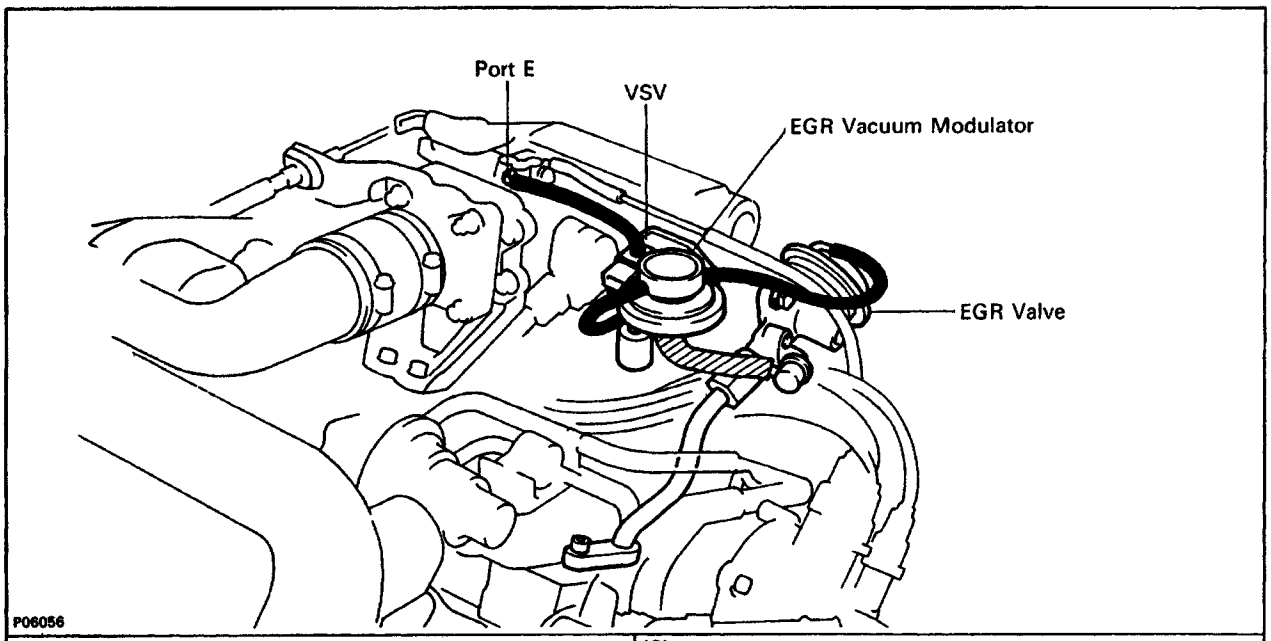
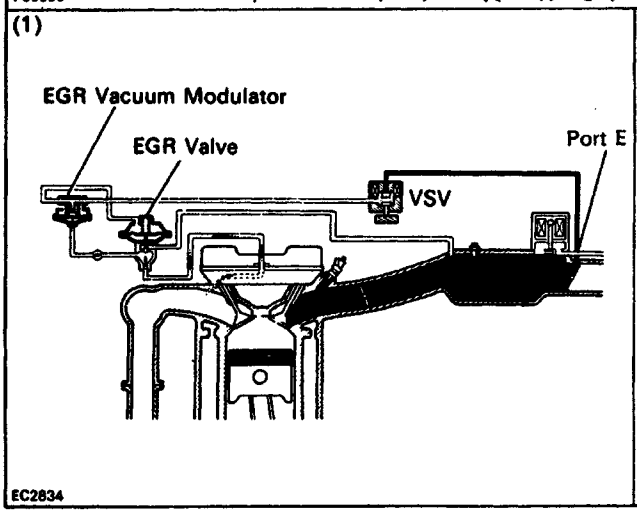
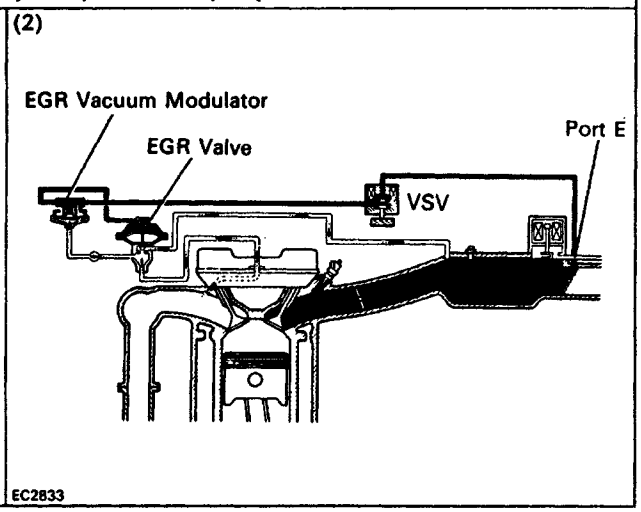
EXHAUST GAS RECIRCULATION (EGR) SYSTEM

EG088–02







To reduce NOx emissions, part of the exhaust gases is recirculated through the EGR valve to the intake manifold to lower the maximum combustion temperature.

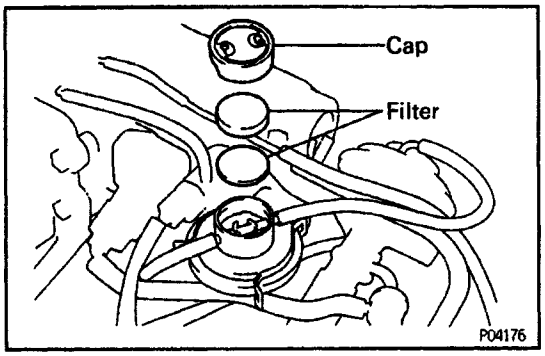
Coolant temp.	VSV	Throttle Valve Opening Angle	Pressure in the EG R Valve Pressure Chamber		EGR Vacuum Modulator	EG R Valve	Exhaust Gas
Below 54°C (129°F)	CLOSED	–	–		–	CLOSED	Not recirculated
Above 60°C (140° F)	OPEN	Positioned above port E	(1)	–	–	CLOSED	Not recirculated
		Positioned .below port E	(2)	•	CLOSED passage to atmosphere	OPEN	Recirculated (increase)

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

V00969

EG0XD–01

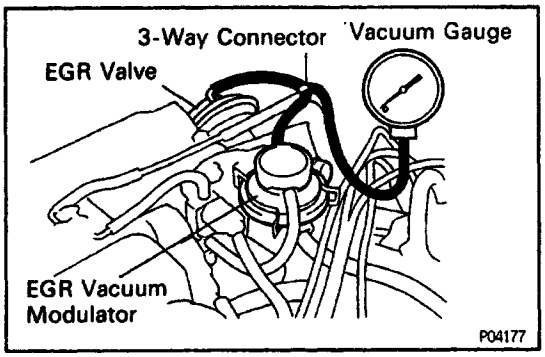
EGR SYSTEM INSPECTION



1. INSPECT AND CLEAN FILTER IN EGR VACUUM MODULATOR

(a) Remove the cap and two filters.
(b) Check the filter for contamination or damage.
(c) Using compressed air, clean the filter.
(d) Reinstall the two filters and cap.

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

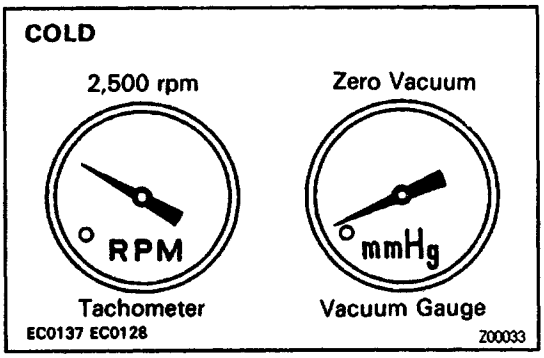


2. INSTALL VACUUM GAUGE

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

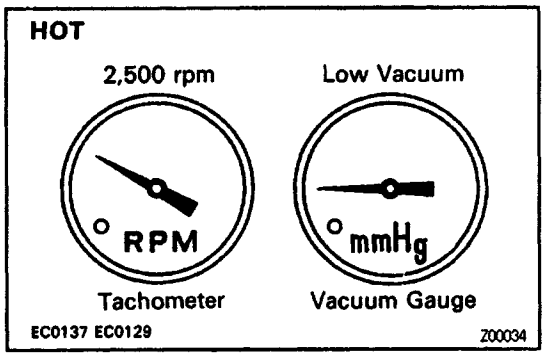
3. INSPECT SEATING OF EGR VALVE

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



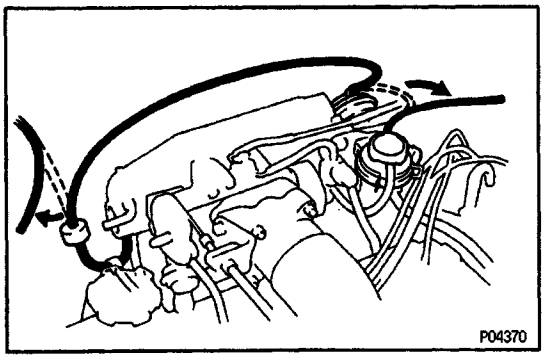
4. INSPECT VSV OPERATION WITH COLD ENGINE

(a) The coolant temperature should be below 54˚C (129˚F).
(b) Check that the vacuum gauge indicates zero at 2,500 rpm.



5. INSPECT VSV OPERATION WITH HOT ENGINE

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



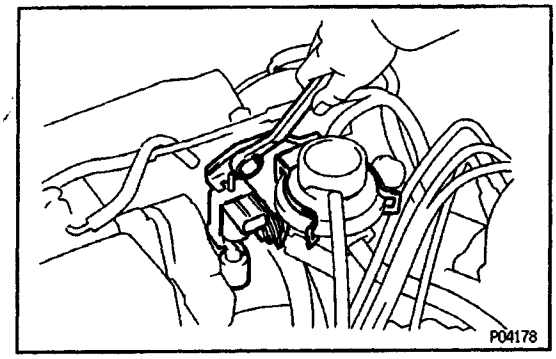
6. INSPECT EGR VALVE

(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.

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

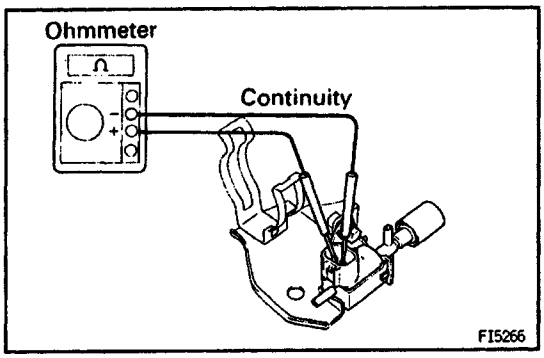
EG0XE–01

VSV INSPECTION



1. REMOVE VSV

(See VSV Removal under SMPI System)



2. INSPECT VSV

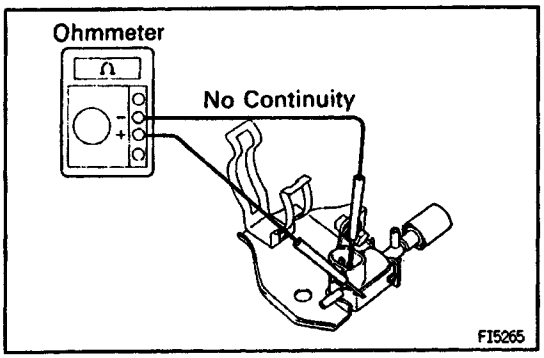
A. Inspect VSV for open circuit .

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

Resistance (Cold):

33–39 Ω

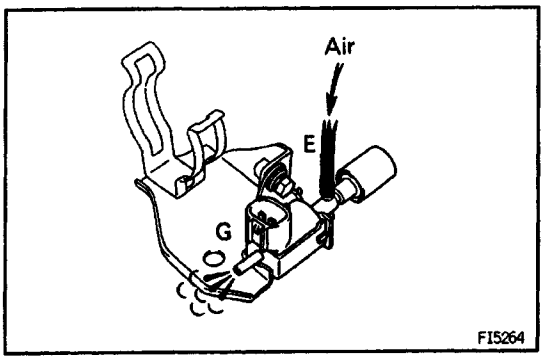
If there is no continuity, replace the VSV.



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.



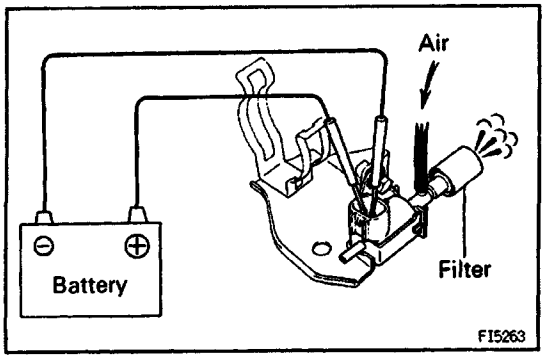
C. Inspect VSV operation

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

(b) Apply battery voltage across the terminals.

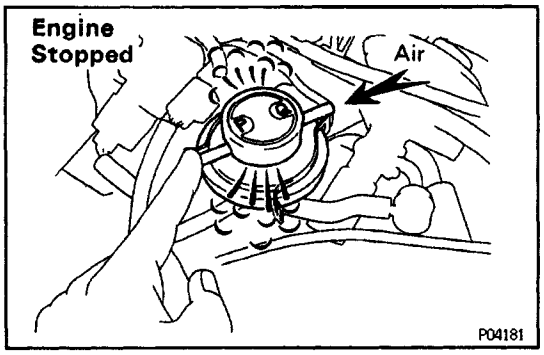
(c) Check that the air flows from port E to the filter.

If operation is not as specified, replace the VSV.



3. REINSTALL VSV

(See VSV Removal under SMPI System)

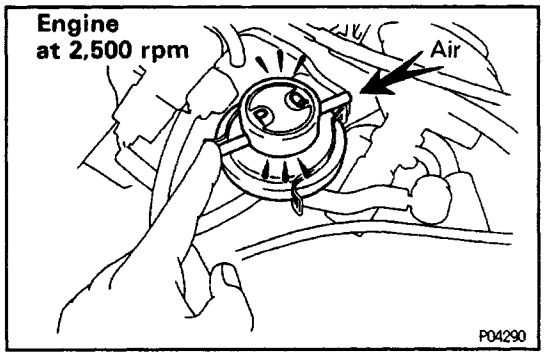


E0011–01

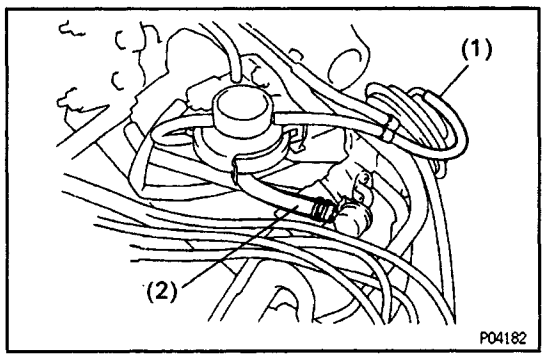
EGR VACUUM MODULATOR INSPECTION

INSPECT EGR VACUUM MODULATOR OPERATION

(a) Disconnect the vacuum hoses from ports P and Q of the EGR vacuum modulator.
(b) Block port one side with your finger.
(c) Blow air into another port, 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.

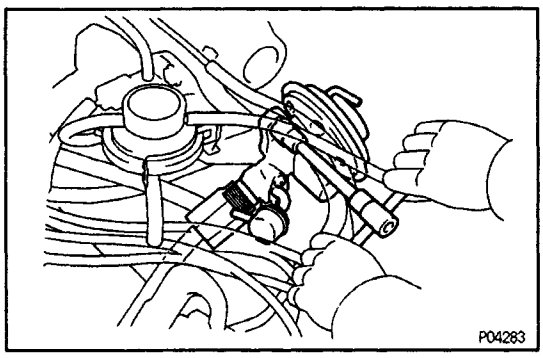


EGOXF–01

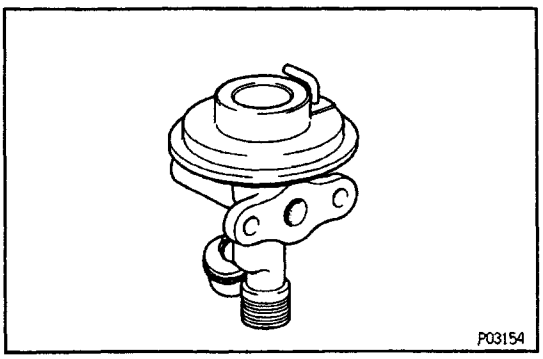
EGR VALVE INSPECTION

1. 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 vacuum modulator)
(2) EGR hose (from vacuum modulator)

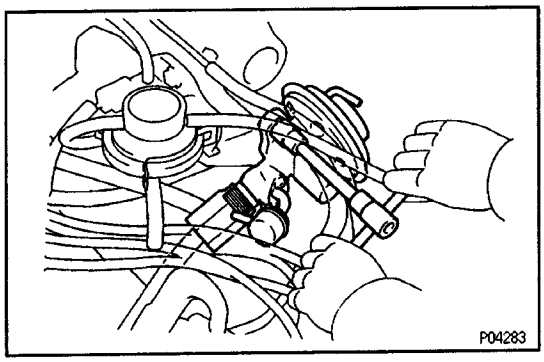


(c) Loosen the union nut, and Remove the two bolts, EGR valve and gasket.



2. INSPECT EGR VALVE

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



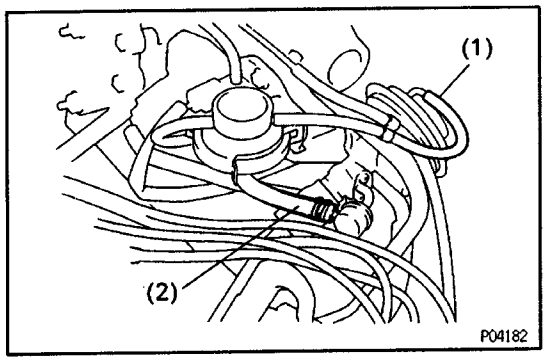
3. REINSTALL EGR VALVE

(a) Install a new gasket and the EGR valve with the union nut and two bolts.

Torque:

19 N–m (195 kgf–cm, 19 ft–lbf) for bolt

59 N–m (600 kgf–cm, 43 ft–lbf) for union nut



(b) Connect the following hoses to the EGR valve:

(1) Vacuum hose (from vacuum modulator)

(2) EGR hose (from vacuum modulator)

(c) (CALIF. only)

Reconnect the EGR function sensor connector.