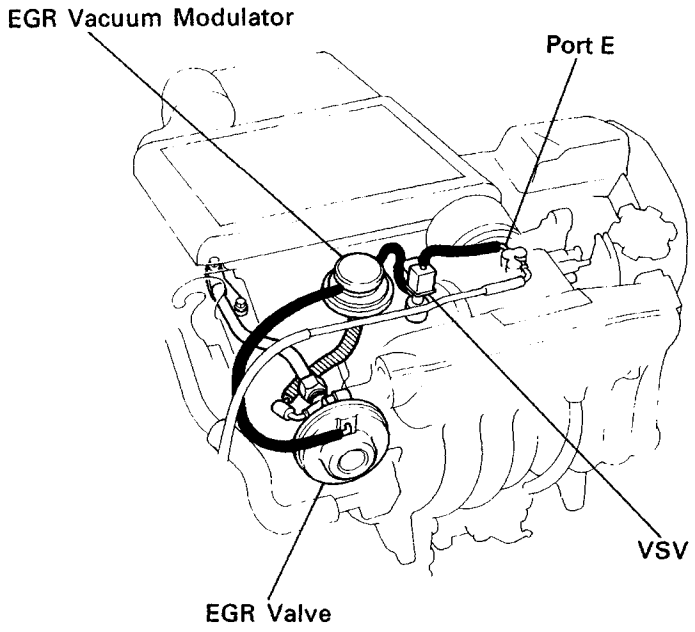
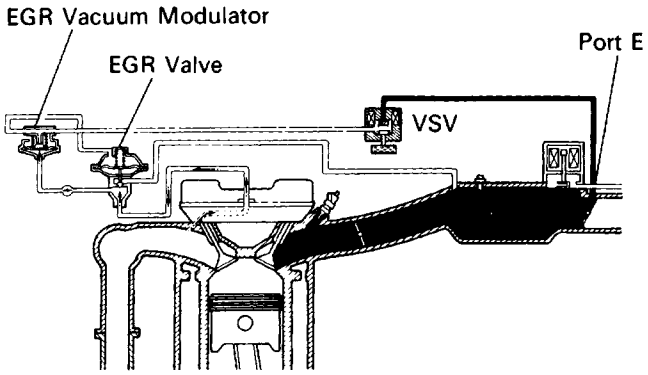
EXHAUST GAS RECIRCULATION (EGR) SYSTEM



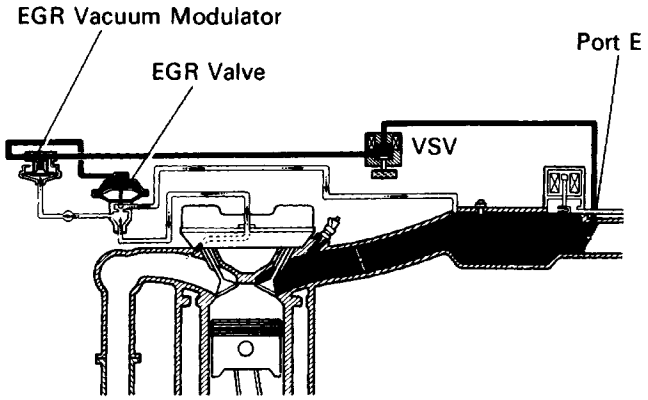
P03591

(1)



EC2834

(2)

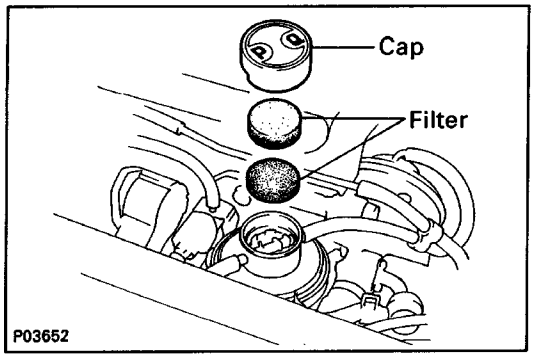


EC2833

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

Engine Coolant Temp.	VSV	Throttle Valve Opening Angle	Pressure in the EGR 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)

Remark: * When the throttle valve is positioned above 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.



INSPECTION OF EGR SYSTEM

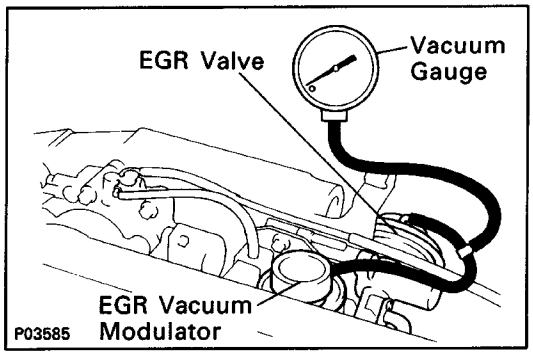
1. INSPECT AND CLEAN FILTERS IN EGR VACUUM MODULATOR

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

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

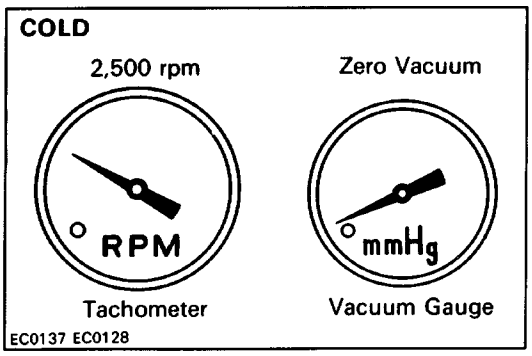
2. INSTALL VACUUM GAUGE

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



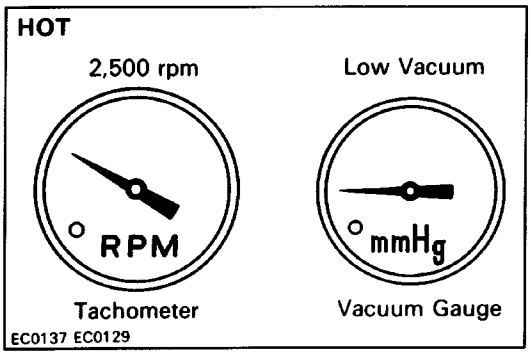
3. INSPECT SEATING OF EGR VALVE

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 vacuum at 2,500 rpm.

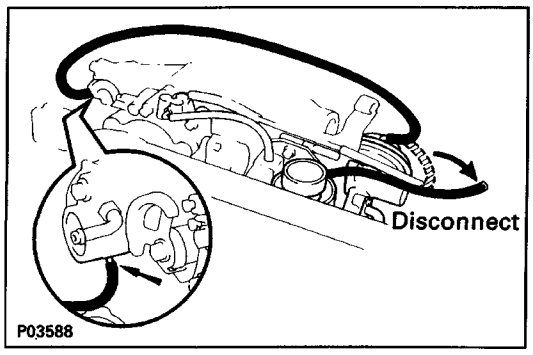


5. INSPECT VSV OPERATION WITH HOT ENGINE

(a) Warm up the engine.
(b) Check that the vacuum gauge indicates low vacuum at 2,500 rpm.

6. REMOVE VACUUM GAUGE

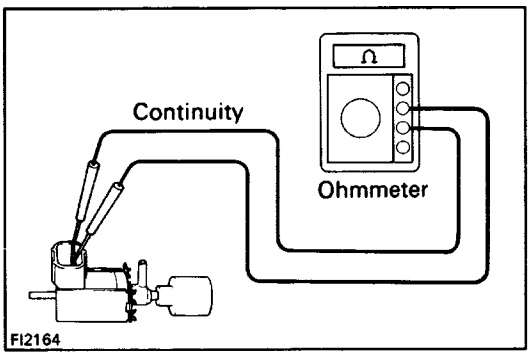
Remove the vacuum gauge, and reconnect the vacuum hoses to proper locations.



7. INSPECT EGR VALVE OPERATION

(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



INSPECTION OF VSV

1. REMOVE VSV

2. INSPECT VSV

A. Inspect VSV for open circuit

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

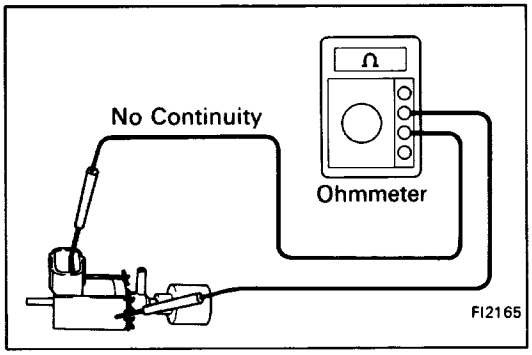
Resistance (Cold): 33 – 39Ω

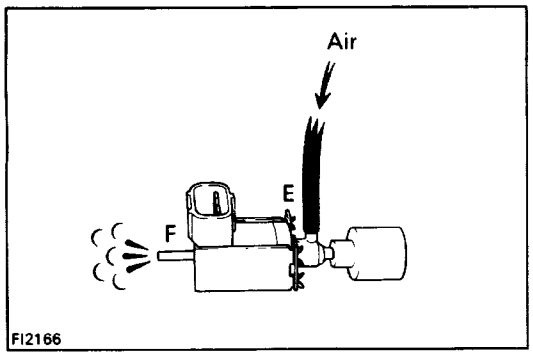
If there is no continuity, replace the VSV.

B. Inspect VSV for ground

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

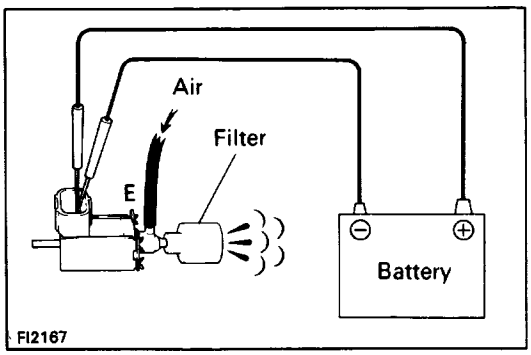
If there is continuity, replace the VSV.





C. Inspect VSV operation

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

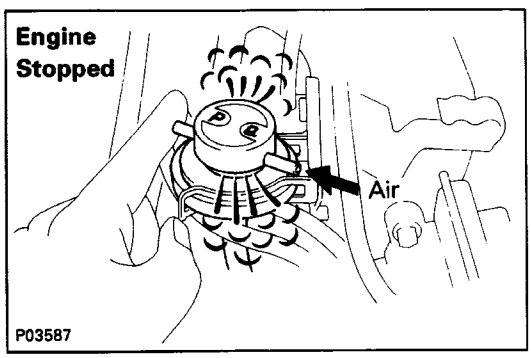


(b) Apply battery voltage across the terminals.

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

If operation is not as specified, replace the VSV.

3. REINSTALL VSV



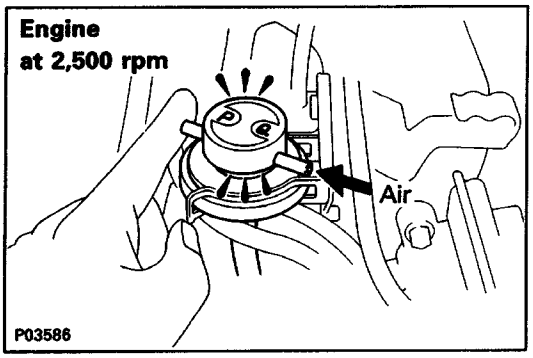
INSPECTION OF EGR VACUUM MODULATOR

INSPECT OPERATION OF EGR VACUUM MODULATOR

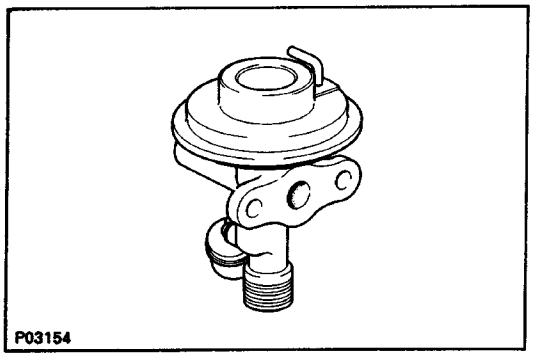
(a) Disconnect the vacuum hoses from ports P and Q of the EGR vacuum modulator.

(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.



INSPECTION OF EGR VALVE

1. REMOVE EGR VALVE

2. INSPECT EGR VALVE

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

3. REINSTALL EGR VALVE

Install a new gasket.