 V**









(1) There is no voltage between ECM terminals THW and E2 (E21) **(IG SW ON)**

↓

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

OK → ↓

NO → Refer to No. 1.

↓

Check wiring between ECM terminal E1 and body ground.

OK → ↓

BAD → Repair or replace.

Check engine coolant temp. sensor.

BAD → Replace engine coolant temp. sensor.

OK → ↓

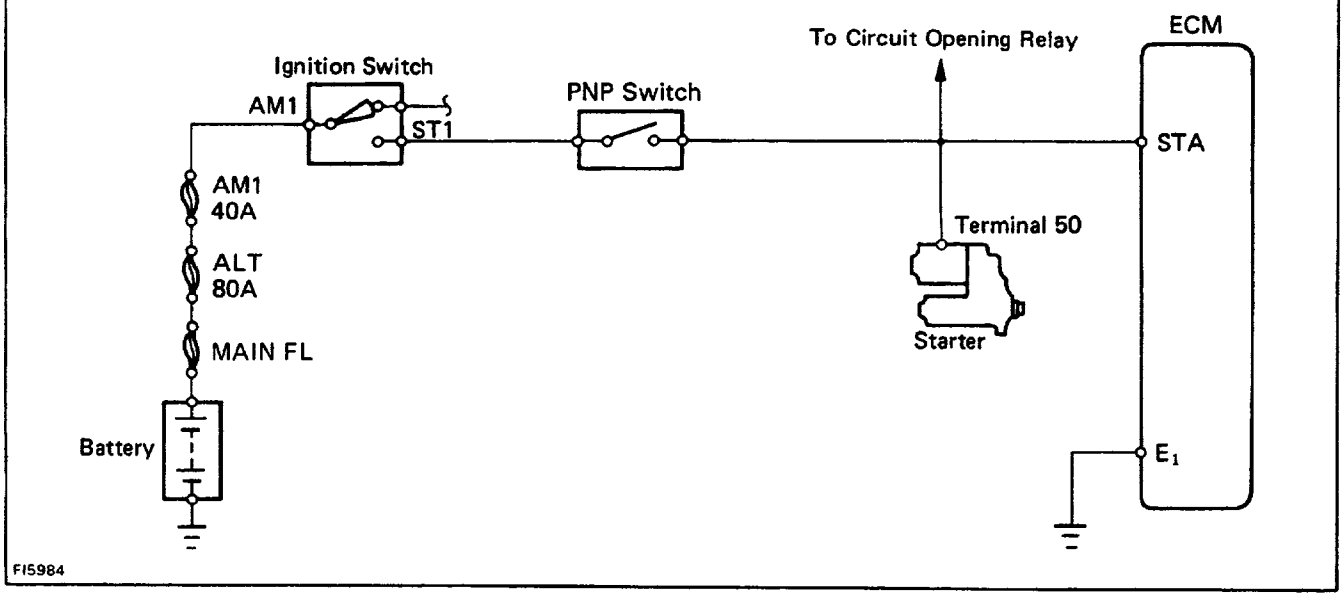
Check wiring between ECM and engine coolant temp. sensor.

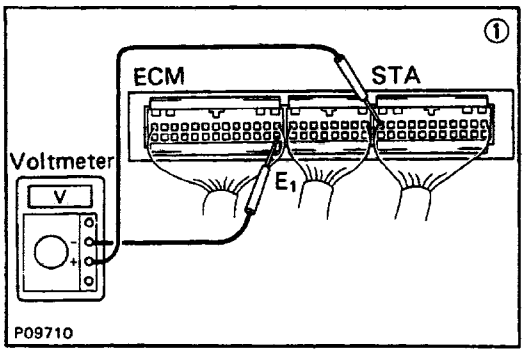
OK → ↓

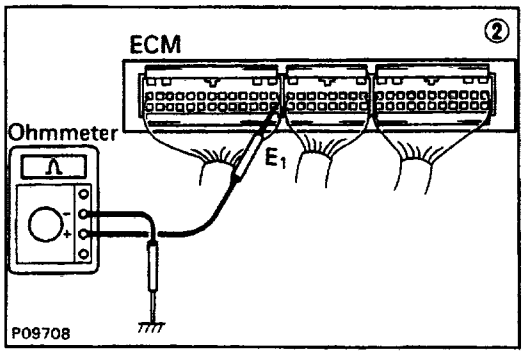
BAD → Repair or replace.

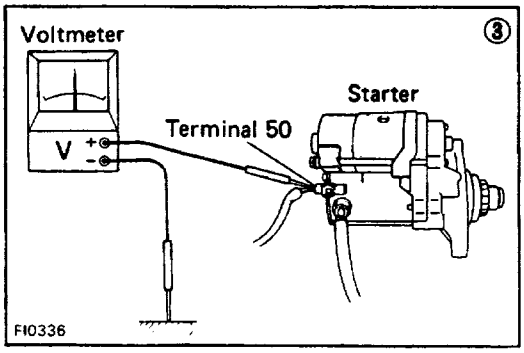
Try another ECM.

No.	Terminals	Trouble	Condition	STD Voltage
5	STA – E 1	No voltage	Ignition switch START position	6–12V









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

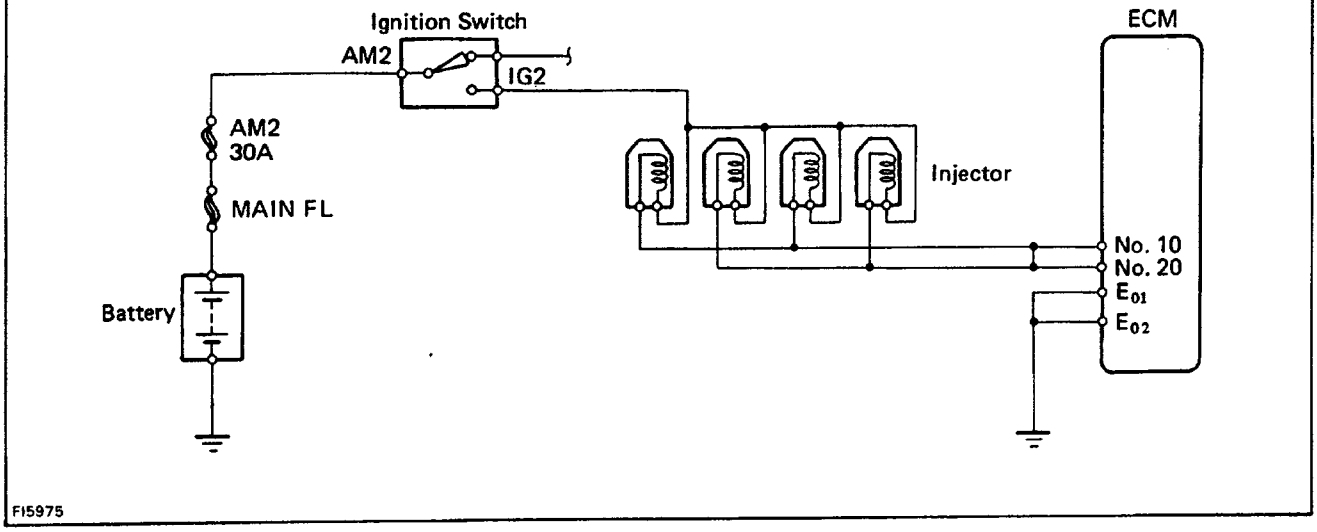
Check starter operation.
- OK → Check wiring between ECM and ignition switch terminal ST.
  - OK → Check wiring between ECM terminal E1 and body ground.
    - OK → Try another ECM.
    - BAD → Repair or replace.
  - BAD → Repair or replace.
- BAD

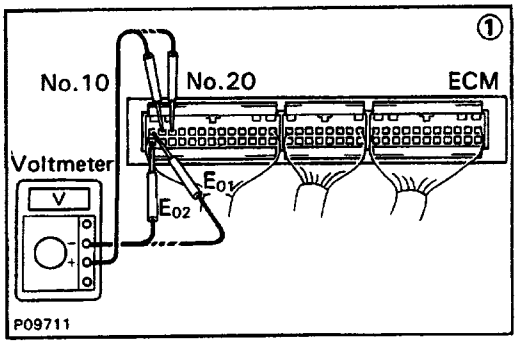
Check fusible link, battery, wiring and ignition switch.
- BAD → Repair or replace.
- OK

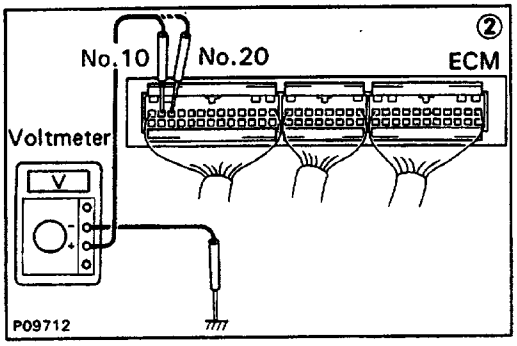
(3) Check that there is voltage at terminal 50 of starter. **(IG SW ST) STD voltage: 6 –12 V**
- OK → Check starter. (See ST section)
- NO → Check wiring between ignition switch ST1 terminal and starter terminal 50.

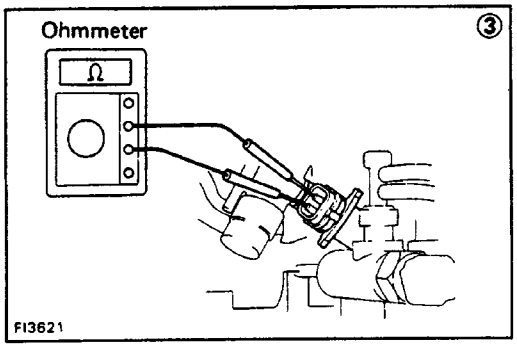
V01839

No.	Terminals	Trouble	Condition	STD Voltage
6	No. 10 – E_{01} No. 20 – E_{02}	No voltage	Ignition switch ON	9 – 14 V









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

↓

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

NO → ↓

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

OK → Try another ECM.

BAD → Repair or replace.

↓

Check fusible link and ignition switch.

BAD → Repair or replace.

OK → ↓

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

OK → ↓

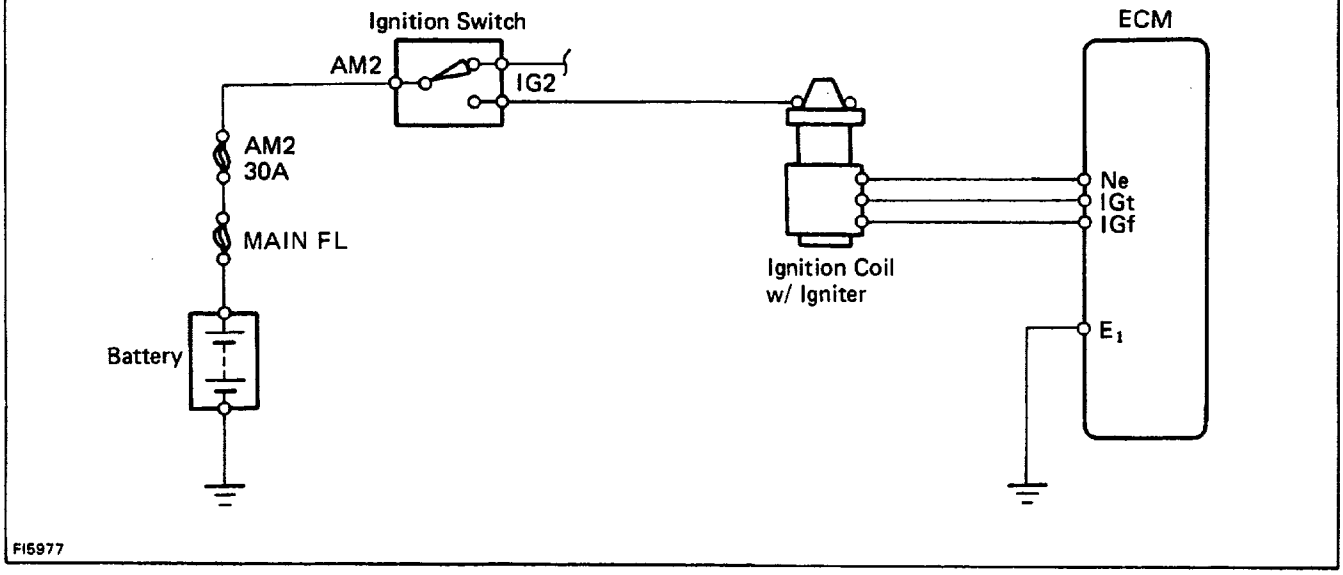
NO → Replace injector.

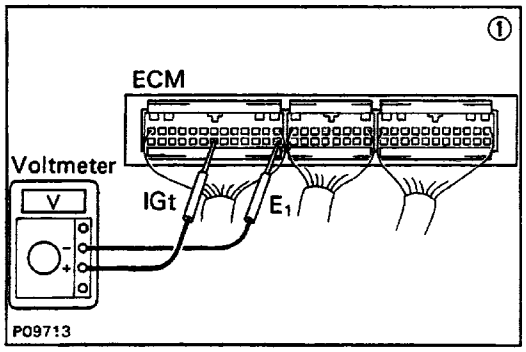
Check wiring between ECM terminal No. 10 and/or No. 20 and battery.

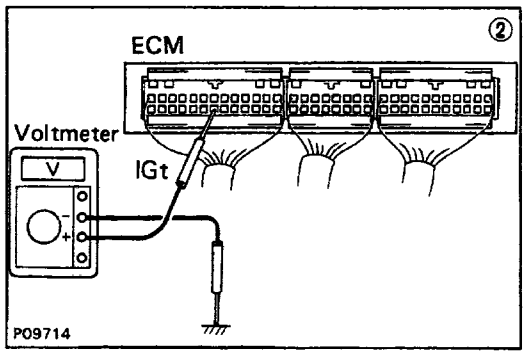
BAD → Repair or replace.

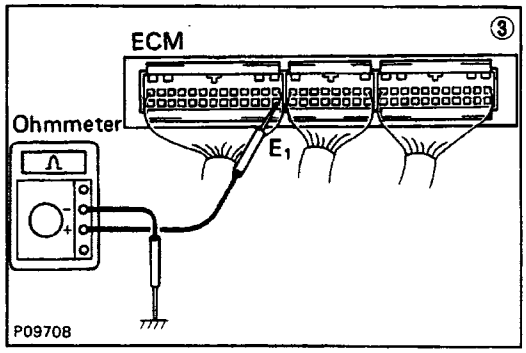
V01840

No.	Terminals	Trouble	Condition	STD Voltage
7	**IGt – E_1**	No voltage	Idling	**0.7 – 1.0 V**









(1) There is no voltage between ECM terminals IGt and E1. **(Idling)**

(2) Check that there is voltage between ECM terminal IGt and body ground. **(Idling)**

NO

OK

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

BAD

Repair or replace.

Refer to No. 1. . BAD

OK

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

OK

Check distributor. BAD → Replace.

OK

Check wiring between ECM and igniter. BAD → Repair or replace.

OK

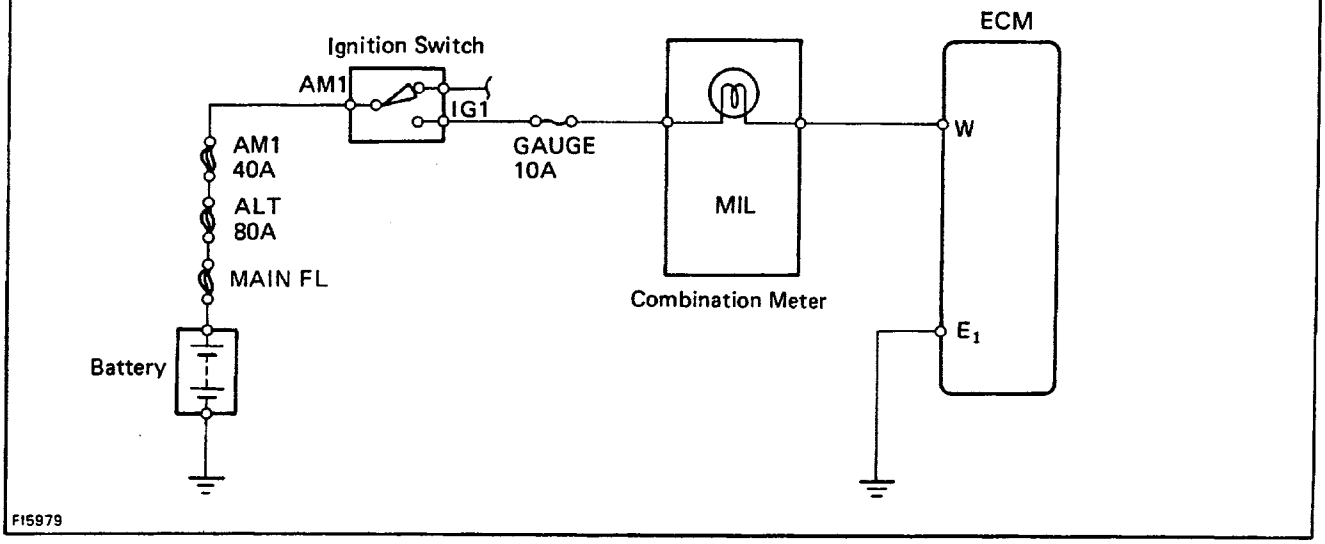
Check igniter. BAD → Repair or replace.

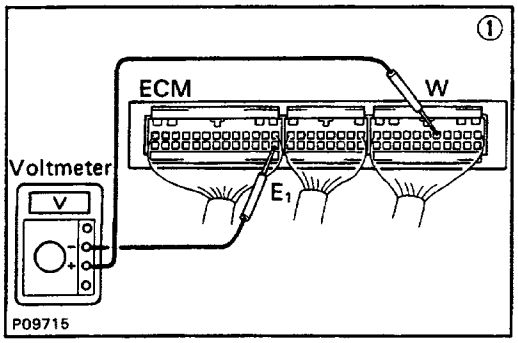
OK

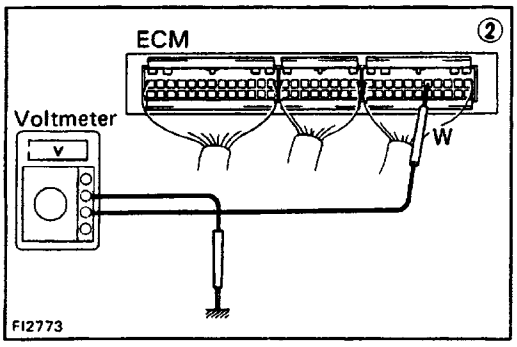
Try another ECM.

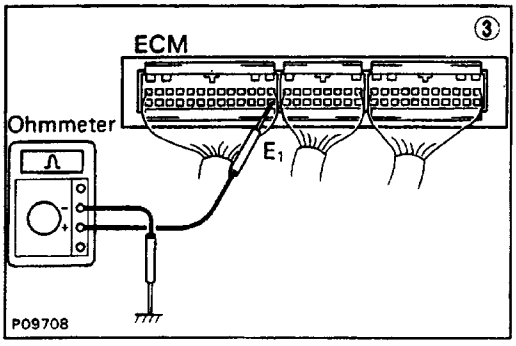
V01841

No.	Terminals	Trouble	Condition	STD Voltage.
8	W – E_1	No voltage	No trouble (MIL off) and engine running	9 – 14 V









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

↓

(2) Check that there is voltage between ECM terminal W and body ground.

NO → ↓

OK →

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

OK → Try another ECM.

BAD → Repair or replace.

↓

Check GAUGE fuse (10 A) and MIL.

OK → ↓

BAD → Repair or replace.

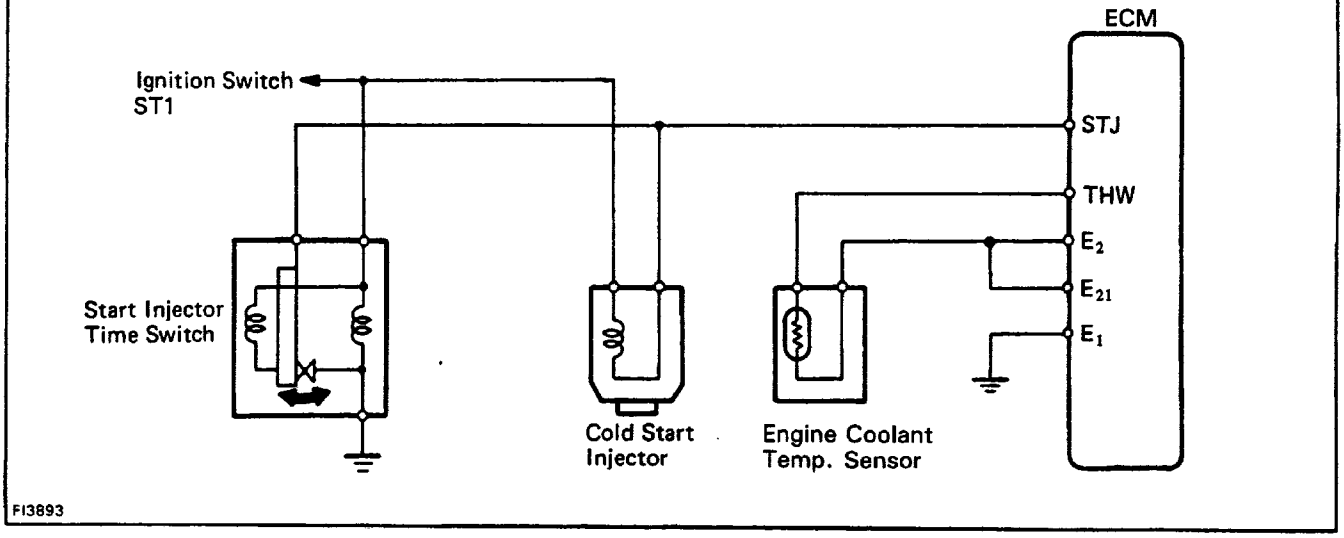
Fuse blows again → ↓

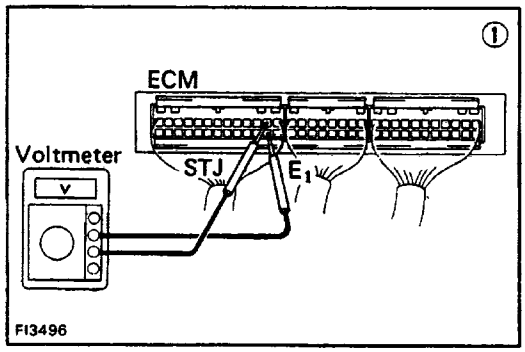
Check wiring between ECM terminal W and fuse.

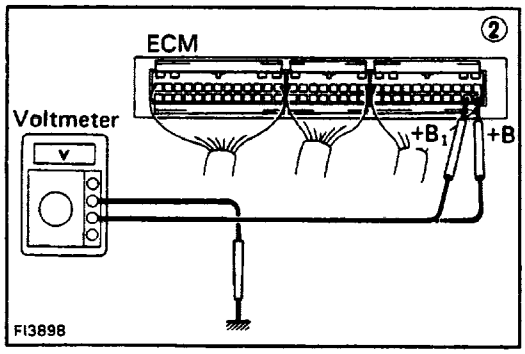
BAD → Repair or replace.

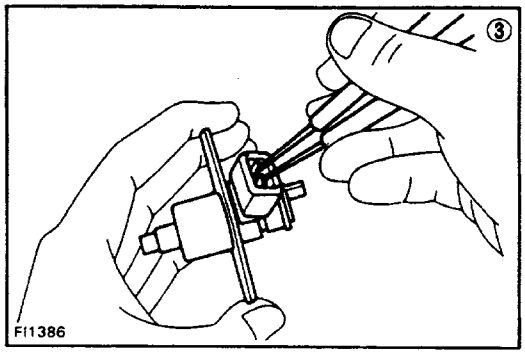
V01842

No.	Terminal	Trouble	Condition		STD Voltage
9	**STJ – E_1**	No voltage	Ignition switch START position	Coolant temperature 80°C (176° F)	**6 – 12 V**









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

↓

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

OK → ↓ | **NO** → Refer to No. 1.

↓

(3) Check cold start injector.

BAD → Replace cold start injector. → ↓

OK → Check wiring between ECM and cold start injector.

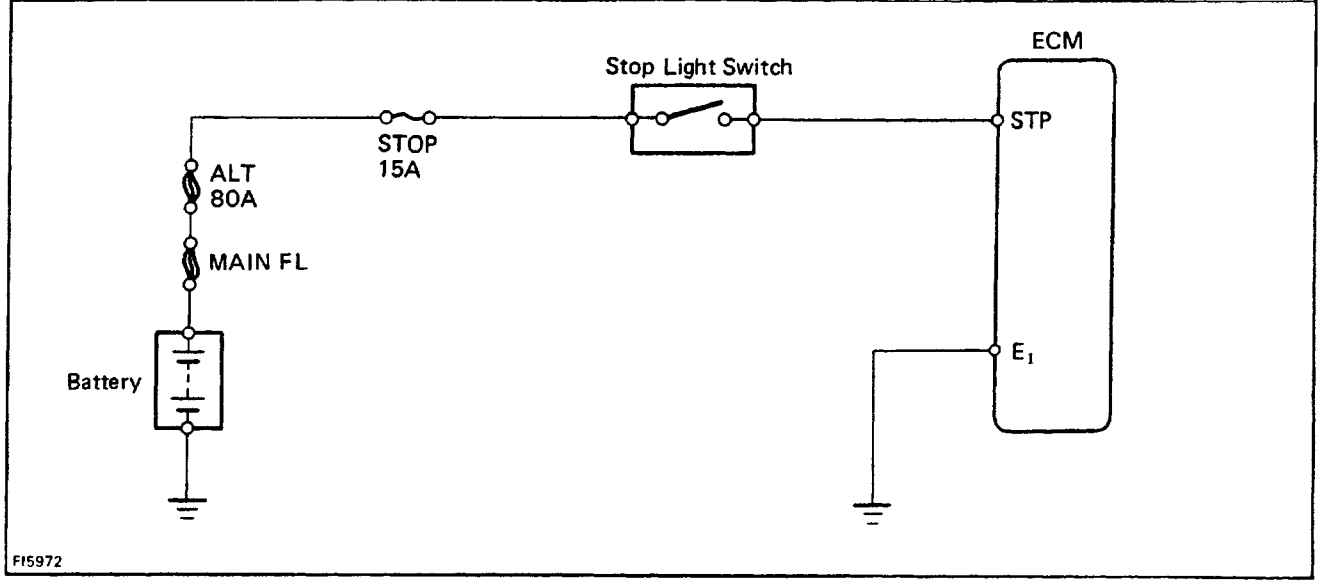
OK → Check wiring between ECM terminal E1 and body ground.

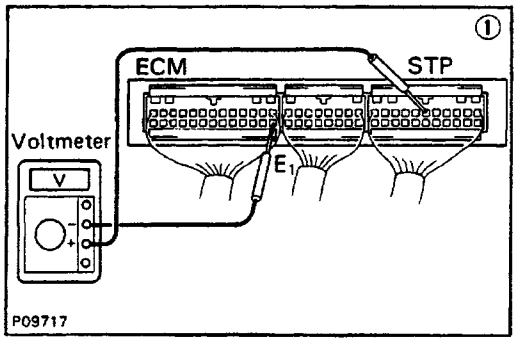
OK → Try another ECM.

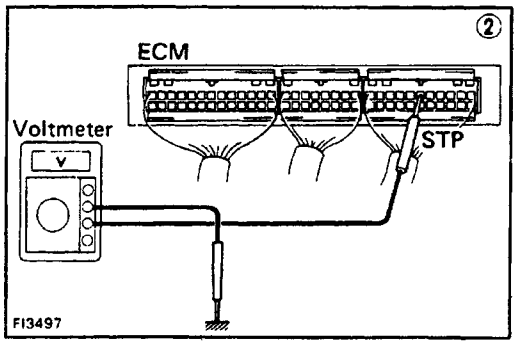
BAD → Repair or replace wiring.

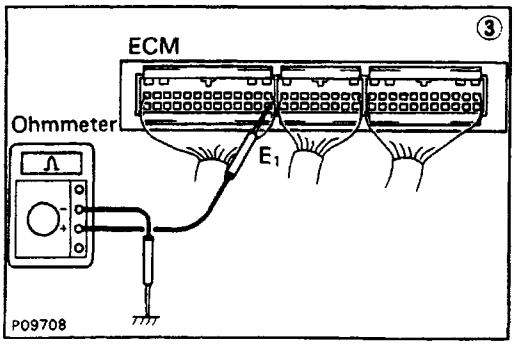
V01843

No.	Terminals	Trouble	Condition	STD Voltage
10	**STP – E_1**	No voltage	Stop light switch ON	**7.5 – 14 V**









(1) There is no voltage between ECM terminals STP and E1.

↓

(2) Check that there is voltage between ECM terminal STP and body ground when the brake pedal is depressed.

NO → Check STOP fuse (15A) and stop light switch.

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

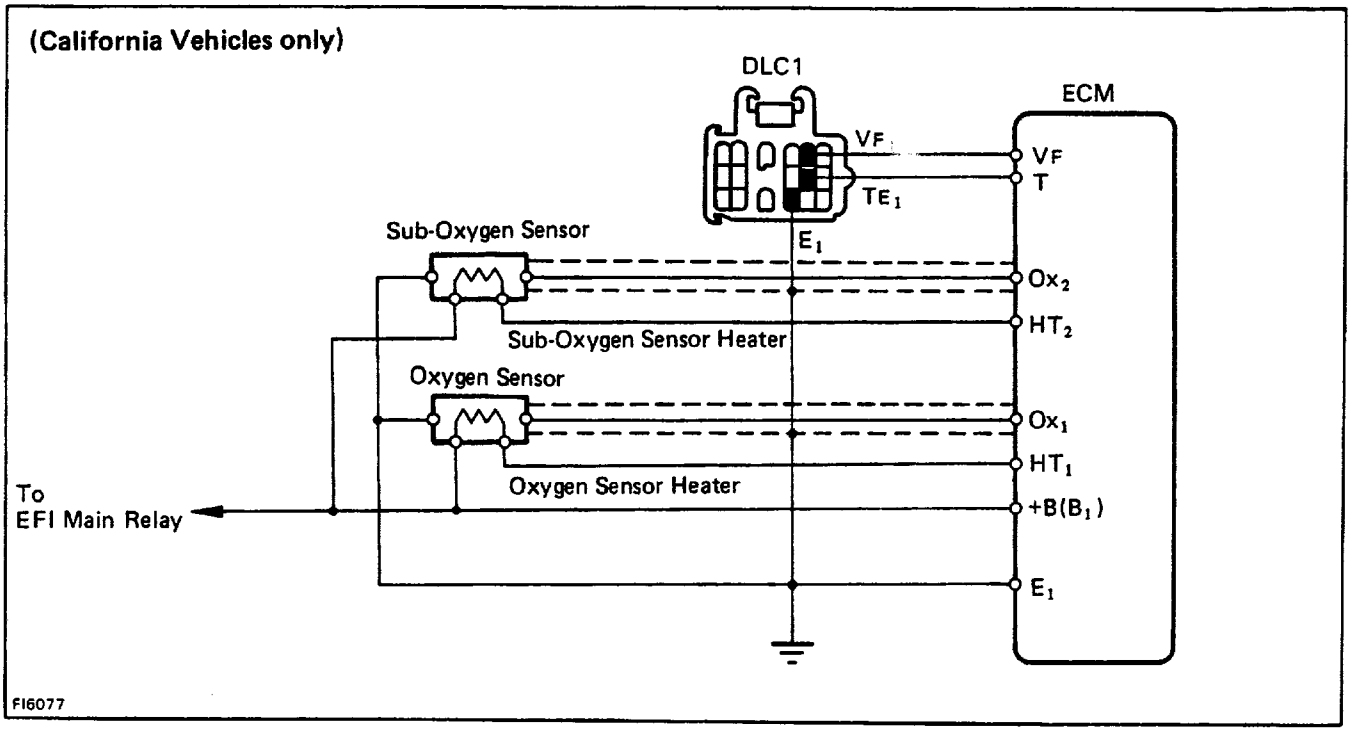
OK → Try another ECM.

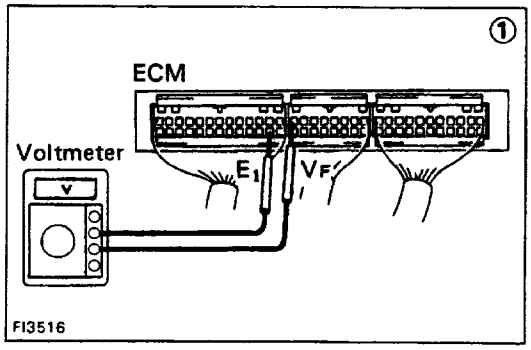
BAD → Repair or replace.

Check STOP fuse (15A) and stop light switch. BAD → Repair or replace.

OK → Check wiring between ECM terminal STP and battery. BAD → Repair or replace.

V01844





(1) There is no voltage between ECM terminals VF and E1.

(2) Check that there is voltage between ECM terminal VF and body ground.

NO — OK

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

OK — Try another ECM.

BAD — Repair or replace.

Is air leaking into air induction system?

YES — Repair air leak.

NO

Check spark plugs.

BAD — Repair or replace.

OK

Check distributor and ignition system.

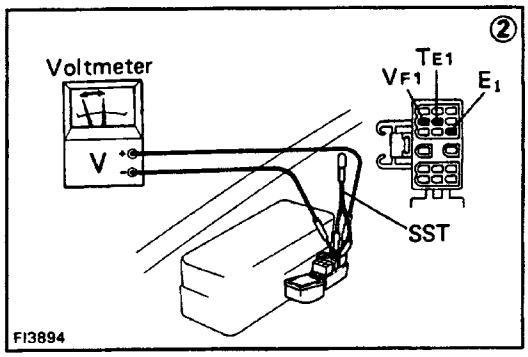
BAD — Repair or replace.

OK

CONTINUED 4N PAGE EG1–175

V01845

CONTINUED FROM PAGE EG1–174



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 volume air flow meter. — BAD → Repair or replace.

OK

Check operation of oxygen sensor. — OK → System normal.

BAD

Check wiring between oxygen sensor and ECM connector. — BAD → Repair wiring.

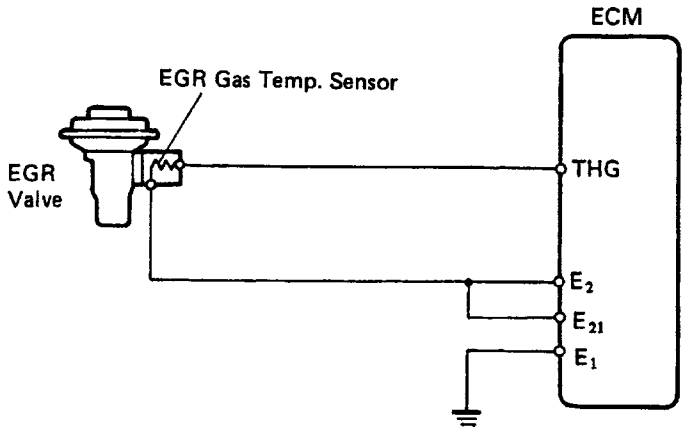
OK

Replace oxygen sensor.

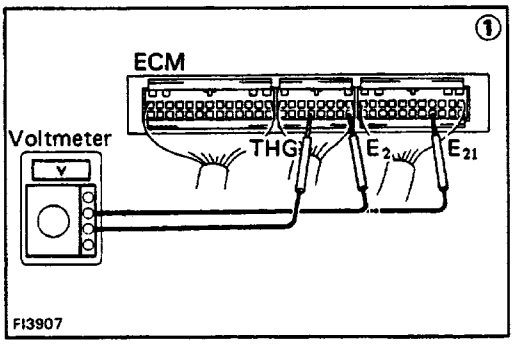
*Rich malfunction only.

V01847

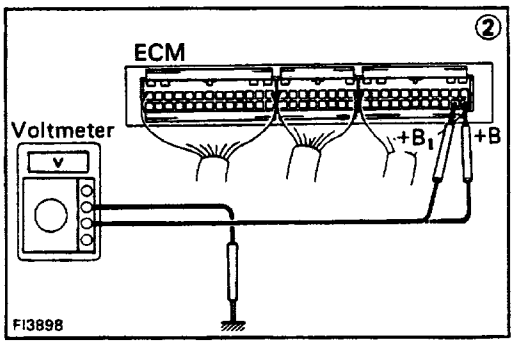
(California Vehicles only)



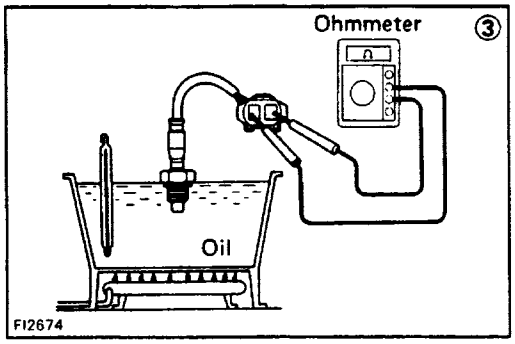
FI3895



FI3907



FI3898



FI2674

(1) There is no voltage between ECM terminals THG and E2 (E21) (Engine running at 2,000 rpm)

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

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

NO → Refer to No. 1 .

OK → Check EGR system.

BAD → Repair or replace.

OK → Check EGR gas temp. sensor.

BAD → Replace EGR gas temp. sensor.

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

OK → Try another ECM.

BAD → Repair or replace.

V01846