DIAGNOSIS SYSTEM

DESCRIPTION

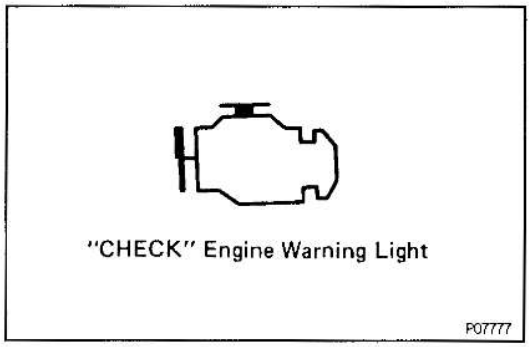
EG43L-02

The ECU contains a built–in self–diagnosis system by which troubles with the engine signal network are detected and the check engine warning light on the combination meter lights up.
By analyzing various signals as shown in the later table (See page EG–182) the ECU detects system malfunctions relating to the sensors or actuators.

EG

The self–diagnosis system has 2 modes, a normal mode and a test mode.
If a malfunction is detected when in the normal mode, the ECU lights up the check engine warning light to inform the driver of the occurrence of a malfunction. (For some codes the light does not come on.) The light goes OFF automatically when the malfunction has been repaired. But the diagnostic code(s) remains stored in the ECU memory. The ECU stores the code(s) until it is cleared by removing the EFI fuse with the ignition switch OFF.
The diagnostic code can be read by the number of blinks of the check engine warning light when TE1 and E1 terminals on the check connector are connected. When 2 or more codes are indicated, the lowest number (code) will appear first.
If a malfunction is detected when in the test mode, the ECU lights up the check engine warning light to inform the technician of the occurrence of a malfunction (except for code Nos. 42, 43 and 51). In this case, TE2 and E1 terminals on the check connector should be connected as shown later. (See page EG–179).
In the test mode, even if the malfunction is corrected, the malfunction code is stored in the ECU memory even when the ignition switch is OFF (except code Nos. 42, 43 and 51). This also applies in the normal mode. The diagnostic mode (normal or test) and the output of the check engine warning light can be selected by connecting the TE1, TE2 and E1 terminals on the check connector, as shown later. (See page EG–179)
A test mode function has been added to the functions of the self–diagnosis system of the normal mode for the purpose of detecting malfunctions such as poor contact, which are difficult to detect in the normal mode. This function fills up the self–diagnosis system. The test mode can be implemented by the technician following the appropriate procedures of check terminal connection and operation described later. (See page EG–179)

EG497-01



"CHECK" Engine Warning Light

P07777

CHECK ENGINE WARNING LIGHT CHECK

1. The check engine warning light will come on when the ignition switch is at ON and the engine is not running.

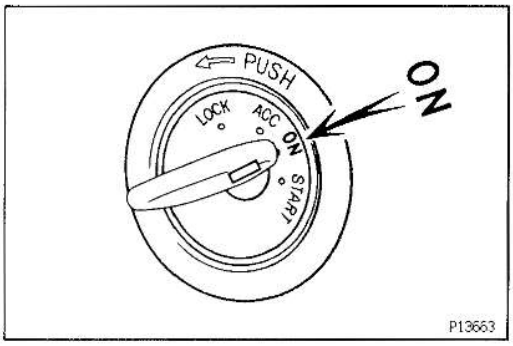
2. When the engine is started, the check engine warning light should go off.
   If the light remains on, the diagnosis system has detected a malfunction or abnormality in the system.

EG43M–01

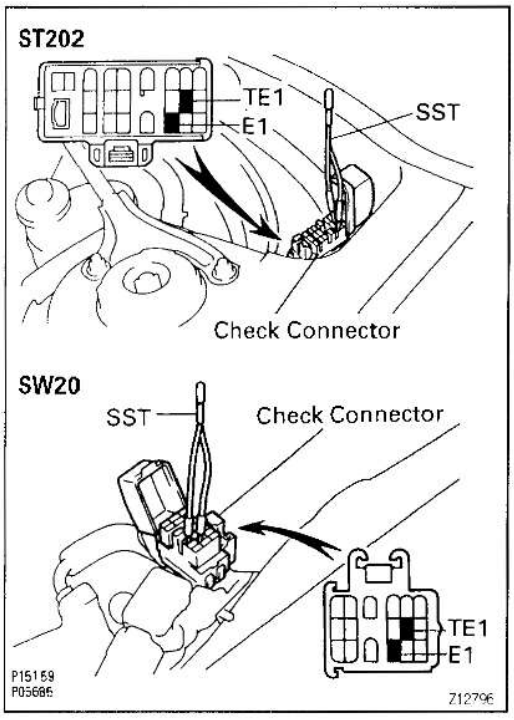
DIAGNOSTIC CODES OUTPUT
(Normal mode)

To obtain an output of diagnostic codes, proceed as follows:

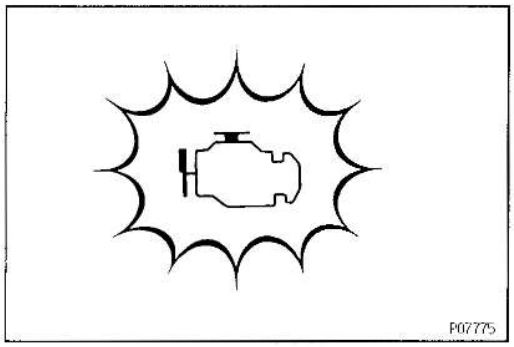
1. Initial conditions
(a) Battery voltage 11 V or more
(b) Throttle valve fully closed (throttle position sensor IDL points closed)
(c) Accessories switched OFF
(d) Engine at normal operating temperature
2. Turn the ignition switch ON.
NOTICE: Do not start the engine.

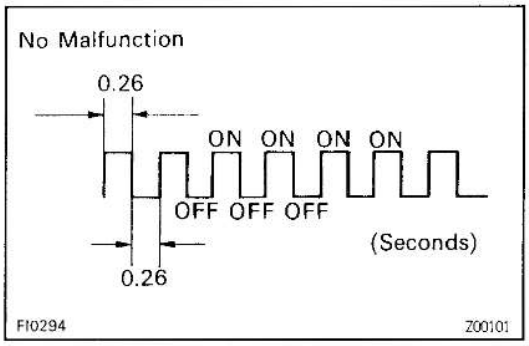


3. Using SST, connect terminals TE1 and E1 of the check connector.
SST 09843–18020



4. Read the diagnostic code as indicated by the number of flashes of the check engine warning light.

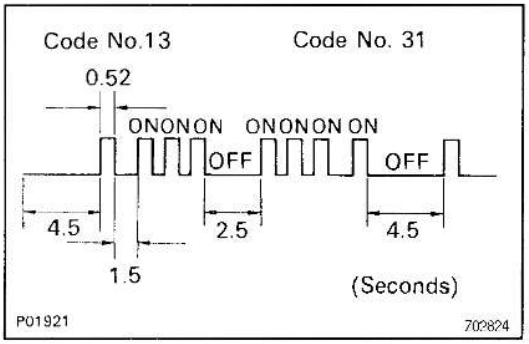




Diagnostic Codes (See page EG–182)

(a) Normal System Operation (no malfunction)

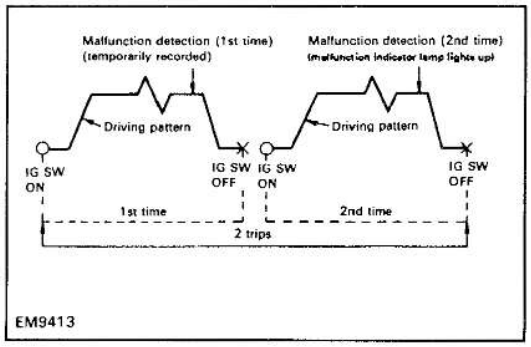
- The light will alternately blink ON and OFF at 0.26 second intervals.



(b) Malfunction Code Indication

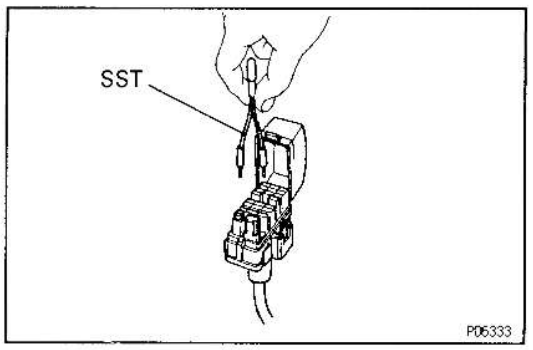
- In the event of a malfunction, the light will blink every 0.52 seconds. The first number of blinks will equal the first digit of a 2 digit diagnostic code and, after a 1.5 second pause, the 2nd number of blinks will equal the 2nd. If there are two or more codes, there will be a 2.5 second pause between each code.
- After all the codes have been output, there will be a 4.5 second pause and they will all be repeated as long the terminals TE1 and E1 of the check connector are connected.

HINT: In the event of a number of codes, indication will begin from the smaller value and continue to the larger.



(c) 2 Trip Detection Logic

Diagnostic codes 21 and 25 use "2 trip detection logic". With this logic, when a malfunction is first detected, the malfunction is temporarily stored in the ECU memory. If the same case is detected again during the second drive test, this second detection causes the check engine warning light to light up. The 2 trip repeats the same mode a 2nd time. (However, the ignition switch must be turned OFF between the 1st time and 2nd time.) In the Test Mode, the check engine warning light lights up the 1st time a malfunction is detected.



5. After the diagnosis check, remove the SST from the check connector.
   SST 09843–18020

(Test mode)

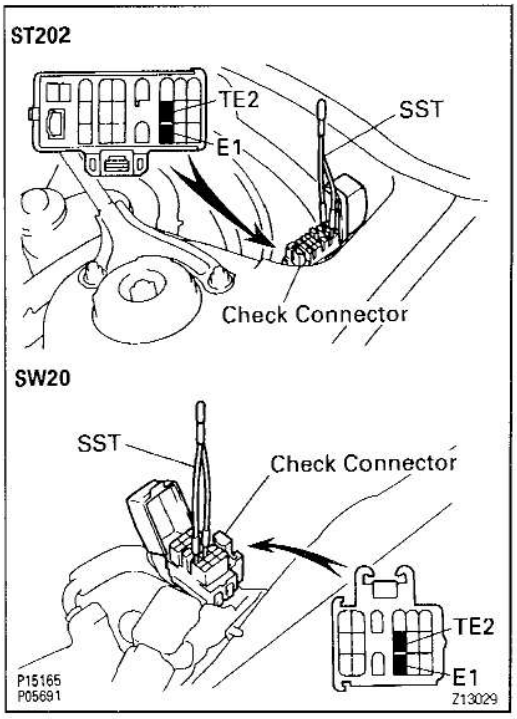
HINT:

- Compared to the normal mode, the test mode has high sensing ability to detect malfunctions.
- It can also detect malfunctions in the starter signal circuit and air conditioner signal.
- Furthermore, the same diagnostic items which are detected in the normal mode can also be detected in the test mode.

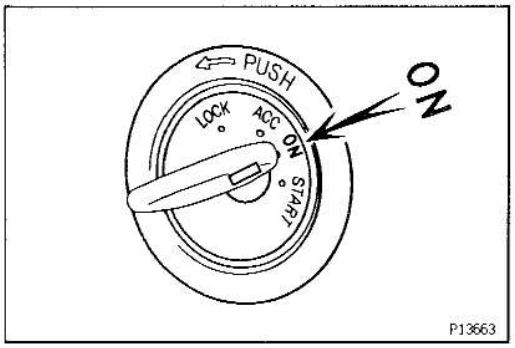
EC

To obtain an output of diagnostic codes, proceed as follows:

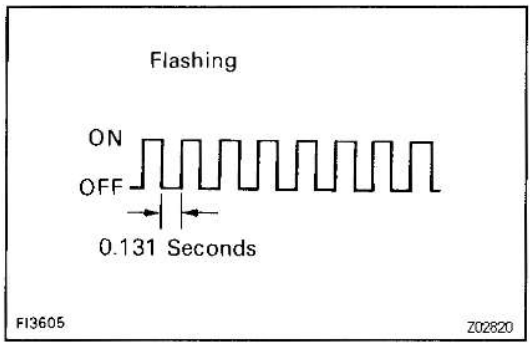
1. Initial conditions
(a) Battery voltage 11 V or more
(b) Accessories switched OFF
(c) Engine at normal operating temperature



2. First, using SST, connect terminals TE2 and E1 of the check connector.
SST 09843–18020

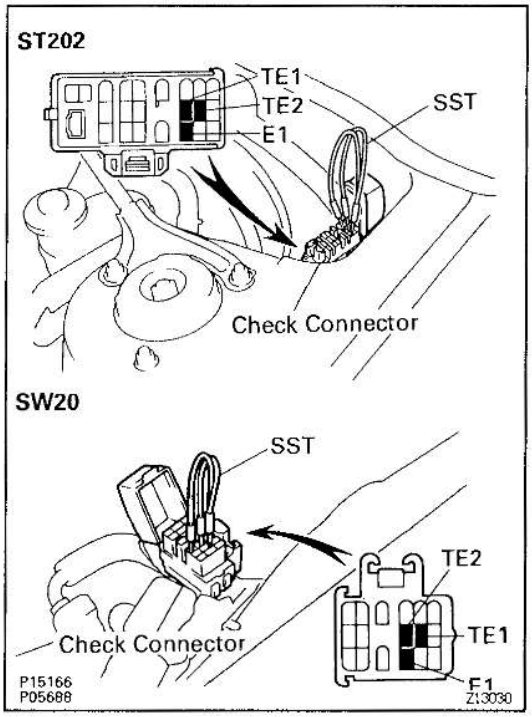


3. Turn the ignition switch ON to begin the diagnosis in the test mode.

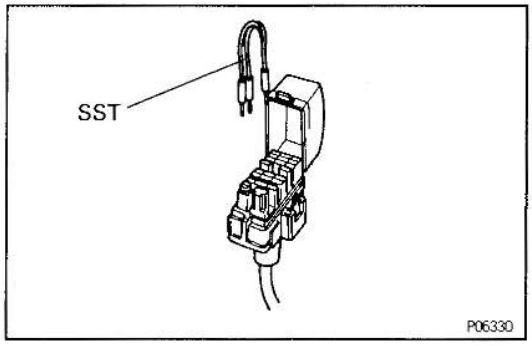


HINT: To confirm that the test mode is operating, check that the check engine warning light flashes when the ignition switch is turned ON.

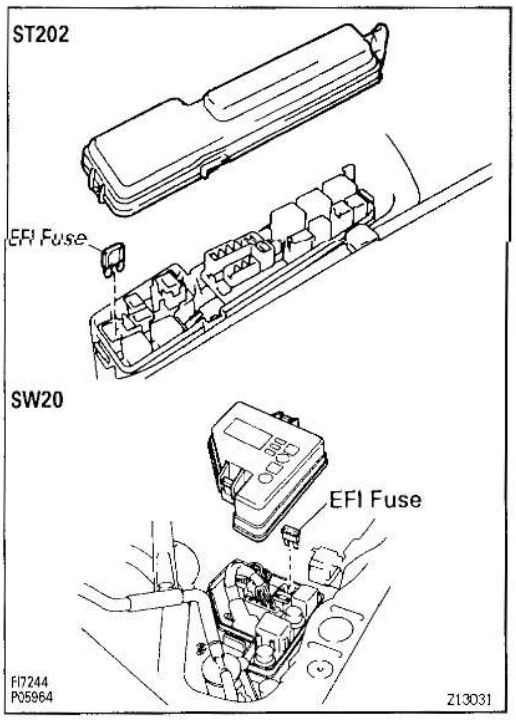
4. Start the engine and drive the vehicle at a speed of 10 km/h (6 mph) or higher.
5. Simulate the conditions of the malfunction described by the customer.



6. Using SST, connect terminals TE1 and E1 of the check connector.
   SST 09843–18020
7. Read the diagnostic code as indicated by the number of flashes of the check engine warning light. (See page EG–182)



8. After the diagnosis check, remove the SST from the check connector.
   SST 09843–18020
   HINT:
   - The test mode will not start if terminals TE2 and E1 are connected after the ignition switch is turned on.
   - The starter signal and vehicle speed signal will be diagnosed by the ECU as malfunctions, and code Nos. 42 and 43 will be output, if the operation in step 4 is not performed.
   - When the air conditioner is ON or when the accelerator pedal is depressed, code No. 51 (Switch Condition Signal) is output, but this is not abnormal.



DIAGNOSTIC CODE CANCELLATION

EG438-01

1. After repair of the trouble area, the diagnostic code retained in memory by the ECU must be cancelled out by removing the EFI fuse 15A for 10 seconds or more, depending on ambient temperature (the lower the temperature, the longer the fuse must be left out) with the ignition switch OFF.
   HINT:
   - Cancellation can also be done by removing the negative (−) terminal cable from the battery, but in this case, other memory systems (clock, etc.) will also be cancelled out.
   - If the diagnostic code is not cancelled out, it will be retained by the ECU and appear along with a new code in the event of future trouble.
   - If it is necessary to work on engine components requiring removal of the battery terminal, a check must first be made to see if a diagnostic code has been recorded.
2. After cancellation, perform road test of the vehicle to check that a normal code is now read on the check engine warning light.
   If the same diagnostic code appears, it indicates that the trouble area has not been repaired thoroughly.

EG

DIAGNOSIS INDICATION

EG1SU-04

1. When 2 or more codes are indicated, the lowest numbered code will appear first.
2. All detected diagnostic codes, except code Nos. 42, 43 and 51 under the test mode will be retained in memory by the ECU from the time of detection until cancelled out.
3. Once malfunction is cleared, the check engine warning light on the combination meter will go off but the diagnostic code(s) remains stored in ECU memory (except for code Nos. 42, 43 and 51 under the test mode).

E043K-01

DIAGNOSTIC CODES

HINT:

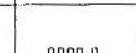
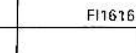
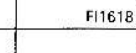
- If a malfunction is detected during the diagnostic code check, refer to the circuit indicated in the table, and turn to the corresponding page.
- Your readings may vary from the parameters listed in the table, depending on the instruments used.

EG

Code No.	Number of blinks of Check Engine Warning Light	System	*1 Check Engine Warning Light		Diagnosis	Trouble Area	*2 Memory	See page
			Normal Mode	Test Mode				
–	FI1401	Normal	–	–	No trouble code is recorded.	–	–	–
12	FI1606	RPM Signal	ON	N.A.	• No G1, G2 or NE signal is input to the ECU for 2 secs. or more after STA turns ON. • Open in G and NE – circuits	• Open or short in NE, G circuit • Distributor • Open or short in STA circuit • ECU	○	IG-5 EG-200
13	FI1607	RPM Signal	ON	ON	NE signal is not input to ECU for 0.05 sec. or more when engine speed is 1,500 rpm or more.	• Open or short in NE circuit • Distributor • ECU	○	IG-5
14	FI1608	Ignition Signal	ON	N.A.	IG signal from igniter is not input to ECU for 8 consecutive ignition.	• Open or short in IGF or IGT circuit from igniter to ECU • Igniter • ECU	○	EG-201
21	FI1609	Oxygen Sensor Signal	ON	N.A.	Open or short in heater circuit of oxygen sensor for 0.5 sec. or more. (HT)	• Open or short in heater circuit of oxygen sensor • Oxygen sensor heater • ECU	○	EG-204 EG-286
				ON	At normal driving speed (below 100 km/h (60 mph) and engine speed is above 1,500 rpm), amplitude of oxygen sensor signal (OX1) is reduced to between 0.35 – 0.70 V continuously for 60 secs. or more. *3 (2 trip detection logic)	• Open or short in oxygen sensor circuit • Oxygen sensor • Open or short in vacuum sensor circuit • Vacuum sensor • ECU		
22	FI1610	Water Temp. Sensor Signal	ON	ON	Open or short in water temp. sensor circuit for 0.5 sec. or more. (THW)	• Open or short in water temp. sensor circuit • Water temp. sensor • ECU	○	EG-199
24	FI1611	Intake Air Temp. Sensor Signal	ON	ON	Open or short in intake air temp. sensor circuit for 0.5 sec. or more. (THA)	• Open or short in intake air temp. circuit • Intake air temp. sensor • ECU	○	EG-198
25	FI2562	Air-Fuel Radio Lean Mal-function	ON	ON	Oxygen sensor output in less than 0.45 V for at least 90 secs. when oxygen sensor is warmed up (racing at 1,500 rpm). *3 (2 trip detection logic)	• Engine ground bolt loose • Open in E1 circuit • Open in injector circuit • Fuel line pressure (Injector blockage, etc.) • Open or short in oxygen sensor circuit. • Oxygen sensor • Ignition system • Water temp. sensor • ECU	○	EG-204 EG-286
31	FI1612	Vacuum Sensor Signal	ON	ON	Open or short detected continuously for 500 msec. or more in vacuum sensor sensor circuit. (PIM)	• Open or short in vacuum sensor circuit • Vacuum sensor • ECU	○	EG-196

V05410

DIAGNOSTIC CODES (Cont'd)

Code No.	Number of blinks of Check Engine Warning Light	System	*1 Check Engine Warning Light		Diagnosis	Trouble Area	*2 Memory	See page
			Normal Mode	Test Mode				
41	 FI1614	Throttle Position Sensor Signal	ON	ON	Open or short detected in throttle position sensor signal (VTA) for 0.5 sec. or more.	• Open or short in throttle position sensor circuit • Throttle position sensor • ECU	○	EG-194
42	 FI1615	Vehicle Speed Sensor Signal	OFF	OFF	SPD signal is not input to the ECU for at least 8 seconds during high load driving with engine speed between 2,500 rpm and 5,000 rpm.	• Open or short in vehicle speed sensor circuit • Vehicle speed sensor • ECU	○	–
43	 FI1616	Starter Signal	N.A.	OFF	Starter signal (STA) is not input to ECU until TE1 and E1 are connected.	• Open or short in starter signal circuit • Open or short in IG SW or EFI main relay circuit • ECU	X	EG-200
52	 FI1618	Knock Sensor Signal	ON	N.A.	With engine speed between 2,850 rpm and 7,300 rpm, signal from knock sensor is not input to ECU for 2 revolutions. (KNK)	• Open or short in knock sensor circuit • Knock sensor (looseness, etc.) • ECU	○	–
53	 FI1619	Knock Control Signal	ON	N.A.	Engine speed is between 700 rpm and 7,300 rpm and ECU (for knock control) malfunction is detected.	• ECU	X	–
51	 FI1617	Switch Condition Signal	N.A.	OFF	Displayed when A/C is ON or IDL contact OFF with the check terminals E1 and TE1 connected.	• A/C switch circuit • Throttle position sensor IDL circuit. • Accelerator pedal, cable • ECU	X	EG-194

REMARKS:

*1 "ON" displayed in the diagnosis mode column indicates that the check engine warning light is lit up when a malfunction is detected. "OFF" indicates that the check engine warning light does not light up during malfunction diagnosis, even if a malfunction is detected. "N.A." indicates that the item is not included in malfunction diagnosis.

*2 "○" in the memory column indicates that a diagnostic code is recorded in the ECU memory when a malfunction occurs. "X" indicates that a diagnostic code is not recorded in the ECU memory even if a malfunction occurs. Accordingly, output of diagnostic results in normal or test mode is performed with the ignition switch ON.

*3 "2 trip detection logic" (See page EG-178)

W05411

DIAGNOSTIC CODE DETECTION DRIVING PATTERN

Purpose of the driving pattern.

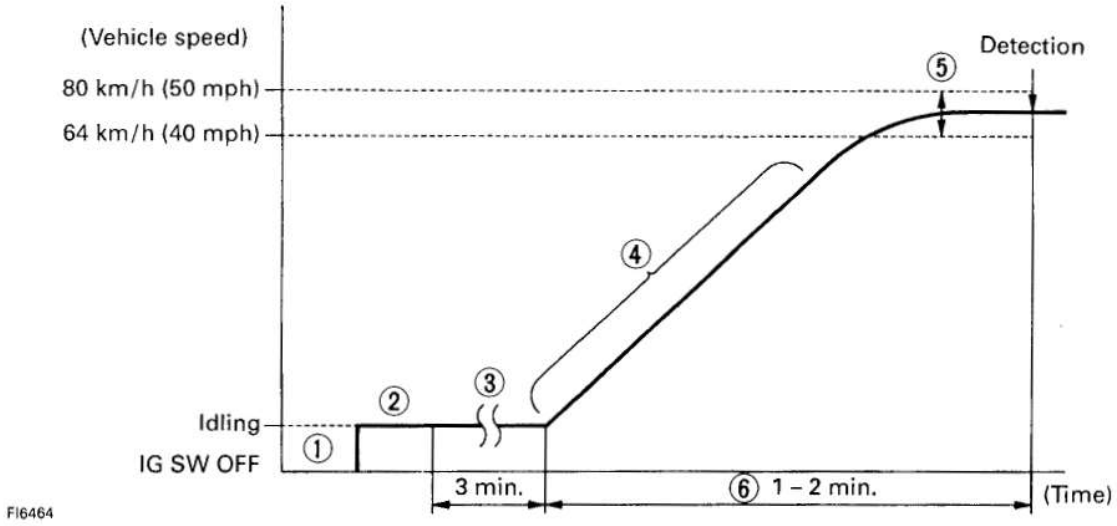
(a) To simulate diagnostic code detecting condition after diagnostic code is recorded.

(b) To check that the malfunction is corrected when the repair is completed, confirming that diagnostic code is not longer detected.

EG

Code No.	21	Oxygen Sensor Circuit

Malfunction: Deterioration of Oxygen Sensor



It is vital that test routine is adhered to detect the malfunction:

① Disconnect the EFI fuse (15A) for 10 sec. or more, with IG switch OFF.
Initiate test mode (Connect terminals TE2 and E1 of check connector with IG switch OFF).

② Start the engine and warm up with all ACC switched OFF.

③ Idle the engine for 3 minutes.

④ With A/C switched ON, A/T in D range (M/T in 5th gear), accelerate gradually within the range 1,300 – 1,700 rpm centered around 1,500 rpm.

HINT:
- Ensure engine speed does NOT fall below 1,200 prm.
- Gradually depress the accelerator pedal at a suitable rate to comply with the test requirements on the above graph.
- Never allow engine speed to drop at any time during the test.

⑤ Maintain the vehicle speed at 64 – 80 km/h (40 – 50 mph).

⑥ Keep the vehicle running for 1 – 2 min. after starting acceleration.

HINT: If a malfunction exists, the check engine warning light will light up after approx. 60 sec. from the start of acceleration.

NOTICE: If the conditions in this test are not strictly followed, detection of the malfunction will not be possible.

V05368

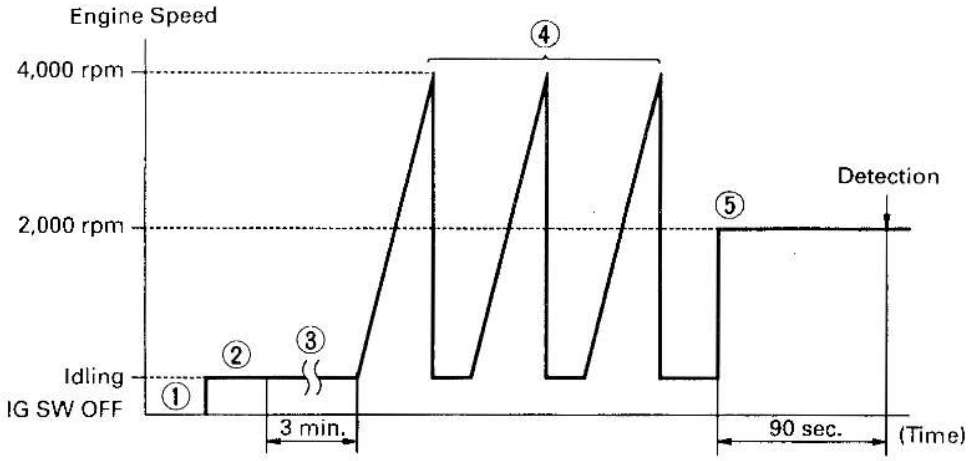
DIAGNOSTIC TROUBLE CODE DETECTION DRIVING PATTERN (Cont'd)

Purpose of the driving pattern.

(a) To simulate diagnostic code detecting condition after diagnostic code is recorded.

(b) To check that the malfunction is corrected when the repair is completed, confirming that diagnostic code is no longer detected.

Code No.	25	Air-Fuel Radio Lean Malfunction



FI6465

HINT: Before this test, check the feedback voltage for oxygen sensor.

① Disconnect the EFI fuse (15A) for 10 sec. or more, with IG switch OFF.
Initiate test mode (Connect terminals TE2 and E1 of check connector with IG switch OFF).

② Start the engine and warm up.

③ Idle the engine for 3 minutes.

④ Quickly race the engine to 4,000 rpm 3 times using the accelerator pedal.

⑤ Race the engine at 2,000 rpm for 90 secs.

HINT: If a malfunction exists, the check engine warning light will light up during step ④.

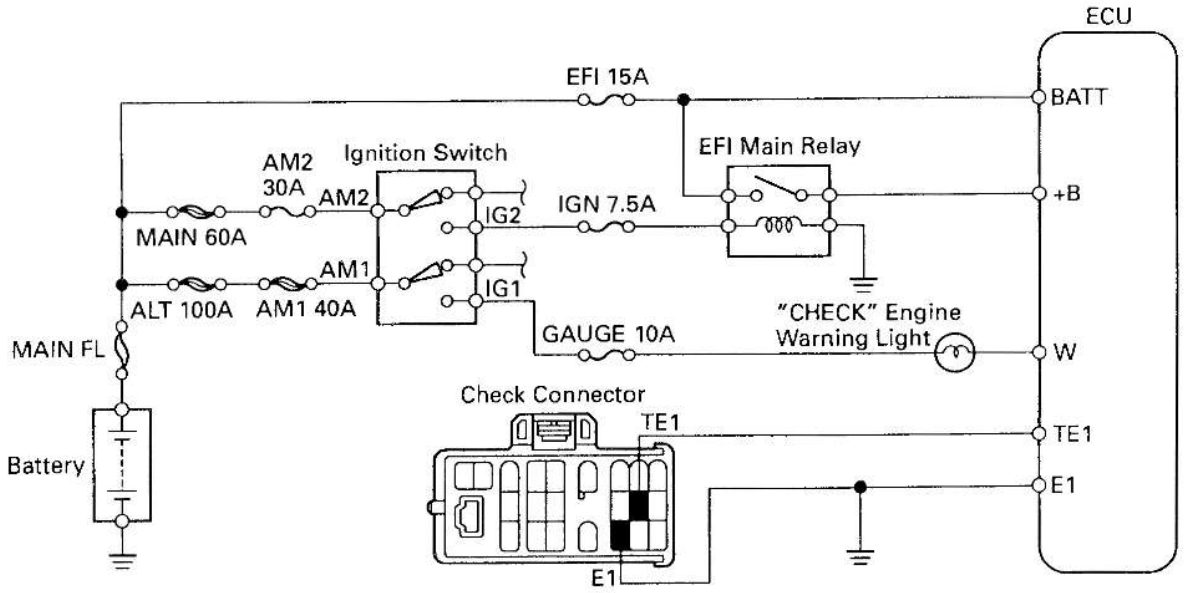
NOTICE: If the conditions in this test are not strictly followed, detection of the malfunction will not be possible.

V05369

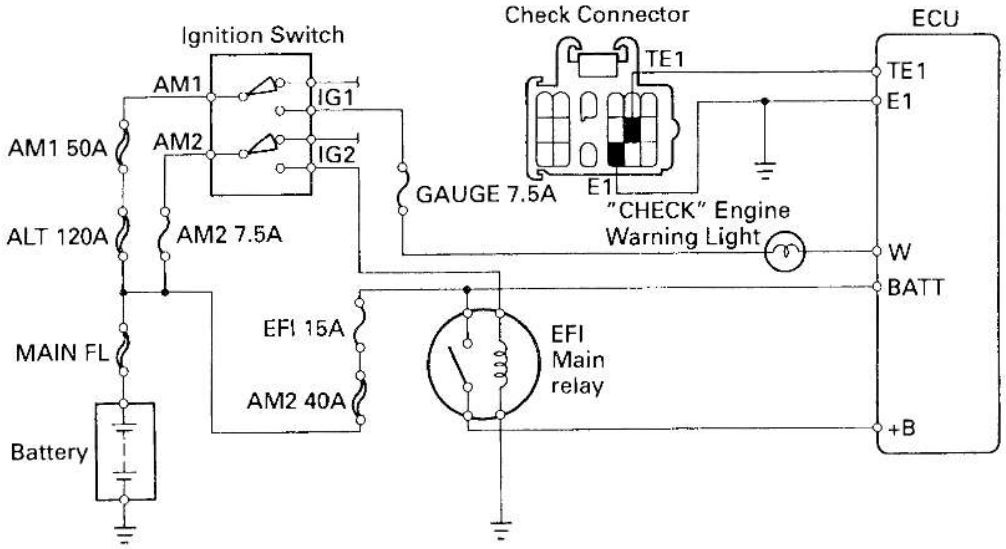
EG439-01

DIAGNOSIS CIRCUIT INSPECTION

ST202



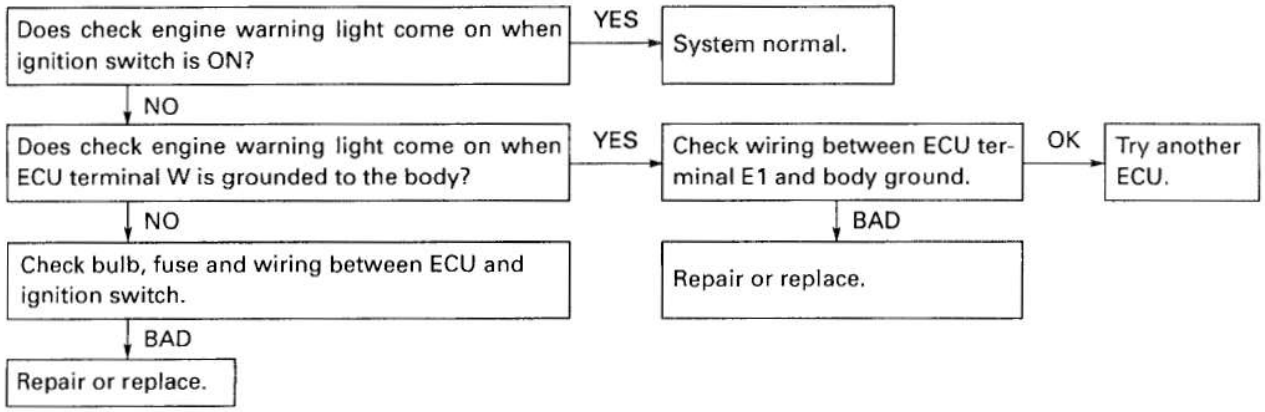
SW20



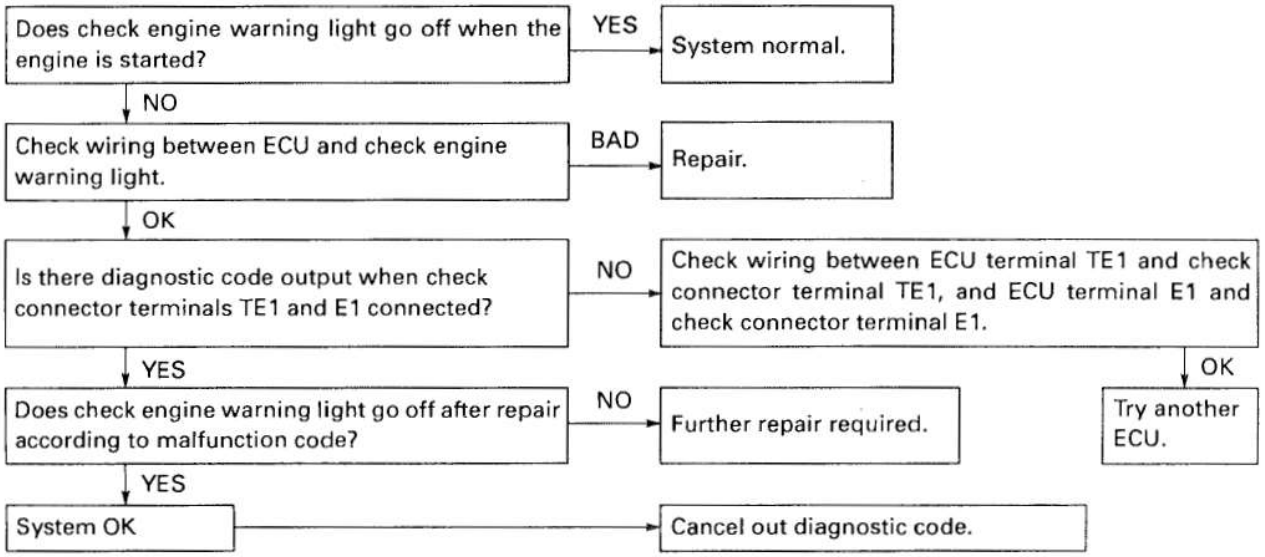
P17818
P17653

W5412

1.


Does check engine warning light come on when ignition switch is ON?
YES
System normal.
NO
Does check engine warning light come on when ECU terminal W is grounded to the body?
YES
Check wiring between ECU terminal E1 and body ground.
OK
Try another ECU.
NO
BAD
Check bulb, fuse and wiring between ECU and ignition switch.
Repair or replace.
BAD
Repair or replace.

2.


Does check engine warning light go off when the engine is started?
YES
System normal.
NO
Check wiring between ECU and check engine warning light.
BAD
Repair.
OK
Is there diagnostic code output when check connector terminals TE1 and E1 connected?
NO
Check wiring between ECU terminal TE1 and check connector terminal TE1, and ECU terminal E1 and check connector terminal E1.
YES
OK
Does check engine warning light go off after repair according to malfunction code?
NO
Further repair required.
Try another ECU.
YES
System OK
Cancel out diagnostic code.

V05413

TROUBLESHOOTING w/ VOLT, OHMMETER

EG129-04

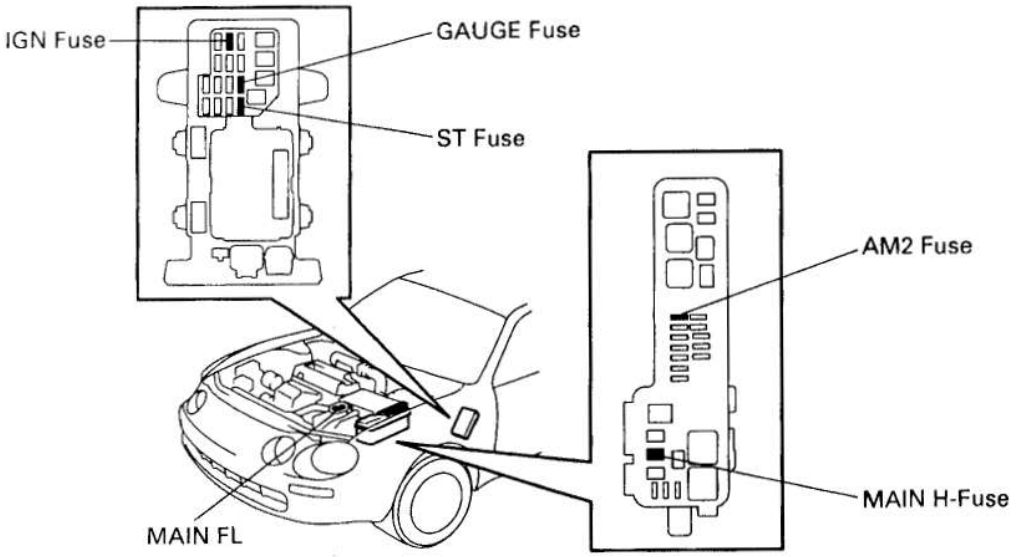
HINT:

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

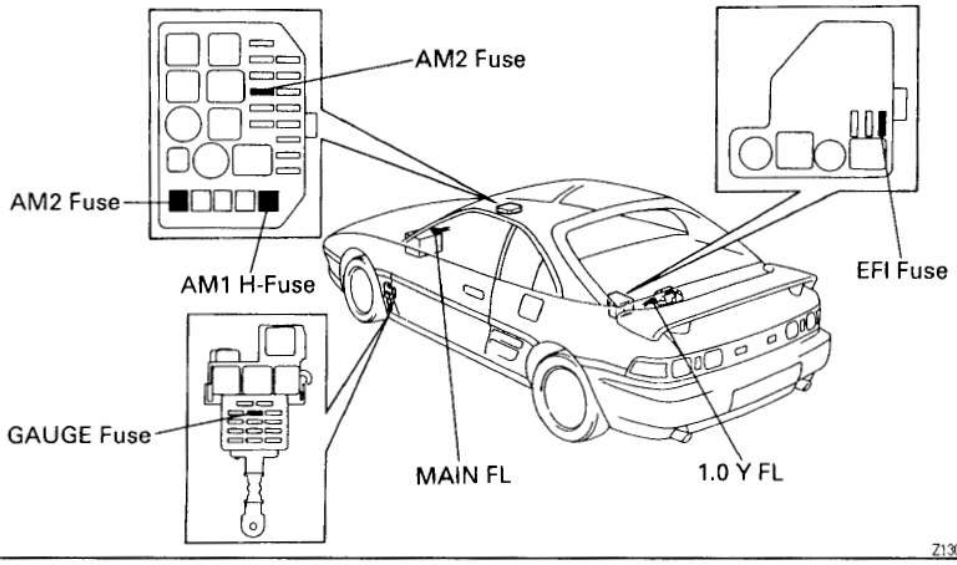
FUSES AND FUSIBLE LINK LOCATION

EG43P-01

ST202

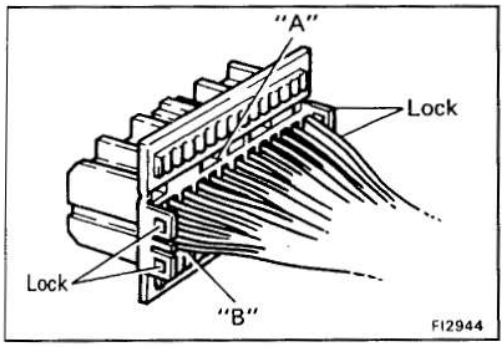


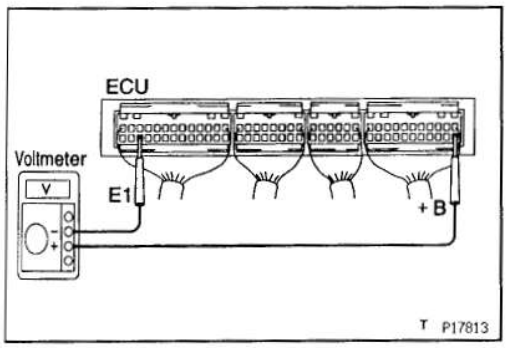
SW20



P17395
P17811

Z13032





EFI SYSTEM CHECK PROCEDURE

EG43A-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:

- Perform all voltage measurements with the connectors connected.
- Verify 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.

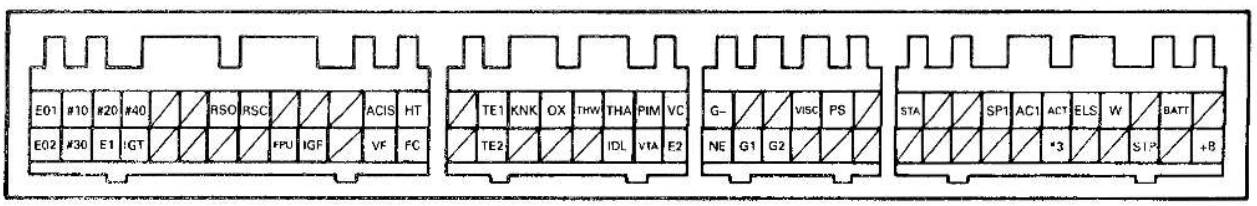
EG

EG

ECU Terminals

Symbol	Terminal Name	Symbol	Terminal Name	Symbol	Terminal Name
E01	POWER GROUND		–		–
E02	POWER GROUND		–		–
#10	INJECTOR	TE1	CHECK CONNECTOR	STA	STARTER SWITCH
#30	INJECTOR	TE2	CHECK CONNECTOR		–
#20	INJECTOR	KNK	KNOCK SENSOR		–
E1	COMPUTER GROUND		–		–
#40	INJECTOR	OX	OXYGEN SENSOR		–
IGT	IGNITER		–		–
	–	THW	WATER TEMP. SENSOR	SP1	SPEED SENSOR
	–		–		–
	–	THA	INTAKE AIR TEMP. SENSOR	AC1	A/C AMPLIFIER
	–	IDL	THROTTLE POSITION SENSOR		–
RSO	ISC VALVE	PIM	VACUUM SENSOR	ACT	A/C AMPLIFIER
	–	VTA	THROTTLE POSITION SENSOR	ATS*2	A/C AMPLIFIER
RSC	ISC VALVE	VC	THROTTLE POSITION SENSOR	PSCT*1	POWER STEERING ECU
	–	E2	SENSOR GROUND	ELS	TAILLIGHT RELAY DEFOGGER RELAY
	–	G–	DISTRIBUTOR		–
FPU	FUEL PRESSURE VSV	NE	DISTRIBUTOR	W	WARNING LIGHT
	–		–		–
IGF	IGNITER	G1	DISTRIBUTOR		–
	–		–	STP	STOP LIGHT SWITCH
	–	G2	DISTRIBUTOR	BATT	BATTERY
ACIS	ACIS VSV	VISC	A/C IDLE-UP VALVE		–
VF	CHECK CONNECTOR		–		–
HT	OXYGEN SENSOR HEATER	PS*1	POWER STEERING ECU	+B	EFI MAIN RELAY
FC	CIRCUIT OPENING RELAY		–		

ECU Terminals



P01399

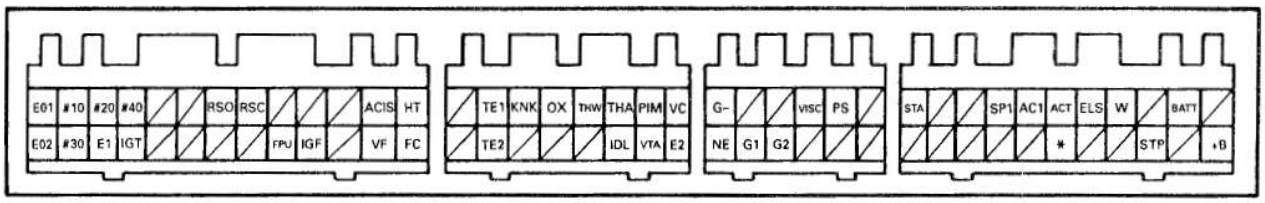
*1 SW20
*2 ST202
*3 ST202: ATS
SW20: PSCT

V05414

ECU Wiring Connectors Voltage

No.	Terminals	Condition		STD voltage (V)	See page
1	+B – E1	IG SW ON		9 – 14	EG-192
2	BATT – E1	–		9 – 14	EG-193
3	IDL – E2	IG SW ON	Throttle valve open	9 – 14	EG-194
	VC – E2		–	4.5 – 5.5	
	VTA – E2		Throttle valve fully closed	0.3 – 0.8	
			Throttle valve fully open	3.2 – 4.9	
4	PIM – E2	IG SW ON		3.3 – 3.9	EG-196
	VC – E2			4.5 – 5.5	
5	#10, #30 _ E01 #20, #40 E02			9 – 14	EG-197
6	THA – E2	IG SW ON	Intake air temp. 20°C (68°F)	0.5 – 3.4	EG-198
7	THW – E2		Coolant temp. 80°C (176°F)	0.2 – 1.0	EG-199
8	STA – E1	Cranking		6 or more	EG-200
9	IGT – E1	Cranking or idling		Pulse generation	EG-201
10	RSC RSO – E1	IG SW ON	ECU connectors disconnected	9 – 14	EG-202
11	W – E1	No trouble (Check engine warning light off) and engine running		9 – 14	EG-203

ECU Terminals



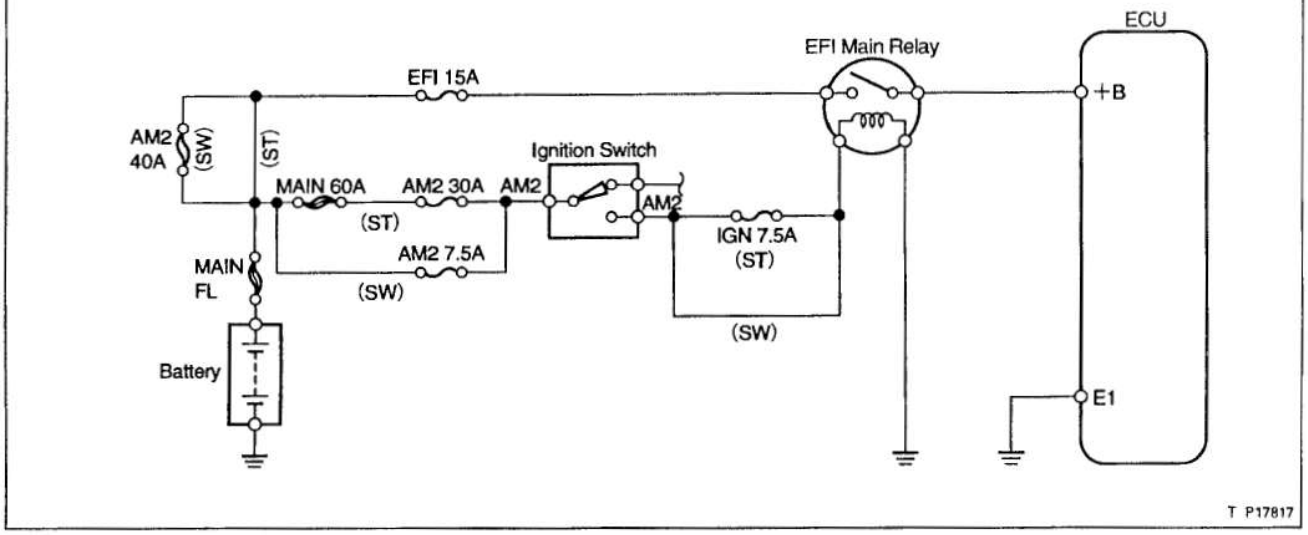
P01399

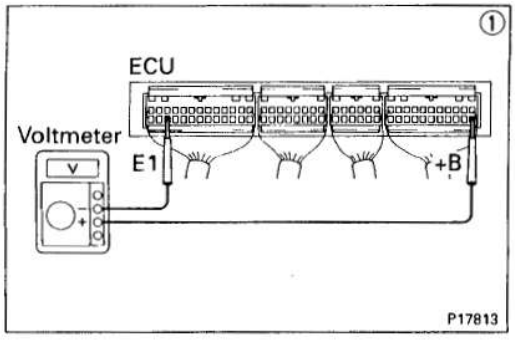
* ST202: ATS
SW20: PSCT

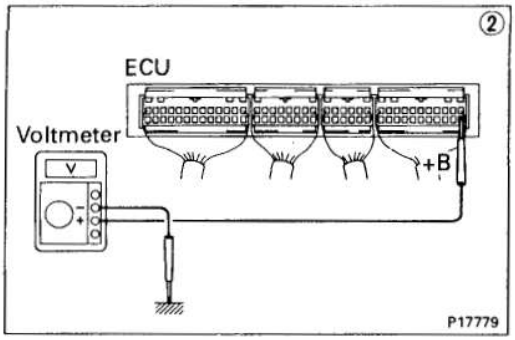
V05415

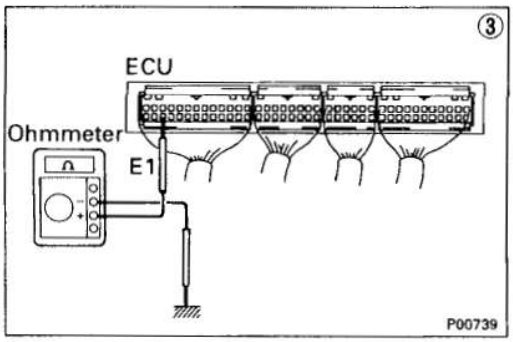
EG

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









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, fusible links and ignition switch. BAD → Repair or replace.

OK ↓

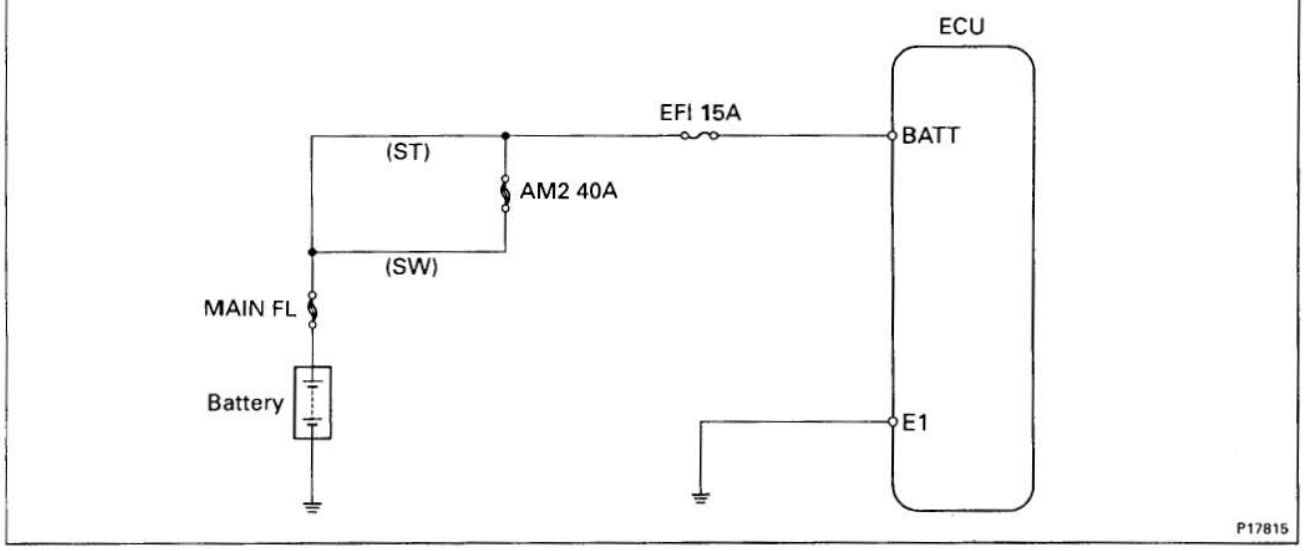
Check EFI main relay. (See page EG-262 or 263) BAD → Replace.

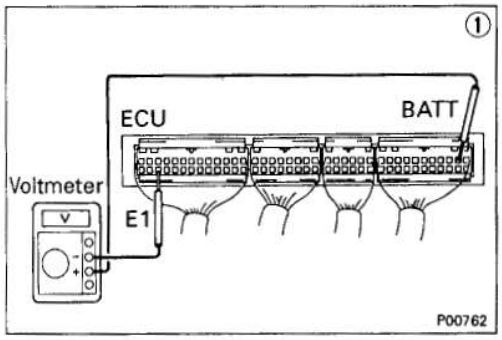
OK ↓

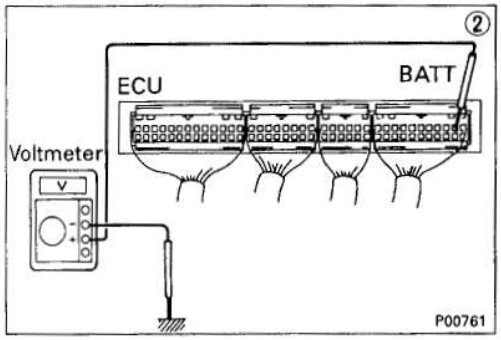
Check wiring between EFI main relay and battery. BAD → Repair or replace.

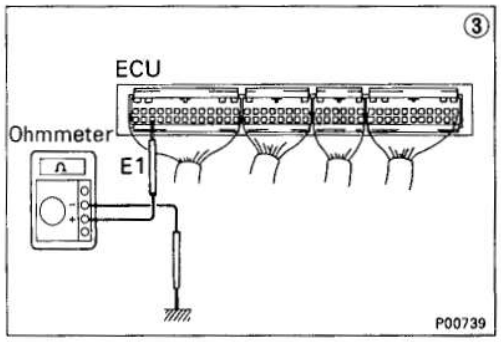
V05416

No.	Terminals	Trouble	Condition	STD Voltage
2	BATT – E1	No voltage	–	9 – 14 V









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

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

NO → ② Check that there is voltage between ECU terminal BATT and body ground.

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

③ OK → Try another ECU.

③ BAD → Repair or replace.

② OK → Check fuse and fusible link.

Check fuse and fusible link. BAD → Replace.

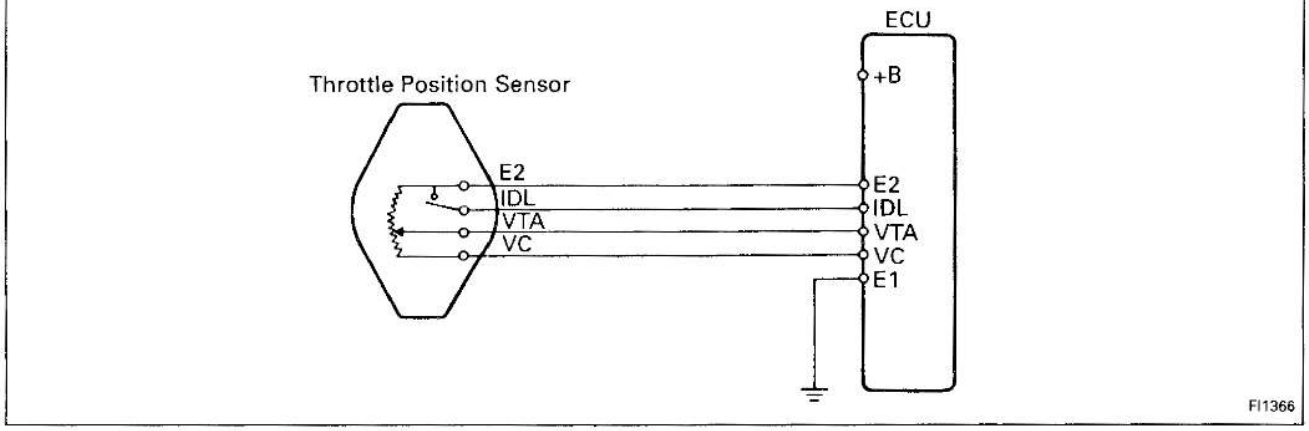
Check fuse and fusible link. OK → Check wiring between ECU terminal and battery.

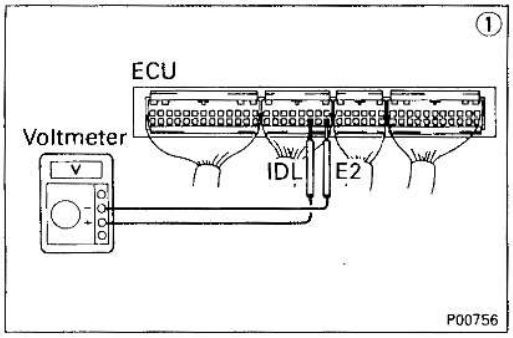
Check wiring between ECU terminal and battery. BAD → Repair or replace.

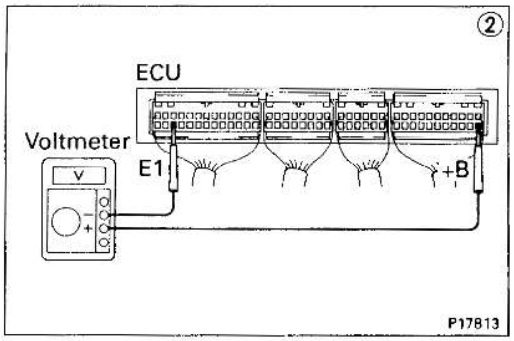
V05417

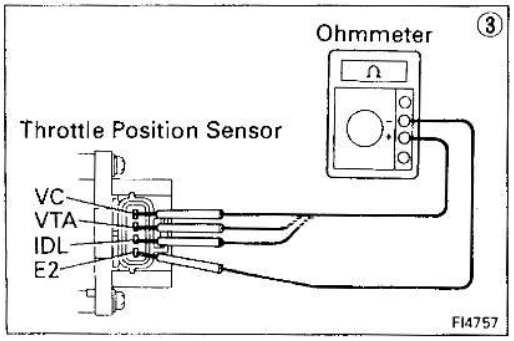
EG

No.	Terminals	Trouble	Condition		STD Voltage
3	IDL – E2	No voltage	Ignition switch ON	Throttle valve open	9 – 14 V
	VC – E2			–	4.5 – 5.5 V
	VTA – E2			Throttle valve fully closed	0.3 – 0.8 V
				Throttle valve fully open	3.2 – 4.9 V









• IDL – E2

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

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

NO → Refer to +B – E1 trouble section (No.1). (See page EG-192)

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

OK → Try another ECU.

BAD → Repair or replace.

BAD → Repair or replace.

③ Check throttle position sensor. (See pageEG-253)

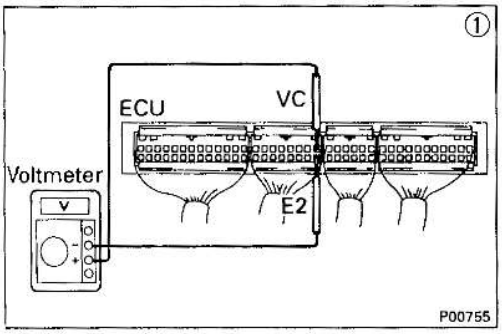
BAD → Repair or replace throttle position sensor.

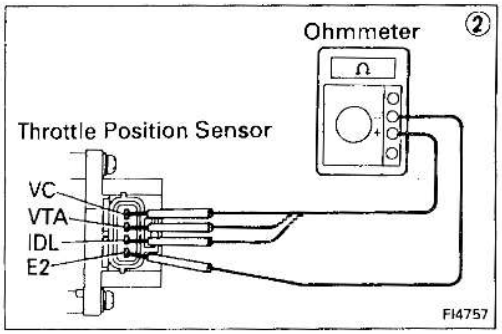
OK → Check wiring between ECU and throttle position sensor.

BAD → Repair or replace.

OK → Try another ECU.

V05418





• VC – E2

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

↓

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

↓ OK

② Check throttle position sensor. (See page EG-253)

↓ BAD

Repair or replace.

↓ OK

Check wiring between ECU and throttle position sensor.

↓ OK

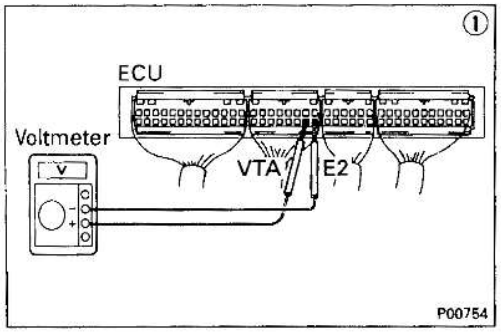
Try another ECU.

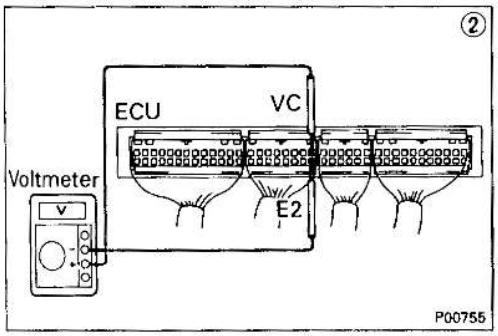
NO ↓

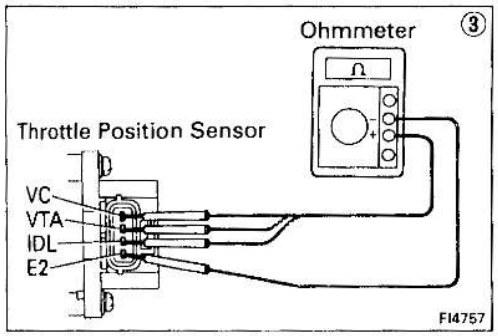
Refer to +B – E1 trouble section (No.1). (See page EG-192)

↓ BAD

Repair or replace.







• VTA – E2

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

↓

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

↓ NO

Refer to VC – E2 trouble section.

↓ OK

OK ↓

③ Check throttle position sensor. (See page EG-253)

↓ BAD → Repair or replace.

↓ OK

Check wiring between ECU and throttle position sensor.

↓ BAD → Repair or replace.

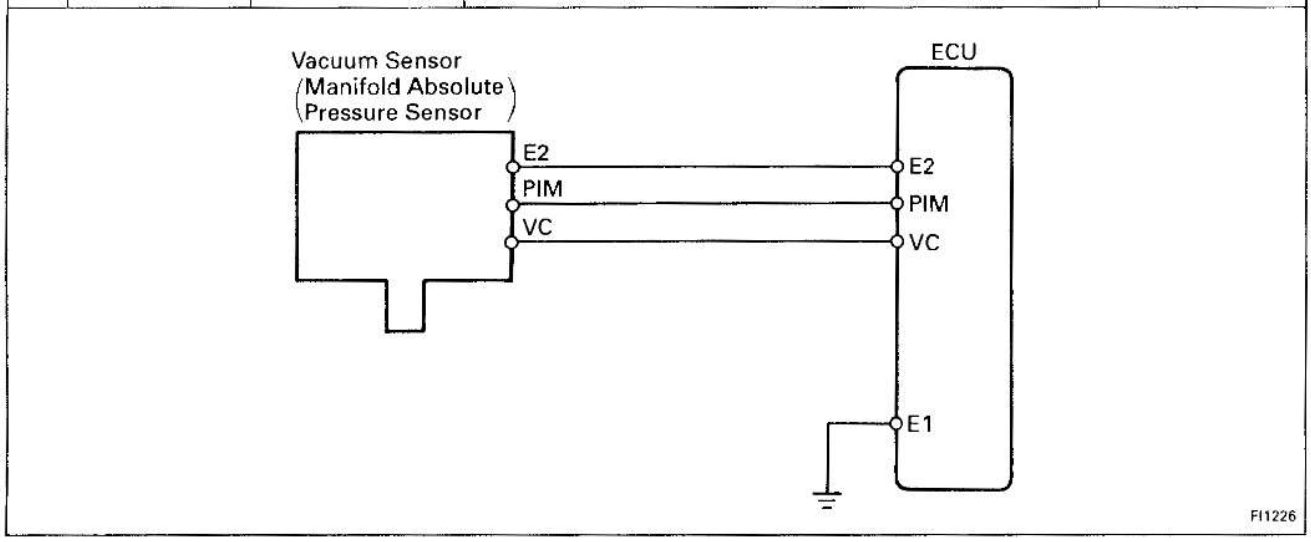
↓ OK

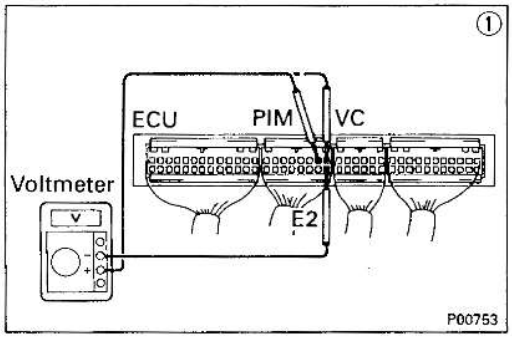
Try another ECU.

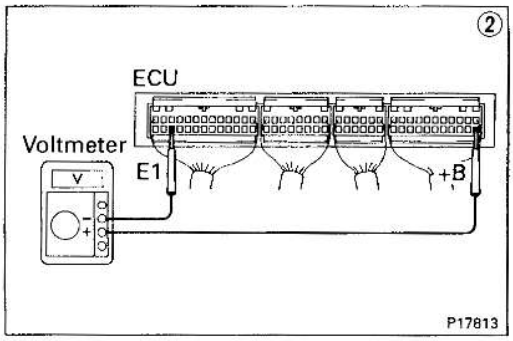
V05419

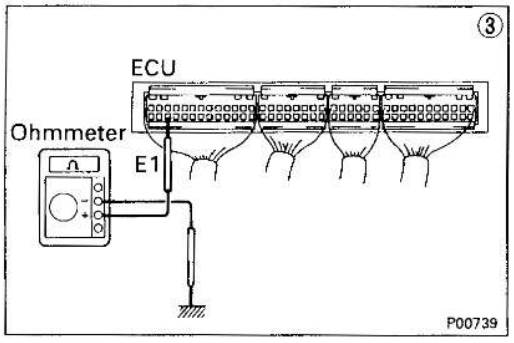
EG

No.	Terminals	Trouble	Condition	STD voltage
4	PIM – E2	No voltage	IG SW ON	3.3 – 4.9 V
	VC – E2			4.5 – 5.5 V









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

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

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

NO → Refer to +B – E1 trouble section (No.1). (See page EG-192)

③ OK → Check vacuum sensor. (See page EG-280)

③ BAD → Repair or replace.

Check vacuum sensor. BAD → Replace vacuum sensor.

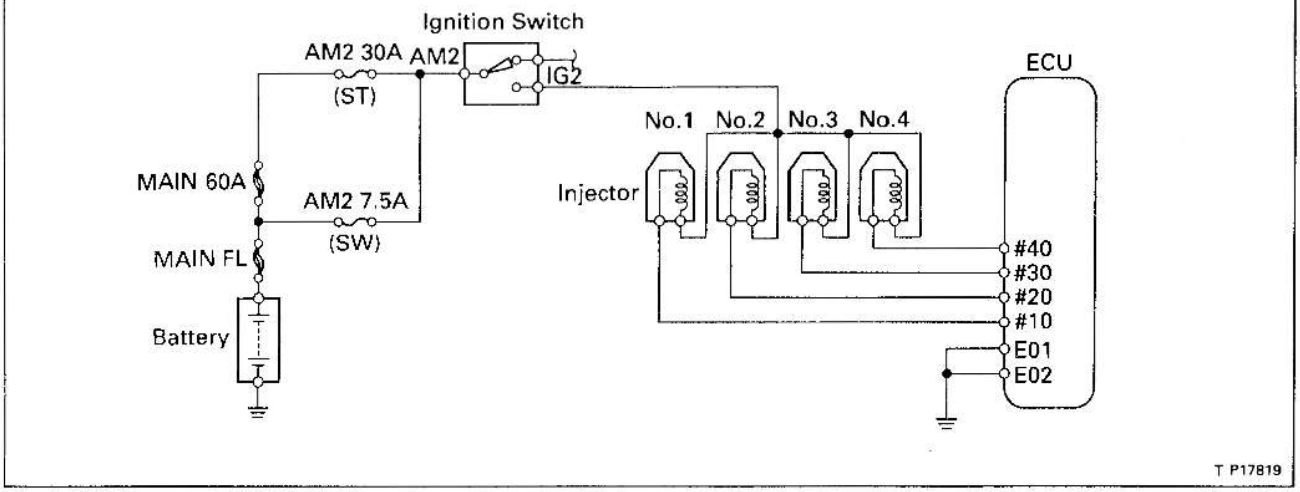
Check vacuum sensor. OK → Check wiring between ECU and vacuum sensor.

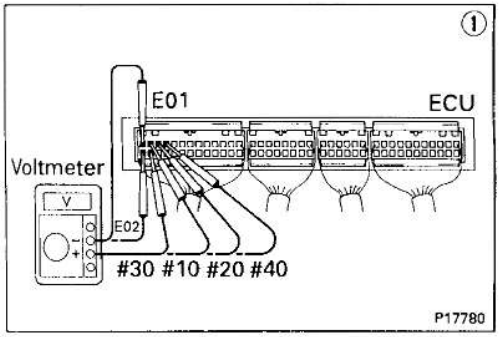
Check wiring between ECU and vacuum sensor. OK → Try another ECU.

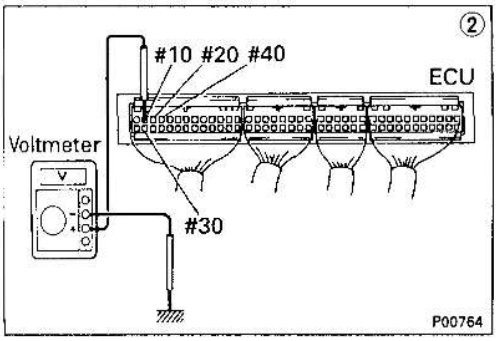
Check wiring between ECU and vacuum sensor. BAD → Repair or replace.

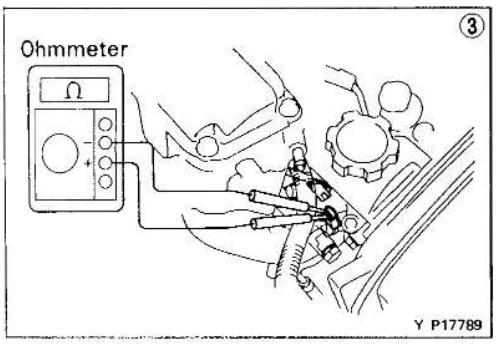
V05420

No.	Terminals	Trouble	Condition	STD voltage
5	#10, #30 – E01 #20, #40 – E02	No voltage	IG SW ON	9 – 14 V









● **IDL – E2**

① There is no voltage between ECU terminals #10, #20, #30 and/or #40 and E01 and/or E02. **(IG SW ON)**

↓

② Check that there is voltage between ECU terminal #10, #20, #30 and/or #40 and body ground.

NO → OK

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

OK → Try another ECU.

BAD → Repair or replace.

↓

Check fuse, fusible links and ignition switch.

BAD → Repair or replace.

↓ OK

③ Check resistance of each injector.
STD resistance: Approx. 13.8 Ω

OK → ↓

OK → Replace injector.

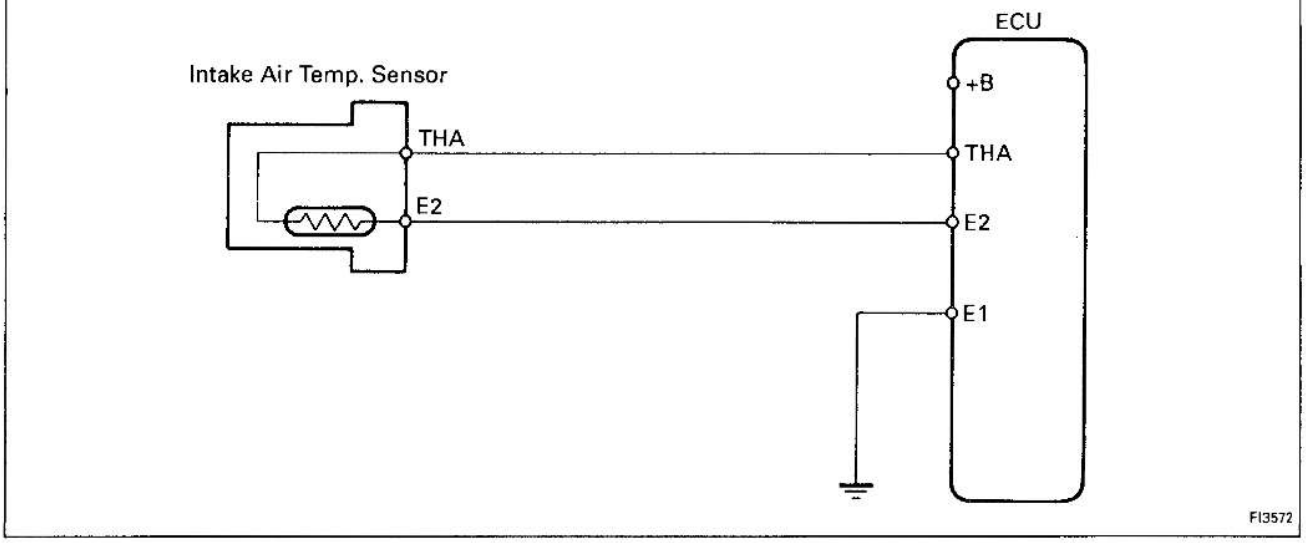
Check wiring between ECU terminal #10, #20, #30 and/or #40 and battery.

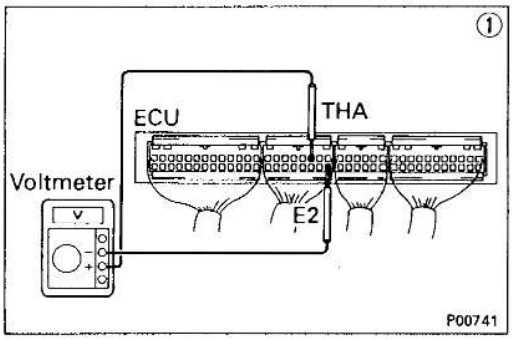
BAD → Repair or replace.

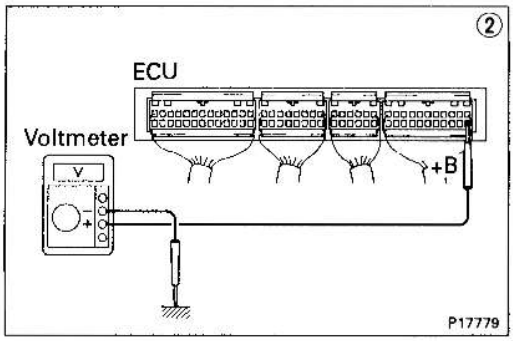
V05421

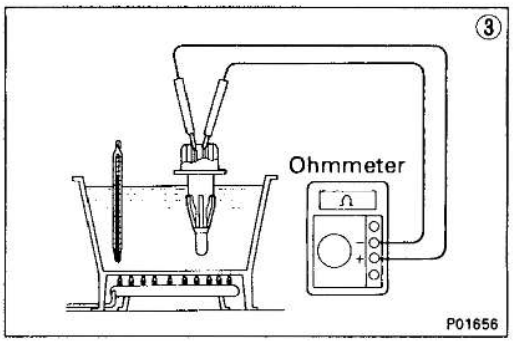
EG

No.	Terminals	Trouble	Condition		STD voltage
6	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)**

OK → ↓

NO → Refer to +B – E1 trouble section No.1. (See page EG-192)

↓

Check wiring between ECU terminal E1 and body ground.

OK → ↓

BAD → Repair or replace.

↓

③ Check intake air temp. sensor. (See page EG-278)

BAD → Repair intake air temp. sensor.

OK → ↓

Check wiring between ECU and intake air temp. sensor.

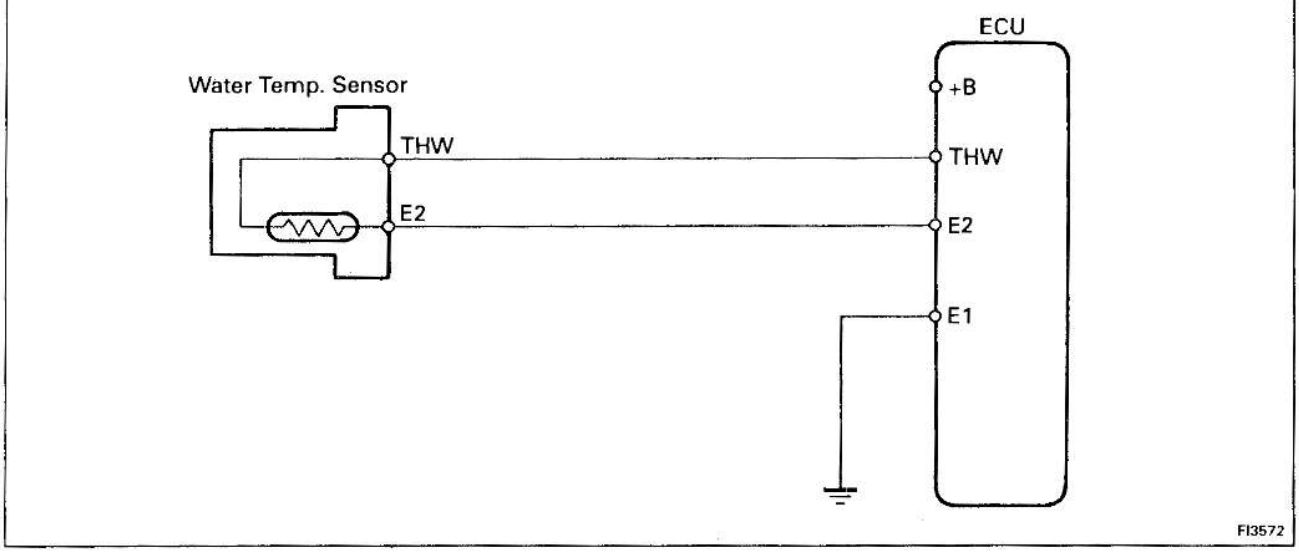
OK → ↓

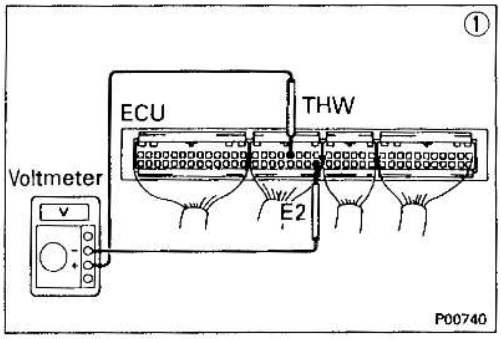
Try another ECU.

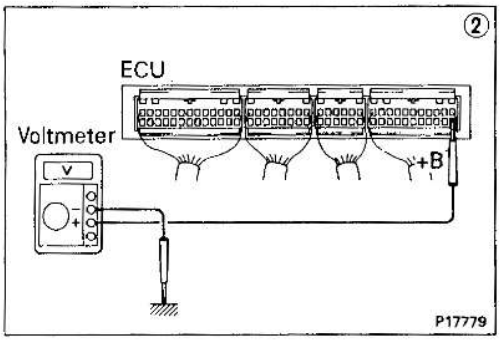
BAD → Repair or replace.

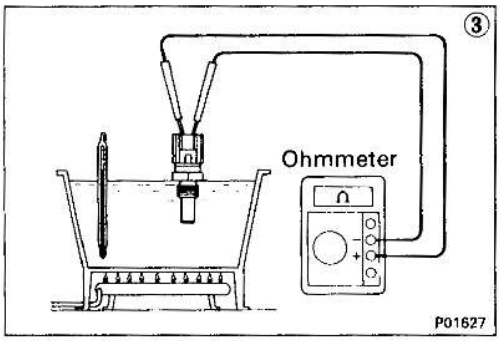
V05422

No.	Terminals	Trouble	Condition		STD voltage
7	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 → Check wiring between ECU terminal E1 and body ground.

NO → Refer to +B – E1 trouble section (No.1). (See page EG-192)

OK → ③ Check water temp. sensor. (See page EG-275)

BAD → Repair or replace.

BAD → Replace water temp. sensor.

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

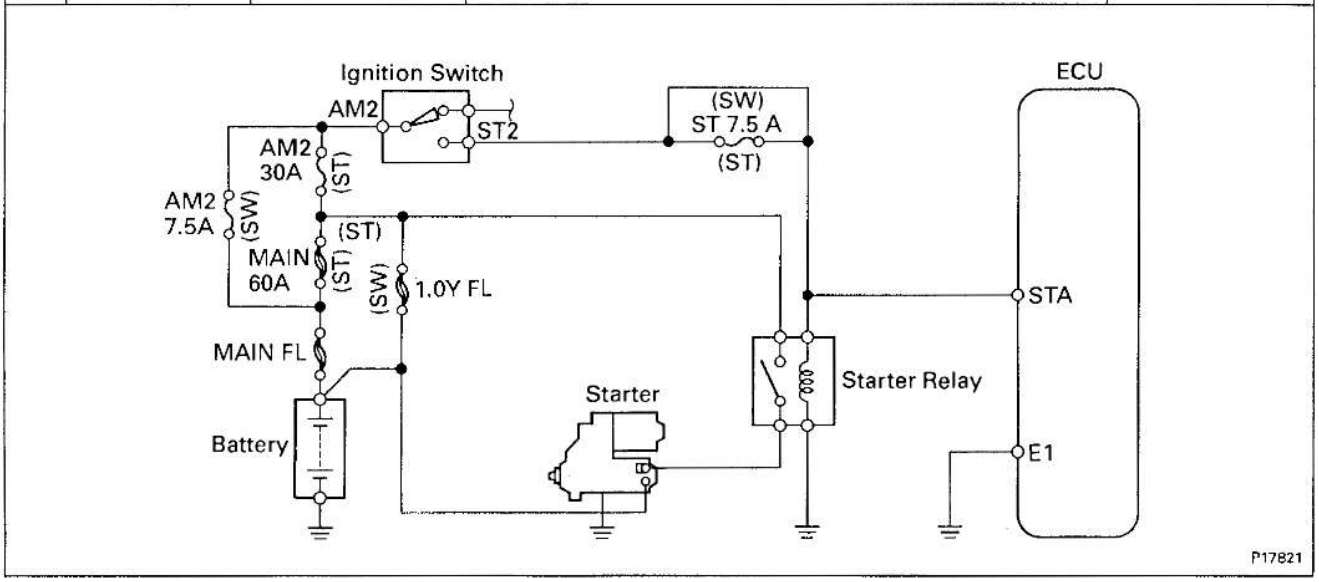
OK → Try another ECU.

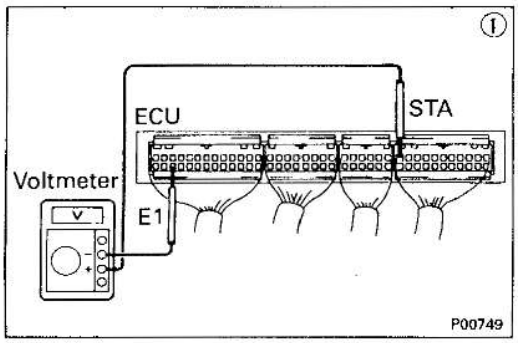
BAD → Repair or replace.

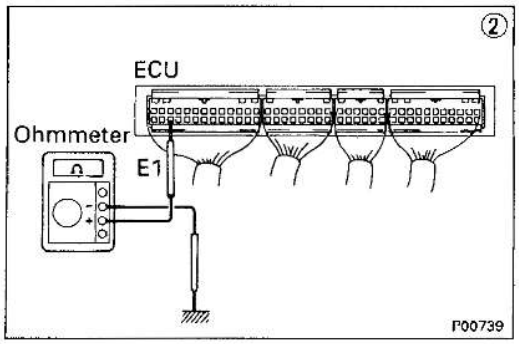
V05423

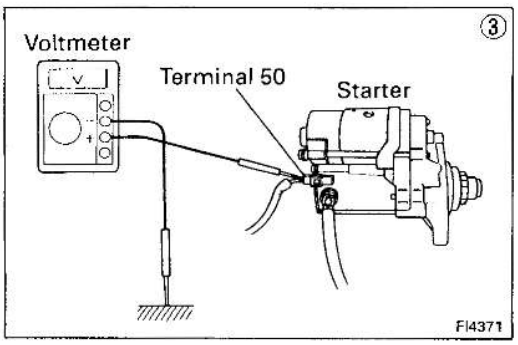
EG

No.	Terminals	Trouble	Condition	STD voltage
8	STA – E1	No voltage	Cranking	6 V or more









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

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

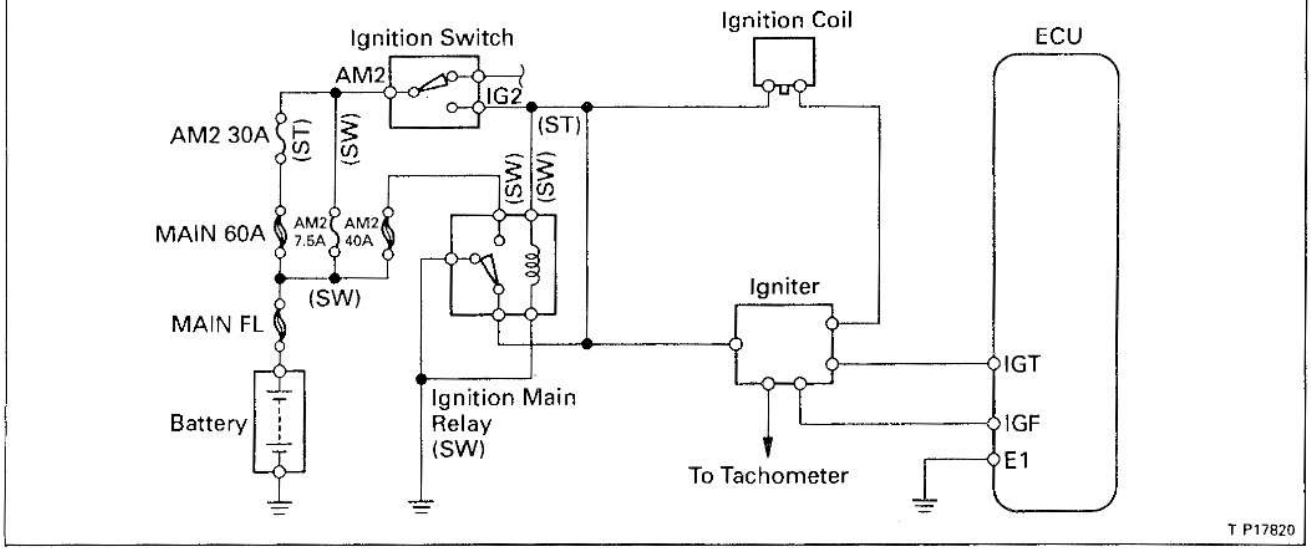
OK → ③ Check that there is voltage at terminal 50 of starter. **(IG SW START) STD voltage: 6 – 14 V**

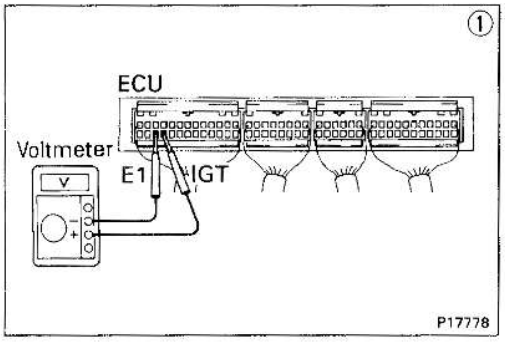
OK → Check starter.

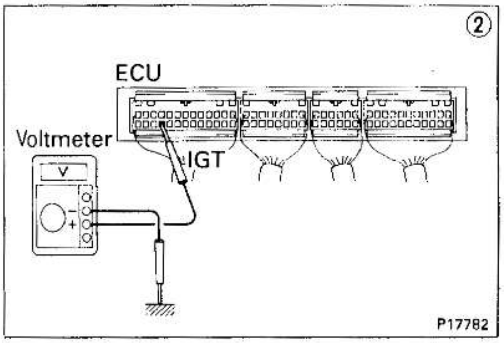
NO → Check wiring between 1). ST2 and starter relay, and 2). battery and starter terminal 50.

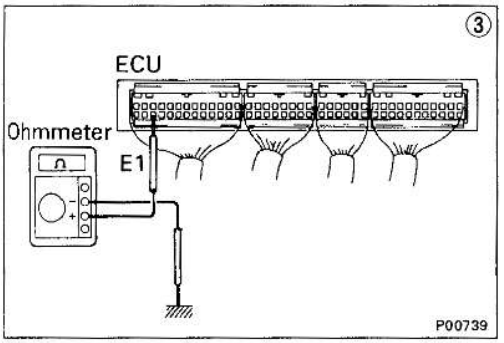
V05424

No.	Terminals	Trouble	Condition	STD voltage
9	IGT – E1	No voltage	Idling	Pulse generation









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

↓

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

NO ↓ OK

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

↓ OK

Try another ECU.

Check fusible links and ignition switch. — BAD → Repair or replace.

↓ OK

Check distributor. (See page IG-12) — BAD → Repair or replace.

↓ OK

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

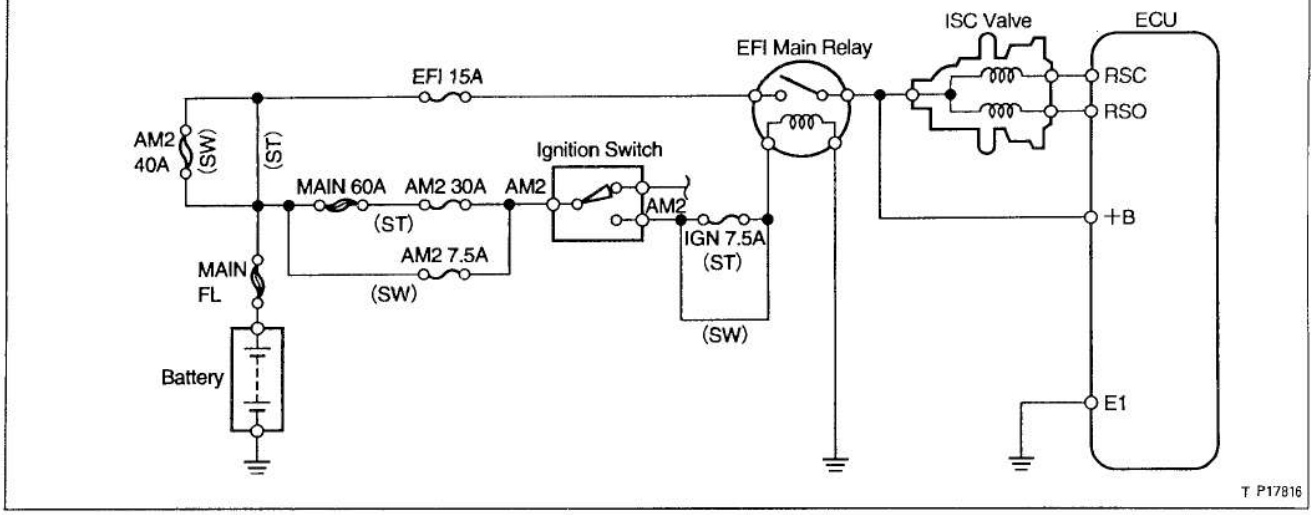
↓ OK

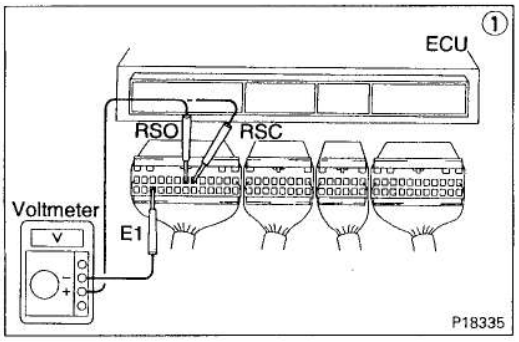
Check igniter. (See page IG-13) — BAD → Repair or replace.

V06125

EG

No.	Terminals	Trouble	Condition		STD voltage
10	RSC RSO – E1	No voltage	IG SW ON	ECU connectors disconnected	9 – 14 V





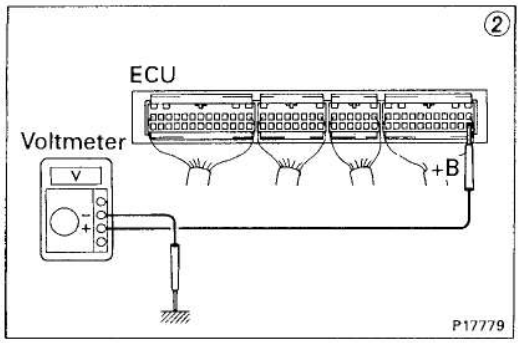
① There is no voltage between ECU terminals RSC or RSO and E1. **(IG SW ON)**

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

OK

NO

Refer to +B – E1 trouble section (No.1). (See page EG-192)



③ Check resistance between ISC valve terminals +B and RSC or RSO.
STD resistance:
Approx. 19.3 – 22.3 Ω

BAD

Replace ISC valve.

OK

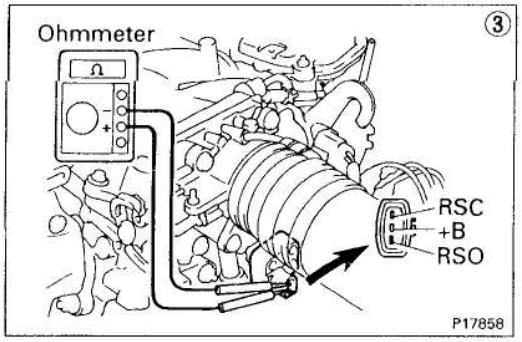
Check wiring between ECU and ISC valve.

BAD

Repair or replace.

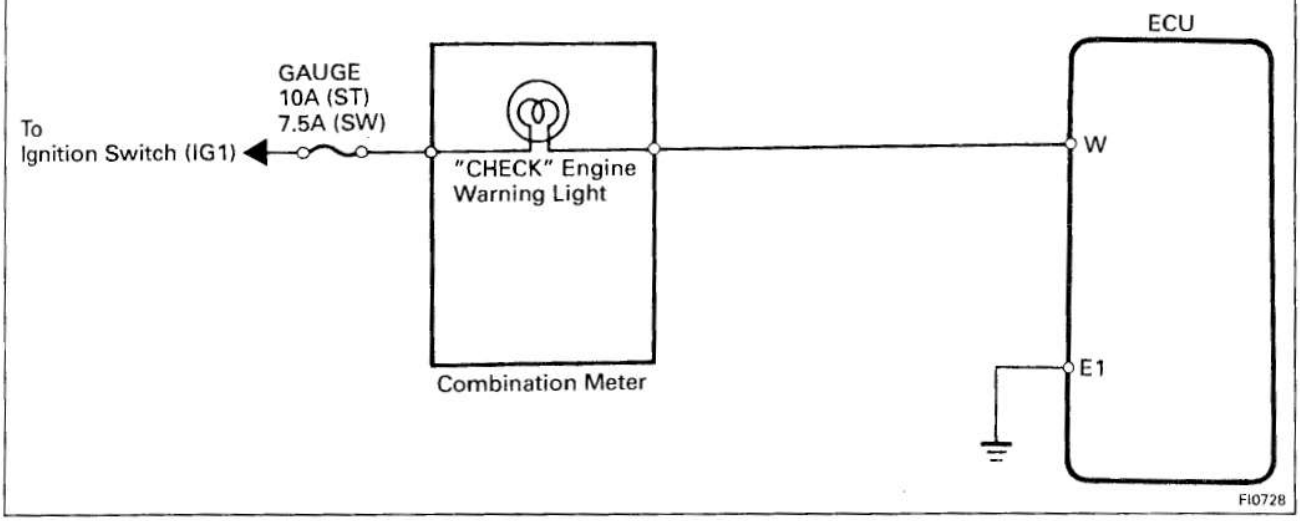
OK

Try another ECU.

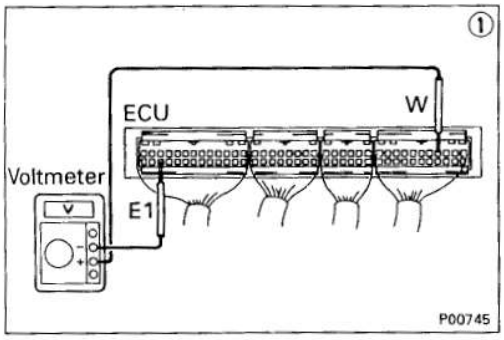


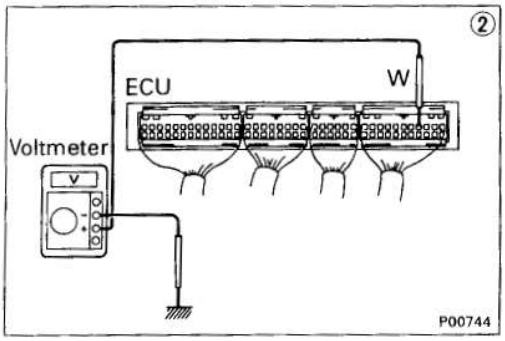
V05426

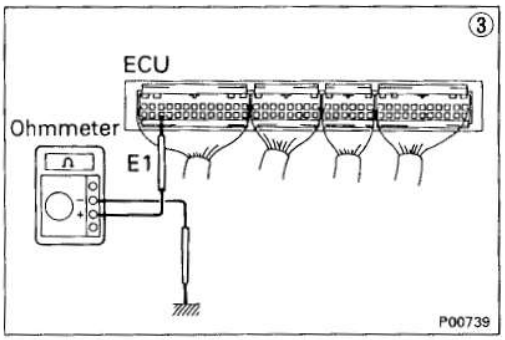
No.	Terminals	Trouble	Condition	STD voltage
11	W – E1	No voltage	No trouble ("CHECK" engine warning light off) and engine running.	9 – 14 V



EG







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

↓

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

NO → OK

↓

③ Check wiring between ECU terminal E1 and body ground.

OK → Try another ECU.

BAD → Repair or replace.

Check GAUGE fuse (10A or 7.5A) and "CHECK" engine warning light.

OK → Check wiring between ECU terminal W and fuse.

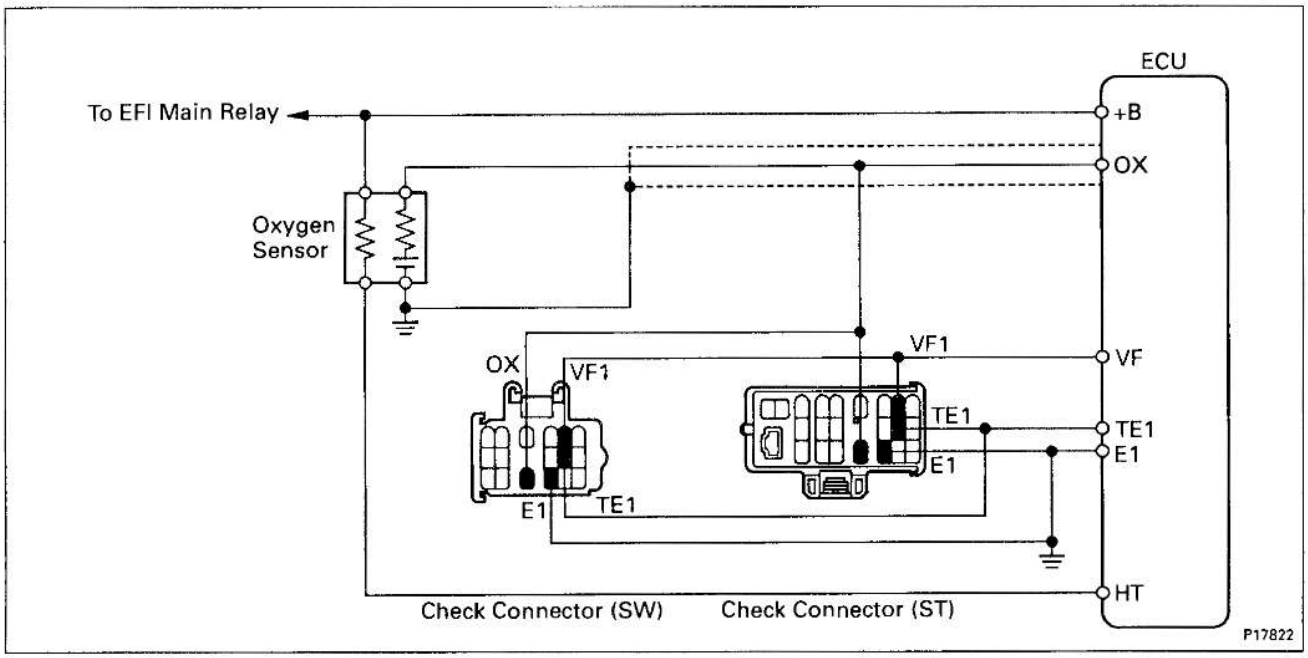
BAD → Repair or replace.

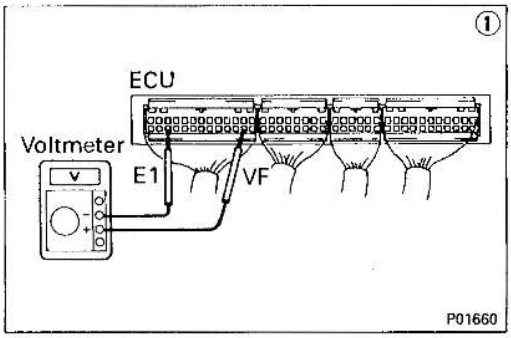
Fuse blows again → Check wiring between ECU terminal W and fuse.

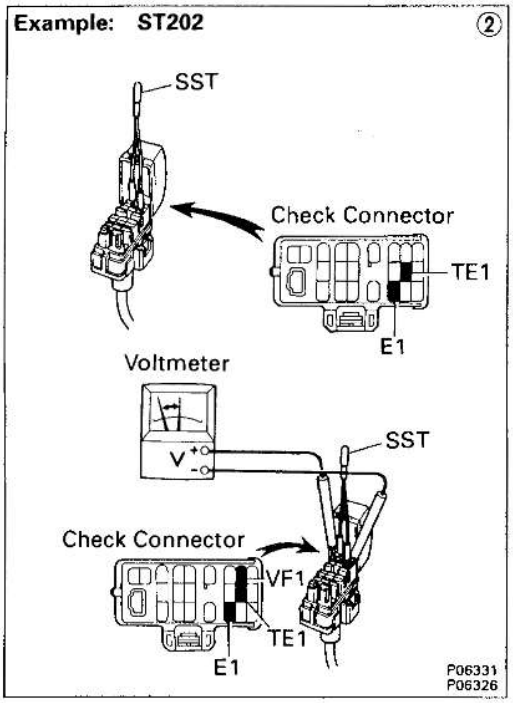
BAD → Repair or replace.

V05427

EG







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

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

NO → OK: Check wiring between ECU terminal E1 and body ground.

OK → Try another ECU. BAD → Repair or replace.

BAD → Repair or replace.

Is air leaking into air induction system? BAD → Repair or replace.

OK → Check spark plugs. (See page IG-9) BAD → Repair or replace.

OK → Check distributor and ignition system. (See page IG-7) BAD → Repair or replace.

OK → Check fuel pressure. (See page EG-205) BAD → Repair or replace.

OK → Check injectors. (See page EG-237) BAD → Repair or replace.

OK → Check vacuum sensor. (See page EG-280) BAD → Repair or replace.

OK → ② Check operation of oxygen sensor. (See page EG-286) OK → System normal.

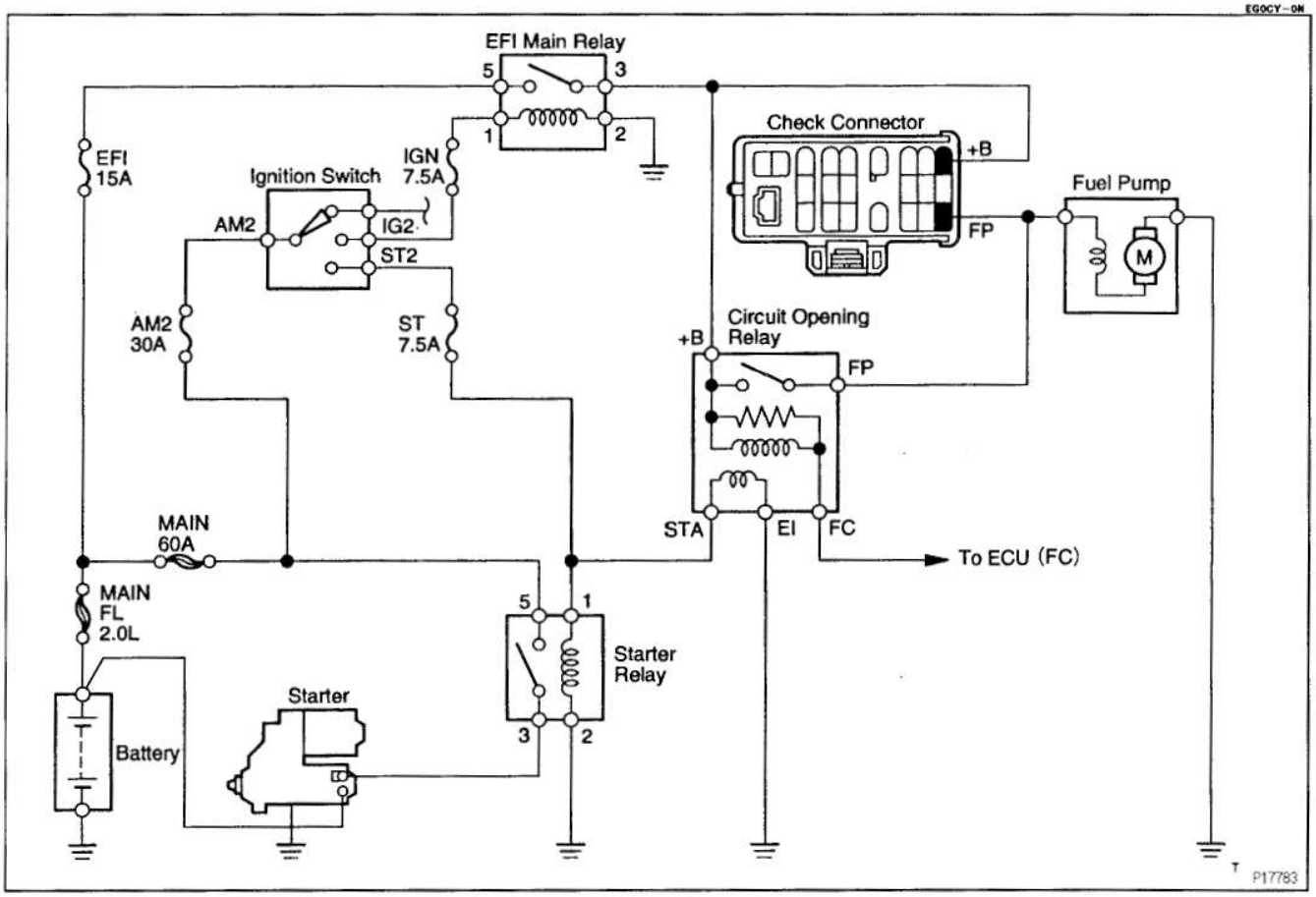
BAD → Check wiring between oxygen sensor and ECU. BAD → Repair wiring.

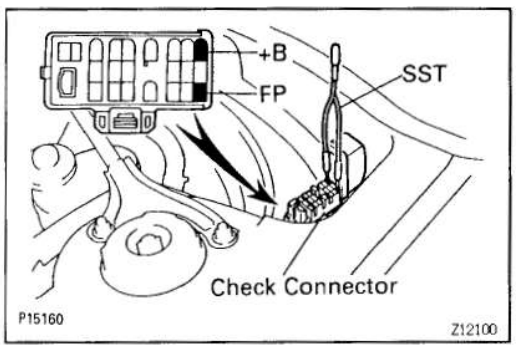
OK → Replace oxygen sensor.

V05428

FUEL PUMP (ST202)

EG



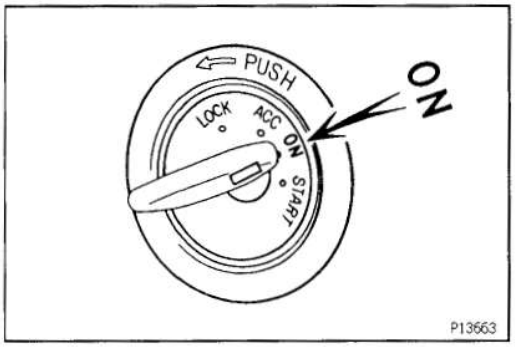


EG3MH-02

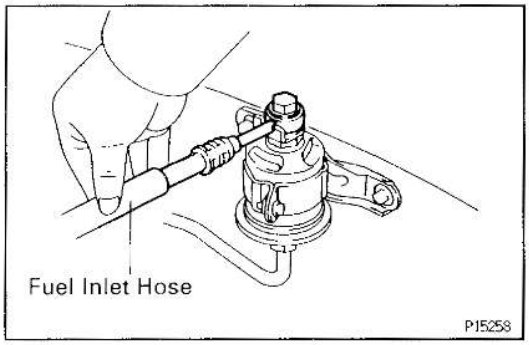
ON–VEHICLE INSPECTION

1. CHECK FUEL PUMP OPERATION

(a) Using SST, connect terminals +B and FP of the check connector.
SST 09843–18020

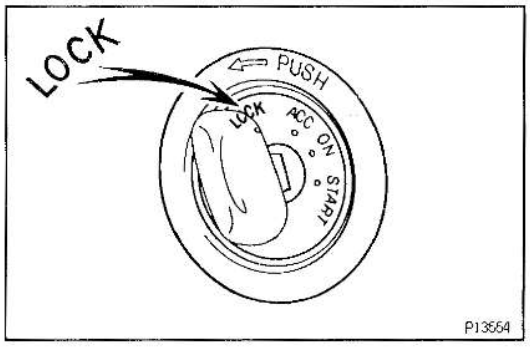


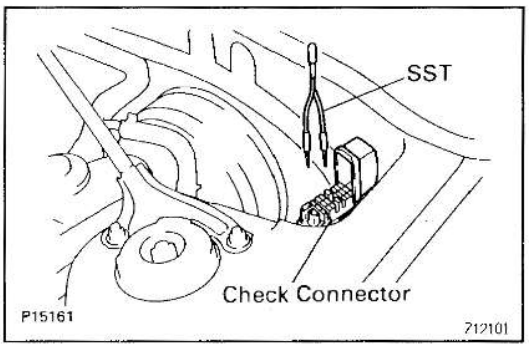
(b) Turn the ignition switch ON.
NOTICE: Do not start the engine.



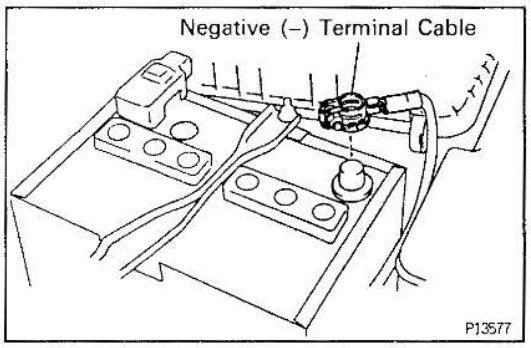
(c) Check that there is pressure in the fuel inlet hose from the fuel filter.
HINT: If there is fuel pressure, you will hear the sound of fuel flowing.
If there is no pressure, check the following parts:
- Fusible link
- H–fuse
- Fuses
- EFI main relay
- Fuel pump
- Wiring connections

(d) Turn the ignition switch to LOCK.





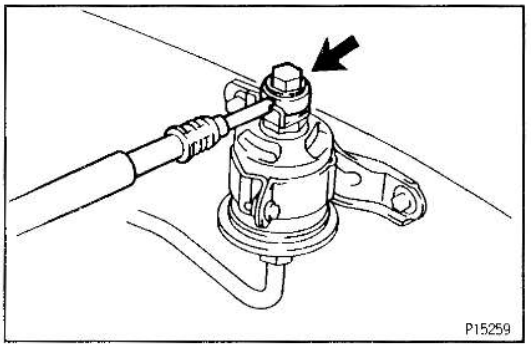
(e) Remove the SST from the check connector.
SST 09843–18020



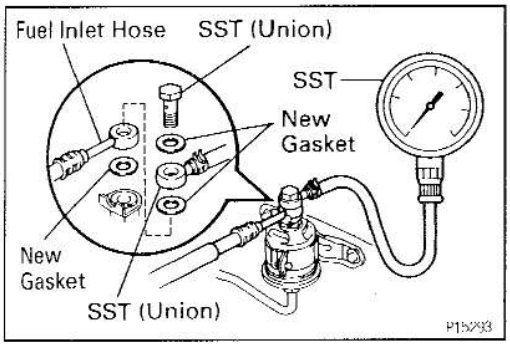
2. CHECK FUEL PRESSURE

(a) Check that the battery voltage is above 12 V.

(b) Disconnect the negative (–) terminal cable from the battery.



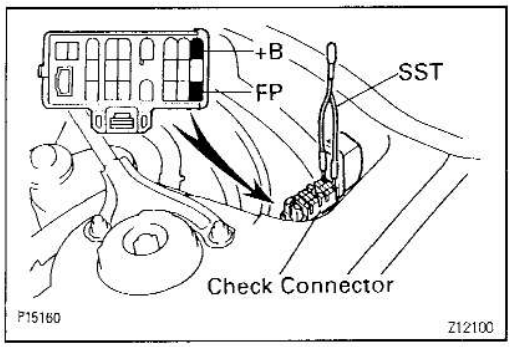
(c) Remove the union bolt and 2 gaskets, and disconnect the fuel inlet hose from the fuel filter outlet.
CAUTION:
- **Put a suitable container or shop rag under the fuel filter.**
- **Slowly loosen the union bolt.**
- **When removing or installing the union bolt, fix the fuel filter in place using a spanner.**



(d) Install the fuel inlet hose and SST (pressure gauge) to the fuel filter with 3 new gaskets and SST (union bolt).
SST 09268–45012
Torque: 29 N·m (300 kgf·cm, 22 ft·lbf)

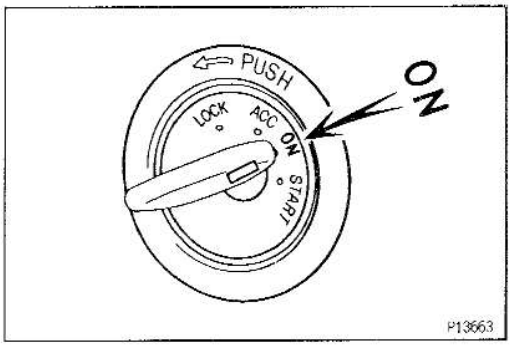
(e) Wipe off any splattered gasoline.

EG

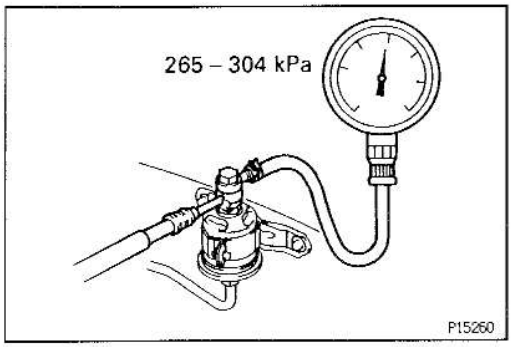


(f) Using SST, connect terminals +B and FP of the check connector.
SST 09843–18020

(g) Reconnect the negative (–) terminal cable to the battery.

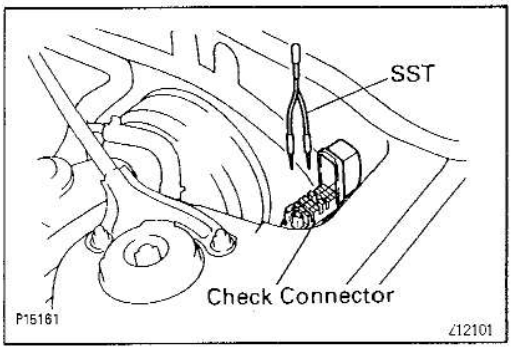


(h) Turn the ignition switch ON.



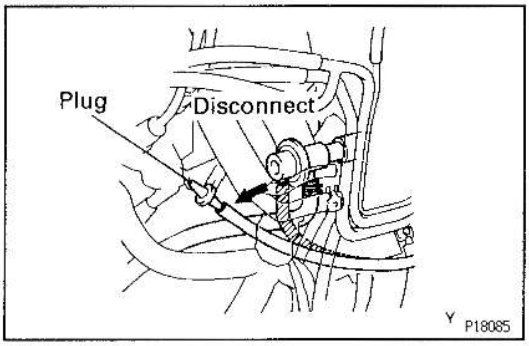
(i) Measure the fuel pressure.
Fuel pressure:
265 – 304 kPa (2.7 – 3.1 kgf/cm², 38 – 44 psi)
If pressure is high, replace the fuel pressure regulator.
If pressure is low, check the following parts:

- Fuel hoses and connections
- Fuel pump
- Fuel filter
- Fuel pressure regulator



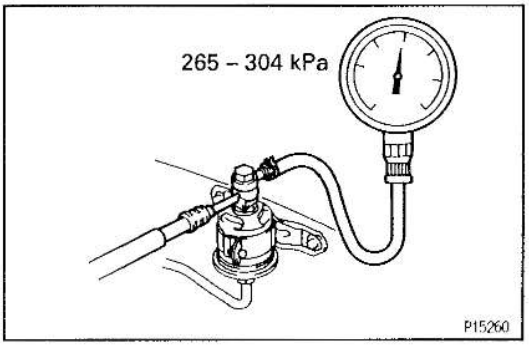
(j) Remove the SST from the check connector.
SST 09483–18020

EG



(k) Start the engine.

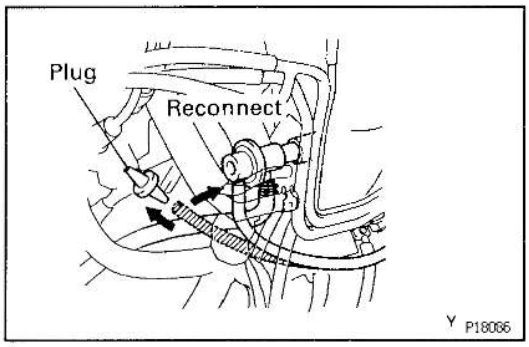
(l) Disconnect the vacuum sensing hose from the fuel pressure regulator, and plug the hose end.



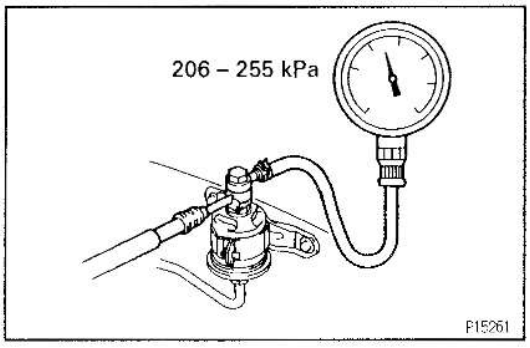
(m) Measure the fuel pressure at idle.

Fuel pressure:

265 – 304 kPa (2.7 – 3.1 kgf/cm², 38 – 44 psi)



(n) Reconnect the vacuum sensing hose to the fuel pressure regulator.

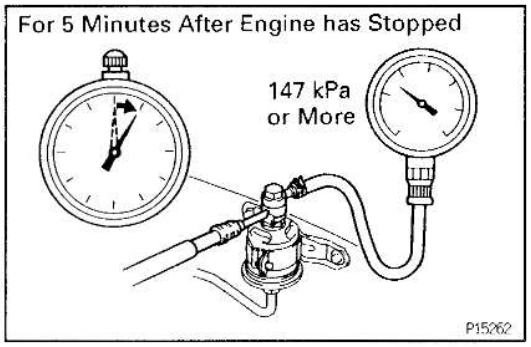


(o) Measure the fuel pressure at idle.

Fuel pressure:

206 – 255 kPa (2.1 – 2.6 kgf/cm², 31 – 37 psi)

If pressure is not as specified, check the vacuum sensing hose and fuel pressure regulator.



(p) Stop the engine.

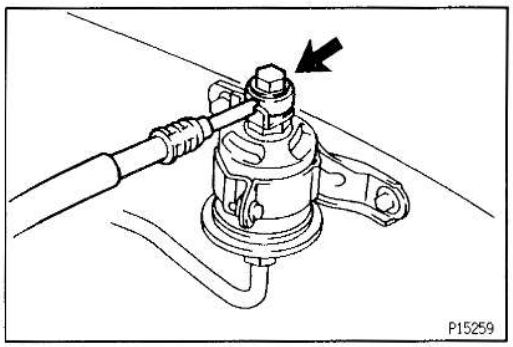
(q) Check that the fuel pressure remains as specified for 5 minutes after the engine has stopped.

Fuel pressure:

147 kPa (1.5 kgf/cm², 21 psi) or more

If pressure is not as specified, check the fuel pump, pressure regulator and/or injector.

(r) After checking fuel pressure, disconnect the battery negative (–) terminal cable from the battery and carefully remove the SST to prevent gasoline from splashing.
SST 09268–45012



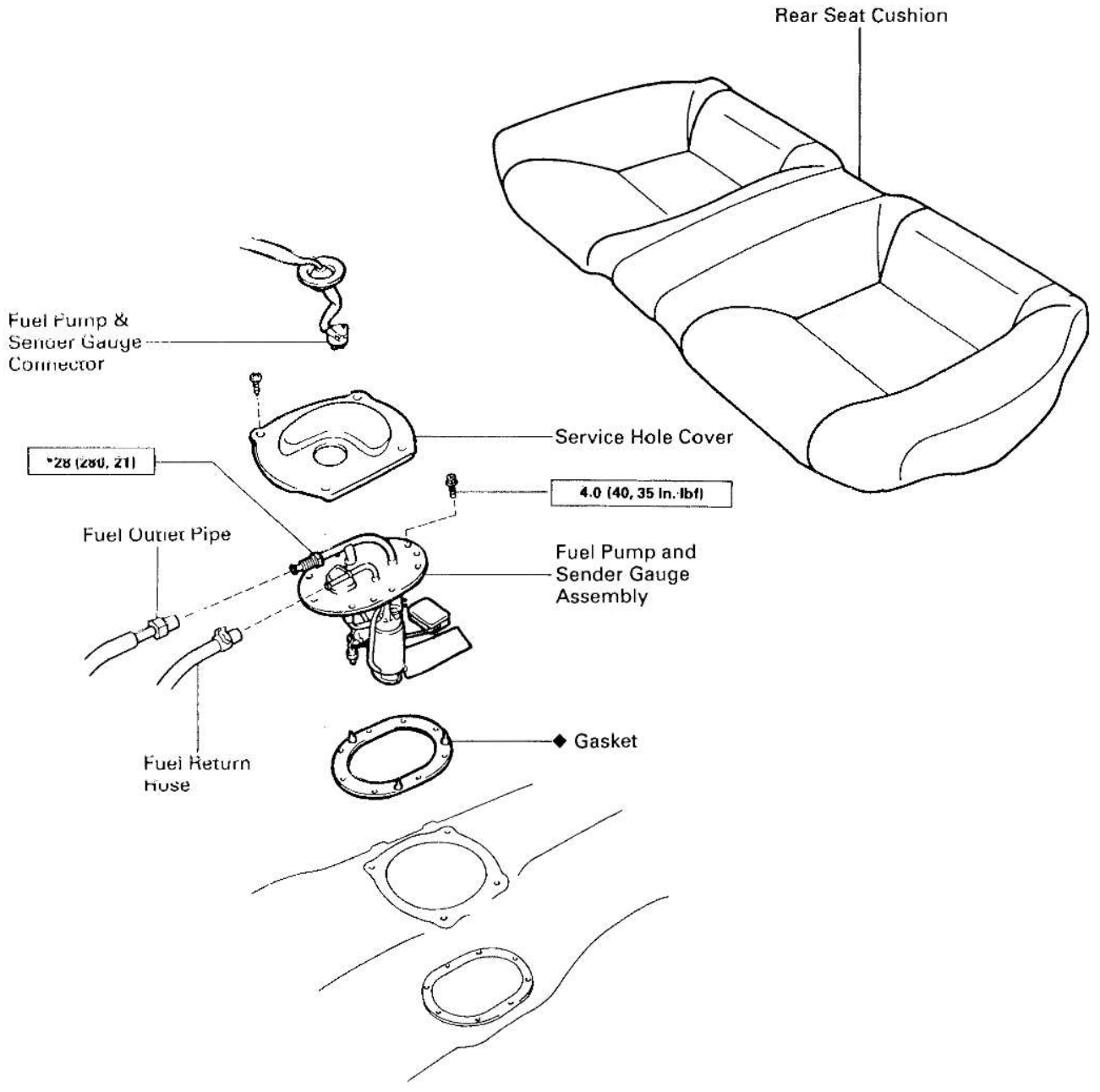
(s) Reconnect the fuel inlet hose to the fuel filter with with 2 new gaskets and the union bolt.
Torque: 29 N·m (300 kgf·cm, 22 ft·lbf)
CAUTION: When removing or installing the union bolt, fix the fuel filter in place using a spanner.

(t) Reconnect the negative (–) terminal cable to the battery.

(u) Check for fuel leaks. (See page EG–173)

COMPONENTS FOR REMOVAL AND INSTALLATION

EG



P15291

N·m (kgf·cm, ft·lbf) : Specified torque

◆ Non-reusable part

* For use with SST

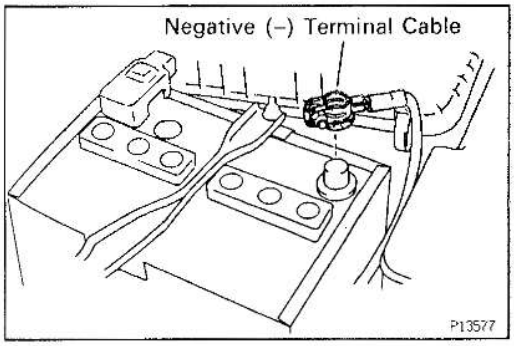
Z12999

EG3JV–03

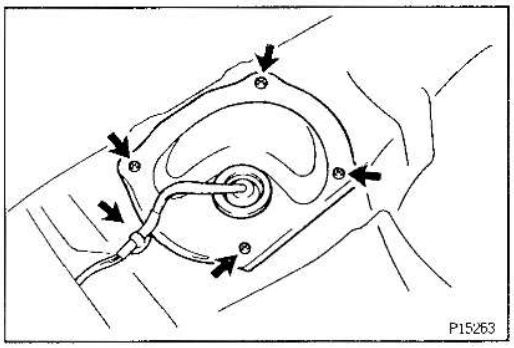
FUEL PUMP REMOVAL

(See Components for Removal and Installation)

CAUTION: Do not smoke or work near an open flame when working on the fuel pump.

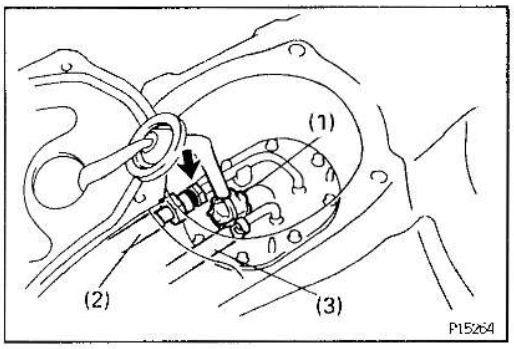


1. **DISCONNECT NEGATIVE (–) TERMINAL CABLE FROM BATTERY**
2. **REMOVE REAR SEAT CUSHION**



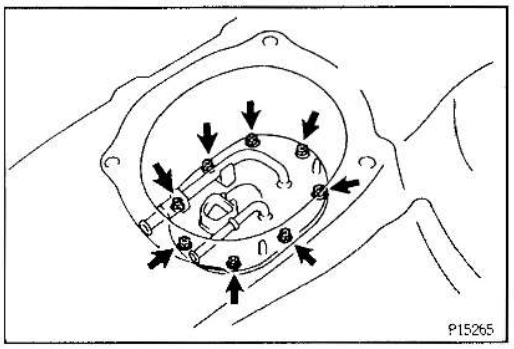
3. **REMOVE SERVICE HOLE COVER**

Remove the 4 screws, and disconnect the wire harness clamp, service hole cover from the floor panel.

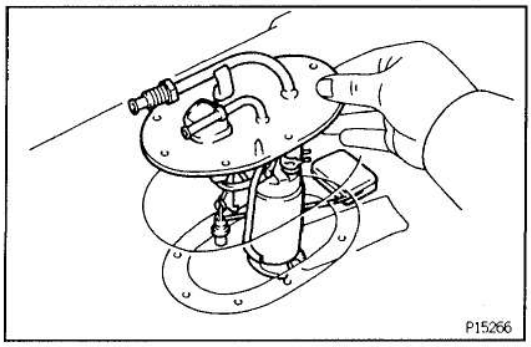


4. **REMOVE FUEL PUMP AND SENDER GAUGE ASSEMBLY**

(a) Disconnect the following connector, pipe and hose:
- (1) Fuel pump & sender gauge connector
- (2) Fuel outlet pipe
- (3) Fuel return hose

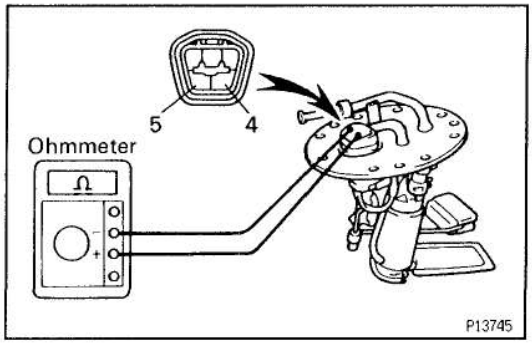


(b) Remove the 8 bolts.



(c) Remove the fuel pump & sender gauge assembly and gasket.

EG



FUEL PUMP INSPECTION

EG1LY-00

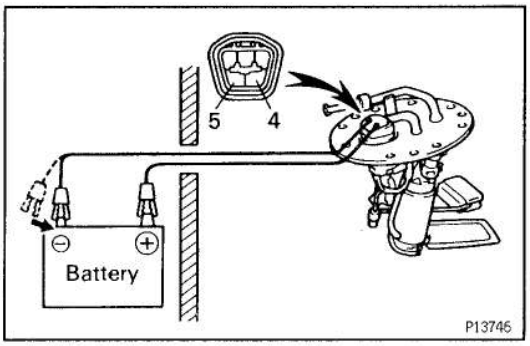
1. INSPECT FUEL PUMP RESISTANCE

Using an ohmmeter, measure the resistance between terminals 4 and 5.

Resistance:

0.2 – 3.0 Ω at 20°C (68°F)

If the resistance is not as specified, replace the fuel pump, lead wire or connector.



2. INSPECT FUEL PUMP OPERATION

Connect a tester lead from terminal 4 of the connector to the positive (+) terminal of the battery; connect another tester lead from terminal 5 of the connector to the negative (–) terminal of the battery.

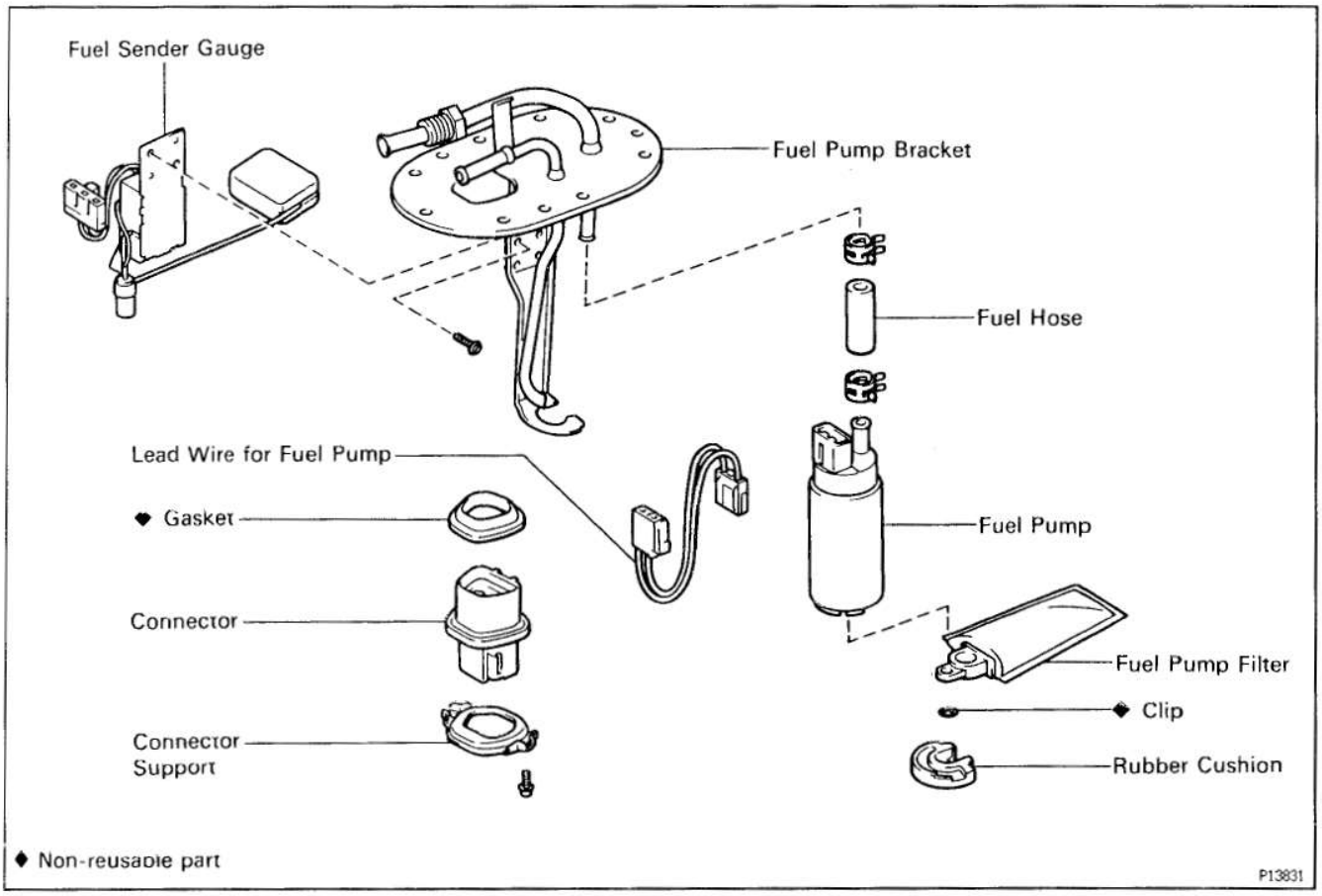
NOTICE:

- **These tests must be performed quickly (within 10 seconds) to prevent the coil from burning out.**
- **Keep the fuel pump as far away from the battery as possible.**
- **Always connect or disconnect at the battery.**

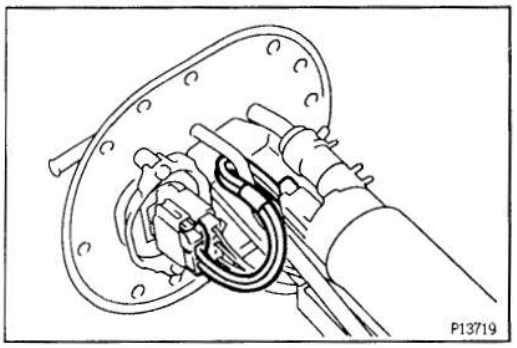
If operation is not as specified, replace the fuel pump, lead wire or connector.

COMPONENTS FOR DISASSEMBLY AND ASSEMBLY

EG0D1-0E



EG



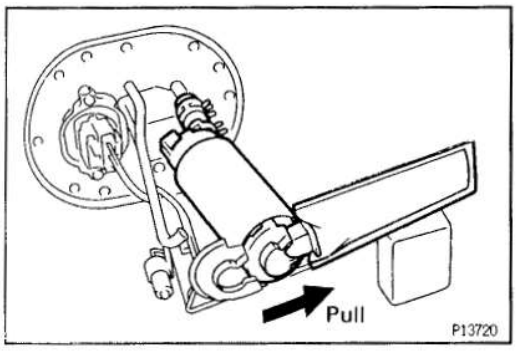
FUEL PUMP DISASSEMBLY

EG3H5-03

(See Components for Disassembly and Assembly)

1. REMOVE FUEL PUMP FROM PUMP BRACKET

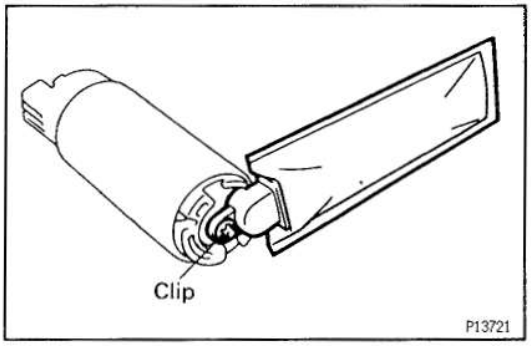
(a) Remove the lead wire.



(b) Pull out the lower side of the fuel pump from the connector.

(c) Remove the rubber cushion from the fuel pump.

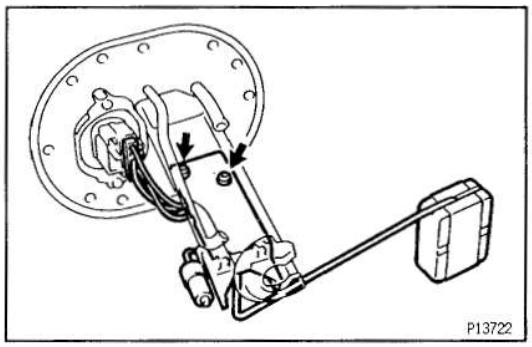
(d) Disconnect the fuel hose from the fuel pump, and remove the fuel pump.



2. REMOVE FUEL PUMP FILTER FROM FUEL PUMP

(a) Remove the clip.

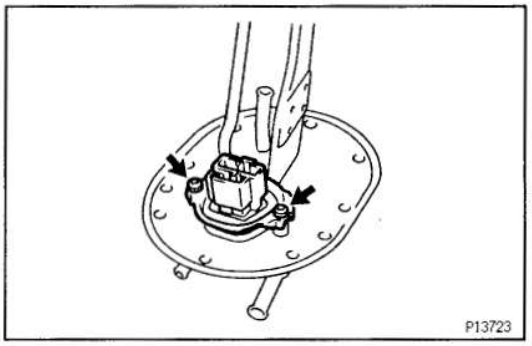
(b) Pull out the pump filter.



3. REMOVE FUEL SENDER GAUGE FROM FUEL PUMP BRACKET

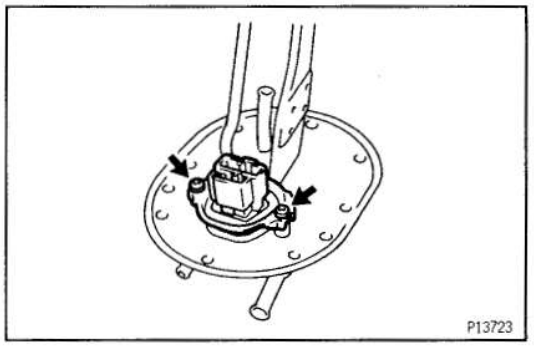
(a) Disconnect the connector from the connector.

(b) Remove the 2 screws and sender gauge.



4. REMOVE CONNECTOR

Remove the 2 screws, connector support, connector and gasket.



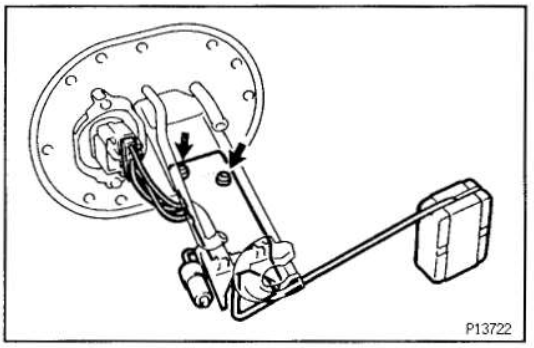
FUEL PUMP ASSEMBLY

EG3MK-03

(See Components for Disassembly and Assembly)

1. INSTALL CONNECTOR

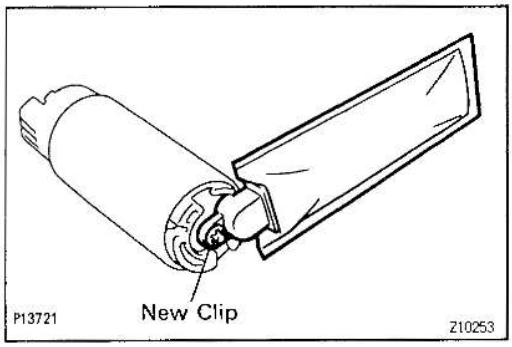
Install a new gasket, the connector and connector support with the 2 screws.



2. INSTALL FUEL SENDER GAUGE TO FUEL PUMP BRACKET

(a) Install the sender gauge with the 2 screws.

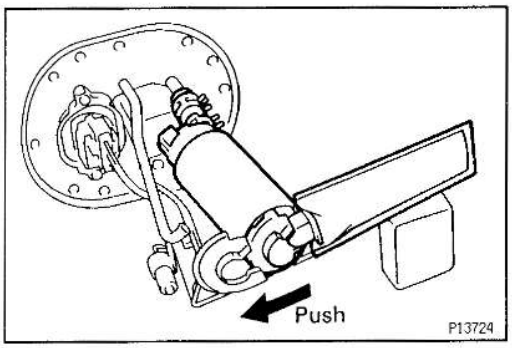
(b) Connect the connector to the connector.



3. INSTALL FUEL PUMP FILTER TO FUEL PUMP

Install the pump filter with a new clip.

EG

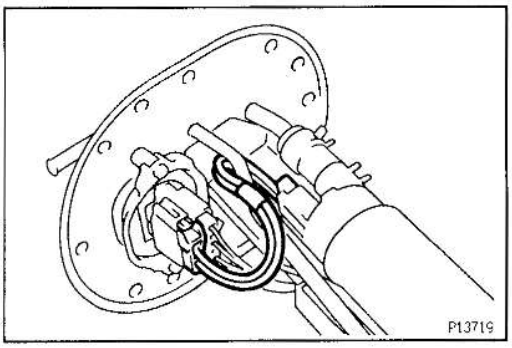


4. INSTALL FUEL PUMP TO FUEL PUMP BRACKET

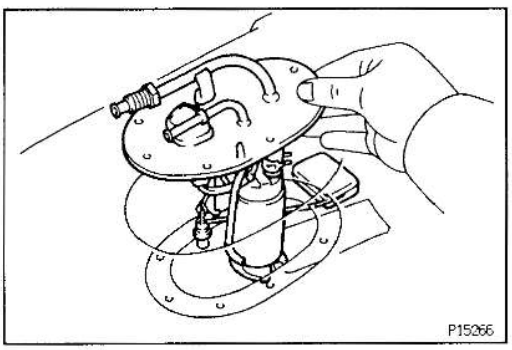
(a) Connect the fuel hose to the outlet port of the fuel pump.

(b) Install the rubber cushion to the fuel pump.

(c) Install the fuel pump by pushing the lower side of the fuel pump.



(d) Install the lead wire.



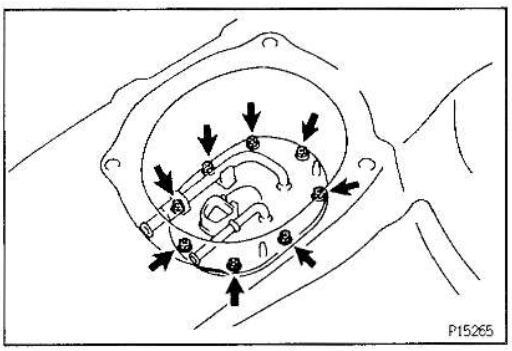
FUEL PUMP INSTALLATION

(See Components for Removal and Installation)

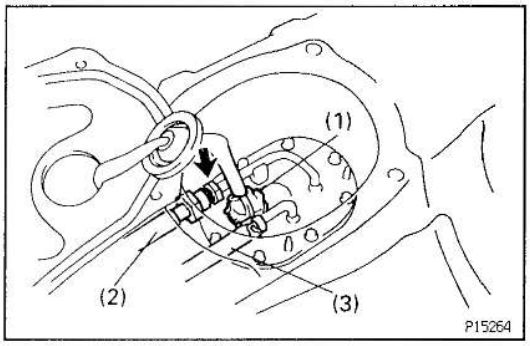
1. INSTALL FUEL PUMP AND SENDER GAUGE ASSEMBLY

(a) Install a new gasket to the connector.

(b) Insert the fuel pump & sender gauge assembly into the fuel tank.

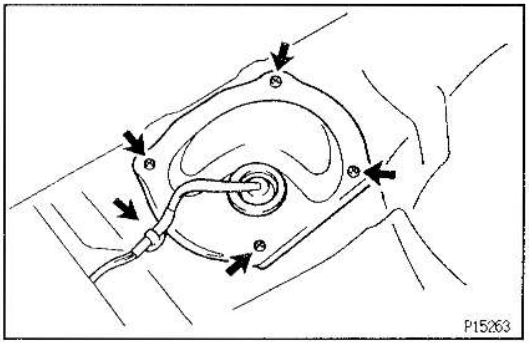


(c) Install the fuel pump bracket with the 8 bolts.
Torque: 4.0 N·m (40 kgf·cm, 35 in.·lbf)



(d) Connect the following connector, pipe and hose:
(1) Fuel pump & sender gauge connector
(2) Fuel outlet pipe
HINT: Use SST. (See page EG–173)
SST 09631–22020
Torque: 28 N·m (280 kgf·cm, 21 ft·lbf)
(3) Fuel return hose

2. CHECK FOR FUEL LEAKS
(See page EG–173)

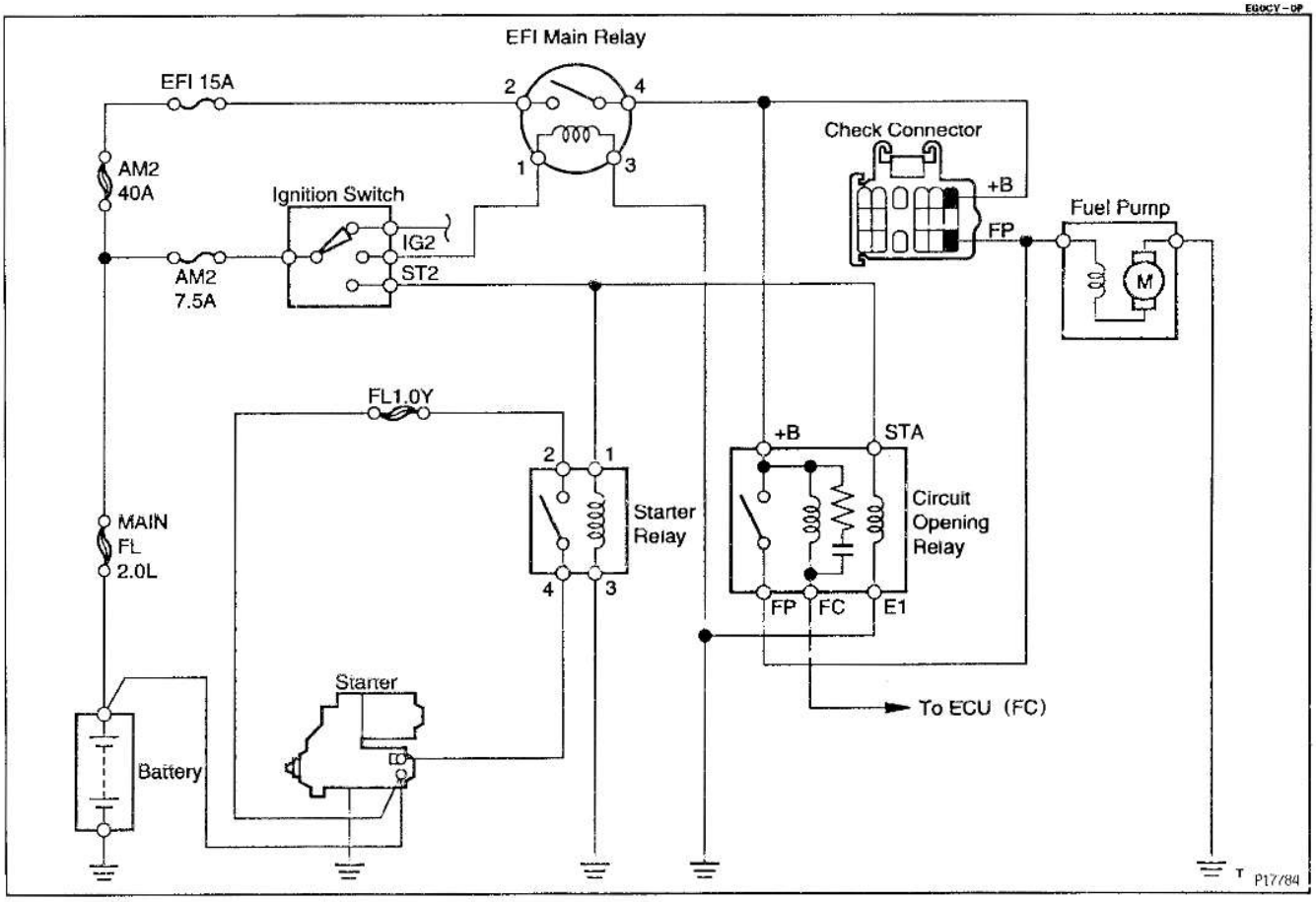


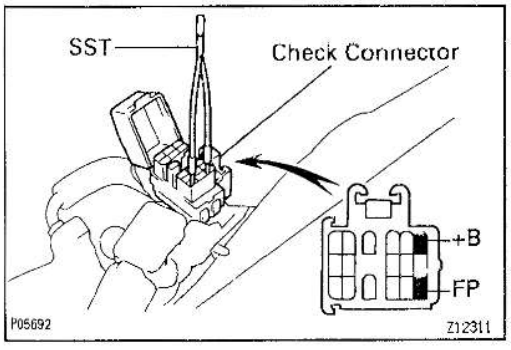
3. INSTALL SERVICE HOLE COVER
Connect the service hole cover, wire harness clamp and install the 4 screws.

4. INSTALL REAR SEAT CUSHION

5. CONNECT NEGATIVE (–) TERMINAL CABLE TO BATTERY

FUEL PUMP (SW20)

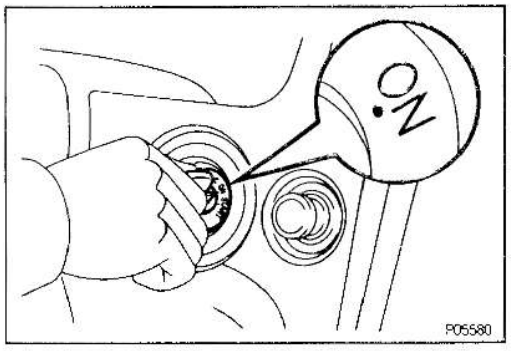




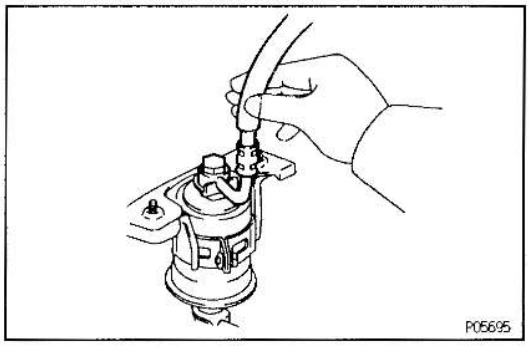
ON–VEHICLE INSPECTION

1. CHECK FUEL PUMP OPERATION

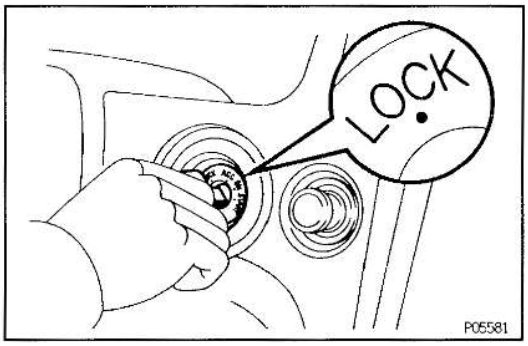
(a) Using SST, connect terminals +B and FP of the check connector.
SST 09843–18020



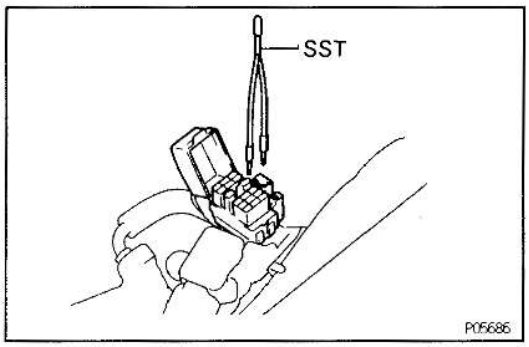
(b) Turn the ignition switch ON.
NOTICE: Do not start the engine.



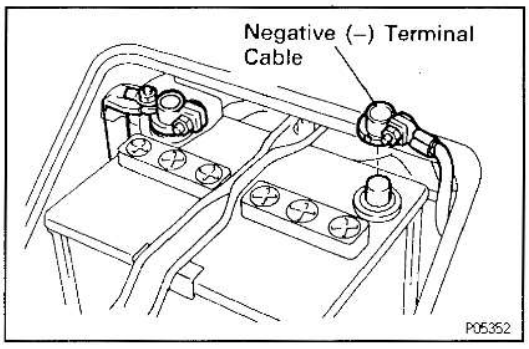
(c) Check that there is pressure in the hose from the fuel filter.
HINT: At this time, you will hear fuel return noise.
If there is no pressure, check the following parts:
- Fusible links
- H–fuse
- Fuses
- EFI main relay
- Fuel pump
- Wiring connections



(d) Turn the ignition switch to LOCK.



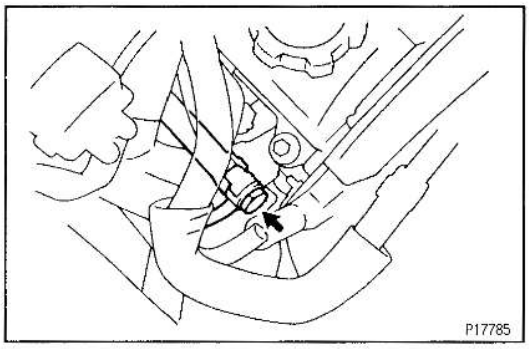
(e) Remove the SST from the check connector.
SST 09843–18020



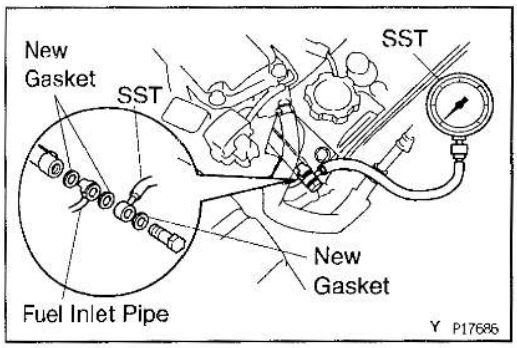
2. **CHECK FUEL PRESSURE**

(a) Check that the battery voltage is above 12 V.

(b) Disconnect the negative (–) terminal cable from the battery.



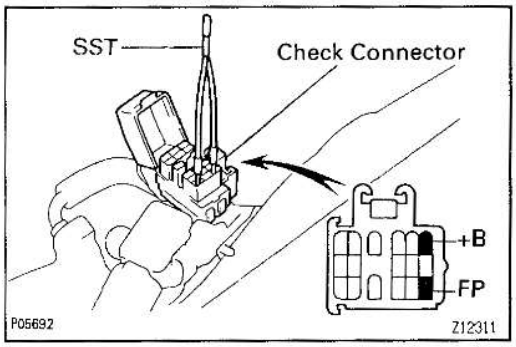
(c) Remove the union bolt and 2 gaskets, and disconnect the fuel inlet pipe from the delivery pipe.
CAUTION:
- **Put a suitable container or shop towel under the delivery pipe.**
- **Slowly loosen the union bolt.**



(d) Install the fuel inlet hose and SST (pressure gauge) to the delivery pipe with 3 new gaskets and SST (union bolt).
SST 09268–45012
Torque: 29 N·m (300 kgf·cm, 22 ft·lbf)

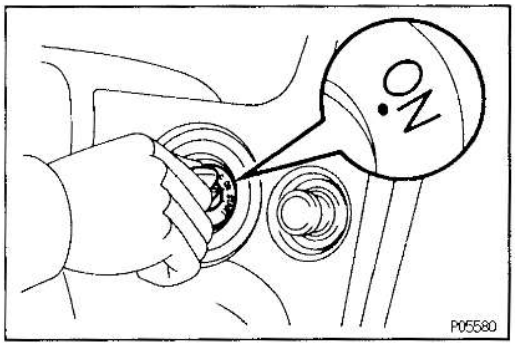
(e) Wipe off any splattered gasoline.

EG

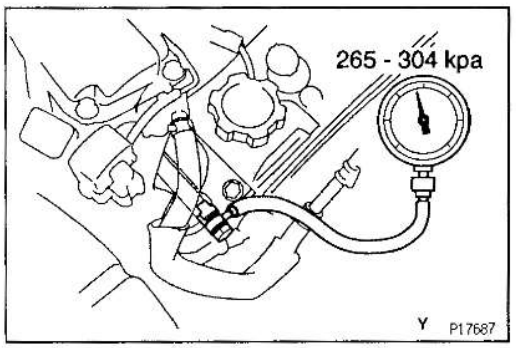


(f) Using SST, connect terminals +B and FP of the check connector.
SST 09843–18020

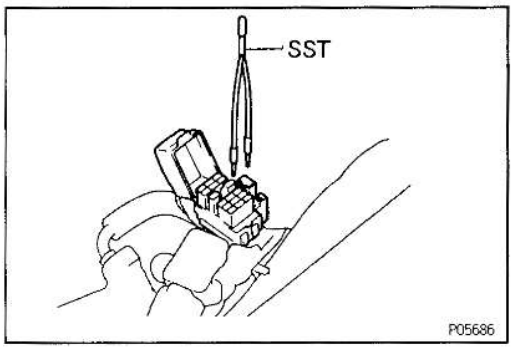
(g) Reconnect the negative (–) terminal cable to the battery.



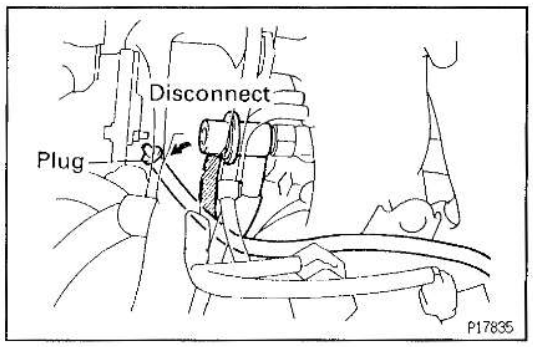
(h) Turn the ignition switch ON.



(i) Measure the fuel pressure.
Fuel pressure:
265 – 304 kPa (2.7 – 3.1 kgf/cm², 38 – 44 psi)
If pressure is high, replace the fuel pressure regulator.
If pressure is low, check the following parts:
- Fuel hoses and connections
- Fuel pump
- Fuel filter
- Fuel pressure regulator

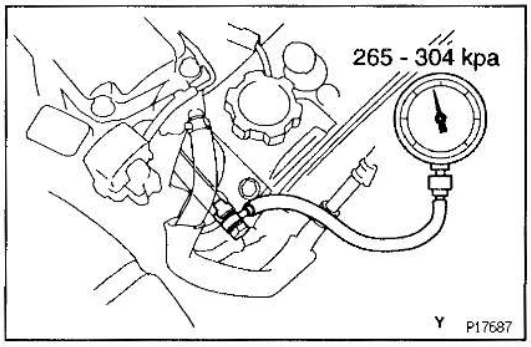


(j) Remove the SST from the check connector.
SST 09483–18020



(k) Start the engine.

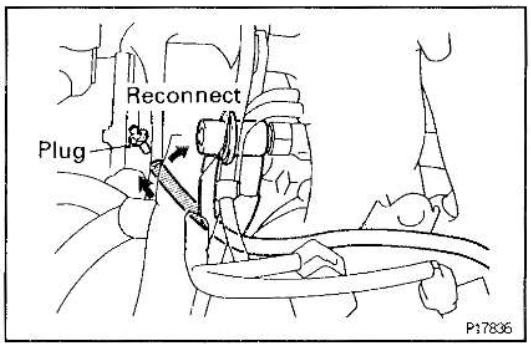
(l) Disconnect the vacuum sensing hose from the fuel pressure regulator, and plug the hose end.



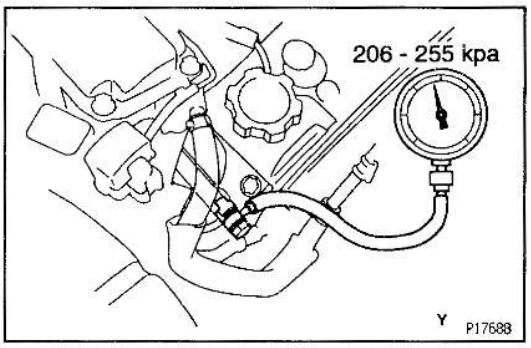
(m) Measure the fuel pressure at idle.

Fuel pressure:

265 – 304 kPa (2.7 – 3.1 kgf/cm², 38 – 44 psi)



(n) Reconnect the vacuum sensing nose to the fuel pressure regulator.

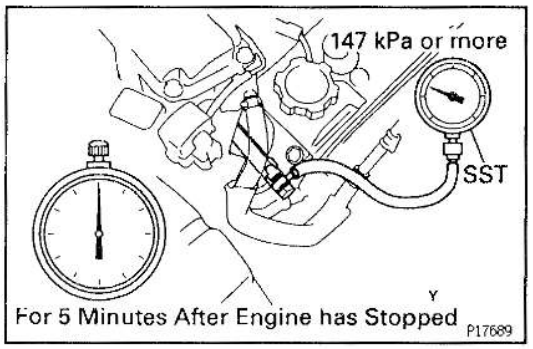


(o) Measure the fuel pressure at idle.

Fuel pressure:

206 – 255 kPa (2.1 – 2.6 kgf/cm², 30 – 37 psi)

If pressure is not as specified, check the vacuum sensing hose and fuel pressure regulator.



(p) Stop the engine.

(q) Check that the fuel pressure remains as specified for 5 minutes after the engine has stopped.

Fuel pressure:

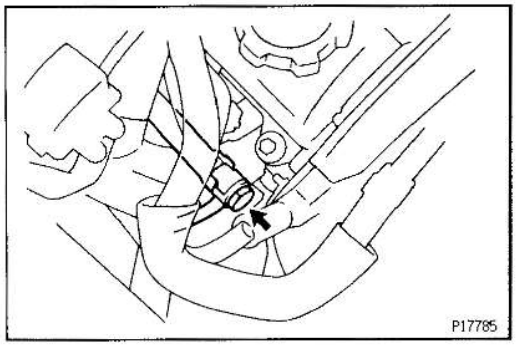
147 kPa (1.5 kgf/cm², 21 psi) or more

If pressure is not as specified, check the fuel pump, pressure regulator and/or injector.

(r) After checking fuel pressure, disconnect the negative (–) tarminal cable from the battery and carefully remove the SST to prevent gasoline from splashing.

SST 09268–45012

EG

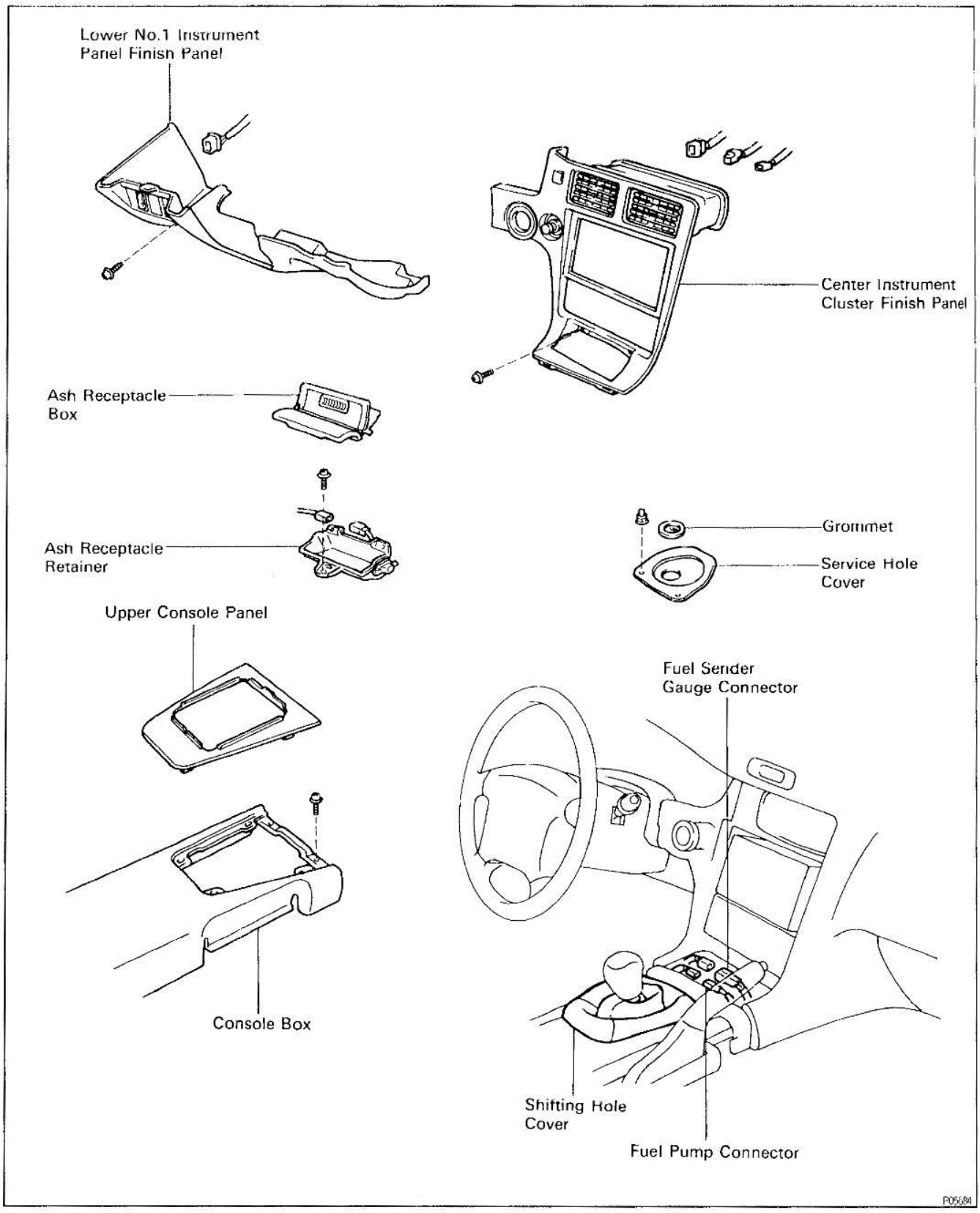


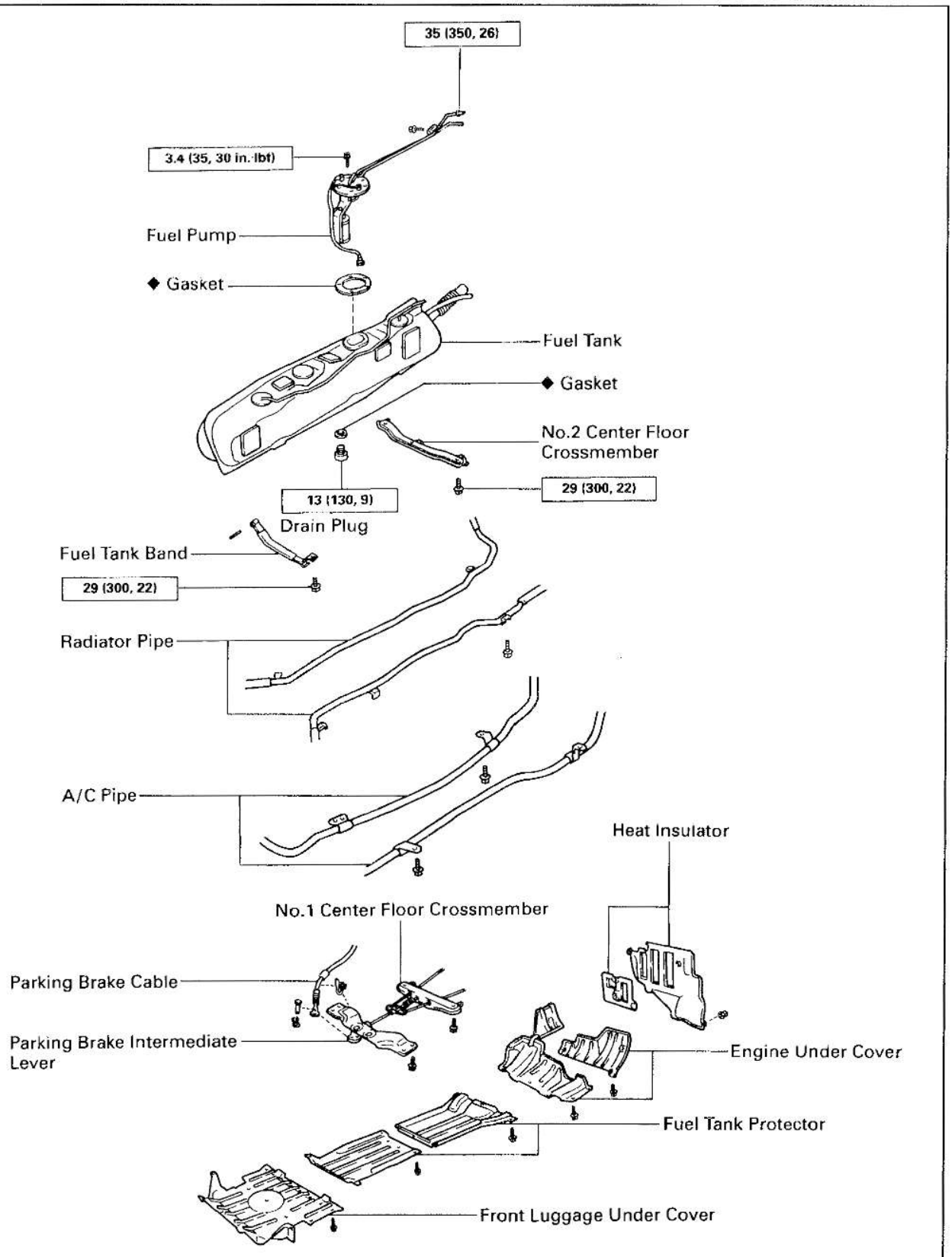
(s) Connect the fuel inlet pipe to the delivery pipe with 2 new gaskets and the union bolt.
Torque: 29 N·m (300 kgf·cm, 22 ft·lbf)

(t) Reconnect the negative (–) terminal cable to the battery.
(u) Check for fuel leaks.
(See page EG–173)

EG

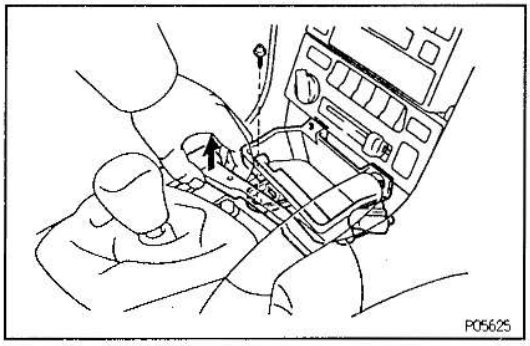
COMPONENTS FOR REMOVAL AND INSTALLATION




35 (350, 26)
3.4 (35, 30 in.·lbf)
Fuel Pump
◆ Gasket
Fuel Tank
◆ Gasket
No.2 Center Floor Crossmember
29 (300, 22)
13 (130, 9)
Drain Plug
Fuel Tank Band
29 (300, 22)
Radiator Pipe
A/C Pipe
Heat Insulator
No.1 Center Floor Crossmember
Parking Brake Cable
Parking Brake Intermediate Lever
Engine Under Cover
Fuel Tank Protector
Front Luggage Under Cover
FI5801
N·m (kgf·cm, ft·lbf) : Specified torque
◆ Non-reusable part
Z13004

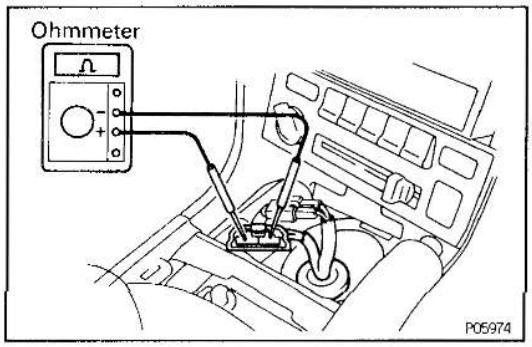
EG3W6-01

FUEL PUMP INSPECTION



(See Components for Removal and Installation)

1. REMOVE ASH RECEPTACLE RETAINER
(See steps 1 and 2 on page EG—225)
2. DISCONNECT FUEL PUMP CONNECTOR



3. INSPECT FUEL PUMP

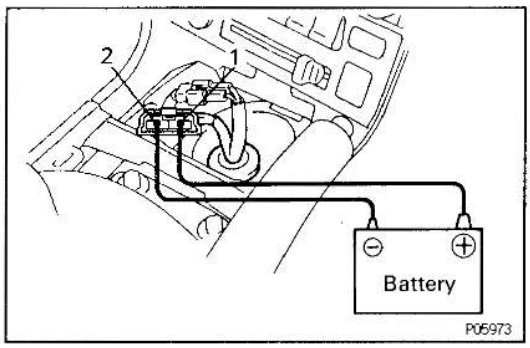
A. Inspect fuel pump resistance

Using an ohmmeter, measure the resistance between the terminals.

Resistance:

0.2 — 3.0 Ω at 20°C (68°F)

If the resistance is not as specified, replace the fuel pump.



B. Inspect fuel pump operation

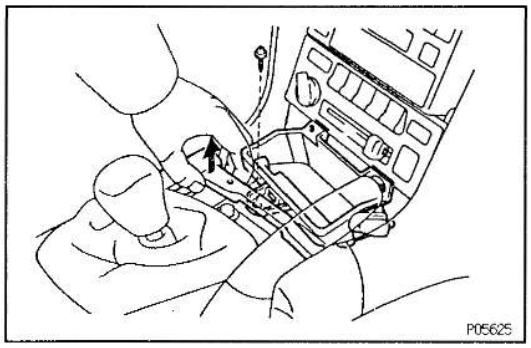
Connect the positive (+) lead from the battery to terminal 1 of the connector, and the negative (—) lead to terminal 2. Check that the fuel pump operates.

If operation is not as specified, replace the fuel pump.

NOTICE:

- **These tests must be performed quickly (within 10 seconds) to prevent the coil from burning out.**
- **Keep the fuel pump as far away from the battery as possible.**
- **Always perform switching at the battery side.**

4. RECONNECT FUEL PUMP CONNECTOR



5. REINSTALL ASH RECEPTACLE RETAINER
(See steps 7 and 9 on page EG—231 and EG—232)

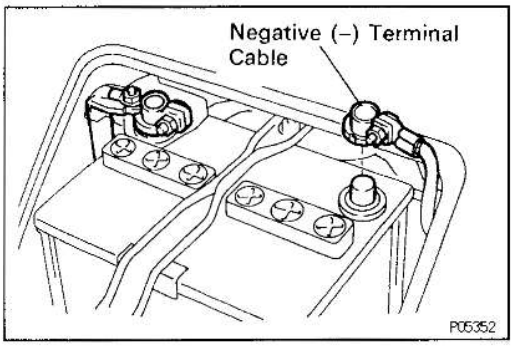
EG0XZ–04

FUEL PUMP REMOVAL

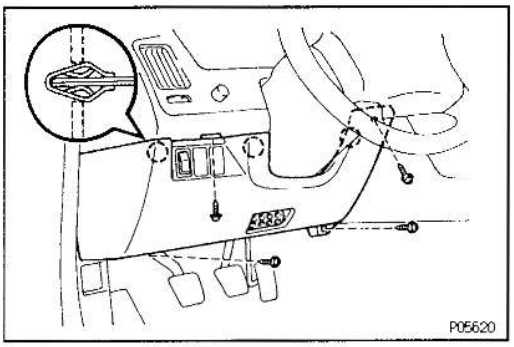
(See Components for Removal and Installation)

CAUTION: Do not smoke or work near an open flame when working on the fuel pump.

EG



1. DISCONNECT NEGATIVE (–) TERMINAL CABLE FROM BATTERY

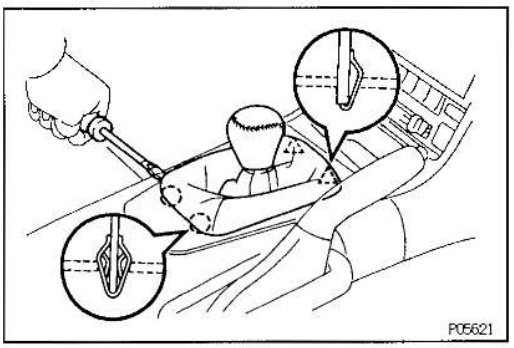


2. DISCONNECT FUEL PUMP CONNECTOR AND FUEL SENDER GAUGE CONNECTOR

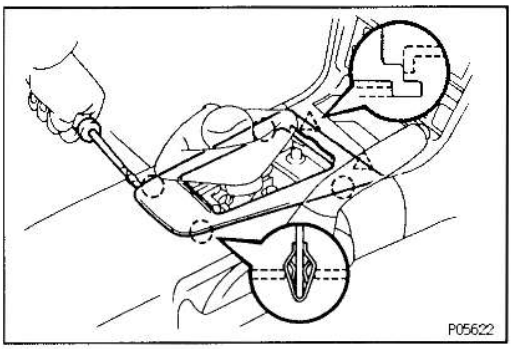
(a) Remove the 4 screws, and disconnect the lower No.1 instrument panel finish panel by pulling it.

(b) Disconnect the connector, and remove the lower No.1 instrument panel finish panel.

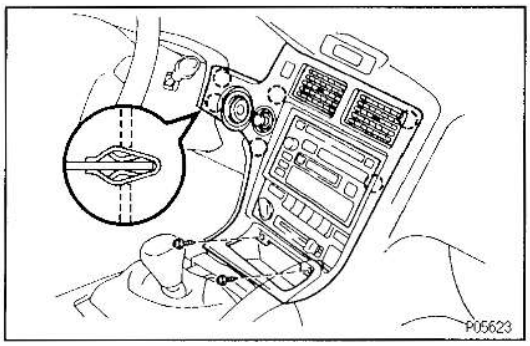
(c) Remove the ash receptacle box.



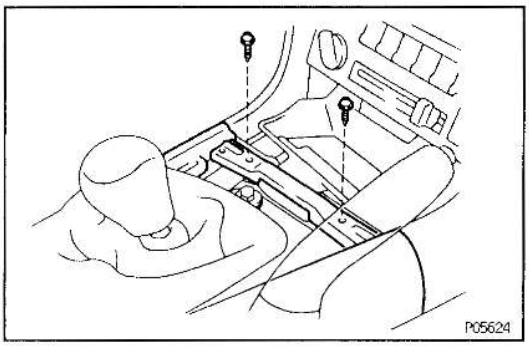
(d) Using a screwdriver, pry out the shifting hole cover.



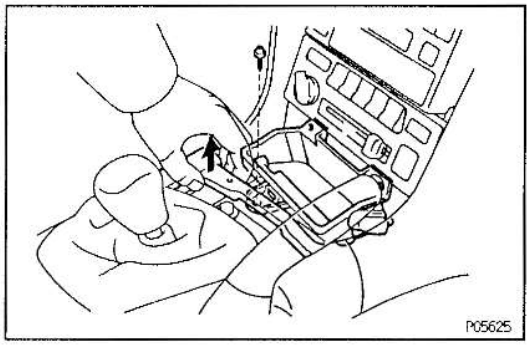
(e) Using a screwdriver, pry out the upper console panel.



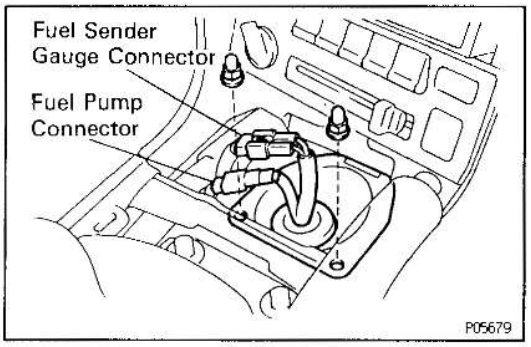
(f) Remove the 2 screws, and disconnect the center instrument cluster finish panel by pulling it.
(g) Disconnect the connectors, and remove the center instrument cluster finish panel.



(h) Remove the 2 screws holding the console box to the instrument panel safety pad.

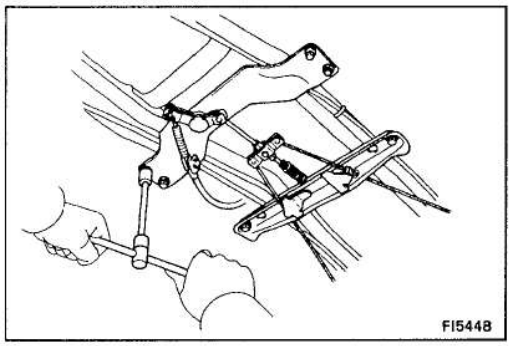


(i) Remove the ash receptacle retainer mounting screw by lifting the front side of the console box.
(j) Disconnect the connector, and remove the ash receptacle retainer.



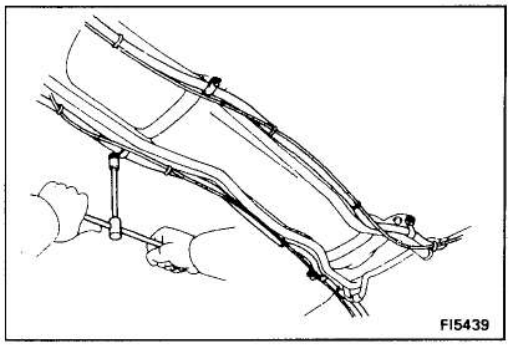
(k) Disconnect the fuel pump connector and fuel sender gauge connector.
(l) Remove the grommet from the service hole cover.
(m) Remove the 2 nuts and service hole cover.

3. REMOVE ENGINE UNDER COVERS
4. REMOVE FRONT LUGGAGE UNDER COVER
5. REMOVE FUEL TANK PROTECTORS
6. DRAIN FUEL



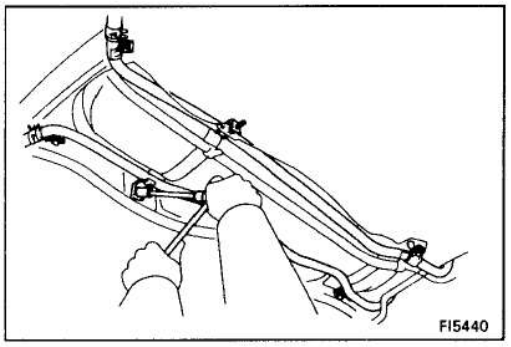
7. REMOVE PARKING BRAKE INTERMEDIATE LEVER AND NO.1 CENTER FLOOR CROSSMEMBER

(a) Remove the 4 bolts and intermediate lever.
(b) Remove the 2 bolts and crossmember.
(c) Disconnect the parking brake cable from the intermediate lever.



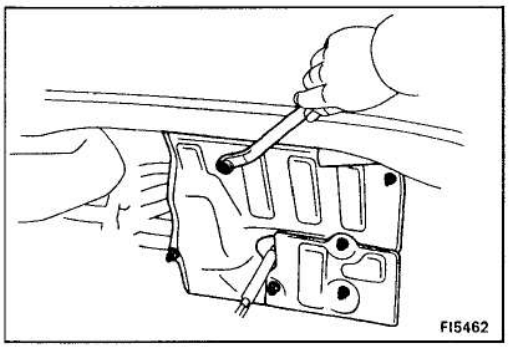
8. REMOVE A/C PIPES FROM BODY

Remove the 4 bolts, and disconnect the 2 A/C pipes from the body.



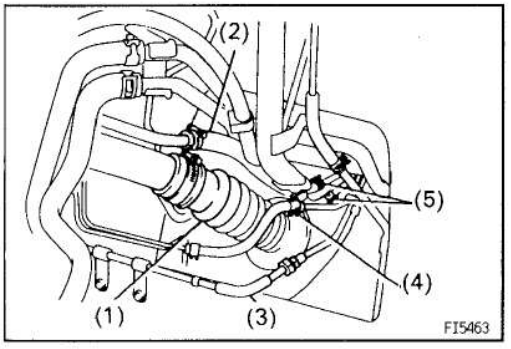
9. DISCONNECT RADIATOR PIPES FROM BODY

Remove the 6 bolts, and disconnect the 2 radiator pipes from the body.



10. REMOVE FUEL TANK HEAT INSULATORS

Remove the 6 nuts and 2 heat insulators.

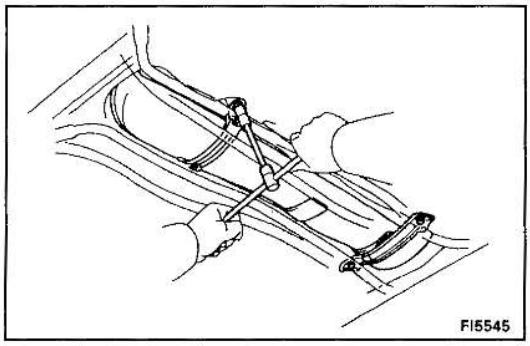


11. DISCONNECT HOSES AND PIPE

CAUTION: Remove the fuel filter cap to prevent the fuel from flowing out.

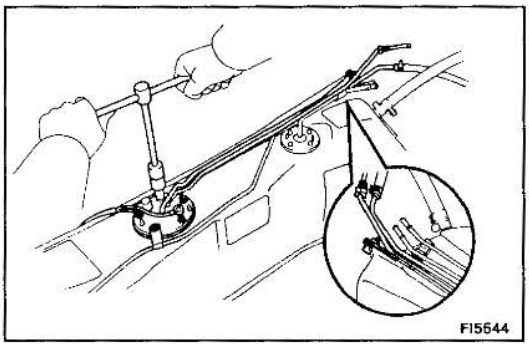
Disconnect the following hoses and pipe:

(1) Fuel inlet hose
(2) Fuel breather hose
(3) Fuel pump pipe
(4) Fuel return hose
(5) 2 fuel evaporative vent hoses



12. REMOVE FUEL TANK

(a) Remove the bolt, pin and tank band.
(b) Remove the 2 bolts and No.2 center floor crossmember.
(c) Remove the fuel tank.

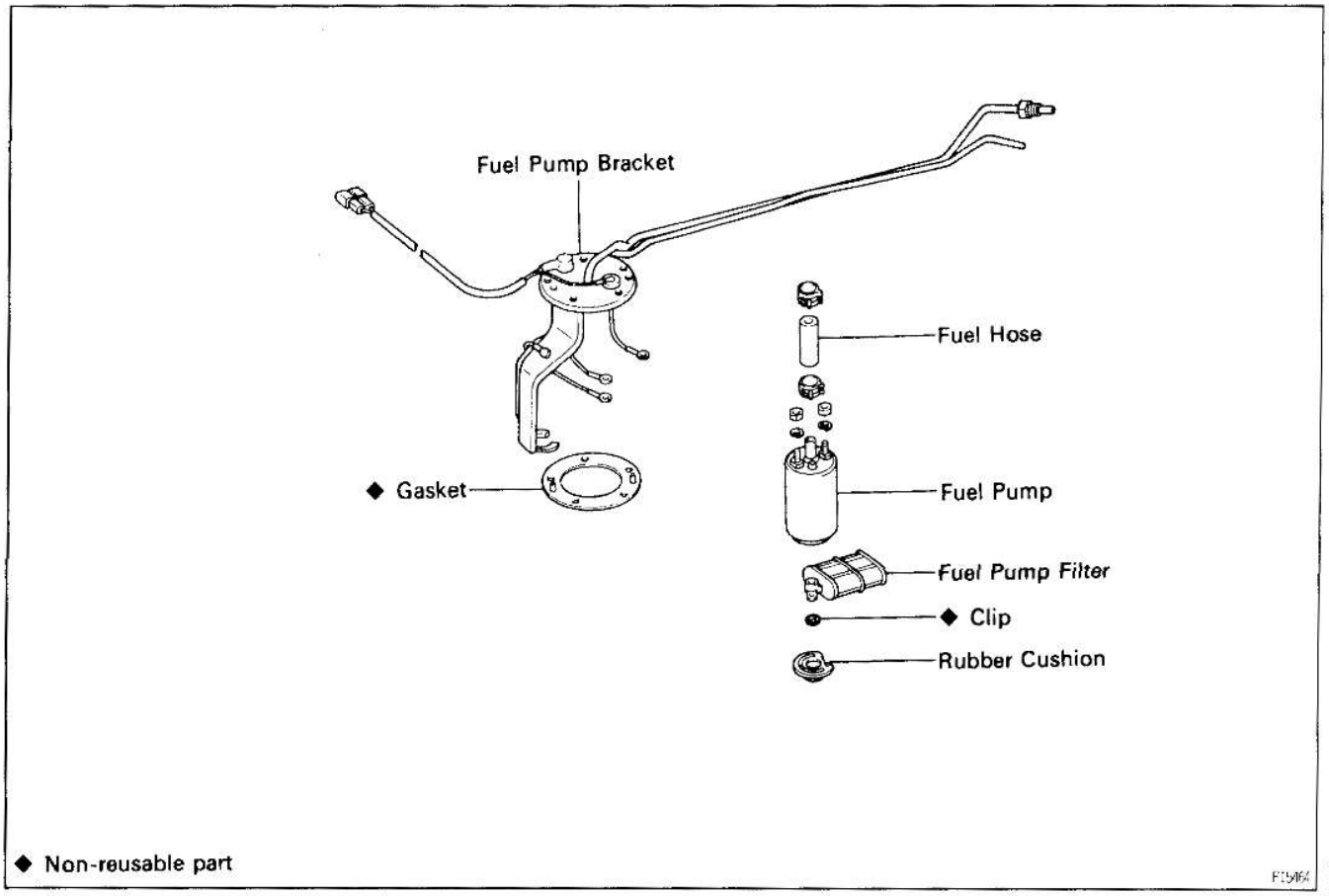


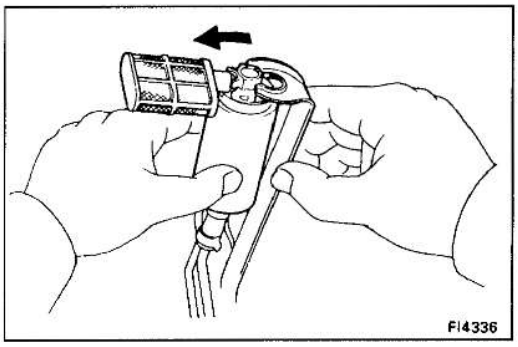
13. REMOVE FUEL PUMP ASSEMBLY FROM FUEL TANK

(a) Remove the bolt holding the fuel pump pipe to the fuel tank.
(b) Remove the 5 bolts, and pull out the fuel pump assembly.
(c) Remove the gasket from the pump bracket.

COMPONENTS FOR DISASSEMBLY AND ASSEMBLY

EG001-02





FUEL PUMP DISASSEMBLY

EG0Y0–02

(See Components for Disassembly and Assembly)

1. REMOVE FUEL PUMP FROM FUEL PUMP BRACKET

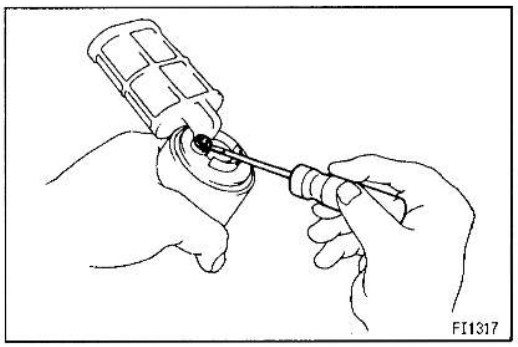
(a) Pull out the lower side of the fuel pump from the pump bracket.

(b) Remove the rubber cushion from the fuel pump.

(c) Remove the nut and spring washer, and disconnect the lead wire from the fuel pump. Disconnect the 3 lead wires.

(d) Disconnect the fuel hose from the fuel pump, and remove the fuel pump.

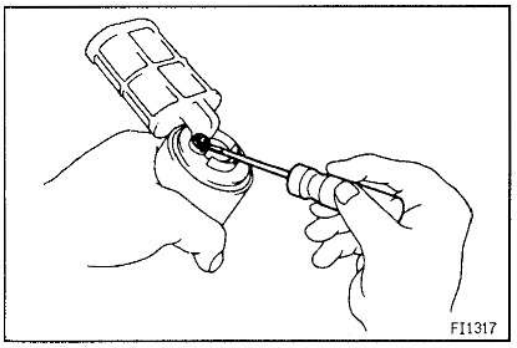
EG



2. REMOVE FUEL PUMP FILTER FROM FUEL PUMP

(a) Using a small screwdriver, pry out the clip.

(b) Pull out the pump filter.



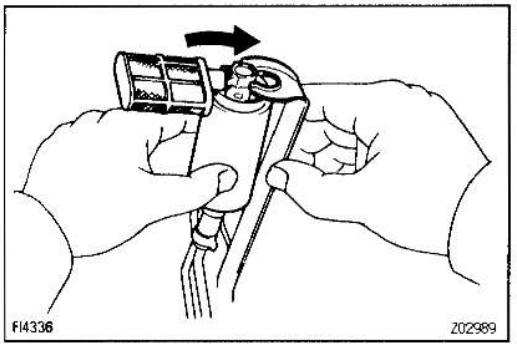
FUEL PUMP ASSEMBLY

EG0Y1–02

(See Components for Disassembly and Assembly)

1. INSTALL FUEL PUMP FILTER TO FUEL PUMP

Install the pump filter with a new clip.



2. INSTALL FUEL PUMP TO FUEL PUMP BRACKET

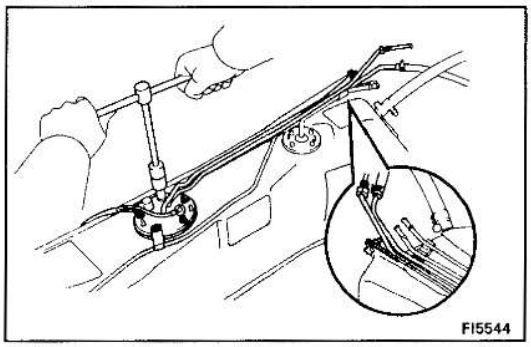
(a) Connect the fuel hose to the outlet port of the fuel pump.

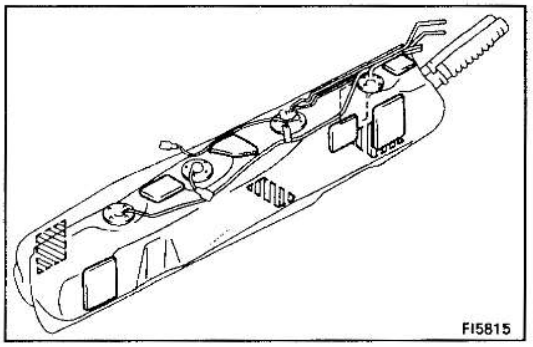
(b) Connect the lead wire to the fuel pump with the spring washer and nut. Connect the 3 lead wires.

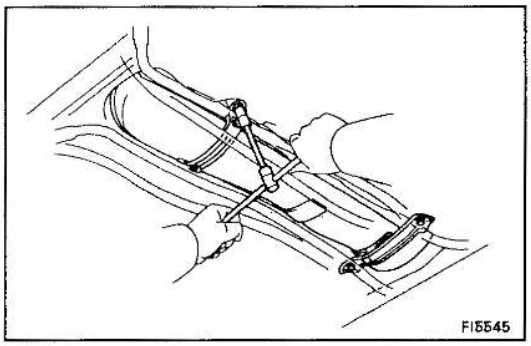
(c) Install the rubber cushion to the fuel pump.

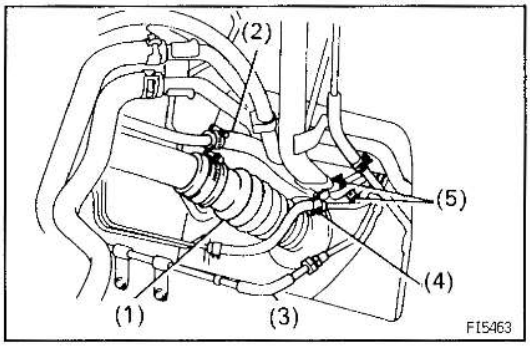
(d) Install the fuel pump by pushing the lower side of the fuel pump.

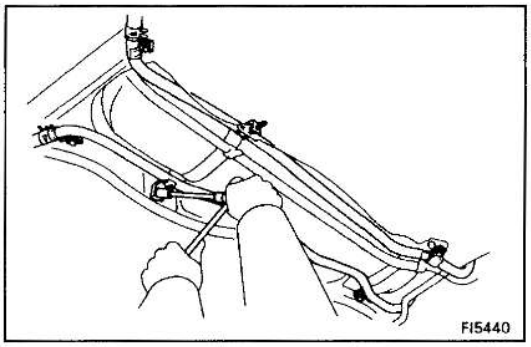
EG











FUEL PUMP INSTALLATION

(See Components for Removal and Installation)

1. INSTALL FUEL PUMP ASSEMBLY TO FUEL TANK

(a) Install a new gasket to the pump bracket.

(b) Insert the fuel pump assembly into the fuel tank.

(c) Install the 5 bolts holding the fuel pump bracket to the fuel tank.
Torque: 3.4 N·m (35 kgf·cm, 30 in.·lbf)

(d) Install the 5 bolts holding the fuel pump pipe to the fuel tank.

2. INSTALL FUEL TANK

(a) Apply soapy water to the cushions on the fuel tank.

(b) Attach the fuel tank to the body.

(c) Install the fuel tank band with the pin and bolt.
Torque: 35 N·m (350 kgf·cm, 26 ft·lbf)

(d) Install the No.2 center floor crossmember with the 2 bolts.
Torque: 29 N·m (300 kgf·cm, 22 ft·lbf)

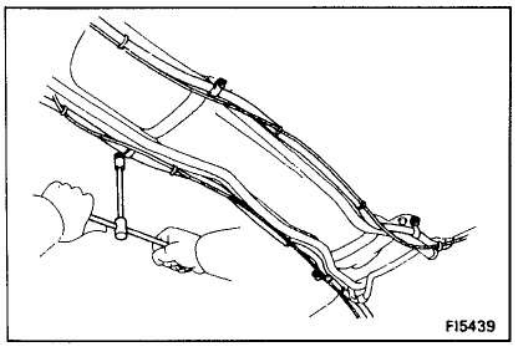
3. CONNECT HOSES AND PIPE

Connect the following hoses and pipe:

(1) Fuel inlet hose
(2) Fuel breather hose
(3) Fuel pump pipe
Torque: 35 N·m (350 kgf·cm, 26 ft·lbf)
(4) Fuel return hose
(5) 2 fuel evaporative vent hoses

4. INSTALL RADIATOR PIPES TO BODY

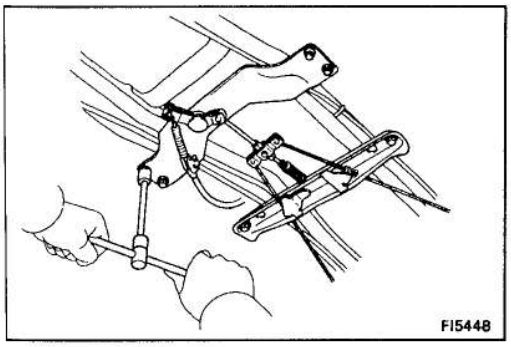
Install the 2 radiator pipes with the 6 bolts.



5. INSTALL A/C PIPES TO BODY

Install the 2 A/C pipes with the 4 bolts.

EG

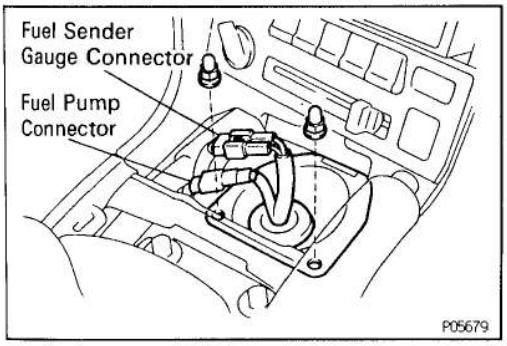


6. INSTALL PARKING BRAKE INTERMEDIATE LEVER AND NO.1 CENTER FLOOR CROSSMEMBER

(a) Connect the parking brake cable to the intermediate lever.

(b) Install the intermediate lever with the 4 bolts.

(c) Install the crossmember with the 2 bolts.

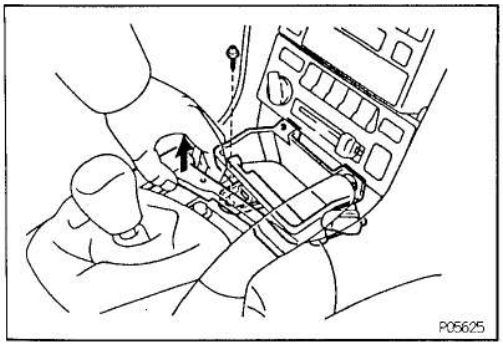


7. CONNECT FUEL PUMP CONNECTOR AND FUEL SENDER GAUGE CONNECTOR

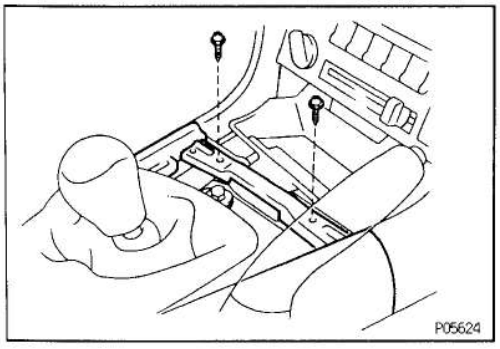
(a) Install the service hole cover with the 2 nuts.

(b) Install the grommet to the service hole cover.

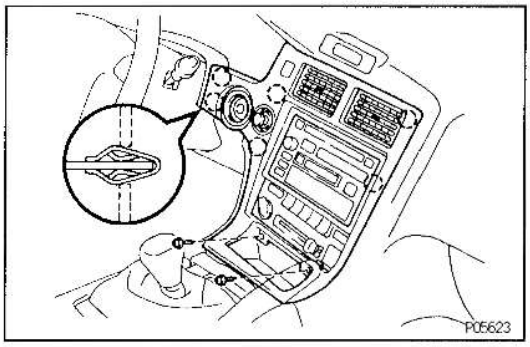
(c) Connect the fuel pump connector and fuel sender gauge connector.



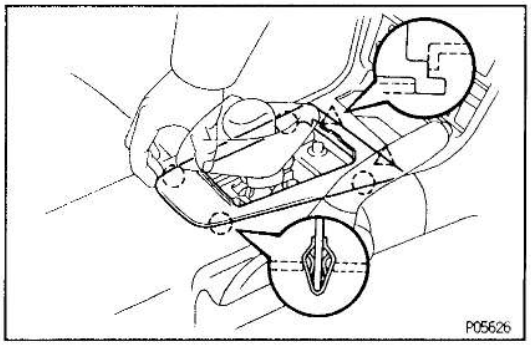
(d) Connect the connector, and install the ash receptacle retainer with the screw by lifting the front side of the console box.



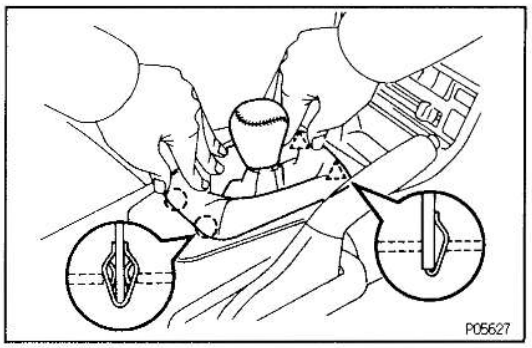
(e) Install the console box to the instrument panel safety pad with the 2 screws.



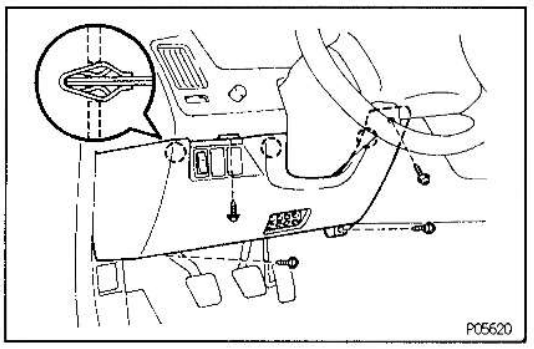
(f) Connect the connectors, and attach the center instrument cluster finish panel to the instrument panel safety pad with the clips.
(g) Install the 2 screws.



(h) Connect the connector, and attach the upper console panel to the console panel with the 2 claws and 2 clips.

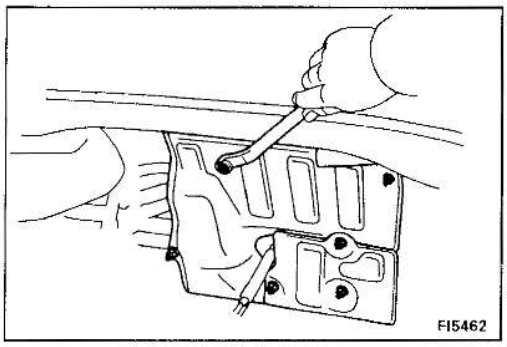


(i) Attach the shifting hole cover with the 4 clips.
(j) Install the ash receptacle box.



(k) Connect the connector, and attach the lower No.1 instrument panel finish panel with the 3 clips.
(l) Install the 4 screws.

8. **FILL WITH FUEL**
9. **CONNECT NEGATIVE (–) TERMINAL CABLE TO BATTERY**
10. **CHECK FOR FUEL LEAKS**
(See page EG–173)



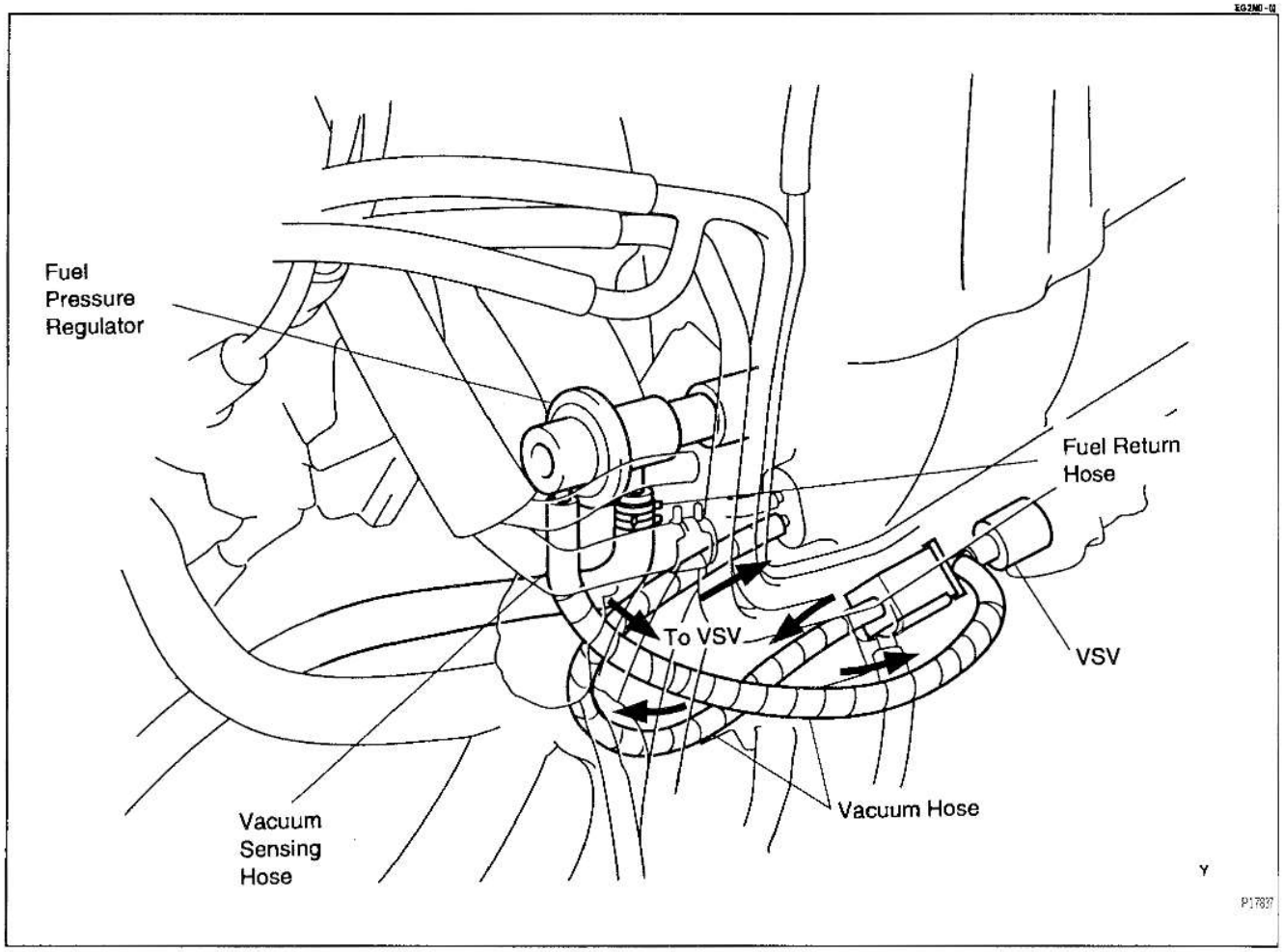
11. **INSTALL FUEL TANK HEAT INSULATORS**
Install the 2 heat insulators with the 6 nuts.

EG

12. **INSTALL FUEL TANK PROTECTORS**
13. **INSTALL FRONT LUGGAGE UNDER COVER**
14. **INSTALL ENGINE UNDER COVERS**

FUEL PRESSURE REGULATOR

EG

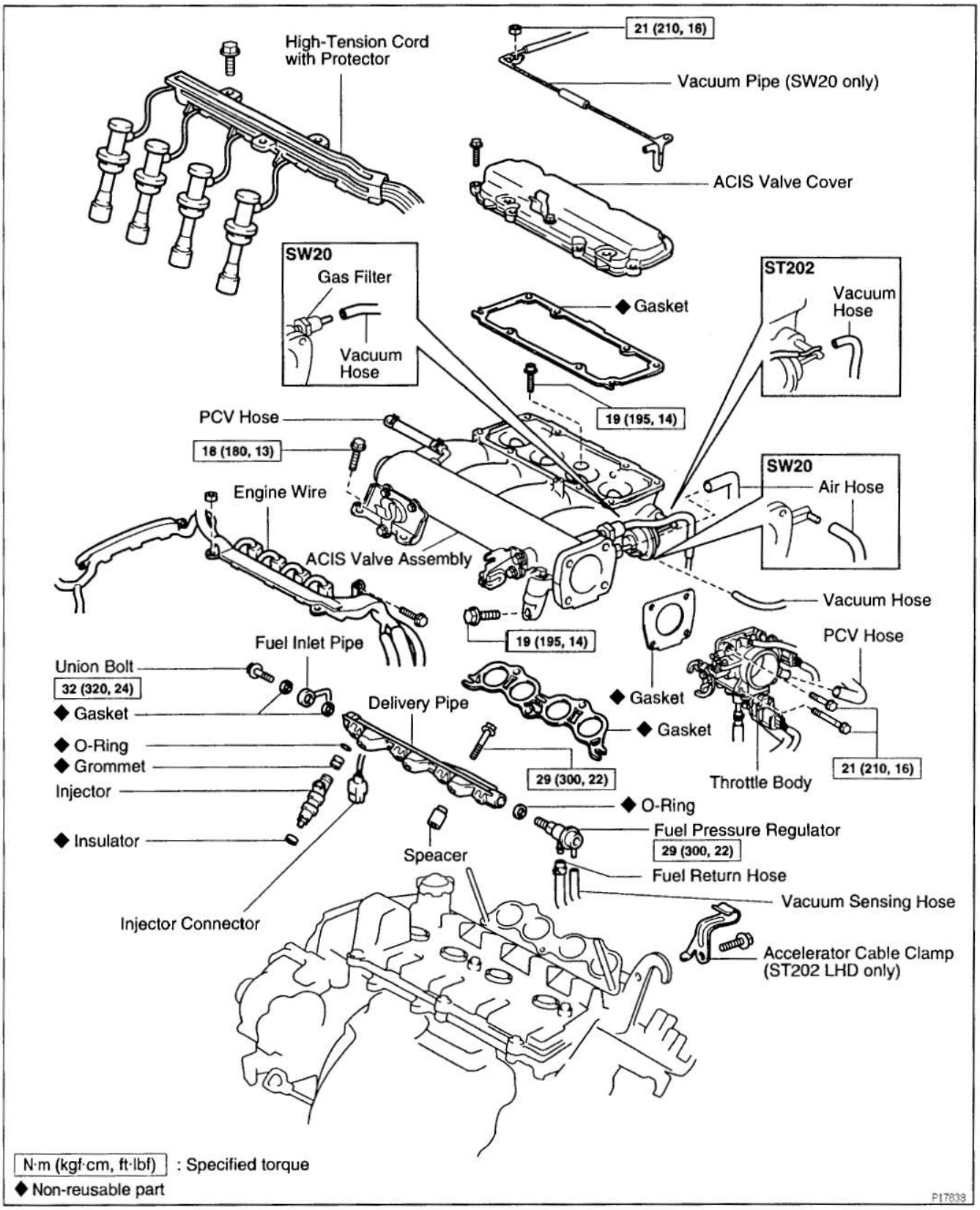


ON – VEHICLE INSPECTION

INSPECT FUEL PRESSURE (See step 2 on page EG – 206)

EG12R-08

COMPONENTS FOR REMOVAL AND INSTALLATION



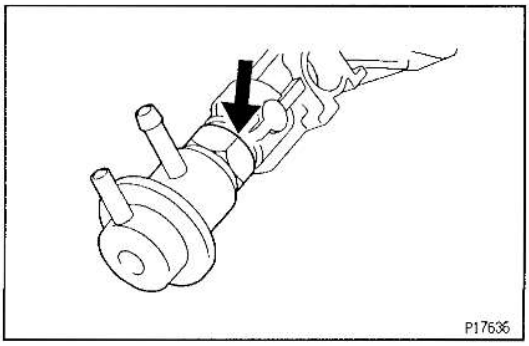
FUEL PRESSURE REGULATOR REMOVAL

(See Components for Removal and Installation)

1. REMOVE INJECTORS AND DELIVERY PIPE

(See steps 1 to 10 on page EG–240 to EG–242)

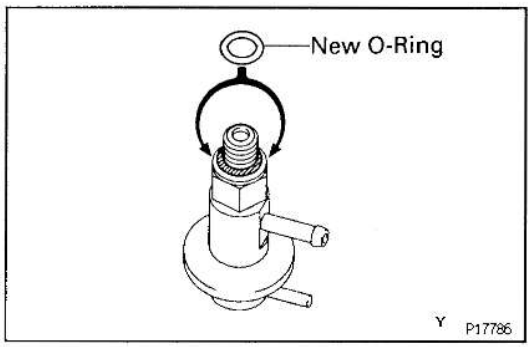
EG



2. REMOVE FUEL PRESSURE REGULATOR

(a) Loosen the lock nut, and remove the pressure regulator.

(b) Remove the O–ring from the pressure regulator.

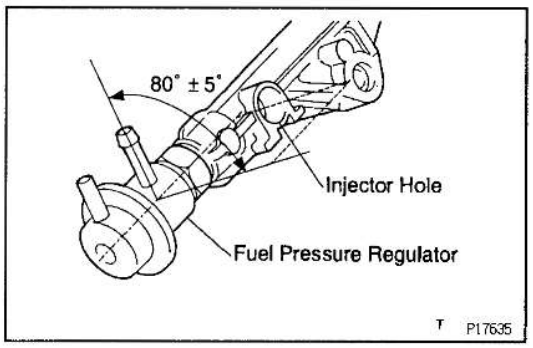


FUEL PRESSURE REGULATOR INSTALLATION

1. INSTALL FUEL PRESSURE REGULATOR

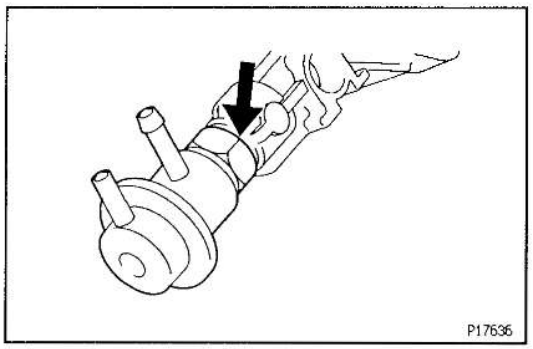
(a) Fully loosen the lock nut of the pressure regulator.

(b) Apply a light coat of gasoline to a new O–ring, and install it to the pressure regulator.



(c) Thrust the pressure regulator completely into the delivery pipe by hand.

(d) Turn the pressure regulator counterclockwise until the fuel return pipe faces in the direction indicated in the illustration.



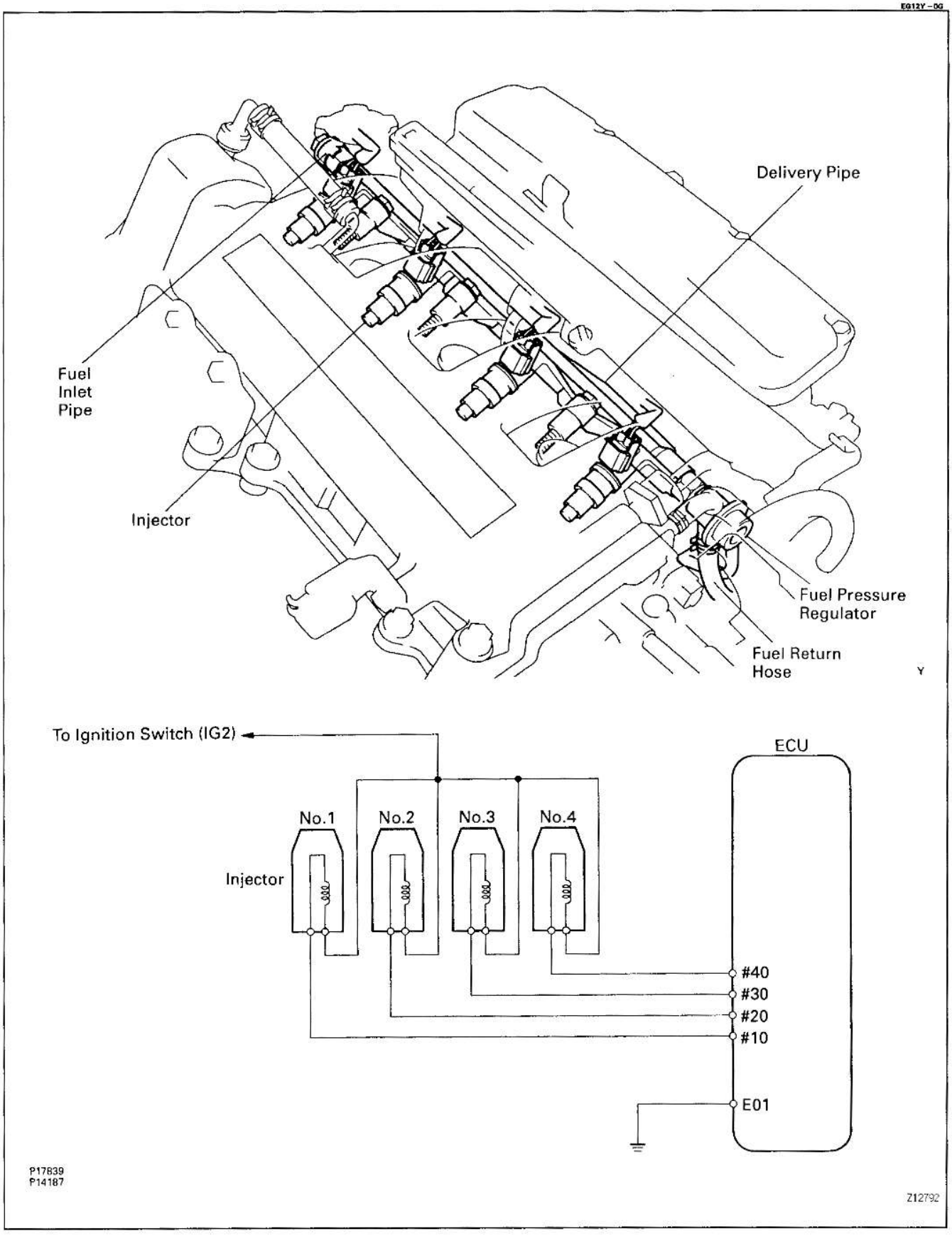
(e) Tighten the lock nut

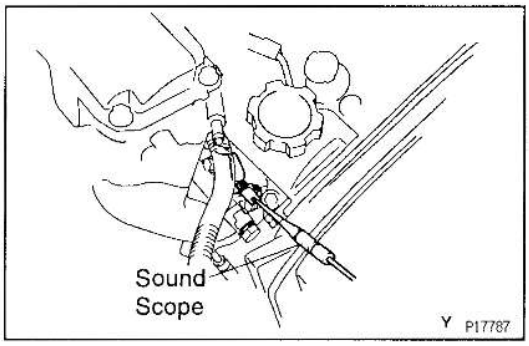
Torque: 29 N·m (300 kgf·cm, 22 ft·lbf)

2. INSTALL INJECTORS AND DELIVERY PIPE

(See steps 1 to 11 on page EG–247 to EG–251)

INJECTOR


EG12Y-DG
Delivery Pipe
Fuel Inlet Pipe
Injector
Fuel Pressure Regulator
Fuel Return Hose
Y
To Ignition Switch (IG2)
ECU
No.1
No.2
No.3
No.4
Injector
#40
#30
#20
#10
E01
P17839
P14187
Z12792



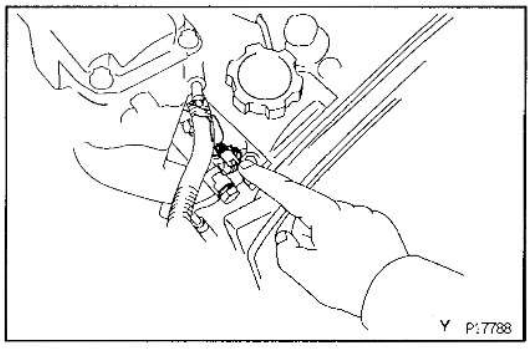
ON–VEHICLE INSPECTION

EG0D8-0K

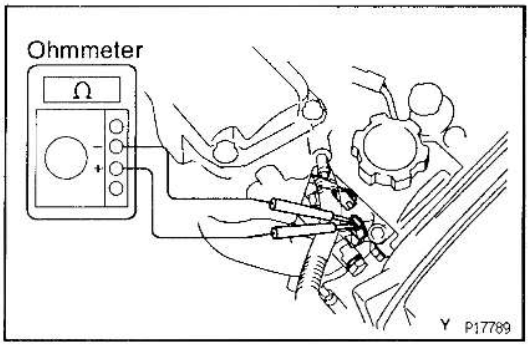
1. INSPECT INJECTOR OPERATION

Check operation sound from each injector.

(a) With the engine running or cranking, use a sound scope to check that there is a normal operating noise in proportion to engine speed.



(b) If you have no sound scope, you can check the injector transmission operation with your finger.
If no sound or unusual sound is heard, check the wiring connector, injector or injection signal from the ECU.



2. INSPECT INJECTOR RESISTANCE

(a) Disconnect the injector connector.

(b) Using an ohmmeter, measure the resistance between the terminals.

Resistance:

13.4 – 14.2 Ω at 20°C (68°F)

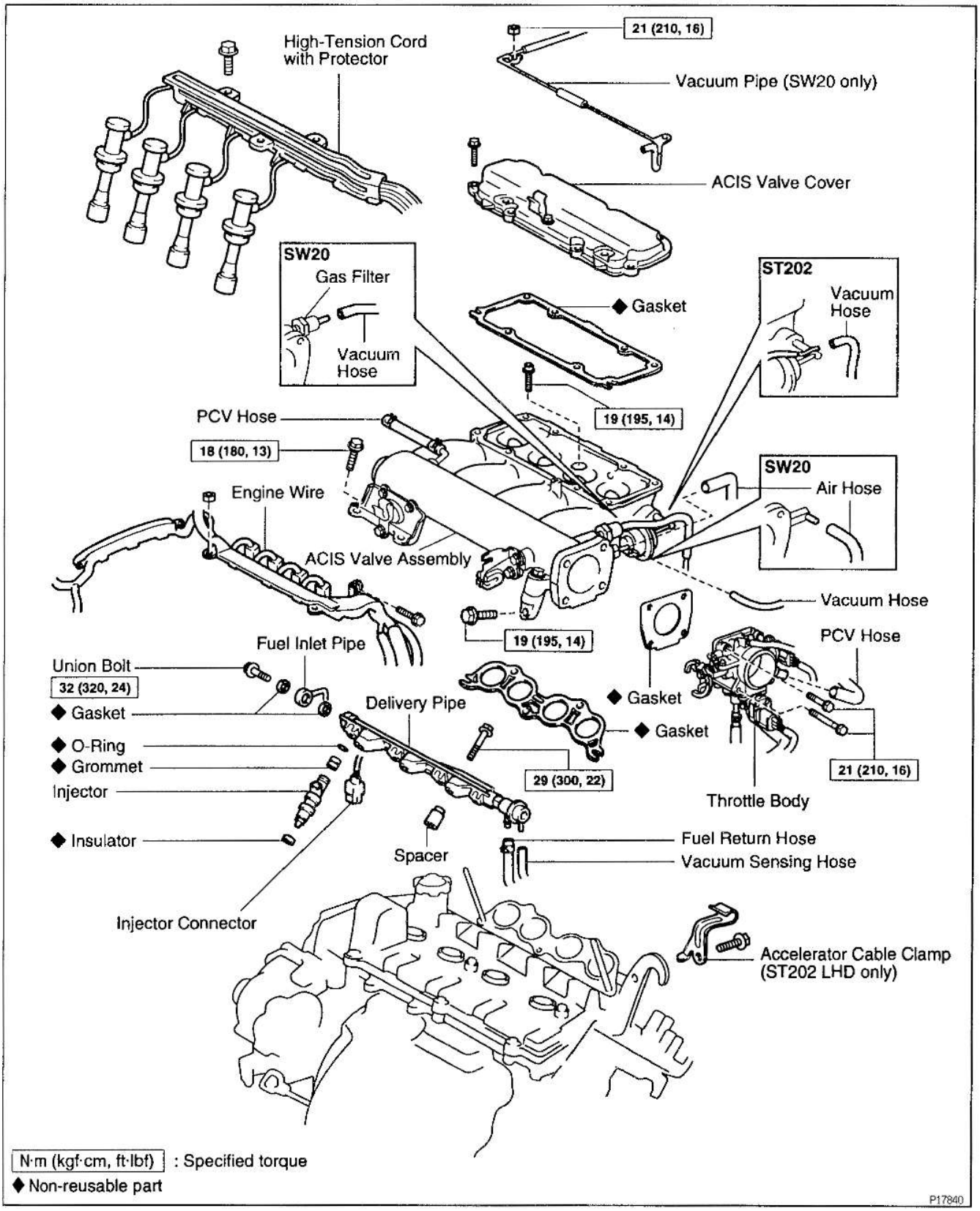
If the resistance is not as specified, replace the injector.

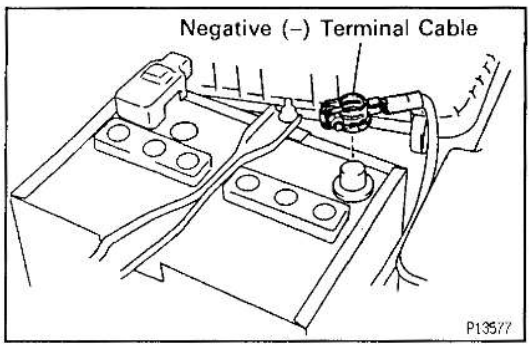
(c) Reconnect the injector connector.

EG130-0E

COMPONENTS FOR REMOVAL AND INSTALLATION

EG





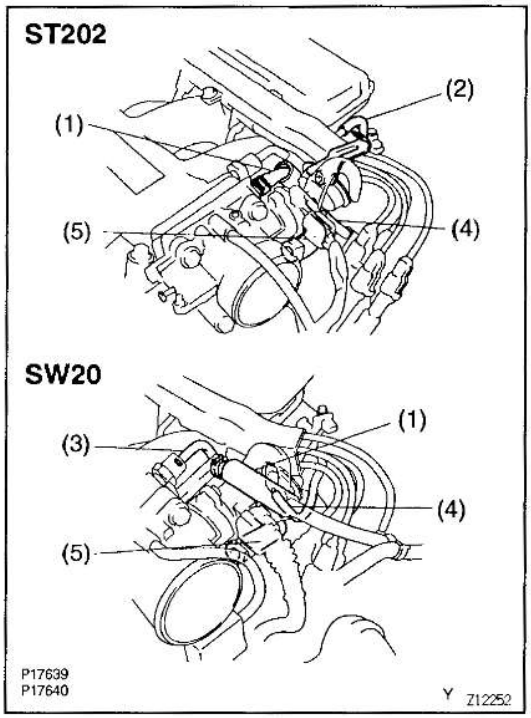
EG

INJECTORS REMOVAL

(See Components for Removal and Installation)

1. DISCONNECT NEGATIVE (–) TERMINAL CABLE FROM BATTERY

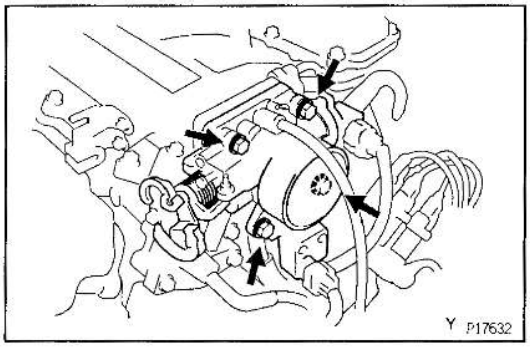
2. DISCONNECT INTAKE AIR TEMPERATURE SENSOR FROM AIR CLEANER CAP
3. REMOVE AIR CLEANER CAP AND HOSE
4. DISCONNECT ACCELERTOR CABLE FROM THROTTLE BODY



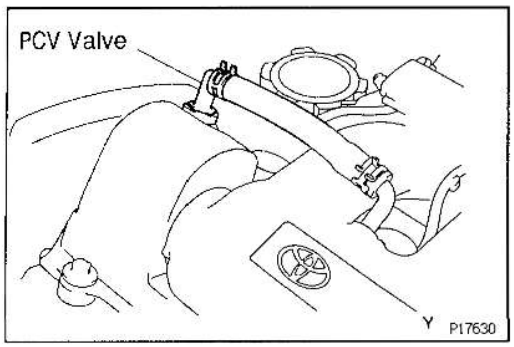
5. DISCONNECT THROTTLE BODY FROM AIR INTAKE CHAMBER

(a) Disconnect the following hoses:
- (1) Air hose (from A/C idle–up valve)
- (2) ST202: Vacuum hose (from vacuum pipe)
- (3) SW20: Vacuum hose (from gas filter)
- (4) Vacuum hose (from ACIS valve actuator)
- (5) PCV hose

(b) ST202 LHD only:
Remove the accelerator cable clamp and bolt from the engine hanger.

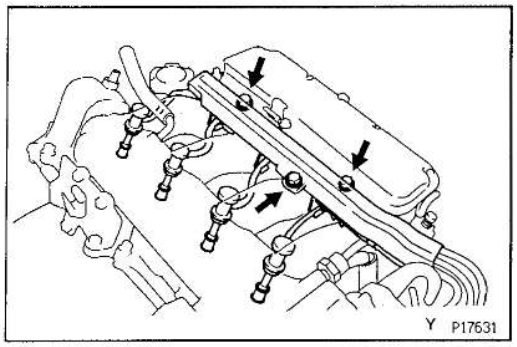


(c) Remove the 4 bolts and the throttle body from the ACIS valve assembly.



6. DISCONNECT PCV HOSE FROM PCV VALVE

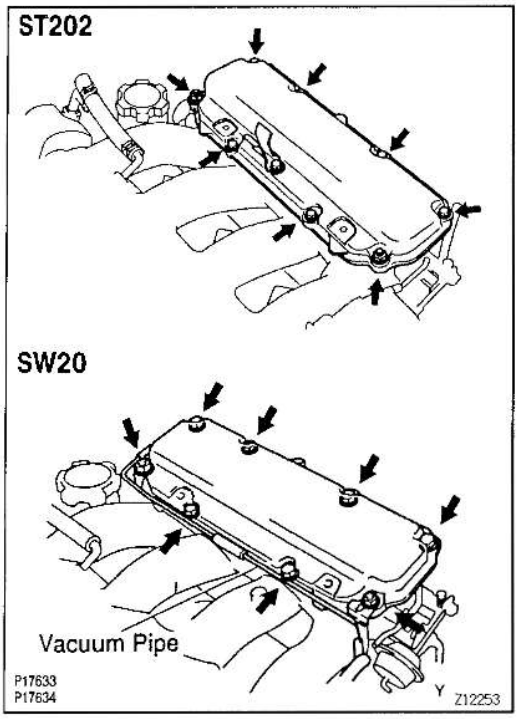
EG



7. DISCONNECT HIGH–TENSION CORDS

(a) Remove the 3 bolts and high–tension cord protector from the ACIS valve assembly.

(b) Disconnect the high–tension cords from the spark plugs.

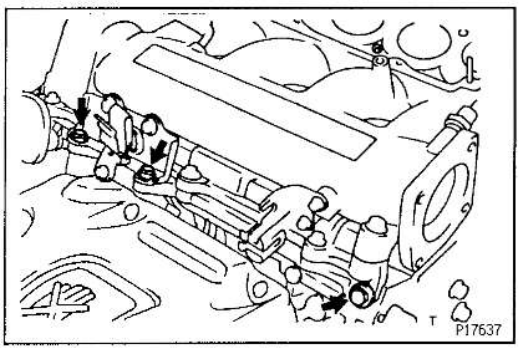


8. REMOVE ACIS VALVE ASSEMBLY

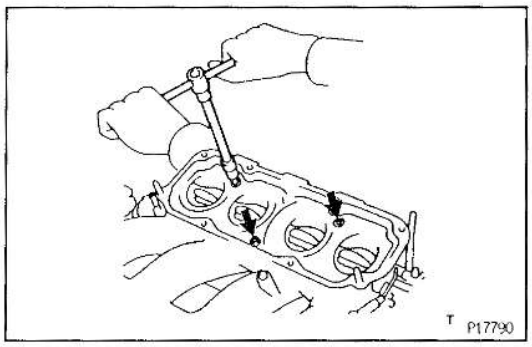
(a) ST202:
Remove the 6 bolts and 2 nuts.

(b) SW20:
Remove the 6 bolts and 2 nuts and vacuum pipe.

(c) Remove the ACIS valve cover and gasket.

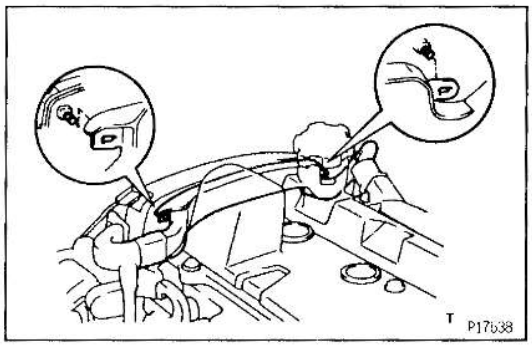


(d) Remove the 3 bolts from the ACIS valve stays and cylinder head.



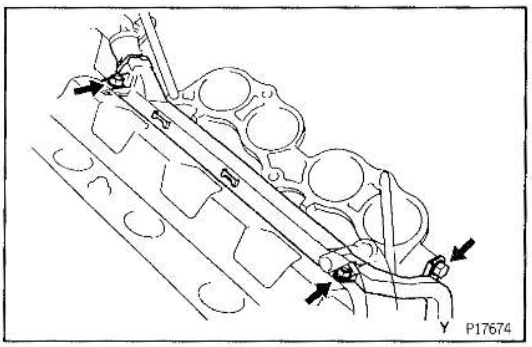
(e) Using 6 mm hexagon wrench, remove the 3 bolts from the ACIS valve assembly.

(f) Remove the ACIS valve assembly and gasket.

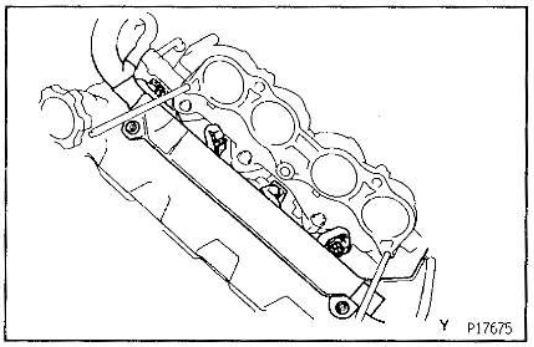


9. DISCONNECT WIRE HANESS

(a) Disconnect the engine wire protector from the 2 mounting bolts of the No.2 timing belt cover in the sequence shown.

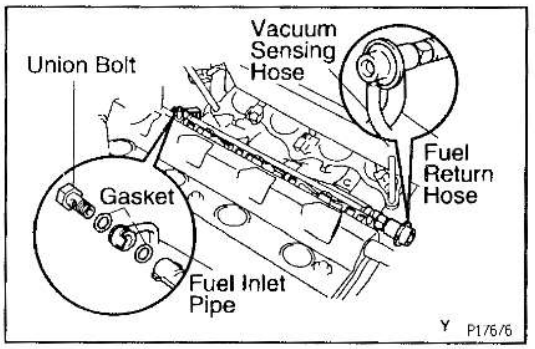


(b) Disconnect the 2 nuts, bolt and engine wire.



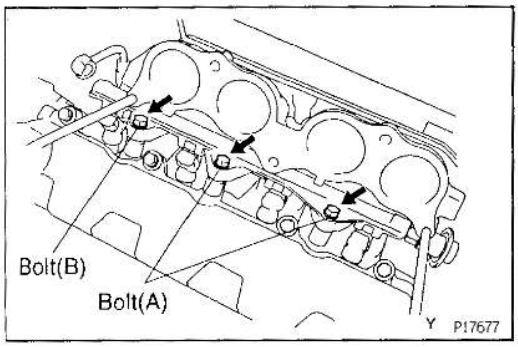
10. REMOVE DELIVERY PIPE AND INJECTOR

(a) Disconnect the 4 injector connectors.



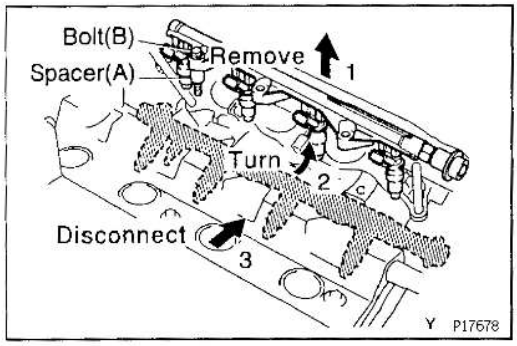
(b) Remove the union bolt, 2 gaskets and disconnect the fuel inlet pipe from delivery pipe.

(c) Disconnect the fuel return hose and vacuum sensing hose from the pressure regulator.



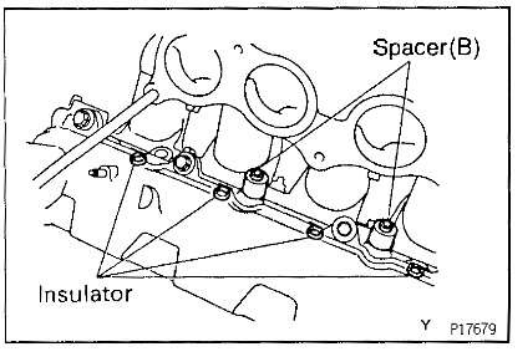
(d) Remove the 2 bolts (A) holding the delivery pipe to the cylinder head.

(e) Loosen the bolt (B).

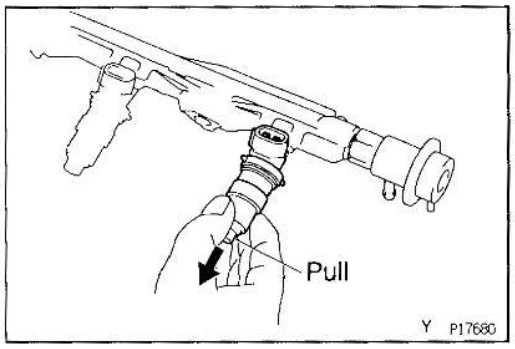


(f) Remove the delivery pipe together with bolt (B), spacer (A) and 4 injectors by following the instructions as shown in the illustration.

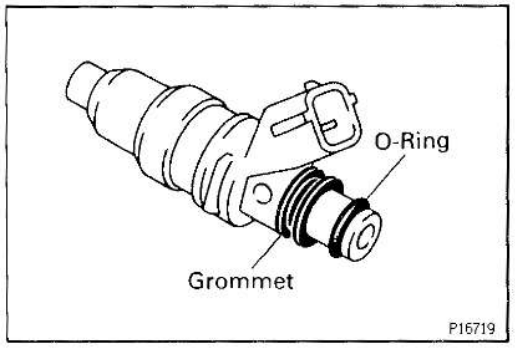
NOTICE: Be careful not to drop the injectors when removing the delivery pipe.



(g) Remove the 4 insulators and 2 spacers (B) from the cylinder head.



(h) Pull out the 4 injectors from the delivery pipe.



(i) Remove the O–ring and grommet from each injector.

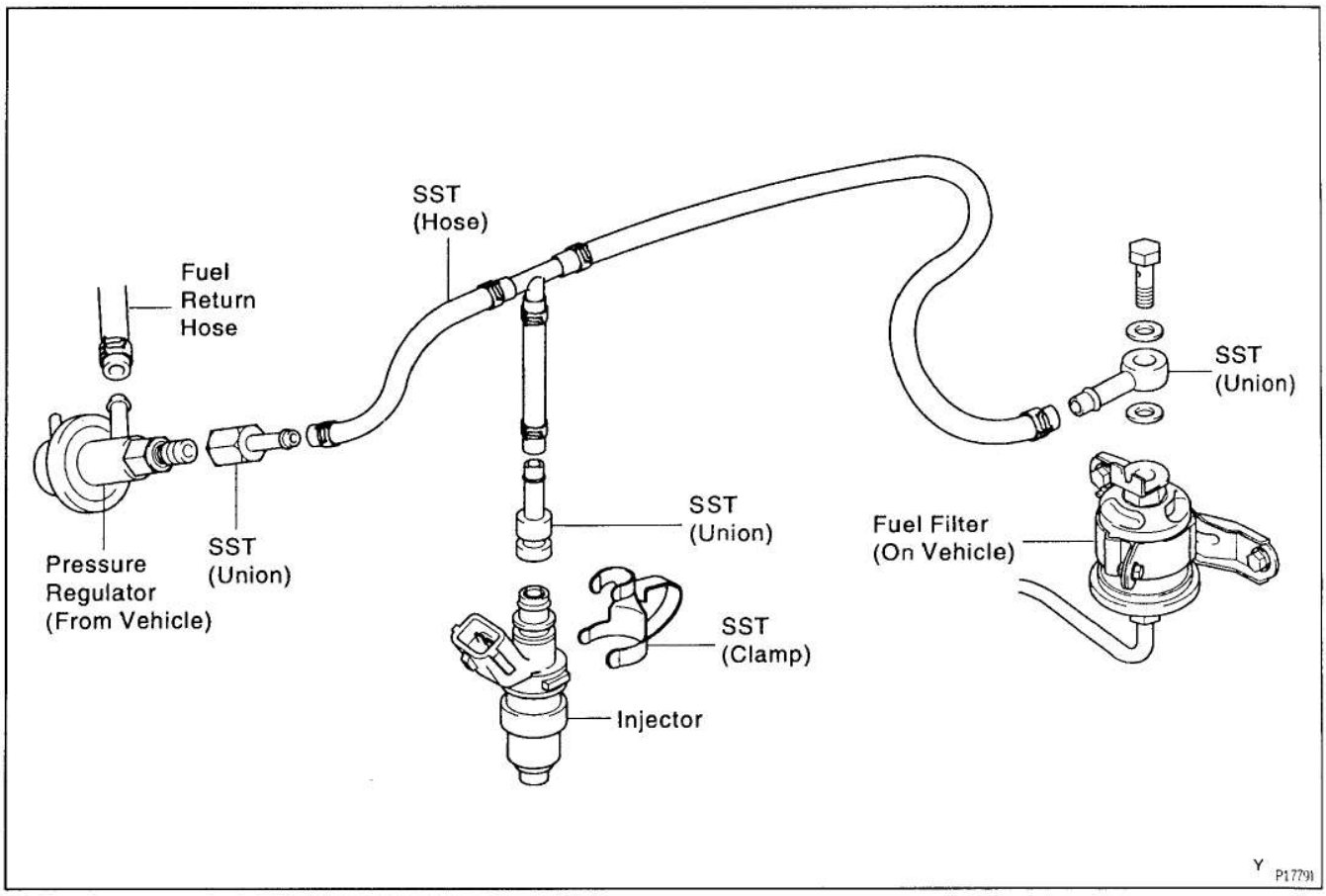
EG

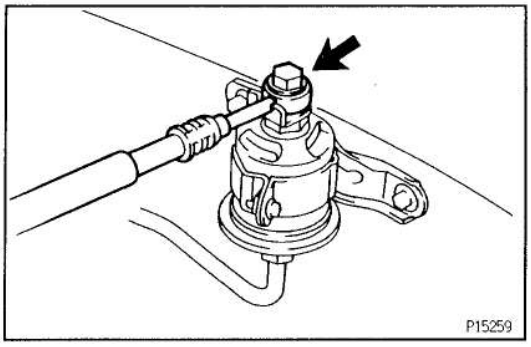
INJECTORS INSPECTION

EG3W9-01

1. INSPECT INJECTOR INJECTION

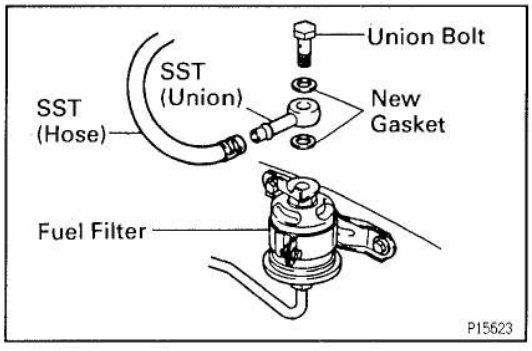
CAUTION: Keep injector clear of sparks during the test.





(a) Remove the union bolt and 2 gaskets, and disconnect the fuel inlet hose from the fuel filter outlet.

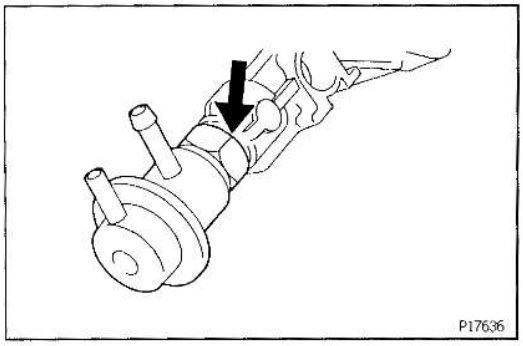
CAUTION: When removing or installing the union bolt, fix the fuel filter in place using a spanner.



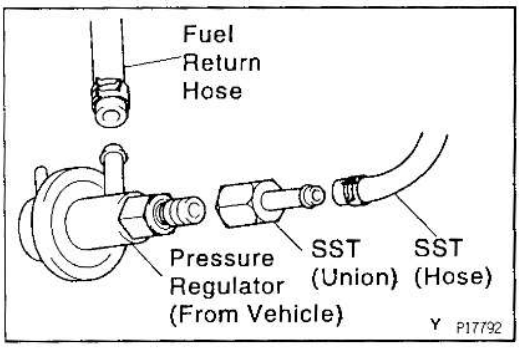
(b) Connect SST (union and hose) to the fuel filter outlet with 2 new gaskets and union bolts.

SST 09268–41045 (90405–09015)

Torque: 29 N·m (300 kgf·cm, 22 ft·lbf)



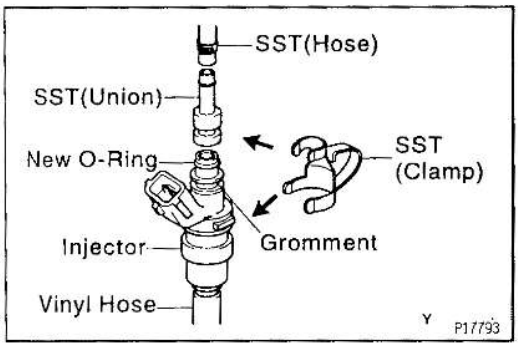
(c) Remove the pressure regulator from the delivery pipe. (See step 2 on page EG–236)



(d) Install a new O–ring to the fuel pressure regulator inlet.

(e) Connect SST (hose) to the fuel inlet of the pressure regulator with SST (union).
SST 09268–41045 (09268–41090)
Torque: 29 N·m (300 kgf·cm, 22 ft·lbf)

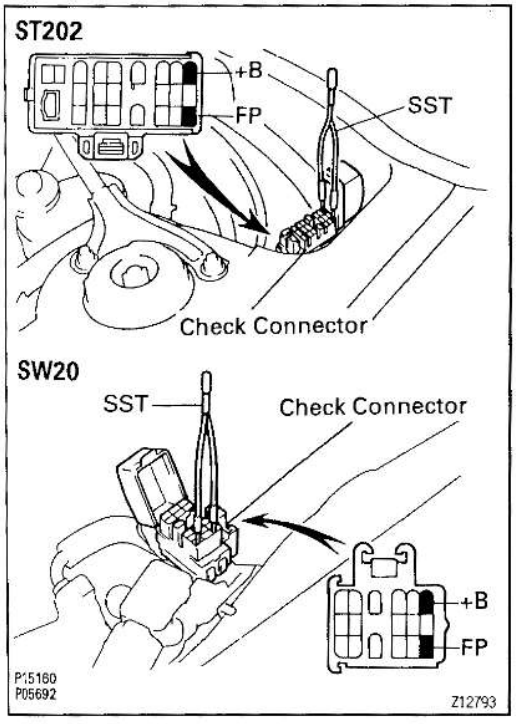
(f) Connect the fuel return hose to the fuel pressure regulator outlet.



(g) Install the grommet and a new O–ring to the injector.

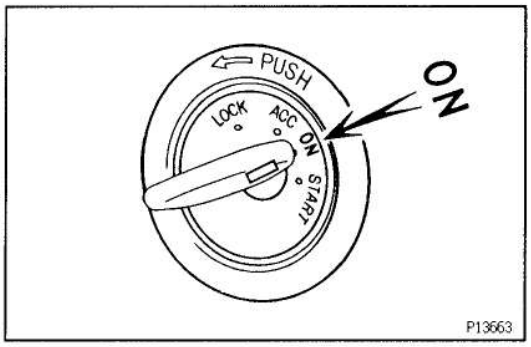
(h) Connect SST (union and hose) to the injector, and hold the injector and union with SST (clamp).
SST 09268–41045

(i) Put the injector into a graduated cylinder.
CAUTION: Install a suitable vinyl hose onto the injector to prevent gasoline from splashing out.

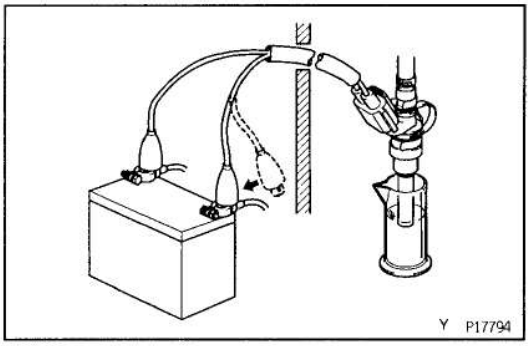


(j) Using SST, connect terminals +B and FP of the check connector.
SST 09843–18020

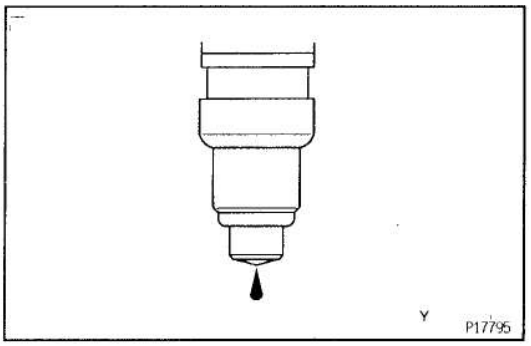
(k) Reconnect the negative (–) terminal cable to the battery.



(l) Turn the ignition switch ON.
NOTICE: Do not start the engine.

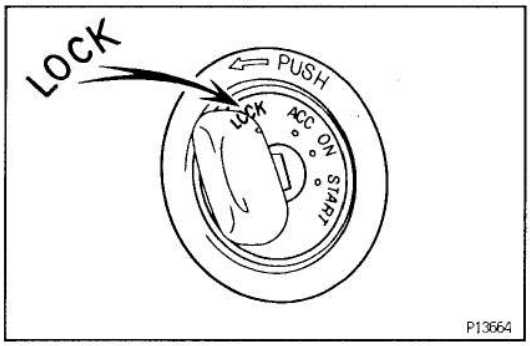


(m) Connect SST (wire) to the injector and battery for 15 seconds, and measure the injection volume with a graduated cylinder. Test each injector 2 or 3 times.
SST 09842–30070
Volume:
81 – 102 cm³ (4.9 – 6.2 cu in.) per 15 sec.
Difference between each injector:
5 cm³ (0.3 cu in.) or less
If the injection volume is not as specified, replace the injector.

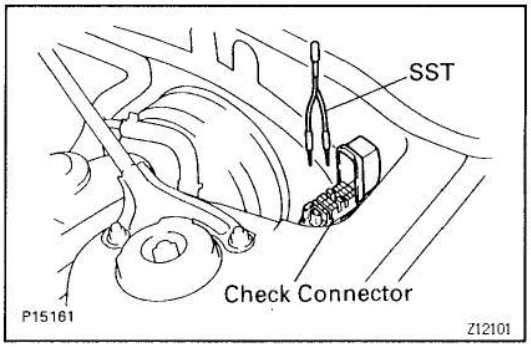


2. INSPECT LEAKAGE

(a) In the condition above, disconnect the tester probes of SST (wire) from the battery and check the fuel leakage from the injector.
SST 09842–30070
Fuel drop:
One drop or less per minute

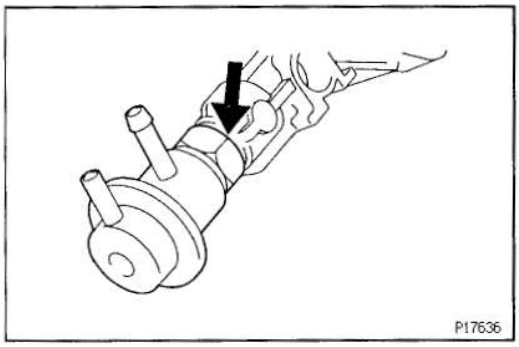


(b) Turn the ignition switch to LOCK.

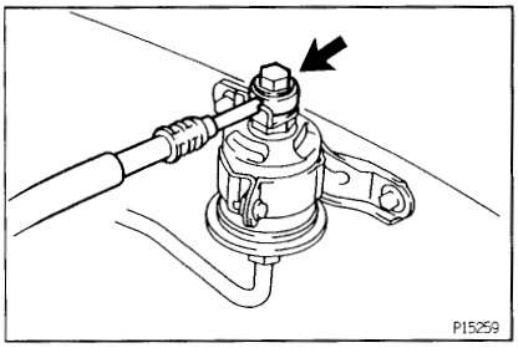


(c) Disconnect the negative (–) terminal cable from the battery.

(d) Remove the SST from the check connector.
SST 09268–41045, 09842–30070, 09843–18020



(e) Reinstall the pressure regulator to the delivery pipe. (See steps 1 and 2 on page EG–236)
Torque: 29 N·m (300 kgf·cm, 22 ft·lbf)



(f) Reconnect the fuel inlet hose to the fuel filter outlet with 2 new gaskets and the union bolt.
Torque: 29 N·m (300 kgf·cm, 22 ft·lbf)
CAUTION: When installing the union bolt, fix the fuel filter in place using a spanner.

INJECTORS INSTALLATION

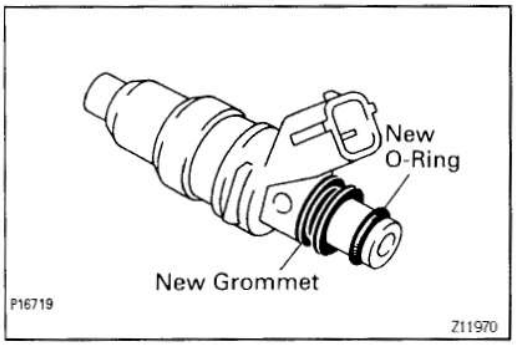
EG3WA–01

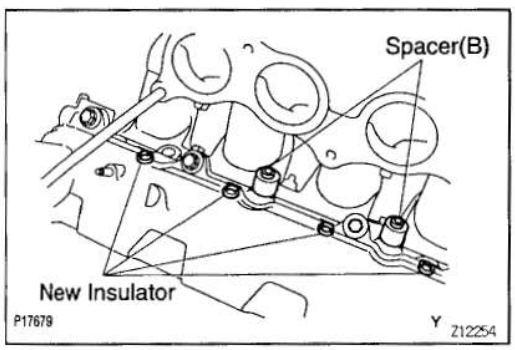
(See Components for Removal and Installation)

1. INSTALL INJECTORS AND DELIVERY PIPE

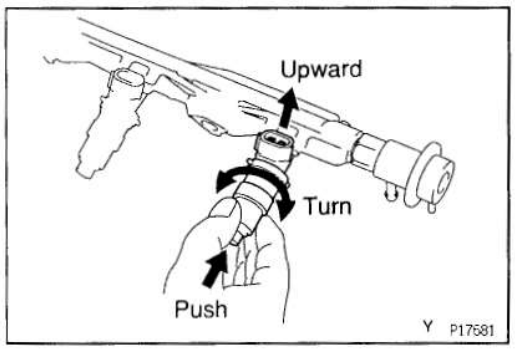
(a) Install a new grommet to the injector.

(b) Apply a light coat of gasoline onto a new O–ring, and install it to each injector.



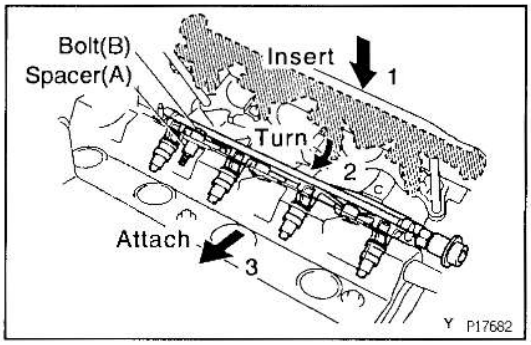


(c) Place 4 new insulators and the 2 spacers (B) in position on the cylinder head.

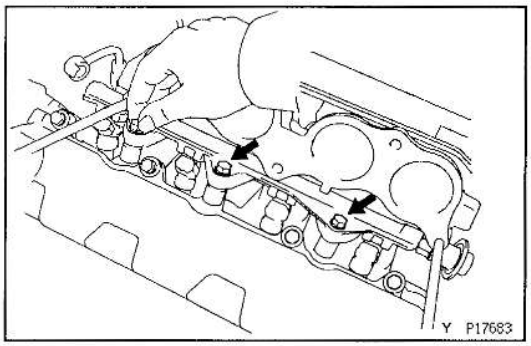


(d) While turning the injector left and right, install it to the delivery pipe. Install the 4 injectors.

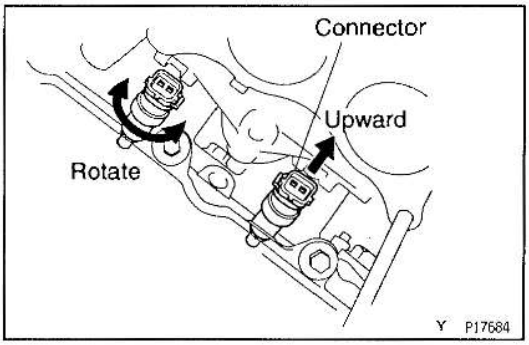
(e) Position the injector connector upward.



(f) Install the delivery pipe togerther with 4 injectors, bolt (B) and spacer (A) to the cylinder head by following the instructions as shown in the illustration.

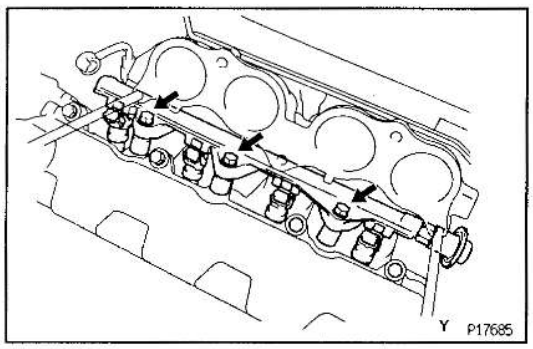


(g) Temporarily install the 3 bolts holding the delivery pipe to the cylinder head.

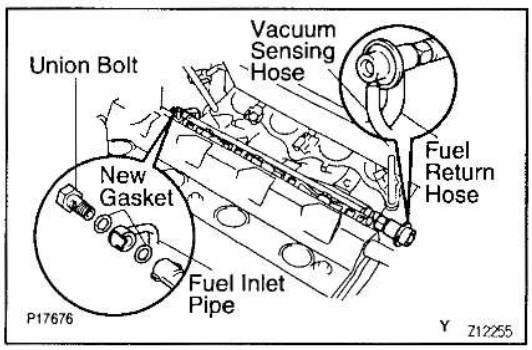


(h) Check that the injectors rotate smoothly.
HINT: If injectors do not rotate smoothly, the probable cause is incorrect installation of O–rings. Replace the O–rings.

(i) Position the injector connector upward.

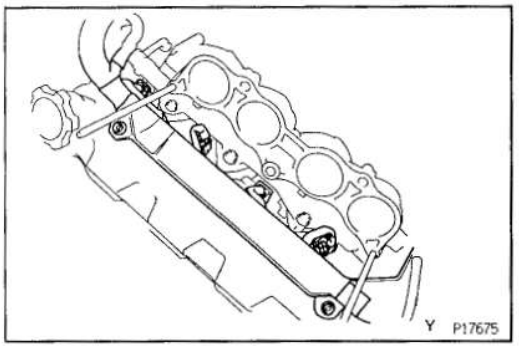


(j) Tighten the 3 bolts holding the delivery pipe to the cylinder head.
Torque: 29 N·m (300 kgf·cm, 22 ft·lbf)

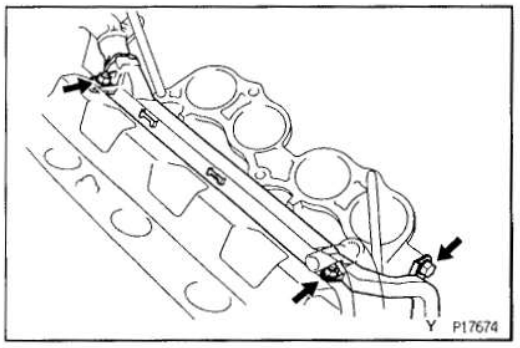


(k) Connect the fuel return hose and vacuum sensing hose from the pressure regulator.

(l) Install the union bolt, 2 new gaskets and connect the fuel inlet pipe from the pressure regulator.
Torque: 32 N·m (320 kgf·cm, 24 ft·lbf)

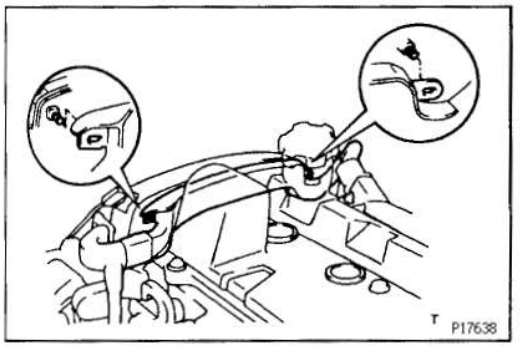


(m) Connect the 4 injector connectors.

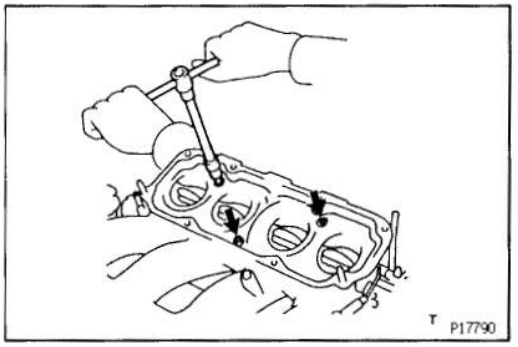


2. INSTALL WIRE HARNESS

(a) Install the 2 nuts, bolt and engine wire.



(b) Install the engine wire protector to the 2 mounting bolts of the No.2 timing belt cover in the sequence shown.

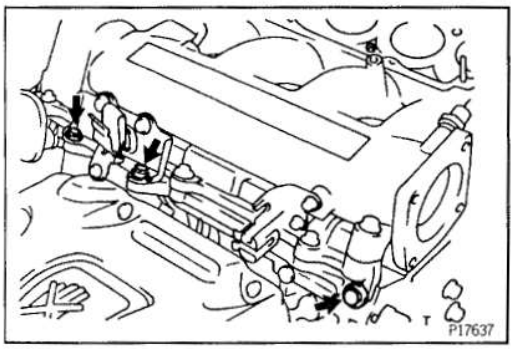


3. INSTALL ACIS VALVE ASSEMBLY

(a) Install the ACIS valve assembly and gasket.

(b) Using 6 mm hexagon wrench, install the 3 bolts to the ACIS valve assembly.

Torque: 19 N·m (195 kgf·cm, 14 ft·lbf)

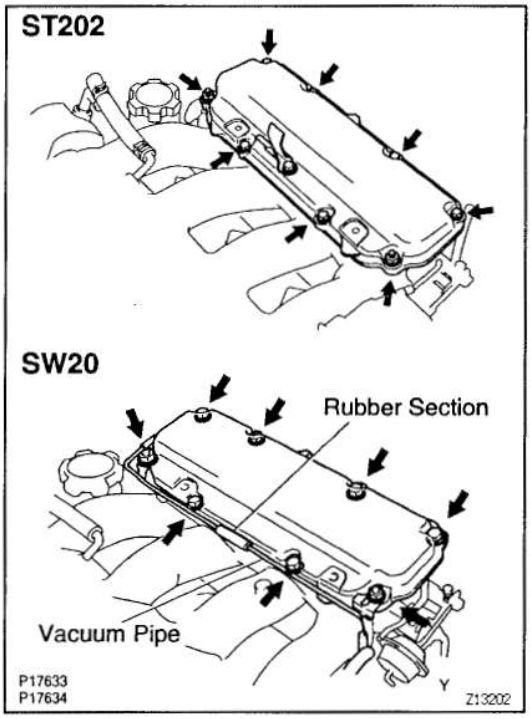


(c) Install the 3 bolts to the ACIS valve stays and cylinder head.

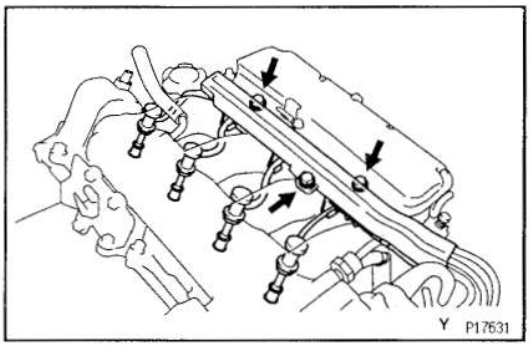
Torque:

No.1 ACIS valve stay: 19 N·m (195 kgf·cm, 14 ft·lbf)

No.2 ACIS valve stay: 18 N·m (180 kgf·cm, 13 ft·lbf)

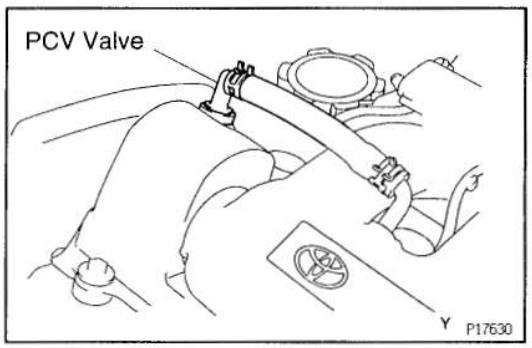


(d) Install the ACIS valve cover and gasket.
(e) ST202:
Install the 6 bolts and 2 nuts.
(f) SW20:
Install the 6 bolts, 2 nuts and vacuum pipe.
Torque:
Bolt: 8.5 N·m (85 kgf·cm, 75 in.·lbf)
Nut : 21 N·m (210 kgf·cm, 14 ft·lbf)
(g) Check that rubber section at the center, of the vacuum pipe is firmly pressed against the ACIS valve cover.

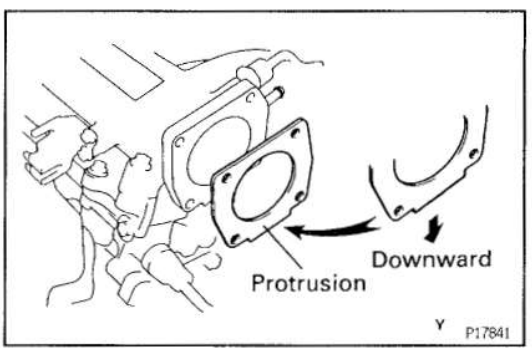


4. CONNECT HIGH–TENSION CORDS

(a) Install the high–tension cord protector and 3 bolts to the ACIS valve assembly.
(b) Connect the high–tension cords to the spark plugs.

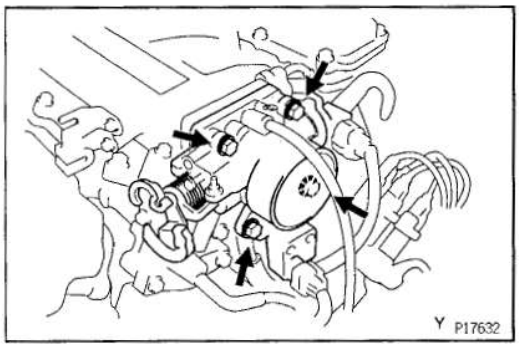


5. CONNECT PCV HOSE TO PCV VALVE

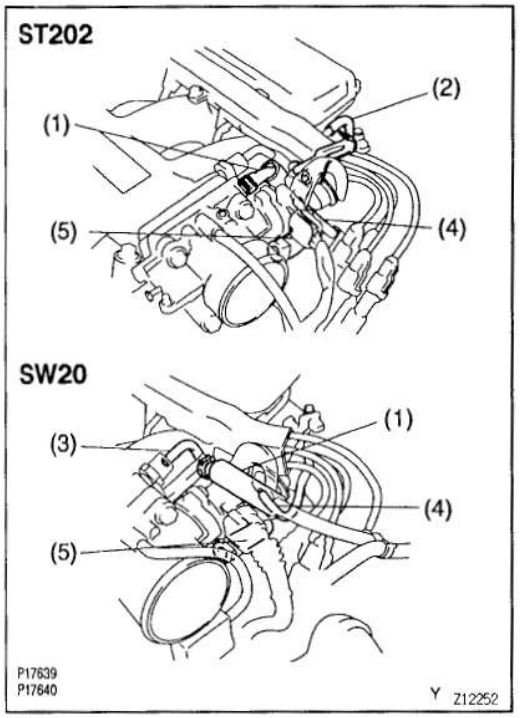


6. INSTALL THROTTLE BODY

(a) Attach a new gasket to the ACIS valve assembly, facing the protrusion downward.



(b) Install the throttle body with the 4 bolts.
Torque: 21 N·m (210 kgf·cm, 16 ft·lbf)
HINT: Different bolt lengths are used for the upper and lower sides.
Bolt length:
Upper side: 40 mm (1.59 in.)
Lower side: 65 mm (2.56 in.)



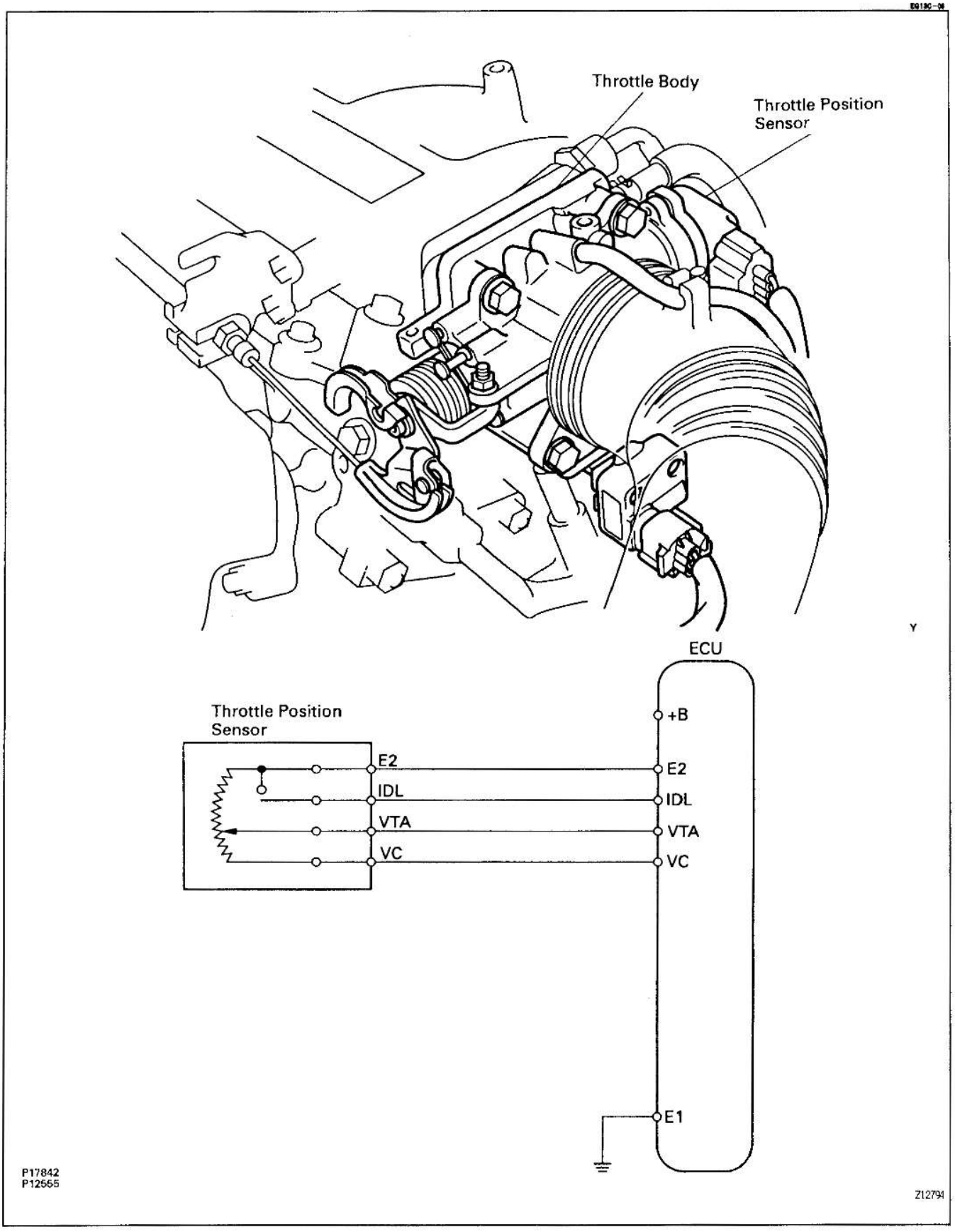
(c) ST202 LHD only:
Install the accelerator cable clamp and bolt to the engine hanger.

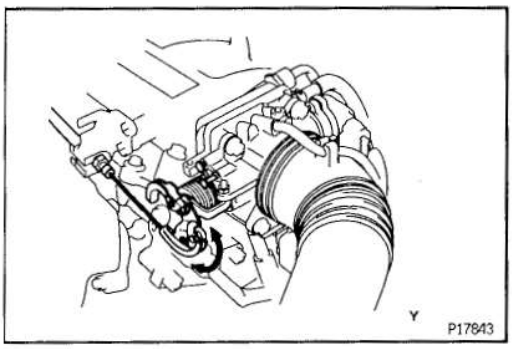
(d) Connect the following hoses:
(1) Air hose (from A/C idle–up valve)
(2) ST202:
Vacuum hose (from vacuum pipe)
(3) SW20:
Vacuum hose (from gas filter)
(4) Vacuum hose (to ACIS actuator)
(5) PCV hose

7. **CONNECT ACCELERATOR CABLE TO THROTTLE BODY**
8. **INSTALL AIR CLEANER CAP AND HOSE**
9. **INSTALL INTAKE AIR TEMPERATURE SENSOR TO AIR CLEANER CAP**
10. **CONNECT NEGATIVE (–) TERMINAL CABLE TO BATTERY**
11. **CHECK FOR FUEL LEAKS**
(See page EG–173)

THROTTLE BODY

EG



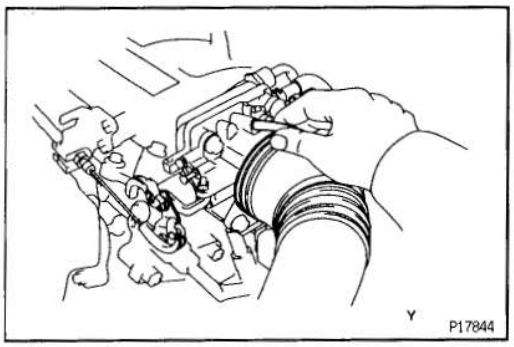


EG286-02

ON–VEHICLE INSPECTION

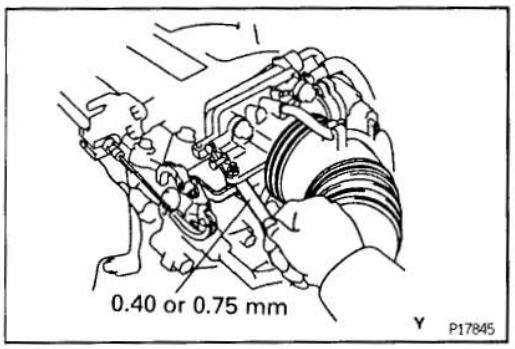
1. INSPECT THROTTLE BODY

(a) Check that the throttle linkage moves smoothly.



(b) Check the vacuum at P port.
- Start the engine.
- Check the vacuum with the vacuum hose pick your finger.

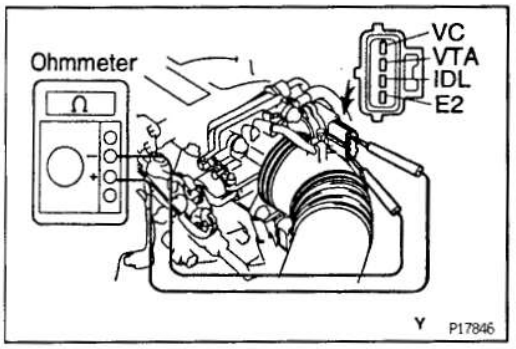
Port name	At idle	Other than idle
P	No vacuum	Vacuum



2. INSPECT THROTTLE POSITION SENSOR

(a) Disconnect the throttle position sensor connector.

(b) Insert a feeler gauge between the throttle stop screw and stop lever.



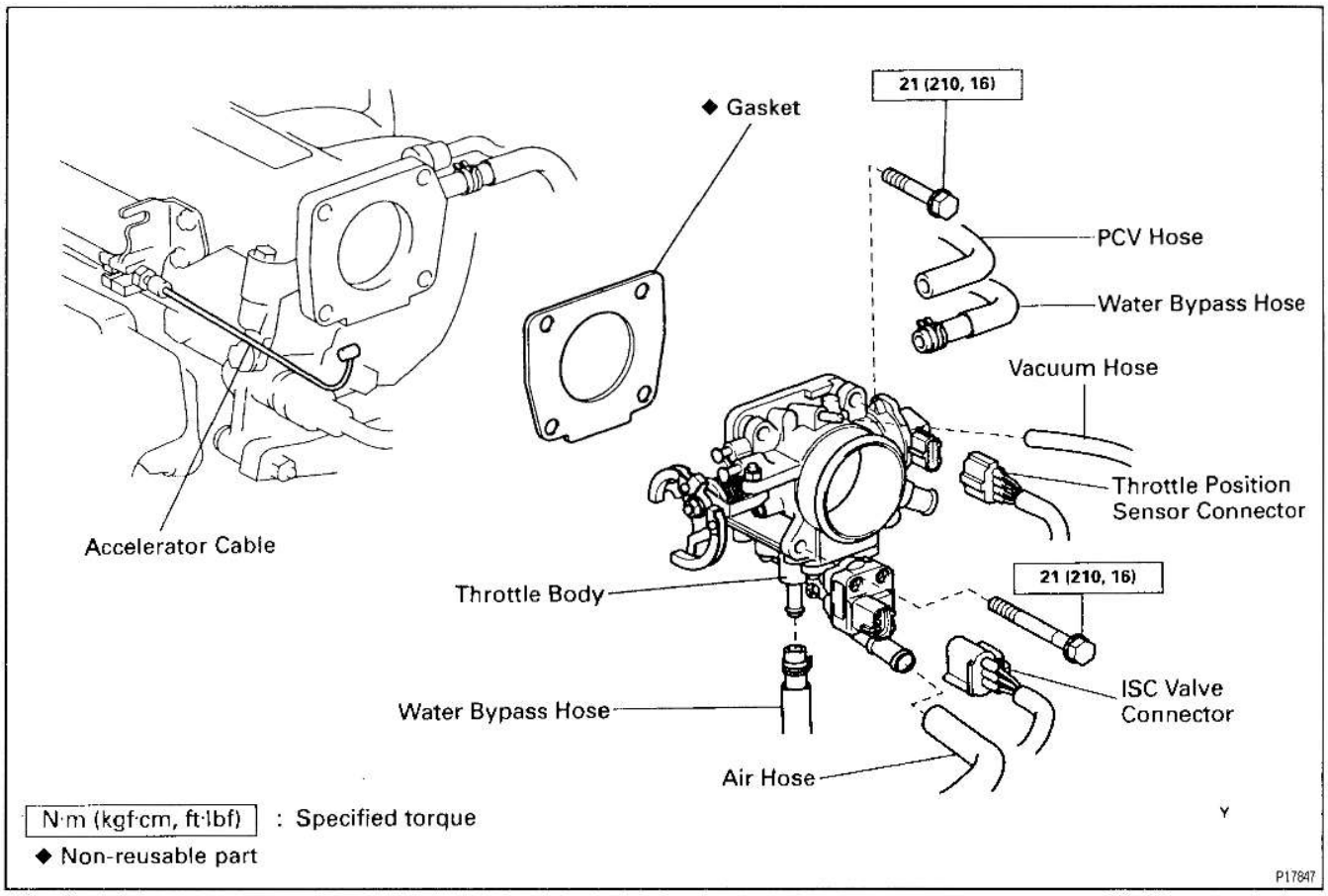
(c) Using an ohmmeter, measure the resistance between each terminal.

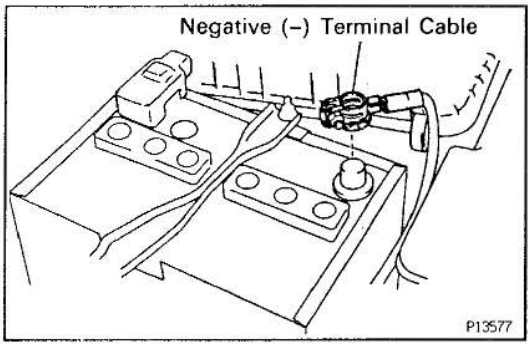
Clearance between lever and stop screw	Between terminals	Resistance
0 mm (0 in.)	VTA – E2	0.2 – 5.7 kΩ
0.40 mm (0.016 in.)	IDL – E2	2.3 kΩ or less
0.75 mm (0.030 in.)	IDL – E2	Infinity
Throttle valve fully open	VTA – E2	2.0 – 10.2 kΩ
–	VC – E2	2.5 – 5.9 kΩ

(d) Reconnect the throttle position sensor connector.

EG

COMPONENTS FOR REMOVAL AND INSTALLATION

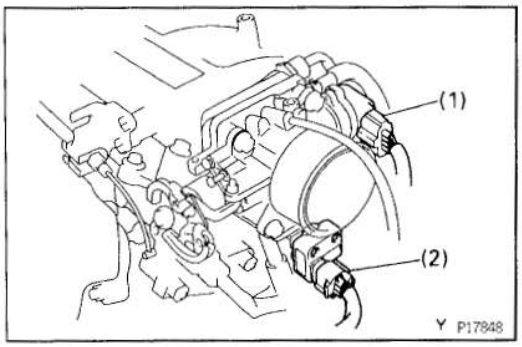




THROTTLE BODY REMOVAL

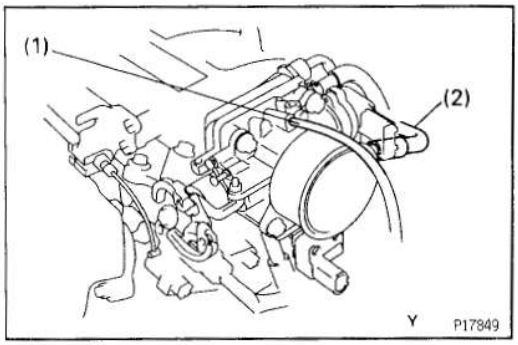
(See Components for Removal and Installation)

1. **DISCONNECT NEGATIVE (–) TERMINAL CABLE FROM BATTERY**
2. **DRAIN ENGINE COOLANT**
3. **DISCONNECT INTAKE AIR TEMPERATURE SENSOR FROM AIR CLEANER CAP**
4. **DISCONNECT AIR CLEANER CAP AND HOSE**
5. **DISCONNECT ACCELERATOR CABLE FROM THROTTLE BODY**

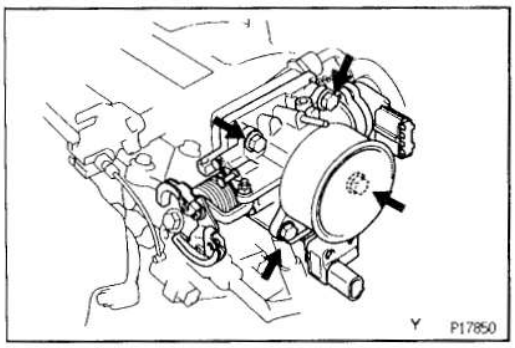


6. REMOVE THROTTLE BODY

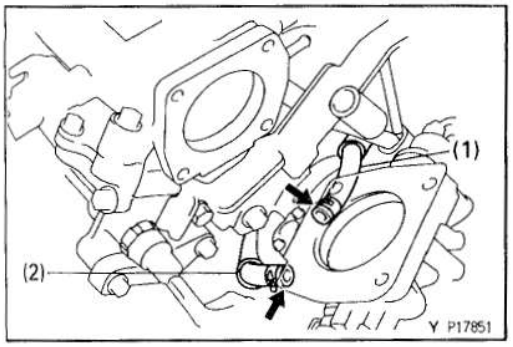
(a) Disconnect the folloiwing connectors:
(1) Throttle position sensor connector
(2) ISC valve connector



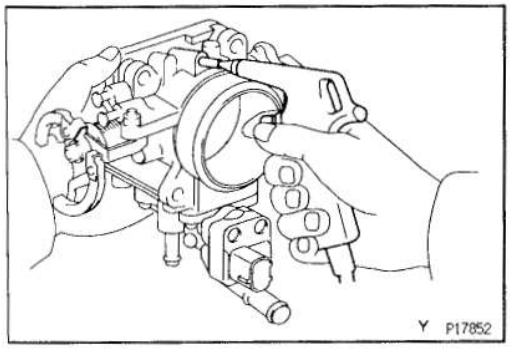
(b) Disconnect the folloiwing hoses:
(1) Vacuum hose (from BVSV for EVAP)
(2) PCV hose



(c) Remove the 4 bolts and gasket.



(d) Disconnect the following hoses from the throttle body, and remove the throttle body:
(1) Water bypass hose (from water outlet)
(2) Water bypass hose (from water bypass pipe)



THROTTLE BODY INSPECTION

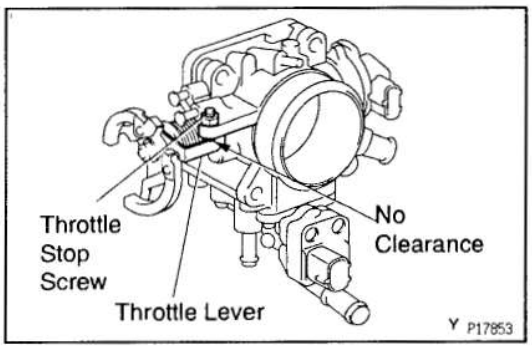
EG2E7-02

1. CLEAN THROTTLE BODY

(a) Using a soft brush and carburetor cleaner, clean the cast parts.

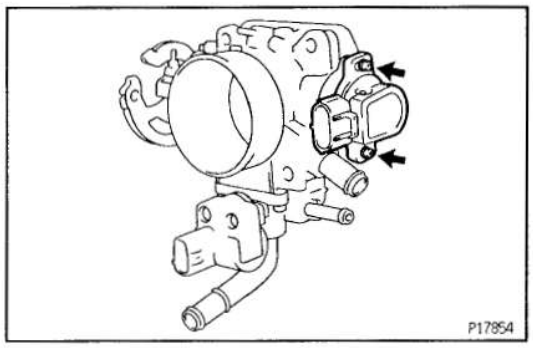
(b) Using compressed air, clean all the passages and apertures.

NOTICE: To prevent deterioration, do not clean the throttle position sensor.



2. INSPECT THROTTLE VALVE

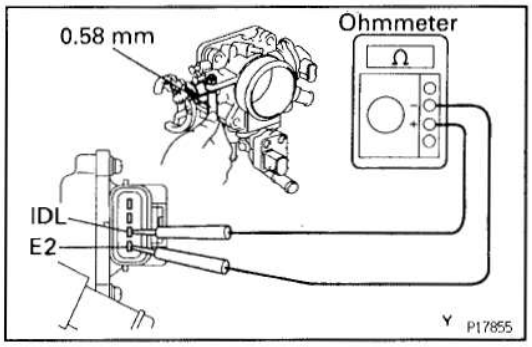
Check that there is no clearance between the throttle stop screw and throttle lever when the throttle valve is fully closed.



3. INSPECT THROTTLE POSITION SENSOR
(See step 2 on page EG–253)

4. IF NECESSARY, ADJUST THROTTLE POSITION SENSOR

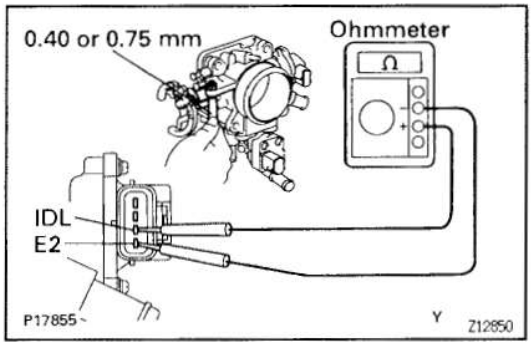
(a) Loosen the 2 set screws of the throttle position sensor



(b) Insert a 0.58 mm (0.023 in.) feeler gauge, between the throttle stop screw and stop lever.

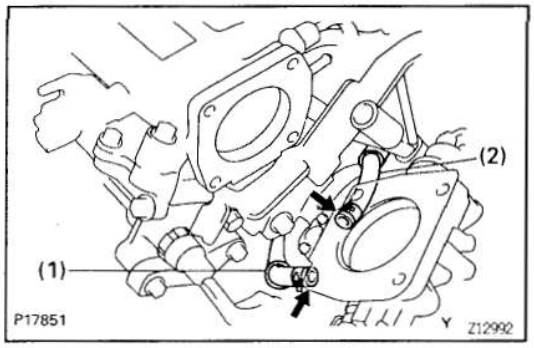
(c) Connect the test probe of an ohmmeter to the terminals IDL and E2 of the thottle position sensor.

(d) Gradually turn the sensor clockwise until the ohmmeter indicator deflects, and secure it with the 2 set screws.



(e) Recheck the continuity between terminals IDL and E2.

Clearance between lever and stop screw	Continuity (IDL – E2)
0.40 mm (0.016 in.)	Continuity
0.75 mm (0.030 in.)	No continuity



THROTTLE BODY INSTALLATION

EG2WC-01

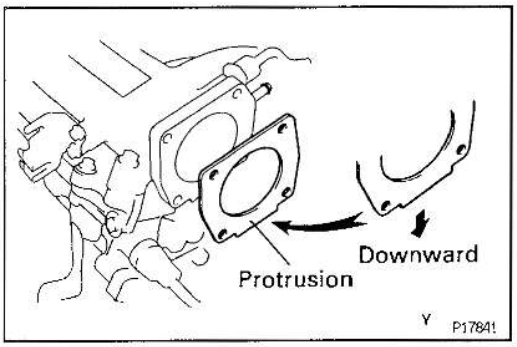
(See Components for Removal and Installation)

1. INSTALL THROTTLE BODY

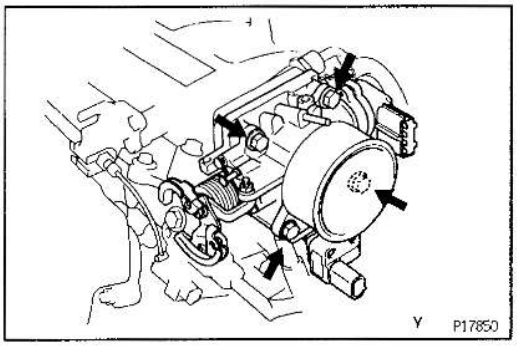
(a) Connect the following hoses to throttle body:

(1) Water bypass hose (from water bypass pipe)

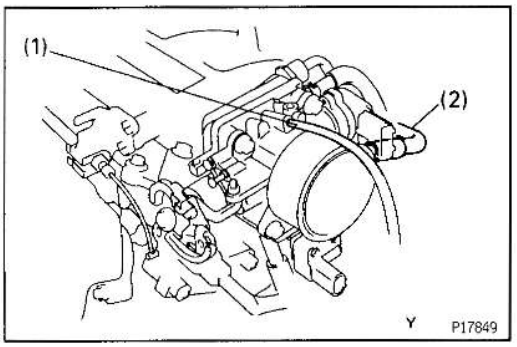
(2) Water bypass hose (from water outlet)



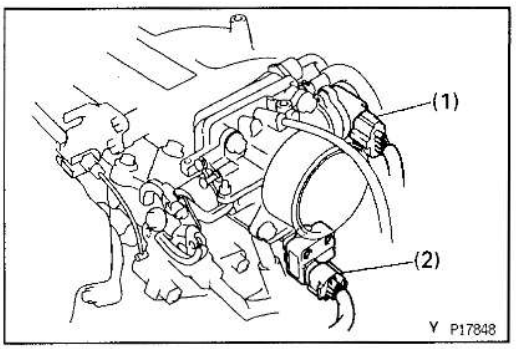
(b) Attach a new gasket to the ACIS assembly, facing the protrusion downward.



(c) Install the throttle body with the 4 bolts.
Torque: 21 N·m (210 kgf·cm, 16 ft·lbf)
HINT: Different bolt lengths are used for the upper and lower sides.
Bolt length:
Upper side: 40 mm (1.59 in.)
Lower side: 65 mm (2.56 in.)



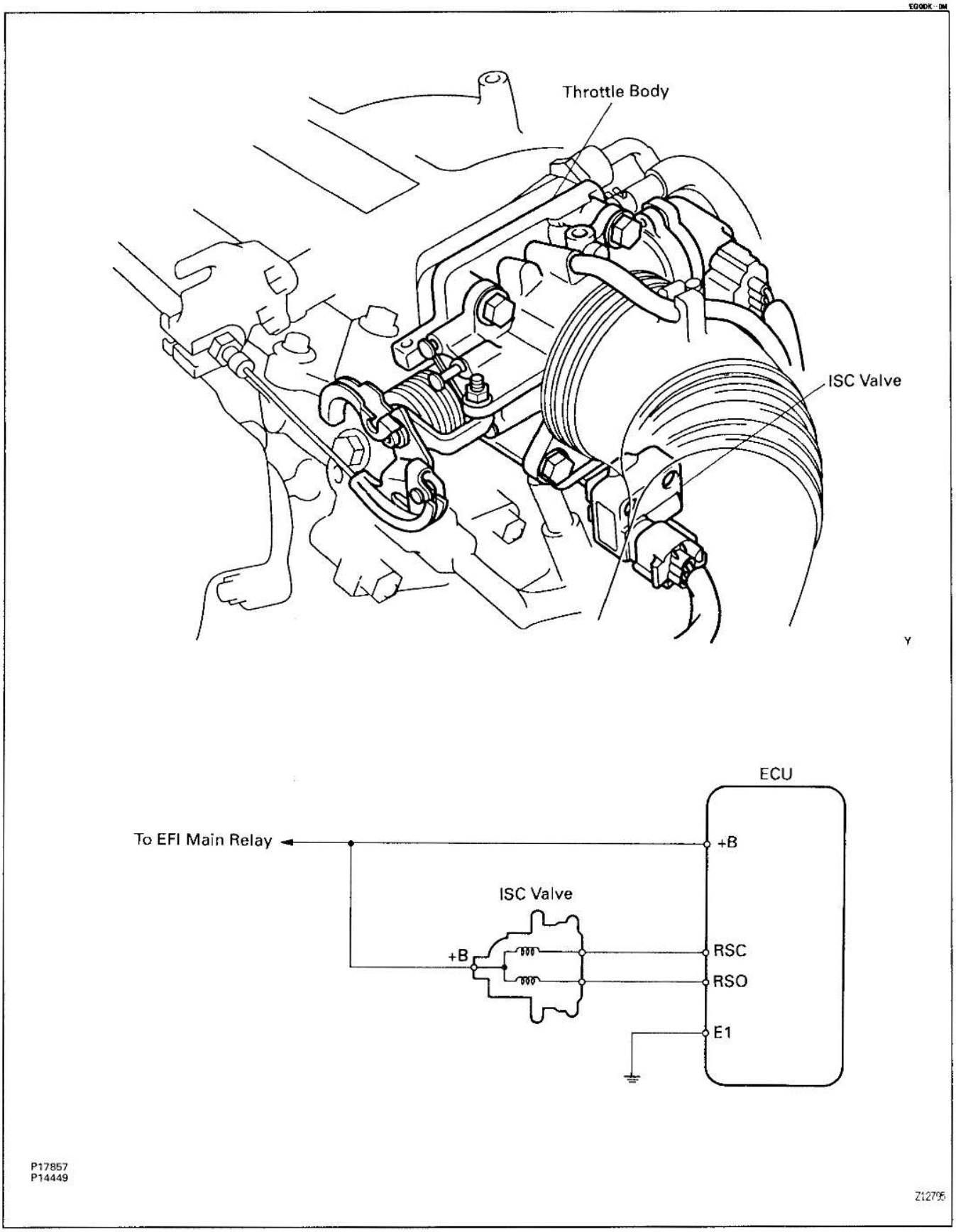
(d) Connect the following hoses:
(1) Vacuum hose (from BVSV for EVAP)
(2) PCV hose



(e) Connect the following connectors:
(1) Throttle position sensor connector
(2) ISC valve connector

2. **CONNECT ACCELERATOR CABLE TO THROTTLE BODY**
3. **INSTALL AIR CLEANER CAP AND HOSE**
4. **CONNECT INTAKE AIR TEMPERATURE SENSOR TO AIR CLEANER CAP**
5. **FILL WITH ENGINE COOLANT**
6. **CONNECT NEGATIVE (–) TERMINAL CABLE TO BATTERY**

ISC VALVE


EG00DK-DM
Throttle Body
ISC Valve
Y
ECU
To EFI Main Relay
+B
ISC Valve
+B
RSC
RSO
E1
P17857
P14449
Z12795

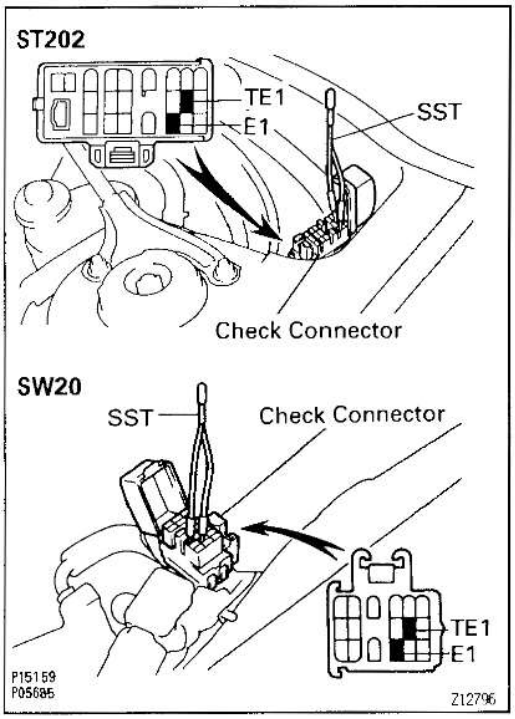
EG2BR-02

ON–VEHICLE INSPECTION

1. INSPECT ISC VALVE OPERATION

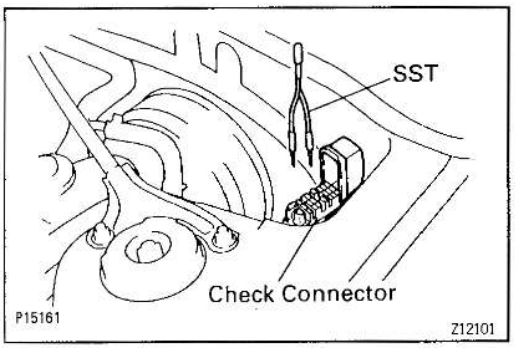
(a) Initial conditions:
- Engine at normal operating temperature
- Idle speed set correctly

EG



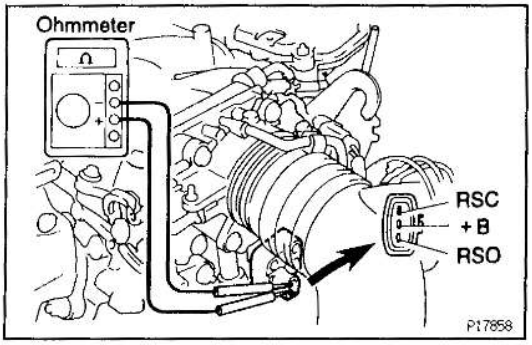
(b) Using SST, connect terminals **TE1** and E1 of the check connector.
SST 09843–18020

(c) After engine rpm are kept at 1,000 – 1,300 rpm for 5 seconds, check that the rpm drops to about idle speed.
If the rpm operation is not as specified, check the ISC valve, wiring and engine ECU.



(d) Remove SST.
SST 09843–18020

(e) Check the idle speed.
Idle speed:
ST202:
w/ Daytime running light system
750 ± 50 rpm
w/o Daytime running light system
700 ± 50 rpm
SW20:
w/ Daytime running light system
850 ± 50 rpm
w/o Daytime running light system
750 ± 50 rpm



2. INSPECT ISC VALVE RESISTANCE

(a) Disconnect the ISC valve connector.

(b) Using an ohmmeter, measure the resistance between terminal +B and other terminals (RSC, RSO).

Resistance:

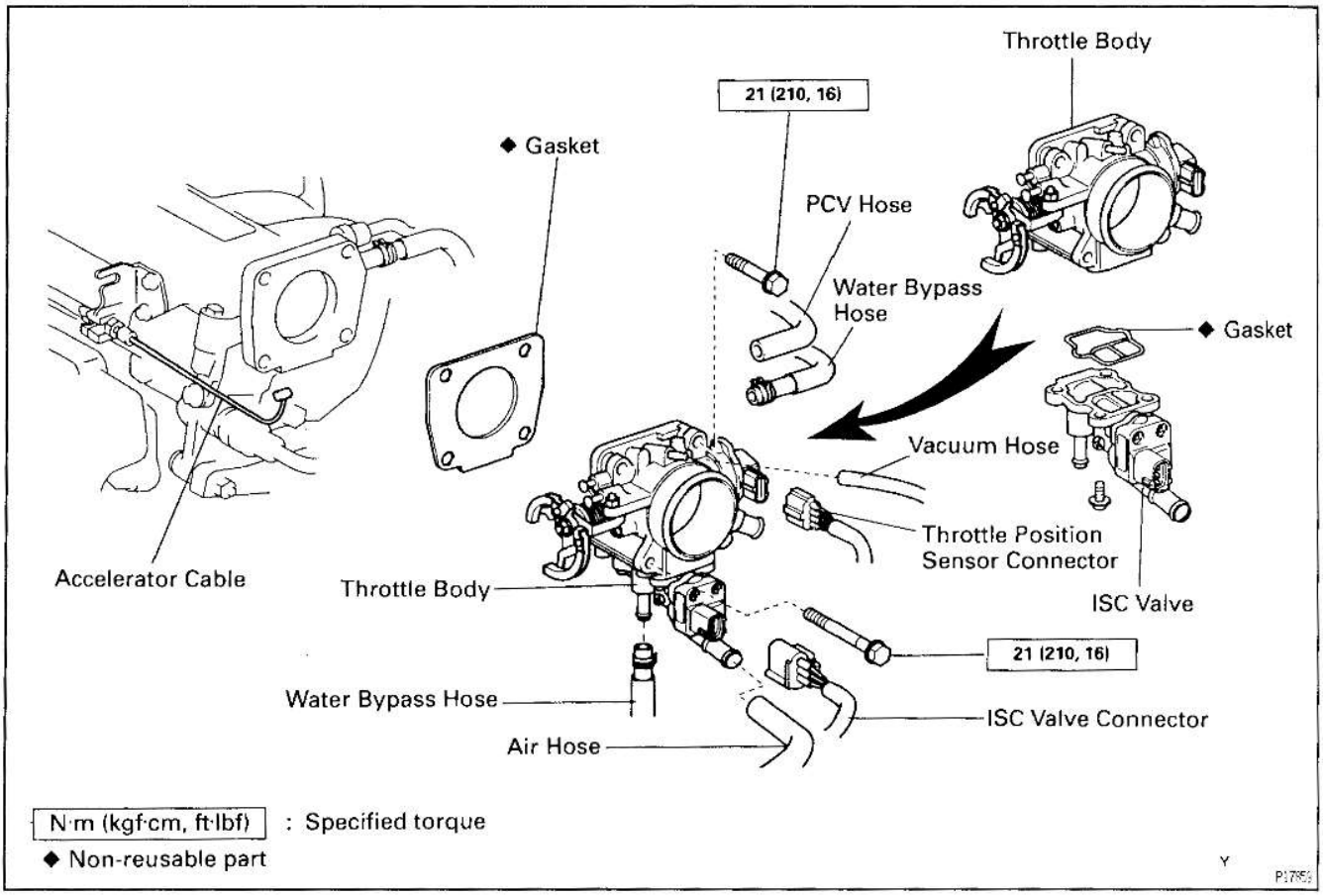
19.3 – 22.3 Ω at 20°C (68°F)

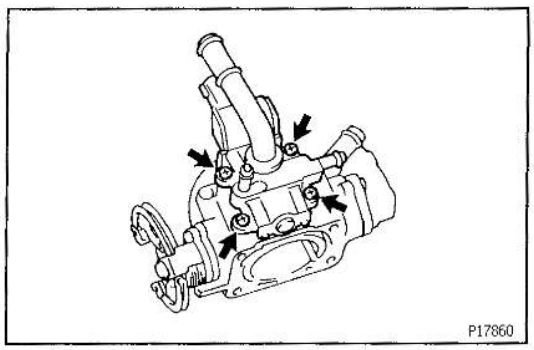
If resistance is not as specified, replace the ISC valve.

(c) Reconnect the ISC valve connector.

EG

COMPONENTS FOR REMOVAL AND INSTALLATION





ISC VALVE REMOVAL

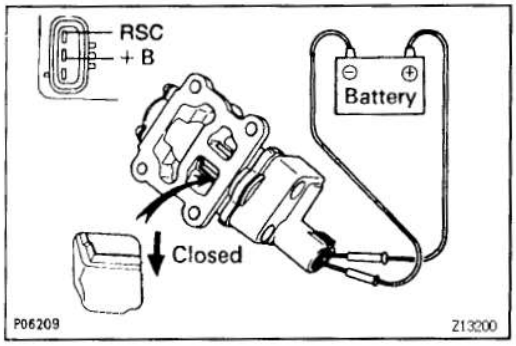
(See Components for Removal and Installation)

1. REMOVE THROTTLE BODY

(See steps 1 to 6 on page EG – 254 and EG – 255)

2. REMOVE ISC VALVE

Remove the 4 screws, ISC valve and gasket.



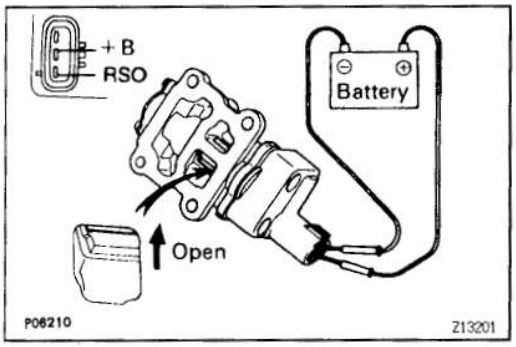
ISC VALVE INSPECTION

EGODN-0F

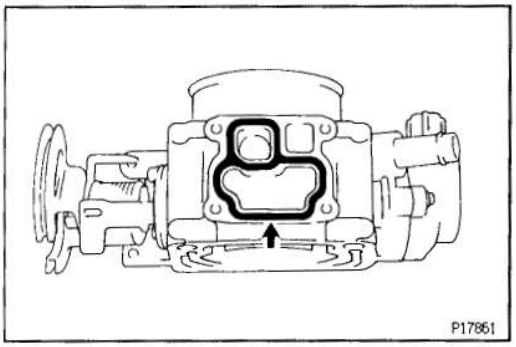
INSPECT ISC VALVE OPERATION

(a) Connect the positive (+) lead from the battery to terminal +B and negative (−) lead to terminal RSC, and check that the valve is closed.

EG



(b) Connect the positive (+) lead from the battery to terminal +B and negative (−) lead to terminal RSO, and check that the valve is open.
If operation is not as specified, replace the ISC valve.



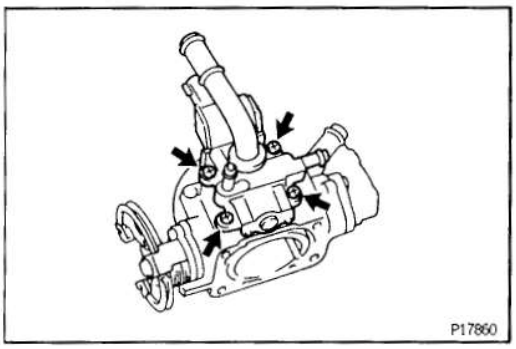
ISC VALVE INSTALLATION

EG28T-02

(See Components for Removal and Installation)

1. INSTALL ISC VALVE

(a) Place a new gasket on the throttle body.



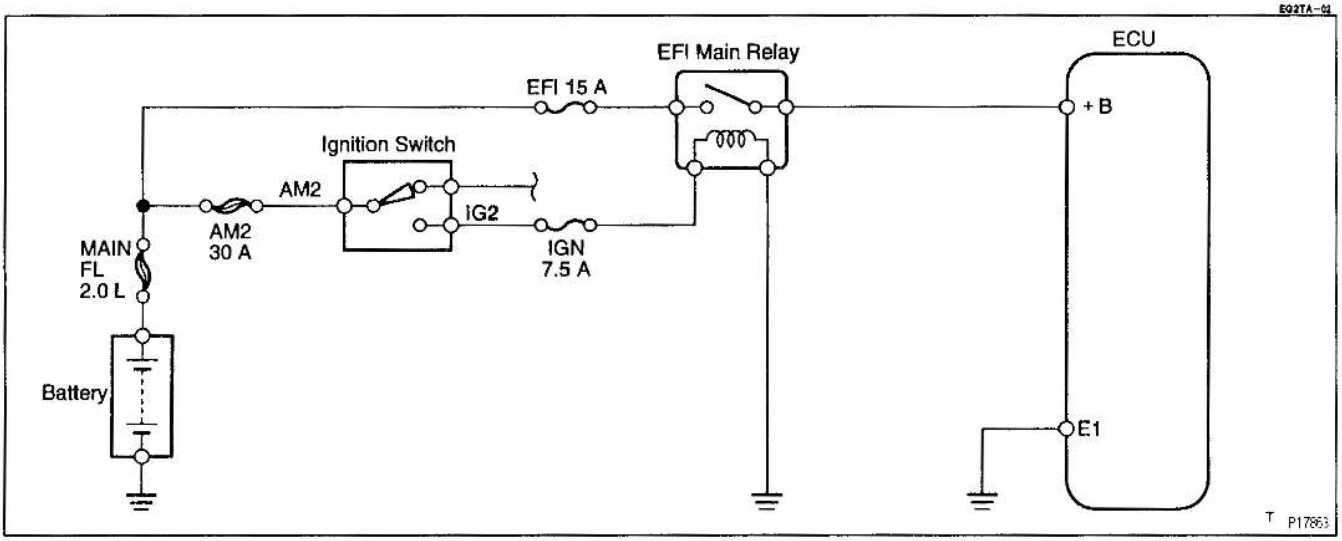
(b) Install the ISC valve with the 4 screws.

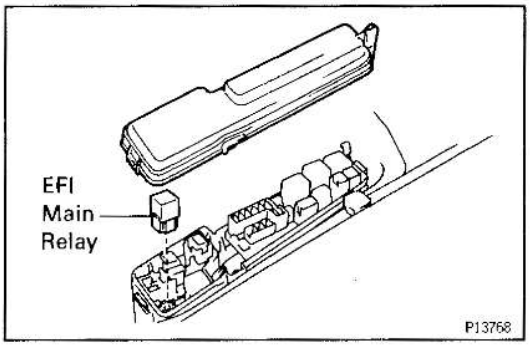
2. INSTALL THROTTLE BODY

(See steps 1 to 6 on page EG−256 and EG−257)

EG

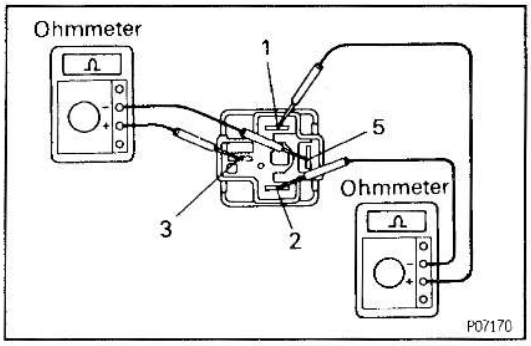
EFI MAIN RELAY (ST202)





EFI MAIN RELAY INSPECTION

1. **REMOVE EFI MAIN RELAY**
   LOCATION: In the engine compartment relay box.



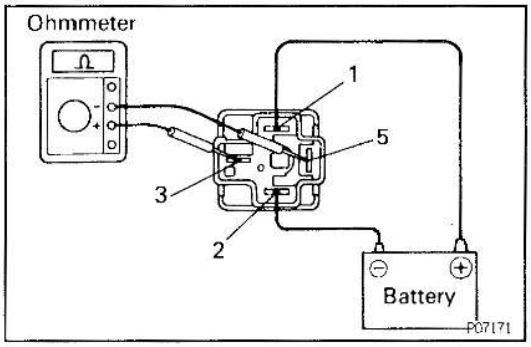
2. **INSPECT EFI MAIN RELAY**

A. Inspect relay continuity

(a) Using an ohmmeter, check that there is continuity between terminals 1 and 2.

(b) Check that there is no continuity between terminals 3 and 5.

If continuity is not as specified, replace the EFI main relay.



B. Inspect relay operation

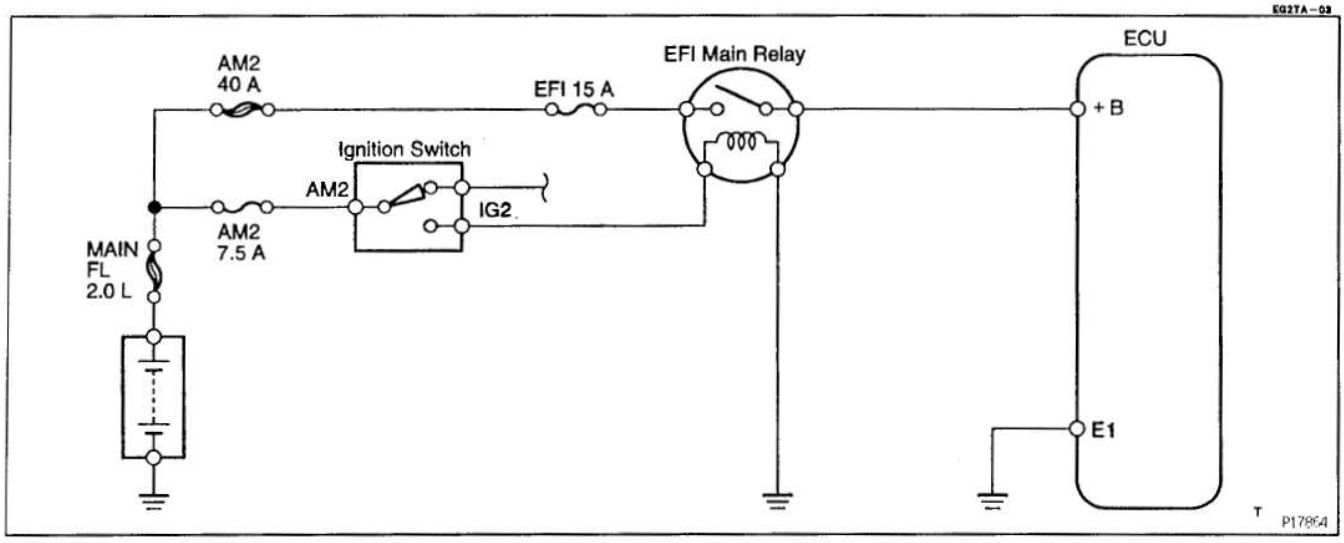
(a) Apply battery voltage across terminals 1 and 2.

(b) Using an ohmmeter, check that there is continuity between terminals 3 and 5.

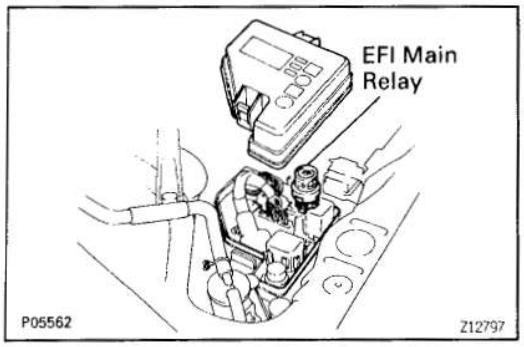
If operation is not as specified, replace the EFI main relay.

3. **REINSTALL EFI MAIN RELAY**

EFI MAIN RELAY (SW20)



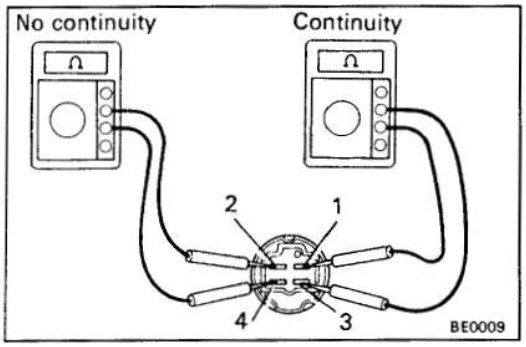
EG



EG3WD-01

EFI MAIN RELAY INSPECTION

1. **REMOVE EFI MAIN RELAY**
   LOCATION: In the engine compartment relay box.



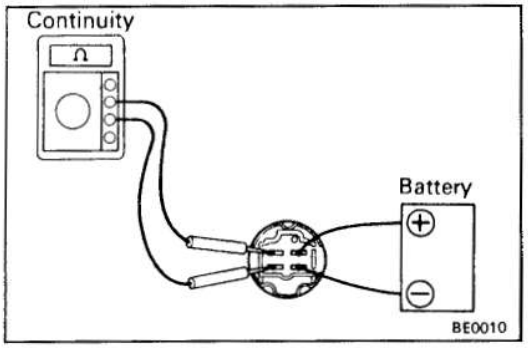
2. **INSPECT EFI MAIN RELAY**

A. Inspect relay continuity

(a) Using an ohmmeter, check that there is continuity between terminals 1 and 3.

(b) Check that there is no continuity between terminals 2 and 4.

If continuity is not as specified, replace the EFI main relay.



B. Inspect relay operation

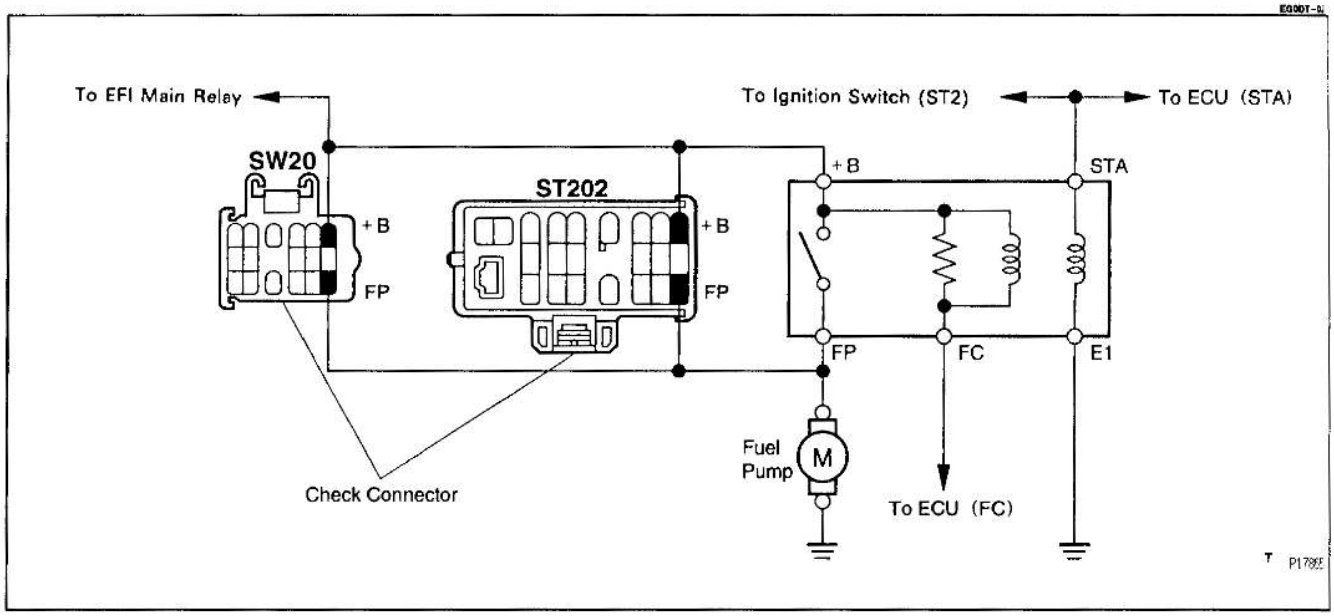
(a) Apply battery voltage across terminals 1 and 3.

(b) Using an ohmmeter, check that there is continuity between terminals 2 and 4.

If operation is not as specified, replace the EFI main relay.

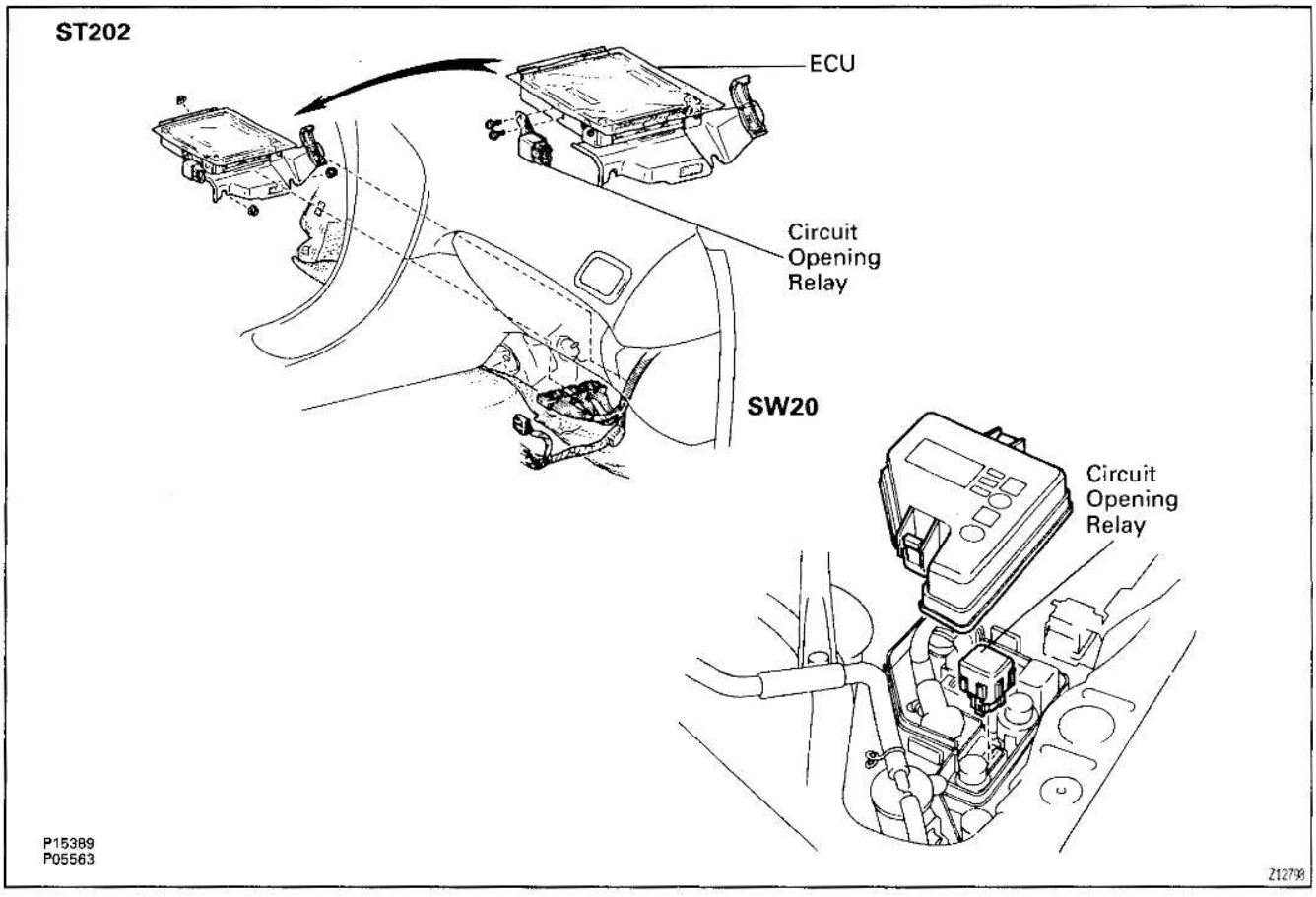
3. **REINSTALL EFI MAIN RELAY**

CIRCUIT OPENING RELAY



EG

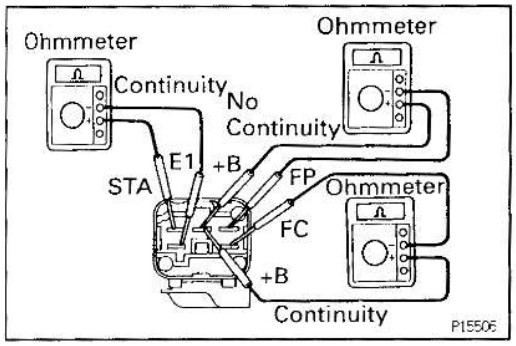
COMPONENTS FOR REMOVAL AND INSTALLATION



CIRCUIT OPENING RELAY INSPECTION

(See Components for Removal and Installation)

1. REMOVE CIRCUIT OPENING RELAY



2. INSPECT CIRCUIT OPENING RELAY

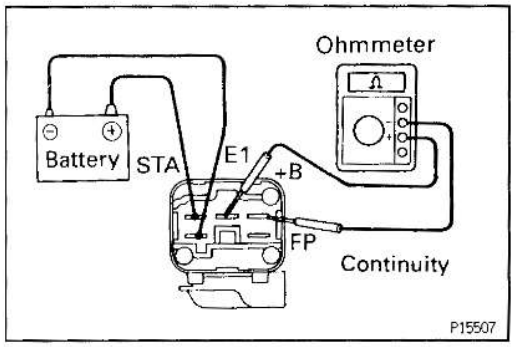
A. Inspect relay continuity

(a) Using and ohmmeter, check that there is continuity between terminals STA and E1.

(b) Check that there is continuity between terminals +B and FC.

(c) Check that there is no continuity between terminals +B and FP.

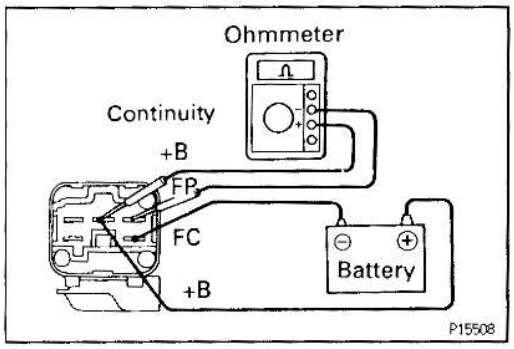
If continuity is not as specified, replace the circuit opening relay.



B. Inspect relay operation

(a) Apply battery voltage across terminals STA and E1.

(b) Using an ohmmeter, check that there is continuity between terminals +B and FP.



(c) Apply battery voltage across terminals +B and FC.

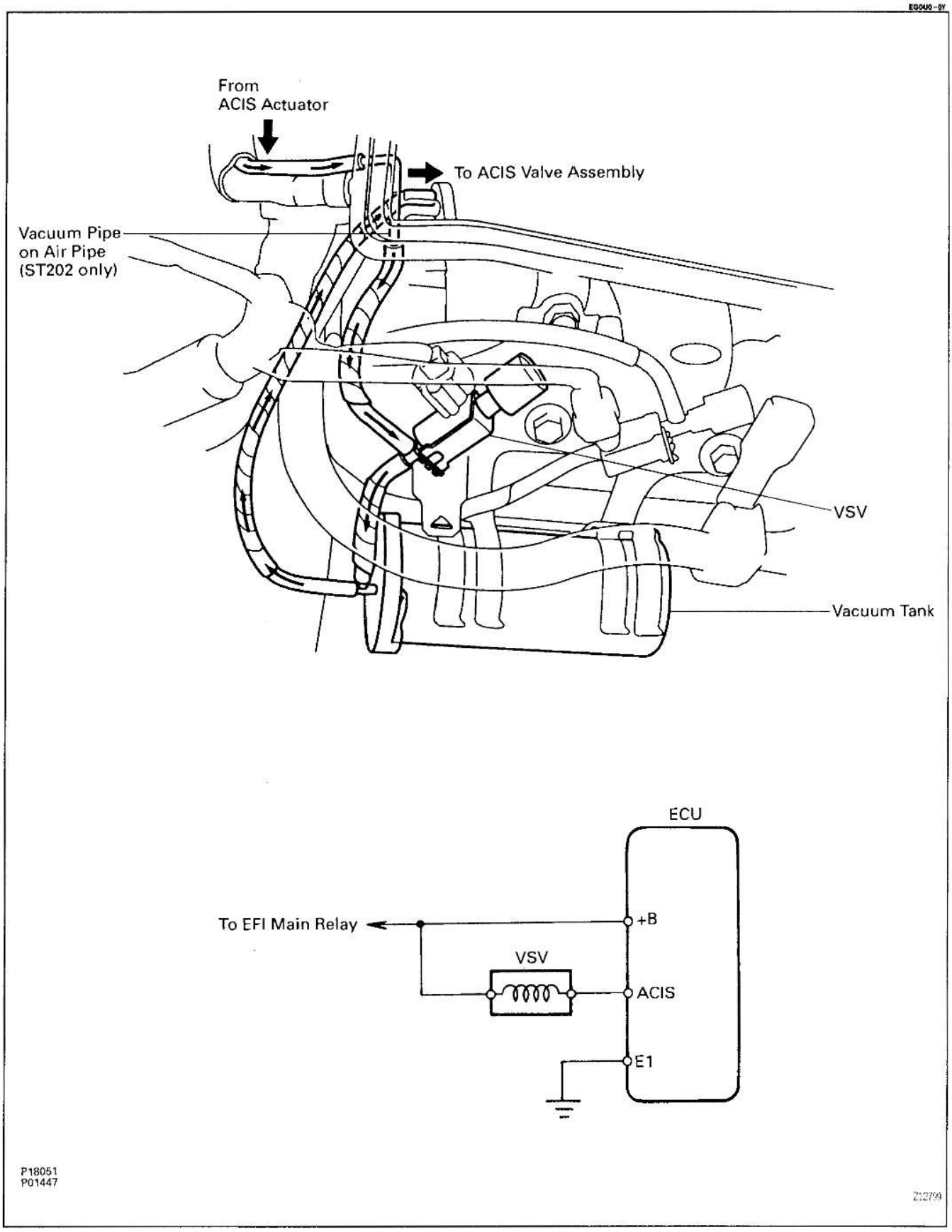
(d) Check that there is continuity between terminals +B and FP.

If operation is not as specified, replace the circuit opening relay.

3. REINSTALL CIRCUIT OPENING RELAY

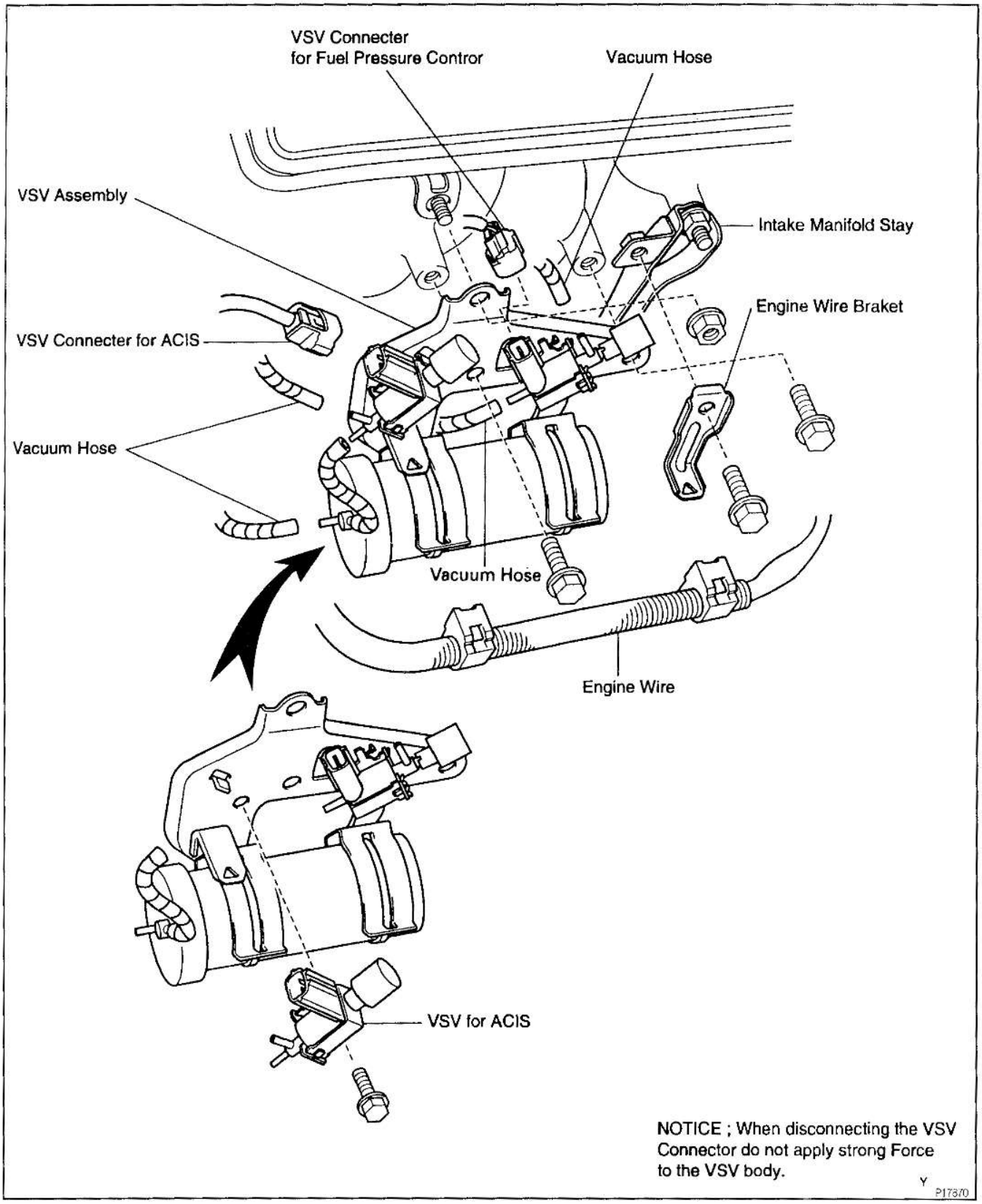
VSV FOR ACIS

EG



EG0E2-1Y

COMPONENTS FOR REMOVAL AND INSTALLATION

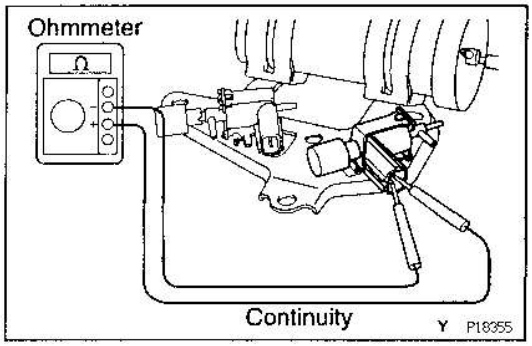


ACIS VSV INSPECTION

(See Components for Removal and Installation)

1. REMOVE VSV

EG



2. INSPECT VSV

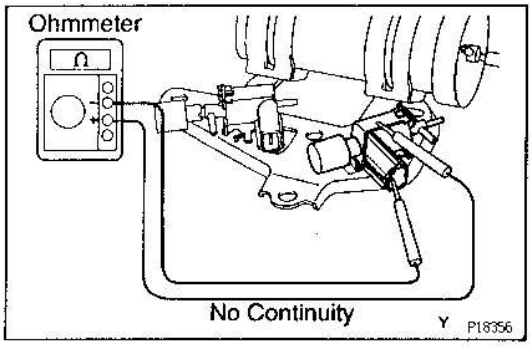
A. Inspect VSV for open circuit

Using an ohmmeter, check that there is resistance between the terminals.

Resistance:

33 – 39 Ω at 20°C (68°F)

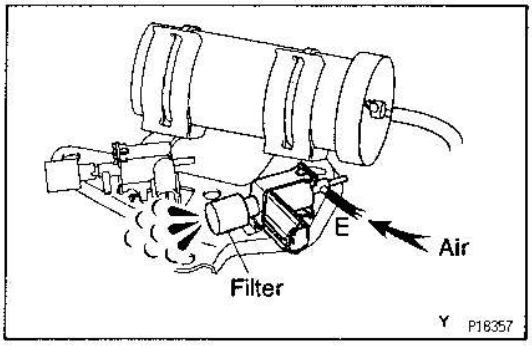
If there is no continuity, replace the VSV.



B. Inspect VSV for ground

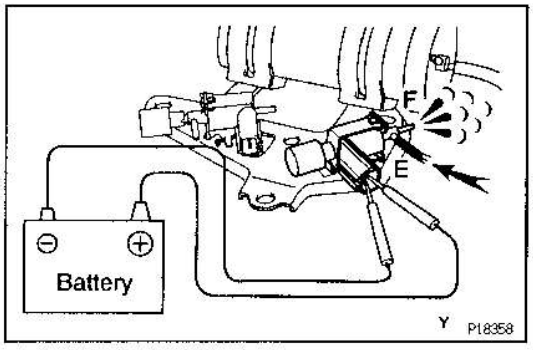
Using an ohmmeter, check that there is no continuity between each terminal and the body.

If there is continuity, replace the VSV.



C. Inspect VSV operation

(a) Check that air flow from port E to the filter.



(b) Apply battery voltage across the terminals.

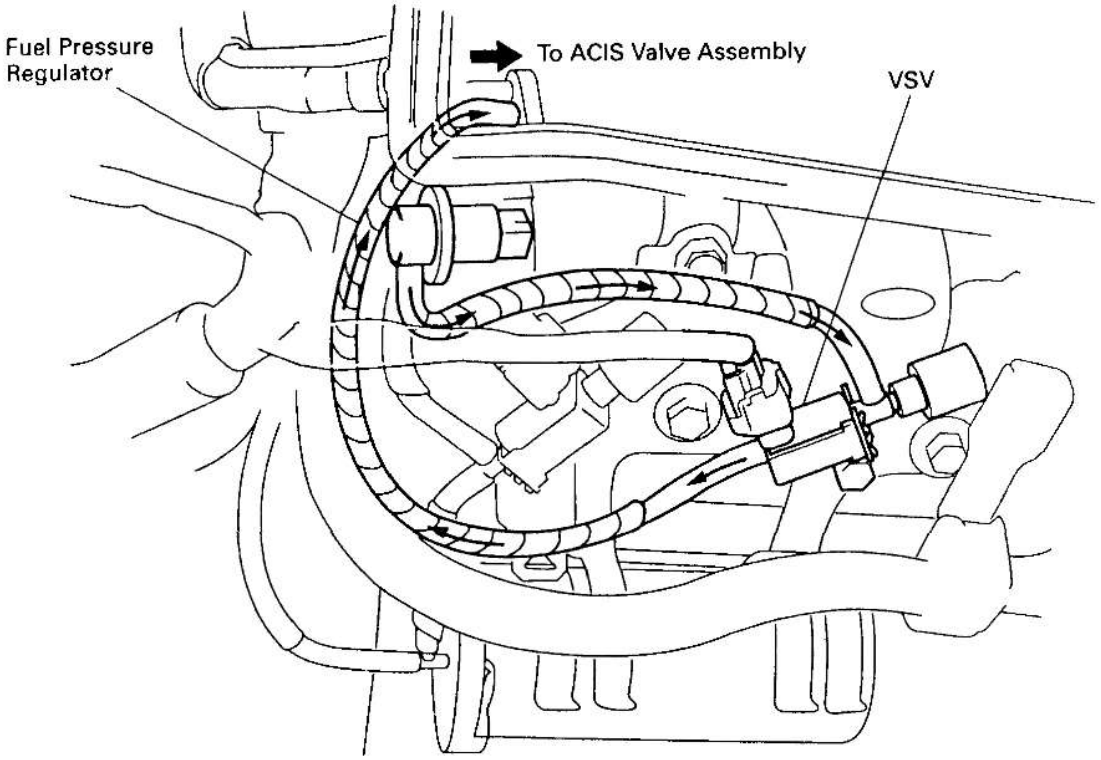
(c) Check that air flows from ports E to F.

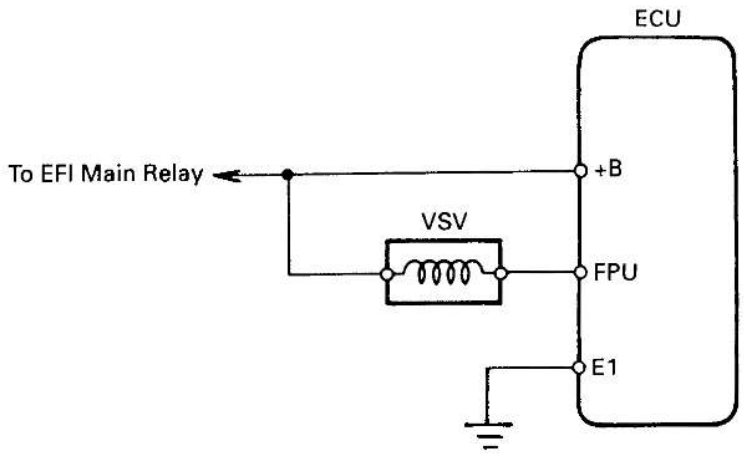
If operation is not as specified, replace the VSV.

3. REINSTALL VSV

VSV FOR FUEL PRESSURE CONTROL

EG0E2-24



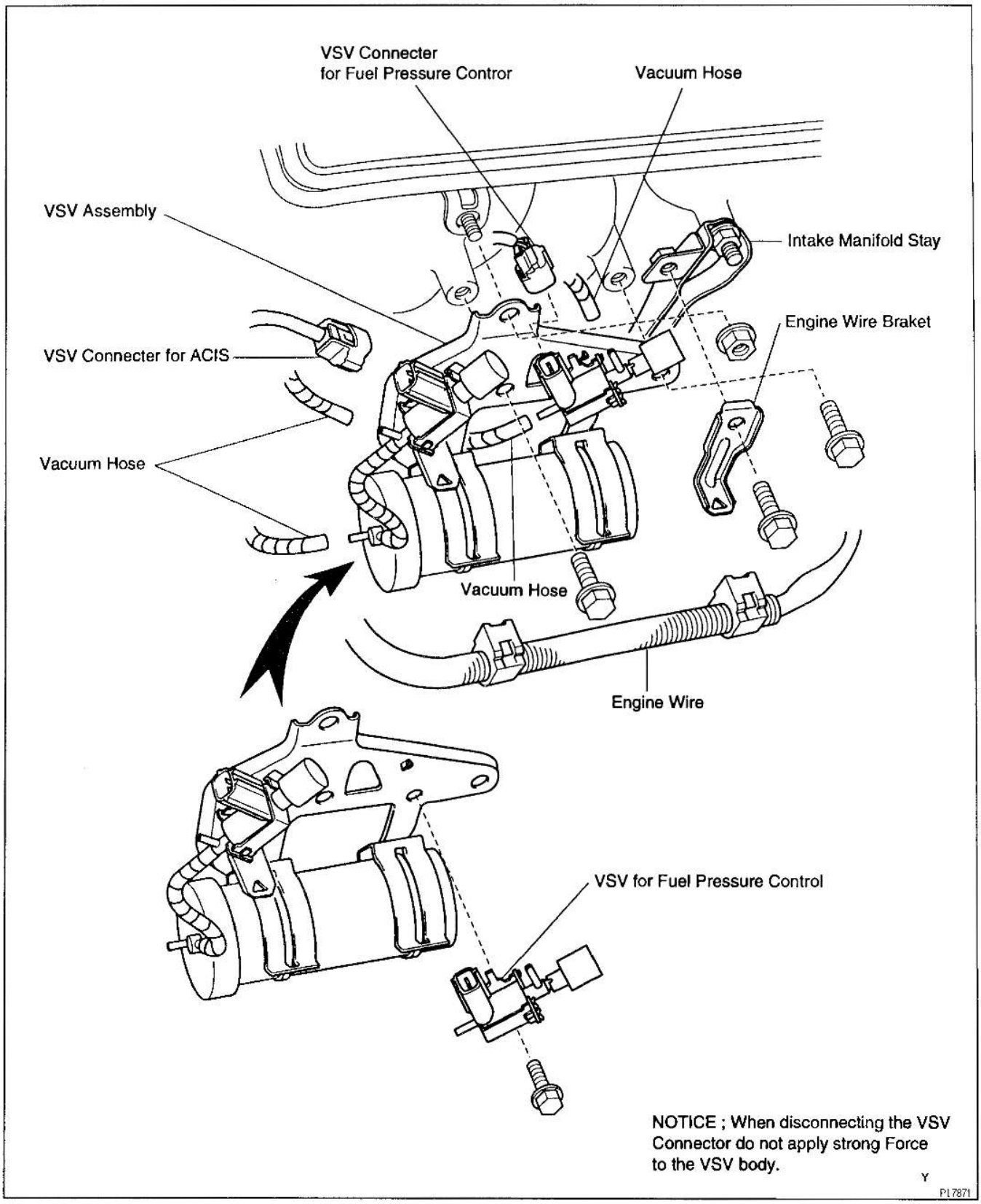


P18052
P01447

Z12800

E0063-21

COMPONENTS FOR REMOVAL AND INSTALLATION

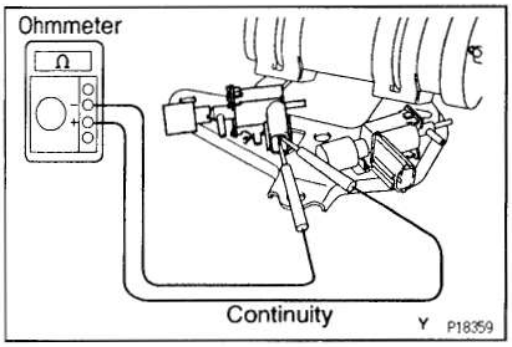


EG41Z-01

VSV INSPECTION

(See Components for Removal and Installation)

1. REMOVE VSV



2. INSPECT VSV

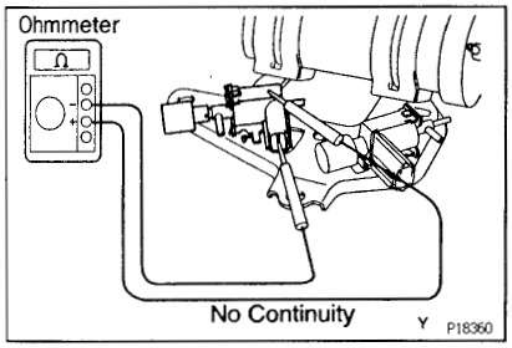
A. Inspect VSV for open circuit

Using an ohmmeter, check that there is resistance between the terminals.

Resistance:

33 – 39 Ω at 20°C (68°F)

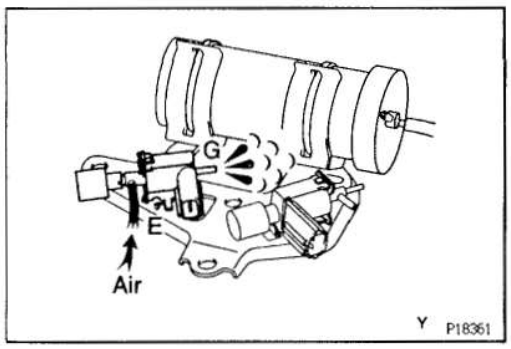
If there is no continuity, replace the VSV.



B. Inspect VSV for ground

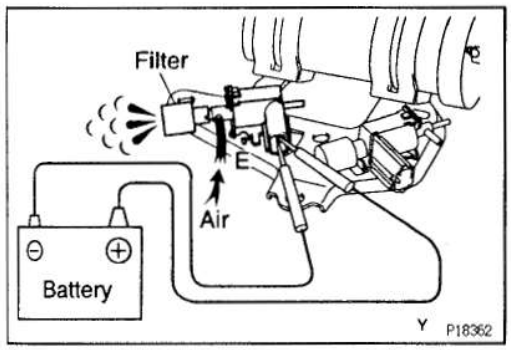
Using an ohmmeter, check that there is no continuity between each terminal and the body.

If there is continuity, replace the VSV.



C. Inspect VSV operation

(a) Check that air flows from ports E to G.



(b) Apply battery voltage across the terminals.

(c) Check that air flows from port E to the filter.

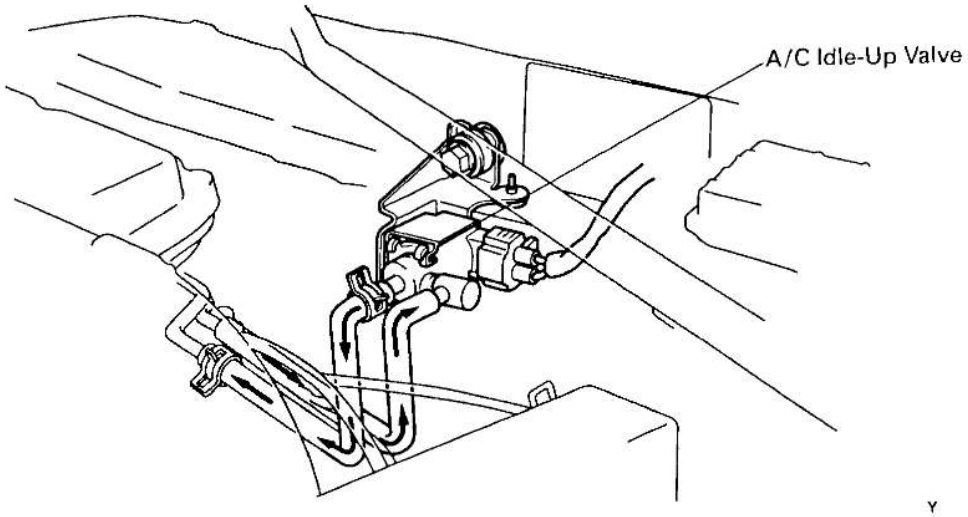
If operation is not as specified, replace the VSV.

3. REINSTALL VSV

A/C IDLE–UP VALVE

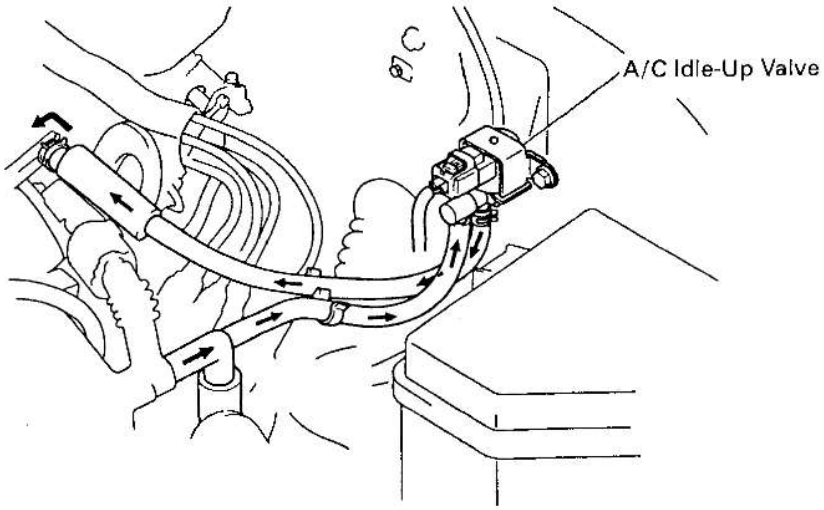
EG

ST202

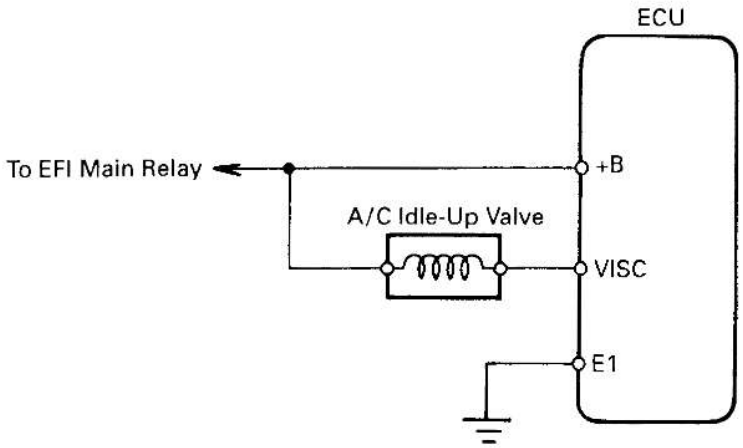


Y

SW20



Y

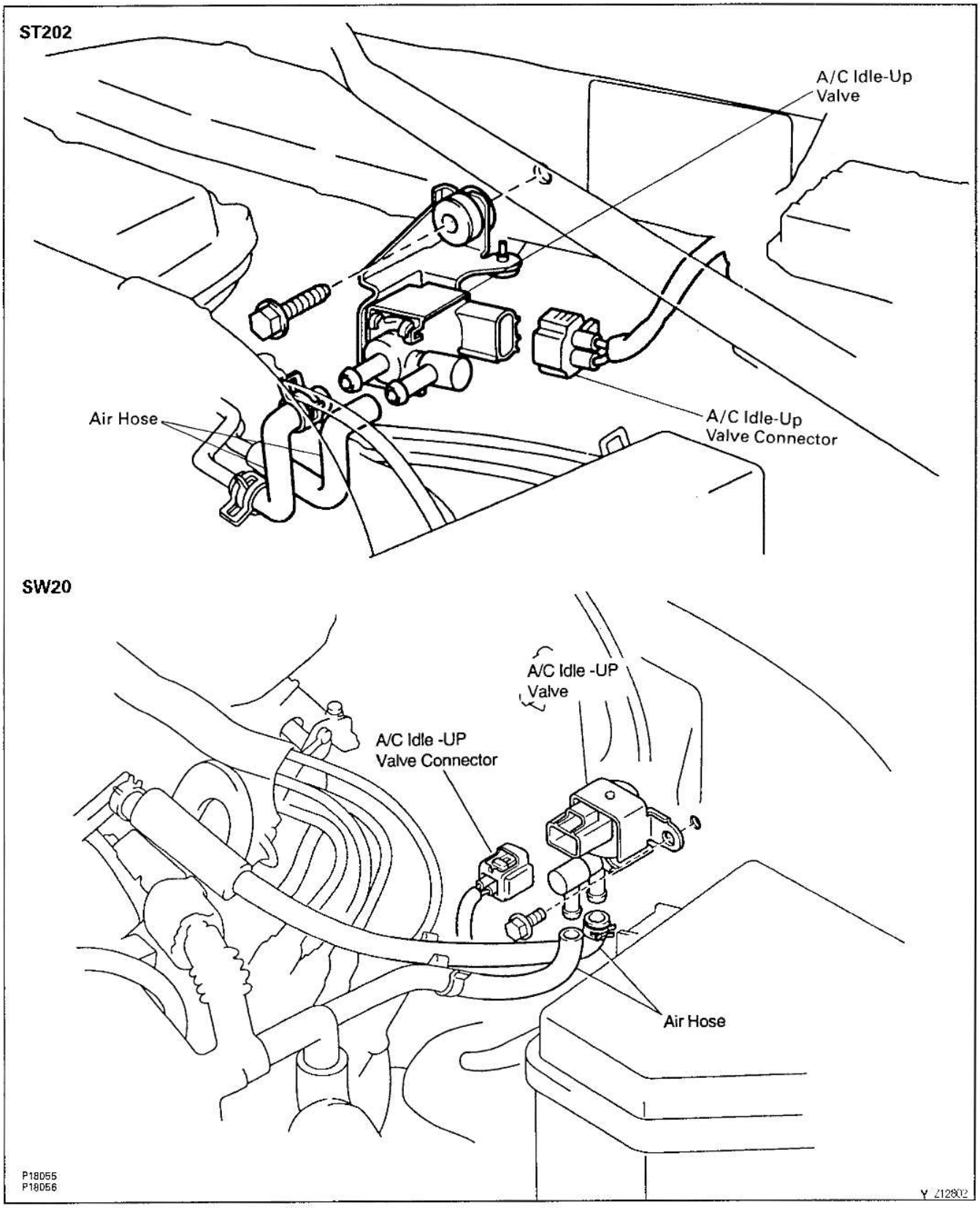


P18053
P18054
P01447

Z12801

EQ0E3-20

COMPONENTS FOR REMOVAL AND INSTALLATION



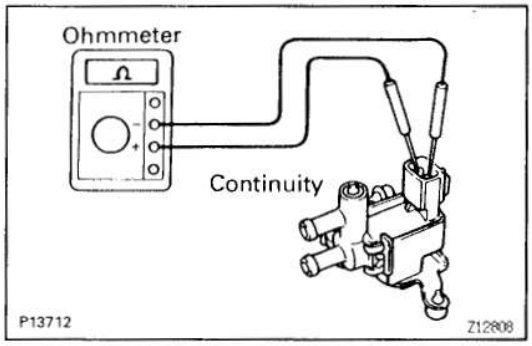
EG2WE-01

A/C IDLE–UP VALVE INSPECTION

(See Components for Removal and Installation)

1. REMOVE IDLE–UP VALVE

EG



2. INSPECT IDLE–UP VALVE

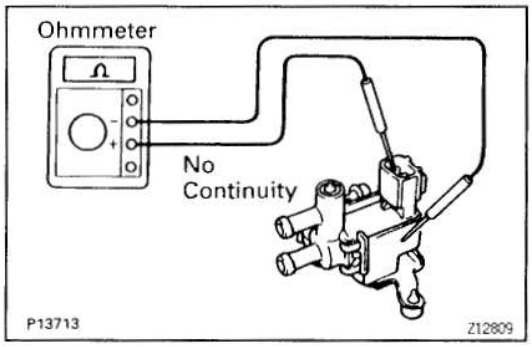
A. Inspect idle–up valve for open circuit

Using an ohmmeter, check that there is resistance between the terminals.

Resistance:

30 – 34 Ω at 20°C (68°F)

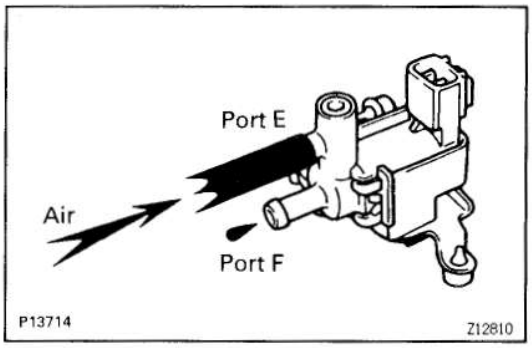
If there is no continuity, replace the idle–up valve.



B. Inspect idle–up valve for ground

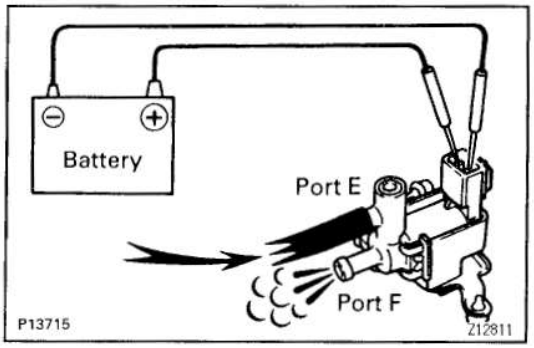
Using an ohmmeter, check that there is no continuity between each terminal and the body.

If there is continuity, replace the idle–up valve.



C. Inspect idle–up valve operation

(a) Check that air does not flow from port E to port F.



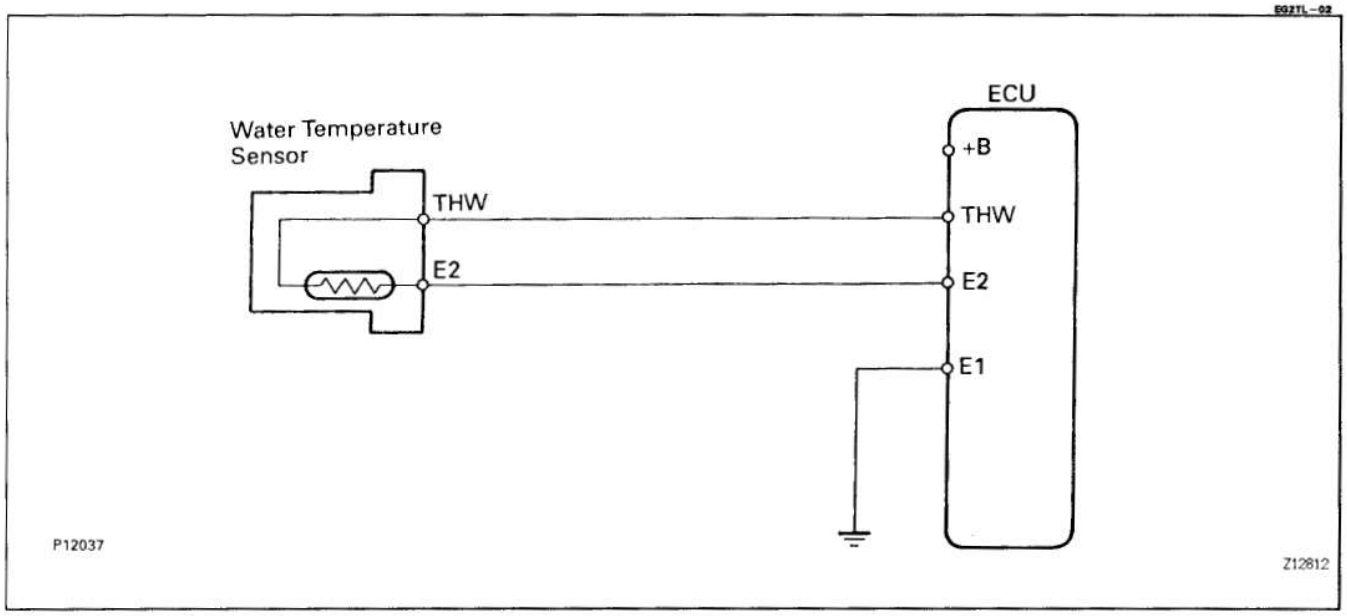
(b) Apply battery voltage across the terminals.

(c) Check that air flows from port E to port F.

If operation is not as specified, replace the idle–up valve.

3. REINSTALL IDLE–UP VALVE

WATER TEMPERATURE SENSOR

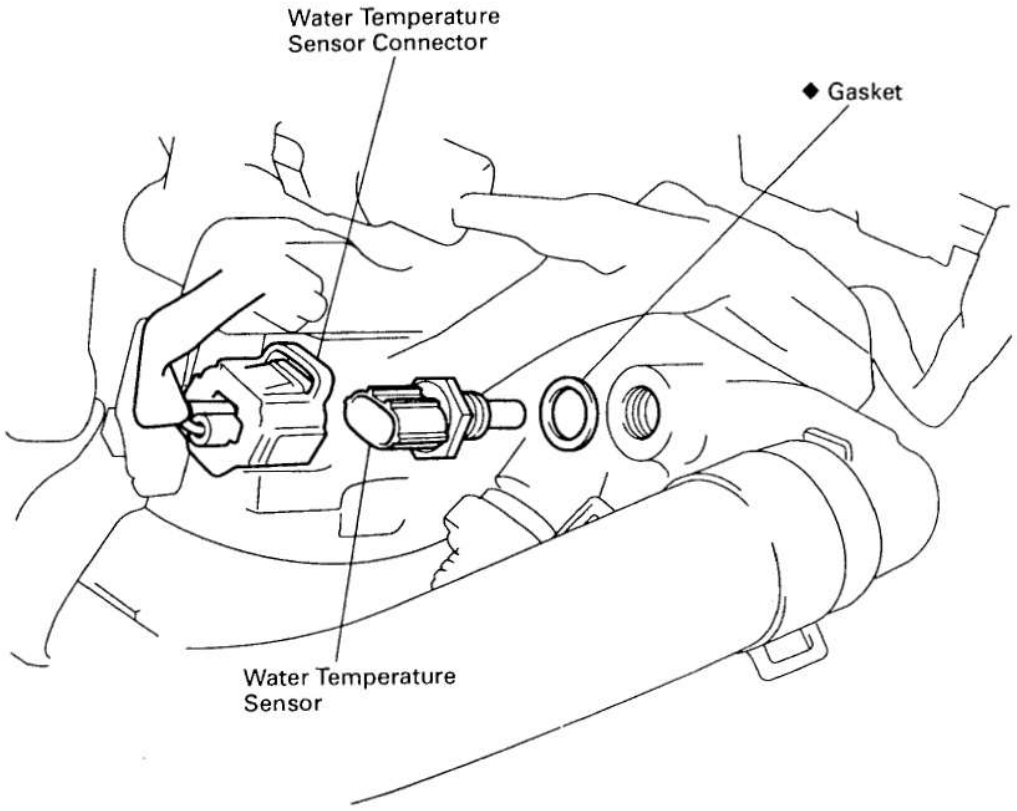


EGGYY-01

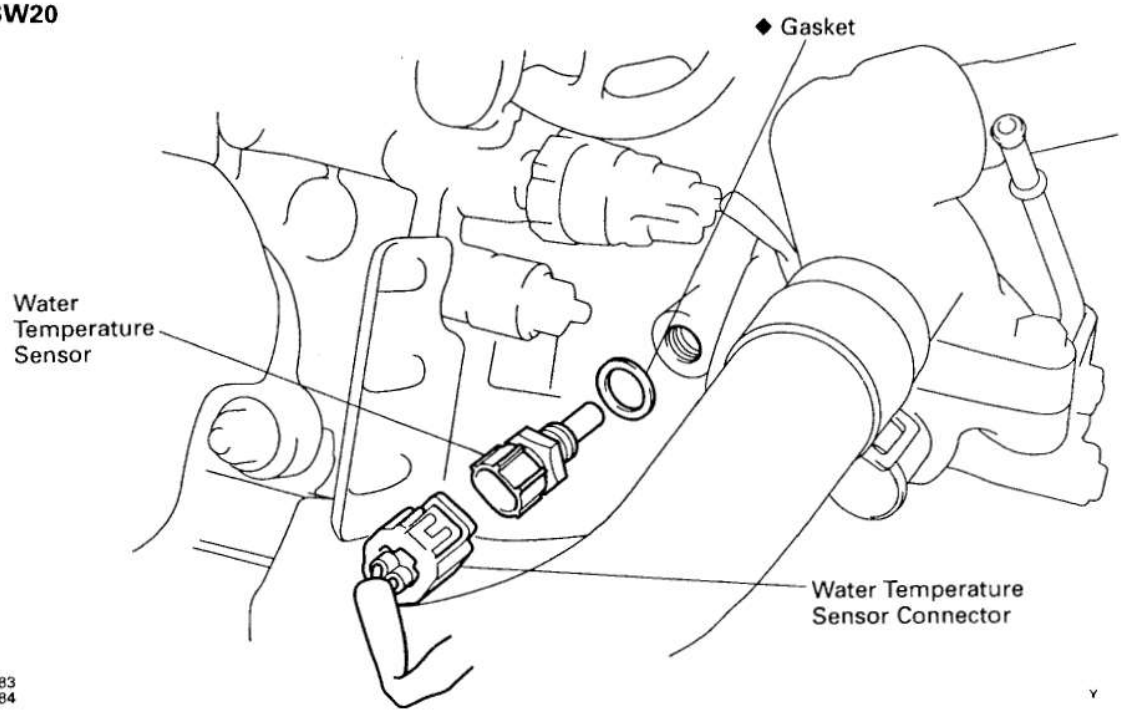
COMPONENTS FOR REMOVAL AND INSTALLATION

EG

ST202



SW20



P17883
P17884

◆ Non-reusable part

Z12910

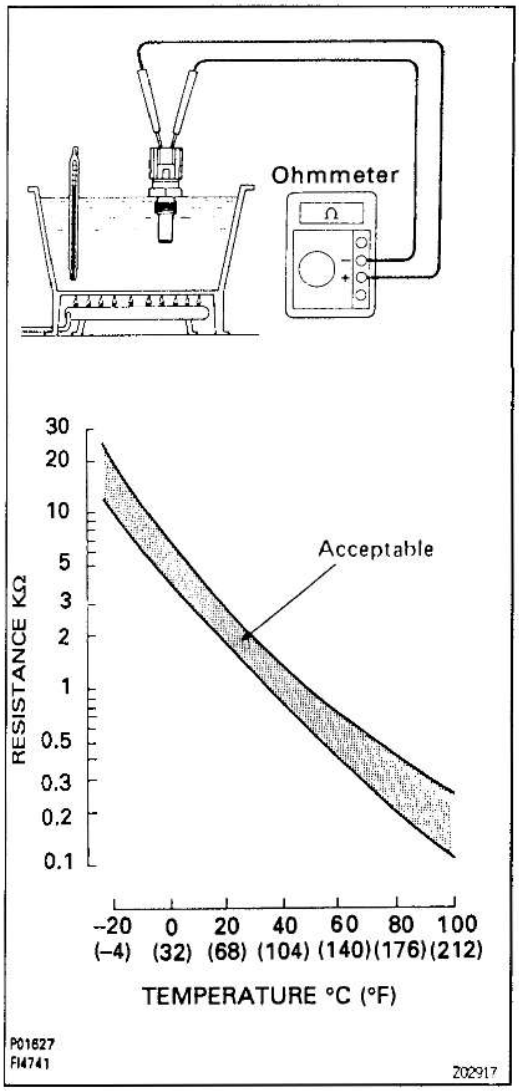
EG3MV–03

WATER TEMPERATURE SENSOR INSPECTION

(See Components for Removal and Installation)

1. **DRAIN ENGINE COOLANT**
2. **REMOVE WATER TEMPERATURE SENSOR**

EG



3. **INSPECT WATER TEMPERATURE SENSOR**

Using an ohmmeter, measure the resistance between the terminals.

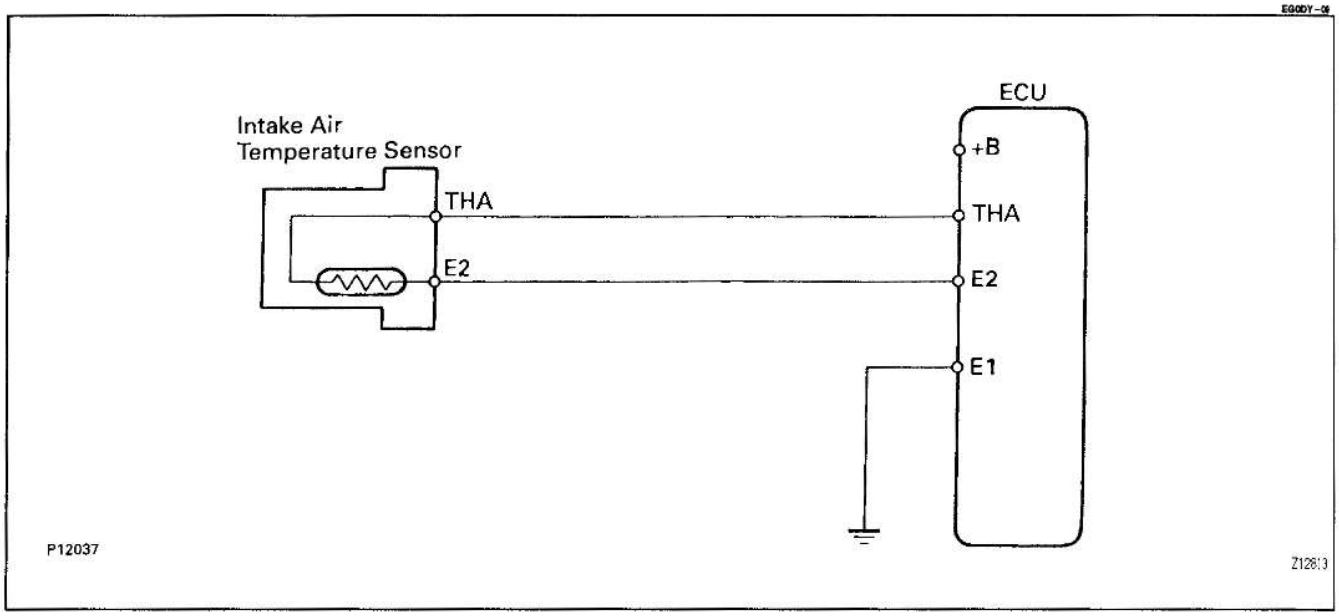
Resistance:

Refer to the graph

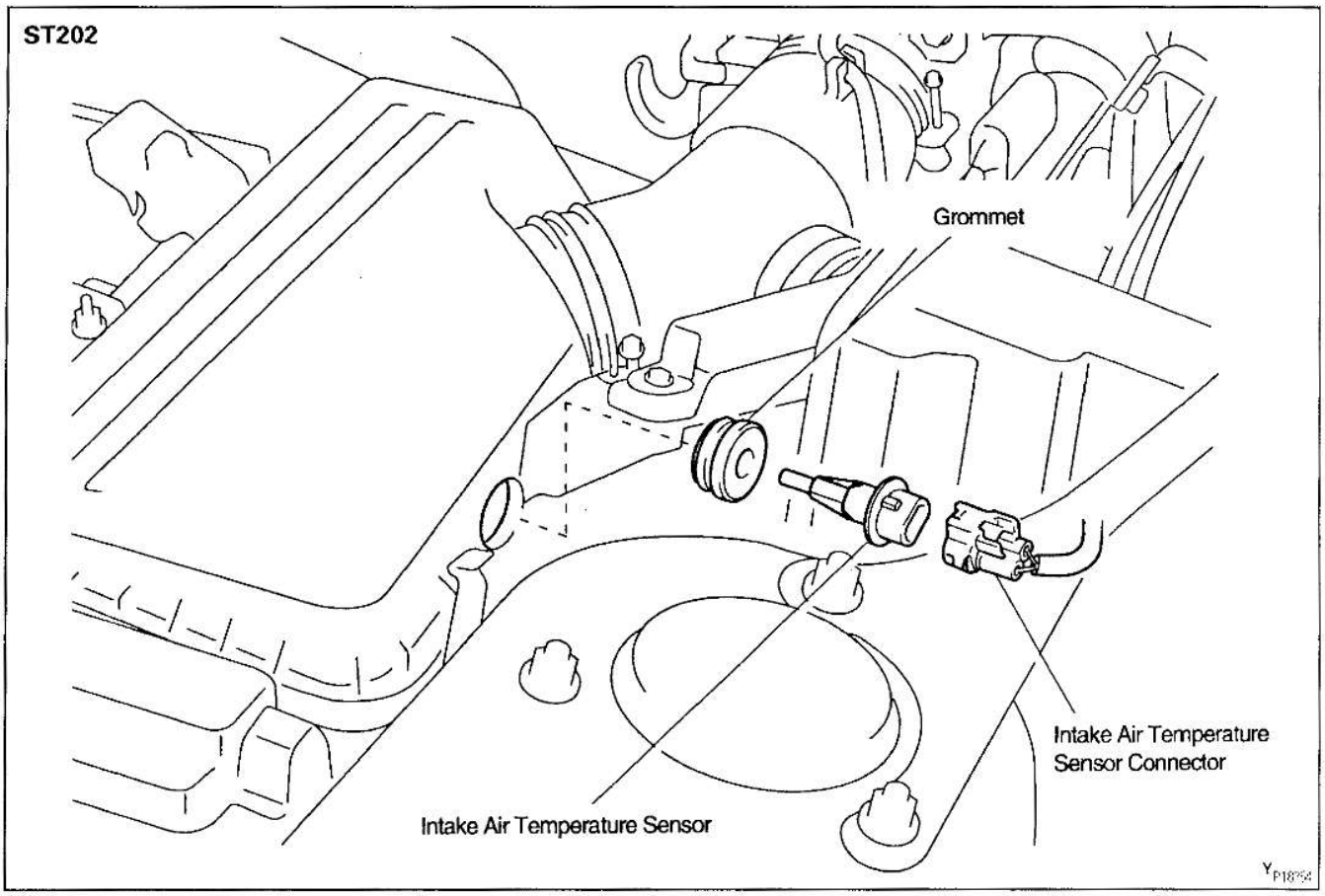
If the resistance is not as specified, replace the water temperature sensor.

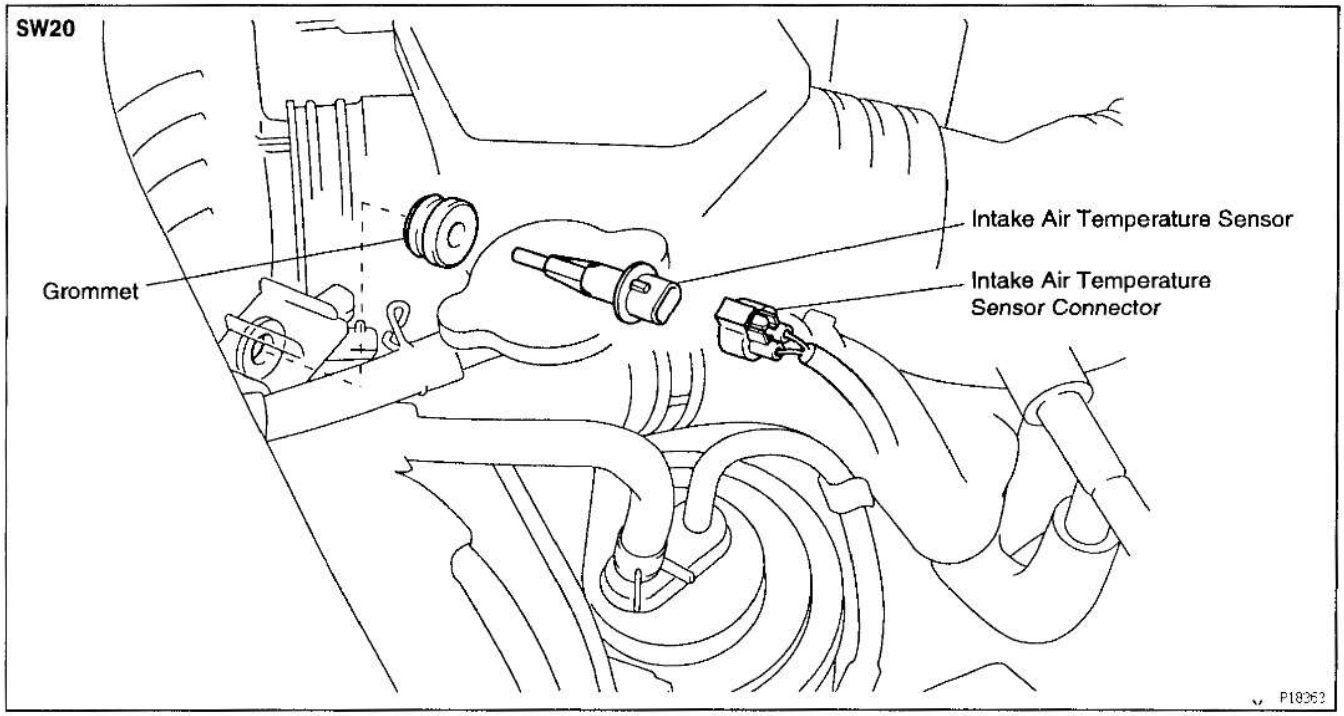
4. **REINSTALL WATER TEMPERATURE SENSOR**
5. **REFILL WITH ENGINE COOLANT**

INTAKE AIR TEMPERATURE SENSOR

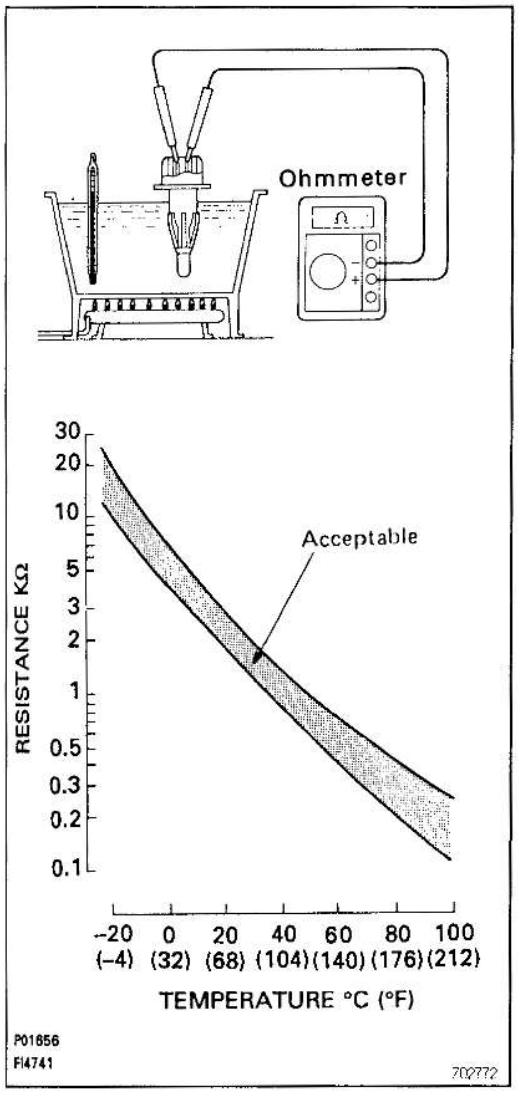


COMPONENTS FOR REMOVAL AND INSTALLATION





EG



EG421 - 01

INTAKE AIR TEMPERATURE SENSOR INSPECTION

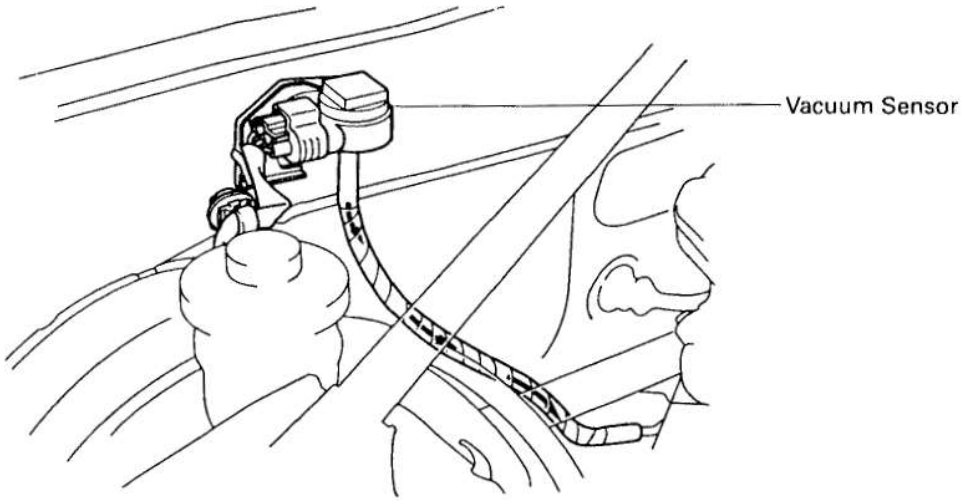
(See Components for Removal and Installation)

1. **REMOVE INTAKE AIR TEMPERATURE SENSOR**
2. **INSPECT INTAKE AIR TEMPERATURE SENSOR**
   Using an ohmmeter, measure the resistance between the terminals.
   Resistance:
   Refer to the graph
   If the resistance is not as specified, replace the intake air temperature sensor.
3. **REINSTALL INTAKE AIR TEMPERATURE SENSOR**

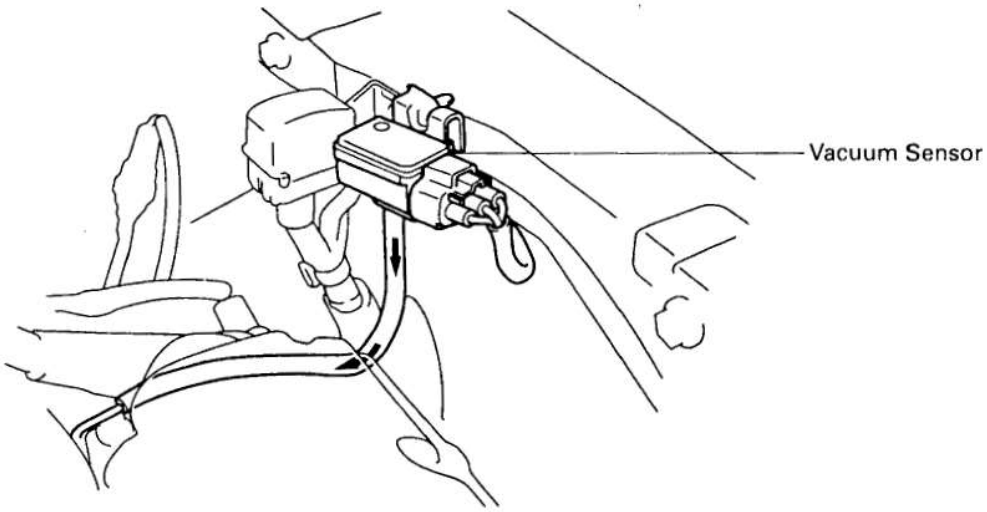
VACUUM SENSOR

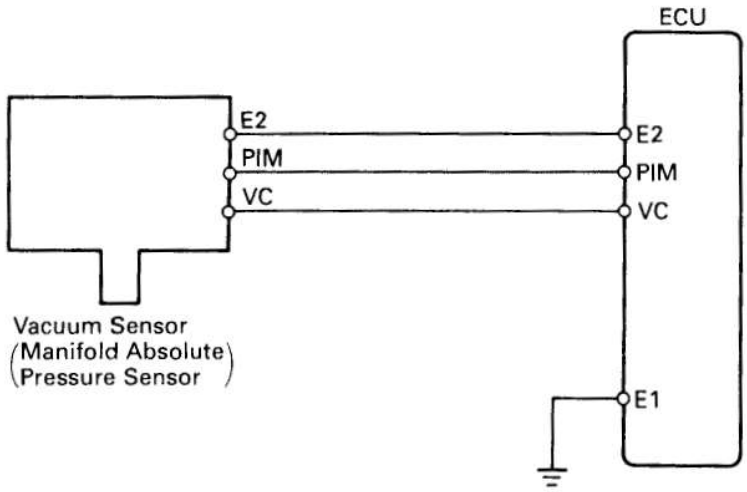
EG

ST202



SW20





P18057
P18058
FI1226

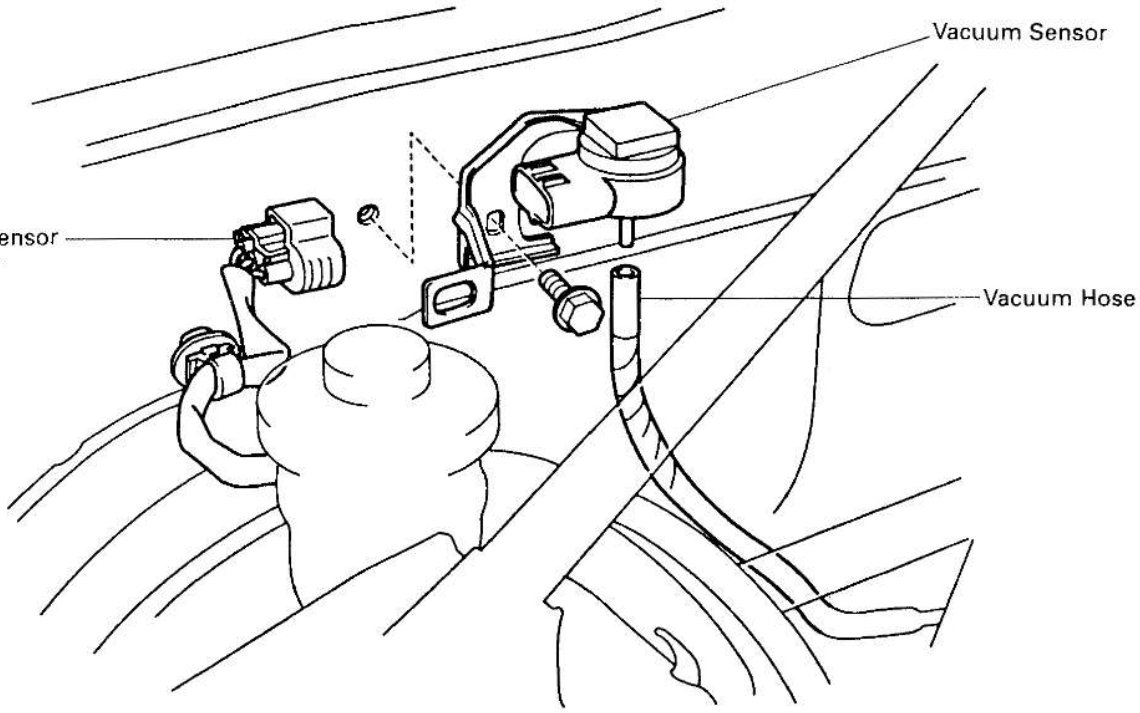
Z12804

EG14F-DH

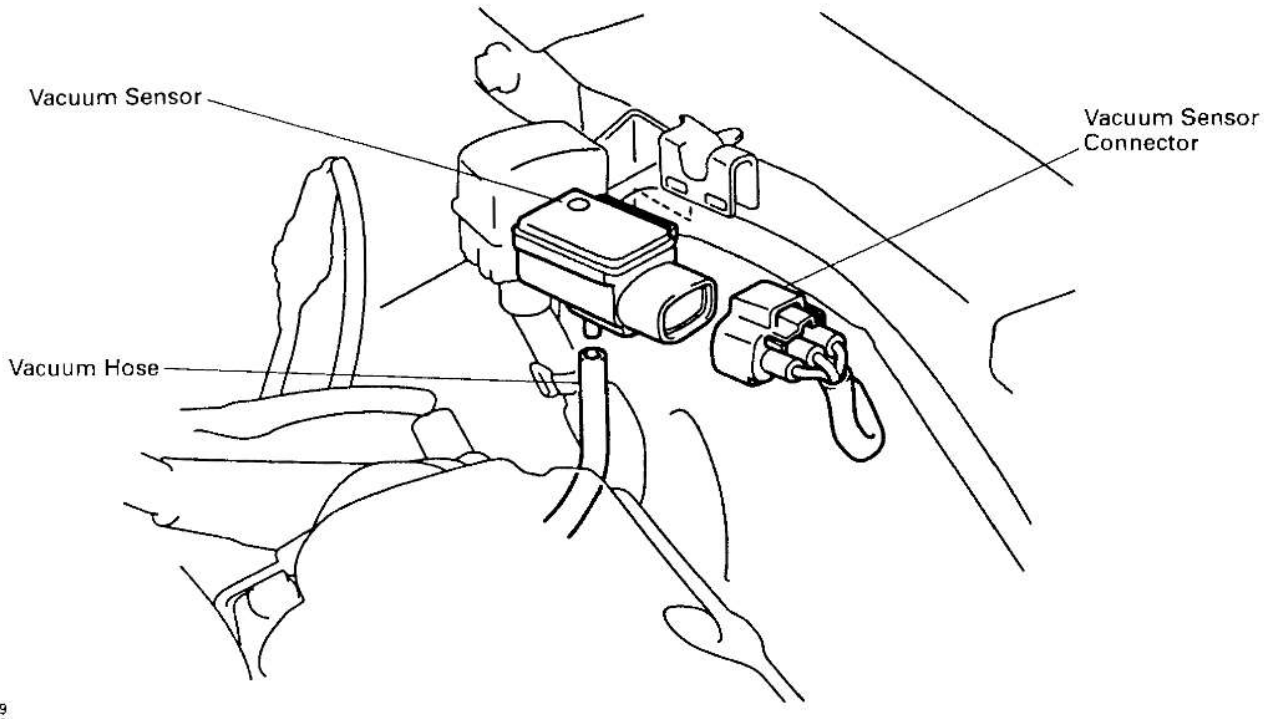
COMPONENTS FOR REMOVAL AND INSTALLATION

EG

ST202



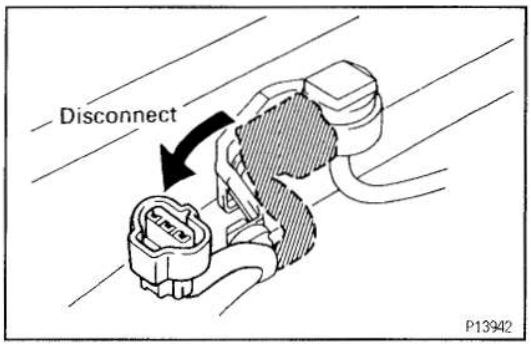
SW20



P18059
P18060

Z12805

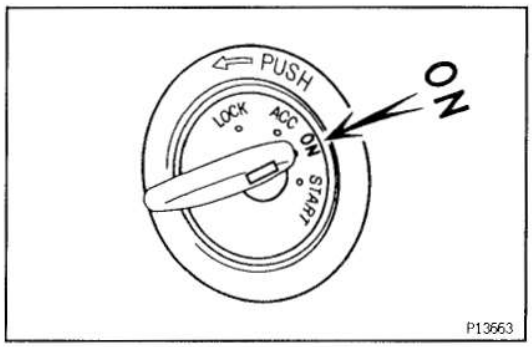
VACUUM SENSOR INSPECTION



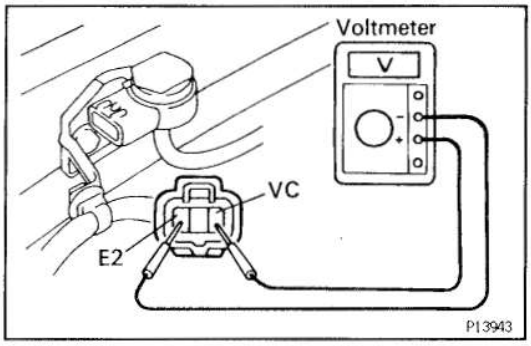
(See Components for Removal and Installation)

1. INSPECT POWER SOURCE VOLTAGE OF VACUUM SENSOR

(a) Disconnect the vacuum sensor connector.



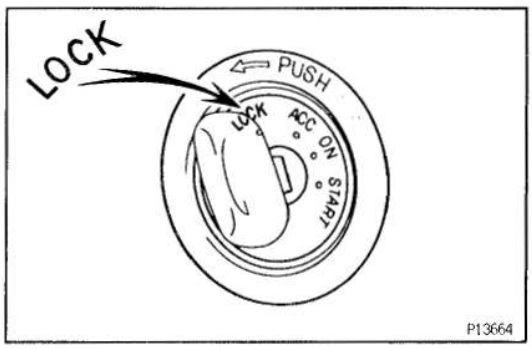
(b) Turn the ignition switch ON.



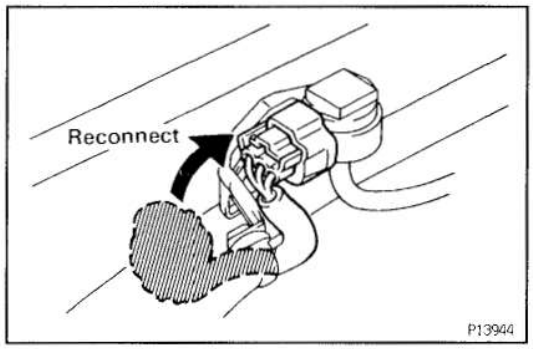
(c) Using a voltmeter, measure the voltage between connector terminals VC and E2 of the wiring harness side.

Voltage:

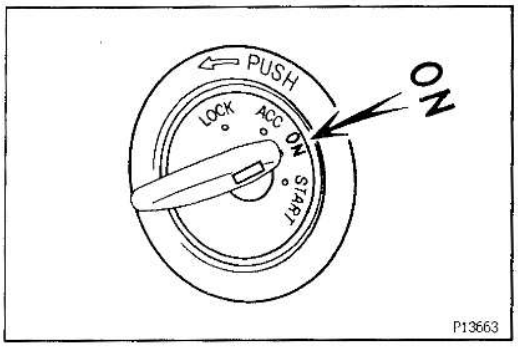
4.5 – 5.5 V



(d) Turn the ignition switch to LOCK.



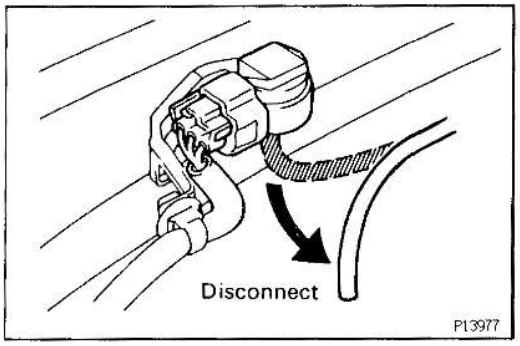
(e) Reconnect the vacuum sensor connector.



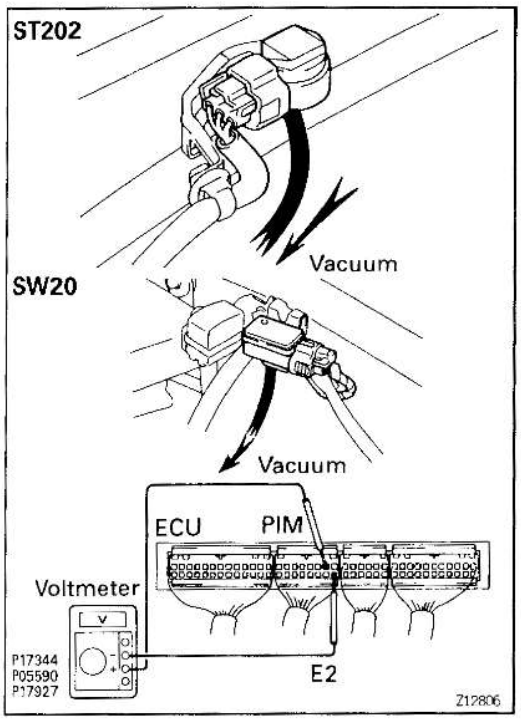
2. INSPECT POWER OUTPUT OF VACUUM SENSOR

(a) Turn the ignition switch ON.

EG



(b) Disconnect the vacuum hose from the vacuum sensor.



(c) Connect a voltmeter to terminals PIM and E2 of the ECU, and measure the output voltage under ambient atmospheric pressure.

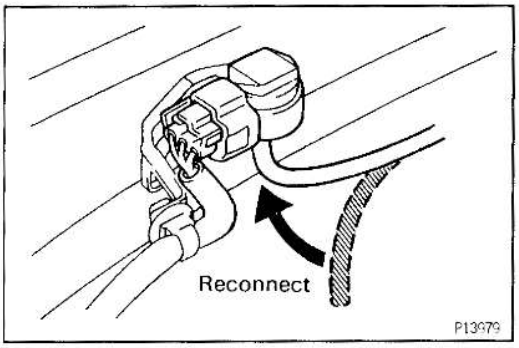
(d) Apply vacuum to the vacuum sensor in 13.3 kPa (100 mmHg, 3.94 in.Hg) segments to 66.7 kPa (500 mmHg, 19.69 in.Hg).

(e) Measure the voltage drop from step (c) above for each segment.

Voltage drop

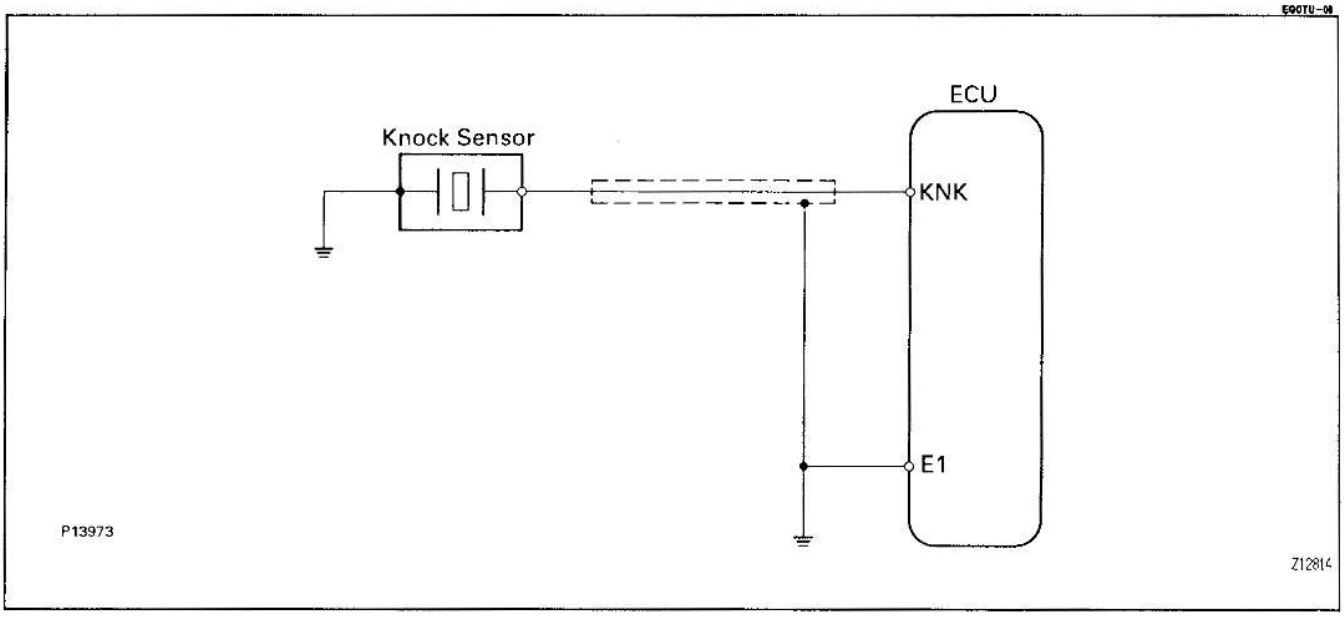
Applied Vacuum kPa (mmHg, in.Hg)	13.3 (100, 3.94)	26.7 (200, 7.87)	40.0 (300, 11.81)	53.5 (400, 15.75)	66.7 (500, 19.69)
Voltage drop V	0.3 – 0.5	0.7 – 0.9	1.1 – 1.3	1.5 – 1.7	1.9 – 2.1

V00494

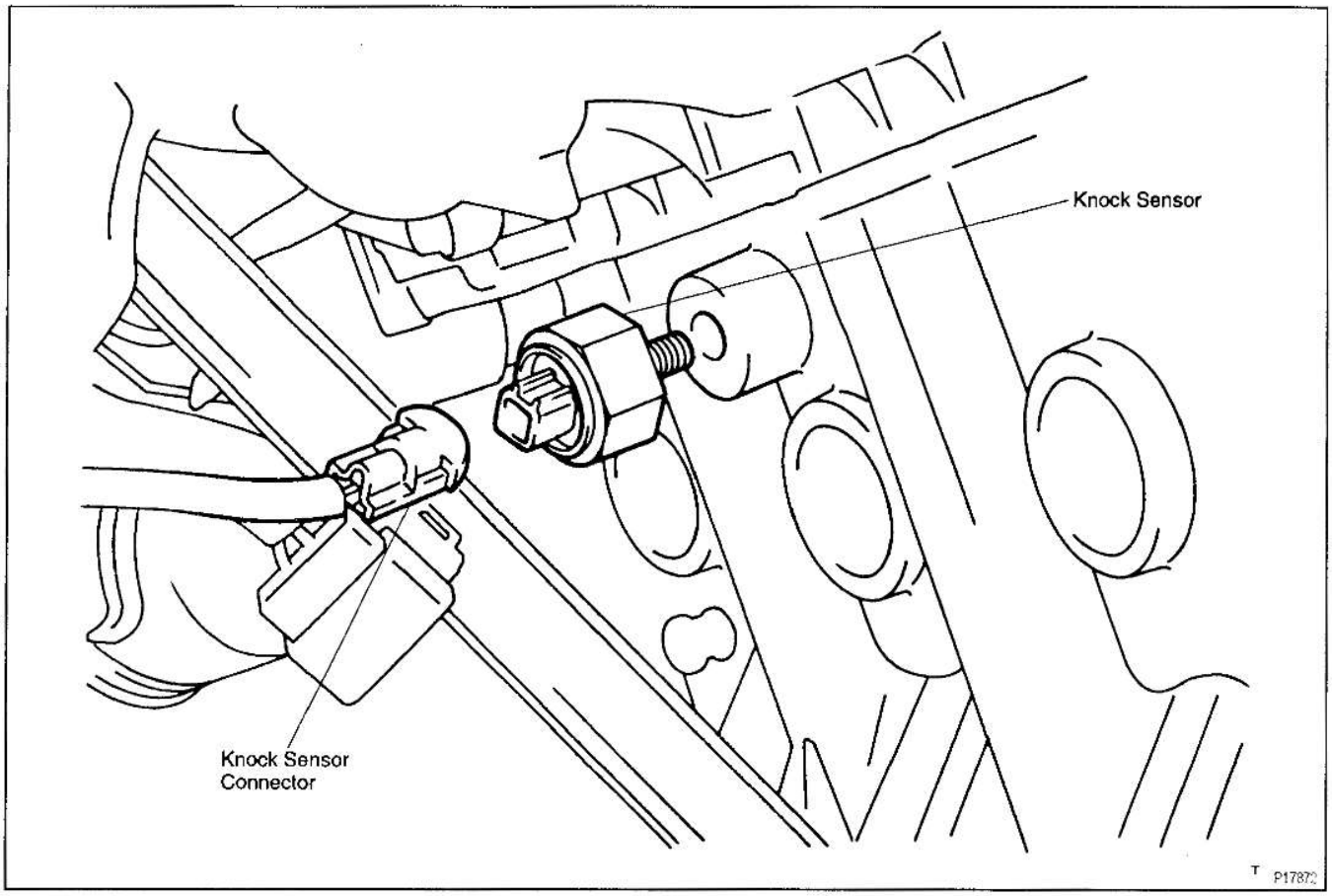


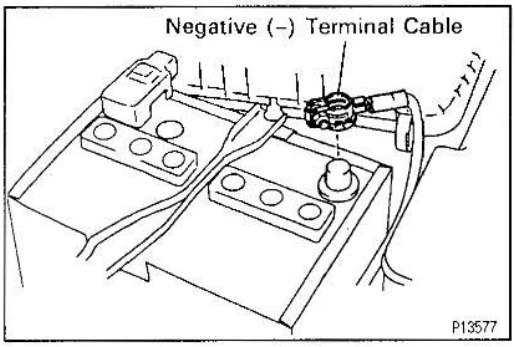
(f) Reconnect the vacuum hose to the vacuum sensor.

KNOCK SENSOR



COMPONENTS FOR REMOVAL AND INSTALLATION



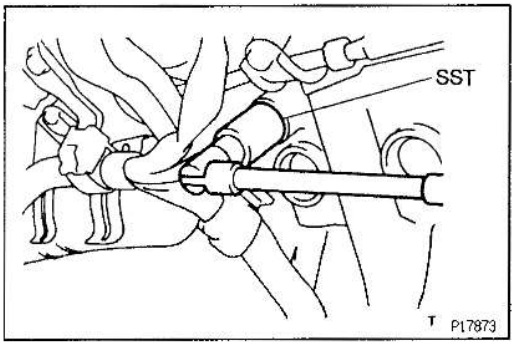


EG3M2–03

KNOCK SENSOR INSPECTION

(See Components for Removal and Installation)

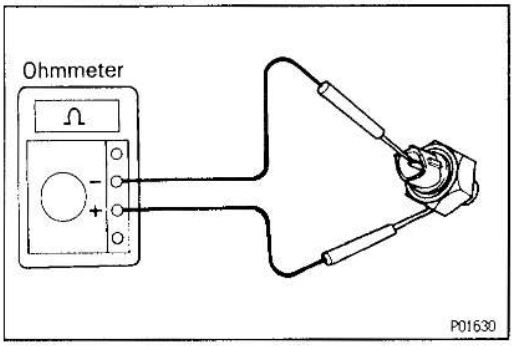
1. DISCONNECT NEGATIVE (–) TERMINAL CABLE FROM BATTERY



2. REMOVE KNOCK SENSOR

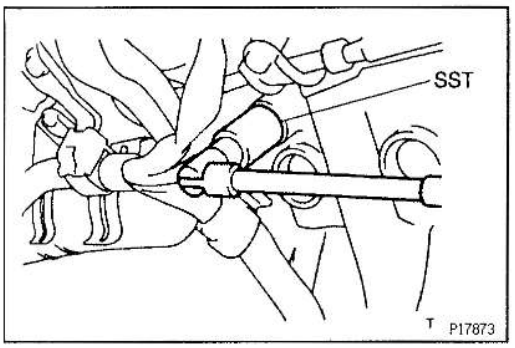
(a) Disconnect the knock sensor connector.

(b) Using SST, remove the knock sensor.
SST 09816–30010



3. INSPECT KNOCK SENSOR

Using an ohmmeter, check that there is no continuity between the terminal and body.
If there is continuity, replace the sensor.

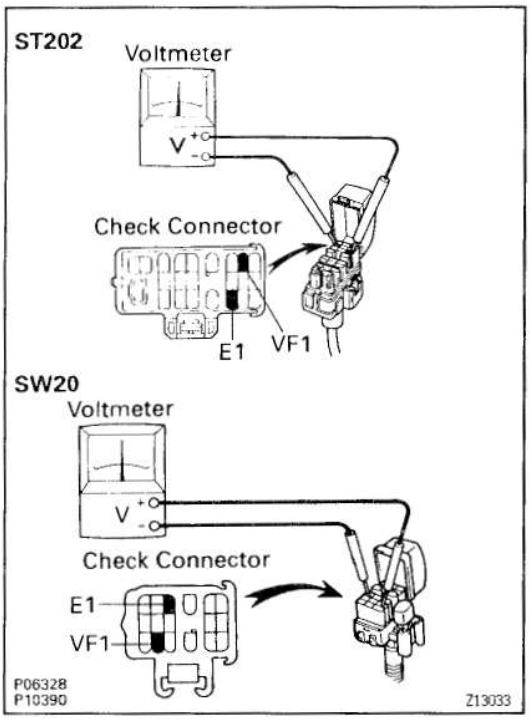


4. REINSTALL KNOCK SENSOR

(a) Using SST, install the knock sensor.
SST 09816–30010
Torque: 44 N·m (450 kgf·cm, 33 ft·lbf)

(b) Connect the knock sensor connector.

5. RECONNECT NEGATIVE (–) TERMINAL CABLE T BATTERY

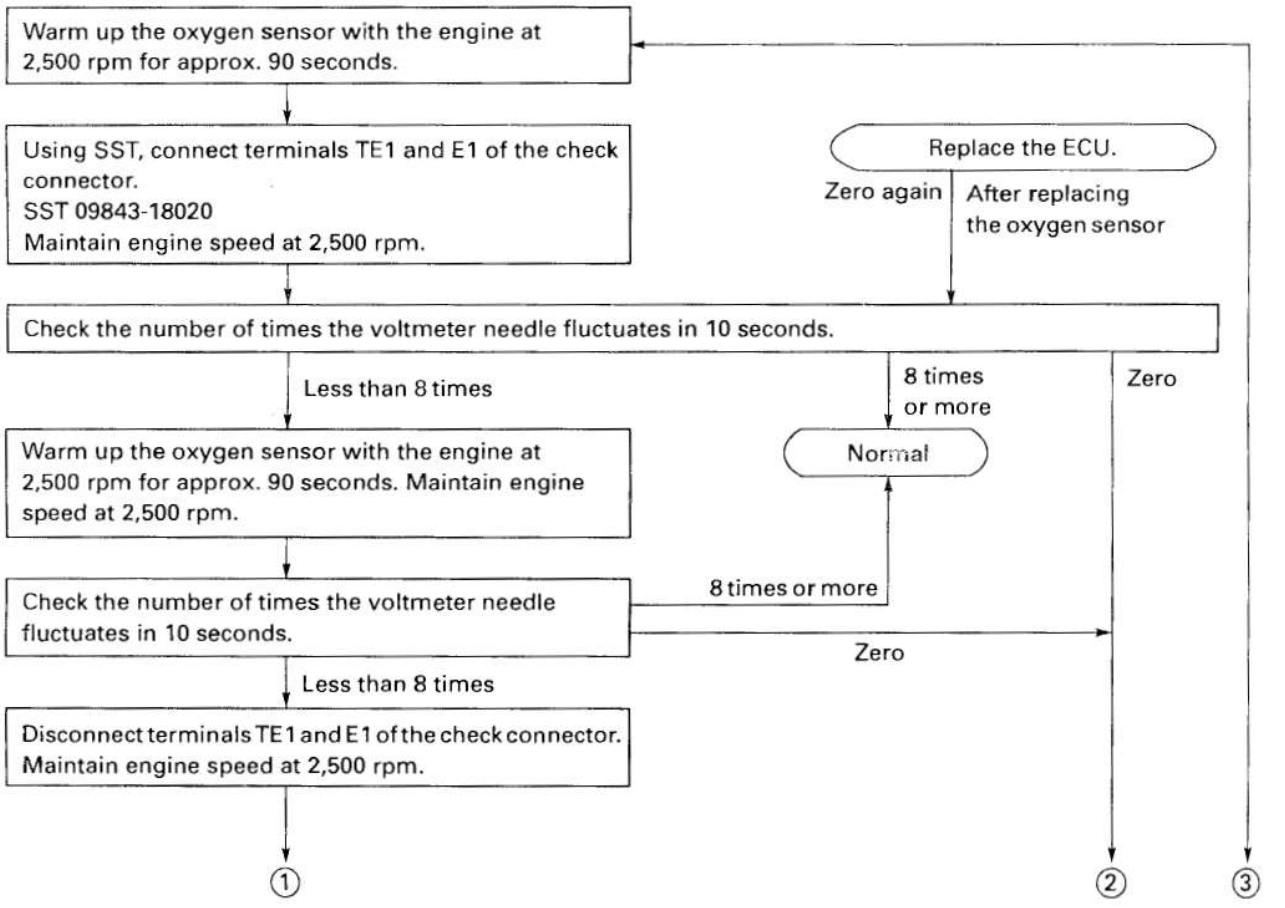


OXYGEN SENSOR

OXYGEN SENSOR INSPECTION

EG438-01

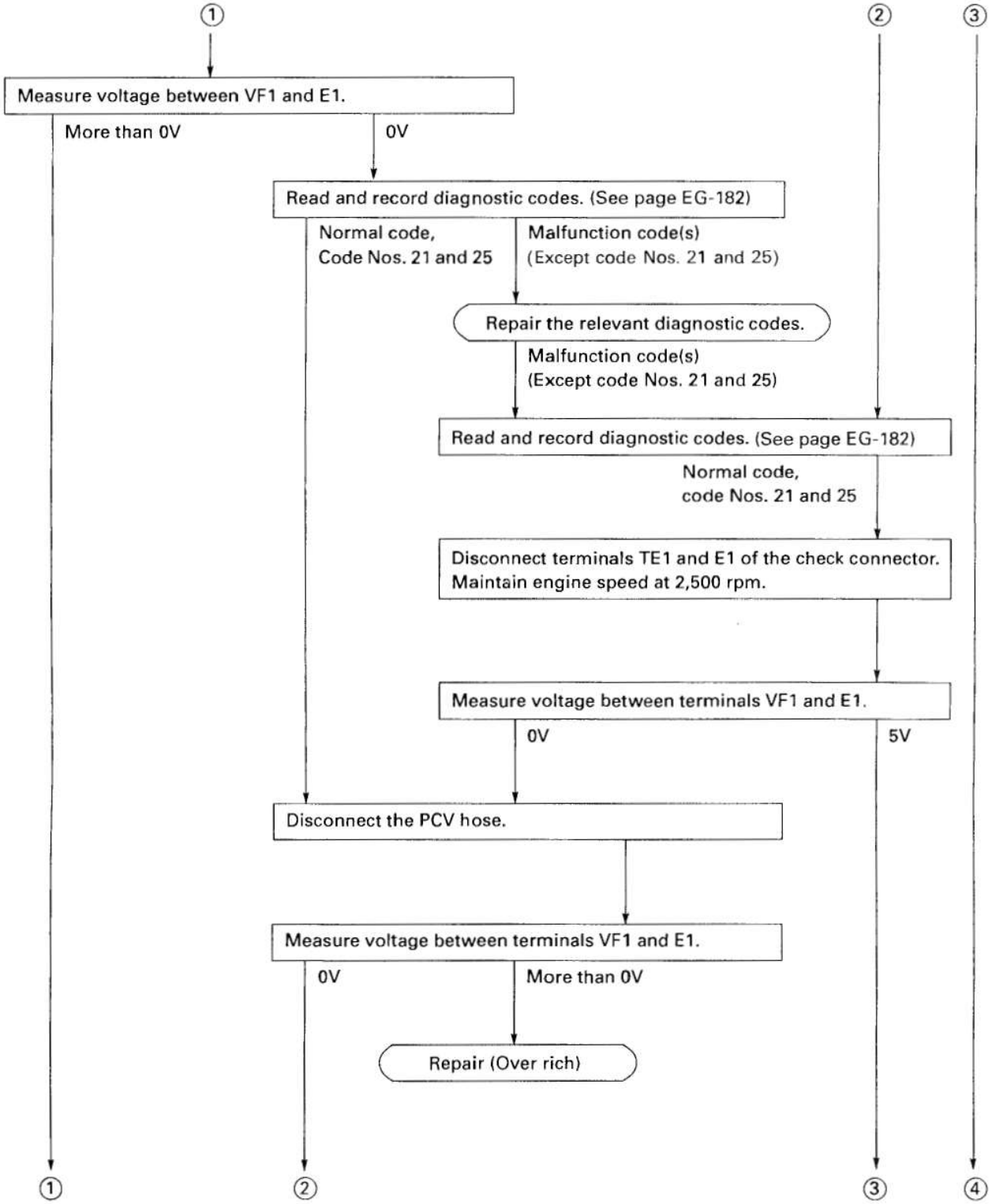
1. **WARM UP ENGINE**
   Allow the engine to reach normal operating temperature.
2. **INSPECT FEEDBACK VOLTAGE**
   Connect the positive (+) probe of a voltmeter to terminal VF1 of the check connector, and negative (−) probe to terminal E1. Perform the test as follows:



CONTINUED ON PAGE EG-287

V05430

CONTINUED FROM PAGE EG-286

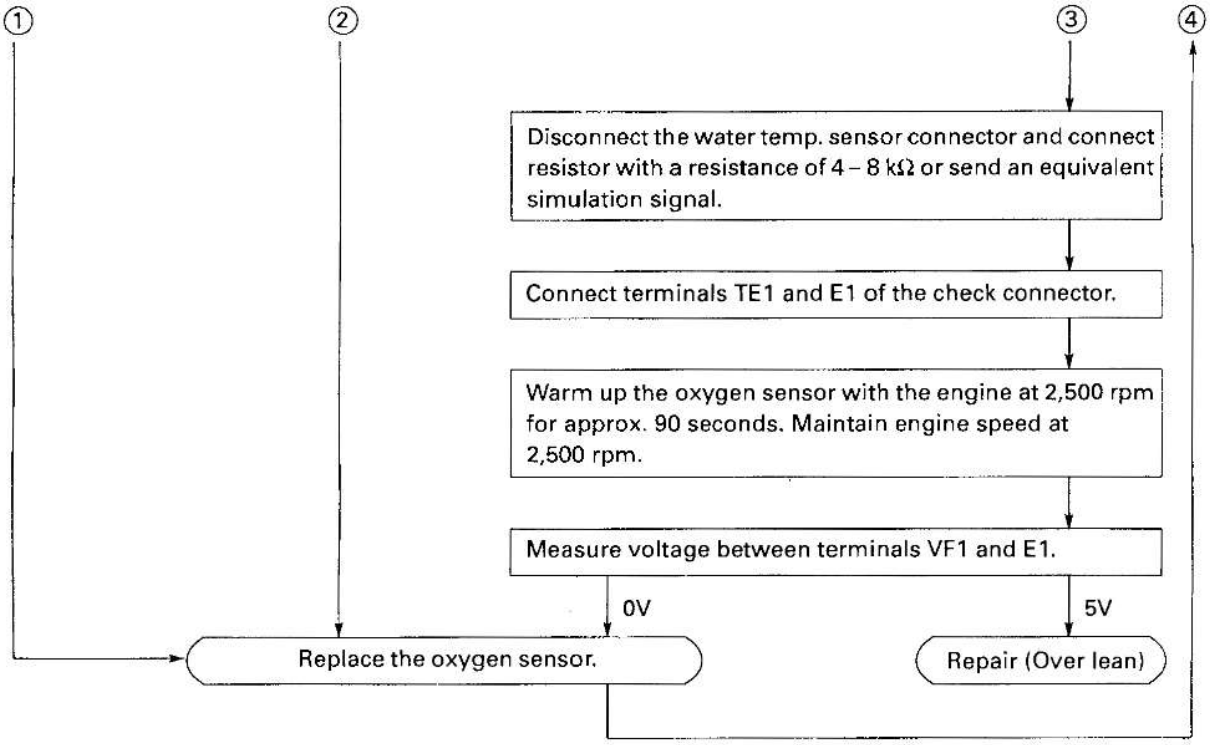


CONTINUED ON PAGE EG-288

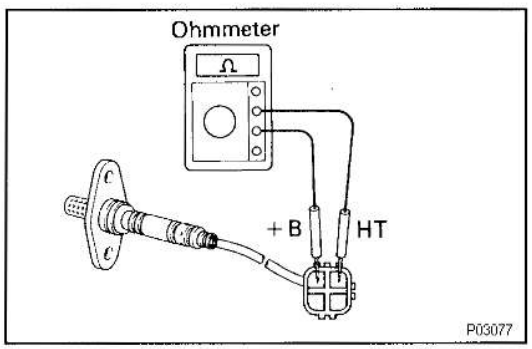
V05429

CONTINUED FROM PAGE EG-287

EG



V05031



3. INSPECT HEATER RESISTANCE OF OXYGEN SENSOR

Using an ohmmeter, measure the resistance between the terminal +B and HT.

Resistance (Cold):

5.1 – 6.3 Ω at 20°C(68°F)

If the resistance is not as specified, replace the sensor.

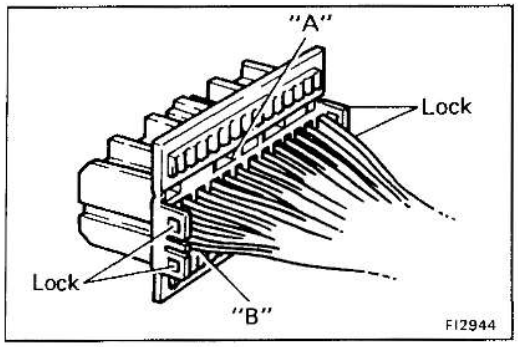
ECU

ECU INSPECTION

EG43Q-01

HINT: The EFI circuit can be checked by measuring the resistance and voltage at the wiring connectors of the ECU.

EG

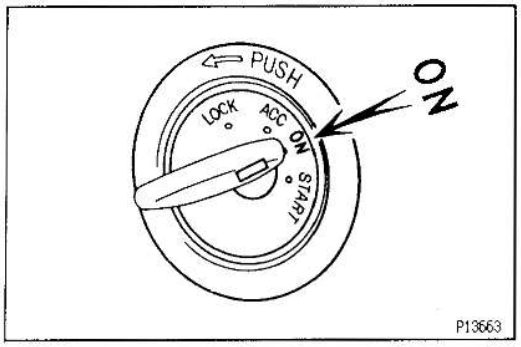


1. PREPARATION

(a) Disconnect the 3 connectors from the ECU.

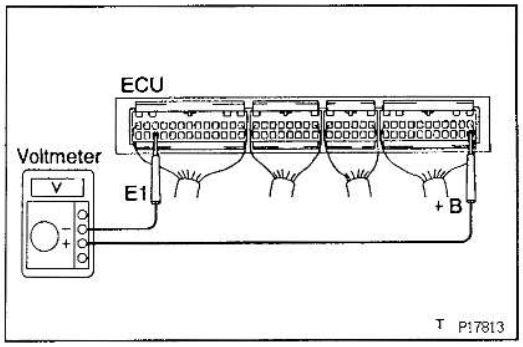
(b) Remove the locks as shown in the illustration so that the tester probe(s) can easily come in.
NOTICE: Pay attention to sections A and B in the illustration which can easily broken.

(c) Reconnect the 3 connectors to the ECU.



2. INSPECT VOLTAGE OF ECU

(a) Turn the ignition switch ON.



(b) Measure the voltage between each terminal of the wiring connectors.
HINT:

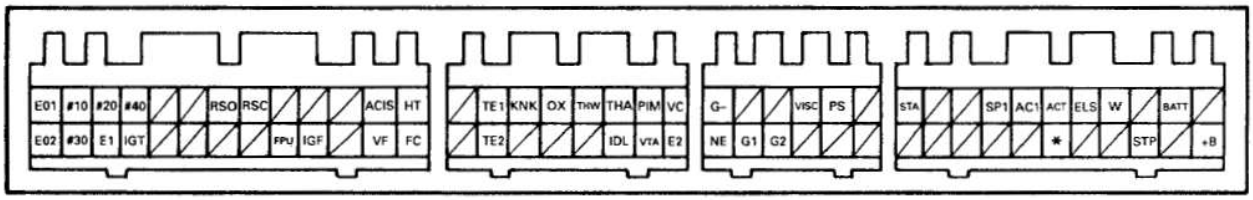
- Perform all voltage measurements with the connectors connected.
- Verify that the battery voltage is 11 V or more when the ignition switch is ON.

ECU Wiring Connectors Voltage

EG

Terminals	Condition		STD voltage (V)
+B – E1	IG SW ON		9 – 14
BATT – E1	–		9 – 14
IDL – E2	IG SW ON	Throttle valve open	9 – 14
VTA – E2		Throttle valve fully closed	0.3 – 0.8
		Throttle valve fully open	3.2 – 4.9
PIM – E2	IG SW ON		3.3 – 3.9
VC – E2			4.5 – 5.5
#10, #30 – E01 #20, #40 – E02			9 – 14
THA – E2	IG SW ON	Intake air temp. 20°C (68°F)	0.5 – 3.4
THW – E2		Coolant temp. 80°C (68°F)	0.2 – 1.0
STA – E1	Cranking		6 or more
IGT – E1	Idling		Pulse generation
RSO, RSC – E1	IG SW ON	ECU connectors disconnected	9 – 14
W – E1	No trouble (check engine warning light off) and engine running		9 – 14
TE1, TE2 – E1	IG SW ON	Check connector TE1 – E1 not connected	9 – 14
		Check connector TE1 – E1 connected	0 – 3

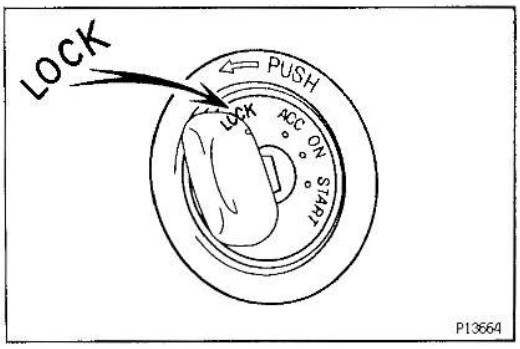
ECU Terminals



P01399

*ST202: ATS
SW20: PSCT

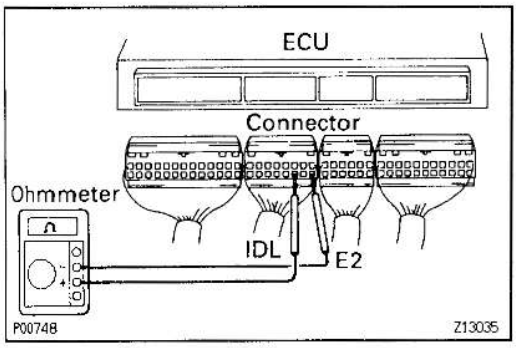
V05432



3. INSPECT RESISTANCE OF ECU

(a) Turn the ignition switch OFF.

(b) Disconnect the 3 connectors from the ECU.



(c) Measure the resistance between each terminal of the wiring connectors.

NOTICE:

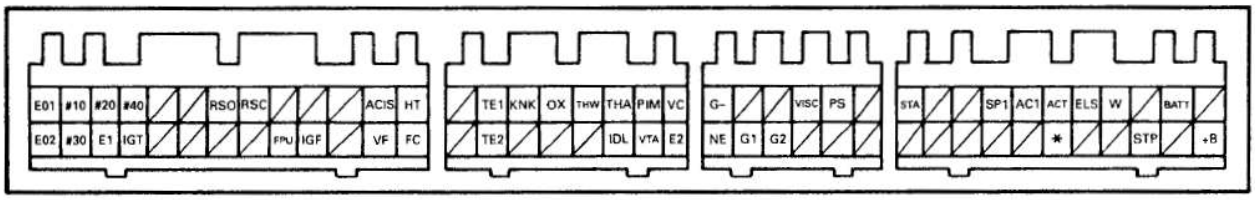
- **Do not touch the ECU terminals.**
- **The tester probe should be inserted in the wiring connector from the wiring side.**

EG

ECU Wiring Connectors Resistance

Terminals	Condition	STD resistance (Ω)
IDL – E2	Throttle valve open	Infinity
	Throttle valve fully closed	2,300 or less
VTA – E2	Throttle valve fully open	2,000 – 10,200
	Throttle valve fully closed	200 – 5,700
VC – E2	–	2,500 – 5,900
THA – E2	Intake air temp. 20°C (68°F)	2,000 – 3,000
THW – E2	Coolant temp. 80°C (176°F) 76°F)	200 – 400
G1, G2 – G–	Cold (–10°C (14°F) to 50°C (122°F))	125 – 200
	Hot (50°C (122°F) to 100°C (212°F))	160 – 235
NE – G–	Cold (–10°C (14°F) to 50°C (122°F))	155 – 250
	Hot (50°C (122°F) to 100°C (212°F))	190 – 290
RSC, RSO – +B	–	19.3 – 22.3

ECU Terminals



P01399

*ST202: ATS
SW20: PSCT

V05433

FUEL CUT RPM

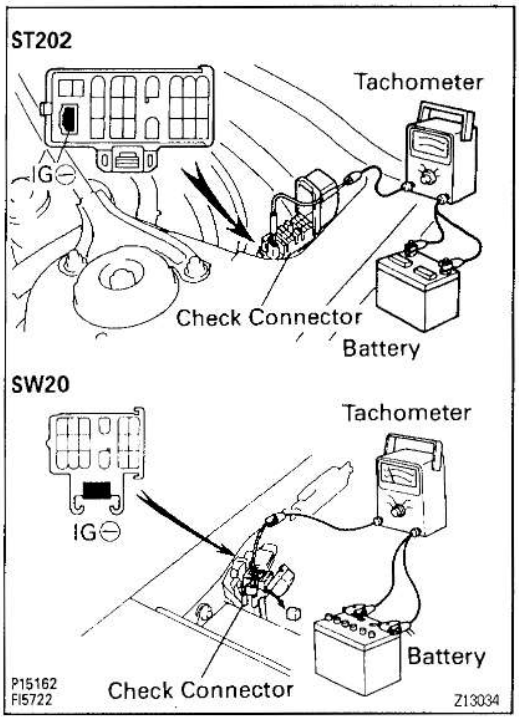
FUEL CUT PRM INSPECTION

EG43C-01

1. WARM UP ENGINE

Allow the engine to warm up to normal operating temperature.

EG

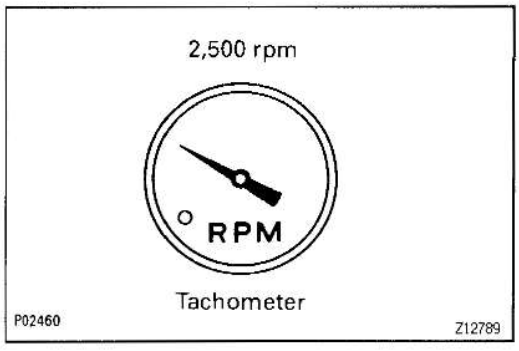


2. CONNECT TACHOMETER TO ENGINE

Connect the test probe of a tachometer to terminal IG ⊖ of the check connector.

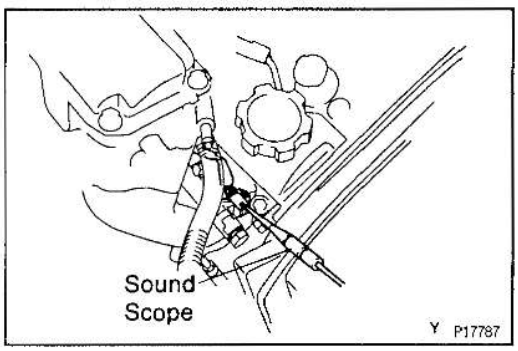
NOTICE:

- **Never allow the tachometer terminal to touch ground as it could result in damage to the igniter and/or ignition coil.**
- **As some tachometers are not compatible with this ignition system, we recommend that you confirm the compatibility of your unit before use.**



3. INSPECT FUEL CUT RPM

(a) Increase the engine speed to at least 2,500 rpm.



(b) Using a sound scope, check for injector operating noise.

(c) Check that when the throttle lever is released, injector operation noise stops momentarily and then resumes.

HINT: Measure with the A/C OFF.

Fuel return rpm:

1,500 rpm

4. DISCONNECT TACHOMETER

SERVICE SPECIFICATIONS

SERVICE DATA

EG43R-01

Fuel pressure regulator	Fuel pressure	at no vacuum	265 – 304 kPa (2.7 – 3.1 kgf/cm², 38 – 44 psi)
Fuel pump	Resistance	at 20°C (68°F)	0.2 – 3.0 Ω
Injector	Resistance	at 20°C (68°F)	13.4 – 14.2 Ω
	Injection volume		81 – 102 cm³ (4.9 – 6.2 cu in.) per 15 sec.
	Difference between each cylinder		5 cm³ (0.3 cu in.) or less
	Fuel leakage		One drop or less per minute
Throttle body	Throttle body fully closed angle		6°
Throttle position sensor	Clearance between stop screw and lever		
	0 mm (0 in.)	VTA – E2	0.2 – 5.7 kΩ
	0.40 mm (0.016 in.)	IDL – E2	2.3 kΩ or less
	0.75 mm (0.030 in.)	IDL – E2	Infinity
	Throttle valve fully open	VTA – E2	2.0 – 10.2 kΩ
	–	VC – E2	2.5 – 5.9 kΩ
ISC valve	Resistance (+B – RSC or RSO)	at 20°C (68°F)	19.3 – 22.3 Ω
VSV for EGR	Resistance		33 – 39 Ω
A/C idle–up valve	Resistance		30 – 34 Ω
Water Temp. sensor	Resistance	at –20°C (–4°F)	10 – 20 kΩ
		at 0°C (32°F)	4 – 7 kΩ
		at 20°C (68°F)	2 – 3 kΩ
		at 40°C (104°F)	0.9 – 1.3 kΩ
		at 60°C (140°F)	0.4 – 0.7 kΩ
		at 80°C (176°F)	0.2 – 0.4 kΩ
Intake Air Temp. sensor	Resistance	at –20°C (–4°F)	10 – 20 kΩ
		at 0°C (32°F)	4 – 7 kΩ
		at 20°C (68°F)	2 – 3 kΩ
		at 40°C (104°F)	0.9 – 1.3 kΩ
		at 60°C (140°F)	0.4 – 0.7 kΩ
		at 80°C (176°F)	0.2 – 0.4 kΩ
Oxygen sensor	Heater coil resistance		5.1 – 6.3 Ω
Fuel cut rpm	Fuel return rpm		1,500 rpm

SERVICE DATA (Cont'd)

ECU	Voltage		
	+B – E1	IG SW ON	9 – 14 V
	BATT – E1		9 – 14 V
	IDL – E2	IG SW ON (Throttle valve open)	9 – 14 V
	VTA – E2	IG SW ON (Throttle valve fully closed)	0.3 – 0.8 V
		IG SW ON (Throttle valve fully open)	3.2 – 4.9 V
	PIM – E2	IG SW ON	3.3 – 3.9 V
	VC – E2	IG SW ON	4.5 – 5.5 V
	#10, #20, #30 or #40 – E01	IG SW ON	9 – 14 V
	#10, #20, #30 or #40 – E02	IG SW ON	9 – 14 V
	THA – E2	IG SW ON (Intake air temp. 20°C (68°F))	0.5 – 3.4 V
	THW – E2	IG SW ON (Coolant temp. 80°C (176°F))	0.2 – 1.0 V
	STA – E1	Cranking	6 V or more
	IGT – E1	Idling	Pulse generation
	RSC – E1	IG SW ON (ECU connectors disconnected)	9 – 14 V
	RSO – E1	IG SW ON (ECU connectors disconnected)	9 – 14 V
	W – E1	No trouble (Check engine warning light off) and engine running	9 – 14 V
	TE1 – E1	IG SW ON (Check connector terminals TE1 – E1 not connected)	9 – 14 V
		IG SW ON (Check connector terminals TE1 – E1 connected)	0 – 3 V
	Resistance		
	IDL – E2	at throttle valve open	Infinity
		at throttle valve fully closed	2,300 Ω or less
	VTA – E2	at throttle valve fully open	2,000 – 10,200 Ω
		at throttle valve fully closed	200 – 5,700 Ω
	VC – E2		2,500 – 5,900 Ω
	THA – E2	at intake air temp. 20°C (68°F)	2,000 – 3,000 Ω
	THW – E2	at coolant temp. 80°C (176°F)	200 – 400 Ω
	G1 or G2 – G–	at cold (–10°C (14°F) to 50°C (122°F))	125 – 200 Ω
		at hot (50°C (122°F) to 100°C (212°F))	160 – 235 Ω
	NE – G–	at cold (–10°C (14°F) to 50°C (122°F))	155 – 250 Ω
		at hot (50°C (122°F) to 100°C (212°F))	190 – 290 Ω
	+B – RSC or RSO		19.3 – 22.3 Ω

EG

EG

TORQUE SPECIFICATIONS

EG438-01

Part tightened		N·m	kgf·cm	ft·lbf
Fuel line				
Union bolt type		29	300	22
Flare nut type	Fuel pump side	35	350	26
	Others	30	310	22
Drain plug x Fuel tank	SW20	13	130	9
Fuel pump x Fuel tank	ST202	3.5	35	31 in.·lbf
	SW20	3.4	35	30 in.·lbf
Fuel sender gauge x Fuel tank	SW20	1.5	15	13 in.·lbf
Fuel evaporatin vent tube x Fuel Tank	SW20	1.5	15	13 in.·lbf
Fuel tank filler pipe x Fuel tank	SW20	3.4	35	30 in.·lbf
Fuel tank band x Body	SW20	29	300	22
No.2 center floor crossmember x Body	SW20	29	300	22
Fuel pressure regulator x Delivery pipe		29	300	22
Delivery pipe x Cylider head		29	300	22
Fuel inlet pipe x Delivery pipe		32	320	24
Intake chamber stay x Intake manifold		19	195	14
Intake chamber stay x No.1 stay		19	195	14
Intake chamber stay x No.2 stay		18	180	13
Intake chamber stay x ACIS assembly cover	Bolt	8.5	85	75 in.·lbf
	Nut	21	210	16
Throttle body x Intake manifold		21	210	16
Knock sensor x Cylinder block		44	450	33
Oxygen sensor x Exhaust manifold		20	200	14