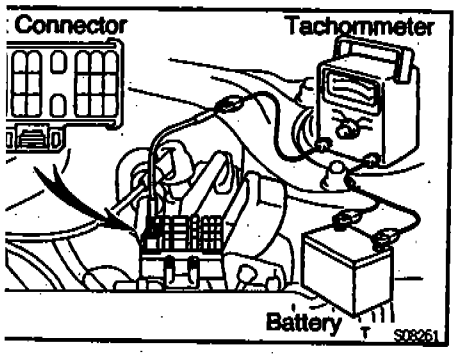
ELECTRONIC FUEL INJECTION

EFI SYSTEM

PRECAUTION

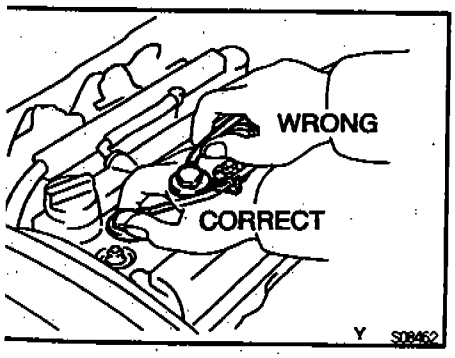
SF040-01

1. **Before working on the fuel system, disconnect the negative (–) terminal cable from the battery.**
   HINT: Any diagnostic trouble code retained by the computer will be erased when the negative (–) terminal cable is removed from the battery.
   Therefore, if necessary, read the diagnosis before removing the negative (–) terminal cable from the battery.
2. **Do not smoke or work near an open flame when working on the fuel system.**
3. **Keep gasoline away from rubber or leather parts.**



Maintenance Precautions

1. **PRECAUTION WHEN CONNECTING GAUGE**
   (a) Use battery as the power source for the timing light, tachometer, etc.
   (b) Connect the tester probe of a tachometer to the terminal IG⊖ of the check connector.



2. **IN EVENT OF ENGINE MISFIRE, FOLLOWING PRECAUTIONS SHOULD BE TAKEN**
   (a) Check proper connection of battery terminal cables, etc.
   (b) Handle high–tension cords carefully.
   (c) After repair work, check that the ignition coil terminals and all other ignition system lines are reconnected securely.
   (d) When cleaning the engine compartment, be especially careful to protect the electrical system from water.

3. **PRECAUTIONS WHEN HANDLING OXYGEN SENSOR**
   (a) Do not allow oxygen sensor to drop or hit against an object.
   (b) Do not allow the sensor to come into contact with water.

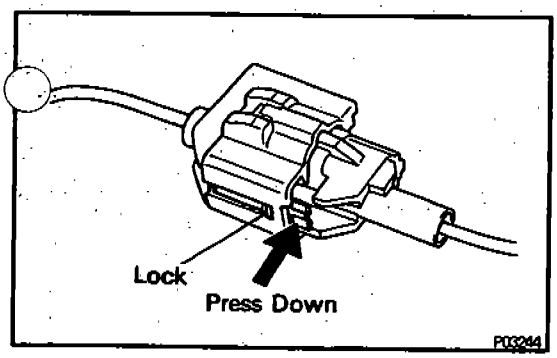
Air Induction System

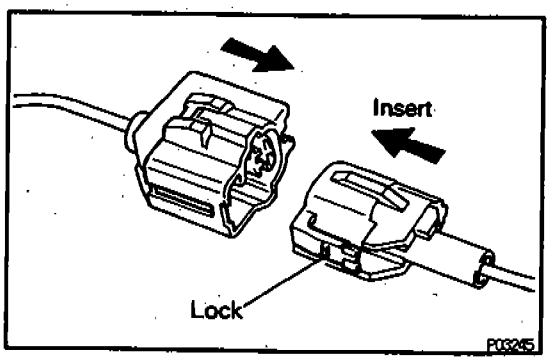
1. Separation of the engine oil dipstick, oil filler cap, PCV hose, etc. may cause the engine to run out of tune.

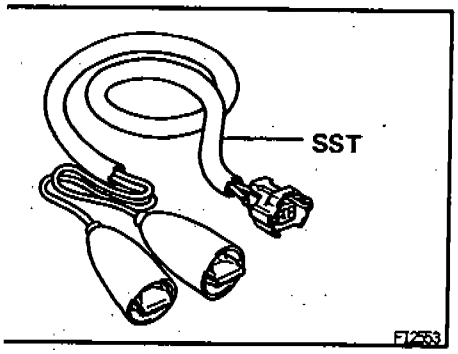
2. Disconnection, looseness or cracks in the parts of the air induction system between the throttle body and cylinder head will allow air suction and cause the engine to run out of tune.

Electronic Control System

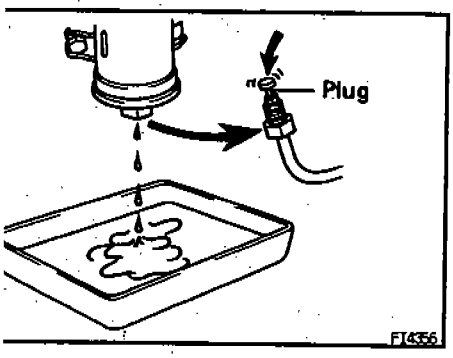
1. Before removing EFI wiring connectors, terminals, etc. first disconnect the power by either turning the ignition switch OFF or disconnecting the negative (–) terminal cable from the battery.
   HINT: Always check the diagnostic code before disconnecting the negative (–) terminal cable from the battery.
2. When installing the battery, be especially careful not to incorrectly connect the positive (+) and negative (–) cables.
3. Do not permit parts to receive a severe impact during removal or installation. Handle all EFI parts carefully, especially the ECU.
4. Do not be careless during troubleshooting as there are numerous transistor circuits and even slight terminal contact can further troubles.
5. Do not open the ECU cover.
6. When inspecting during rainy weather, take care to prevent entry of water. Also, when washing the engine compartment, prevent water from getting on the EFI parts and wiring connectors.
7. Parts should be replaced as an assembly.
8. Care is required when pulling out and inserting wiring connectors.
   (a) Release the lock and pull out the connector, pulling on the connectors.
   (b) Fully insert the connector and check that it is locked.
9. When inspecting a connector with a volt/ohmmeter
   (a) Carefully take out the water–proofing rubber if it is a water–proof type connector.
   (b) Insert the test probe into the connector from the wiring side when checking the continuity, amperage or voltage.
   (c) Do not apply unnecessary force to the terminal.
   (d) After checking, install the water–proofing rubber on the connector securely.





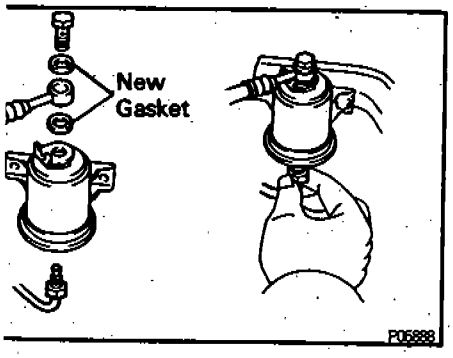


10. Use SST for inspection or test of the injector or its wiring connector.
SST 09842–30070

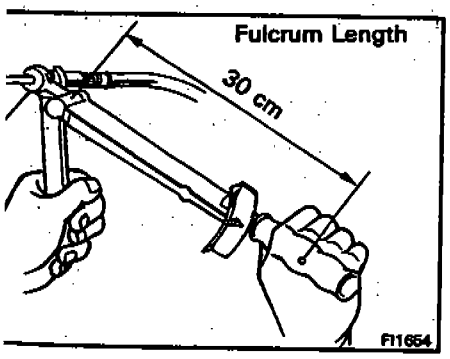


Fuel System

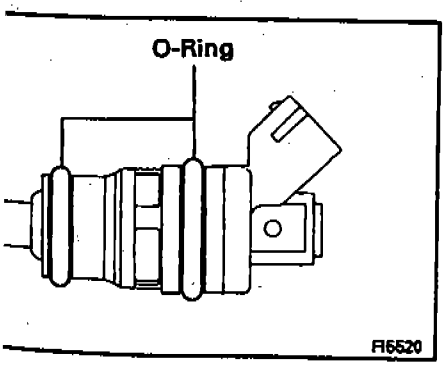
1. When disconnecting the high pressure fuel line, a large amount of gasoline will spill out, so observe the following procedures:
(a) Put a container under the connection.
(b) Slowly loosen the connection.
(c) Disconnect the connection.
(d) Plug the connection with a rubber plug.



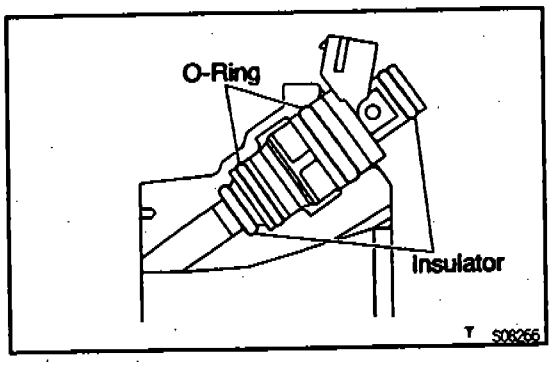
2. When connecting the flare nut or union bolt on the high pressure pipe union, observe the following procedures:
Union Bolt Type:
(a) Always use a new gasket.
(b) Tighten the union bolt by hand.
(c) Tighten the union bolt to the specifide torque.
Torque: 29.5 N·m (300 kgf·cm, 22 ft·lbf)



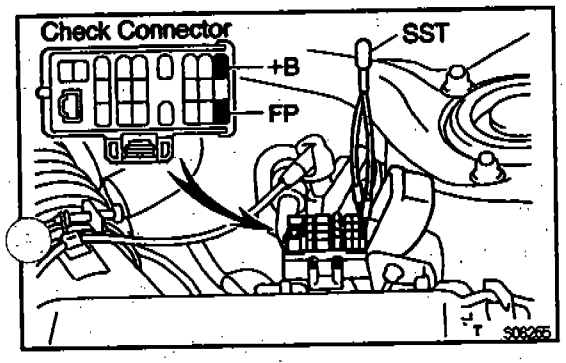
Flare Nut Type:
(a) Apply a light coat of engine oil to the flare and tighten the flare nut by hand.
(b) Using SST, tighten the flare nut to the specified torque.
SST 09631–22020
Torque: 30 N·m (310 kgf·cm, 22 ft·lbf)
HINT: Use a torque wrench with a fulcrum length of 30 cm (11.81 in.).



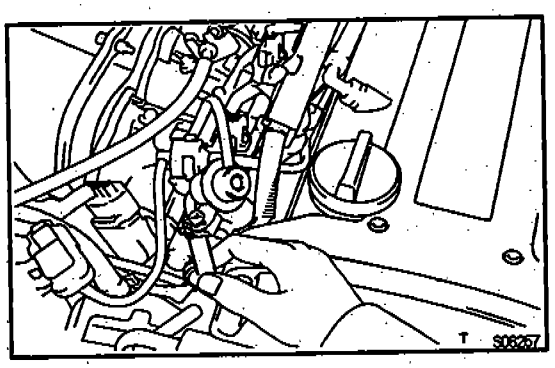
3. Observe the following precautions when removing and installing the injectors.
(a) Never reuse the O–ring.
(b) When placing a new O–ring on the injector, take care not to damage it in any way.
(c) Coat a new O–ring with spindle oil or gasoline before installing–never use engine, gear or brake oil.



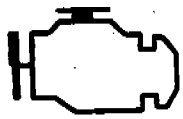
4. Install the injector to delivery pipe and intake manifold as shown in the illustration.



5. Check that there are no fuel leaks after performing maintenance anywhere on the fuel system.
(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) Pinch the fuel return hose. The pressure in the high pressure line will rise to approx. 392 kPa (4kgf/cm^2, 57 psi). In this state, check to see that there are no leaks from any part of the fuel system.
NOTICE: Always pinch the hose. Avoid bending as it may cause the hose to crack.
(d) Turn the ignition switch OFF.
(e) Remove the SST from the check connector.
SST 09843–18020



"CHECK" Engine Warning Light

P07777

DIAGNOSIS SYSTEM

CHECK ENGINE WARNING LIGHT CHECK

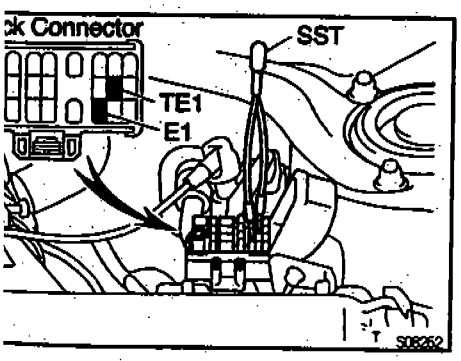
1. The check engine warning light will come on when the ignition switch is at ON and the engine is not running.
2. When the engine is started, the check engine warning light should go off. If the light remains on, the diagnosis system has detected a malfunction or abnormality in the system.

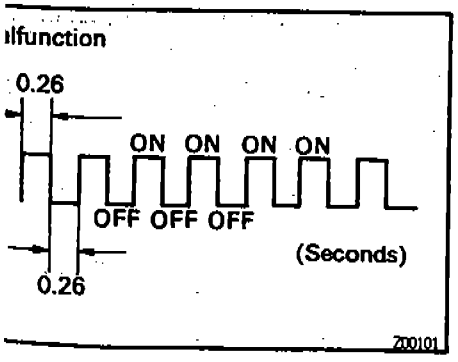
DIAGNOSTIC CODES OUTPUT

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
(c) Accessories switched OFF
(d) Engine at normal operating temperature
2. Turn the ignition switch ON.
CAUTION: 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.

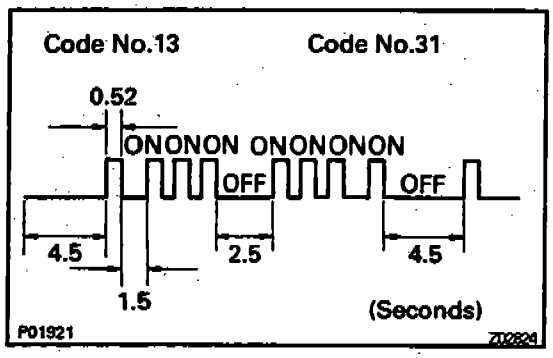




Diagnostic Codes

(a) Normal System Operation (no malfunction)
- The light will alternately blink ON and OFF at 0.26 second intervals.

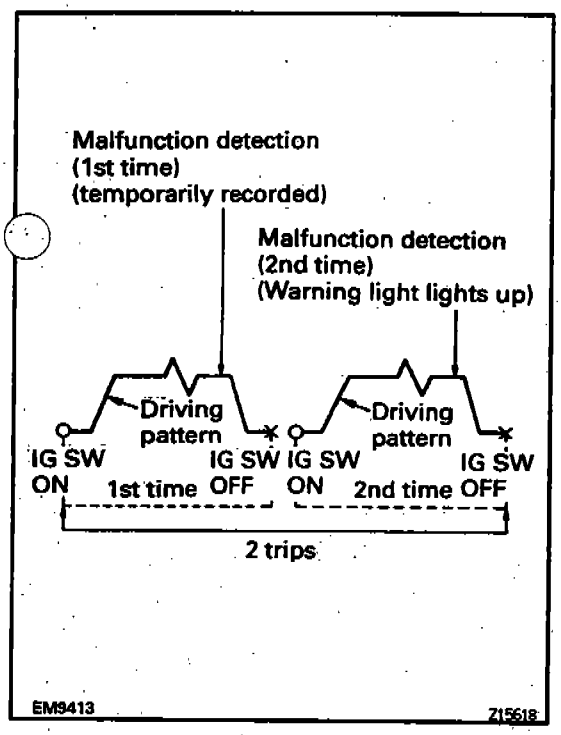
(b) Malfunction Code Indication
- In the event of a malfunction, the light will blink every 0.52 seconds. The 1st number of blinks will equal the 1st digit of a 2 digit diagnostic code, and after a 1.5 second pause, the 2nd number of blinks will equal



the second digit. If there are 2 or more codes, the will be a 2.5 second pause between each code.

- After all the codes have been output, there will be 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 trouble codes, indicati will begin from the smaller value and continue to the lar er.



(c) 2 trip detection logic:
Diagnostic code 21 use "2 trip detection logic". With th logic, when a malfunction is first detected, the malfunctio is temporarily stored in the ECU memory. If the same ca is detected again during the second drive test, this s cond detection causes the warning light to light up.
The 2 trip repeats the same mode a 2nd time. (Howev the ignition switch must be turned OFF between the 1 time and 2nd time.) In the Test Mode, the check engi warning light lights up the 1st time a malfunction is de tected.

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

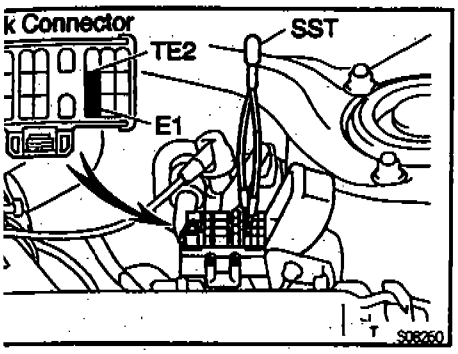
Test mode:

HINT:

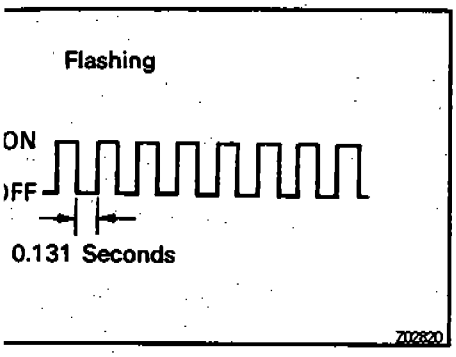
- Compared to the normal mode, the test mode has a increased sensing ability to detect malfunctions.
- It can also detect malfunctions in the starter signa circuit, air conditioning signal.
- Furthermore, the same diagnostic items which are detected in the normal mode can also be detected in the test 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
(c) Accessories switched OFF
2. Turn the ignition switch OFF.

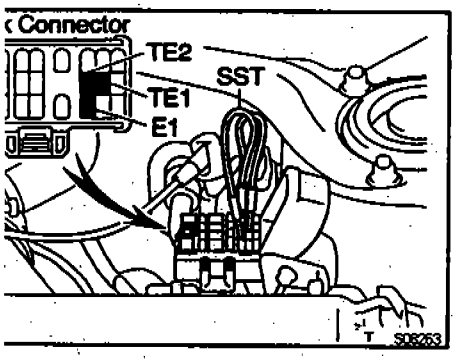


3. First, using SST, connect terminals TE2 and E1 of the check connector.
   SST 09843–18020
4. Turn the ignition switch ON to begin the diagnosis in the test mode.

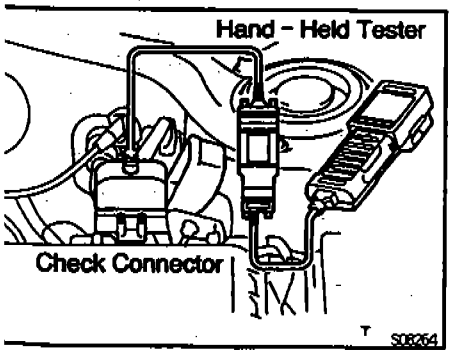


HINT: To confirm that the test mode is operating, check that the check engine warning light flashes when the ignition switch is turned ON.

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

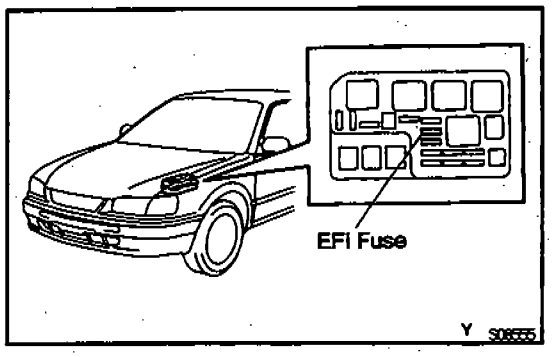


7. Using SST, connect terminals TE1 and E1 of the check connector.
   SST 09843–18020
8. Read the diagnostic code as indicated by the number of flashes of the check engine warning light.
9. After the diagnosis check, remove the SST from the check connector.
   SST 09843–18020
   HINT:
   - The test mode 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 5 is not done.
   - When the air conditioning is on or when the accelerator pedal is depressed, code "51" (Switch condition signal) is output, but this is not abnormal.



DIAGNOSTIC CODE CHECK USING HAND–HELD TESTER

1. Hook up the hand–held tester to the check connector.
2. Read the diagnostic codes by following the prompts on the tester screen.
   Please refer to the hand–held tester operator's manual for further details.

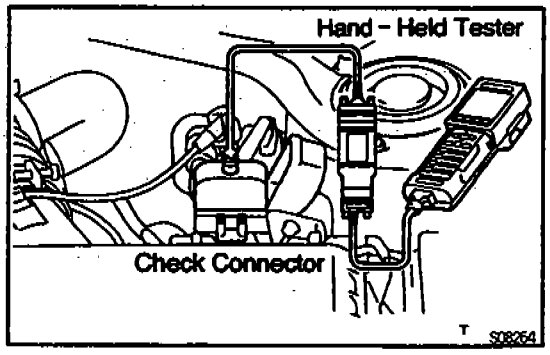


DIAGNOSTIC CODE CANCELLATION

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 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, road test 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.

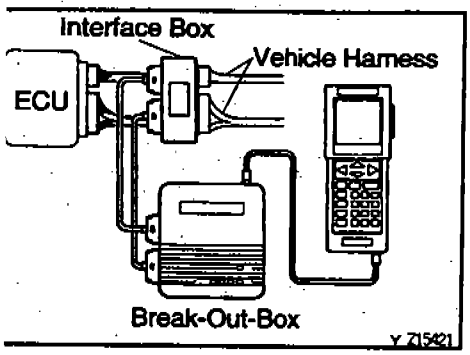
DIAGNOSIS INDICATION

1. When 2 or more codes are indicated, the lowest number (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 in the combination meter will go off but the diagnostic code(s) remains stored in ECU memory.



ECU DATA MONITOR USING HAND–HELD TESTER

1. Hook up the hand–held tester to the check connector.
2. Monitor the ECU data by following the prompts on the tester screen.
   HINT: Hand–held tester has a "Snapshot" function which records the monitored data.
   Please refer to the hand–held tester operator's manual for further details.



EG39Y–0K

ECU TERMINAL VALUES MEASUREMENT USING BREAK–OUT–BOX AND HAND–HELD TESTER

1. Hook up the break–out–box and hand–held tester to the vehicle.
2. Read the ECU input/output values by following the prompts on the tester screen.
   HINT: Hand–held tester has a "Snapshot" function. This records the measured values and is effective in the diagnosis of intermittent problems.
   Please refer to the hand–held tester/break–out–box operator's manual for further details.

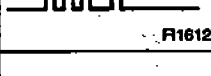
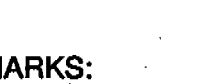
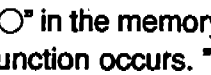
EG5ZE–04

GNOSTIC CODES

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

Number of blinks of Check Engine Warning Light	System	Check Engine Warning Light *1		Diagnosis	Trouble Area	Memory *2	See Page
		Normal Mode	Test Mode				
FI1401	Normal	–	–	Output when no other code is recorded.	–	–	–
FI1606	RPM Signal	ON	N.A.	• No G or NE signal is not input to ECU for 2 sec. or more after cranking. • Open in G-circuit.	• Open or short in G, NE circuit • Distributor • ECU	○	–
FI1607	RPM Signal	ON	ON	No NE signal to ECU for 50 m sec. or more at 1,000 rpm or more.	• Open or short in NE circuit • Distributor • ECU	○	–
FI1608	Ignition Signal	ON	N.A.	No IGF signal to ECU for 4 consecutive IGT signals during engine running.	• Open or short in IGF or IGT circuit from igniter to ECU • Igniter • ECU	○	FI – 26
FI1609	Oxygen Sensor Signal	OFF	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 • ECU	○	FI – 21 FI – 29 FI – 66 FI – 68
			ON	At normal driving speed (below 100 km/h (60 mph) and engine speed is above 1,500 rpm), amplitude of oxygen sensor signal (OX) is reduced to between 0.35 – 0.70 V continuously for 60 sec. 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		
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	○	FI – 24 FI – 64
FI1611	Intake Air Temp. Sensor Signal	OFF	ON	Open or short in intake air temp. sensor circuit for 0.5 sec. or more. (THA)	• Open or short in intake air temp. sensor circuit • Intake air temp. sensor • ECU	○	FI – 23 FI – 65

DIAGNOSTIC CODES (Cont'd)

DTC No.	Number of blinks of Check Engine Warning Light	System	Check Engine Warning Light *1		Diagnosis	Trouble Area	Memory *2	See Page
			Normal Mode	Test Mode				
25	 F12562	Air-Fuel Ratio Lean Malfunction	OFF	ON	Oxygen sensor output in less than 0.45 V for at least 90 sec. when oxygen sensor is warmed up (racing at 1,500 rpm or more). *3 (2 trip detection logic)	• Open in injector circuit • Fuel line pressure (injector leak, blockage) • Ignition system (spark plug, igniter) • Vacuum sensor (air intake) • Open or short in oxygen sensor circuit • Oxygen sensor • ECU	○	FI – 22 FI – 29 FI – 68
31	 F11612	Vacuum Sensor Signal	ON	ON	Open or short in vacuum sensor signal for 0.5 sec. or more. (PIM)	• Open or short in vacuum sensor circuit • Vacuum sensor • ECU	○	FI – 21 FI – 66
33	 BE3933	Idle Speed Control Valve System	ON	ON	Open or short in idle speed control valve circuit.	• Open or short in idle speed control valve circuit • ISC Valve	○	FI – 27
41	 F11614	Throttle Position Sensor Signal	OFF	ON	Open or short in throttle position sensor circuit for 0.5 sec. or more. (VTA)	• Open or short in throttle position sensor circuit • Throttle position sensor • ECU	○	FI – 19
42	 F11615	Vehicle Speed Sensor Signal	ON	OFF	No vehicle speed sensor signal to ECU for at least 8 sec. during heavey load driving with engine speed between 2,000 rpm and 5,000 rpm.	• Open or short in vehicle speed sensor circuit • Vehicle speed sensor • ECU	○	–
43	 F11616	Starter Signal	N.A.	OFF	No starter signal to ECU when cranking with Test mode. (STA)	• Open or short in starter signal circuit • Open or short in ignition switch or starter relay circuit • ECU	×	FI – 25
52	 F11618	No.1 Knock Sensor Signal (front side)	ON	N.A.	No No.1 knock sensor signal to ECU for crank revolutions with engine speed between 2,000 rpm and 6,000 rpm. (KNK1)	• Open or short in knock sensor circuit • Knock sensor (looseness) • ECU	○	FI – 67
53	 F11619	Knock Control Signal	ON	N.A.	ECU (for knock sensor control) malfunction at engine speed between 700 rpm and 6,000 rpm.	• ECU	×	–
51	 F11617	Switch Condition Signal	OFF	N.A.	Displayed when A/C is ON with check terminals TE1 and E1 connected in test mode.	• A/C switch system • Accelerator pedal, cable • ECU	×	–

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V0902

REMARKS:

*1: "ON" displayed in the diagnosis mode column indicates that the check engine warning light is lighted 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.

*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 is performed with the ignition switch ON.

*3: "2 trip detection logic". (See step 4 (c) in trouble codes output (normal mode))

;NOSTIC TROUBLE CODE DETECTION DRIVING PATTERN

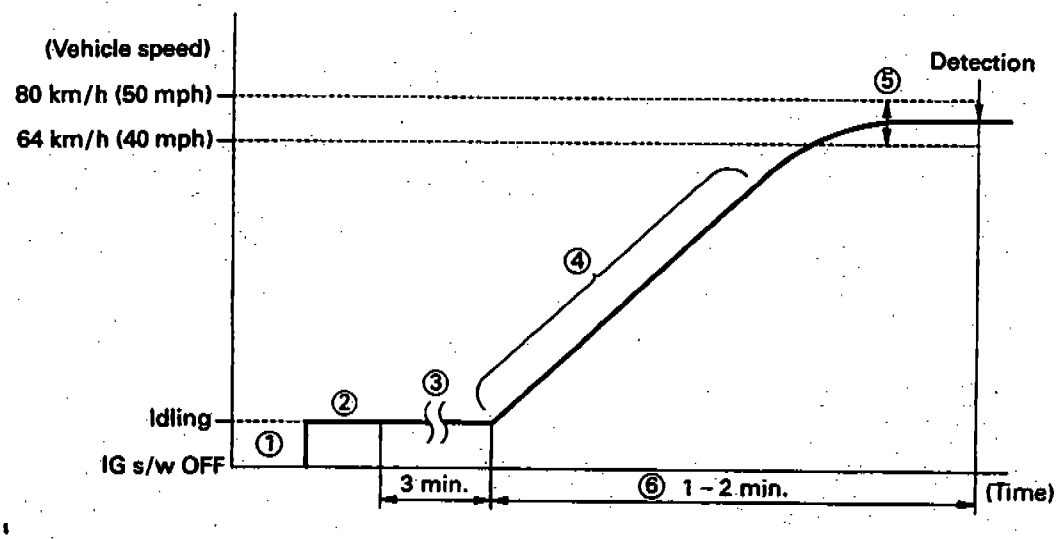
ɔse of the driving pattern

To simulate diagnostic code detecting condition after diagnostic code is recorded.

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

;ode No.	21	Oxygen Sensor Circuit

lalfunction: Deterioration of 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 it up with all accessories switched OFF.

③ Let the engine idle for 3 min..

④ Accelerate gradually with in the range 1,300 ~ 1,700 rpm (Centered around 1,500 rpm) with the A/C switch ON and 5th gear.

(Take care that the engine speed does not fall below 1,200 rpm when shifting. Gradually depress the accelerator pedal and keep it steady so that engine braking does not occur).

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 malfunction indicator lamp 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.

V09054

DIAGNOSTIC TROUBLE CODE DETECTION DRIVING PATTERN (Cont'd)

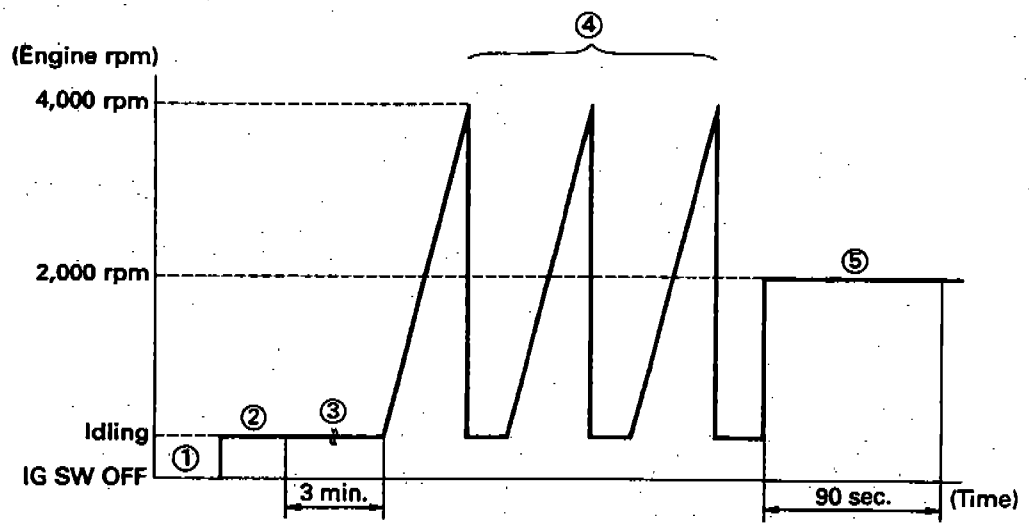
Purpose of the driving pattern

(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 Ratio Lean Malfunction

Malfunction: Open or Short in Oxygen Sensor



P02491

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

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

② Start engine and warm it up with all accessories switched OFF.

③ Let the engine idle for 3 min..

④ Accelerate rapidly to 4,000 rpm three times.

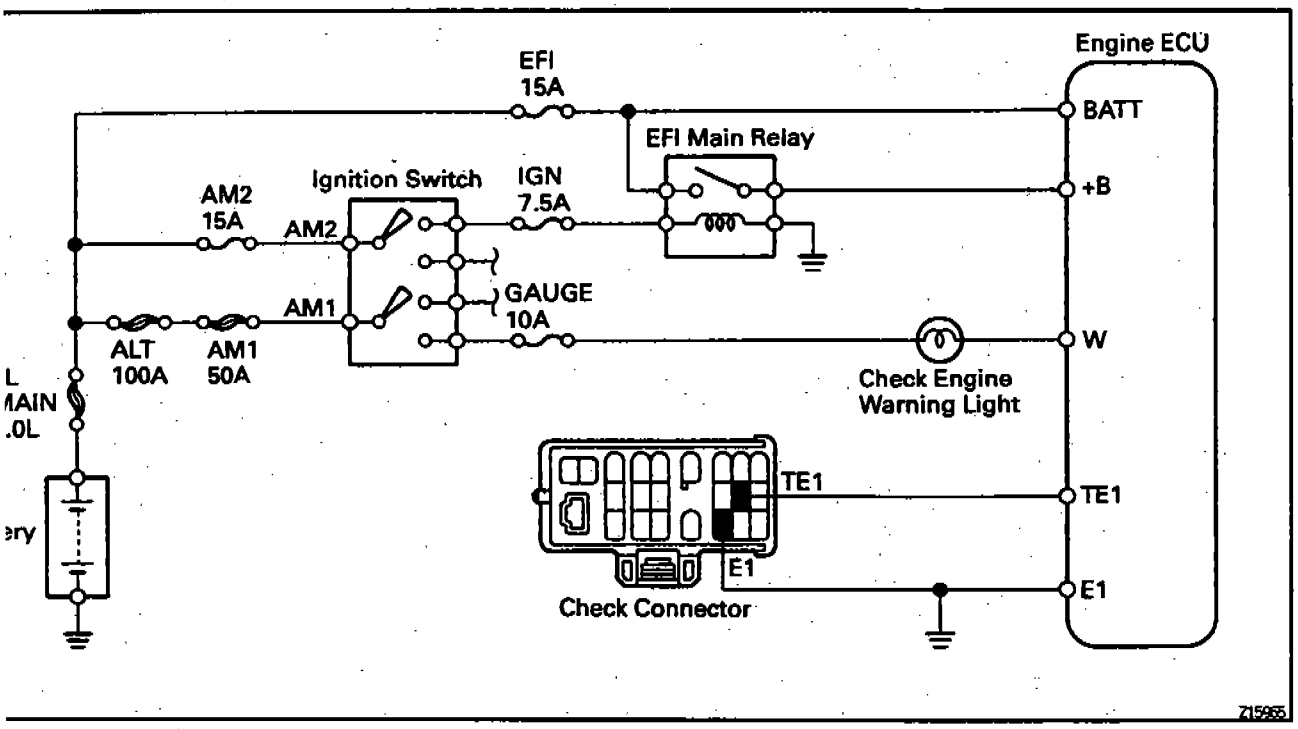
⑤ Maintain at 2,000 rpm for 90 seconds.

HINT: If any malfunction is detected, the check engine warning light will light up during step ⑤.

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

DIAGNOSIS CIRCUIT INSPECTION

E0577-03



Z15965

Does check engine warning light come on when ignition switch is at ON?
- YES → System normal.
- NO ↓

Does check engine warning light come on when engine ECU terminal W is grounded to the body?
- YES → Check wiring between engine ECU terminal E1 and body ground.
  - OK → Try another engine ECU.
  - BAD ↓ Repair or replace.
- NO ↓

Check bulb, fuse and wiring between engine ECU and ignition switch.
- BAD ↓ Repair or replace.

Does check engine warning light go off when the engine is started?
- YES → System normal.
- NO ↓

Check wiring between engine 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 engine ECU terminal TE1 and check connector terminal TE1, and engine ECU terminal E1 and check connector terminal E1.
  - OK ↓ Try another engine ECU.
- YES ↓

Does check engine warning light go off after repair according to malfunction code?
- NO → Further repair required.
- YES ↓

System OK → Cancel out diagnostic code.

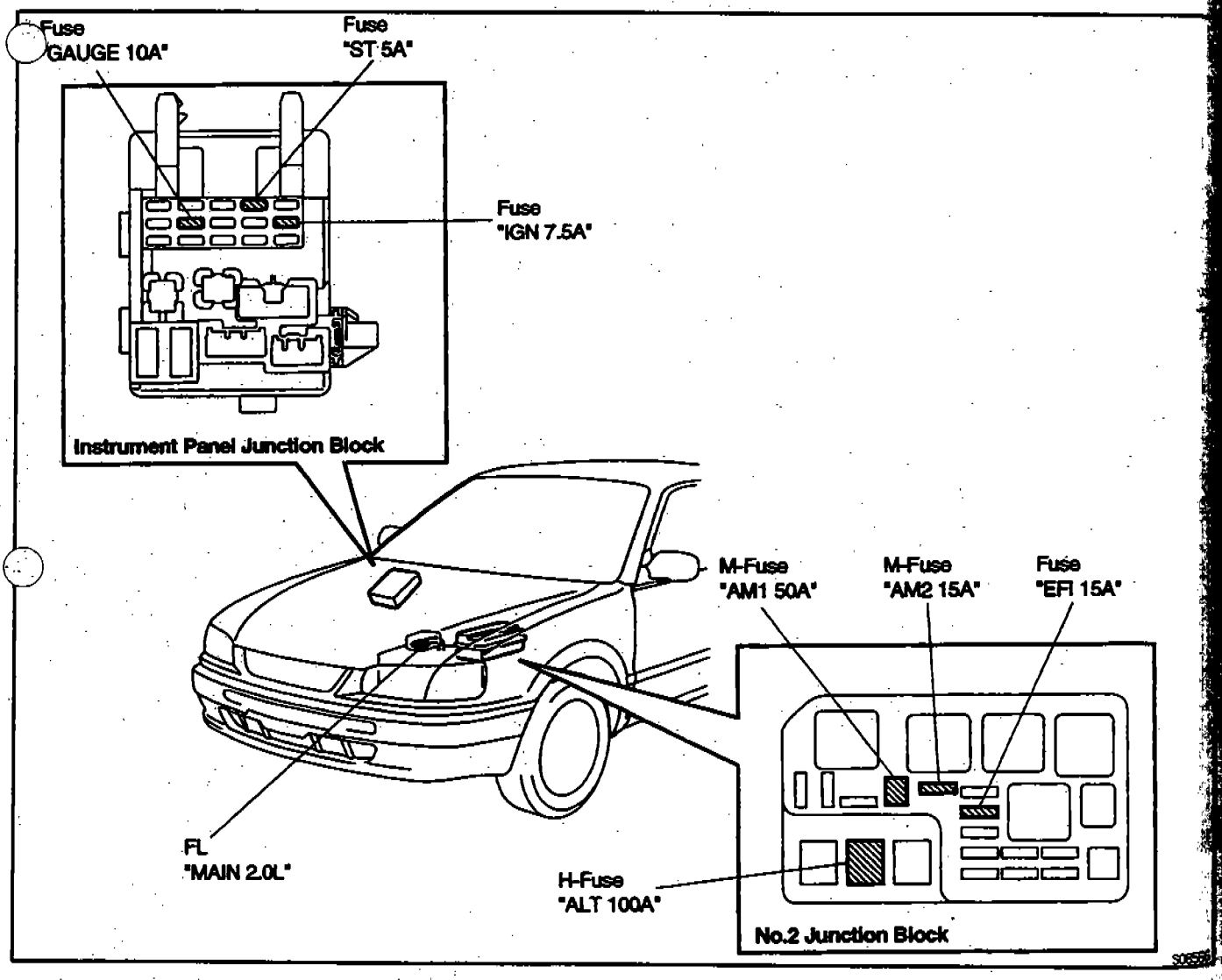
V06410

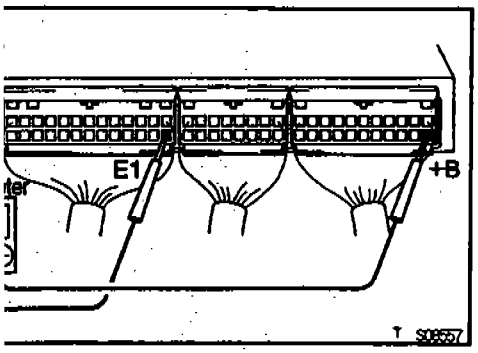
TROUBLESHOOTING w/ VOLT, OHMMETER

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, H–fuses, fusible link and the condition of the connectors.
- The following troubleshooting procedures are based on the supposition that the trouble lies in either a short or open circuit within the computer.
- If engine trouble occurs even though proper operating voltage is detected in the computer connector then it can be assumed that the ECU is faulty and should be replaced.

LOCATION





EFI SYSTEM CHECK PROCEDURE

PREPARATION

Disconnect the ECU from the vehicle body.

HINT:

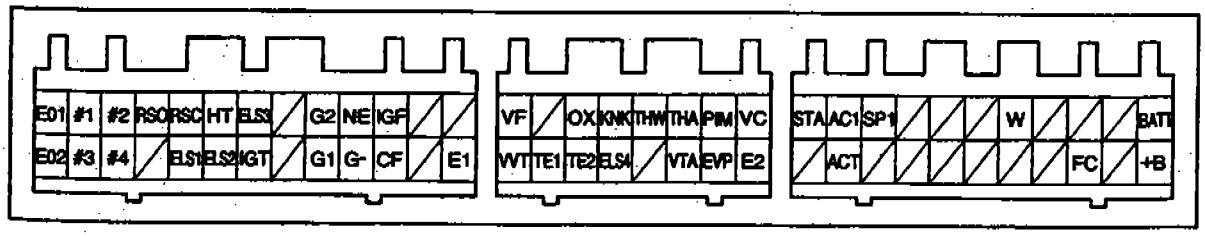
- Do all voltage measurements with the connectors connected.
- Verify that the battery voltage is 11 V or more when the ignition switch is in the "ON" position.

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

Engine ECU Terminals

Symbol	Terminal Name	Symbol	Terminal Name	Symbol	Terminal Name
E01	POWER GROUND		–	AC1	A/C AMPLIFIER
E02	POWER GROUND		–	ACT	A/C AMPLIFIER
#1	INJECTOR		–	SP1	SPEED SENSOR
#3	INJECTOR	E1	ENGINE GROUND		–
#2	INJECTOR	VF	CHECK CONNECTOR		–
#4	INJECTOR	VVT	CAMSHAFT OIL CONTROL VALVE		–
RSO	ISC VALVE		–		–
	–	TE1	CHECK CONNECTOR		–
RSC	ISC VALVE	OX	OXYGEN SENSOR		–
ELS1	ELCTRIC COOLING FAN RELAY	TE2	CHECK CONNECTOR		–
HT	HEATED OXYGEN SENSOR	KNK	KNOCK SENSOR	W	WARNING LIGHT
ELS2	BLOWER RELAY	ELS4	DEFFOGGER SWITCH		–
ELS3	TAILLIGHT RELAY	THW	WATER TEMP.SENSOR		–
IGT	IGNITER		–		–
	–	THA	INTAKE AIR TEMP. SENSOR		–
	–	VTA	THROTTLE POSITION SENSOR	FC	CIRCUIT OPENING RELAY
G2	CRANKSHAFT POSITION SENSOR	PIM	VACUUM SENSOR		–
G1	CRANKSHAFT POSITION SENSOR	EVP	EVAP		–
NE	CRANKSHAFT POSITION SENSOR	VC	VACUUM SENSOR, THROTTLE POSITION SENSOR	BATT	BATTERY
G–	CRANKSHAFT POSITION SENSOR ⊖	E2	SENSOR GROUND	+B	BATTERY
IGF	IGNITER	STA	STARTER RELAY		
CF	COOLING FAN RELAY		–		

Engine ECU Terminals



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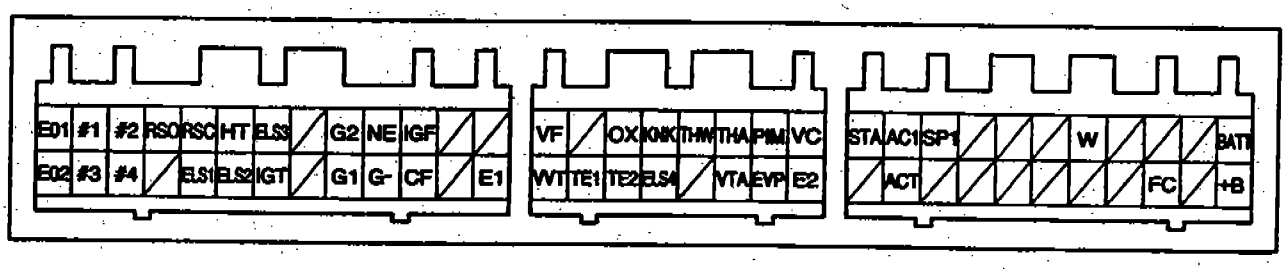
V09057

Engine ECU Wiring Connectors Voltage

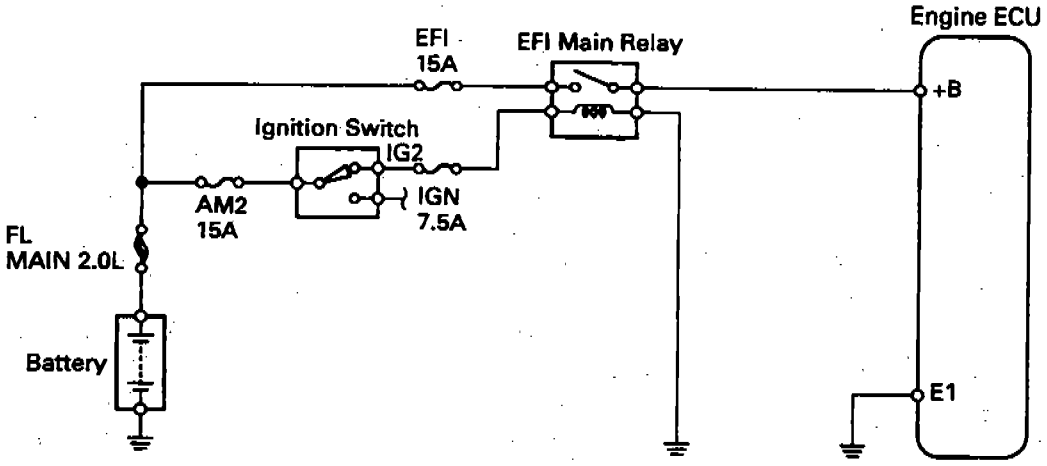
No.	Terminals	Condition		STD voltage (V)	See page
1	+B-E1	IG SW ON		9-14	FI-17
2	BATT-E1	—		9-14	FI-18
3	VC-E2	IG SW ON	—	4.5-5.5	FI-19
	VTA-E2		Throttle valve fully closed	0.3-0.8	
			Throttle valve fully open	3.2-4.9	
4	PIM-E2	IG SW ON		3.3-3.9	FI-21
	VC-E2			4.5-5.5	
5	#1 ~ #4 - E01 E02			9-14	FI-22
6	THA-E2	IG SW ON	Intake air temperature 20°C (68°F)	0.5-3.4	FI-23
7	THW-E2		Coolant temperature 80°C (176°F)	0.2-1.0	FI-24
8	STA-E1	Cranking		6 or more	FI-25
9	IGF-E1	IG SW ON	Igniter connector disconnected	4.5-5.5	FI-26
	IGT-E1	Idling		Pulse generation	
10	RSC RSO -E1	IG SW ON	Engine ECU connectors disconnected	9-14	FI-27
11	W-E1	No trouble (Check engine warning light off) and engine running		9-14	FI-28

Engine ECU Terminals

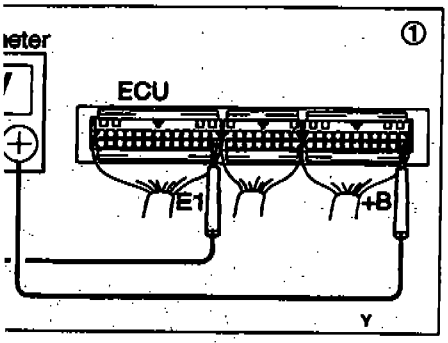


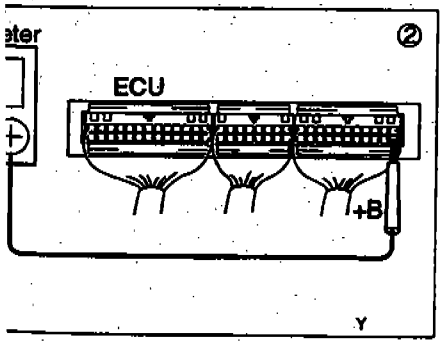
S08553

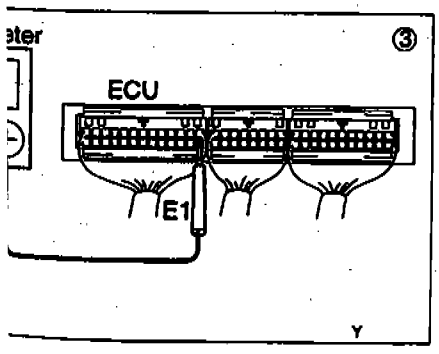
Terminals	Trouble	Condition	STD voltage
+B – E1	No voltage	IG SW ON	9 – 14 V



V06828







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

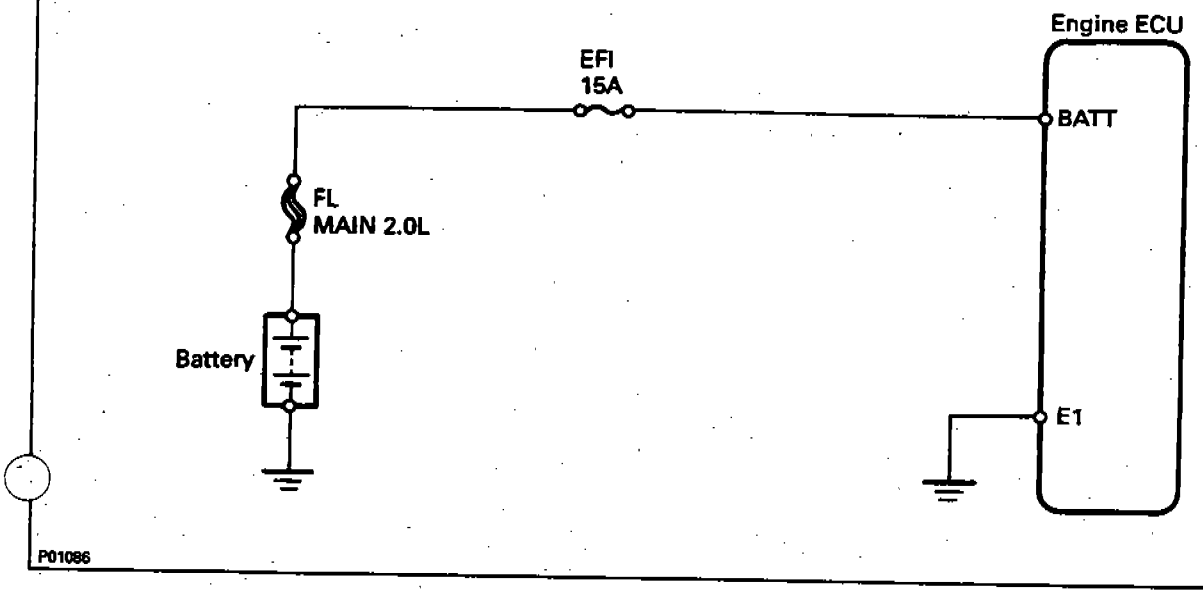
② Check that there is voltage between ECU terminal +B and body ground. (IG SW ON)

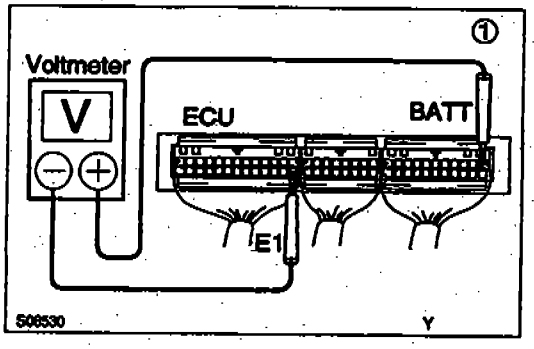
- NO → Check fuses, H-fuse, fusible link and ignition switch.
- OK → ③ Check wiring between ECU terminal E1 and body ground.
  - OK → Try another ECU.
  - BAD → Repair or replace.

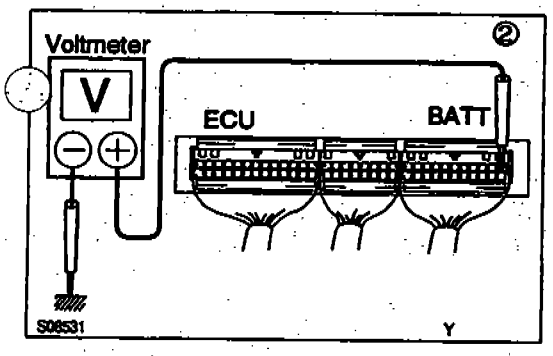
Check fuses, H-fuse, fusible link and ignition switch.
- BAD → Repair or replace.
- OK → Check EFI main relay. (See page FI-60)
  - BAD → Replace.
  - OK → Check wiring between EFI main relay and battery.
    - BAD → Repair or replace.

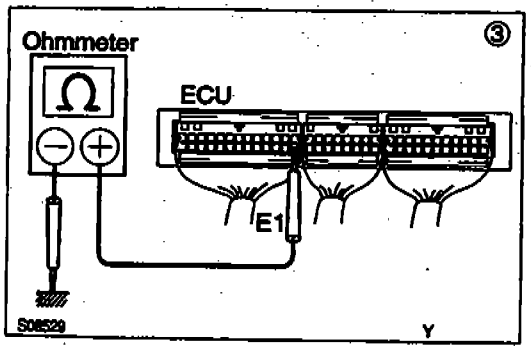
V09066

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.

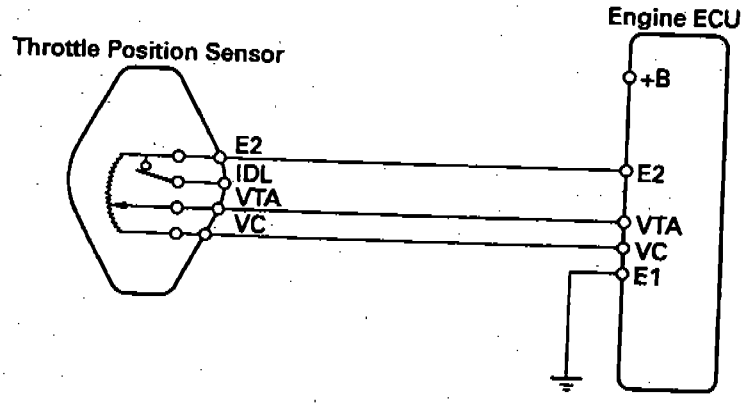
② Check that there is voltage between ECU terminal BATT and body ground.

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

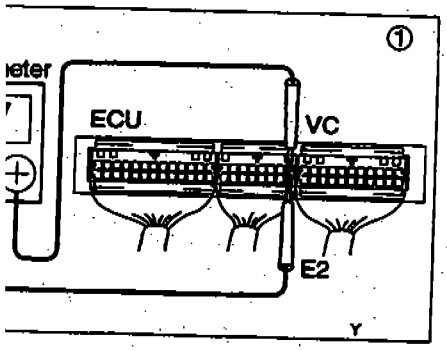
Check fuse and fusible link.
- BAD → Replace.
- OK → Check wiring between ECU terminal and battery.
  - BAD → Repair or replace.

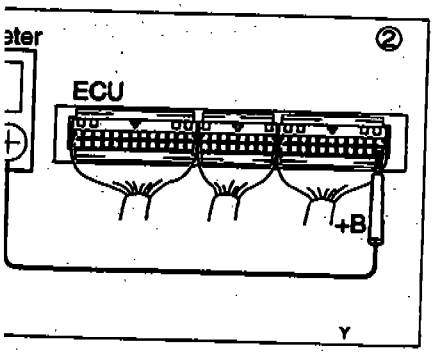
Y V09057

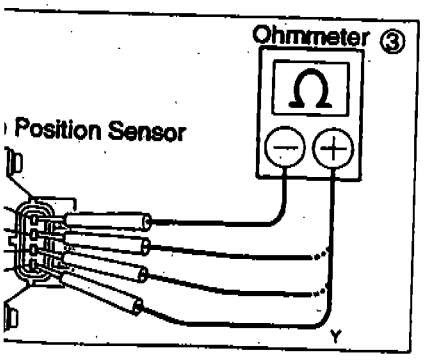
Terminals	Trouble	Condition		STD voltage
VC – E2	No voltage	IG SW ON	–	4.5 – 5.5 V
VTA – E2			Throttle valve fully closed	0.3 – 0.8 V
			Throttle valve fully open	3.2 – 4.9 V



V05417







• **VC - E2**

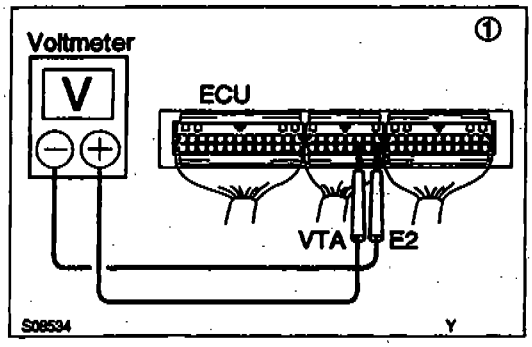
① There is no voltage between ECU terminals VC and E2. (IG SW ON)

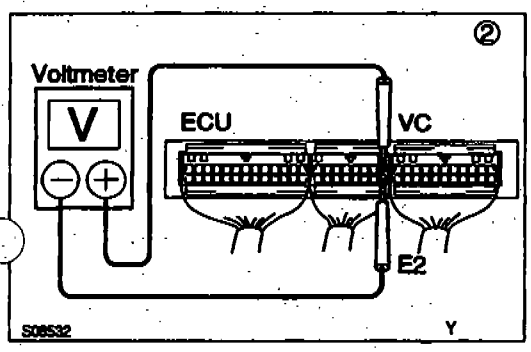
↓

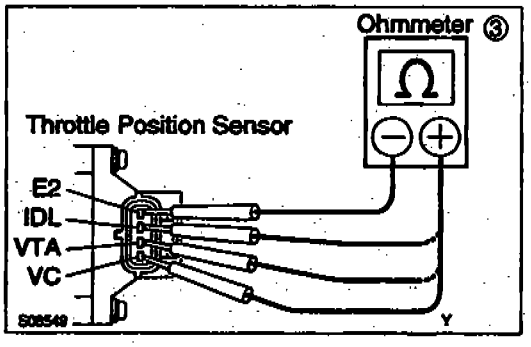
② Check that there is voltage between ECU terminal +B and body ground. (IG SW ON)

- OK → ③ Check throttle position sensor.
  - BAD → Repair or replace.
  - OK → Check wiring between ECU and throttle position sensor.
    - OK → Try another ECU.
    - BAD → Repair or replace wiring.
- NO → Refer to No.1. (See page FI-17)

Y V09073







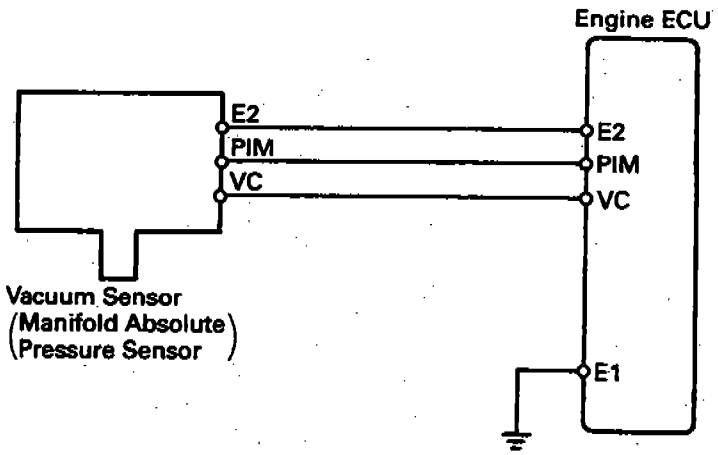
• **VTA - E2**

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

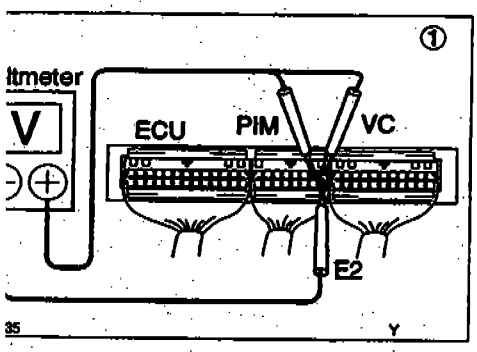
② Check that there is voltage between ECU terminals VC and E2. (IG SW ON)

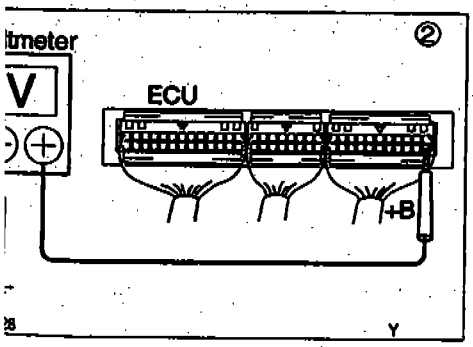
- NO → Refer to VC - E2 trouble section. → OK
- OK → ③ Check throttle position sensor.
  - BAD → Repair or replace.
  - OK → Check wiring between ECU and throttle position sensor.
    - BAD → Repair or replace.
    - OK → Try another ECU.

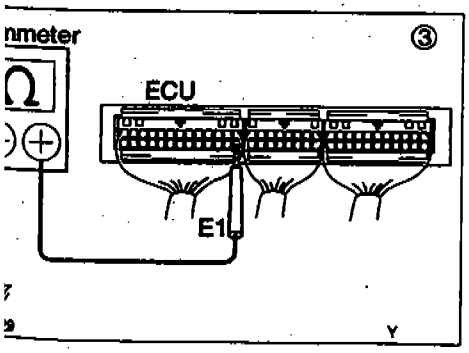
Terminals	Trouble	Condition	STD voltage
PIM – E2	No voltage	IG SW ON	3.3 – 3.9 V
VC – E2			4.5 – 5.5 V



V06419







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
- NO → Refer to No.1. (See page FI-17)

③ Check wiring between ECU terminal E1 and body ground.

- OK → Check vacuum sensor.
- BAD → Repair or replace.

Check vacuum sensor.

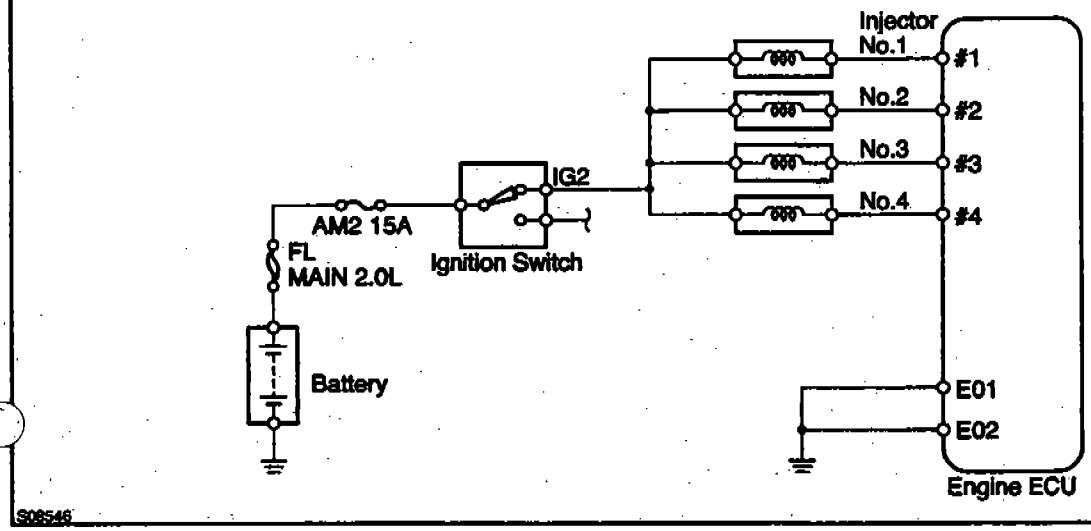
- BAD → Replace vacuum sensor.
- OK → Check wiring between ECU and vacuum sensor.

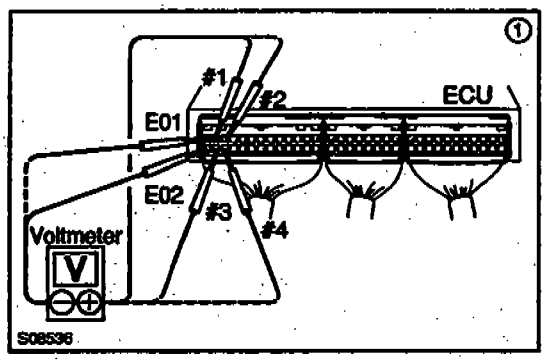
Check wiring between ECU and vacuum sensor.

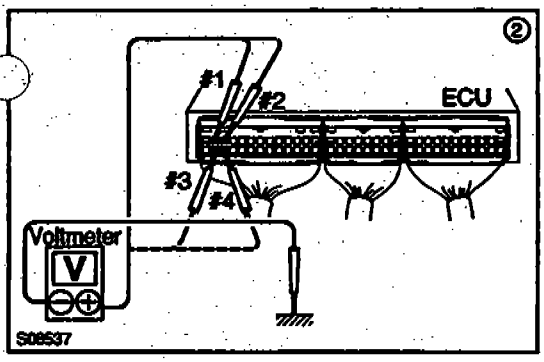
- OK → Try another ECU.
- BAD → Repair or replace.

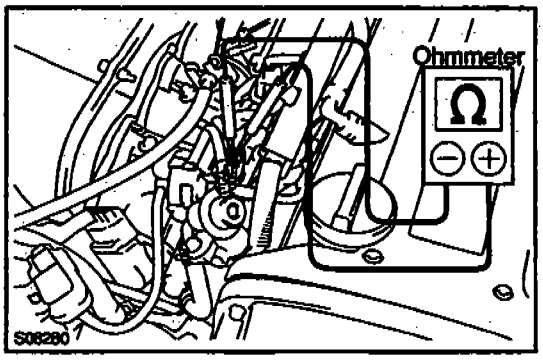
Y V09075

No.	Terminals	Trouble	Condition	STD voltage
5	#1 #4 – E01 E02	No voltage	IG SW ON	9 – 14 V









① There is no voltage between ECU terminals #1–#4 and E01 and / or E02. (IG SW ON)

↓

② Check that there is voltage between ECU terminal #1, #2, #3 and / or #4 and body ground.

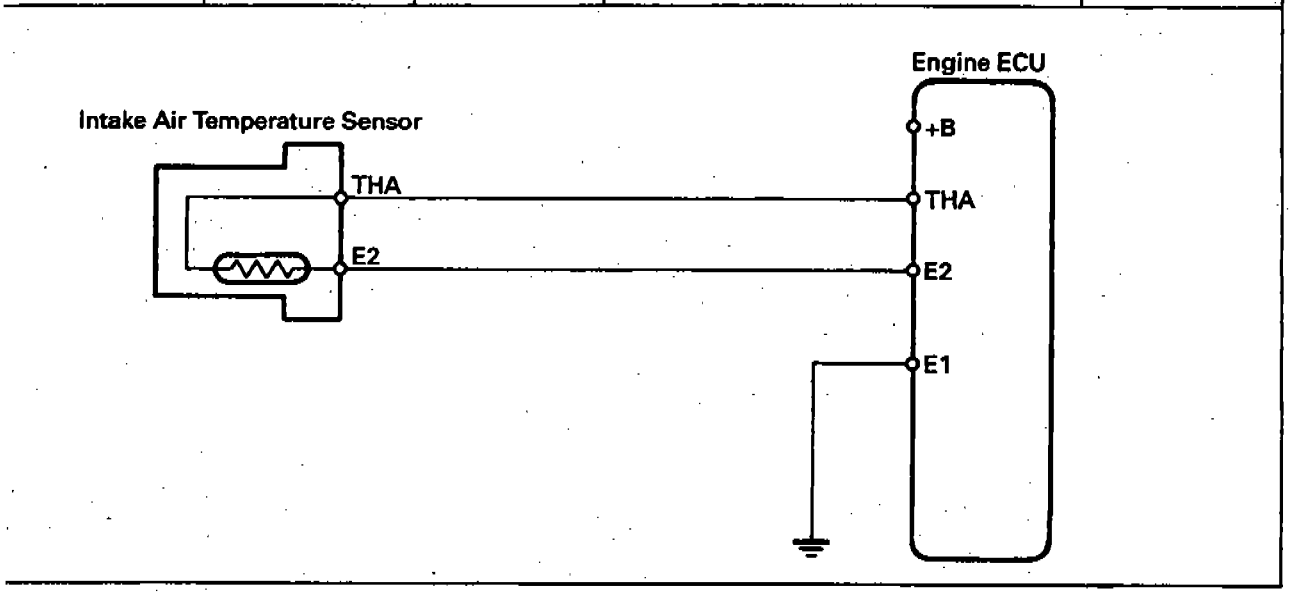
- NO → Check H-fuse, fuse, fusible link and ignition switch.
- OK → Check wiring between ECU terminal E01 and / or E02 and body ground.
  - OK → Try another ECU.
  - BAD → Repair or replace.

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

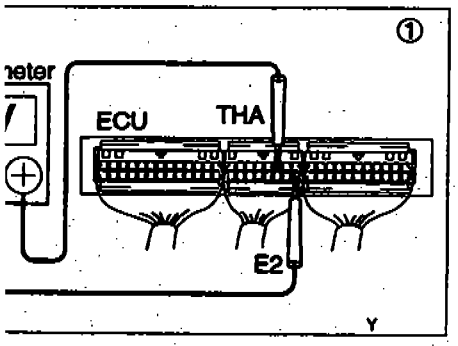
③ Check resistance of each injector. STD resistance : 13.4–14.2Ω
- OK ↓
- OK → Replace injector.

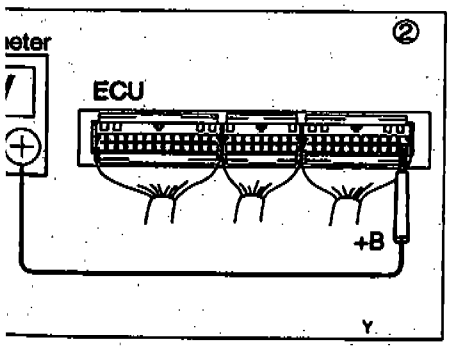
Check wiring between ECU terminal #1, #2, #3, and / or #4 and battery.
- BAD → Repair replace.

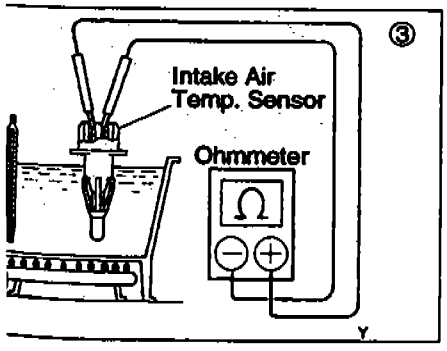
Terminals	Trouble	Condition		STD voltage
THA – E2	No voltage	IG SW ON	Intake air temperature 20°C (68°F)	0.5 – 3.4 V



V05422







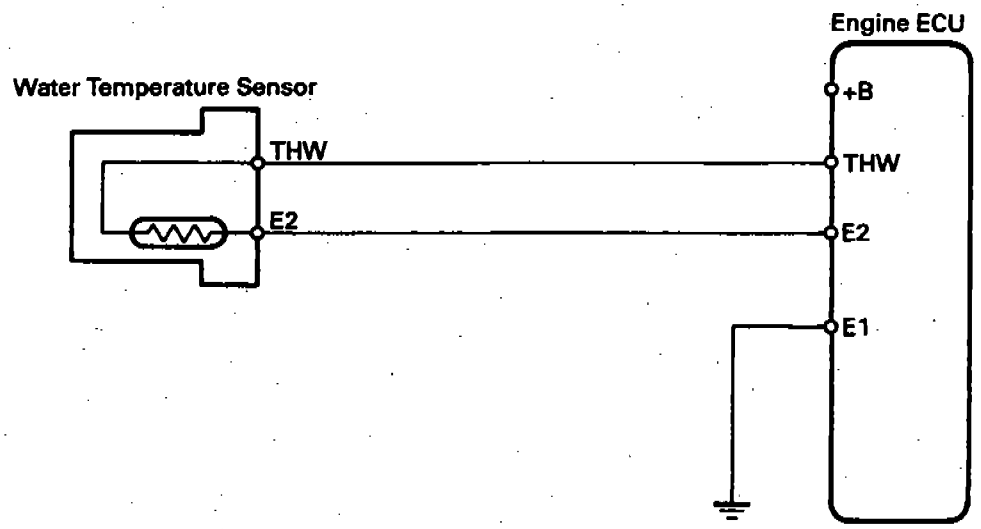
① There is no voltage between ECU terminals THA and E2. (IG SW ON)

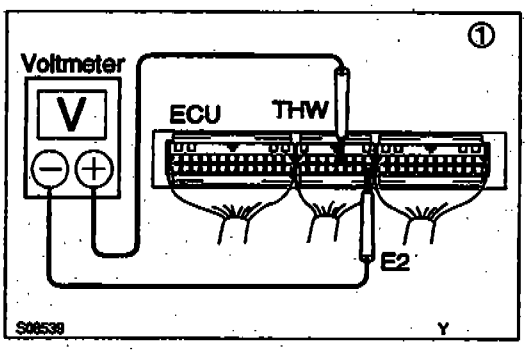
② Check that there is voltage between ECU terminal +B and body ground. (IG SW ON)

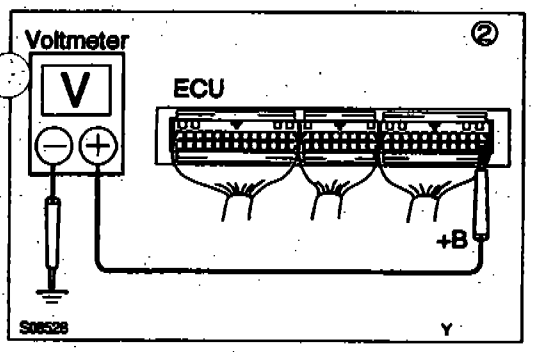
- NO → Refer to No.1. (See page FI-17)
- OK → Check wiring between ECU terminal E1 and body ground.
  - BAD → Repair or replace.
  - OK → ③ Check intake air temp. sensor.
    - BAD → Replace intake air temp. sensor.
    - OK → Check wiring between ECU and air temp. sensor.
      - BAD → Repair or replace.
      - OK → Try another ECU.

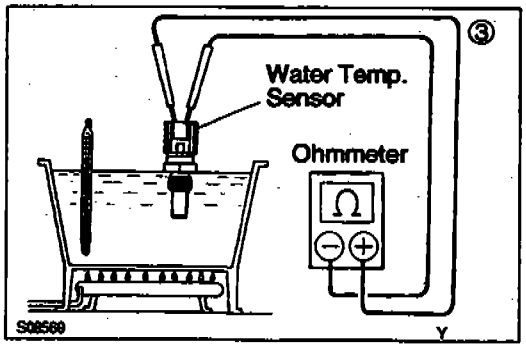
V09069

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)

- NO → Refer to No.1. (See page FI-17)
- OK ↓

Check wiring between ECU terminal E1 and body ground.

- BAD → Repair or replace.
- OK ↓

③ Check water temp. sensor.

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

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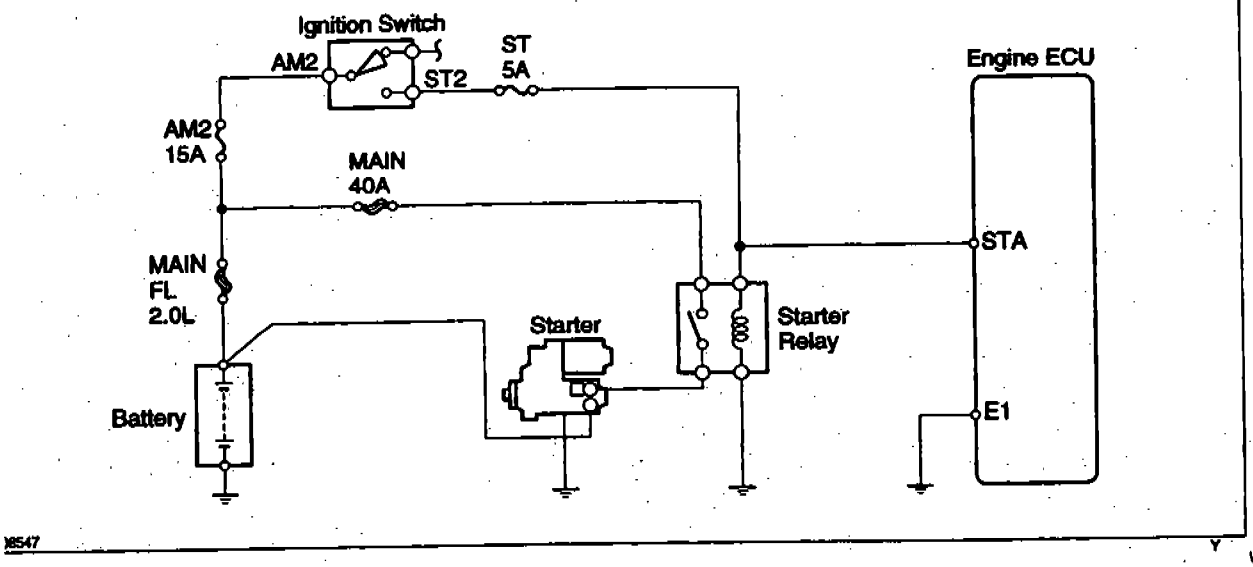
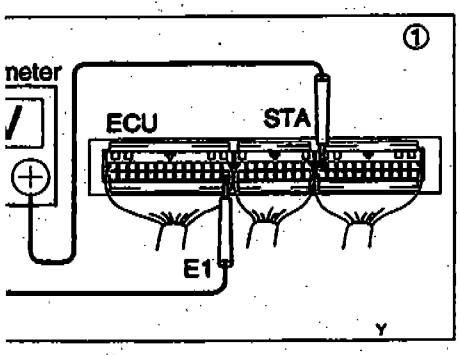
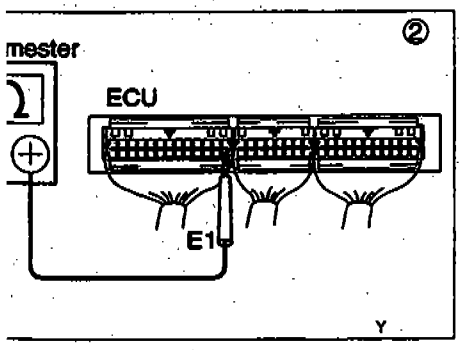
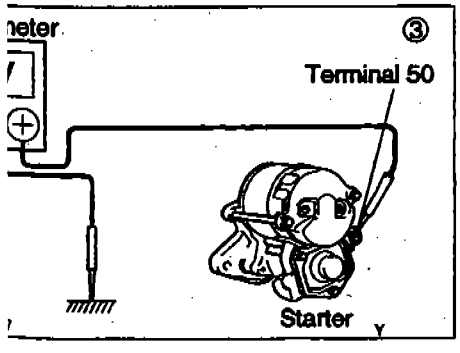
lo.	Terminals	Trouble	Condition	STD voltage
8	STA - E1	No voltage	Cranking	6 V or more









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 ST2.
    - OK → ② Check wiring between ECU terminal E1 and body ground.
      - OK → Try another ECU.
      - BAD → Repair or replace.
    - BAD → Repair or replace.
  - BAD → Check H-fuses, fusible link, battery, wiring, ignition switch and starter relay.
    - BAD → Repair or replace.
    - OK → ③ Check that there is voltage at starter terminal 50. (IG SW START) STD voltage: 6 - 14 V
      - OK → Check starter.
      - NO → Check wiring between ignition switch terminal ST2 and starter terminal 50.

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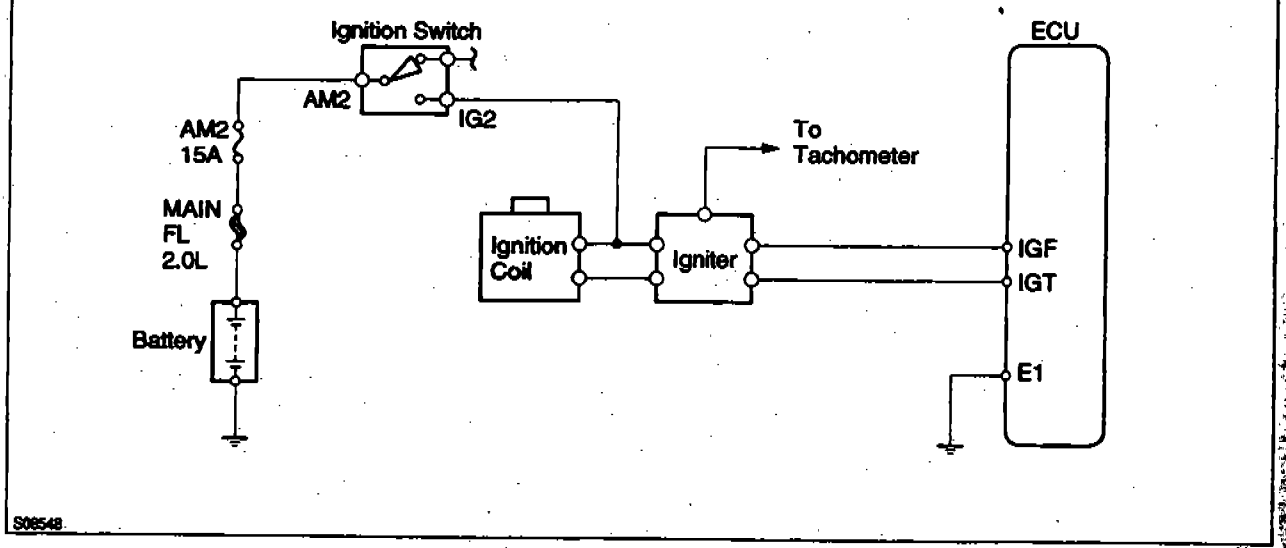
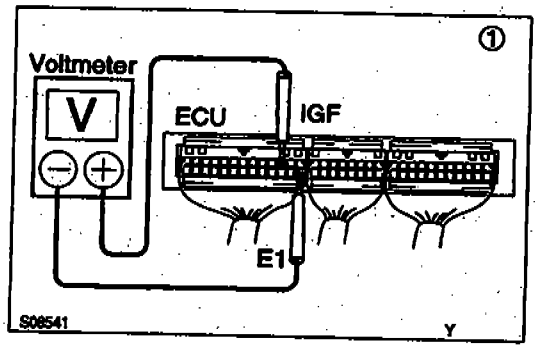
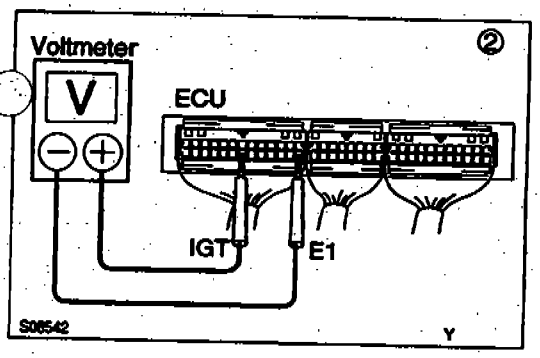
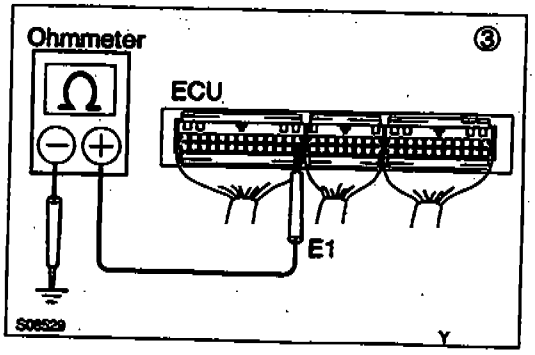
No.	Terminals	Trouble	Condition		STD voltage
9	IGF - E1	No voltage	IG SW ON	Igniter connector disconnected	4.5 - 5.5 V
	IGT - E1	No voltage	Idling		Pulse generation









① There is no voltage between ECU terminals IGF and E1. (Disconnect Igniter connector, IG SW ON)

② Check that there is voltage between ECU terminals IGT and E1. (Idling)

- NO → Check H-fuse, fuse, fusible link and ignition switch.
- OK → ③ Check wiring between ECU terminal E1 and body ground.
  - BAD → Repair or replace.
  - OK → Try another ECU.

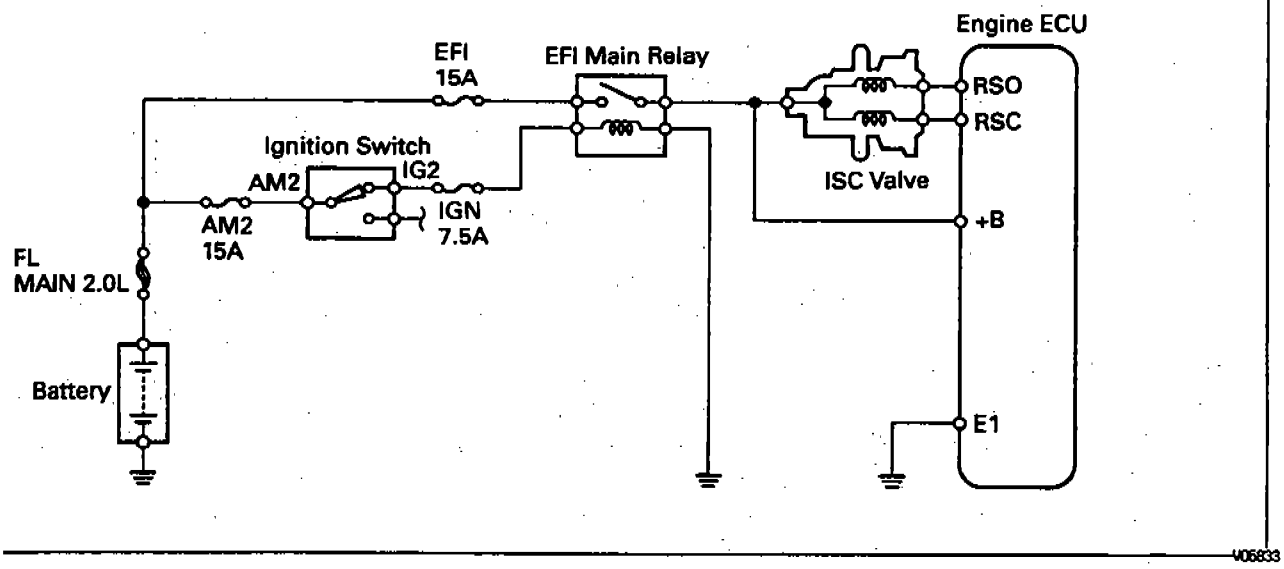
Check H-fuse, fuse, fusible link and ignition switch.
- BAD → Repair or replace.
- OK → Check ignition coil.

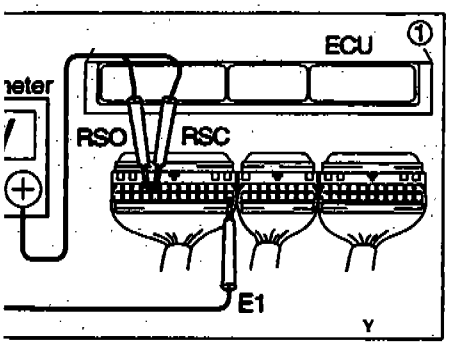
Check ignition coil.
- BAD → Repair or replace.
- OK → Check wiring between ECU and battery.

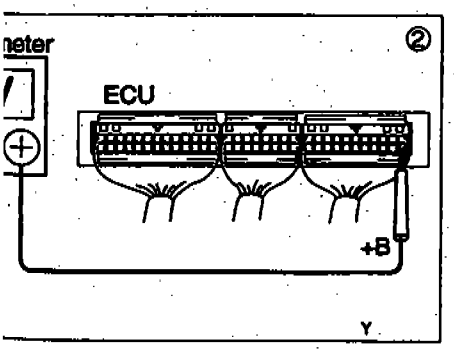
Check wiring between ECU and battery.
- BAD → Repair or replace.
- OK → Check igniter.

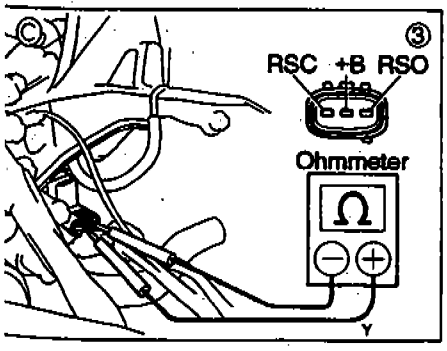
Check igniter.
- BAD → Repair or replace.

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









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

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

- NO → Refer to No.1. (See page FI-17)
- OK ↓

③ Check resistance between ISC valve terminals +B and RSC or RSO.
STD resistance: 19.3 - 22.3 Ω
Cold: 17.5 - 28.5 Ω
Hot: 17.0 - 24.5 Ω

- BAD → Replace ISC valve.
- OK ↓

Check wiring between ECU and ISC valve.

- BAD → Repair or replace wiring.
- OK ↓

Try another ECU.

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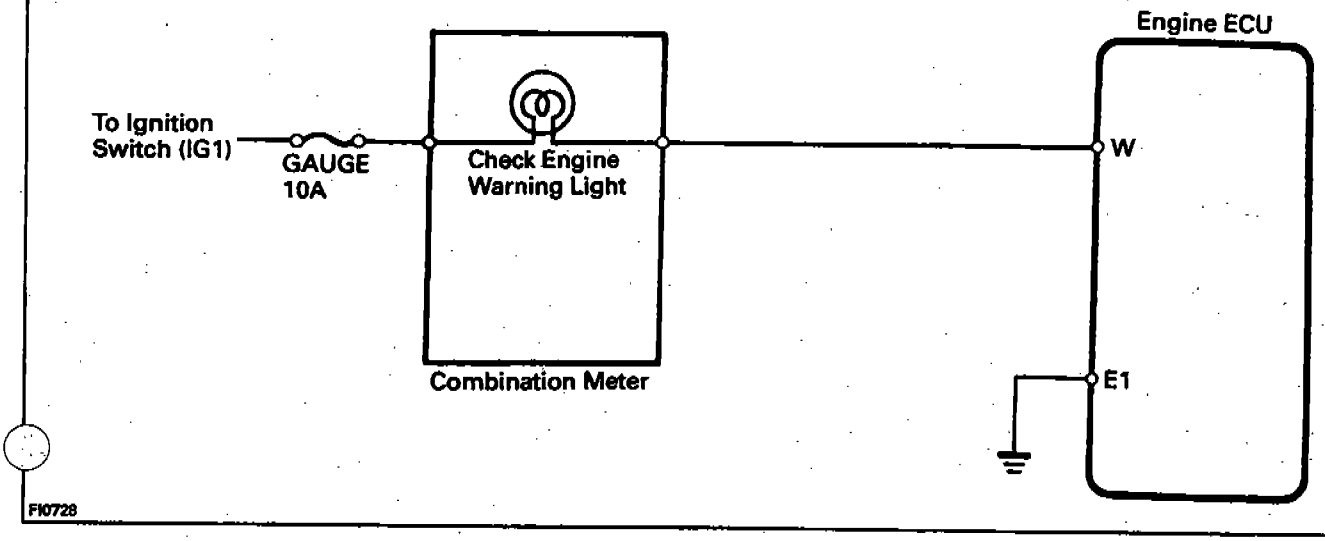
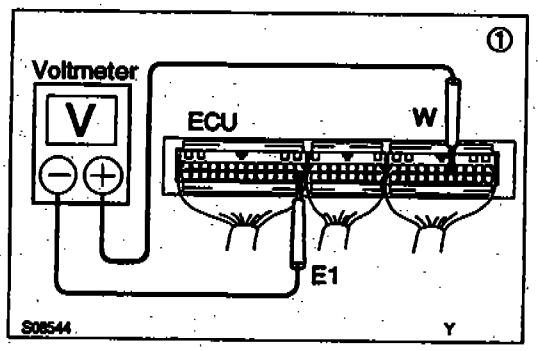
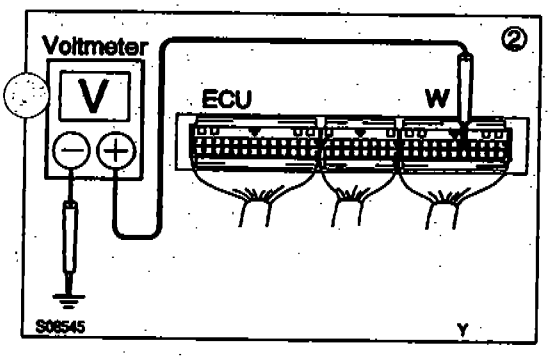
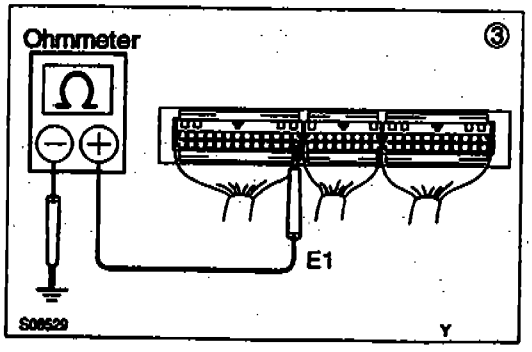
No.	Terminals	Trouble	Condition	STD voltage
11	W – E1	No voltage	No trouble (Check engine warning light off) and engine running.	9 – 14 V









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

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

- NO → Check GAUGE fuse (10A) and check engine warning light.
- OK → ③ Check wiring between ECU terminal E1 and body ground.
  - OK → Try another ECU.
  - BAD → Repair or replace.

Check GAUGE fuse (10A) 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.

Check wiring between ECU terminal W and fuse.

- BAD → Repair or replace.

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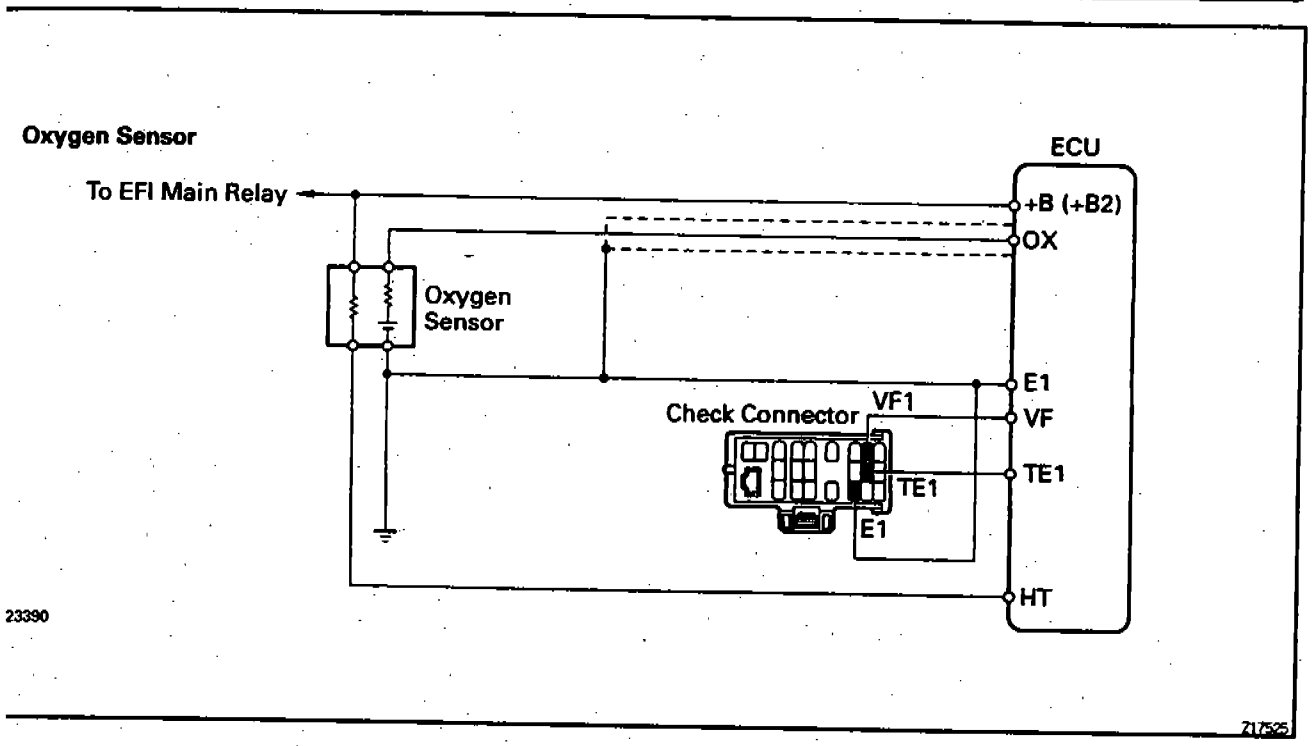
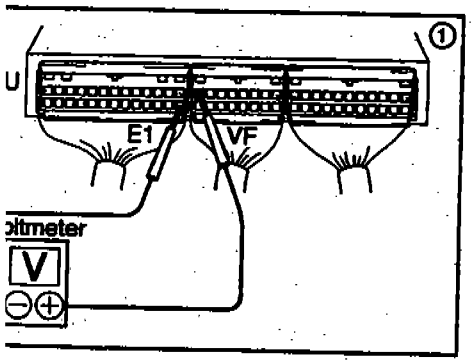
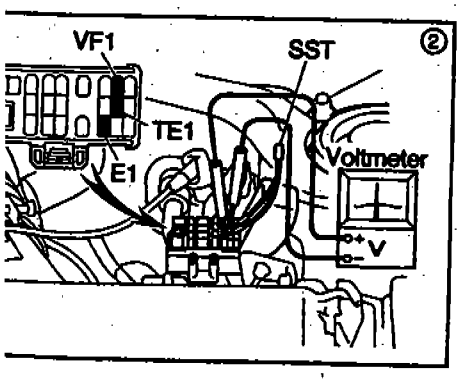






① There is no voltage between ECU terminals VF and E1.

↓

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

- NO → Check for suction of air into exhaust system.
- OK ↓ Check wiring between ECU terminal E1 and body ground.
  - OK ↓ Try another ECU.
    - BAD → Repair or replace.
  - BAD → Repair or replace.

↓

Check for suction of air into exhaust system. — BAD → Repair air suction.

↓ OK

Check for air leak from air intake system. — BAD → Repair air leak.

↓ OK

Check spark plugs. — BAD → Repair or replace.

↓ OK

Check ignition system. — BAD → Repair or replace.

↓ OK

Check fuel pressure. — BAD → Repair or replace.

↓ OK

Check injectors. — BAD → Repair or replace.

↓ OK

Check vacuum sensor. — BAD → Repair or replace.

↓ OK

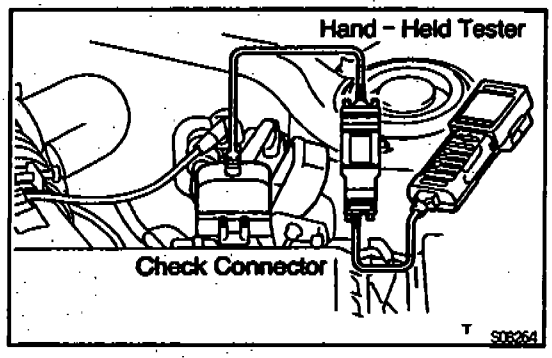
② Check operation of oxygen sensor. — OK → System normal.

↓ BAD

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

↓ OK

Replace oxygen sensor.



REFERENCE VALUE OF ENGINE ECU DATA

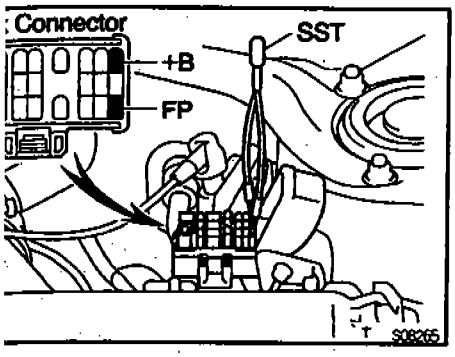
HINT: Engine ECU data can be monitored by hand–held tester.

1. Hook up the hand–held tester to the check connector.
2. Monitor engine ECU data by following the prompts on the tester screen.
   Please refer to the hand–held tester operator's manual for further details.

REFERENCE VALUE FOR ENGINE ECU DATA (Engine at normal operating temp.)

Item	Inspection condition	Reference value
INJECTOR	Engine cold to hot Engine idling at normal operating temp.*1	Gradually decreases Approx. 3 – 4 msecs
IGNITION	Increase engine speed	Gradually increases
ISC DUTY	Engine idling at normal operating temp.*1 A/C switch ON A/T shifting in "D" position	Approx. 29 – 39 % Duty ratio increases Duty ratio increases
ENGINE SPD	RPM kept stable (Comparison with tachometer)	No great changes
INTAKE MAN.	Engine idling at normal operating temp.*1 Increase engine speed	Approx. 160 – 350 mmHg Gradually increases
COOLANT TEMP.	Engine at normal operating temp.	75 – 95°C (167 – 203°F)
THROTTLE	Closed throttle position Wide open throttle From closed throttle position to wide open throttle	Below 5° Above 70° Gradually increases
VEHICLE SPD	During driving (Comparison with speedometer)	No large differences
TARGET A/F L	Engine idling at normal operating temp.	2.50 ± 0.7 V
A/F FB LEFT	RPM stable at 2,500 rpm with normal operating temp.	ON
KNOCK FB	Depress throttle pedal suddenly during idling	ON
STA SIGNAL	During cranking	ON
IDL SIGNAL	Closed throttle position	ON
A/C SIGNAL	A/C switch ON	ON
Ox L	RPM stable at 2,500 rpm with normal operating temp.	RICH LEAN is repeated

*1: All accessories and A/C are switch OFF.
*2: If the engine coolant temp. sensor circuit is open or shorted, the engine ECU assumes an engine coolant temp. value of 80°C (176°F).
*3: When feedback control is forbidden, 0 V is displayed.



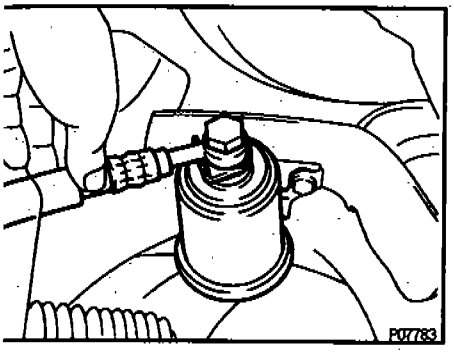
FUEL PUMP

ON–VEHICLE INSPECTION

1. CHECK FUEL PUMP OPERATION

(a) Using SST, connect terminals +B and FP of the check connector.
SST 09843–18020
NOTICE: Do not connect wrong the terminals.

(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 the fuel flowing.
If there is no pressure, check these parts:
- Fusible link
- H–Fuses
- Fuses
- EFI main relay
- Fuel pump
- Wiring connections

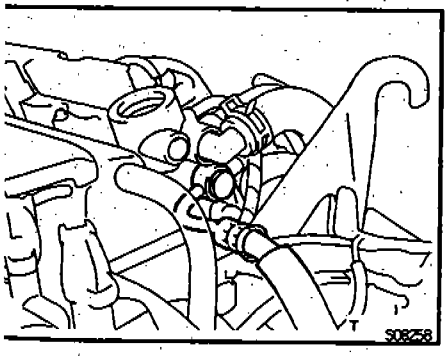
(d) Turn the ignition switch OFF.

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

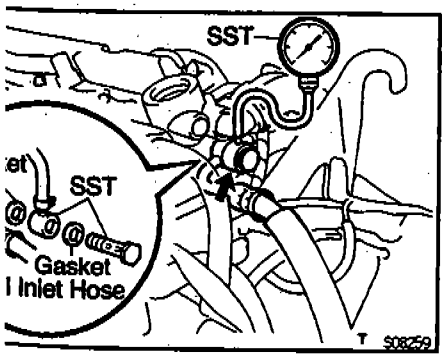
2. INSPECT FUEL PRESSURE

(a) Check that battery voltage is above 11 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 delivery pipe.
HINT:
- 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 the 3 gaskets and SST (union bolt).
SST 09268–45012
Torque: 33 N·m (330 kgf·cm, 24 ft·lbf)

(e) Wipe off any splattered gasoline.

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

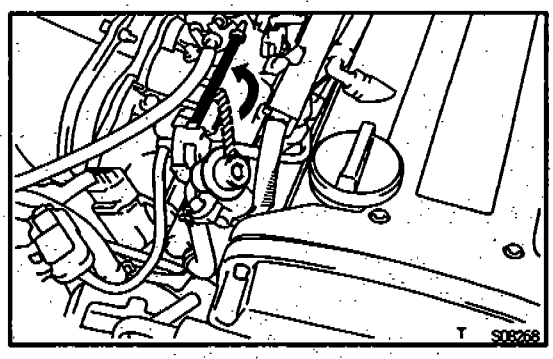
(g) Using SST, connect terminals +B and FP of the che connector.
SST 09843–18020

(h) Turn the ignition switch ON.

(i) Measure the fuel pressure.
Fuel pressure:
235 – 275 kPa (2.4 – 2.8 kgf/cm^2, 34 – 40 psi)
If pressure is high, replace the fuel pressure regulator.
If pressure is low, check these parts:
- Fuel hoses and connection
- Fuel pump
- Fuel filter
- Fuel pressure regulator

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

(k) Start the engine.



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

(m) Measure the fuel pressure at idle.
Fuel pressure:
235 – 275 kPa (2.4 – 2.8 kgf/cm^2, 34 – 40 psi)

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

(o) Measure the fuel pressure at idle.
Fuel pressure:
196 kPa (2.0 kgf/cm^2, 28 psi)
If pressure is not as specified, check the vacuum sensi hose and fuel pressure regulator.

(p) Stop the engine.

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

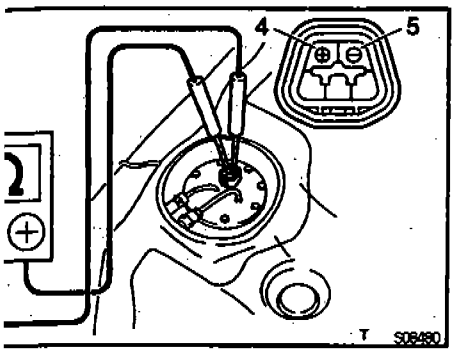
(r) Connect the fuel inlet hose to the delivery pipe with 2 ne gaskets and the union bolt.
Torque: 33 N·m (330 kgf·cm, 24 ft·lbf)

(s) Check for fuel leaks.

3. REMOVE REAR SEAT CUSHION

4. REMOVE FLOOR SERVICE HOLE COVER

5. DISCONNECT FUEL PUMP & SENDER GAUGE CONNECTOR



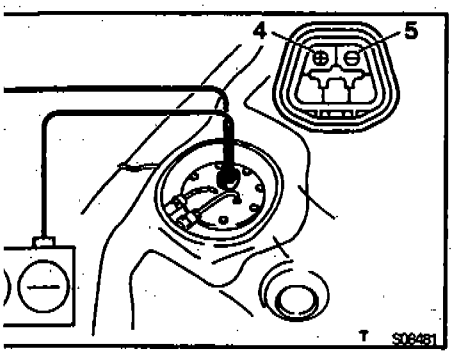
6. INSPECT FUEL PUMP RESISTANCE

Using an ohmmeter, measure the resistance between the 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.



7. INSPECT FUEL PUMP OPERATING

Connect the positive (+) lead from the battery to terminal 4 of the connector, and the negative (–) lead to terminal 5. Check that the fuel pump operates.

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

NOTICE:

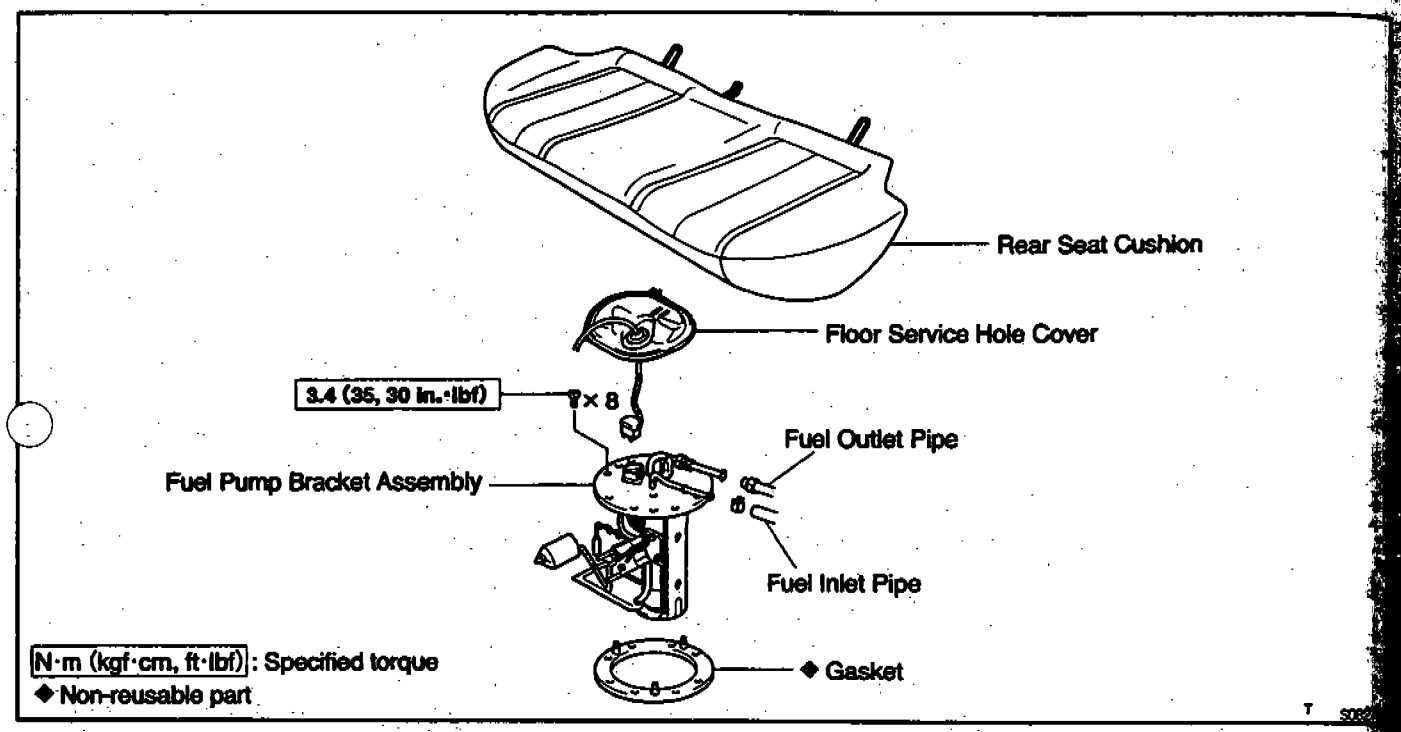
- **These tests must be performed quickly (within 10 seconds) to prevent the coil from burning out.**
- **Keep the fuel pump as far away from the battery as possible.**
- **Always perform switching at the battery side.**

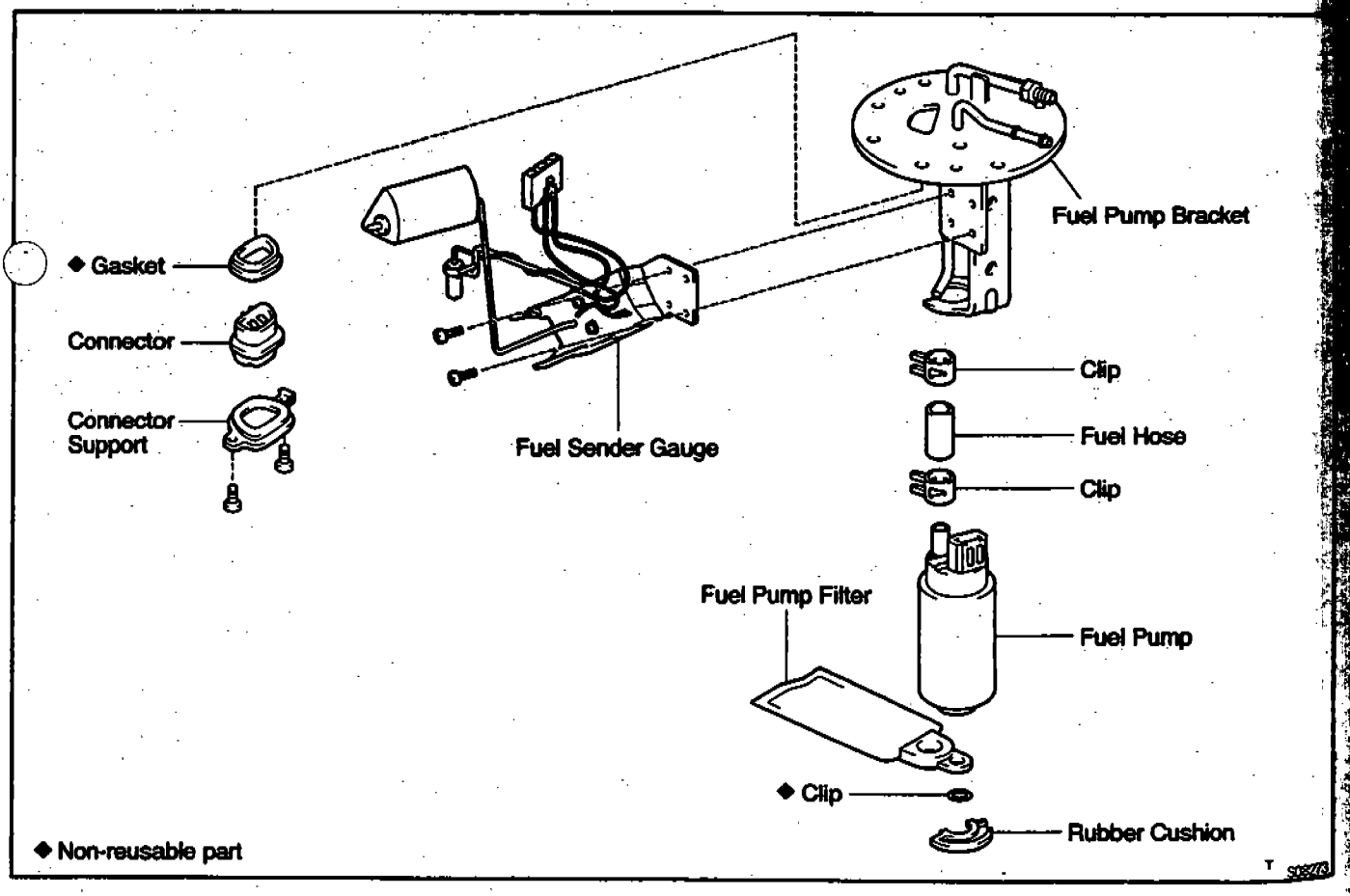
8. RECONNECT FUEL PUMP & SENDER GAUGE CONNECTOR

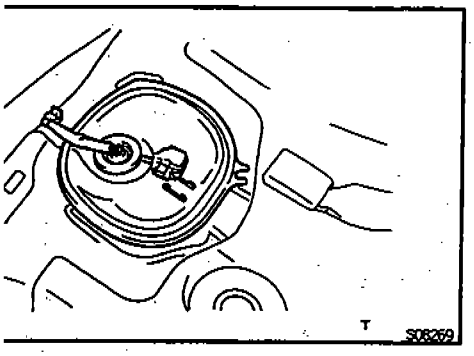
9. REINSTALL FLOOR SERVICE HOLE COVER

10. REINSTALL REAR SEAT CUSHION

COMPONENTS


Rear Seat Cushion
Floor Service Hole Cover
3.4 (35, 30 in.·lbf)
× 8
Fuel Outlet Pipe
Fuel Pump Bracket Assembly
Fuel Inlet Pipe
N·m (kgf·cm, ft·lbf): Specified torque
◆ Non-reusable part
◆ Gasket


Fuel Pump Bracket
◆ Gasket
Connector
Connector Support
Fuel Sender Gauge
Clip
Fuel Hose
Clip
Fuel Pump Filter
Fuel Pump
◆ Clip
Rubber Cushion
◆ Non-reusable part



REMOVAL

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

1. **REMOVE REAR SEAT CUSHION**
2. **REMOVE FLOOR SERVICE HOLE COVER**

(a) Remove the service hole cover.

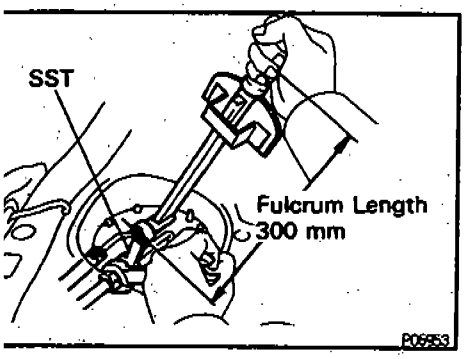
(b) Disconnect the fuel pump & sender gauge connector.
INSTALLATION HINT: Check fuel leakage.

3. **DISCONNECT FUEL PIPE AND HOSE FROM FUEL PUMP BRACKET**

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

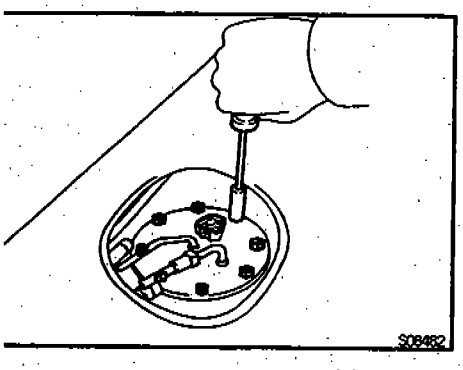
(a) Using SST, disconnect the outlet pipe from the pump bracket.
SST 09631–22020
Torque: 30 N·m (310 kgf·cm, 22 ft·lbf)
INSTALLATION HINT: Use a torque wrench with a fulcrum length of 30 cm (11.81 in.).

(b) Disconnect the return hose from the pump bracket.



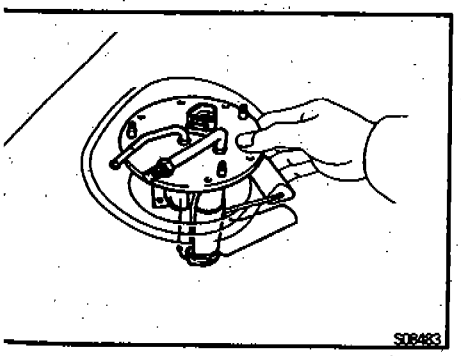
4. **REMOVE FUEL PUMP BRACKET ASSEMBLY FROM FUEL TANK**

(a) Remove the 8 bolts.
Torque: 3.4 N·m (35 kgf·cm, 30 in.·lbf)



(b) Pull out the pump bracket assembly.

(c) Remove the gasket from the pump bracket.
INSTALLATION HINT: Install a new gasket to the pump bracket.



DISASSEMBLY

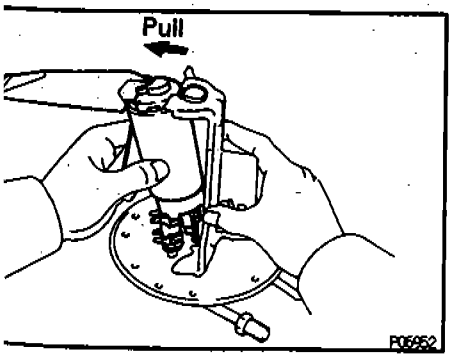
1. **REMOVE FUEL PUMP FROM FUEL PUMP BRACKET**

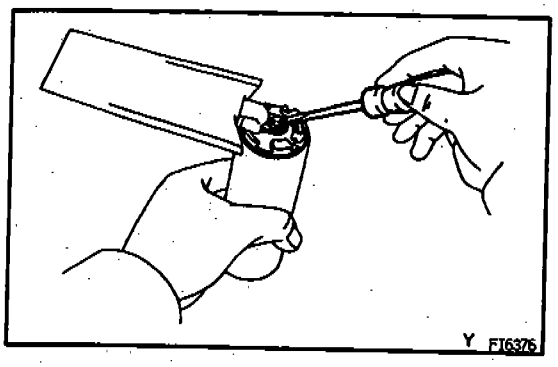
(a) Pull off the lower side of the fuel pump from the pump bracket.

(b) Disconnect the fuel pump connector.

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

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



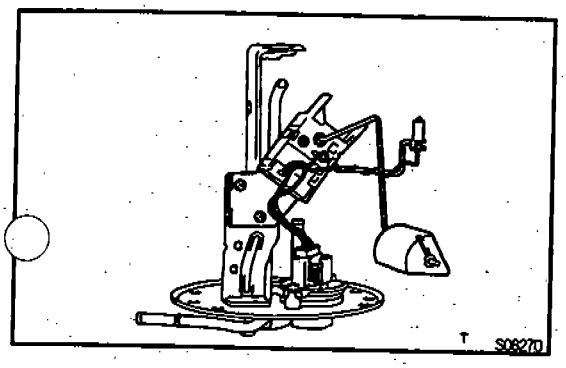


2. REMOVE FUEL PUMP FILTER FROM FUEL PUMP

(a) Using a small screwdriver, remove the clip.

(b) Pull out the pump filter.

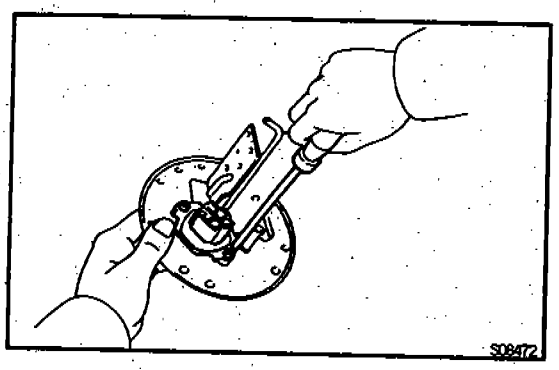
ASSEMBLY HINT: Install the pump filter with a new cl



3. REMOVE FUEL SENDER GAUGE FROM FUEL PU BRACKET

(a) Disconnect the fuel sender gauge connector.

(b) Remove the 2 screws and sender gauge.



4. REMOVE CONNECTOR

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

INSTALLATION HINT: Install the connector with a n gasket.

REASSEMBLY

Reassembly is in the reverse order of disassembl

INSTALLATION

Installation is in the reverse order of removal.

FUEL PRESSURE REGULATOR

ON–VEHICLE INSPECTION

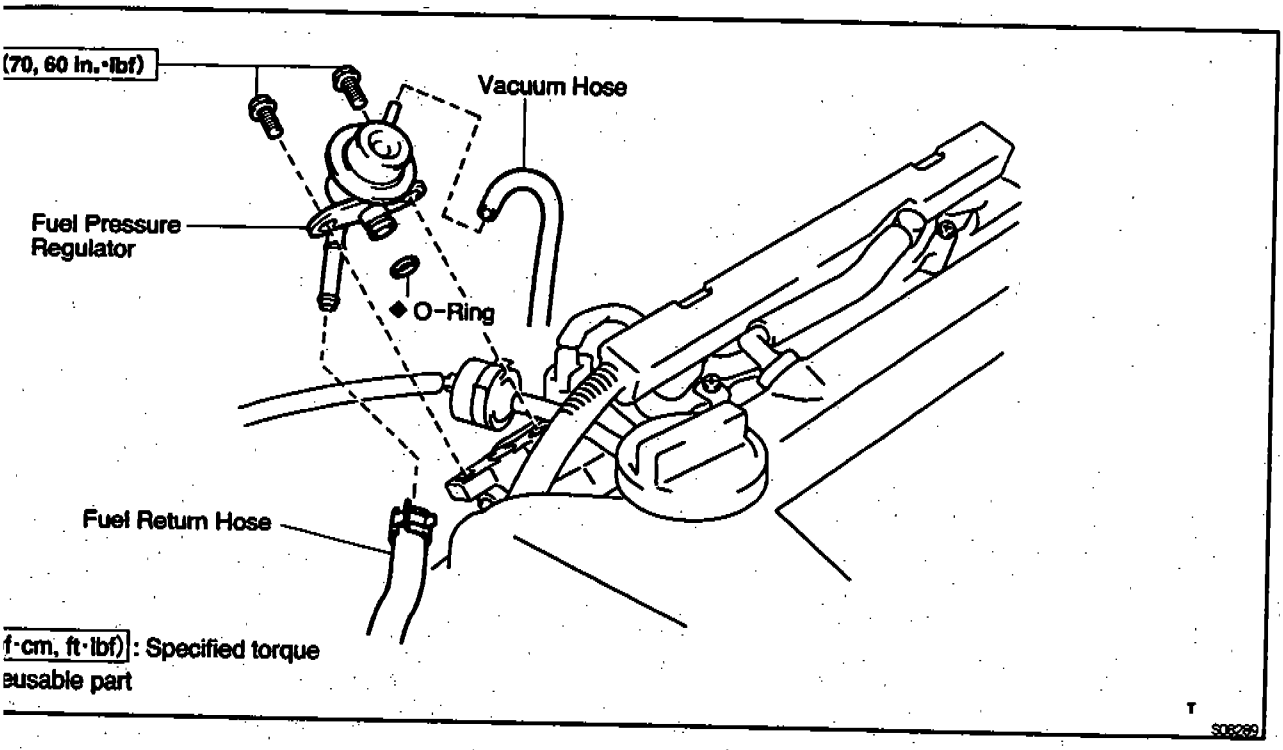
E0005-13

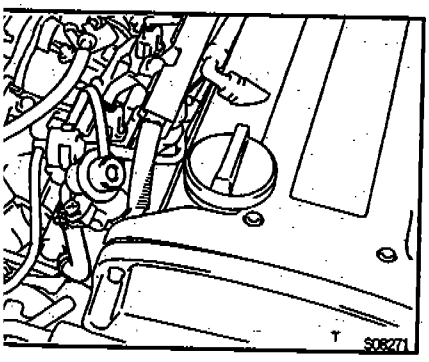
INSPECT FUEL PRESSURE

(See step 2 in on–vehicle inspection in fuel pump)

COMPONENTS

E01AC-2D

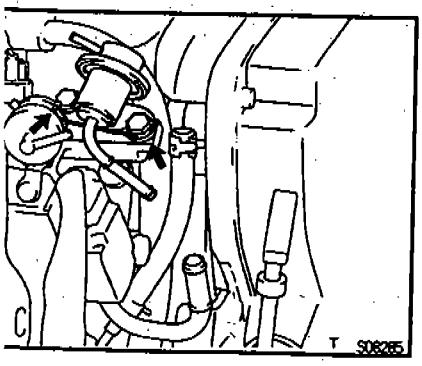




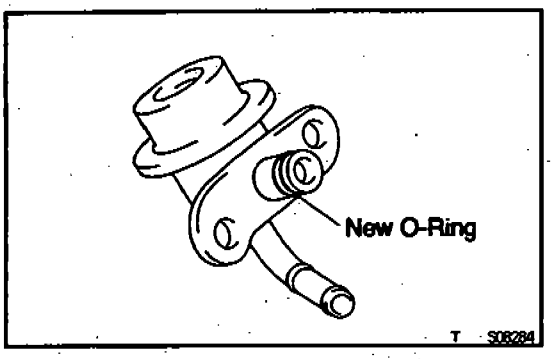
REMOVAL

E01AD-6J

1. **DISCONNECT VACUUM SENSING HOSE FROM FUEL PRESSURE REGULATOR**
2. **DISCONNECT FUEL RETURN HOSE FROM FUEL PRESSURE REGULATOR**
   HINT: Put a suitable container or shop towel under the pressure regulator.



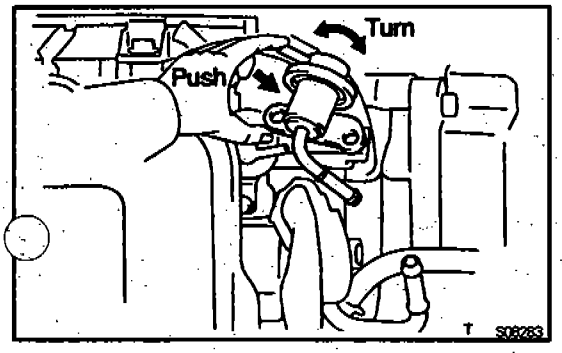
3. **REMOVE FUEL PRESSURE REGULATOR**
   (a) Remove the 2 bolts, and pull out the pressure regulator.
   (b) Remove the O–ring from the pressure regulator.



INSTALLATION

1. INSTALL FUEL PRESSURE REGULATOR

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



(b) While turning the pressure regulator left and right, inst it to the delivery pipe.

(c) Install the pressure regulator with the 2 bolts.
Torque: 7.0 N·m (70 kgf·cm, 60 in.·lbf)

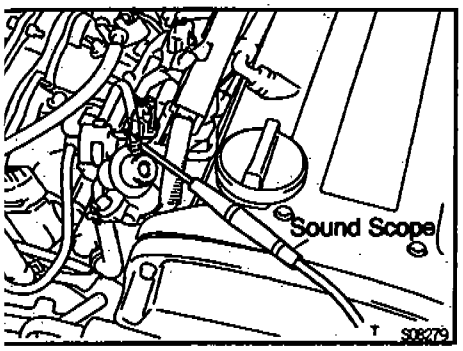
2. CONNECT FUEL RETURN HOSE TO FUEL PRESSURE REGULATOR

3. CONNECT VACUUM SENSING HOSE TO FUEL PRESSURE REGULATOR

4. START ENGINE AND CHECK FOR FUEL LEAKAGE

INJECTOR

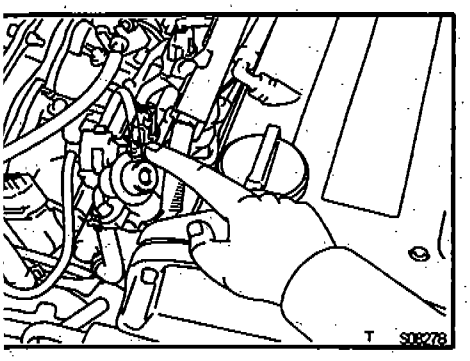
ON–VEHICLE INSPECTION



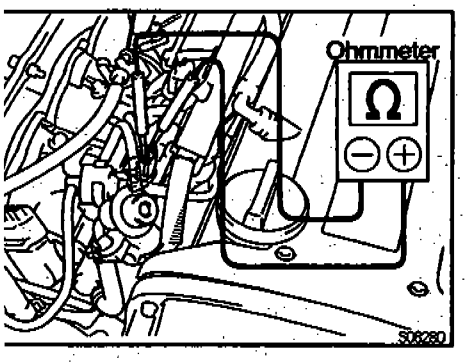
1. INSPECT INJECTOR OPERATION

Check operation sound from each injector.

(a) With the engine running or cranking, use a sound scope to check that there is 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.

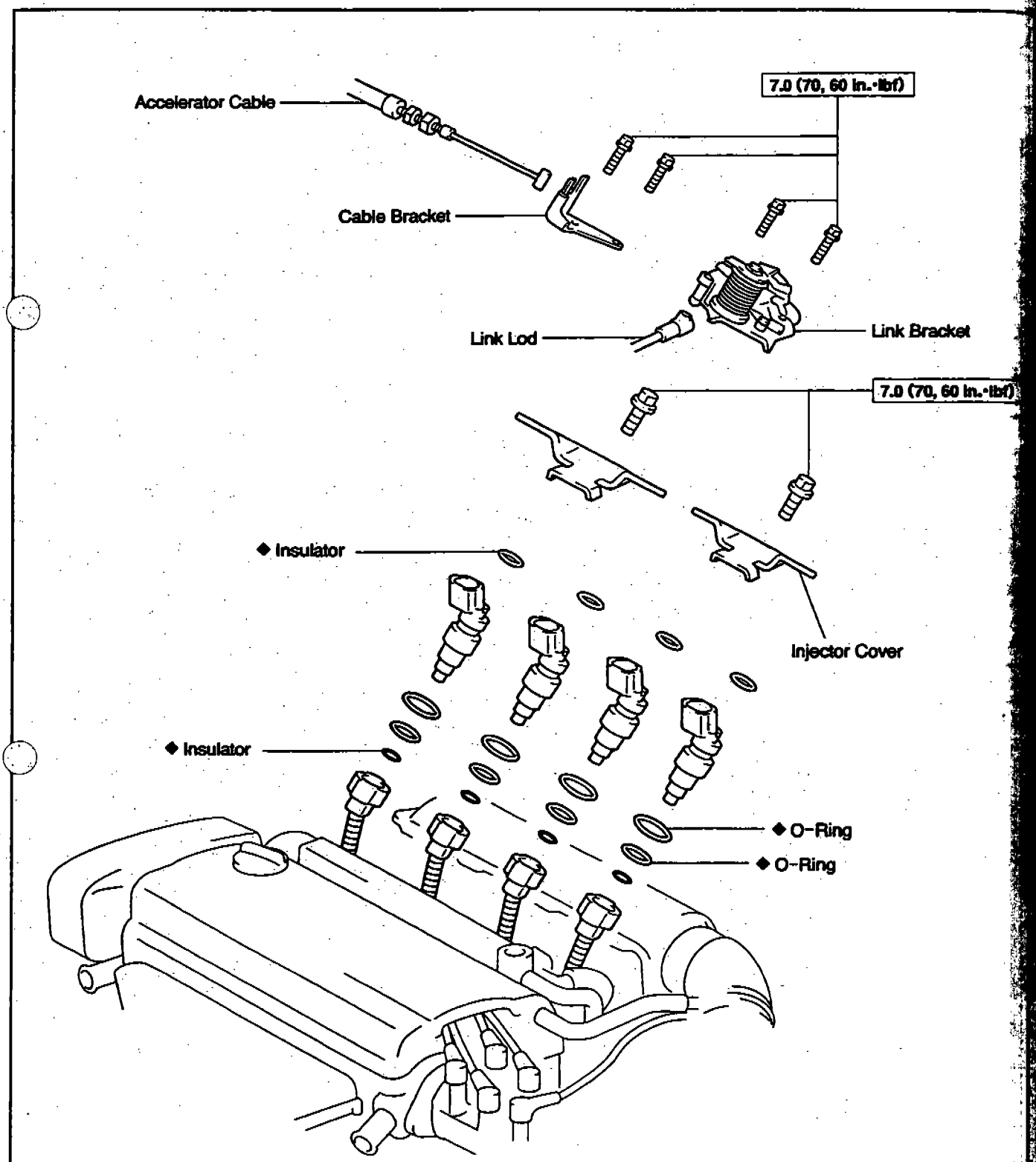
Resistance:

13.4 – 14.2 Ω at 20°C (68°F)

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

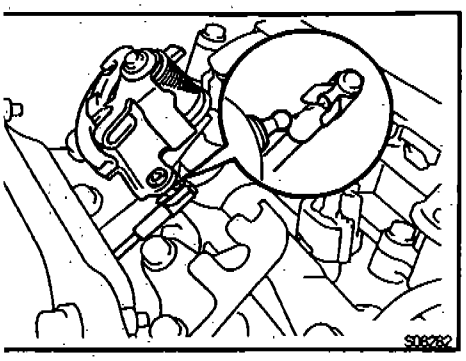
(c) Reconnect the injector connector.

COMPONENTS



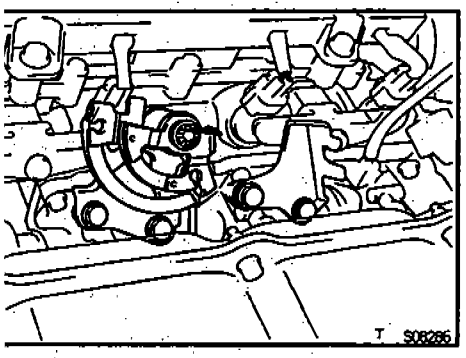
N·m (kgf·cm, ft·lbf) : Specified torque
◆ Non-reusable part

REMOVAL



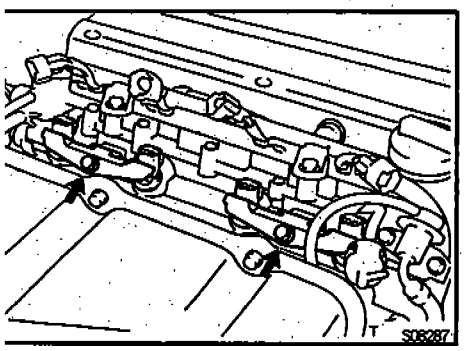
1. **DISCONNECT ACCELERATOR CABLE FROM THROTTLE BODY**
2. **REMOVE LINK BRACKET AND CABLE BRACKET**

(a) Disconnect link rod from link bracket.



(b) Remove the 2 bolts and link bracket.
(c) Remove the 2 bolts and cable bracket.

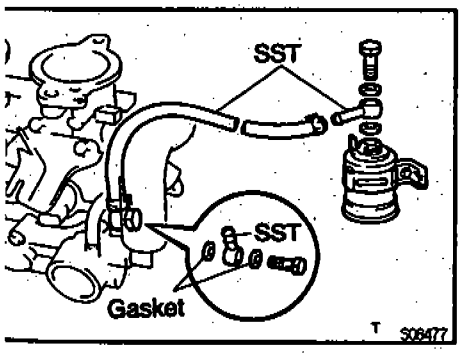
3. **DISCONNECT INJECTOR CONNECTORS**



4. **REMOVE INJECTORS**

(a) Remove the bolt and injector cover. Remove the 2 injector covers.
(b) Remove the insulator from each injector.
(c) Pull out the 4 injectors from throttle body.
(d) Remove the 2 O–rings and insulator from each injector.

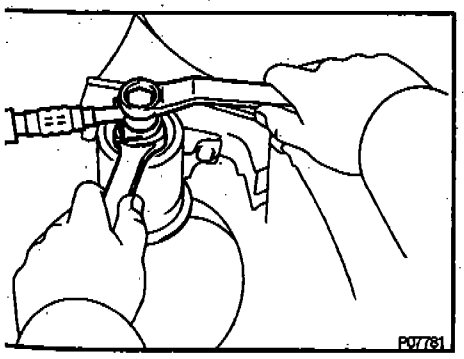
INSPECTION



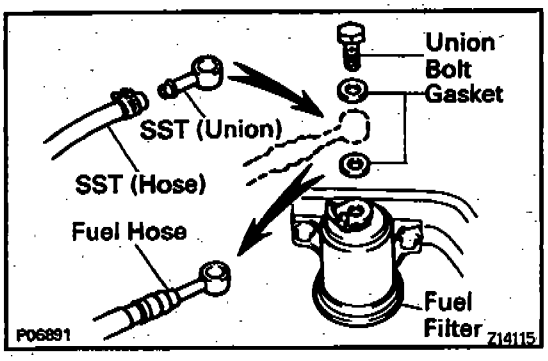
1. **INSPECT INJECTOR INJECTION**

CAUTION: Keep injector clean of sparks during the test.

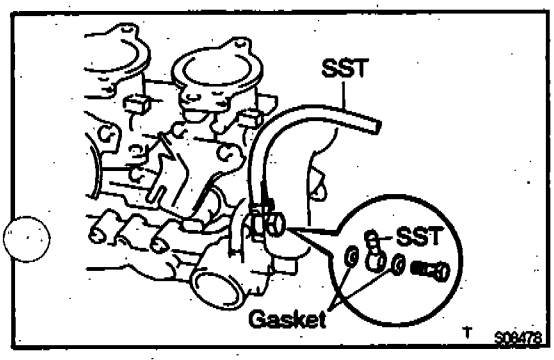
(a) Remove the throttle body assembly.
(See throttle body)
(b) Install the 4 injectors to throttle body assembly.



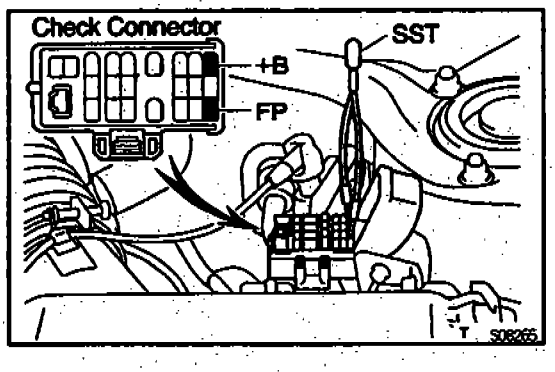
(c) Remove the union bolt and 2 gaskets, and disconnect the fuel inlet hose from the fuel filter outlet.



(d) Connect SST (union and hose) to the fuel filter outlet wi the 2 gaskets and union bolt.
SST 09268–41046 (90405–09015, 95336–08070)
Torque: 29.5 N·m (300 kgf·cm, 22 ft·lbf)



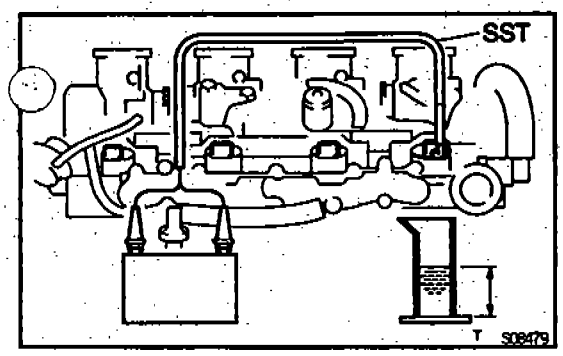
(e) Connect SST (union and hose) to the throttle body sembly with the 2 gasket and union bolt



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

(g) Reconnect negative (–) terminal cable to the batter

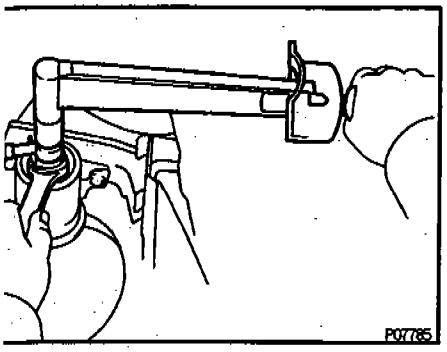
(h) Turn the ignition switch ON.
NOTICE: Do not start the engine.



(i) Connect SST (wire) to the injector and battery for 1 conds, and measure the injection volume with a duated cylinder. Test each injector 2 or 3 times.
SST 09842–30070
Volume:
65 – 82 cm³ (4.0 – 5.0 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 th jector.

2. INSPECT LEAKAGE

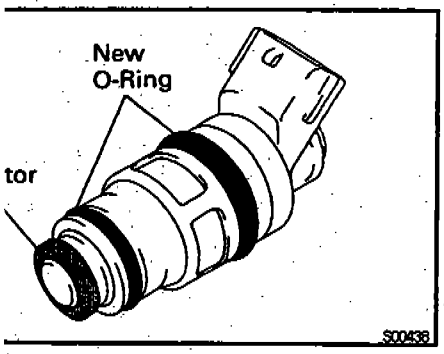
(a) In the condition above, disconnect the test probes of S (wire) from the battery and check the fuel leakage fro the injector.
SST 09842–30070
Fuel drop:
One drop or less per minute



(b) Turn the ignition switch OFF.
(c) Disconnect the negative (–) terminal cable from the battery.
(d) Remove the SST.
SST 09268–41046 (90405–09015, 95336–08070)
09843–18020
(e) Reinstall the fuel inlet hose to the fuel filter outlet with 2 new gaskets and the union bolt.
Torque: 29.5 N·m (300 kgf·cm, 22 ft·lbf)
(f) Remove the 4 injectors from the throttle body assembly.
(g) Reinstall the throttle body assembly.
(See throttle body)

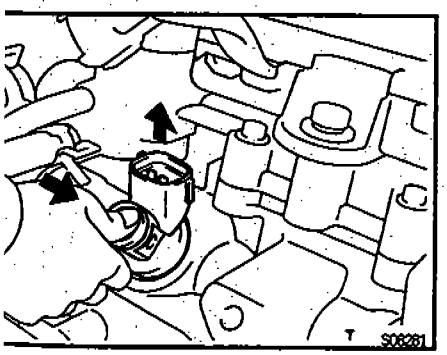
INSTALLATION

8FD45-01

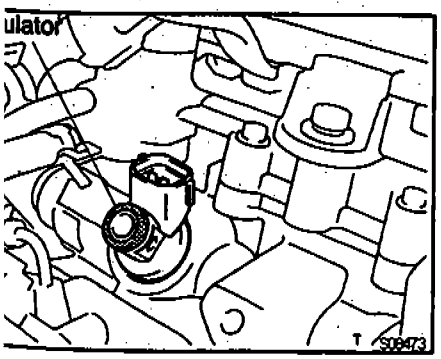


1. INSTALL INJECTORS AND DELIVERY PIPE

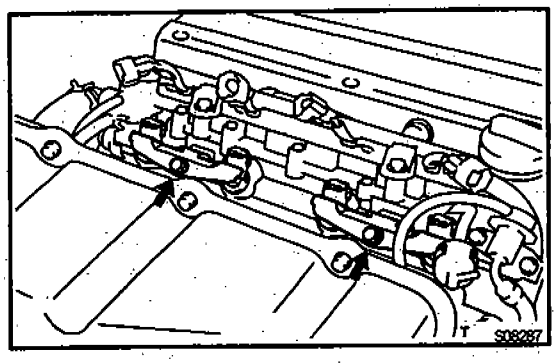
(a) Install 2 new O–rings and a new insulator to each injector.
(b) Apply a light coat of gasoline to 2 new O–rings.



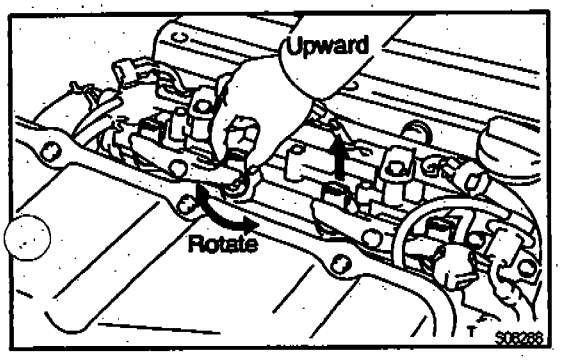
(c) Push in the 4 injectors.
(d) Position the injector connector upward.



(e) Install 4 new insulators.

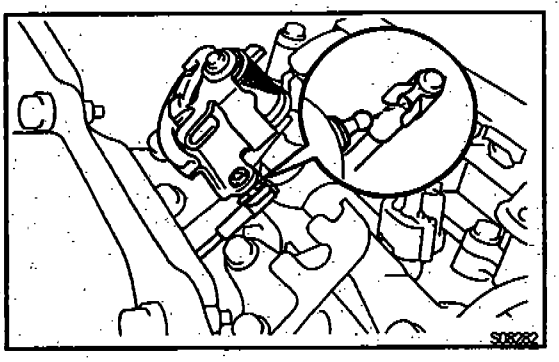


(f) Temporarily install the injector cover with the bolt. Insta
the 2 injector covers.



(g) Check that the injectors rotate smoothly.
HINT: If the injectors do not rotate smoothly, the probab
cause is in correct installation of the O–rings. Replace th
O–rings.

(h) Position the injector connector upward.



(i) Tighten the bolt holding the injector cover to the throtti
body. Hold the 2 injector covers.
Torque: 7.0 N·m (70 kgf·cm, 60 in.·lbf)

2. CONNECT INJECTOR CONNECTORS

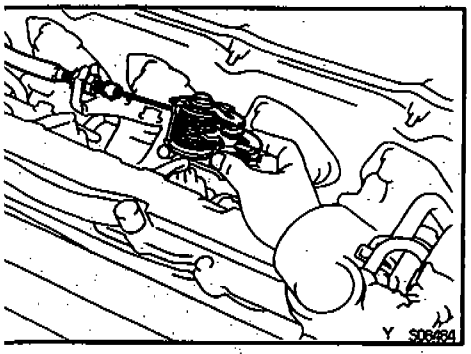
3. INSTALL LINK BRACKET AND CABLE BRACKET

(a) Install the cable bracket with the 2 bolts.
Torque: 7.0 N·m (70 kgf·cm, 60 in.·lbf)

(b) Install the link bracket with the 2 bolts.
Torque: 7.0 N·m (70 kgf·cm, 60 in.·lbf)

(c) Connect the link rod to the link bracket.

**4. CONNECT ACCELERATOR CABLE TO THROTTL
BODY**



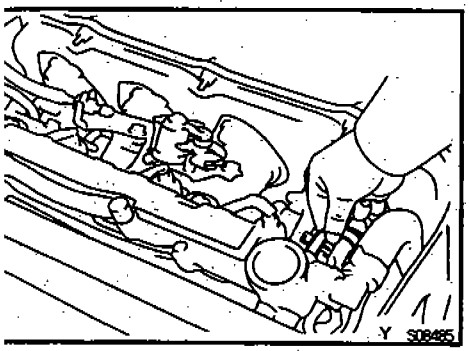
THROTTLE BODY

ON–VEHICLE INSPECTION

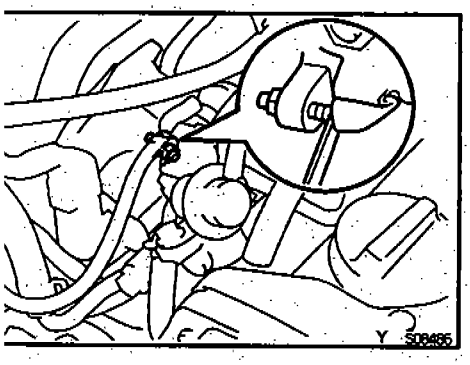
SF046-01

1. INSPECT THROTTLE BODY

(a) Check that the throttle linkage moves smoothly.



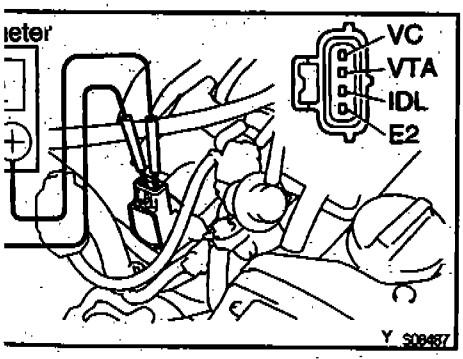
(b) Check the vacuum at the purge port.
- Start the engine.
- Check the vacuum with your finger.



2. INSPECT THROTTLE POSITION SENSOR

(a) Disconnect the throttle position sensor connector.

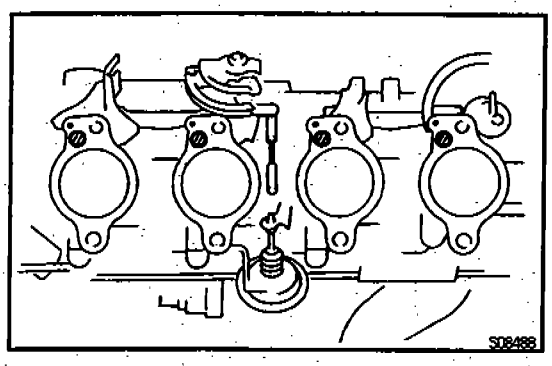
(b) Insert a feeler gauge between the throttle stop screw and throttle lever.



(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	0.3 – 6.3 kΩ
0.8 mm (0.031 in.)	IDL – E2	0.5 kΩ or less
1.0 mm (0.040 in.)	IDL – E2	Infinity
Throttle valve fully open	VTA – E2	1.8 – 11.5 kΩ
–	VC – E2	3.5 – 6.5 kΩ

(d) Reconnect the sensor connector.

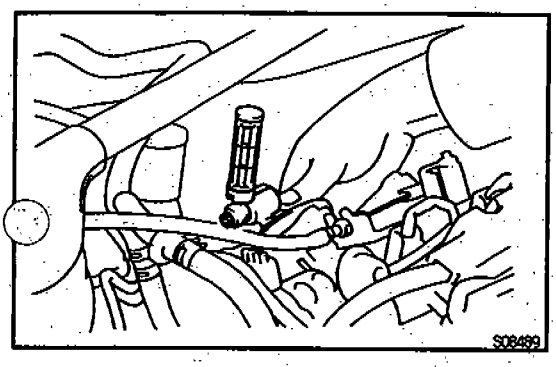


3. ADJUST THROTTLE BODY

(a) Remove the surge tank.

(b) Fully close the bypass screws of the No.1, No.2, No.3 and No.4 throttle bodies.

(c) Allow the engine to warm up to normal operating temperature.



(d) Using a carburetor balancer, search out the maximum air flowed cylinder.

(e) Using the carburetor balancer, and adjusting the bypass screws, tune the other three cylinders in the same as the maximum air flowed cylinder.
HINT: Do not loosen the bypass screw until it becomes of flange surface of the throttle body.

(f) Stop the engine.

(g) Reinstall the surge tank.

(h) Start the engine.

(i) Check that the idle speed is stable in the specification.
Idle speed
830 – 930 rpm
If not within the specified idle speed, stop the engine and screw the bypass screws which adjust as step (e) in turns.

(j) Repeat step (i) until the idle speed becomes stable in specification.

4. INSPECT THROTTLE OPENER

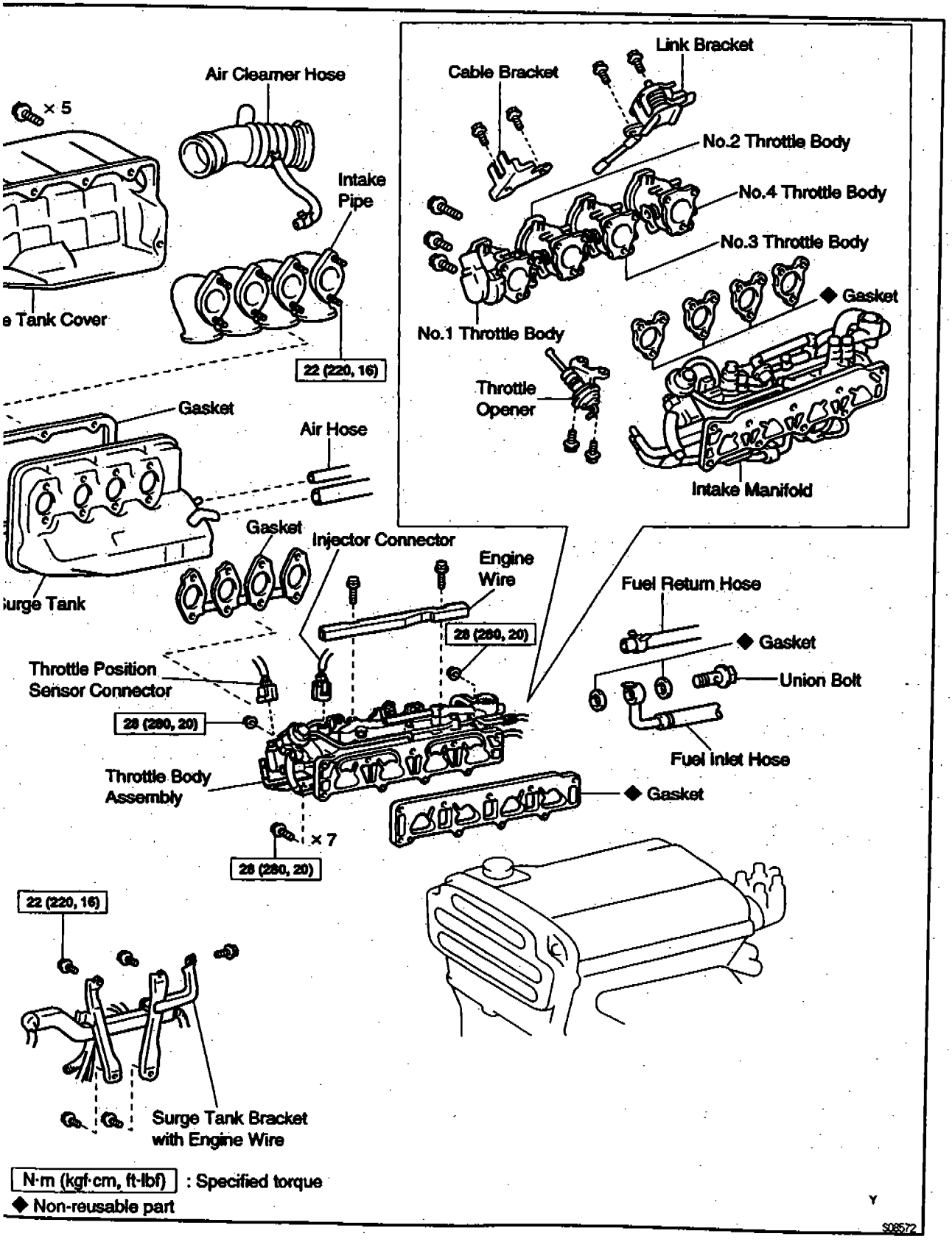
(a) Allow the engine to warm up to normal operating temperature.

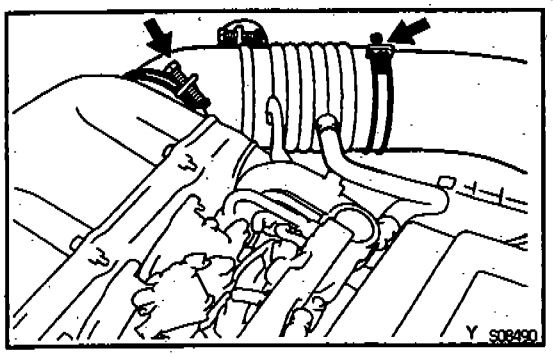
(b) Disconnect the vacuum hose from the throttle opener and plug the hose end.

(c) Check the throttle opener setting speed.
Throttle opener setting speed:
2,500 rpm or less

(d) If the throttle opener setting speed is not as specified, adjust or replace the throttle opener.
(See step 8 in installation)

COMPONENTS


Link Bracket
Cable Bracket
Air Cleamer Hose
× 5
No.2 Throttle Body
Intake Pipe
No.4 Throttle Body
No.3 Throttle Body
◆ Gasket
e Tank Cover
No.1 Throttle Body
22 (220, 16)
Throttle Opener
Gasket
Air Hose
Intake Manifold
Gasket
Injector Connector
Engine Wire
urge Tank
Fuel Return Hose
28 (280, 20)
◆ Gasket
Throttle Position Sensor Connector
Union Bolt
28 (280, 20)
Fuel Inlet Hose
Throttle Body Assembly
◆ Gasket
× 7
28 (280, 20)
22 (220, 16)
Surge Tank Bracket with Engine Wire
N·m (kgf·cm, ft·lbf) : Specified torque
◆ Non-reusable part
Y
S08572



REMOVAL

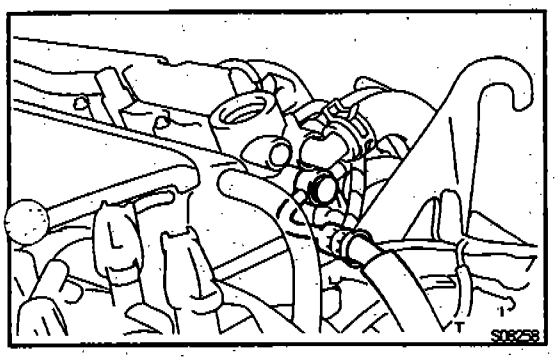
1. REMOVE AIR CLEANER HOSE

(a) Loosen the 2 air cleaner hose clamp bolts.

(b) Disconnect the air hose.

(c) Remove the air cleaner hose.

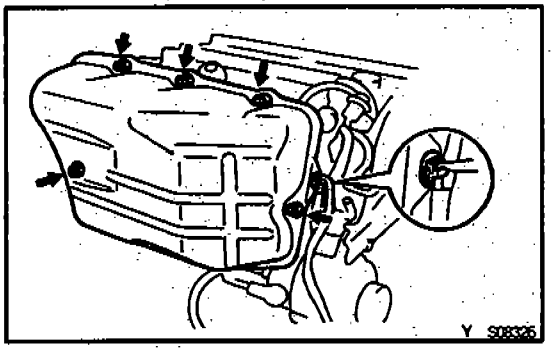
2. DISCONNECT ACCELERATOR CABLE FROM THROTTLE BODY



3. DISCONNECT FUEL HOSES

(a) Remove the union bolt and 2 gaskets, and disconnect t fuel inlet hose from the throttle body.

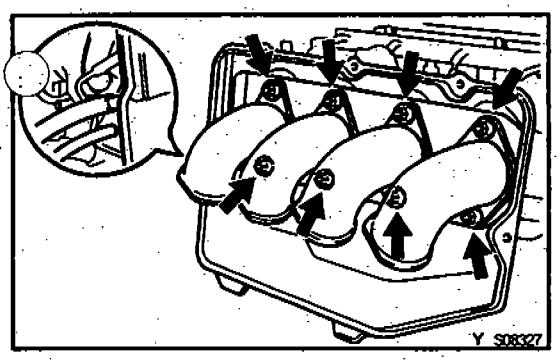
(b) Disconnect the fuel return hose from the throttle body 5)



4. REMOVE SURGE TANK

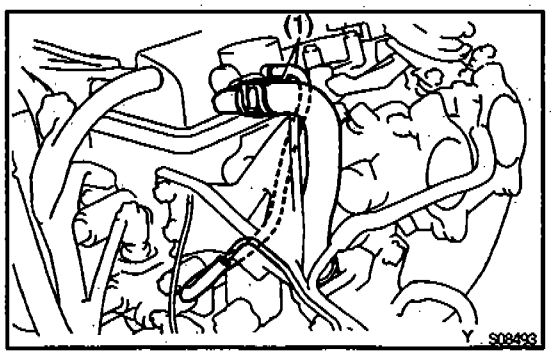
(a) Disconnect the cord clip from the surge tank.

(b) Using a 5 mm hexagon wrench, remove the 5 bolts, sur tank cover and gasket.



(c) Disconnect the vacuum hose and ISC hose from t surge tank.

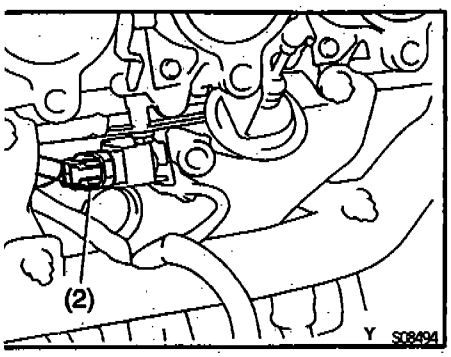
(d) Remove the 2 bolts with the intake pipe. Remove the 4 take pipes, surge tank and gasket.



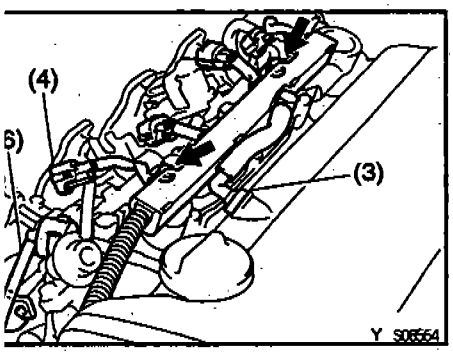
5. REMOVE THROTTLE BODY ASSEMBLY

(a) Disconnect these connectors and hoses:

(1) Air hoses

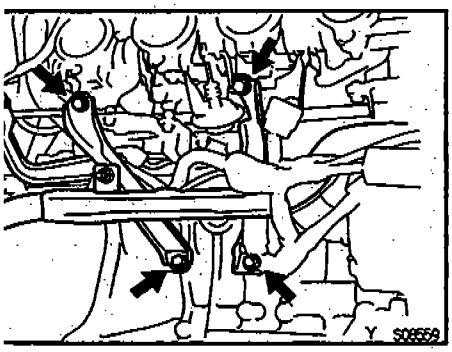


(2) VSV for EVAP connector

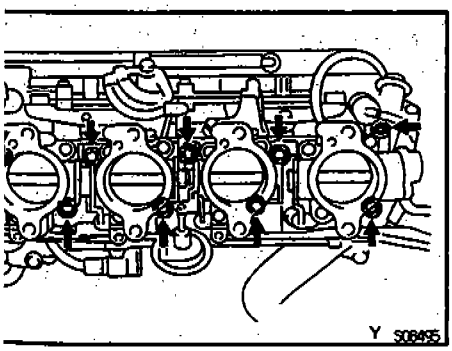


(3) PCV hose
(4) Injector connectors
(5) Throttle position sensor connector
(6) Vacuum hose

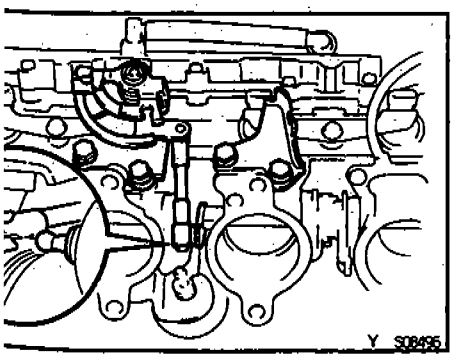
(b) Remove the 2 bolts and engine wire from the throttle body.



(c) Remove the 5 bolts and the 2 surge tank stays with the engine wire from the throttle body.

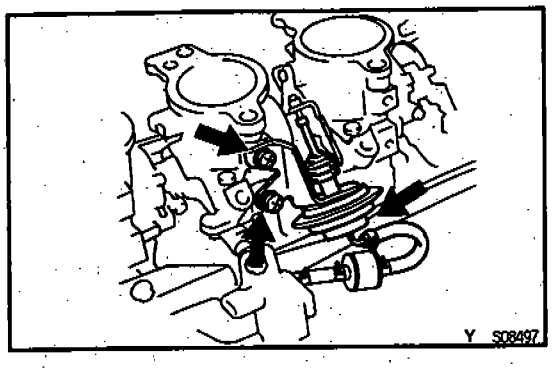


(d) Remove the 2 nuts, 7 bolts, throttle body assembly and gasket.



6. REMOVE LINK BRACKET AND ACCELERATOR CABLE BRACKET

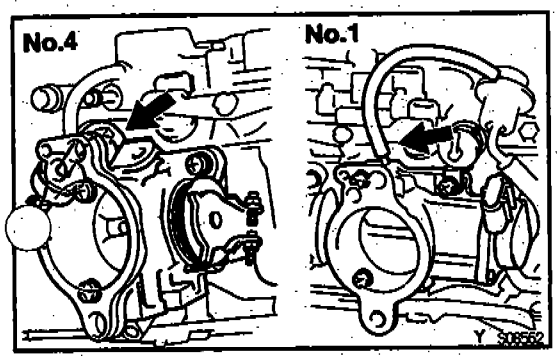
(a) Disconnect the link rod from the throttle lever.
(b) Remove the 2 bolts and link bracket.
(c) Remove the 2 bolts and accelerator cable bracket.



7. REMOVE THROTTLE OPENER

(a) Disconnect the vacuum hose from the throttle opener.

(b) Remove the 2 screws and throttle opener.

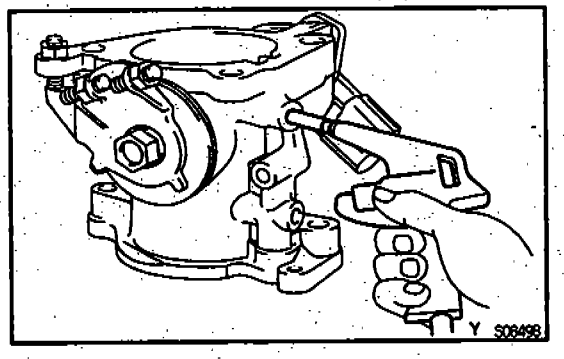


8. REMOVE NO.1 – NO.4 THROTTLE BODIES

(a) No.1 and No.4:
Disconnect the vacuum hose from the throttle body.

(b) No.1:
Remove the 3 screws, clip, throttle body and gasket.

(c) No.2 – No.4:
Remove the 3 screws, throttle body and gasket. Remo the No.2 – No.4 throttle bodies and gaskets.

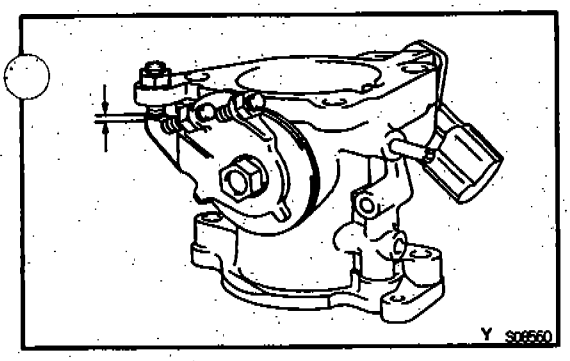


INSPECTION

1. CLEAN THROTTLE BODY

Using compressed air, clean all the passages and a tures. Clean the all throttle bodies.

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



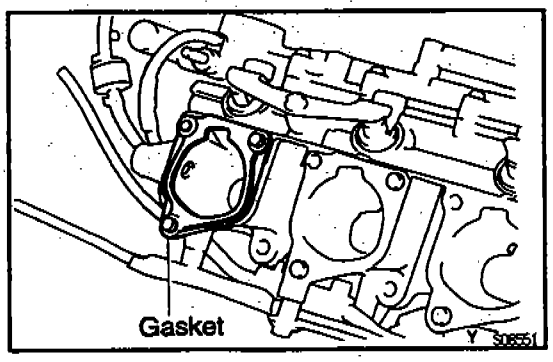
2. INSPECT THROTTLE VALVE

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

NOTICE: Do not adjust the throttle stop screws.

3. INSPECT THROTTLE POSITION SENSOR

(See step 2 in on–vehicle inspection)

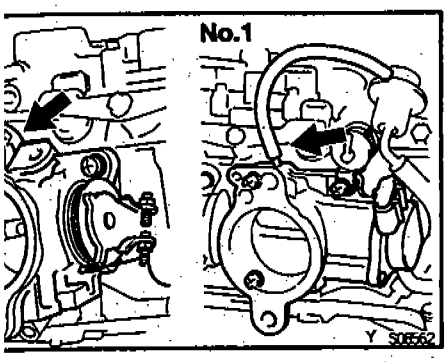


INSTALLATION

1. INSTALL NO.1 – NO.4 THROTTLE BODIES

(a) No.1:
Install a new gasket and the throttle body with the screws and clip.
Torque: 7.0 N·m (70 kgf·cm, 60 in.·lbf)

(b) No.2 – No.4:
Install a new gasket and the throttle body with the screws. Install the No.2 – No.4 throttle bodies.



Torque: 7.0 N·m (70 kgf·cm, 60 ft·lbf)

(c) No.1 and No.4:
Connect the vacuum hose to the throttle body.

2. INSTALL THROTTLE OPENER

(a) Install the throttle opener with the 2 bolts.

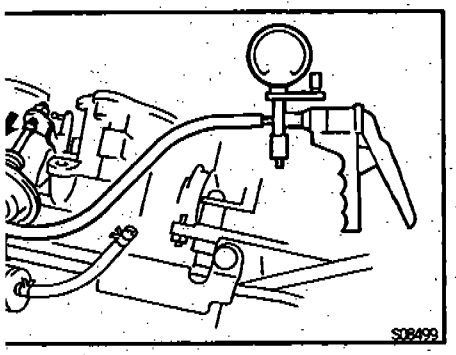
(b) Connect the vacuum hose to the throttle opener.

3. INSTALL LINK BRACKET AND ACCELERATOR CABLE BRACKET

(a) Install the accelerator cable bracket with the 2 bolts.
Torque: 7.0 N·m (70 kgf·cm, 60 in.·lbf)

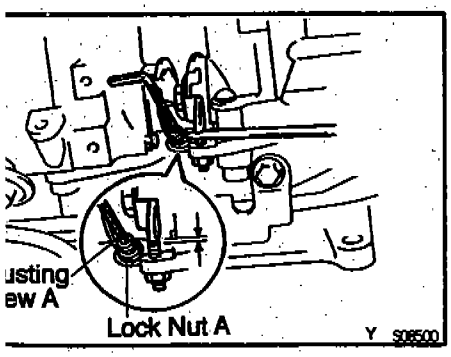
(b) Install the link bracket with the 2 bolts.
Torque: 7.0 N·m (70 kgf·cm, 60 in.·lbf)

(c) Connect the link rod to the throttle lever.



4. ADJUST NO.1 THROTTLE BODY

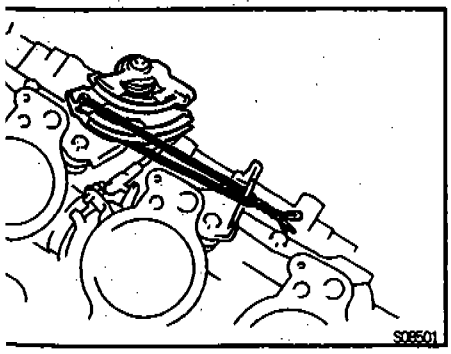
(a) Apply vacuum to the throttle opener.



(b) Loosen the lock nut A.

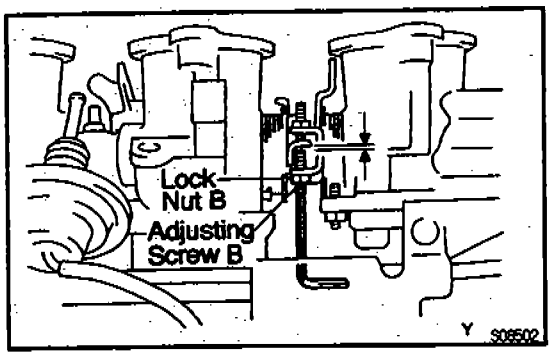
(c) Using a feeler gauge and 2 mm hexagon wrench, turn the adjusting screw A to adjust the clearance as shown in the illustration.
Clearance:
0.03 mm (0.001 in.)

(d) Tighten the lock nut A.

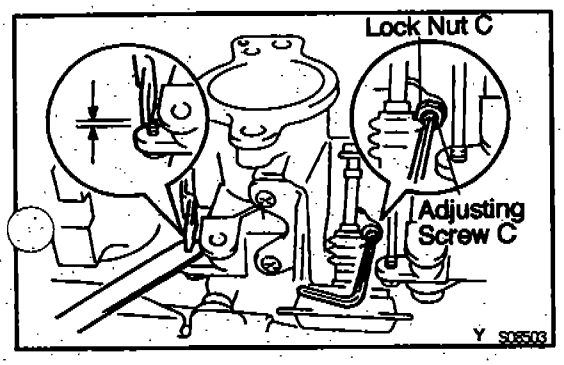


(e) Open fully the throttle valve.

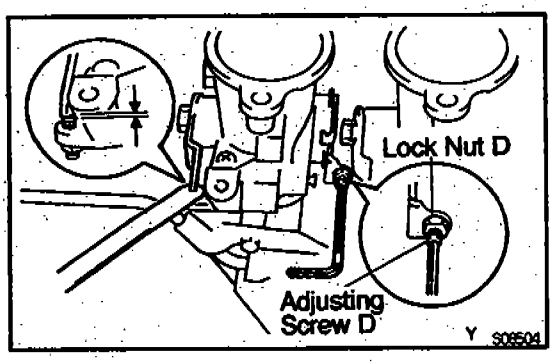
(f) Using a wire, fix the link as keep step (e).
NOTICE: Do not fix the throttle valve by inserting the tools.



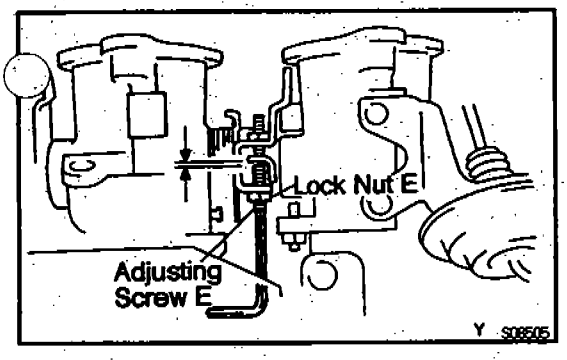
(g) Loosen the lock nut B.
(h) Using a 2 mm hexagon wrench, turn the adjusting screw B until the clearance becomes 0 mm (0 in.).
(i) Return the adjusting screw B 0.33 to 0.50 turns then tighten the lock nut B.
Clearance:
0.15 – 0.25 mm (0.006 – 0.010 in.)
(j) Remove the wire.



5. ADJUST NO.2 THROTTLE BODY
(a) See procedure (a) to (d) in step 4.
(b) Loosen the lock nut C.
(c) Using a feeler gauge and 2 mm hexagon wrench, turn the adjusting screw C to adjust the clearance as shown in the illustration.
Clearance:
0.03 mm (0.001 in.)
(d) Tighten the lock nut C.



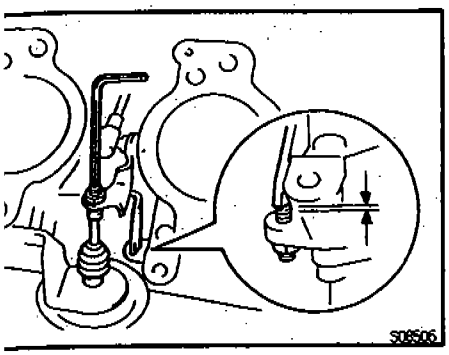
(e) Loosen the lock nut D.
(f) Using a feeler gauge and 2 mm hexagon wrench, turn the adjusting screw D to adjust the clearance as shown in the illustration.
Clearance:
0.03 mm (0.001 in.)
(g) Tighten the lock nut D.



(h) See procedure (e) to (i) in step 4.
(i) Loosen the lock nut E.
(j) Using a 2 mm hexagon wrench, turn the adjusting screw E until the clearance becomes 0 mm (0 in.).
(k) Return the adjusting screw E 0.33 to 0.50 turns then tighten the lock nut E.
Clearance: 0.15 – 0.25 mm (0.006 – 0.010 in.)
(l) Remove the wire.

6. ADJUST NO.3 THROTTLE BODY
(a) Apply vacuum to the throttle opener.
(b) See procedure (b) to (c) and (i) to (l) in step 5.

7. ADJUST NO.4 THROTTLE BODY
(a) Apply vacuum to the throttle opener.
(b) See procedure (e) to (g) and (i) to (l) in step 5.



8. ADJUST THROTTLE OPENER

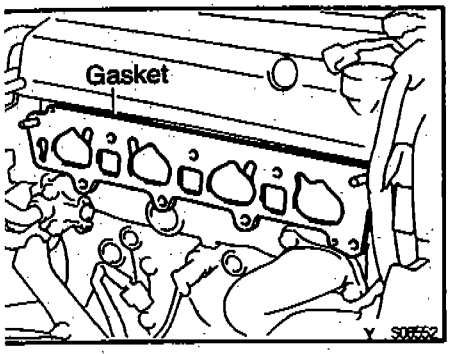
(a) Loosen the lock nut.

(b) Using a feeler gauge and 2 mm hexagon wrench, turn the adjusting screw to adjust the clearance as shown in the illustration.

Clearance:

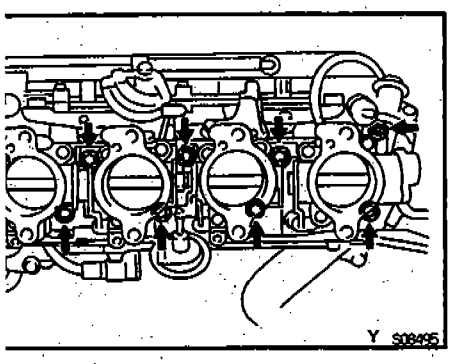
1.23 – 1.37 mm (0.048 – 0.054 in.)

(c) Tighten the lock nut.



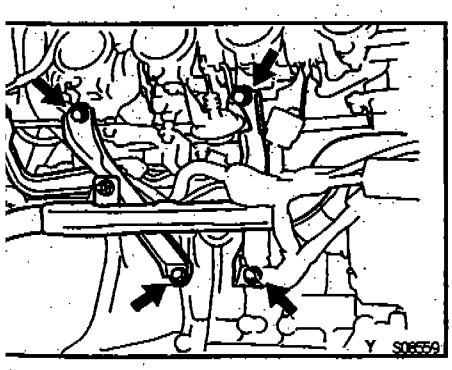
9. INSTALL THROTTLE BODY ASSEMBLY

(a) Place a new gasket to the cylinder head.



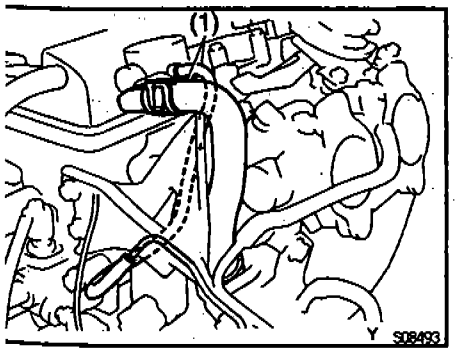
(b) Install the throttle body assembly with the 7 bolts and 2 nuts.

Torque: 28 N·m (280 kgf·cm, 20 ft·lbf)



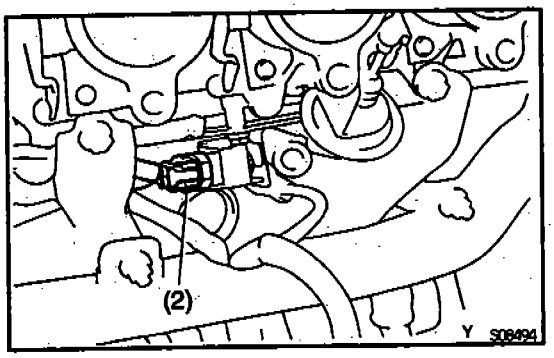
(c) Install the 2 surge tank stays with the engine wire and 4 bolts.

Torque: 22 N·m (220 kgf·cm, 16 ft·lbf)

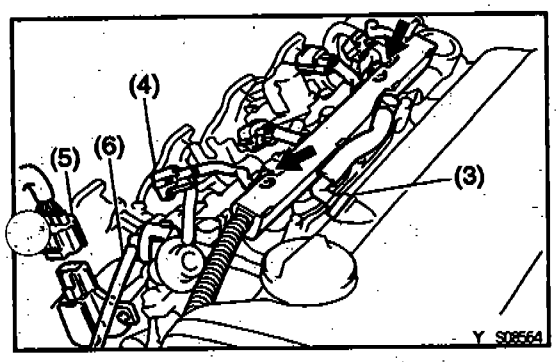


(d) Connect the these connectors and hoses:

(1) Air hoses

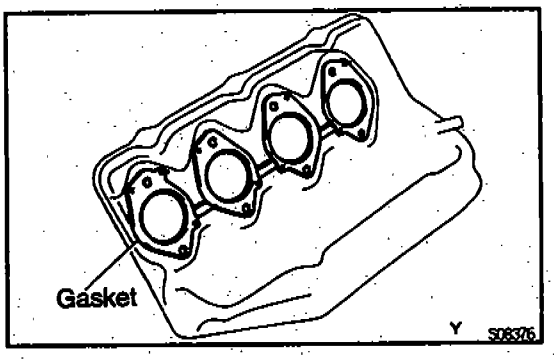


(2) VSV for EVAP connector



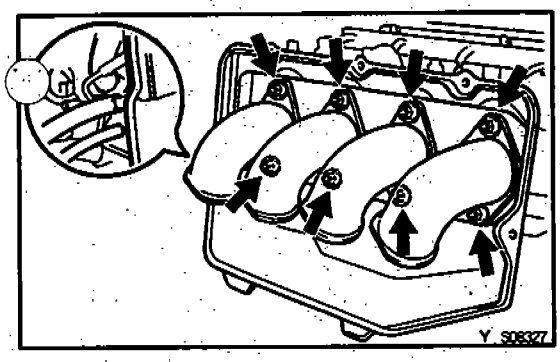
(3) PCV hose
(4) Injector connectors
(5) Throttle position sensor connector
(6) Vacuum hose

(e) Install the engine wire with the 2 bolts.



10. INSTALL SURGE TANK

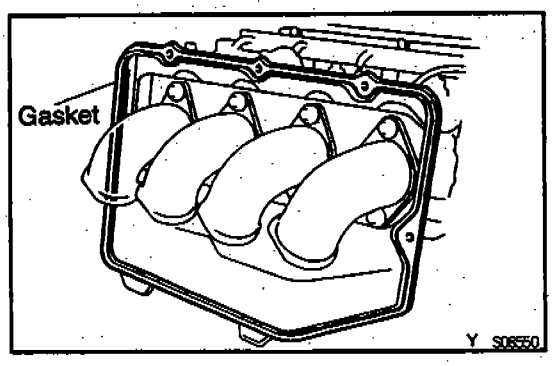
(a) Place the gasket in position on the surge tank.



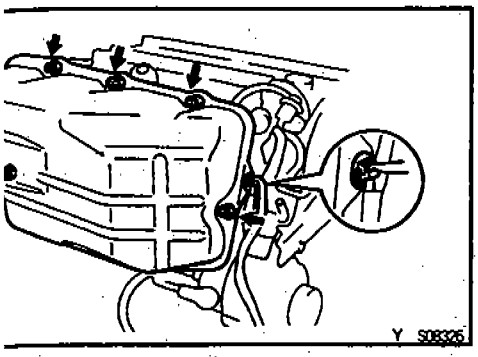
(b) Place the surge tank with the gasket in position on the throttle body.

(c) Install the intake pipe with the 2 bolts. Install the 4 intake pipes.
Torque: 22 N·m (220 kgf·cm, 16 ft·lbf)

(d) Connect the vacuum hose and ISC hose.

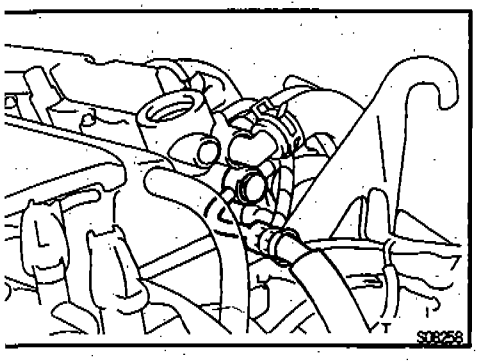


(e) Place the gasket in position on the surge tank.



(f) Using a 5 mm hexagon wrench, install the surge tank cover with the 5 bolts.
Torque: 15 N·m (150 kgf·cm, 11 ft·lbf)

(g) Connect the cord clip to the surge tank.



11. CONNECT FUEL HOSES

(a) Install the fuel inlet hose with 2 new gaskets and the union bolt.
Torque: 33 N·m (330 kgf·cm, 24 ft·lbf)

(b) Connect the fuel return hose the throttle body.

12. CONNECT ACCELERATOR CABLE TO THROTTLE BODY

13. INSTALL AIR CLEANER HOSE

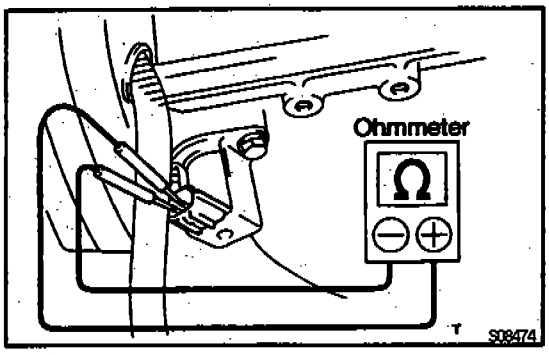
(a) Install the air cleaner hose.

(b) Tighten the 2 air cleaner hose clamp bolts.

(c) Connect the air hose.

14. ADJUST THROTTLE BODY ASSEMBLY BALANCE (See step 3 in on–vehicle inspection)

15. CHECK THROTTLE OPENER (See step 4 in on–vehicle inspection)



CAMSHAFT TIMING OIL CONTRO VALVE

ON–VEHICLE INSPECTION

INSPECT OIL CONTROL VALVE RESISTANCE

(a) Disconnect the oil control valve connector.

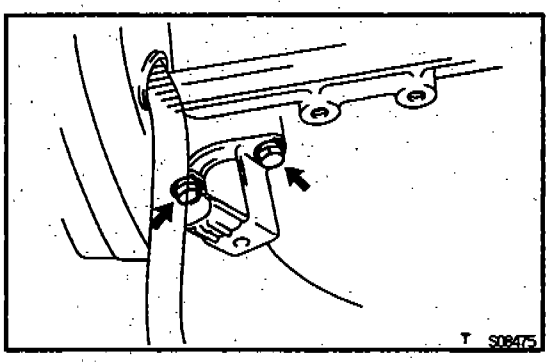
(b) Using an ohmmeter, measure the resistance between t terminals.

Resistance:

11 – 13 Ω at 20°C (68°F)

If the resistance is not as specified, replace the valve

(c) Reconnect the oil control valve connector.



REMOVAL

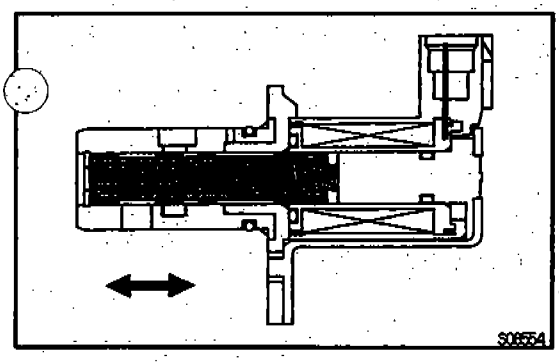
REMOVE OIL CONTROL VALVE

(a) Disconnect the oil control valve connector.

(b) Remove the 2 bolts, oil control valve and O–ring.

INSTALLATION HINT: Use a new O–ring.

Torque: 8.0 N·m (80 kgf·cm, 71 in.·lbf)



INSPECTION

INSPECT OIL CONTROL VALVE OPERATION

Apply battery voltage across the terminals, then ch the movement of the valve.

If operation is not as specified, replace the oil con valve.

INSTALLATION

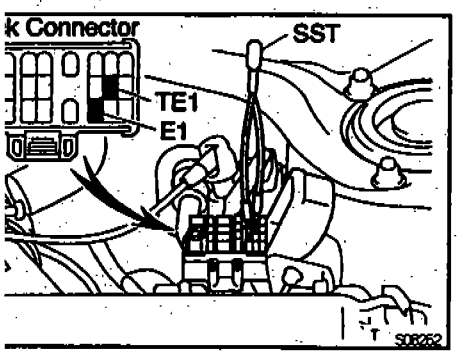
Installation is in the reverse order of removal.

ISC VALVE

ON–VEHICLE INSPECTION

1. INSPECT ISC VALVE OPERATION

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



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

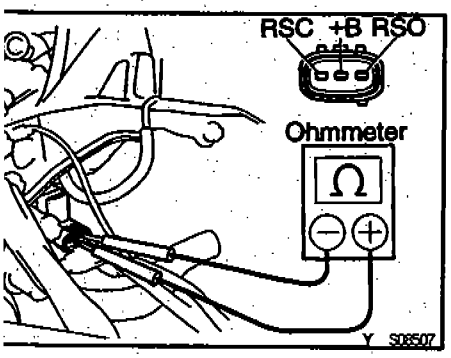
(c) After engine speed are kept at 1,000 – 1,500 rpm for 5 seconds, check that they return to idle speed.
If the rpm operation is not as specified, check the ISC valve, wiring and ECU.

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

2. INSPECT ISC VALVE RESISTANCE

NOTICE: "Cold" and "Hot" in the following sentences express the temperature of the coils themselves. "Cold" is from –10°C (14°F) to 50°C (122°F) and "Hot" is from 50°C (122°F) to 100°C (212°F).

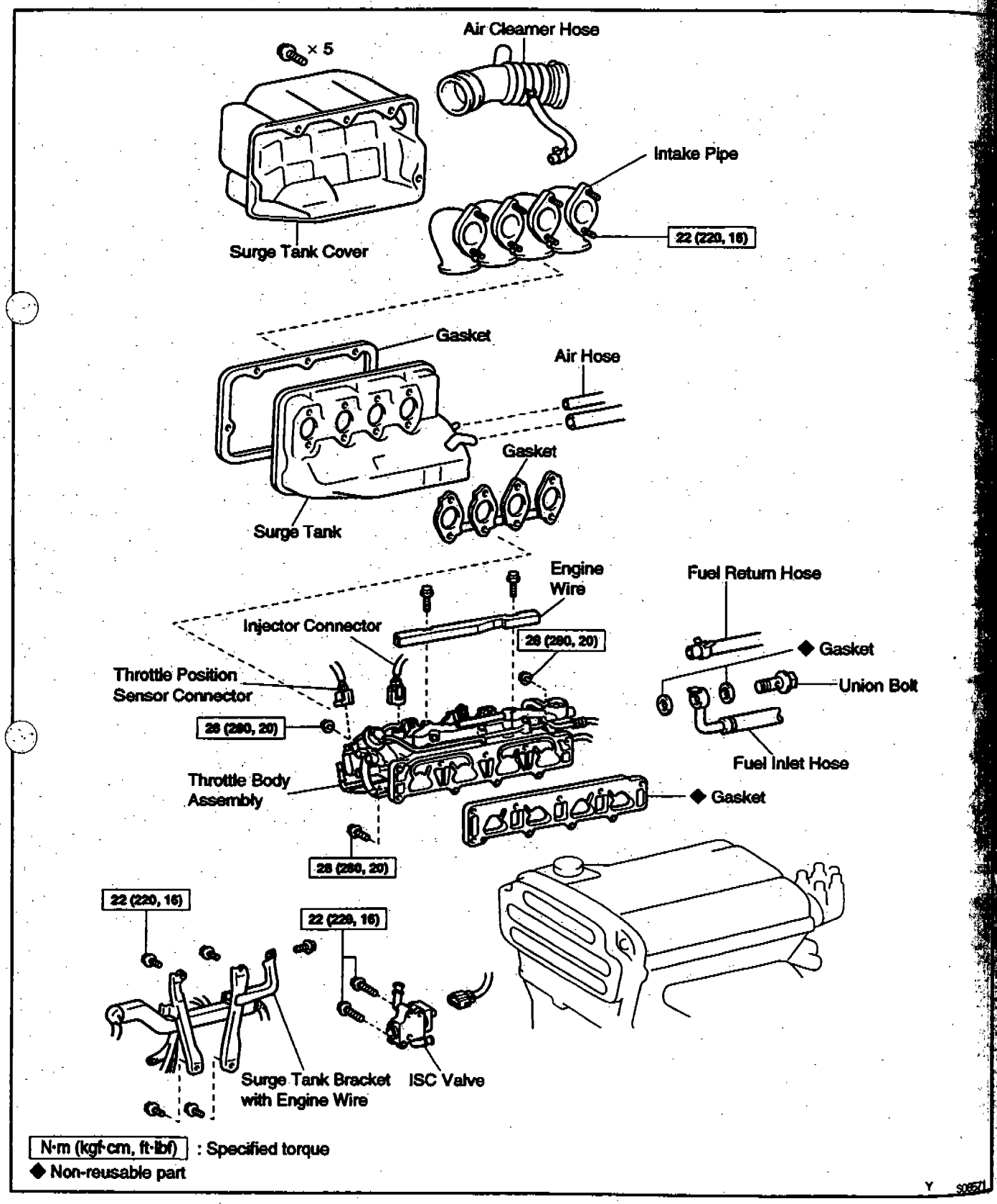
(a) Disconnect the ISC valve connector.

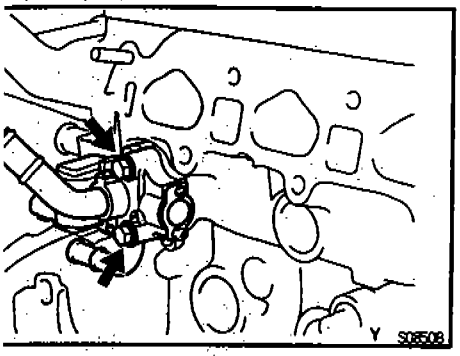


(b) Using an ohmmeter, measure the resistance between terminal +B and other terminals (RSC, RSO).
Resistance:
Cold: 17.5 – 28.5 Ω
Hot: 17.0 – 24.5 Ω
If resistance is not as specified, replace the ISC valve.

(c) Reconnect the ISC valve connector.

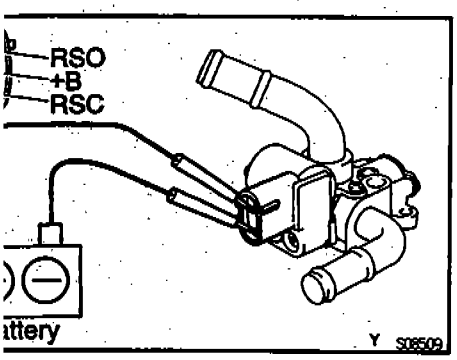
COMPONENTS


× 5
Air Cleaner Hose
Intake Pipe
22 (220, 16)
Surge Tank Cover
Gasket
Air Hose
Gasket
Surge Tank
Engine Wire
Fuel Return Hose
Injector Connector
26 (260, 20)
◆ Gasket
Throttle Position Sensor Connector
Union Bolt
26 (260, 20)
Fuel Inlet Hose
Throttle Body Assembly
◆ Gasket
26 (260, 20)
22 (220, 16)
22 (220, 16)
Surge Tank Bracket with Engine Wire
ISC Valve
N·m (kgf·cm, ft·lbf) : Specified torque
◆ Non-reusable part



REMOVAL

1. **REMOVE THROTTLE BODY ASSEMBLY (See throttle body)**
2. **REMOVE ISC VALVE**
   Remove the 2 bolts and ISC valve.
   Torque: 22 N·m (220 kgf·cm, 16 ft·lbf)



INSPECTION

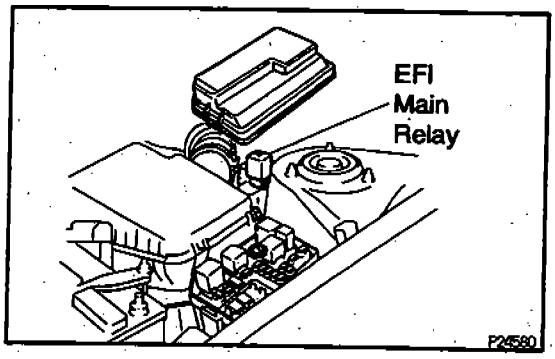
INSPECT ISC VALVE OPERATION

(a) Connect the positive (+) lead from the battery to terminal +B and negative (–) lead to terminal RSC, and check operating sound.

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

INSTALLATION

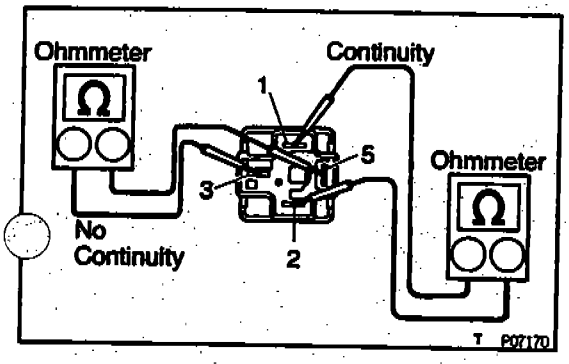
Installation is in the reverse order of removal.



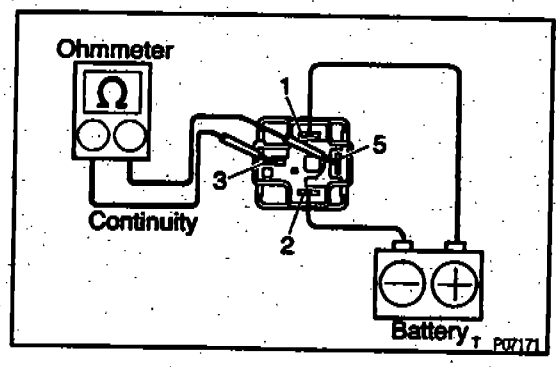
EFI MAIN RELAY

INSPECTION

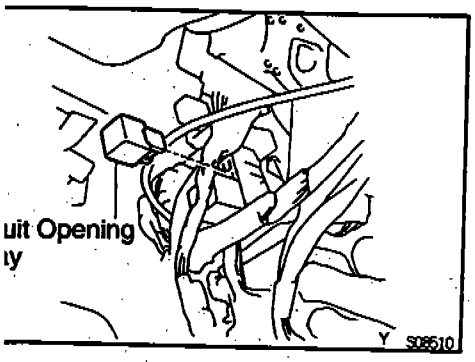
1. **REMOVE EFI MAIN RELAY (Marking: EFI)**



2. **INSPECT EFI MAIN 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 relay.



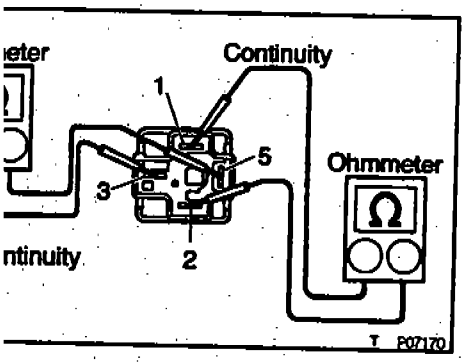
3. **INSPECT EFI MAIN RELAY OPERATION**
   (a) Apply battery voltage across terminals 1 and 2.
   (b) Using an ohmmeter, check that there is continuity between terminals 3 and 5.
   If operation is not as specified, replace the relay.
4. **REINSTALL EFI MAIN RELAY**



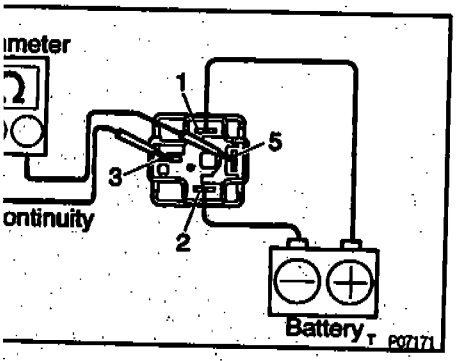
CIRCUIT OPENING RELAY

INSPECTION

1. **REMOVE RH COWL SIDE TRIM**
2. **REMOVE CIRCUIT OPENING RELAY**

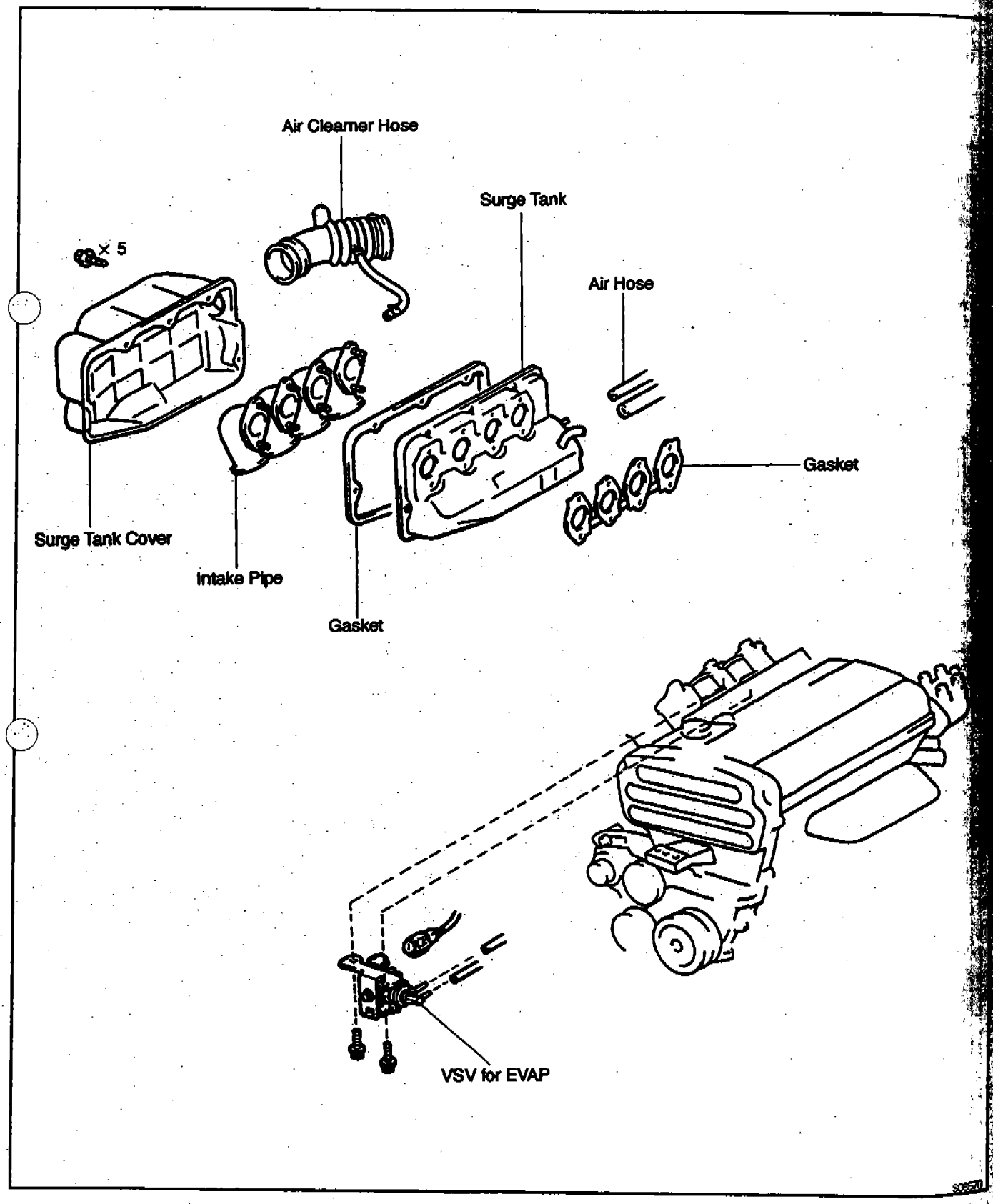


3. **INSPECT CIRCUIT OPENING RELAY CONTINUITY**
(a) Using an ohmmeter, check that there is continuity between terminals 1 and 2.
(b) Check that there is no continuity between terminals 3 and 5.
If continuity is not as specified, replace the relay.



4. **INSPECT CIRCUIT OPENING 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 relay.
5. **REINSTALL CIRCUIT OPENING RELAY**
6. **INSTALL RH COWL SIDE TRIM**

VSV FOR EVAP
COMPONENTS

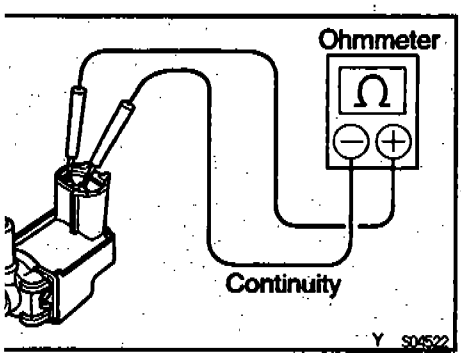


E03ZY-0N

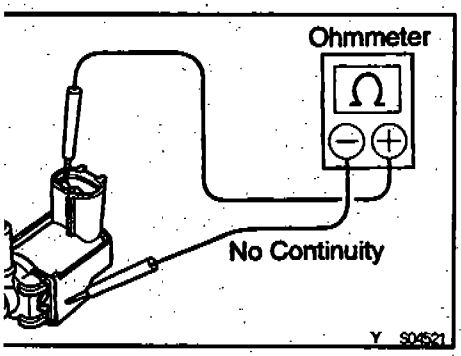
INSPECTION

1. **REMOVE SURGE TANK**
2. **REMOVE VSV**

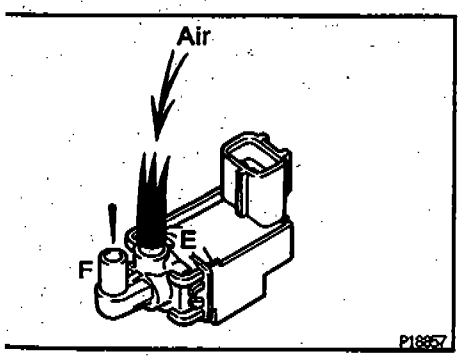
(a) Disconnect the 2 EVAP hoses from the VSV.
(b) Remove the 2 bolts and VSV.



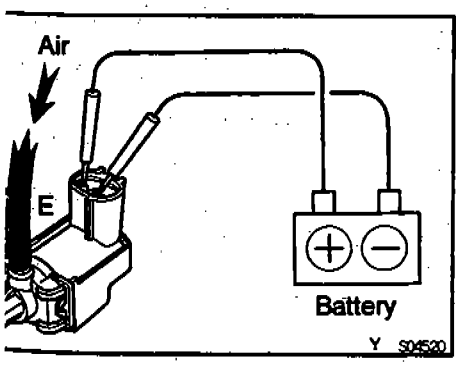
3. **INSPECT VSV FOR OPEN CIRCUIT**
Using an ohmmeter, check that there is continuity between the terminals.
Resistance:
30 – 33 Ω at 20°C (68°F)
If there is no continuity, replace the VSV.



4. **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.



5. **INSPECT VSV OPERATION**
(a) Check that air flows with difficulty from port E to port F.

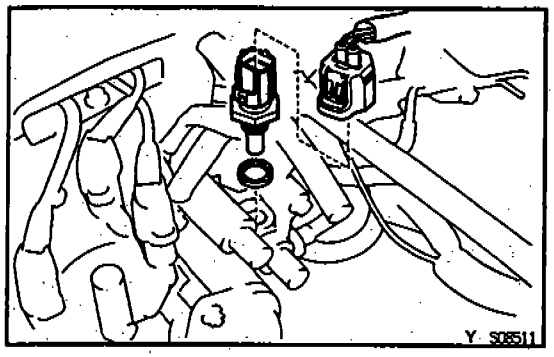


(b) Apply battery voltage across the terminals.
(c) Check that air flows from port E to port F.
If operation is not as specified, replace the VSV.

6. **REINSTALL VSV**

(a) Install the VSV with the screw.
(b) Connect the 2 EVAP hoses to the VSV.

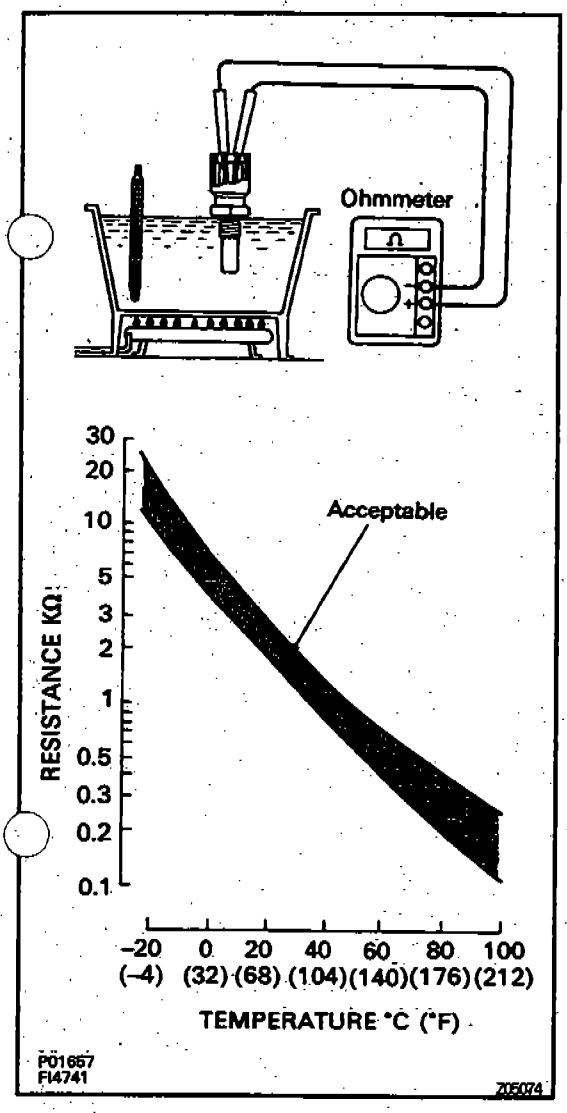
7. **REINSTALL EMISSION CONTROL VALVE SET**
8. **REINSTALL HIGH–TENSION CORD COVER**
9. **REINSTALL V–BANK COVER**



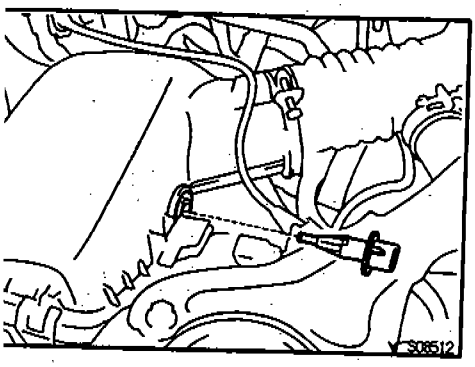
WATER TEMPERATURE SENSOR

INSPECTION

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



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**
   Install a new gasket to the water temperature sensor.
5. **FILL RADIATOR WITH ENGINE COOLANT**

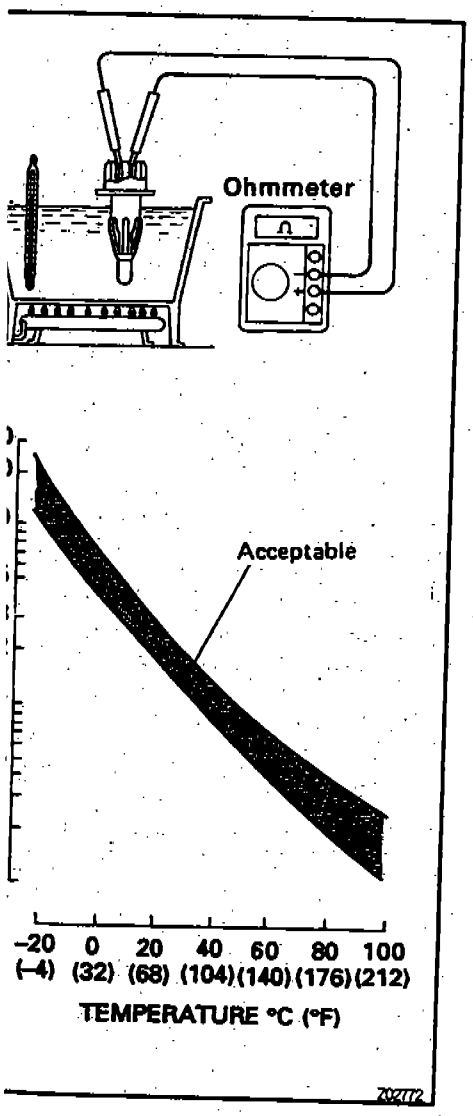


INTAKE AIR TEMPERATURE (IAT) SENSOR

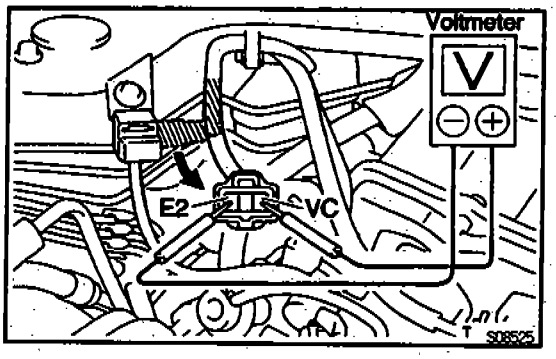
INSPECTION

EG1AN-0H

1. **REMOVE IAT SENSOR**



2. **INSPECT IAT SENSOR RESISTANCE**
   Using an ohmmeter, measure the resistance between the terminals.
   Resistance:
   Refer to the graph
   If the resistance is not as specified, replace the IAT sensor.
3. **REINSTALL IAT SENSOR**



VACUUM SENSOR

INSPECTION

1. INSPECT POWER SOURCE VOLTAGE OF VACUU SENSOR

(a) Disconnect the vacuum sensor connector.

(b) Turn the ignition switch ON.

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

Voltage:

4.5 – 5.5 V

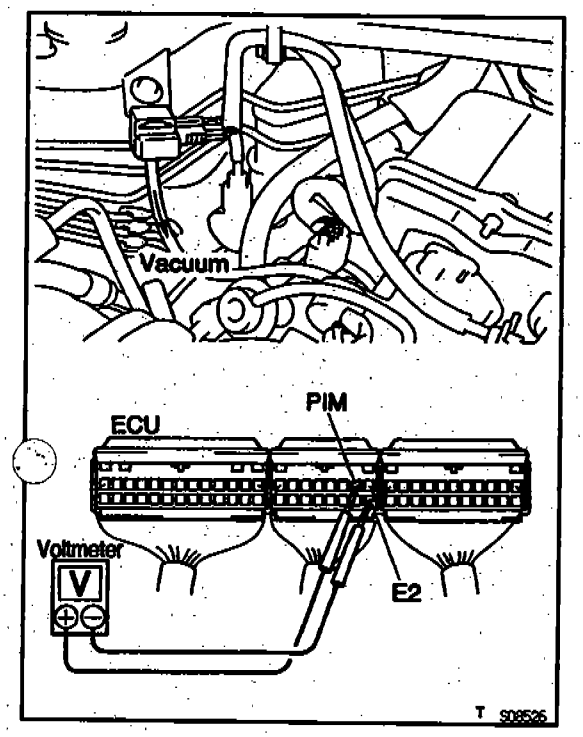
(d) Turn the ignition switch OFF.

(e) Reconnect the vacuum sensor connector.

2. INSPECT POWER OUTPUT OF VACUUM SENSOR

(a) Turn the ignition switch ON.

(b) Disconnect the vacuum hose on the air intake manif side.



(c) Connect a voltmeter to terminals PIM and E2 of the E and measure the output voltage under ambient at spheric pressure.

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

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

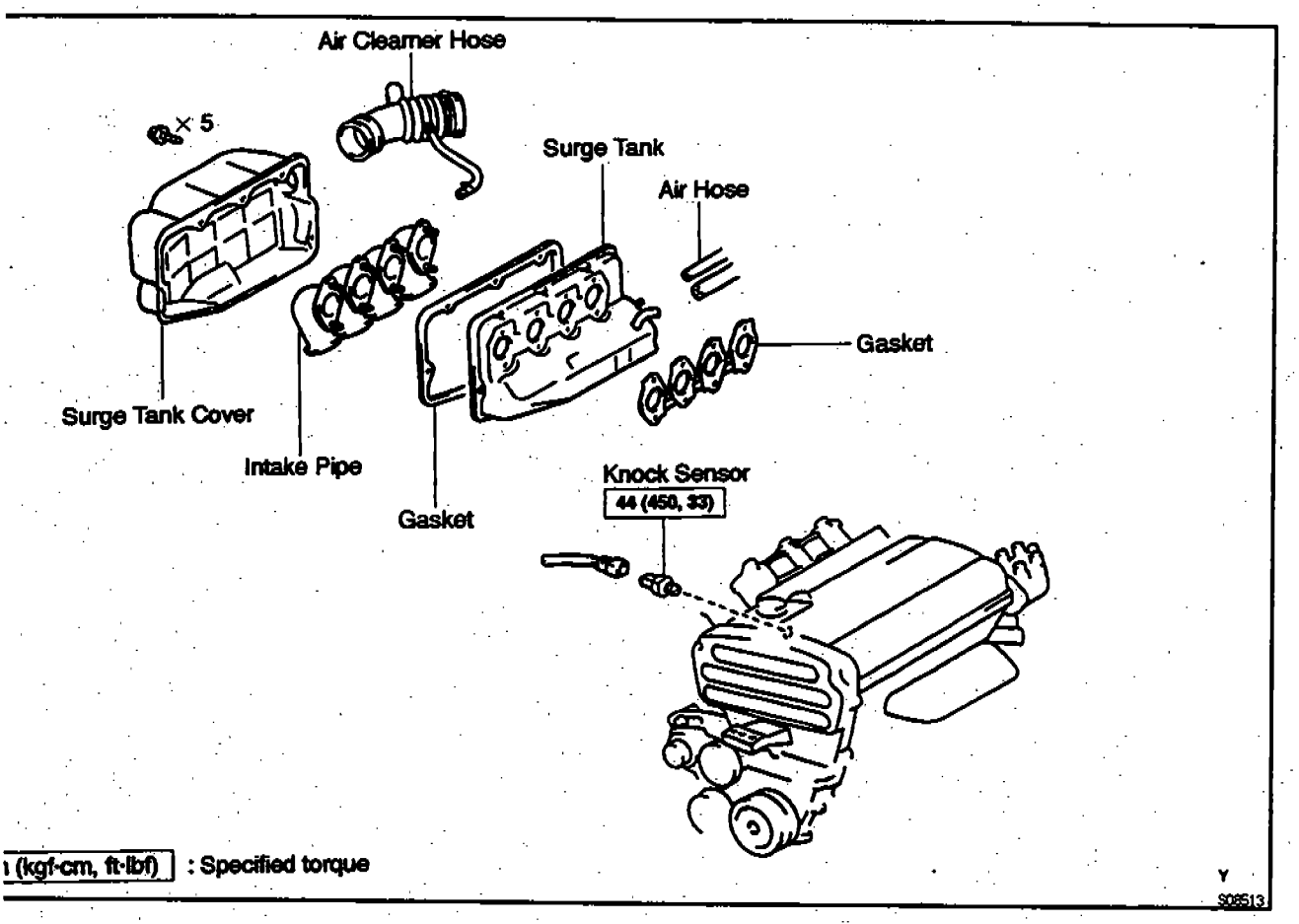
Voltage drop:

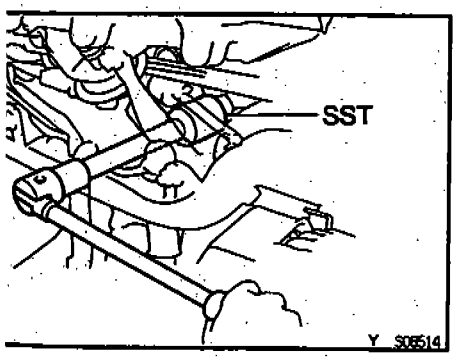
Applied Vacuum kPa (mmHg / in.Hg)	13.3 (100 / 3.94)	26.7 (200 / 7.87)	40.0 (300 / 11.81)	53.5 (400 / 15.75)	66.7 (500 / 19.69)
Voltage drop V	0.3 – 0.5	0.7 – 0.9	1.1 – 1.3	1.5 – 1.7	1.9 – 2

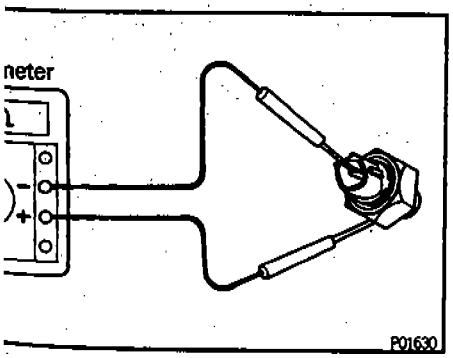
(f) Reconnect the vacuum hose to the intake manifold.

KNOCK SENSOR
COMPONENTS

E05ME-04



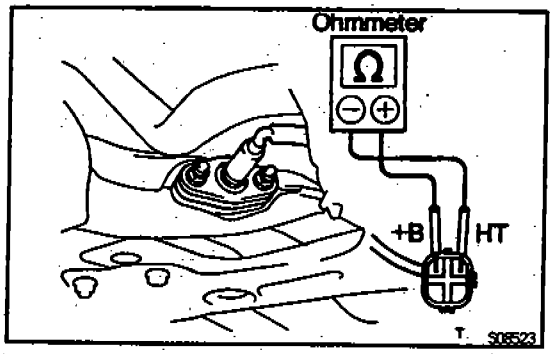


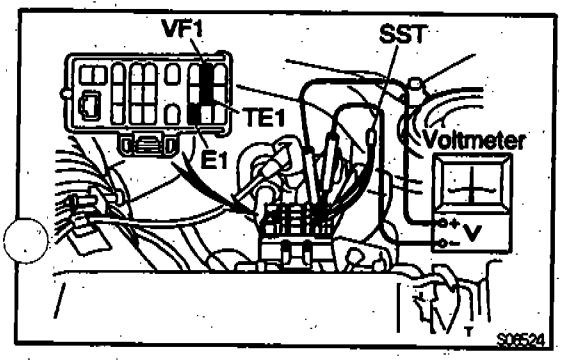


E05KZ-05

INSPECTION

1. **REMOVE SURGE TANK**
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. **REINSTALL SURGE TANK**





OXYGEN SENSOR

INSPECTION

1. **INSPECT HEATER RESISTANCE OF OXYGEN SENSOR**

(a) Disconnect the oxygen sensor connector.

(b) Using an ohmmeter, measure the resistance between the terminals +B and HT.

Resistance:

11 – 16 Ω at 20°C (68°F)

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

Torque: 44 N·m (450 kgf·cm, 33 ft·lbf)

(c) Reconnect the oxygen sensor connector.

2. **WARM UP ENGINE**

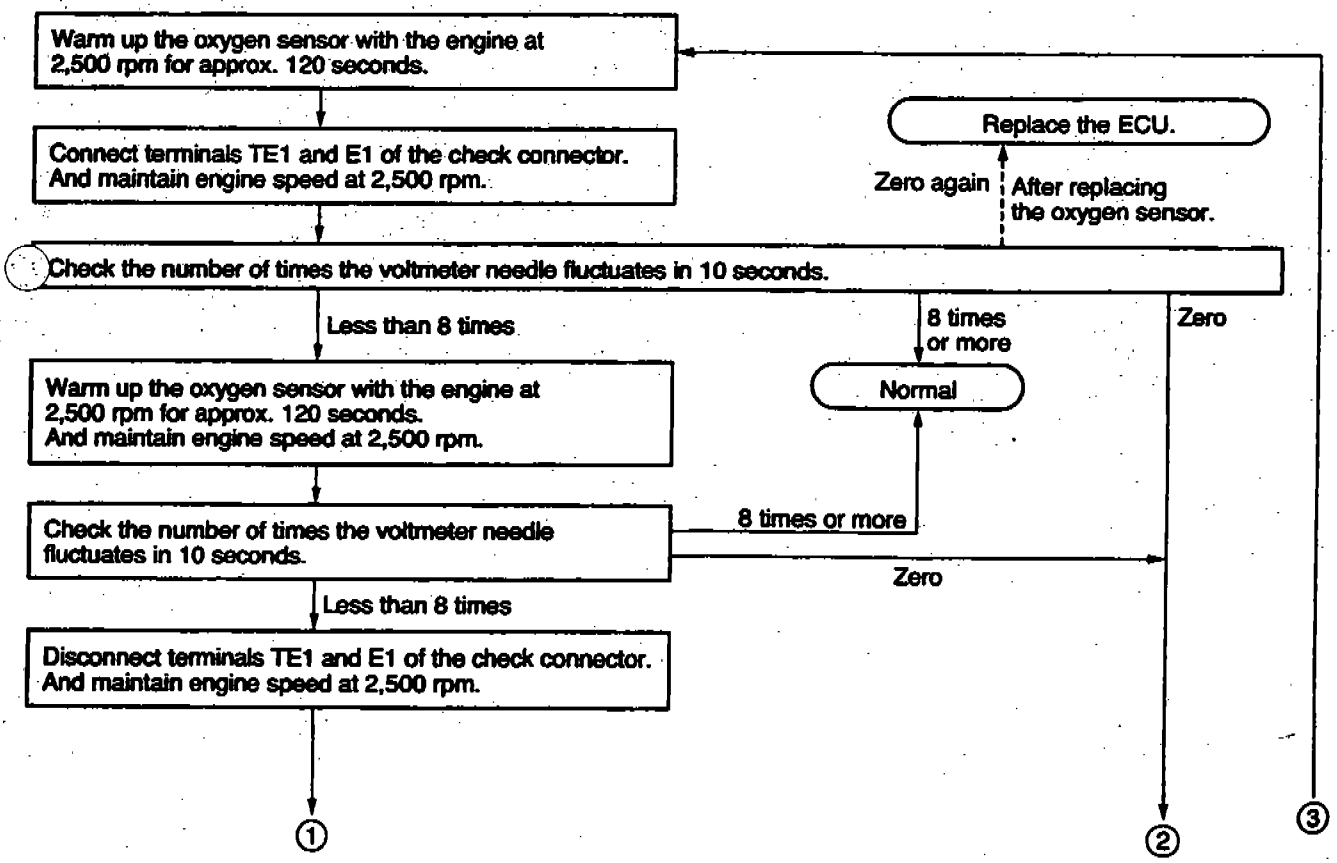
Allow the engine to warm up to normal operating temperature.

3. **INSPECT FEEDBACK VOLTAGE**

Connect the positive (+) tester probe of a voltmeter to terminal VF1 of the check connector, and negative (–) tester probe to terminal E1. Do the test as described.

HINT: Use SST when connecting between terminals TE1 and E1 of the check connector.

SST 09843–18020



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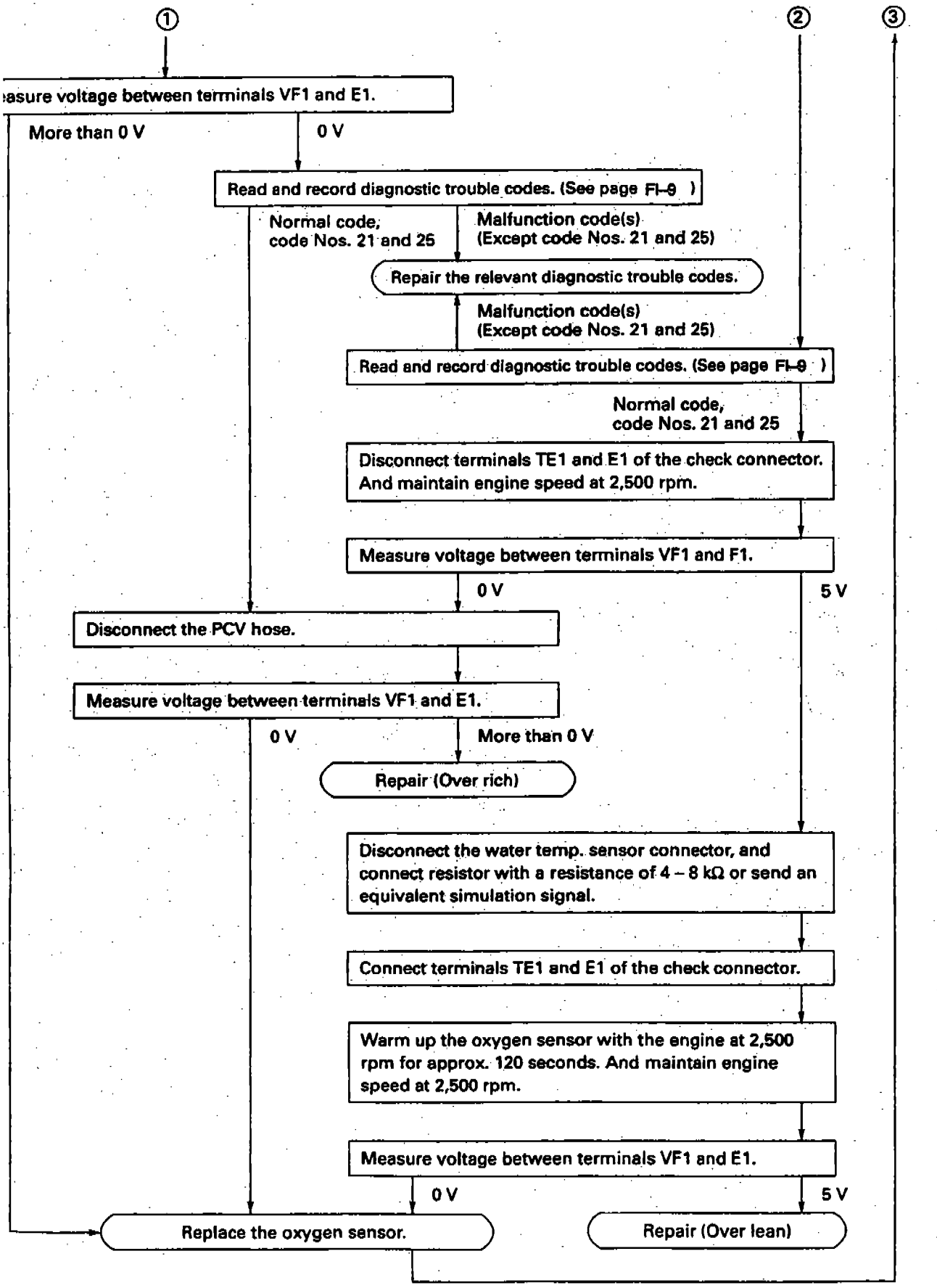
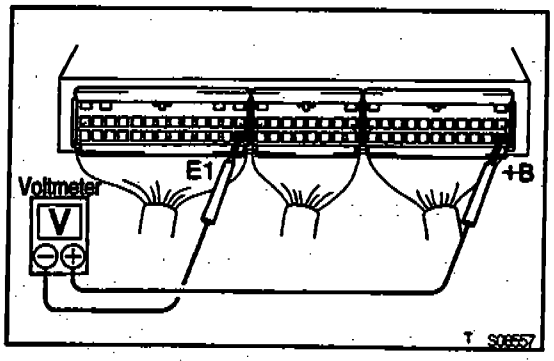


V09079



ENGINE ECU INSPECTION

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

1. **PREPARATION**
   (See EFI check procedure in Troubleshooting w/ Volt, Ohmmeter)
2. **INSPECT VOLTAGE OF ECU**

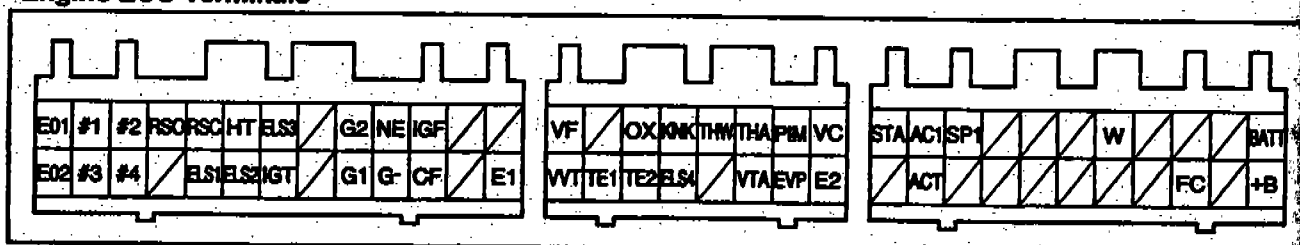
(a) Turn the ignition switch ON.

(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.

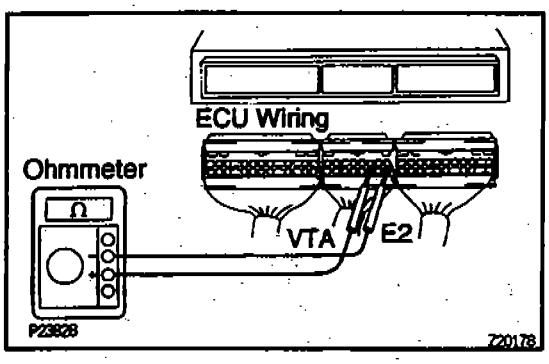
Engine ECU Terminals



ECU Wiring Connectors Voltage

Terminals	Condition	STD voltage (V)
BATT – E1	–	9 – 14
+B – E1	IG SW ON	9 – 14
VC – E2	IG SW ON	4.5 – 5.5
VTA – E2	IG SW ON (Throttle valve fully closed)	0.3 – 0.8
VTA – E2	IG SW ON (Throttle valve open)	3.2 – 4.9
PIM – E2	IG SW ON	3.3 – 3.9
#1 – E01, E02	IG SW ON	9 – 14
#2 – E01, E02	IG SW ON	9 – 14
#3 – E01, E02	IG SW ON	9 – 14
#4 – E01, E02	IG SW ON	9 – 14
THA – E2	IG SW ON (Intake air temp. 20°C (68°F))	0.5 – 3.4
THW – E2	IG SW ON (Coolant temp. 80°C (176°F))	0.2 – 1.0
STA – E1	Cranking	6 or more
IGF – E1	IG SW ON (Igniter connector disconnected)	4.5 – 5.5
IGT – E1	Idling	Pulse generation
RSC – E1	IG SW ON (Engine ECU connector disconnected)	9 – 14
RSO – E1	IG SW ON (Engine ECU connector disconnected)	9 – 14

W – E1	No trouble (Check engine warning light off) and engine running	9 – 14
AC1 – E1	IG SW ON (Air conditioning ON)	1.5 or less
ACT – E1	IG SW ON (Air conditioning ON)	4.5 – 5.5
VF – E1	Maintain engine speed at 2,500 rpm for 2 minutes after warming up then return idling	1.8 – 3.2
G1 – G–	Idling	Pulse generation
G2 – G–	Idling	Pulse generation
NE – G–	Idling	Pulse generation
OX – E1	Maintain engine speed at 2,500 rpm for 2 minutes after warming up	Pulse generation
KNK – E1	Idling	Pulse generation
ELS1 – E1	Electric cooling fan ON	7.5 – 14
ELS1 – E1	Electric cooling fan OFF	0 – 1.5
ELS2 – E1	Blower motor ON	7.5 – 14
ELS2 – E1	Blower motor OFF	0 – 1.5
ELS3 – E1	Taillight switch ON	7.5 – 14
ELS3 – E1	Taillight switch OFF	0 – 1.5
ELS4 – E1	Defogger switch ON	7.5 – 14
ELS4 – E1	Defogger switch OFF	0 – 1.5
HT – E1	IG SW ON	9 – 14
HT – E1	Idling	0 – 3
FC – E1	IG SW ON	9 – 14
FC – E1	Idling	0 – 3
TE1 – E1	IG SW ON	9 – 14
TE2 – E1	IG SW ON	9 – 14



3. INSPECT RESISTANCE OF ECU

(a) Turn the ignition switch OFF.

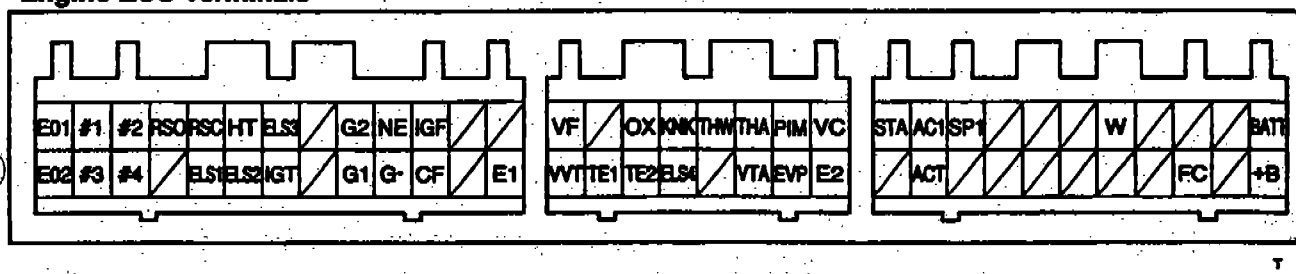
(b) Disconnect the 3 connectors from the ECU.

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

NOTICE:

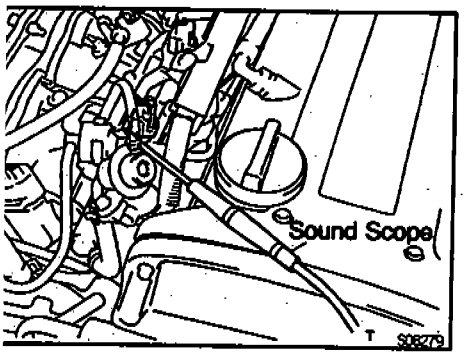
- **Do not touch the ECU terminals.**
- **The tester probe should be inserted in the wiring connector from the wiring side.**

Engine ECU Terminals



ECU Wiring Connectors Resistance

Terminals	Condition	STD resistance (Ω)
VTA – E2	Throttle valve fully open	2,400 – 11,200
VTA – E2	Throttle valve fully closed	340 – 6,300
VC – E2	–	3,100 – 7,200
THA – E2	Intake air temp. 20°C (68°F)	2,000 – 3,000
THW – E2	Coolant temp. 80°C (176°F)	200 – 400
G1, G2 – G–	Cold (–10°C (14°F) to 50°C (122°F))	125 – 200
G1, G2 – G–	Hot (50°C (122°F) to 100°C (212°F))	160 – 250
NE – G–	Cold (–10°C (14°F) to 50°C (122°F))	125 – 200
NE – G–	Hot (50°C (122°F) to 100°C (212°F))	160 – 250
RSC – +B	Cold (–10°C (14°F to 50°C (122°F))	17 – 24.5
RSC – +B	Hot (50°C (122°F to 100°C (212°F))	21.5 – 28.5
RSO – +B	Cold (–10°C (14°F to 50°C (122°F))	17 – 24.5
RSO – +B	Hot (50°C (122°F to 100°C (212°F))	21.5 – 28.5
HT – +B	–	11 – 16



FUEL CUT RPM

INSPECTION

E0527X-04

1. **WARM UP ENGINE**
   Allow the engine to warm up to normal operating temperature.
2. **CONNECT TACHOMETER TO ENGINE (See EM section)**
3. **INSPECT FUEL CUTOFF OPERATION**
   (a) Increase the engine speed to at least 2,500 rpm.
   (b) 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 speed:
   1,400 rpm
4. **DISCONNECT TACHOMETER**