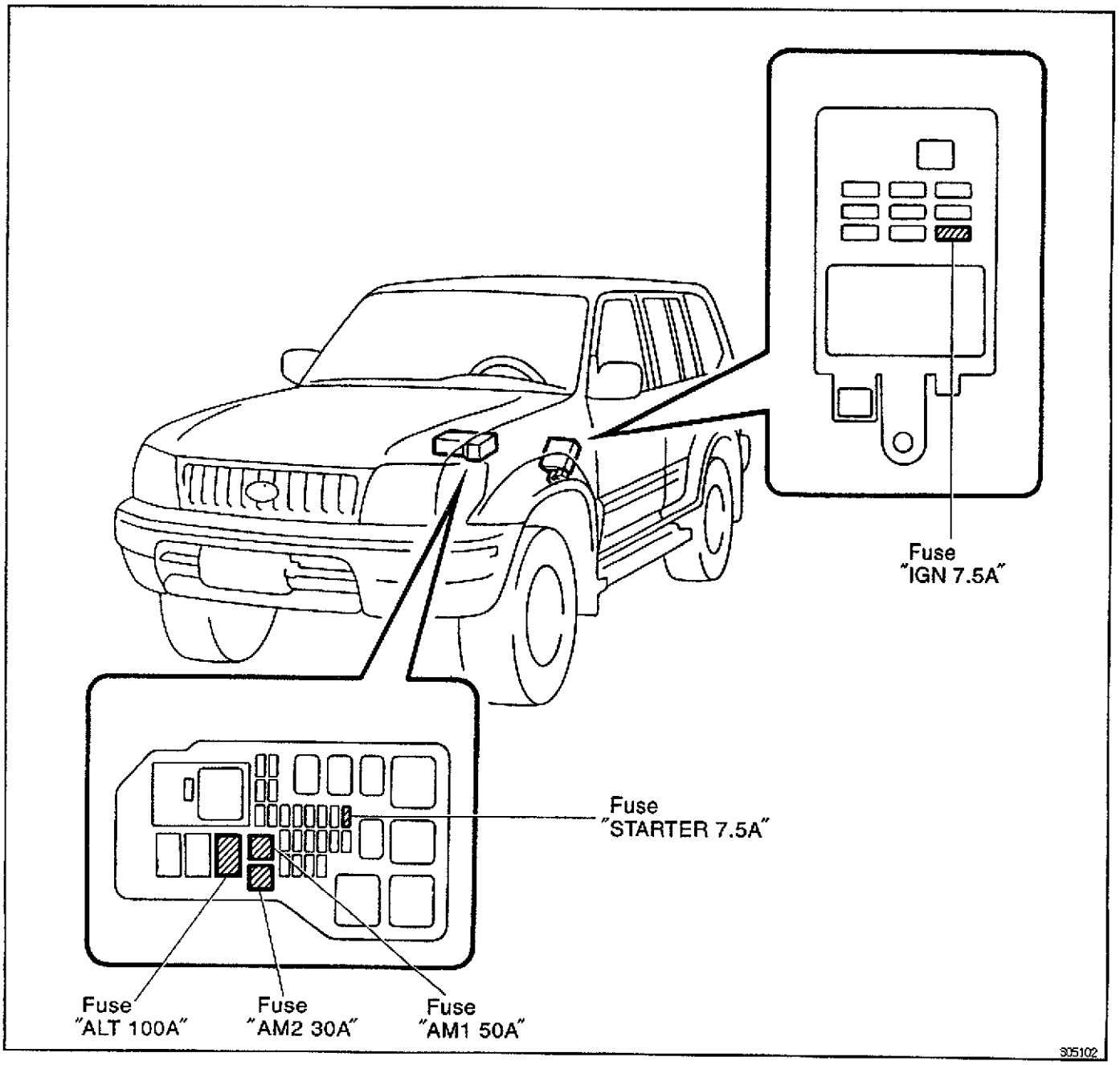
TROUBLESHOOTING w/ VOLT, OHMMETER

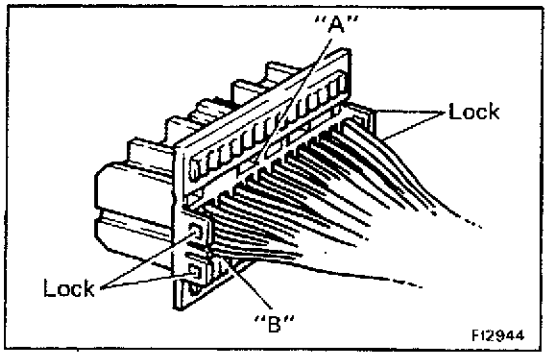
HINT: EG129–0F

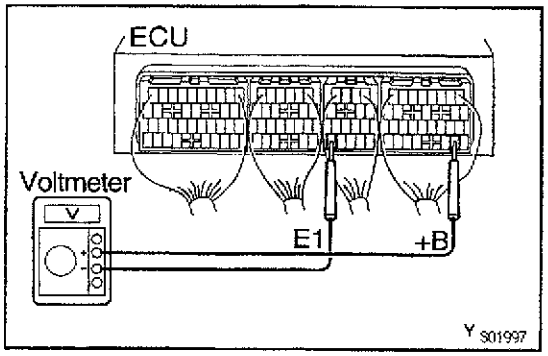
- The following troubleshooting procedures are designed for inspection of each separate system, and therefore the actual procedure may vary somewhat. However, troubleshooting should be performed while referring to the inspection methods described in this manual.
- Before beginning inspection, it is best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

FUSES, H–FUSES AND FUSIBLE LINK LOCATION

EG128–0F







EFI SYSTEM CHECK PROCEDURE

EG7D8-01

PREPARATION

(a) Disconnect the connectors from the ECU.

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

NOTICE: Pay attention to sections "A" and "B" in the illustration which can be easily broken.

(c) Reconnect the connectors to the ECU.

HINT:

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

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

EC

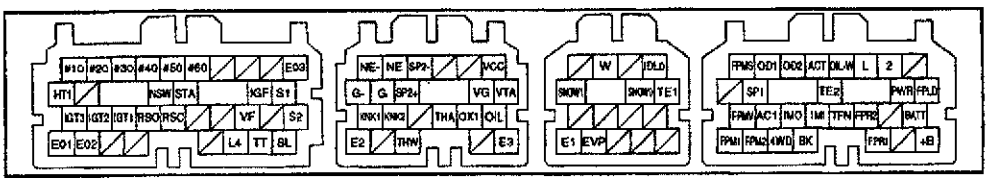
Engine (and ECT) ECU Terminals

EG

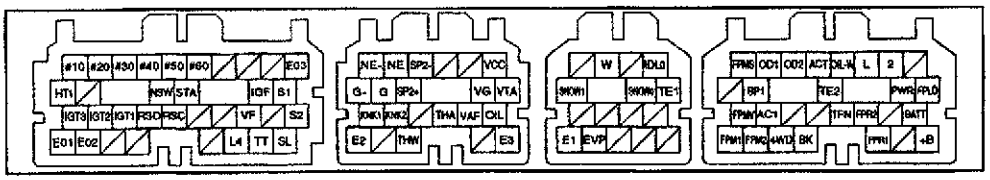
Symbol	Connection	Symbol	Connection	Symbol	Connection
#10	INJECTOR	SL	ECT LOCK - UP SLENOID		—
#20	INJECTOR	NE⊖	CRANKSHAFT POSITION SENSOR	E1	ECU GROUND
#30	INJECTOR	NE	CRANKSHAFT POSITION SENSOR	EVP	EVAPORATOR CONTROL VSV
#40	INJECTOR	SP2⊖	VEHCLE SPEED SENSOR		—
#50	INJECTOR		—		—
#60	INJECTOR		—		—
	—	VCC	THROTTLE POSITION SENSOR	FPMS	FUEL TANK CHANGEOVER SWITCH
	—	G⊖	CRANKSHAFT POSITION SENSOR	OD1	CRUISE CONTROL ECU
	—	G	CRANKSHAFT POSITION SENSOR	OD2	O/D MAIN SWITCH
E03	POWER GROUND	SP2⊕	VEHCLE SPEED SENSOR	ACT	A/C AMPLIFIER
HT1	OXYGEN SENSOR HEATER	VG	AIR FLOW METER	OIL-W	A/T OIL TEMP. : LIGHT
	—	VTA	THROTTLE POSITION SENSOR	L	NEUTRAL START SWITCH
NSW	NEUTRAL START SWITCH	KNK1	KNOCK SENSOR (RIGHT TBANK)	2	NEUTRAL START SWITCH
STA	STARTER RELAY	KNK2	KNOCK SENSOR (LEFT BANK)		—
IGF	IGNITER		—		—
S1	ECT No.1 SOLENOID	THA	INTAKE AIR TEMP. SENSOR	SP1	VEHICLE SPPED SENSOR
IGT3	IGNITER	VAF, OX1	VARIABLE RESISTER, OXGEN SENSOR	TE2	CHECK CONNECTOR
IGT2	IGNITER	OIL	A/T FLUID TEMP. SENSOR	PWR	PATTERN SELECT SWITCH
IGT1	IGNITER	E2	SENSORS GROUND	FPLD	DOUBLE TANK INDICATOR
RSO	ISC VALVE		—	FPMV	FUEL TANK SOLENOID RETURN VALVE
RSC	ISC VALVE	THW	WATER TEMP. SENSOR	AC1	A/C AMPLIFIER
	—		—	IMO	TRANSPONDER KEY COMPUTER
	—	E3	SENSORS GROUND	IMI	TRANSPONDER KEY COMPUTER
VF	CHECK CONNECTOR		—	TFN	TRANSFER NEUTRAL DETECTION SWITCH
	—	W	WARNING LIGHT	FPR2	SUB FUEL PUMP RELAY
S2	ECT No.2 SOLENOID		—		—
E01	POWER GROUND	IDLO	CRUISE CONTROL ECU	BATT	BATTERY
E02	POWER GROUND	SNOW1	SECOND START MODE SWITCH	FPM1	MAIN FUEL PUMP
	—	SNOW0	SECOND START MODE INDICATOR	FPM2	SUB FUEL PUMP
	—	TE1	CHECK CONNECTOR	4WD	TRANSFER 4WD DETECTION SWITCH
	—		—	BK	STOP LIGHT SWITCH
L4	TRANSFER L4 DETECTION SWITCH		—	FPR1	CIRCUIT OPENING RELAY
TT	CHECK CONNECTOR		—		—
				+B	BATTERY

Engine (and ECT) ECU Terminals

For Europe



For Others



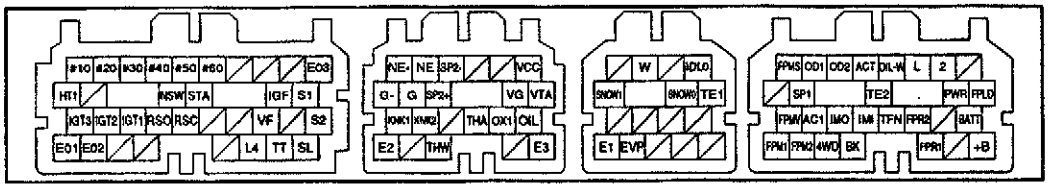
V03160

Engine ECU Wiring Connectors Voltage

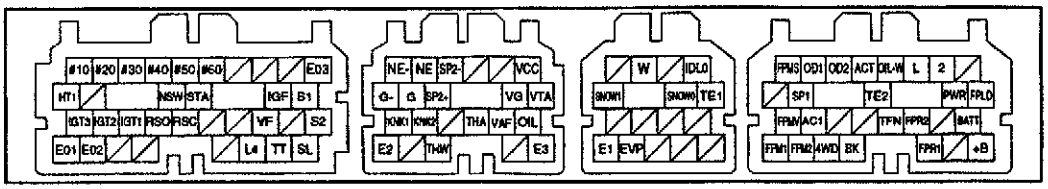
No.	Terminals	Condition		STD voltage (V)	See page
1	+B - E1	IG SW ON		9 - 14	EG-114
2	BATT - E1	—		9 - 14	EG-115
3	VCC - E2	IG SW ON	—	4.5 - 5.5	EG-116
	VTA - E2		Throttle valve fully closed	0.3 - 0.8	
			Throttle valve fully open	2.7 - 5.2	
4	#10, #20, #30, #40, #50, #60 - E01, E02	IG SW ON		9 - 14	EG-118
5	THA - E2	IG SW ON	Intake air temperature 20°C (68°F)	0.5 - 3.4	EG-119
6	THW - E2	IG SW ON	Coolant temperature 80°C (176°F)	0.2 - 1.0	EG-120
7	STA - E1	Cranking		6 or more	EG-121
8	IGT1, IGT2, IGT3 - E1	Idling		Pulse generation	EG-122
9	RSC, RSO - E1	IG SW ON	Engine ECU connectors disconnected	9 - 14	EG-123
10	W - E1	No trouble (Check engine warning light off) and engine running		9 - 14	EG-124

Engine (and ECT) ECU Terminals

For Europe

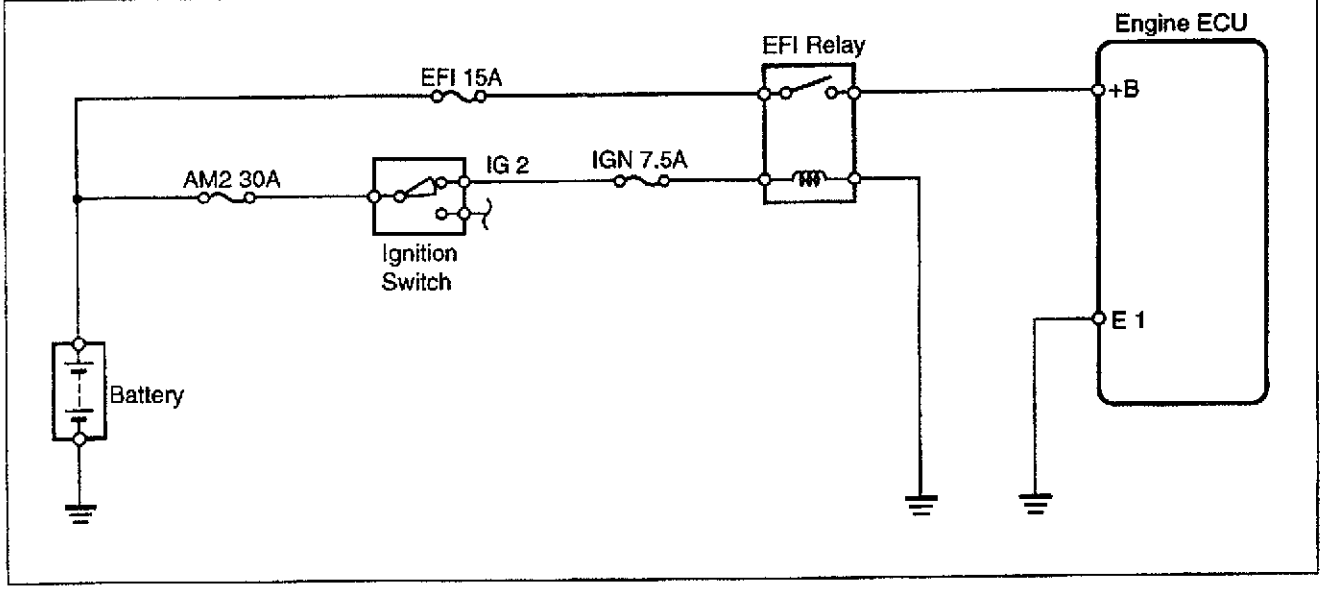


For Others

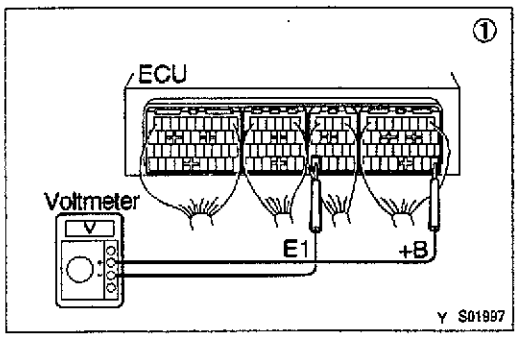


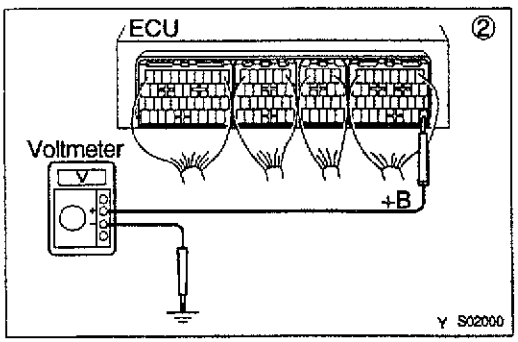
V08162

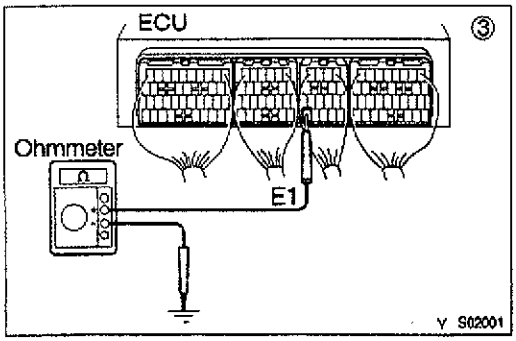
No.	Terminals	Trouble	Condition	STD voltage
1	+B - E1	No voltage	IG SW ON	9 - 14V



V08150







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

② Check that there is voltage between ECU terminal +B 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 fuses, H-fuse, fusible link and ignition switch. → BAD → Repair or replace.

OK

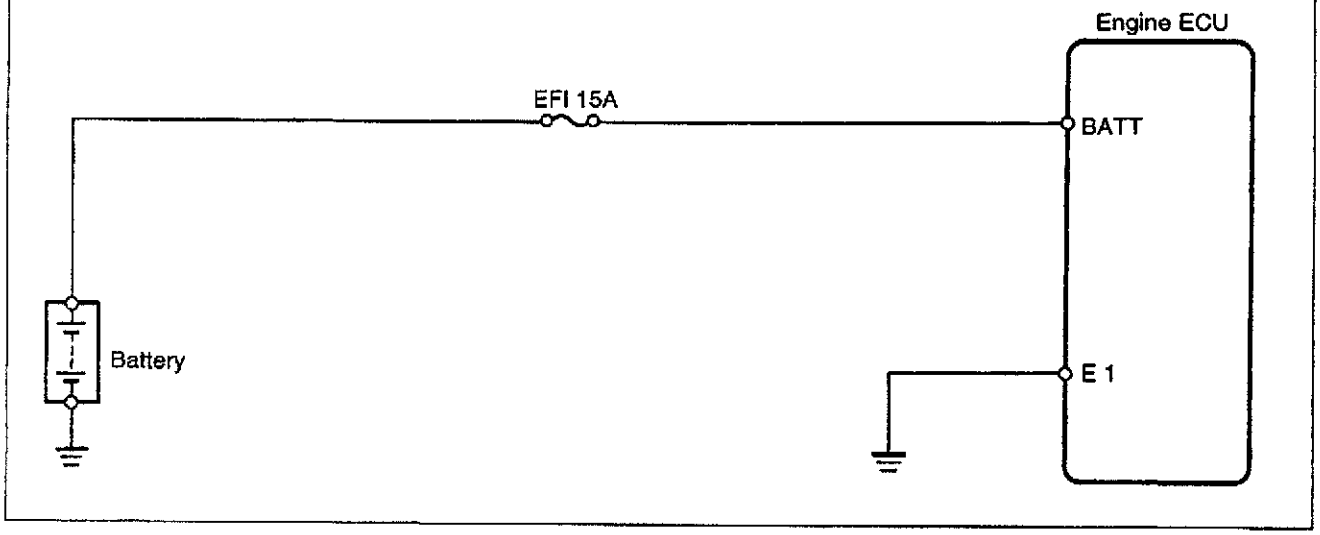
Check EFI main relay. (See page EG-150) → BAD → Replace.

OK

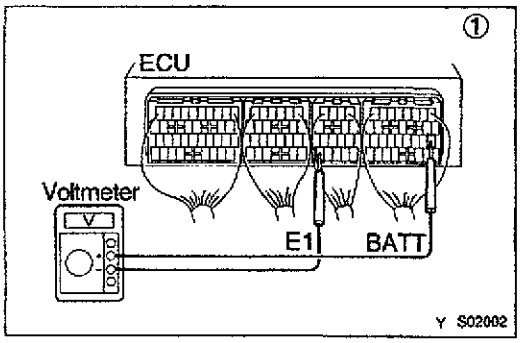
Check wiring between EFI main relay and battery. → BAD → Repair or replace.

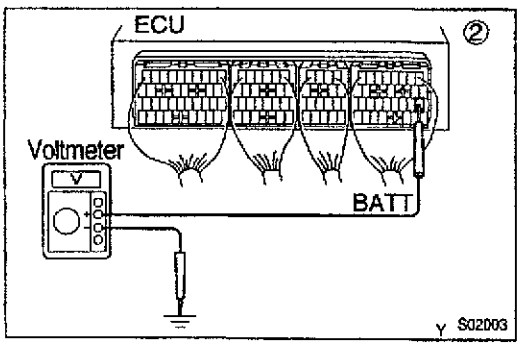
V08193

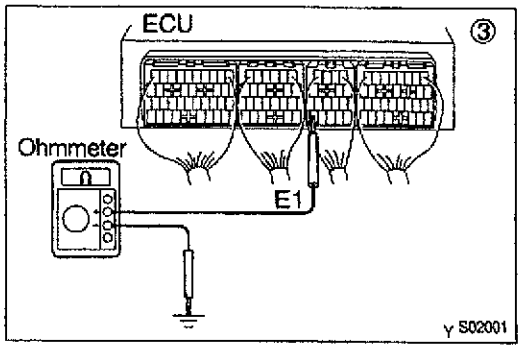
No.	Terminals	Trouble	Condition	STD voltage
2	BATT - E1	No voltage	——	9 - 14V



V08131







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

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

NO

OK

③ Check wiring between ECU terminal E1 and body ground.

OK

BAD

Try another ECU.

Repair or replace.

Check fuse and fusible link.

BAD

Replace.

OK

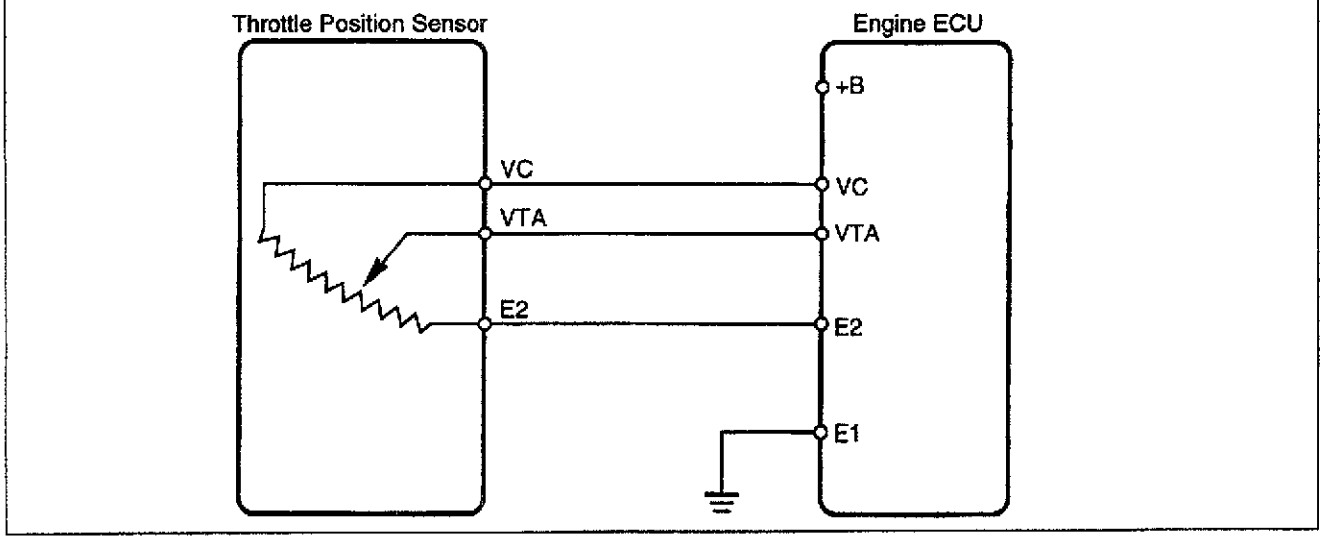
Check wiring between ECU terminal and battery.

BAD

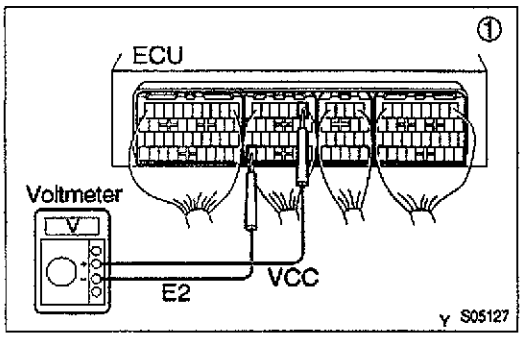
Repair or replace.

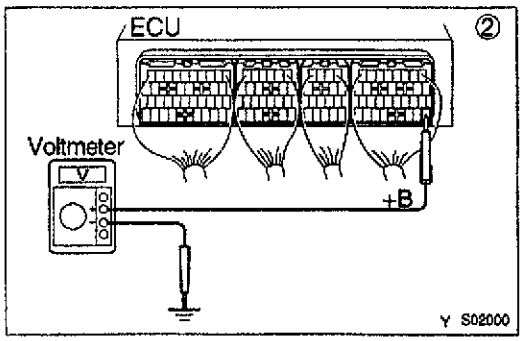
Y V07515

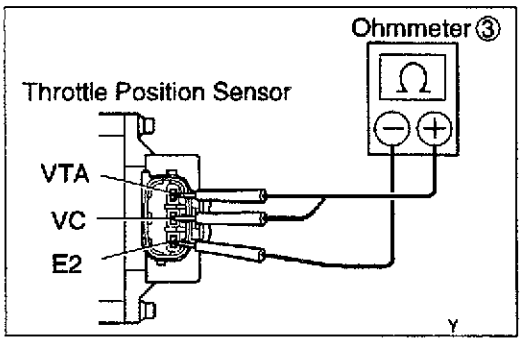
No.	Terminals	Trouble	Condition		STD voltage
3	VCC - E2	No voltage	IG SW ON	—	4.5 - 5.5V
	VTA- E2			Throttle valve fully closed	0.3 - 0.8V
				Throttle valve fully open	2.7 - 5.2V



V08158







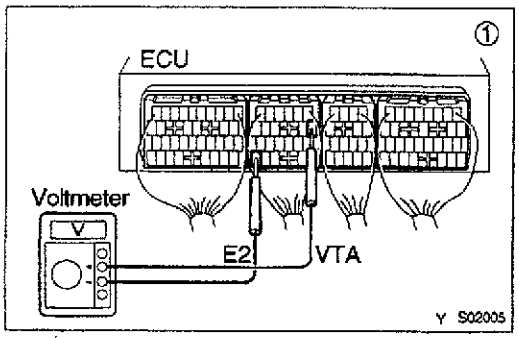
• **VCC - E2**

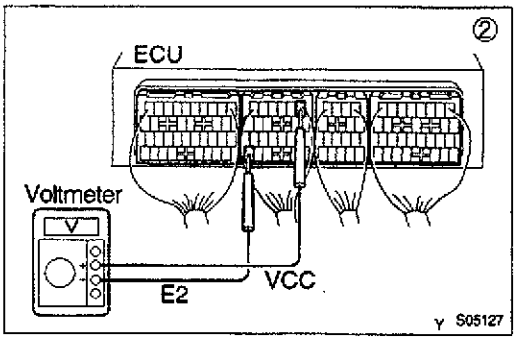
① There is no voltage between ECU terminals V2 and E2. **(IG SW ON)**

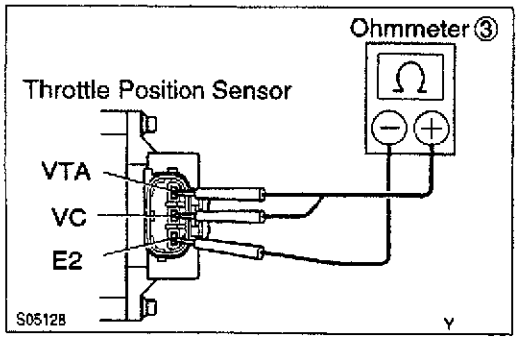
② Check that there is voltage between ECU terminal +B and body ground. **(IG SW ON)**

- OK → ③ Check throttle position sensor.
  - BAD → Repair or replace.
  - OK → Check wiring between ECU and throttle position sensor.
    - OK → Try another ECU.
    - BAD → Repair or replace wiring.
- NO → Refer to No. 1. (See page EG-114)

V08190







• **VTA - E2**

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

↓

② Check that there is voltage between ECU terminals VCC and E2. **(IG SW ON)**

↓ NO

Refer to VCC-E2 trouble section.

↓ OK

→ OK

↓

③ Check throttle position sensor. → BAD → Repair or replace.

↓ OK

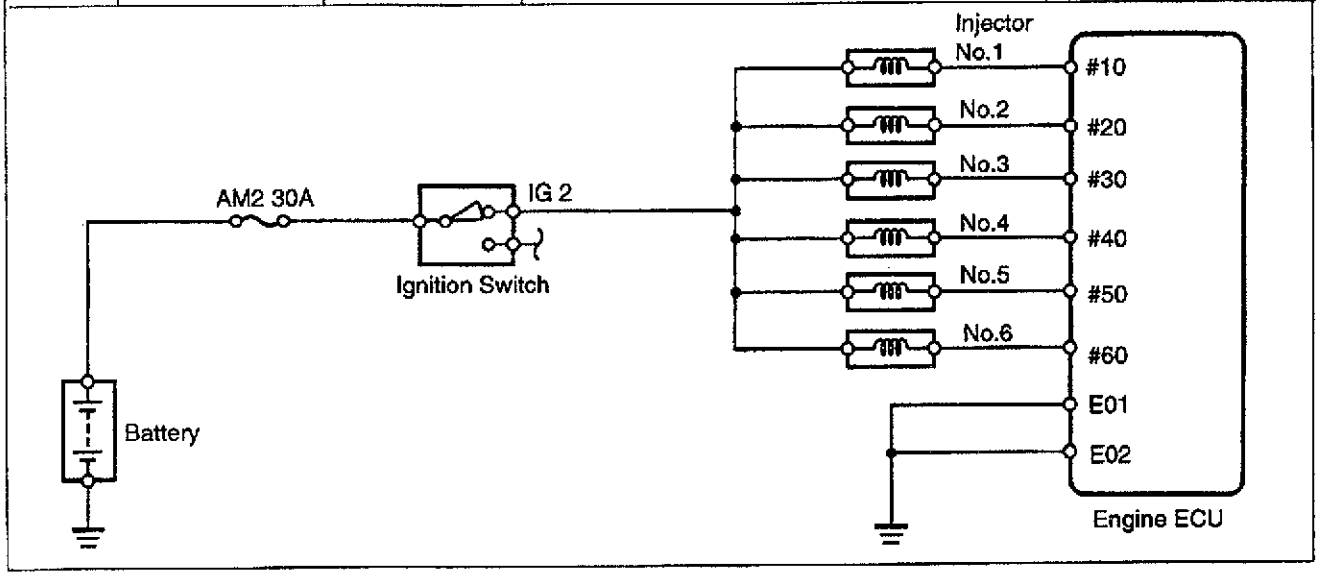
Check wiring between ECU and throttle position sensor. → BAD → Repair or replace.

↓ OK

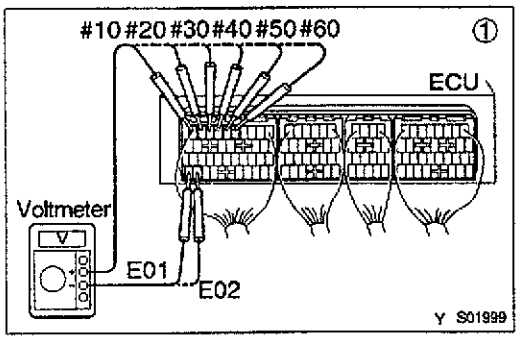
Try another ECU.

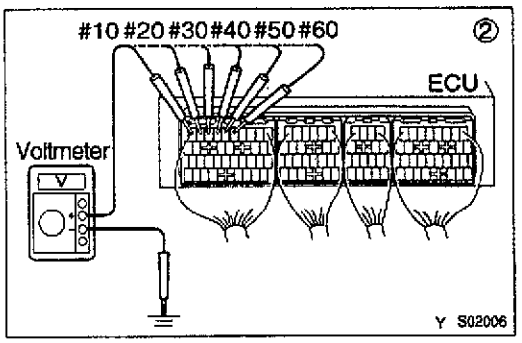
V08196

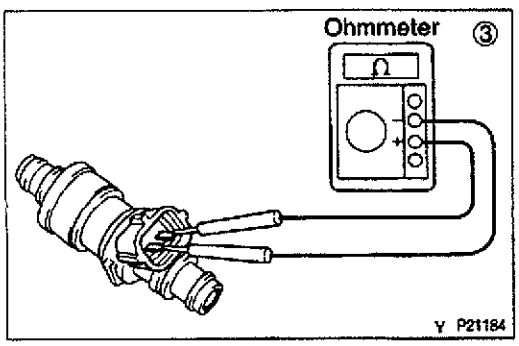
No.	Terminals	Trouble	Condition	STD voltage
4	#10 - E01 #60 - E02	No voltage	IG SW ON	9 -14V



V08130







① There is no voltage between ECU terminals #10 ~ #60 and E01 and/or E02. **(IG SW ON)**

② Check that there is voltage between ECU terminal #10 ~ #60 and body ground.

NO → OK

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

OK → Try another ECU.

BAD → Repair or replace.

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

OK

③ Check resistance of each injector.
STD resistance: 13.4 - 14.2 Ω

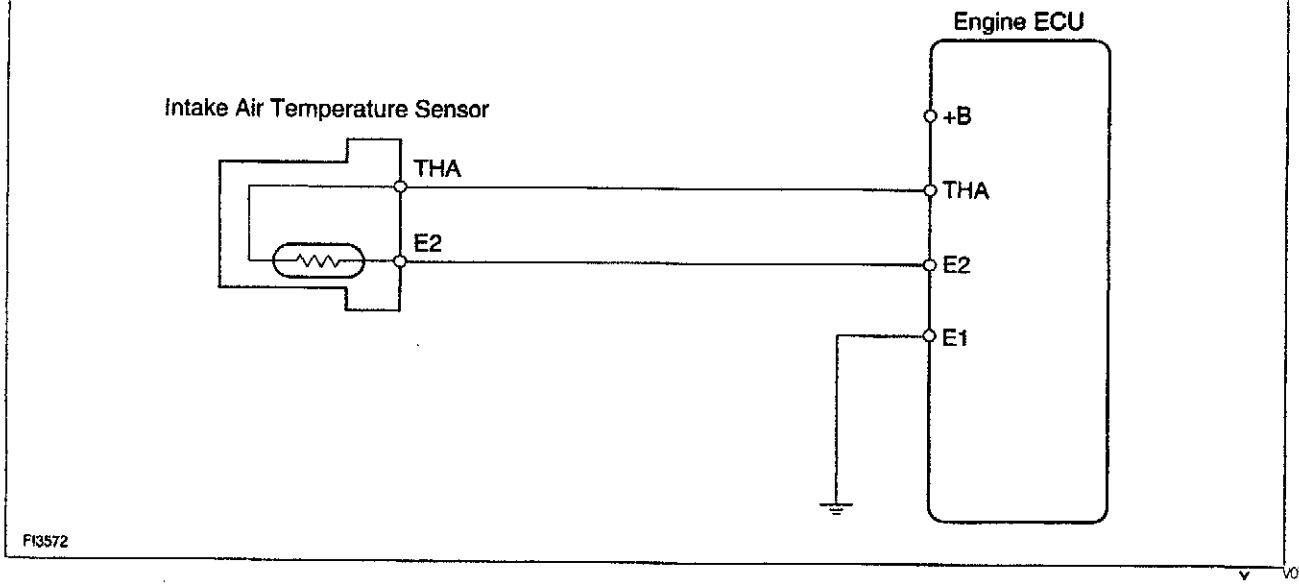
OK

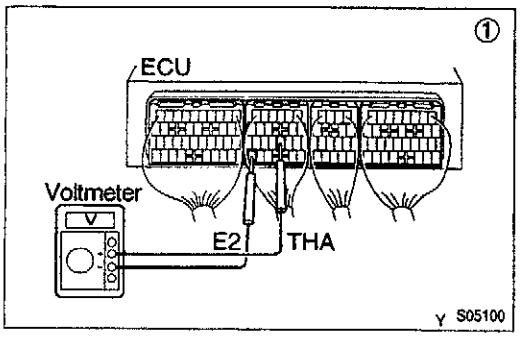
BAD → Replace injector.

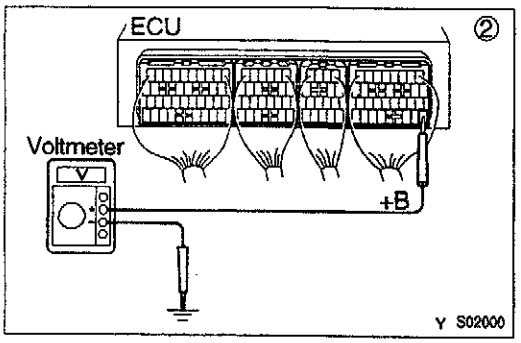
Check wiring between ECU terminal #10 ~ #60 and battery. → BAD → Repair or replace.

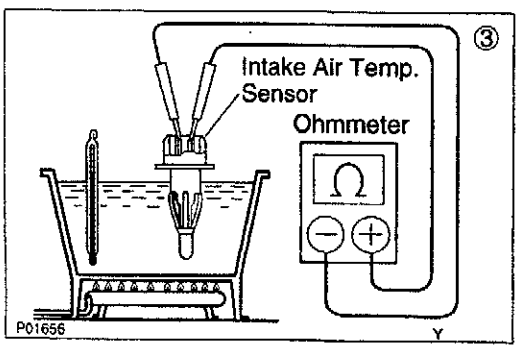
V08197

No.	Terminals	Trouble	Condition		STD voltage
5	THA - E2	No voltage	IG SW ON	Intake air temperature 20°C (68°F)	0.5 - 3.4 V









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

↓

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

- NO → Refer to No.1. (See page EG-114)
- OK ↓

↓

Check wiring between ECU terminal E1 and body ground.

- BAD → Repair or replace.
- OK ↓

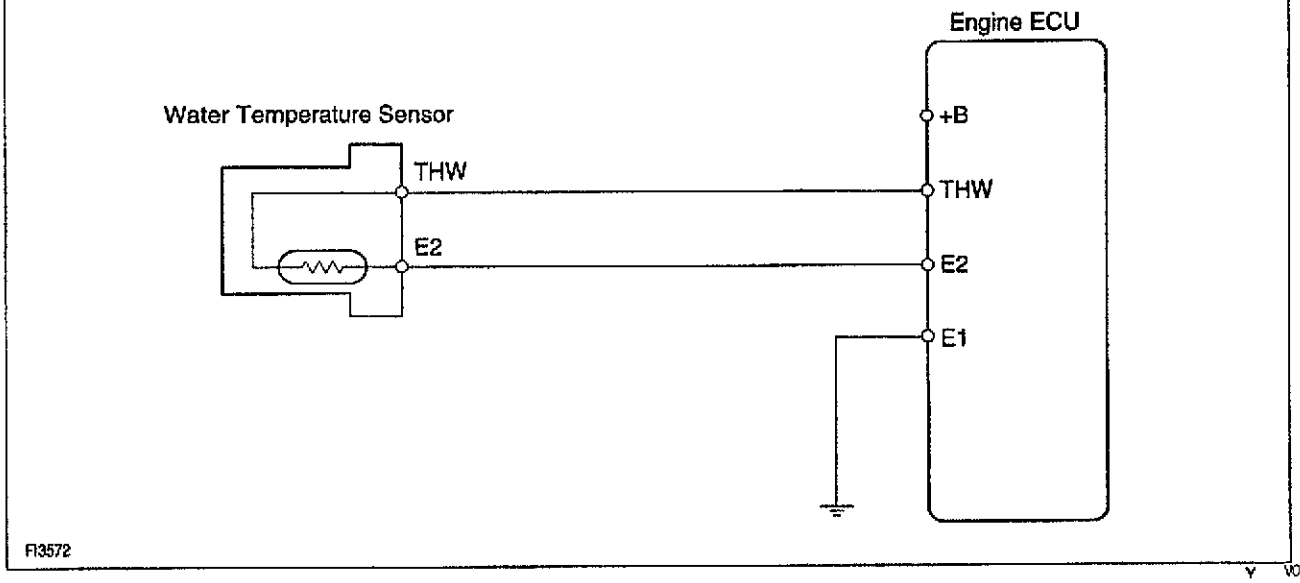
↓

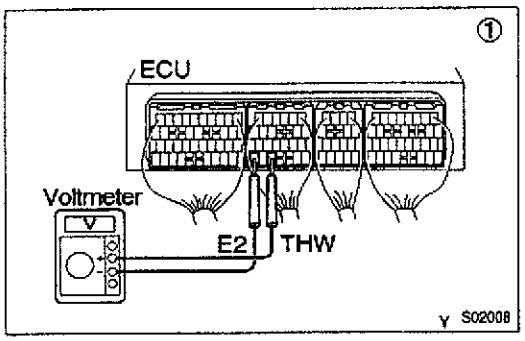
③ Check intake air temp. sensor.

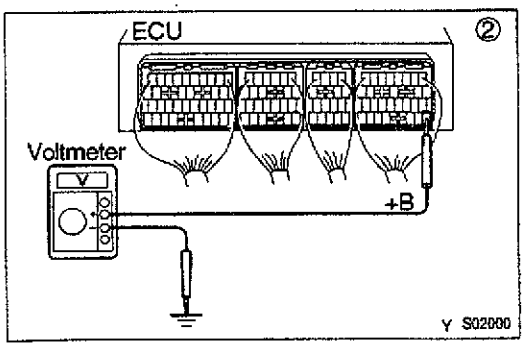
- BAD → Replace intake air temp. sensor.
- OK → Check wiring between ECU and air temp. sensor.
  - BAD → Repair or replace.
  - OK → Try another ECU.

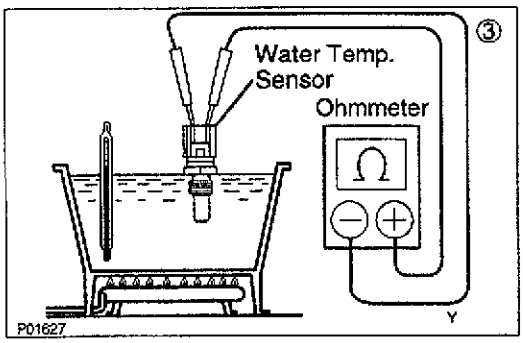
V08192

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









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

↓

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

OK ↓ / NO → Refer to No. 1. (See page EG-114)

↓

Check wiring between ECU terminal E1 and body ground.

OK ↓ / BAD → Repair or replace.

↓

③ Check water temp. sensor.

BAD ↓ Replace water temp. sensor.

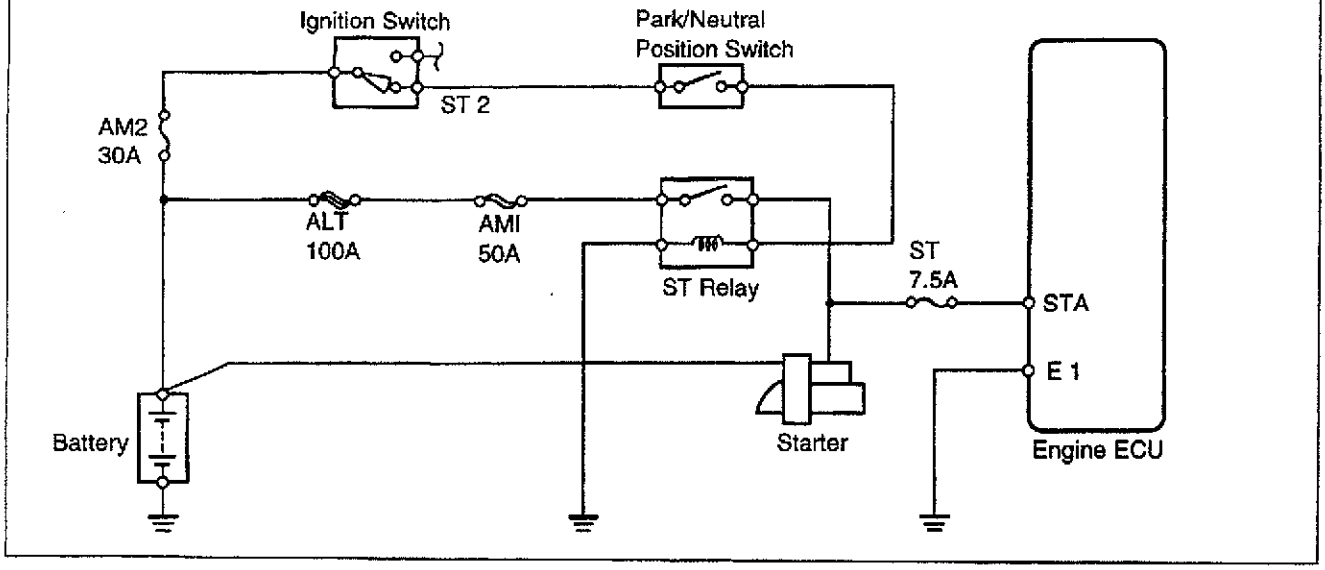
OK ↓ Check wiring between ECU and water temp. sensor.

OK ↓ Try another ECU.

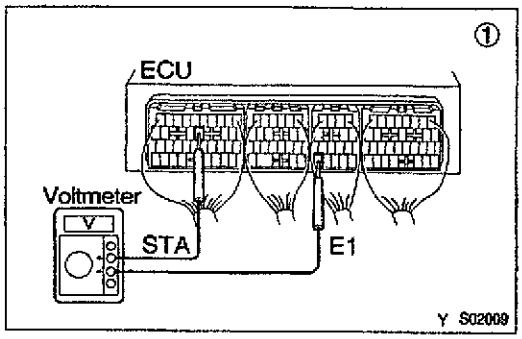
BAD → Repair or replace.

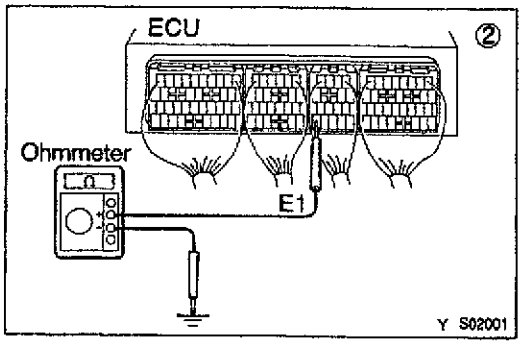
V08191

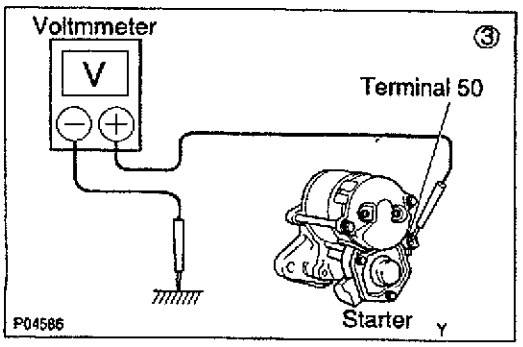
No.	Terminals	Trouble	Condition	STD voltage
7	STA - E1	No voltage	Cranking	6V or more



V08151







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

Check starter operation. — OK → Check wiring between ECU terminal STA and ignition switch terminal ST1. — OK → BAD → Repair or replace.

Check starter operation. — BAD → ② Check wiring between ECU terminal E1 and body ground. — OK → Try another ECU. / BAD → Repair or replace.

Check H-fuses, fusible link, battery, wiring, ignition switch and starter relay. — BAD → Repair or replace.

OK → ③ Check that there is voltage at starter terminal 50. **(IG SW START) STD voltage: 6 - 14V**

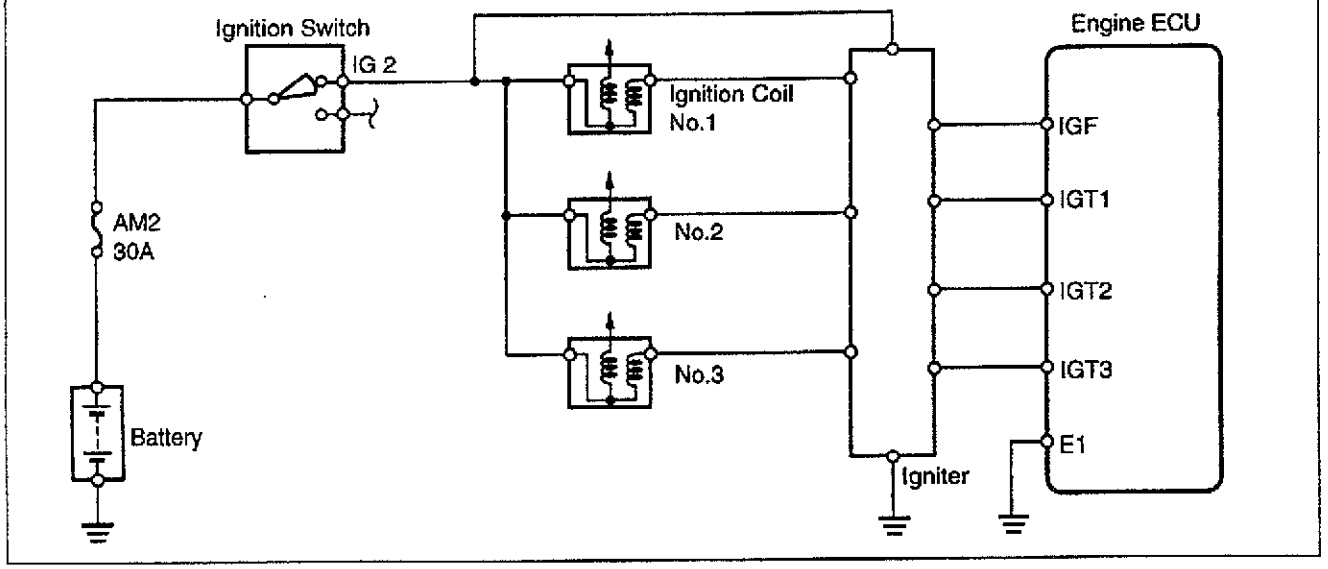
OK → Check starter.

NO → Check wiring between ignition switch terminal ST2 and starter termminal 50.

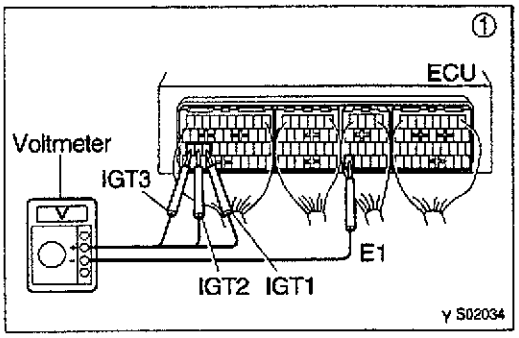
Y V07520

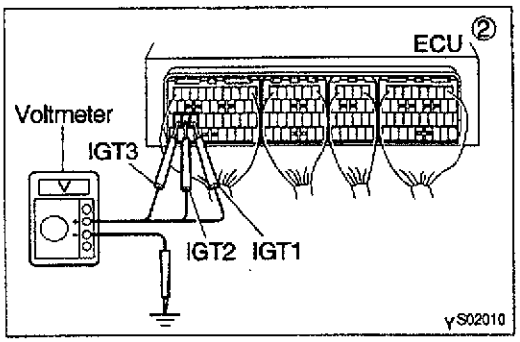
EG

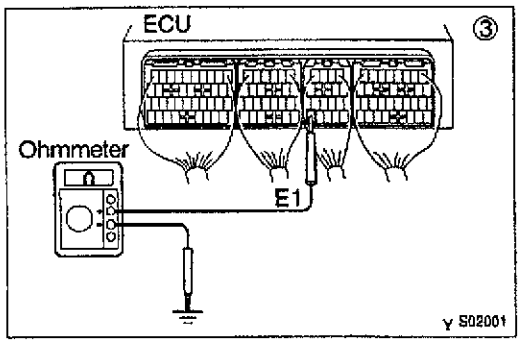
No.	Terminals	Trouble	Condition	STD voltage
8	IGT (1 - 3) -E1	No voltage	Idling	Pulse generation



V08153







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

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

NO

OK

③ Check wiring between ECU terminal E1 and body ground. — BAD → Repair or replace.

OK

Try another ECU.

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

OK

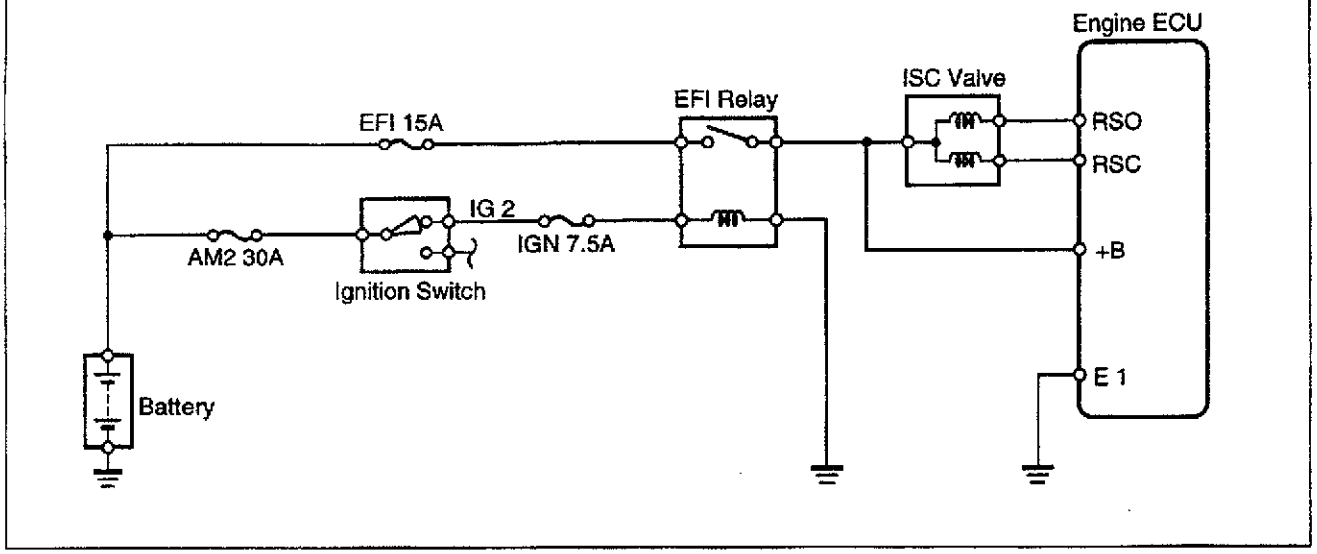
Check wiring between ECU and battery. — BAD → Repair or replace.

OK

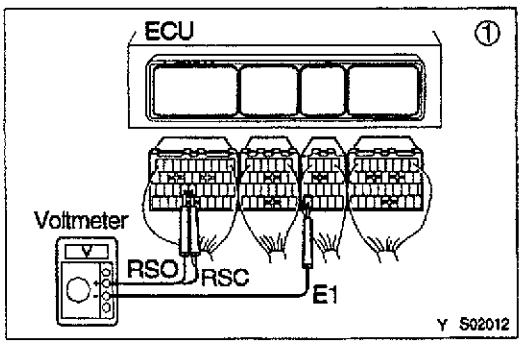
Check igniter. (See IG section) — BAD → Repair or replace.

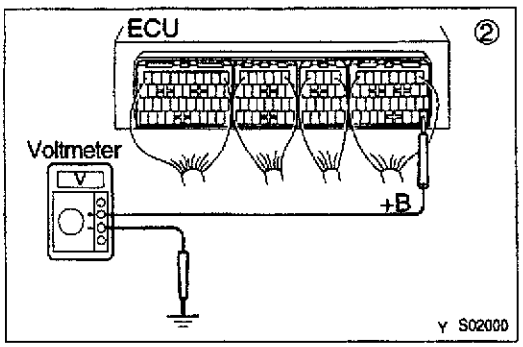
V08195

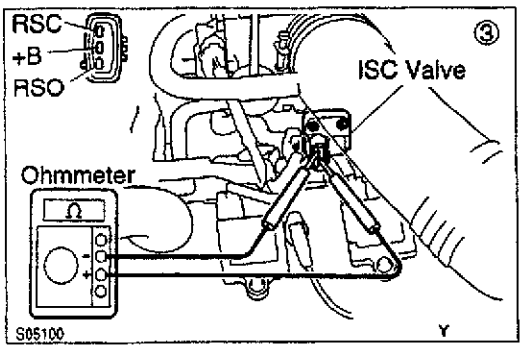
No.	Terminals	Trouble	Condition		STD voltage
9	RSC, RSO - E1	No voltage	IG SW ON	Engine ECU connecters disconnected	9 - 14V



V08152







① There is no voltage between treminals RSC or RSO and E1 of ECU connector.
(IG SW ON, Engine ECU connectors diconnected)

↓

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

OK ↓

NO → Refer to No.1. (See page EG-110)

↓

③ Check resistance beween ISC valve terminals +B and RSC or RSO.
STD resistance: 19.3 - 22.3 Ω
Cold: 17.0 - 24.5 Ω
Hot: 21.5 - 28.5 Ω

BAD → Replace ISC valve.

OK ↓

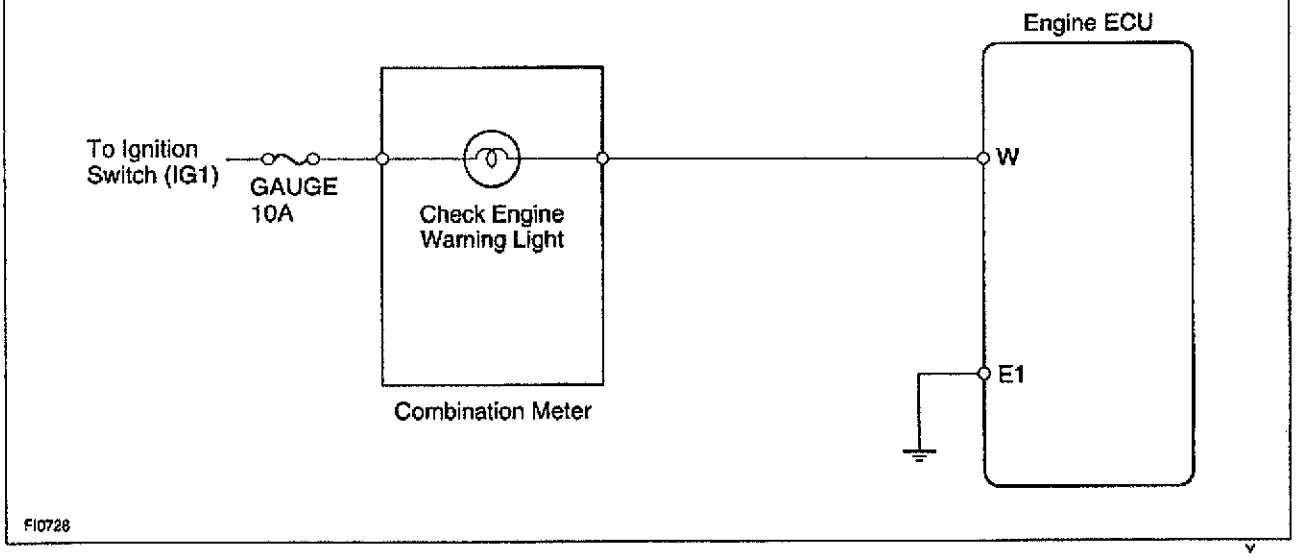
Check wiring between ECU and ISC valve. → BAD → Repair or replace wiring.

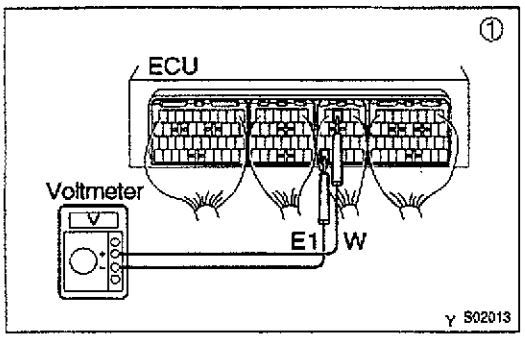
OK ↓

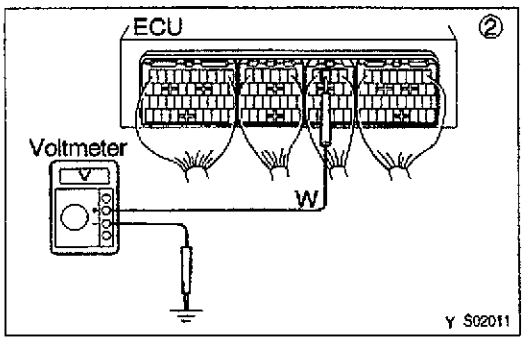
Try another ECU.

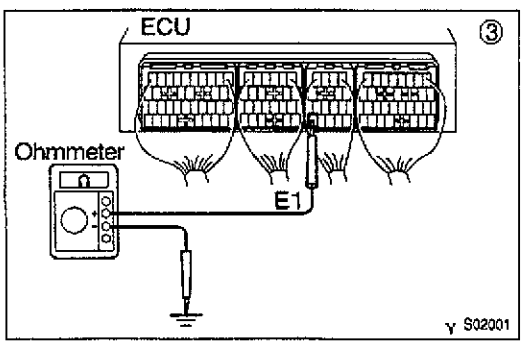
V08198

No.	Terminals	Trouble	Condition	STD voltage
10	W - E1	No voltage	No trouble (Check engine warning light off) and engine running.	9 - 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 → ③ Check wiring between ECU terminal E1 and body ground.
- OK → Try another ECU.
- BAD → Repair or replace.

OK → Check GAUGE fuse (10A) and check engine warning light.
- OK → Check wiring between ECU terminal W and fuse.
  - BAD → Repair or replace.
- BAD → Repair or replace.
  - Fuse blows again → Check wiring between ECU terminal W and fuse.
    - BAD → Repair or replace.

V08194