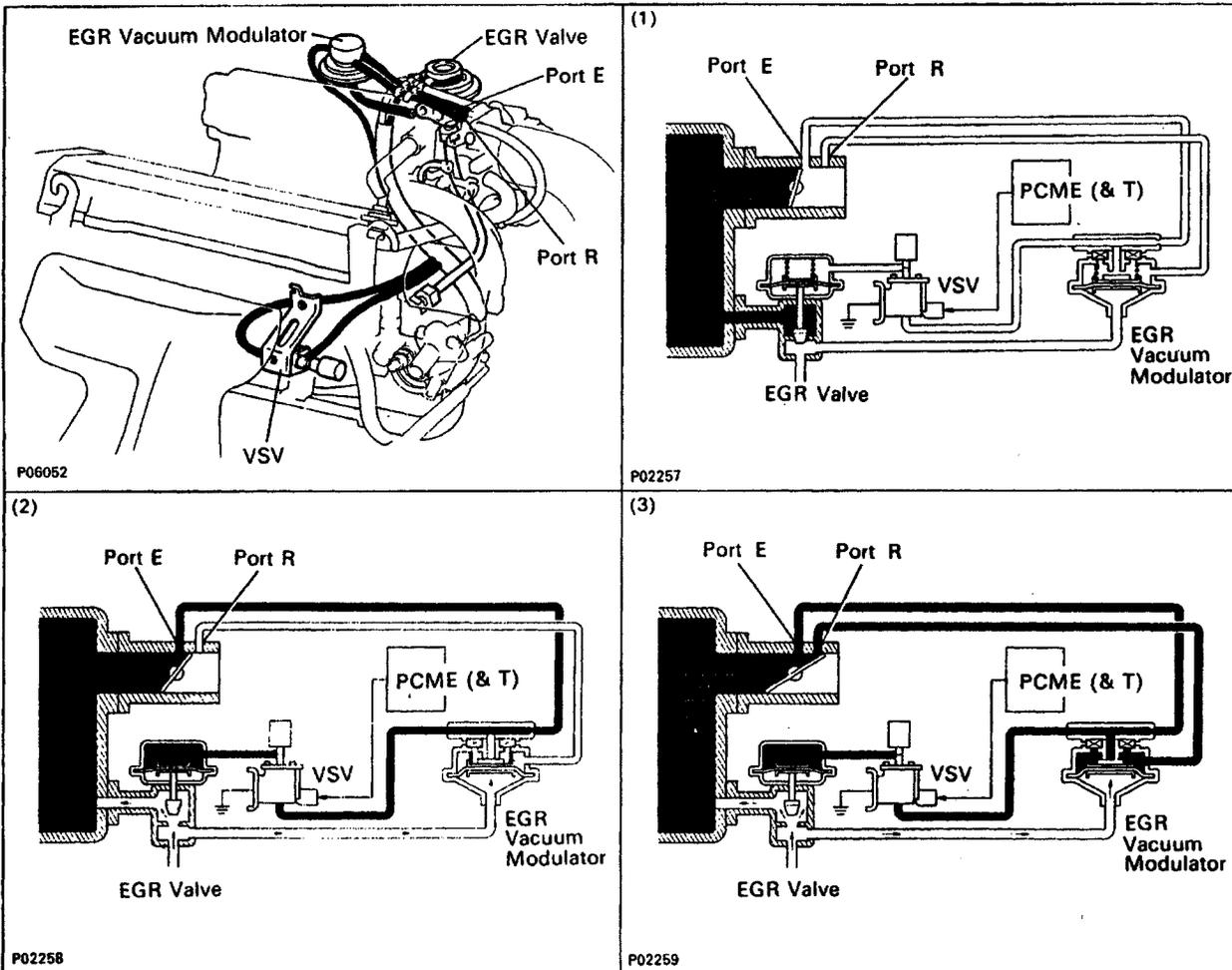


EXHAUST GAS RECIRCULATION (EGR) SYSTEM

EG006-03

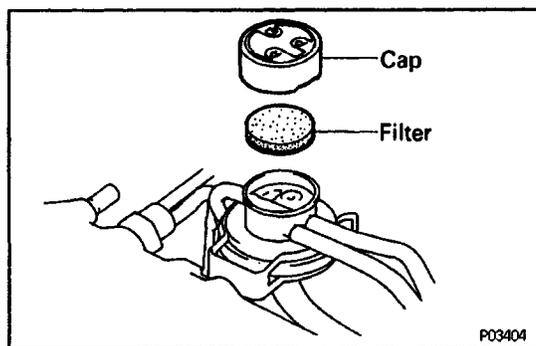


Coolant Temp.	Engine RPM	PIM (PCM)	VSV	Throttle Valve Opening Angle	Pressure in the EGR Valve Pressure Chamber	EGR Vacuum Modulator	EGR Valve	Exhaust Gas	
Below 55°C (131°F)			CLOSED	-	-	-	CLOSED	Not recirculated	
Above 60°C (140°F)	Below 4,000 rpm	OFF	CLOSED	Positioned below port E	(1)	-	CLOSED	Not recirculated	
			CLOSED	Positioned below port E	(1)	-	CLOSED	Not recirculated	
	Above 4,000 rpm	ON	OPEN	Positioned between port E and port R	(2) HIGH	*	CLOSES passage to atmosphere	OPEN	Recirculated
			OPEN	Positioned above port R	(3) HIGH	**	CLOSES passage to atmosphere	OPEN	Recirculated (increase)
	Above 4,000 rpm	OFF	CLOSED	-	-	-	CLOSED	Not Recirculated	

* Pressure increases → Modulator closes → EGR valve opens → Pressure drops
 → EGR valve closes → Modulator opens ←

** When the throttle valve is positioned above port R, the EGR vacuum modulator will close the atmosphere passage and open the EGR valve to increase the exhaust gas, even if the exhaust pressure is insufficiently low.

*** If terminals TE1 and E1 of DLC1 connector are connected, the VSV switches ON.

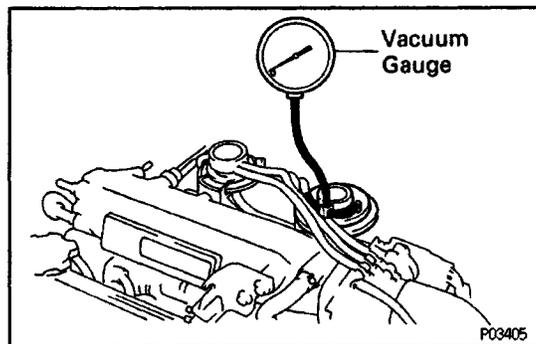


EGR SYSTEM INSPECTION

1. INSPECT AND CLEAN FILTER IN EGR VACUUM MODULATOR

- Remove the cap and filter.
- Check the filter for contamination or damage.
- Using compressed air, clean the filter.
- Reinstall the filter and cap.

HINT: Install the filter with the coarser surface facing the atmospheric side (outward).

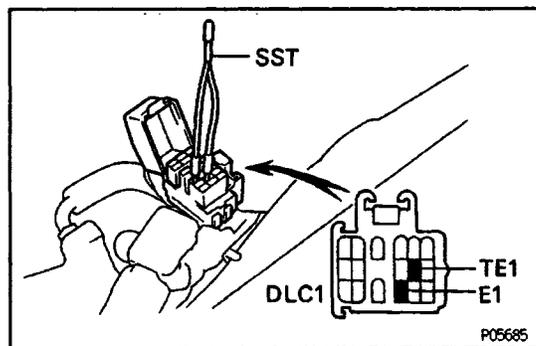


2. INSTALL VACUUM GAUGE

Using a 3-way connector, connect a vacuum gauge to the hose between the EGR valve and VSV.

3. INSPECT SEATING OF EGR VALVE

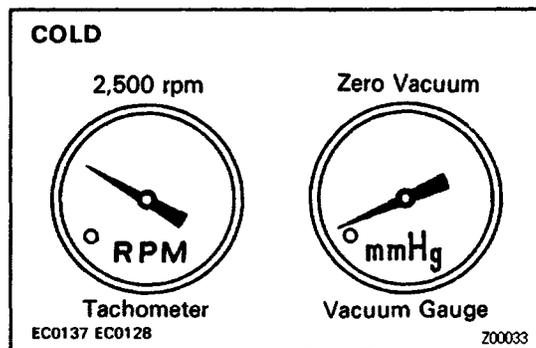
Start the engine and check that the engine starts and runs at idle.



4. CONNECT TERMINALS TE1 AND E1 OF DATA LINK CONNECTOR 1

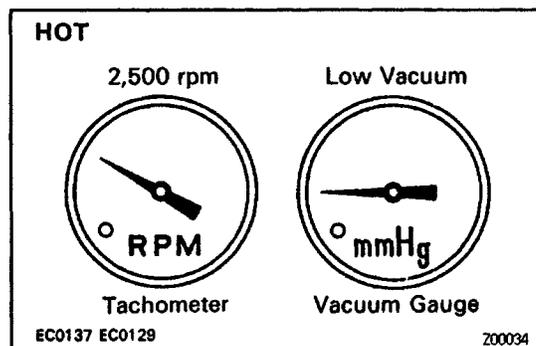
Using SST, connect terminals TE1 and E1 of the data link connector 1.

SST 09843-18020



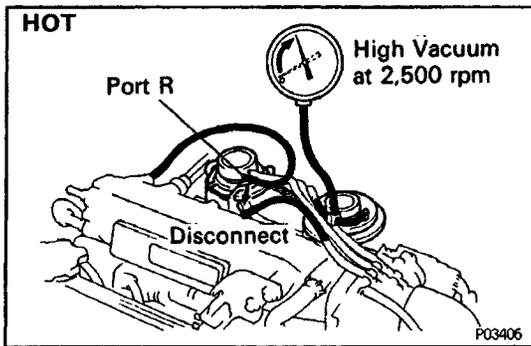
5. INSPECT VSV OPERATION WITH COLD ENGINE

- The engine coolant temperature should be below 55° C (131° F).
- Check that the vacuum gauge indicates zero at 2,500 rpm.



6. INSPECT OPERATION OF VSV AND EGR VACUUM MODULATOR WITH HOT ENGINE

- Warm up the engine to above 60° C (140° F).
- Check that the vacuum gauge indicates low vacuum at 2,500 rpm.



- (c) Disconnect the vacuum hose port R of the EGR vacuum modulator and connect port R directly to the intake manifold with another hose.
- (d) Check that the vacuum gauge indicates high vacuum at 2,500 rpm.

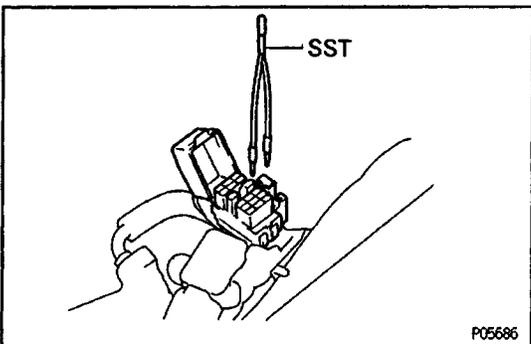
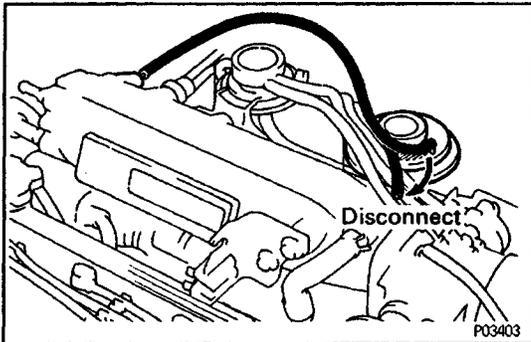
HINT: As a large amount of exhaust gas enters, the engine will misfire slightly.

7. REMOVE VACUUM GAUGE

Remove the vacuum gauge, and reconnect the vacuum hoses to the proper locations.

8. INSPECT EGR VALVE

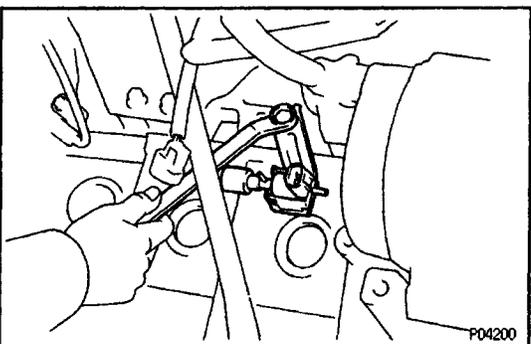
- (a) Apply vacuum directly to the EGR valve with the engine idling.
- (b) Check that the engine runs rough or dies.
- (c) Reconnect the vacuum hoses to the proper locations.



9. REMOVE SST FROM DATA LINK CONNECTOR 1

SST 09843-18020

IF NO PROBLEM IS FOUND WITH THIS INSPECTION, SYSTEM IS NORMAL; OTHERWISE INSPECT EACH PART



VSV INSPECTION

1. REMOVE VSV

(See VSV Removal under MPI System)

2. Inspect VSV for open circuit

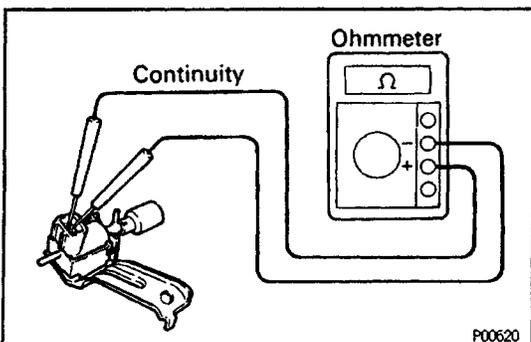
A. Inspect VSV for open circuit

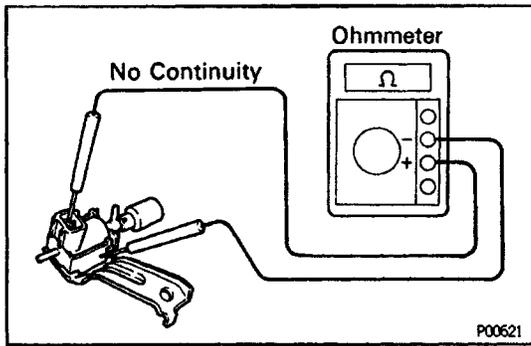
Using an ohmmeter, check that there is continuity between the terminals.

Resistance (Cold):

33-39Ω

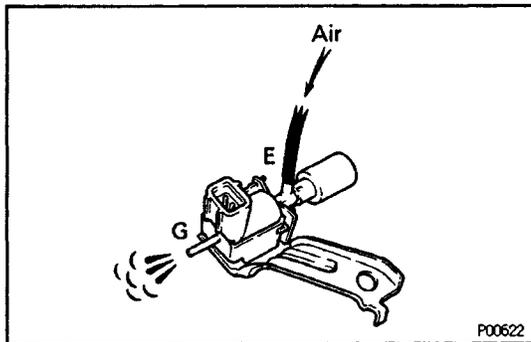
If there is no continuity, replace the VSV.





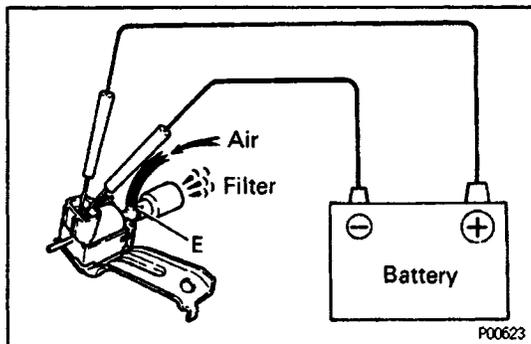
B. Inspect VSV for ground

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



C. Inspect VSV operation

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



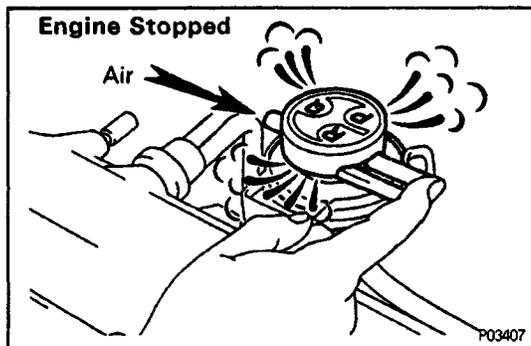
(b) Apply battery voltage across the terminals.

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

If operation is not as specified, replace the VSV.

3. REINSTALL VSV

(See VSV Removal under MPI System)



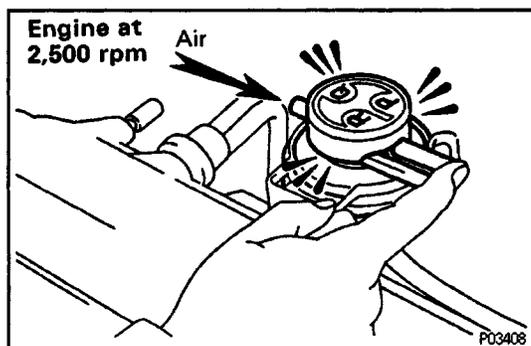
EGR VACUUM MODULATOR INSPECTION

INSPECT EGR VACUUM MODULATOR OPERATION

(a) Disconnect the vacuum hoses from ports P, Q and R of the EGR vacuum modulator.

(b) Block ports P and R with your finger.

(c) Blow air into port Q, and check that the air passes through to the air filter side freely.

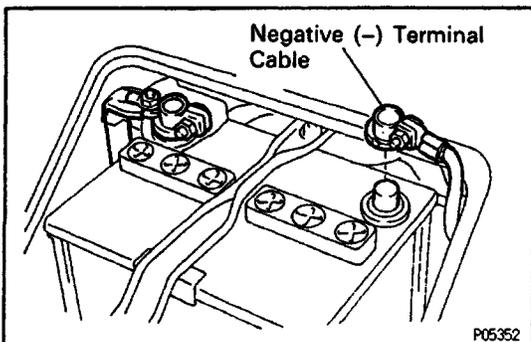
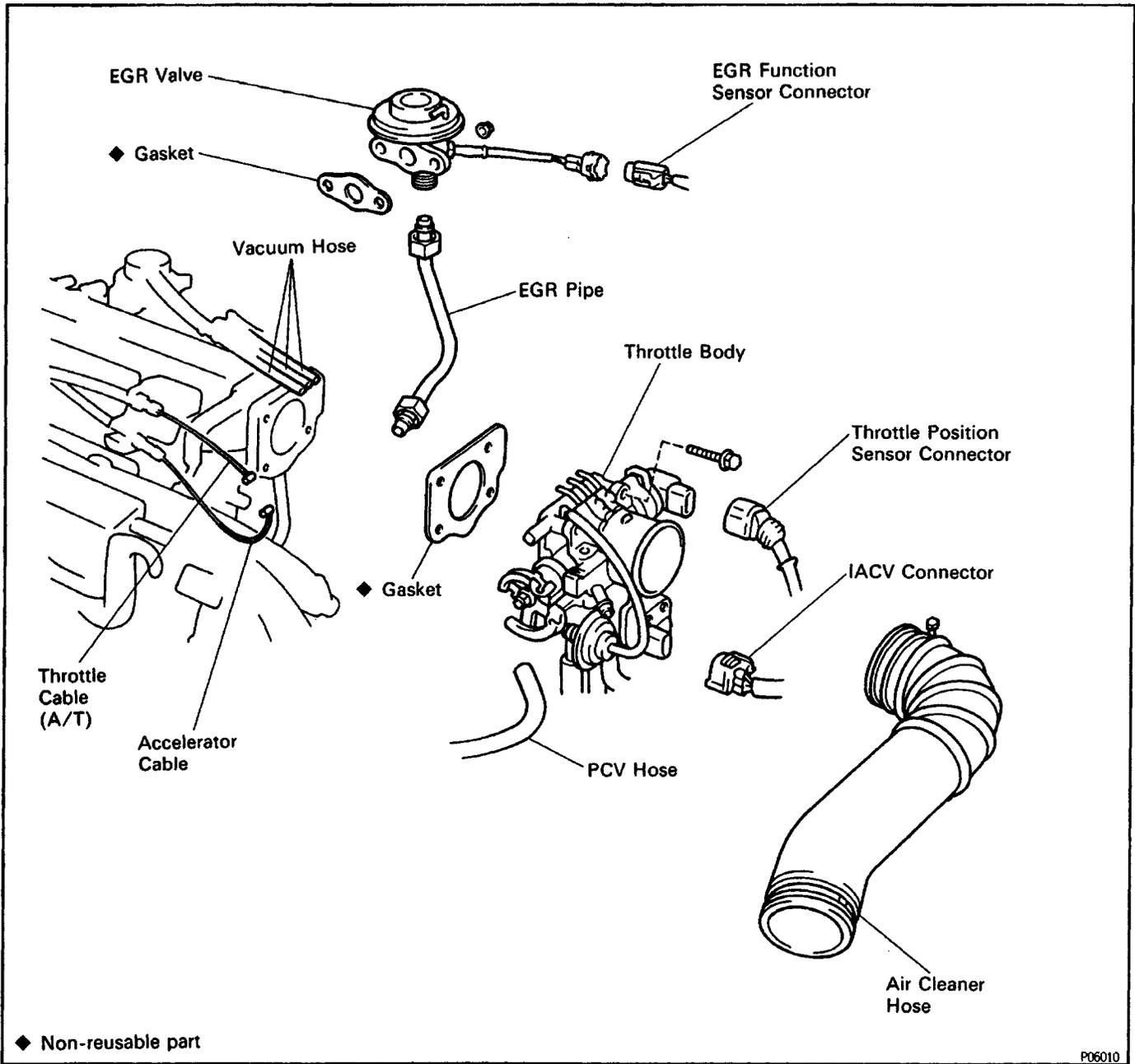


(d) Start the engine, and maintain speed at 2,500 rpm.

(e) Repeat the above test. Check that there is a strong resistance to air flow.

(f) Reconnect the vacuum hoses to the proper locations.

COMPONENTS FOR EGR VALVE REMOVAL AND INSTALLATION

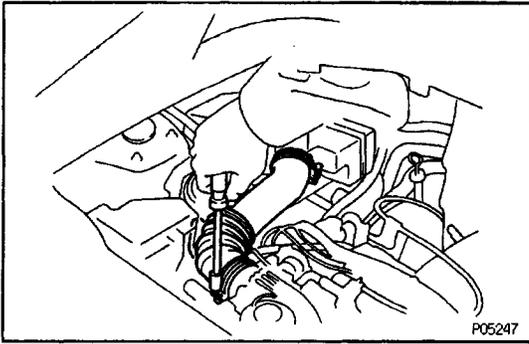


EGR VALVE INSPECTION

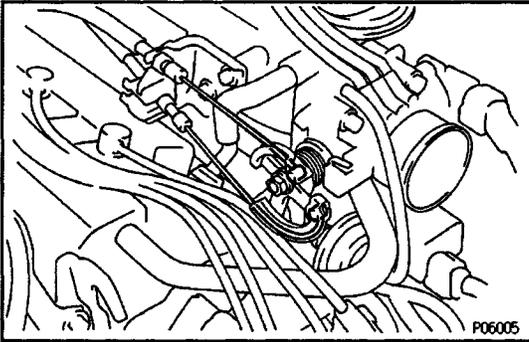
(See Components for EGR Valve Removal and Installation)

1. DISCONNECT CAGE 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 AIR CLEANER HOSE



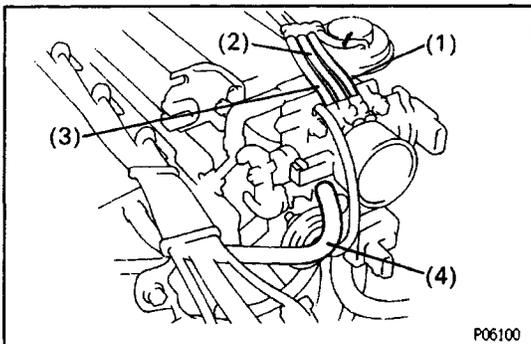
3. DISCONNECT ACCELERATOR CABLE FROM THROTTLE BODY

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

6. DISCONNECT THROTTLE BODY FROM INTAKE MANIFOLD

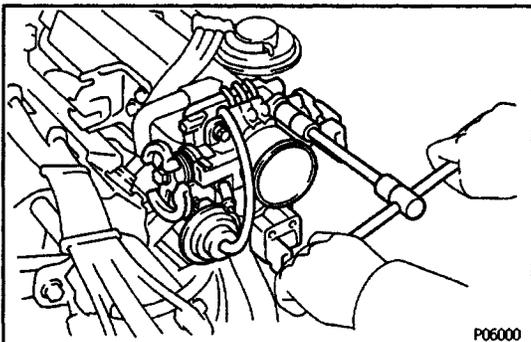
(a) Disconnect the following connector:

- 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 "a" 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

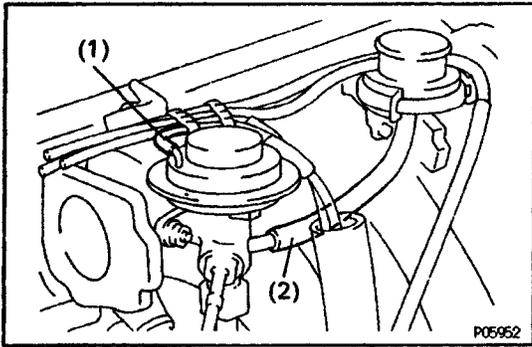


(c) Remove the four bolts, and disconnect the throttle body from the intake manifold.

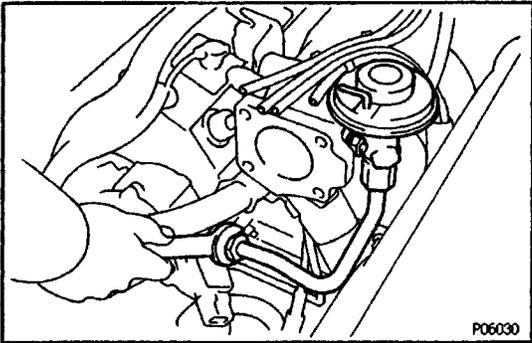
(d) Remove the throttle body gasket.

6. REMOVE EGR VALVE

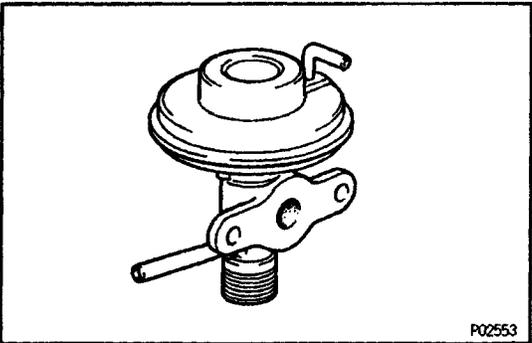
- (a) (CALIF. only)
Disconnect the EGR function sensor connector.
- (b) Disconnect the following hoses from the EGR valve:
 - (1) Vacuum hose (from port E of VSV)
 - (2) EGR hose (from vacuum modulator)



- (c) Loosen the two union nuts.
- (d) Remove the two nuts, EGR valve and gasket.

**7. INSPECT EGR VALVE**

Check for sticking and heavy carbon deposits.
If a problem is found, replace the valve.

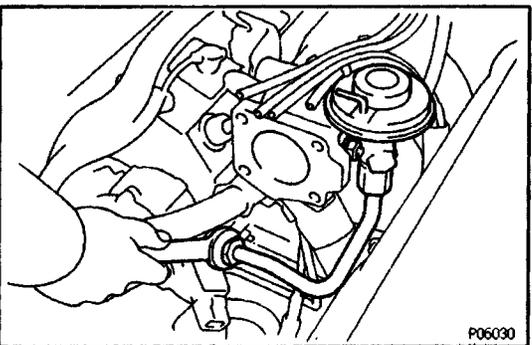
**8. REINSTALL EGR VALVE**

- (a) Install a new gasket and the EGR valve with the two nuts.

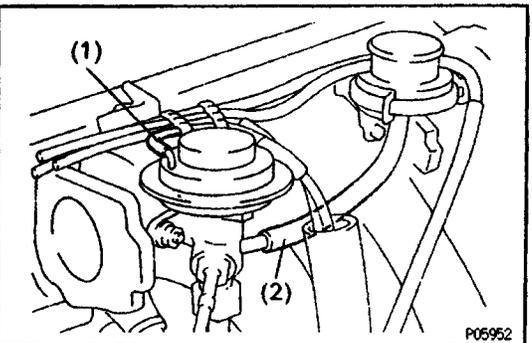
Torque: 13 N-m (130 kgf-cm, 9 ft-lbf)

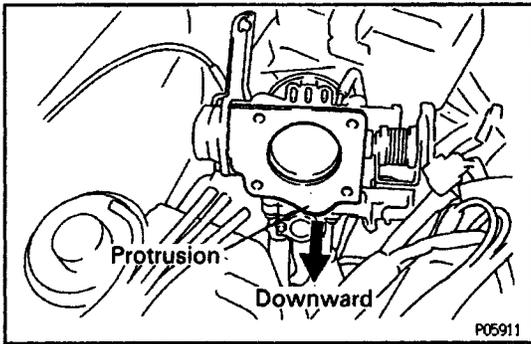
- (b) Install the EGR pipe with the two union nuts.

Torque: 59 N-m (600 kgf-cm, 43 ft-lbf)



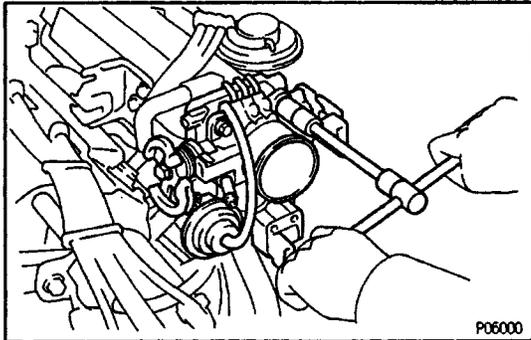
- (c) Connect the following hoses to the EGR valve:
 - (1) Vacuum hose (from port E of VSV)
 - (2) EGR hose (from vacuum modulator)
- (d) (CALIF. only)
Reconnect the EGR function sensor connector.





9. INSTALL THROTTLE BODY

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



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

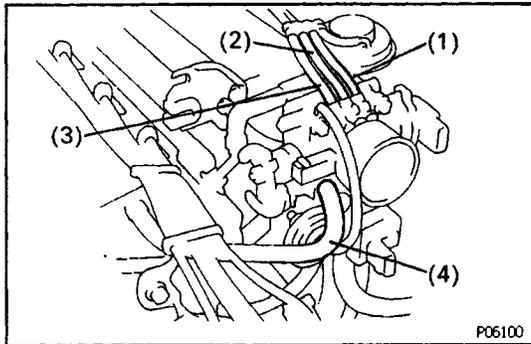
Torque: 19 N-m (195 kgf-cm, 14 ft-lbf)

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

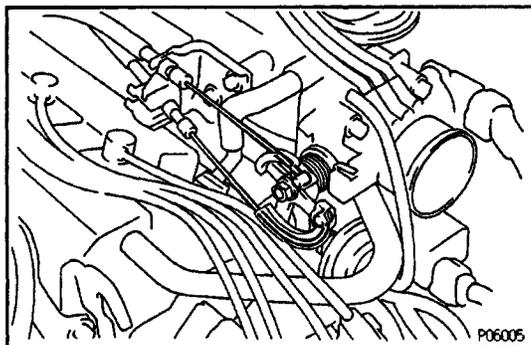


- (c) Connect the following hoses:

- (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

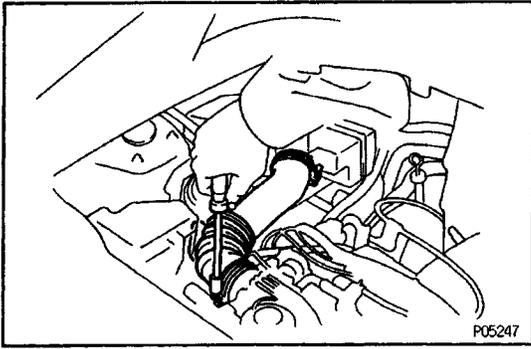
- (d) Reconnect the following connector:

- Throttle position sensor connector
- IACV connector



10. CONNECT ACCELERATOR CABLE TO THROTTLE BODY

11. (A/T)
CONNECT THROTTLE CABLE TO THROTTLE BODY



12. REINSTALL AIR CLEANER HOSE

13. RECONNECT CABLE TO NEGATIVE TERMINAL OF BATTERY