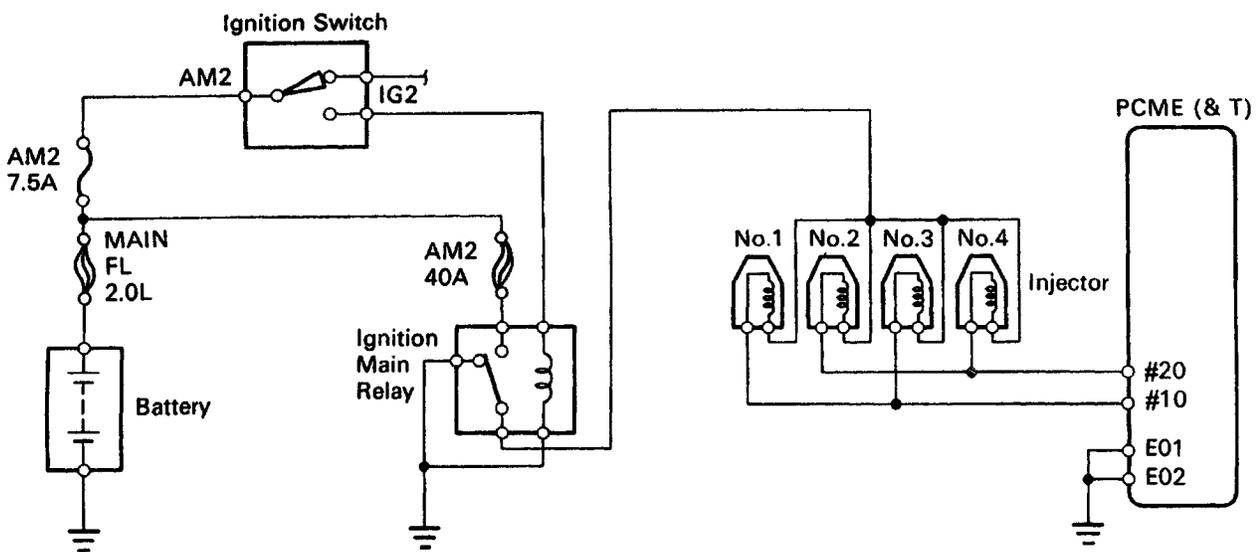
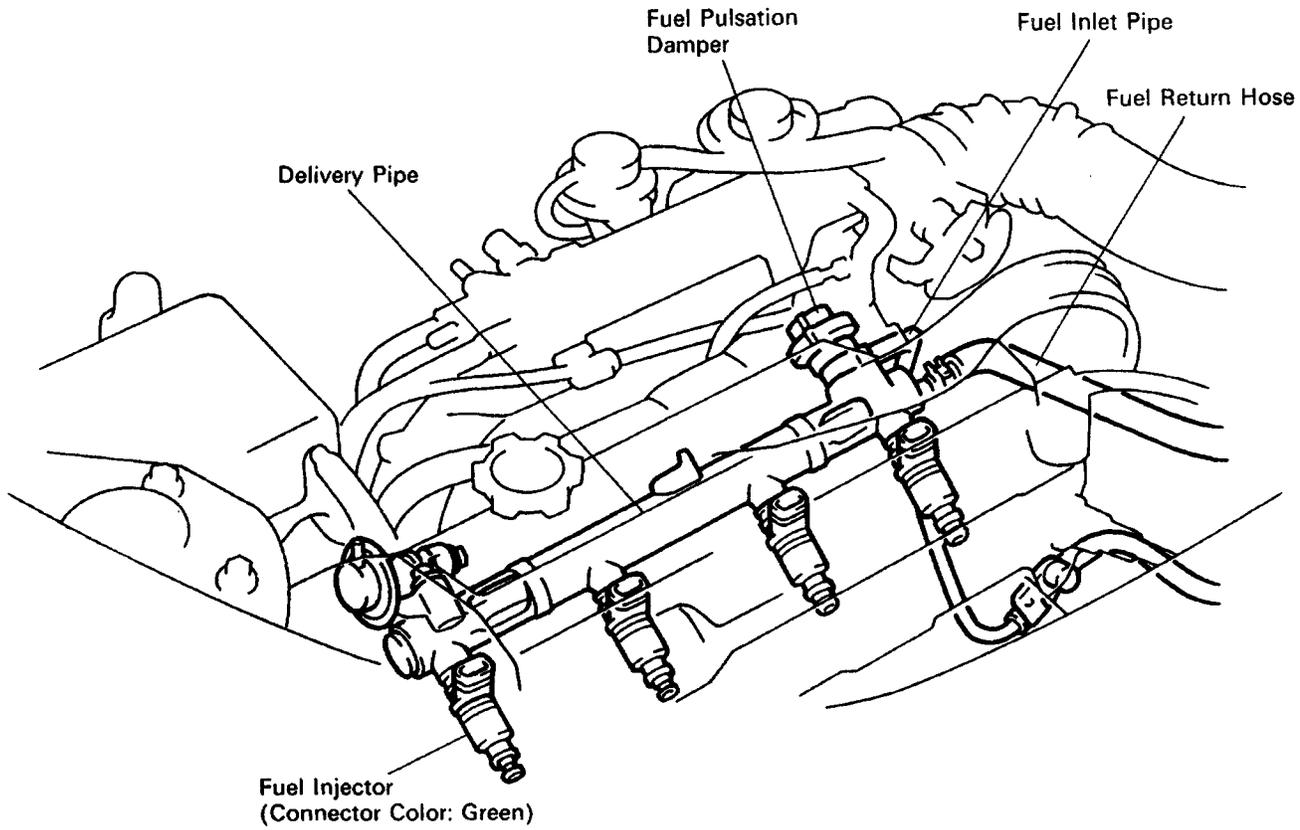
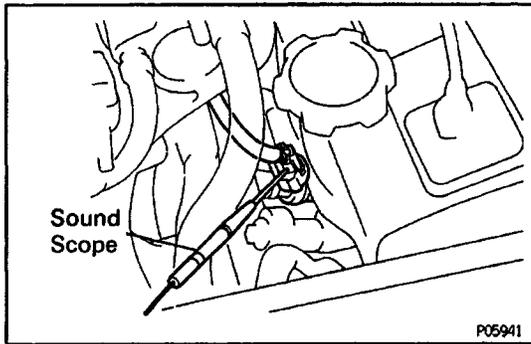


# INJECTOR

EG12Y-01



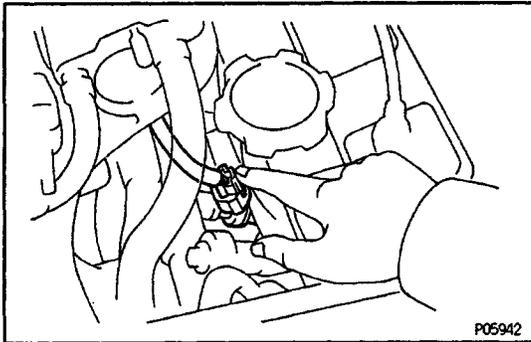


## ON-VEHICLE INSPECTION

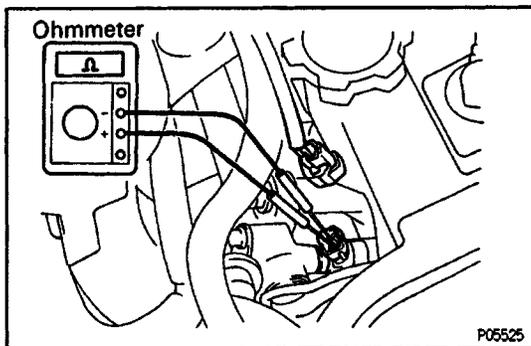
### 1. INSPECT INJECTOR OPERATION

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 rpm.



- (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 PCME (& T).



### 2. INSPECT INJECTOR RESISTANCE

- (a) Disconnect the injector connector.
- (b) Using an ohmmeter, measure the resistance between the terminals.

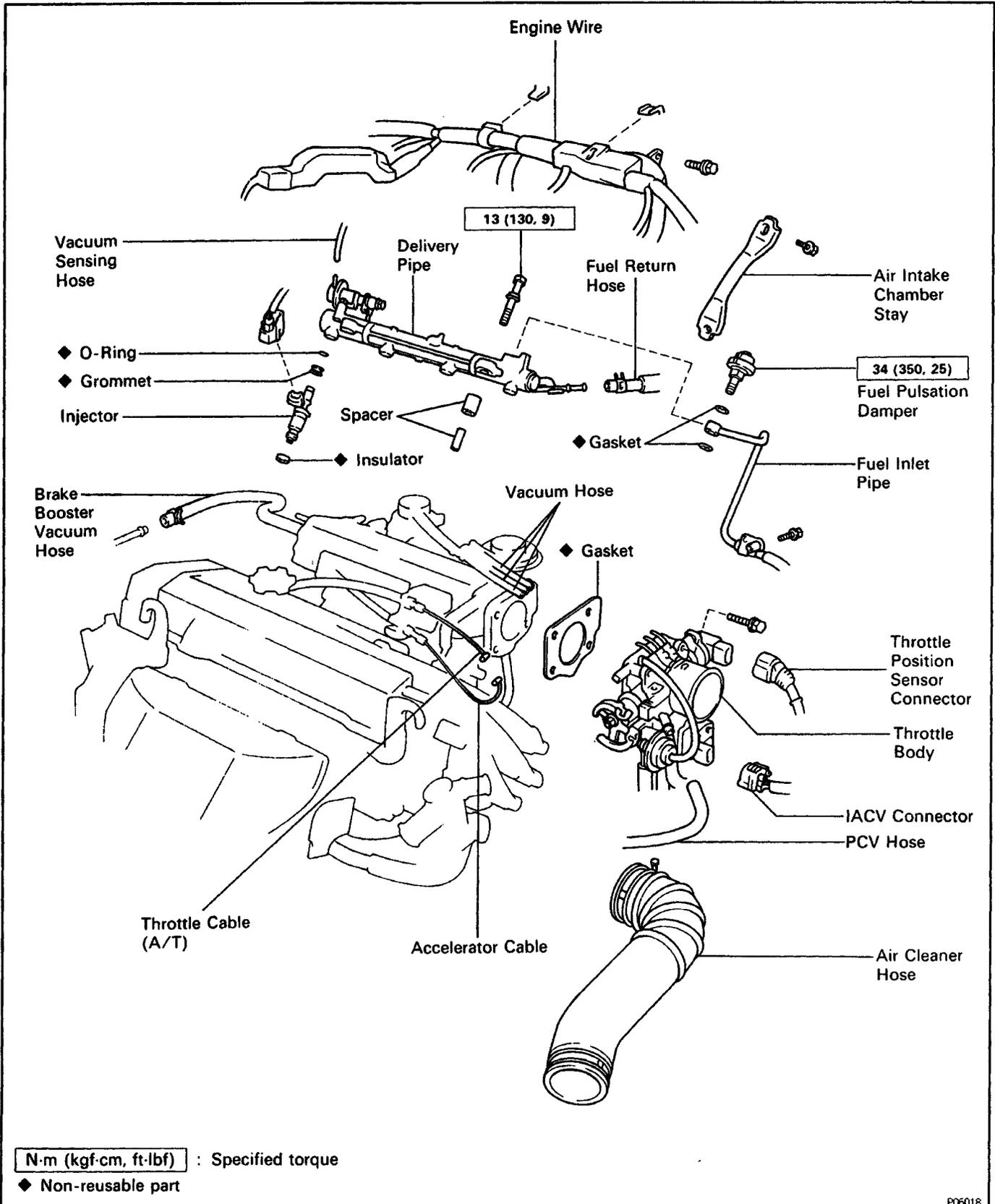
**Resistance:**

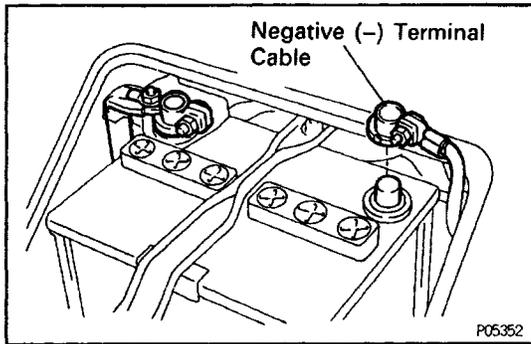
**Approx. 13.8Ω**

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

- (c) Reconnect the injector connector.

# COMPONENTS FOR REMOVAL AND INSTALLATION





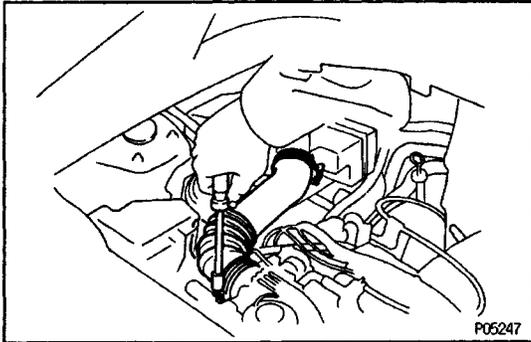
## INJECTORS REMOVAL

(See Components for Removal and Installation)

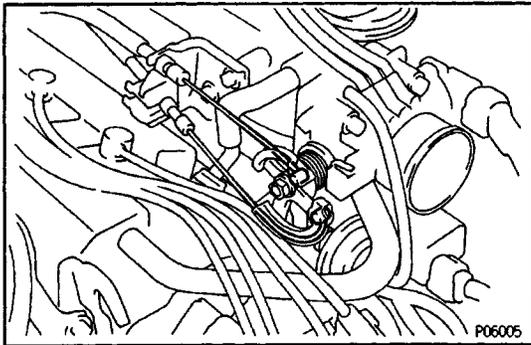
1. DISCONNECT CABLE FROM NEGATIVE TERMINAL OF BATTERY

**CAUTION:** Turn the ignition switch to "LOCK". Disconnect the negative terminal from the battery. Wait at least 20 seconds before proceeding with work.

2. REMOVE RH ENGINE HOOD SIDE PANEL

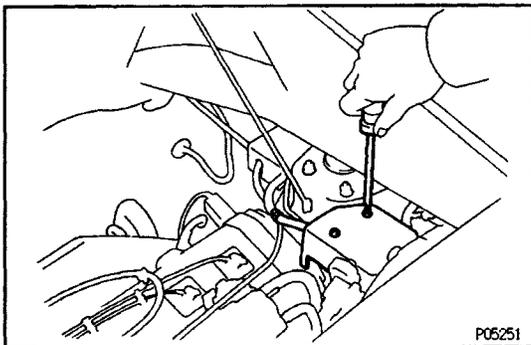


3. REMOVE AIR CLEANER HOSE



4. DISCONNECT ACCELERATOR CABLE FROM THROTTLE BODY

5. (A/T)  
DISCONNECT THROTTLE CABLE FROM THROTTLE BODY

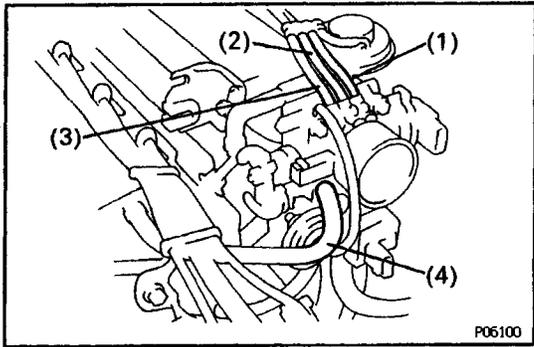


6. (w/ CRUISE CONTROL SYSTEM)  
REMOVE CRUISE CONTROL ACTUATOR

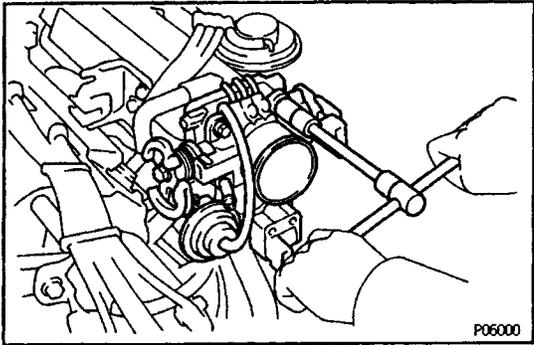
7. DISCONNECT THROTTLE BODY FROM INTAKE MANIFOLD

(a) Disconnect the following connector:

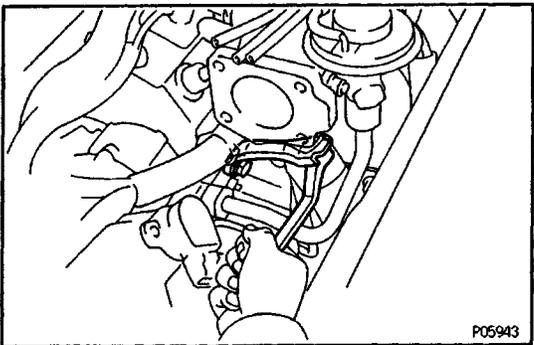
- Throttle position sensor connector
- IACV connector



- (b) Disconnect the following hoses:
- (1) Vacuum hose (from upper port of TVS) from port "P" of throttle body
  - (2) Vacuum hose (from port "Q" of EGR vacuum modulator) from port "E" of throttle body
  - (3) Vacuum hose (from port "R" of EGR vacuum modulator) from port "R" of throttle body
  - (4) PCV hose (from cylinder head) from throttle body



- (c) Remove the four bolts, and disconnect the throttle body from the intake manifold.
- (d) Remove the throttle body gasket.

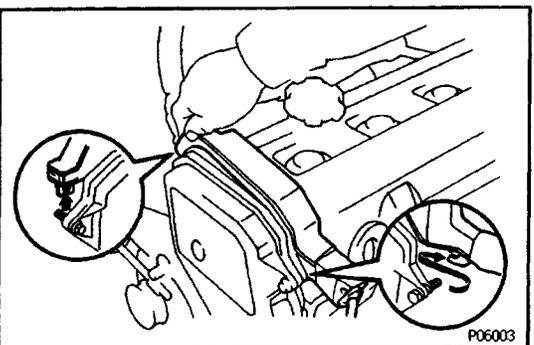


## 8. DISCONNECT ENGINE WIRE PROTECTOR

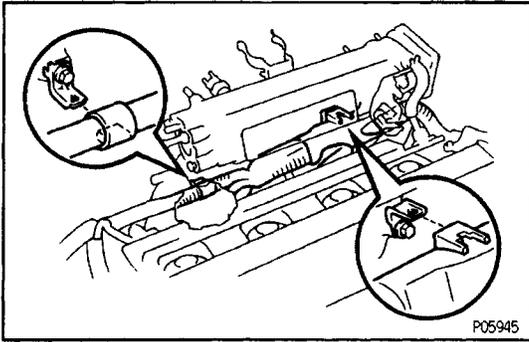
- (a) Remove the two bolts and air intake chamber stay.



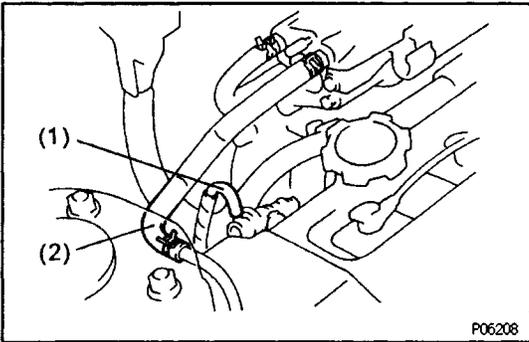
- (b) Remove the bolt, and disconnect the engine wire protector from the RH side of the intake manifold.



- (c) Disconnect the engine wire protector between the No. 3 timing belt and cylinder head cover.



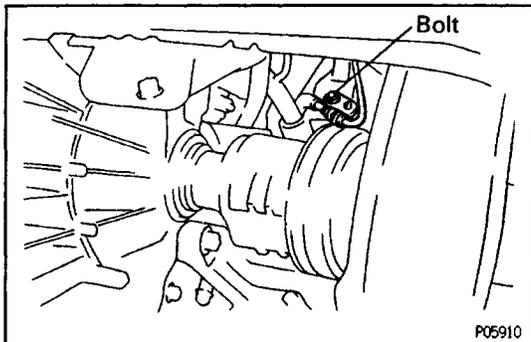
- (d) Disconnect the engine wire protector from the two brackets on the front side of the intake manifold.



### 9. DISCONNECT VACUUM HOSE

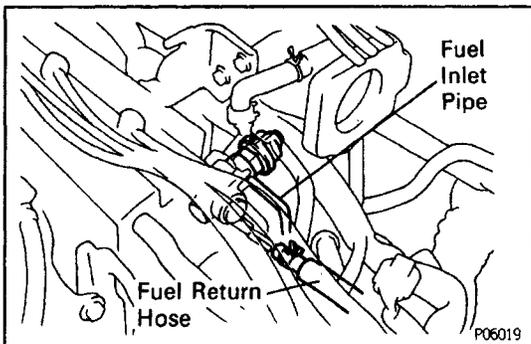
Disconnect the following hoses:

- (1) Vacuum sensing hose from the fuel pressure regulator.
- (2) Brake booster vacuum hose from intake manifold

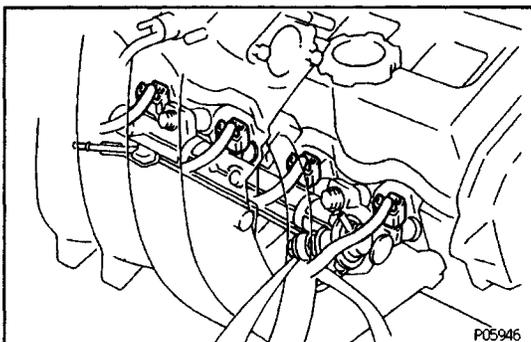


### 10. DISCONNECT FUEL INLET PIPE AND RETURN HOSE

- (a) Remove the bolt holding the fuel inlet pipe to the cylinder head.

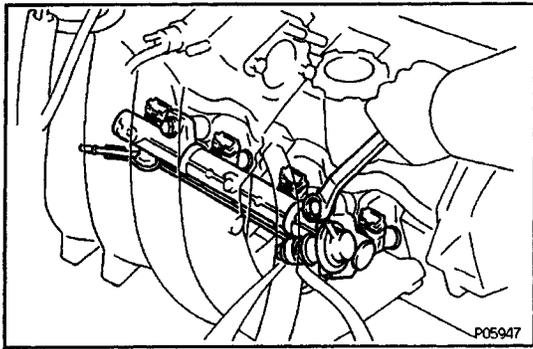


- (b) Remove the pulsation damper and two gasket, and disconnect the fuel inlet pipe from the delivery pipe.
- (c) Disconnect the fuel return hose from the return pipe.

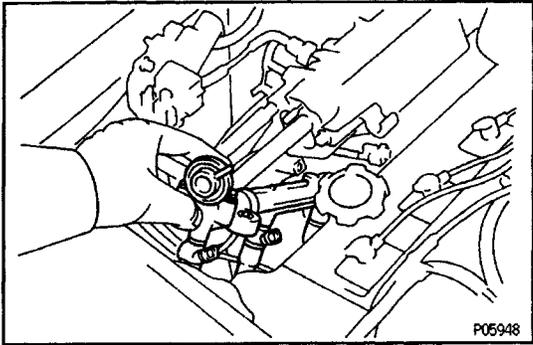


### 11. REMOVE DELIVERY PIPE AND INJECTORS

- (a) Disconnect the four injector connectors.



- (b) Remove the two bolts, the delivery pipe and four injectors assembly.



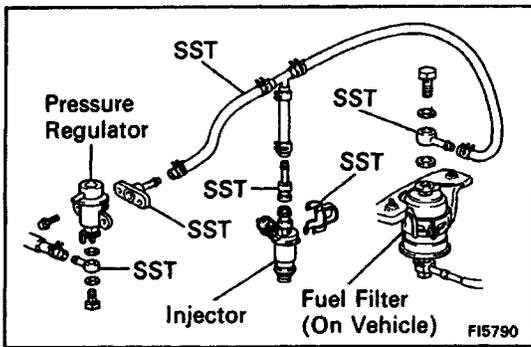
HINT: Remove the delivery pipe and four injectors assembly from the RH side of the engine.

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

- (c) Remove the four insulators and two spacers from the cylinder head.

- (d) Pull out the four injectors from the delivery pipe.

- (e) Remove the O-ring and grommet from each injector.

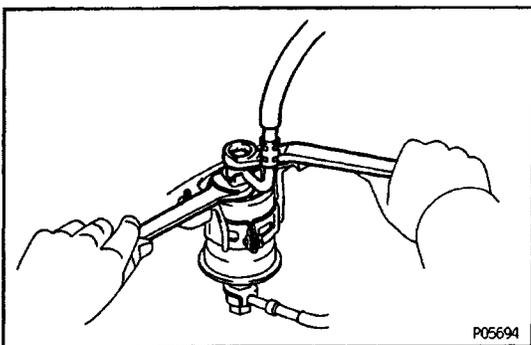


## INJECTORS INSPECTION

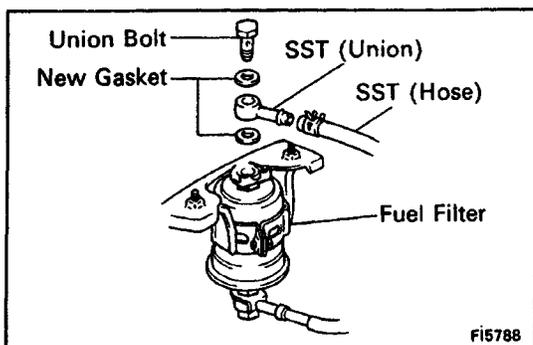
EG133-01

### 1. INSPECT INJECTOR INJECTION

**CAUTION: Keep injector clean of sparks during the test.**



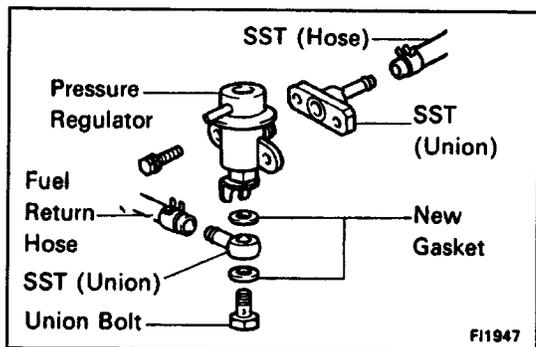
- (a) Remove the union bolt and two gaskets, and disconnect the fuel inlet hose from the fuel filter outlet.



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

SST 09268-41045 (90405-09015)

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



- (c) Remove the pressure regulator from the delivery pipe.
- (d) Install a new O-ring to the fuel inlet of pressure regulator.
- (e) Connect SST (hose) to the fuel inlet of the pressure regulator with SST (union) and the two bolts.

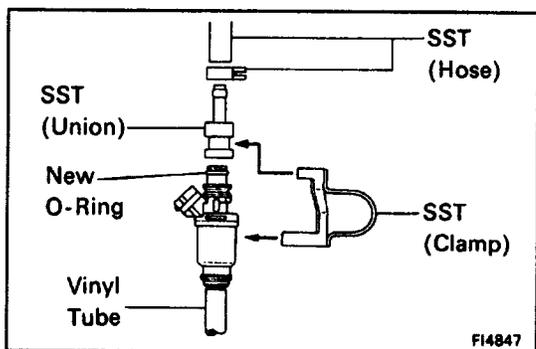
SST 09268-41045 (09268-41090)

**Torque: 5.4 N-m (55 kgf-cm, 48 ft-lbf)**

- (f) Connect the fuel return hose to the fuel outlet of the pressure regulator with SST (union), two new gaskets and union bolts.

SST 09268-41045 (09268-41080)

**Torque: 18 N-m (180 kgf-cm, 13 ft-lbf)**

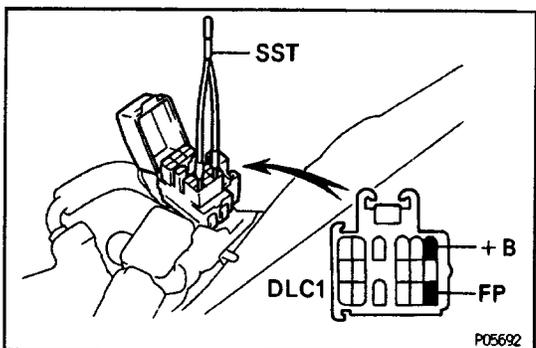


- (g) Install the grommet and a new O-ring to the injector.
- (h) Connect SST (union and hose) to the injector, and hold the injector and union with SST (clamp).

SST 09268-41045

- (i) Put the injector into the graduated cylinder.

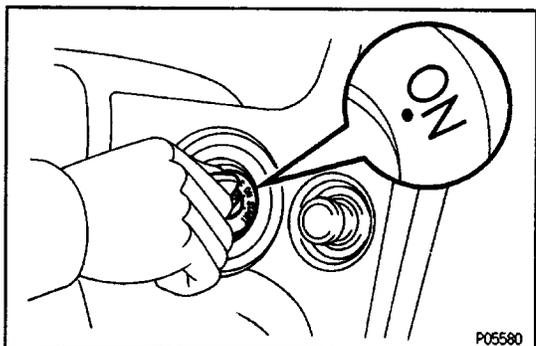
HINT: Install a suitable vinyl hose onto the injector to prevent gasoline from splashing out.



- (j) Using SST, connect terminals +B and FP of the data link connector 1.

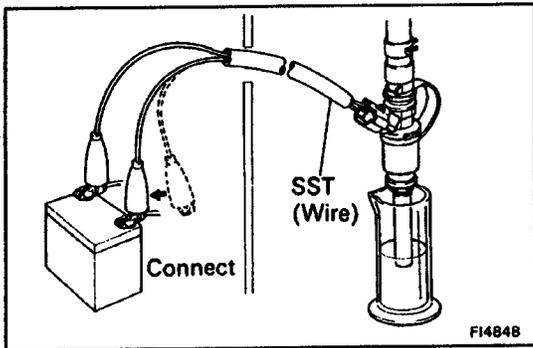
SST 09843-18020

- (k) Reconnect the battery negative (-) cable.



- (l) Turn the ignition switch ON.

**NOTICE: Do not start the engine.**



- (m) Connect SST (wire) to the injector and battery for 15 seconds, and measure the injection volume with a graduated cylinder. Test each injector two or three times.

SST 09842-30070

**Volume:**

**49 – 59 cm<sup>2</sup> (3.0 – 3.6 cu in.) per 15 sec.**

**Difference between each injector:**

**5 cm<sup>2</sup> (0.3 cu in.) or less**

If the injection volume is not as specified, replace the injector.

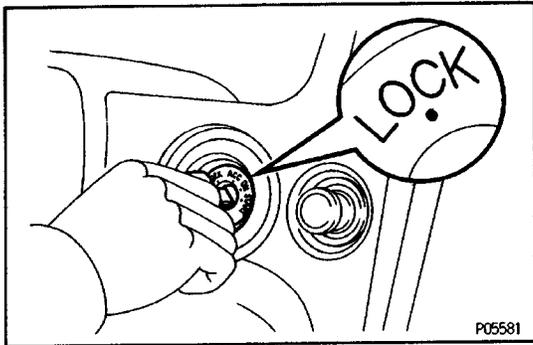
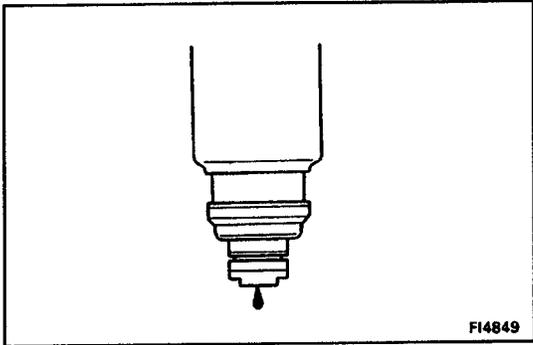
**2. INSPECT LEAKAGE**

- (a) In the condition above, disconnect the test probes of SST (wire) from the battery and check and check the fuel leakage from the injector.

SST 09842-30070

**Fuel drop:**

**One drop or less per minute**

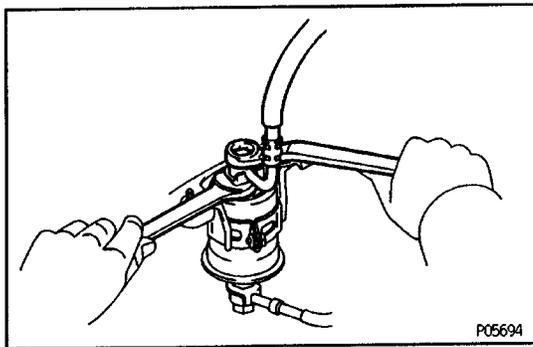


- (b) Turn the ignition switch OFF.

- (c) Disconnect the battery negative (-) cable.

- (d) Remove the SST.

SST 09268-41045, 09843-18020



- (e) Reinstall the fuel inlet hose to the fuel filter outlet with the two new gaskets and the union bolt.

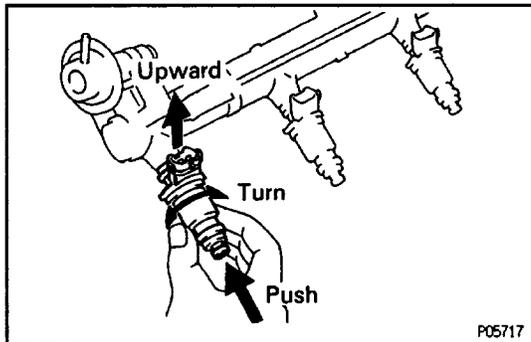
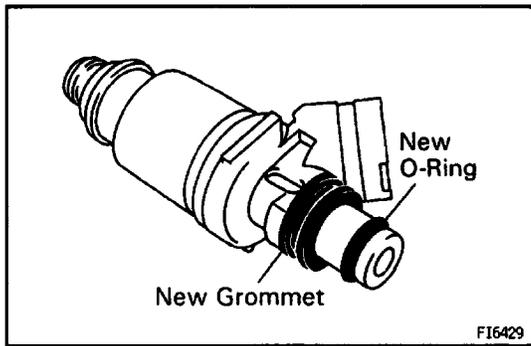
**Torque: 29 N-m (300 kgf-cm, 22 ft-lbf)**

## INJECTORS INSTALLATION

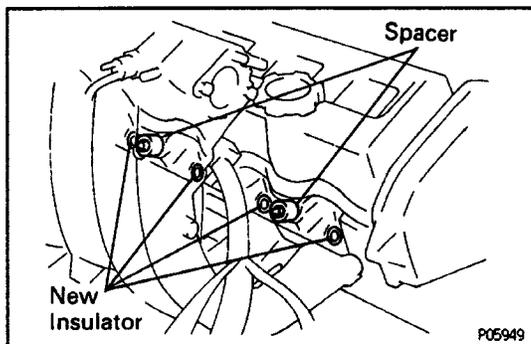
(See Components for Removal and Installation)

### 1. INSTALL INJECTORS AND DELIVERY PIPE

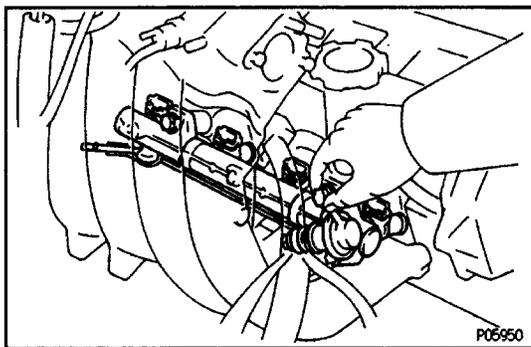
- (a) Install a new grommet to the injector.
- (b) Apply a light coat of gasoline to a new O-ring and install it to the injector.



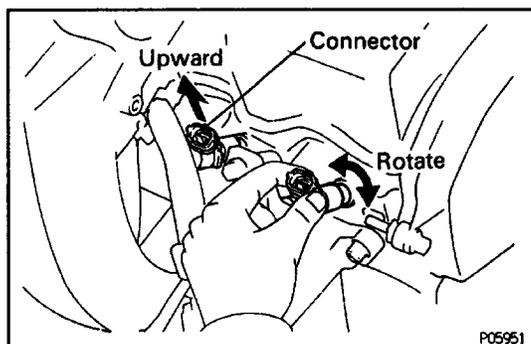
- (c) While turning the injector left and right, install it to the delivery pipes. Install the four injectors.
- (d) Position the injector connector upward.



- (e) Place four new insulators and the two spacers in position on the cylinder head.

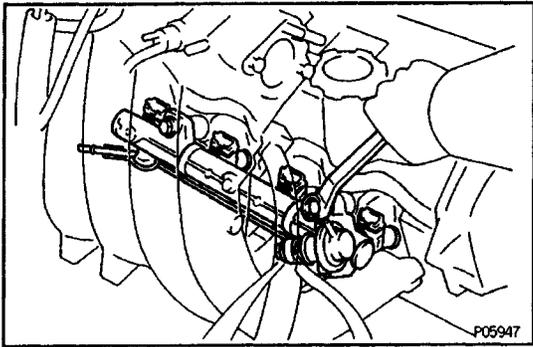


- (f) Place the four injectors and delivery pipe assembly in position on the cylinder head.
- (g) Temporarily install the two bolts holding the delivery pipe to the cylinder head.



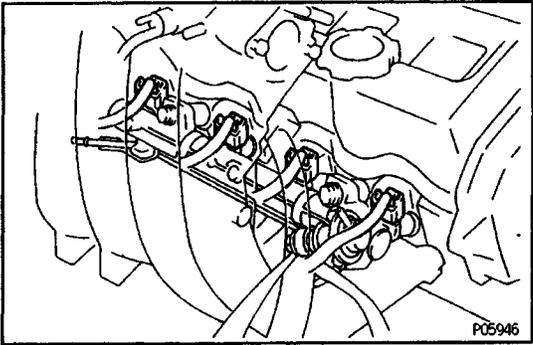
- (h) Check that the injectors rotate smoothly.  
HINT: If injectors do not rotate smoothly, the probable cause is incorrect installation of O-rings. Replace the O-rings.

- (i) Position the injector connector upward.

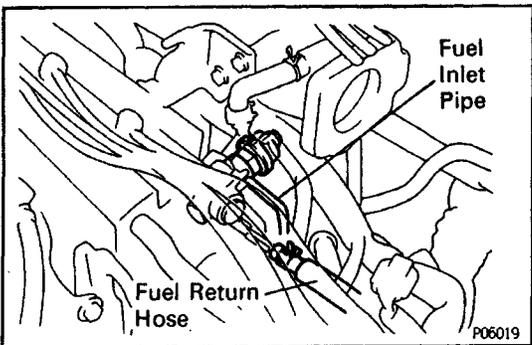


- (j) Tighten the two bolts holding the delivery pipe to the cylinder head.

**Torque: 13 N-m (130 kgf-cm, 9 ft-lbf)**



- (k) Connect the four injector connectors.

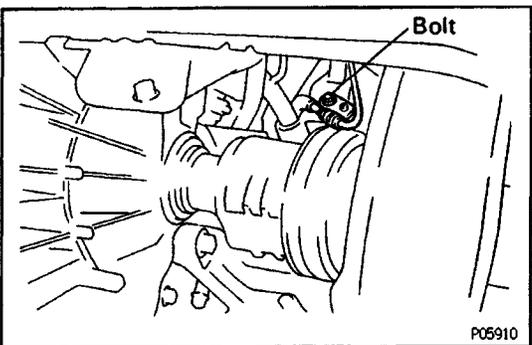


## 2. CONNECT FUEL INLET PIPE AND RETURN HOSE

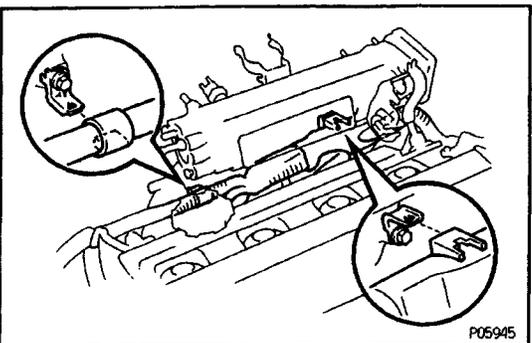
- (a) Connect the fuel inlet pipe to the delivery pipe with two new gaskets and the pulsation damper.

**Torque: 34 N-m (350 kgf-cm, 25 ft-lbf)**

- (b) Connect the fuel return hose.

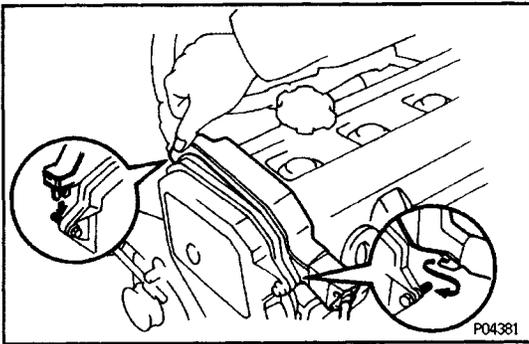


- (c) Install the fuel inlet pipe to the cylinder head with the bolt.



## 3. INSTALL ENGINE WIRE PROTECTOR

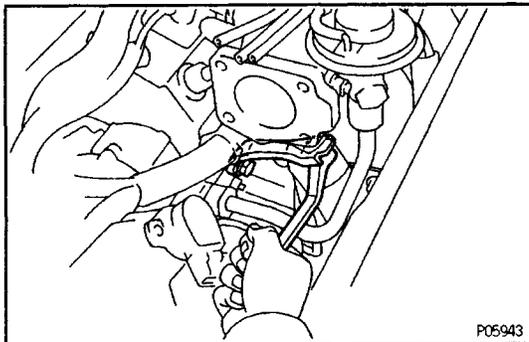
- (a) Connect the the engine wire protector to the brackets on the front side of the intake manifold.



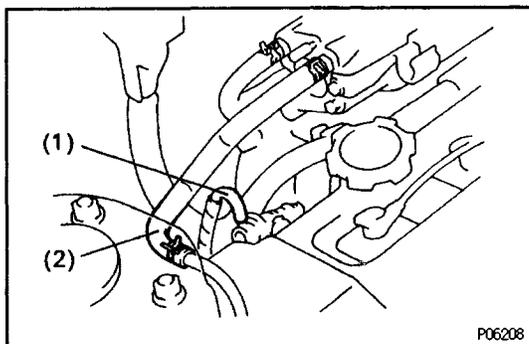
(b) Install the two clamps of the engine wire protector to each bolt.



(c) Install the engine wire protector with the bolt.



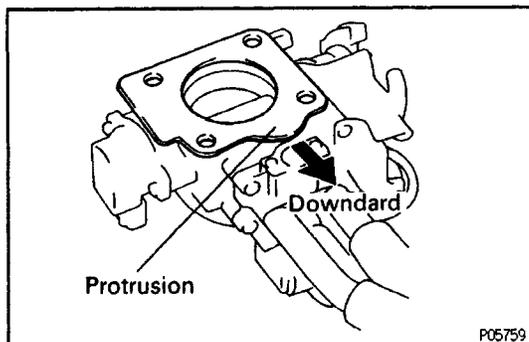
(d) Install the air intake chamber stay with the two bolts.  
**Torque: 42 N-m (425 kgf-cm, 31 ft-lbf)**



#### 4. CONNECT VACUUM HOSES

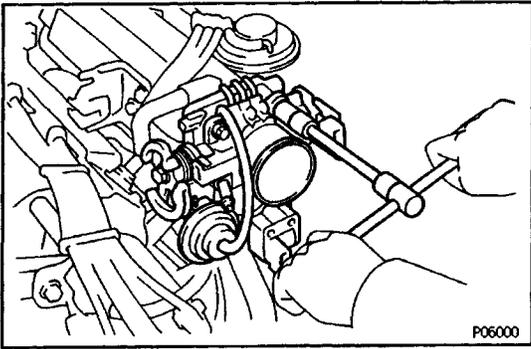
Connect the following hoses:

- Vacuum sensing hose to fuel pressure regulator
- Brake booster vacuum hose to intake manifold



#### 5. INSTALL THROTTLE BODY

(a) Place a new gasket on the throttle body, facing the protrusion downward.



(b) Install the throttle body with the four bolts.

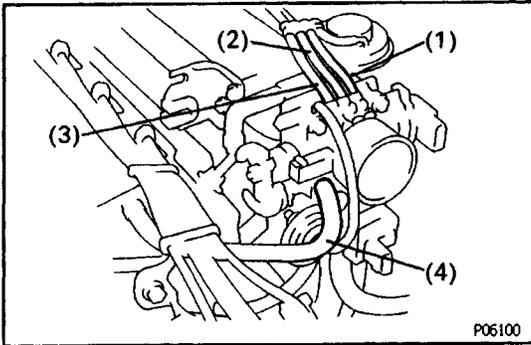
**Torque: 19 N·m (195 kgf·cm, 14 ft·lbf)**

HINT: Different bolt lengths are used for the upper and lower sides.

Bolt length:

45 mm (1.77 in.) for upper side

55 mm (2.17 in.) for lower side



(c) Connect the following hoses:

(1) Vacuum hose (from upper port of TVS) to port "P" of throttle body

(2) Vacuum hose (from port "Q" of EGR vacuum modulator) to port "E" of throttle body

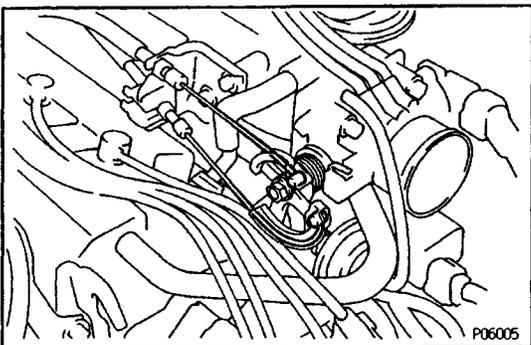
(3) Vacuum hose (from port "R" of EGR vacuum modulator) to port "R" of throttle body

(4) PCV hose (from cylinder head) to throttle body

(d) Connect the following connectors:

Throttle position sensor connector

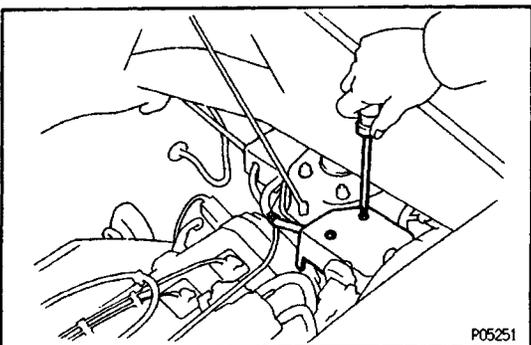
IACV connector



**6. CONNECT ACCELERATOR CABLE TO THROTTLE BODY**

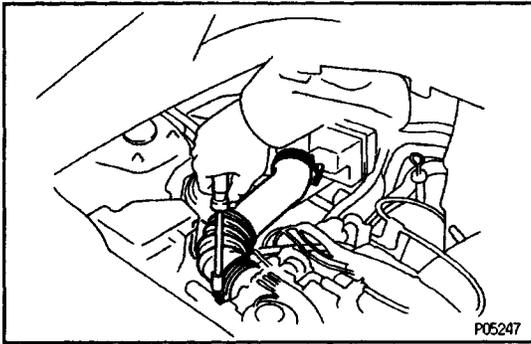
**7. (A/T)**

**CONNECT THROTTLE CABLE TO THROTTLE BODY**



**8. (w/ CRUISE CONTROL SYSTEM)**

**INSTALL CRUISE CONTROL ACTUATOR**



**9. INSTALL AIR CLEANER HOSE**

**10. CONNECT CABLE TO NEGATIVE TERMINAL OF BATTERY**

**11. START ENGINE AND CHECK FOR FUEL LEAKS**

**12. INSTALL ENGINE HOOD SIDE PANELS**