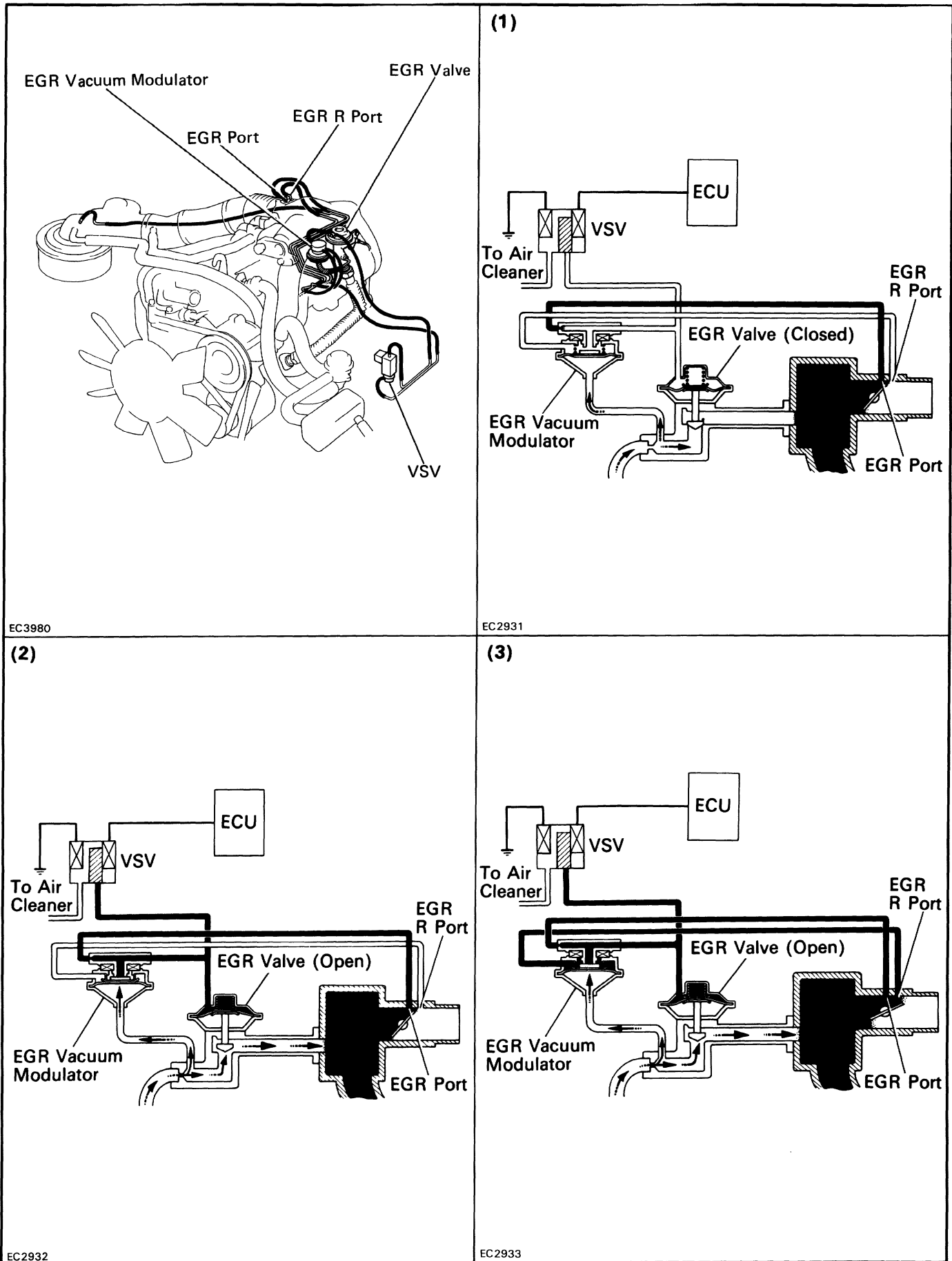


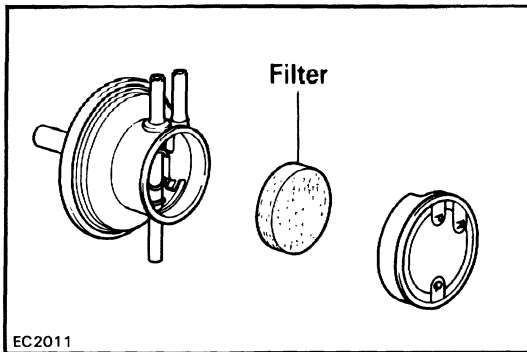
EXHAUST GAS RECIRCULATION (EGR) SYSTEM



To reduce NOx emission, part of the exhaust gases are recirculated through the EGR valve to the intake manifold to lower the maximum combustion temperature.										
Coolant Temp.	Engine RPM	Driving Condition	Intake Air Volume	vsv	Throttle Valve Opening Angle	Pressure in the EGR Valve Pressure Chamber	EGR Vacuum Modulator	EGR Valve	Exhaust Gas	
Below 47°C (117°F)			—	OFF	—	—	—	CLOSED	Not recirculated	
Above 53°C (127°F)	Above 3,500 rpm	—	—	OFF	—	—	—	CLOSED	Not recirculated	
	Below 3,500 rpm	Deceleration	—	OFF	—	—		CLOSED	Not recirculated	
		Ex. deceleration	LOW	OFF	—	—	—	—	CLOSED	Not recirculated
					OFF	—	—	—		CLOSED
				HIGH	ON	Positioned below EGR port	—		CLOSED	Not recirculated
					Positioned between EGR port and EGR R port	(1) LOW	*Pressure constantly altering between low and high	CLOSED	Not recirculated	
						(2) HIGH			OPEN	Recirculated
					Positioned above EGR port	(3) HIGH	**	CLOSES passage to atmosphere	Recirculated (increase)	

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

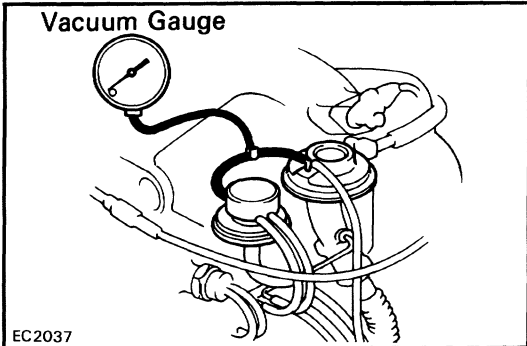
**When the throttle valve is positioned above the R port, the EGR vacuum modulator will close the atmosphere passage and open the EGR valve to increase the EGR gas, even if the exhaust pressure is insufficiently low.



INSPECTION OF EGR SYSTEM

1. CHECK AND CLEAN FILTER IN EGR VACUUM MODULATOR

- Check the filter for contamination or damage.
- Using compressed air, clean the filter.

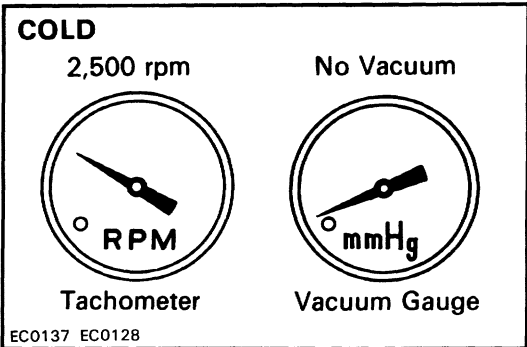


2. PREPARATION

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

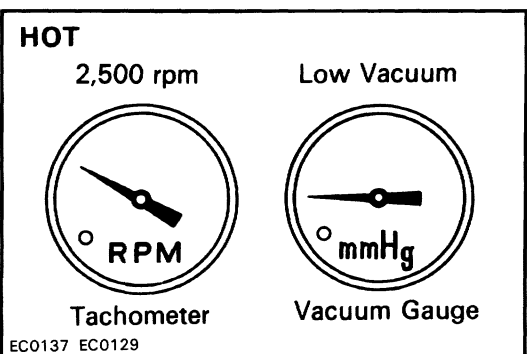
3. CHECK SEATING OF EGR VALVE

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



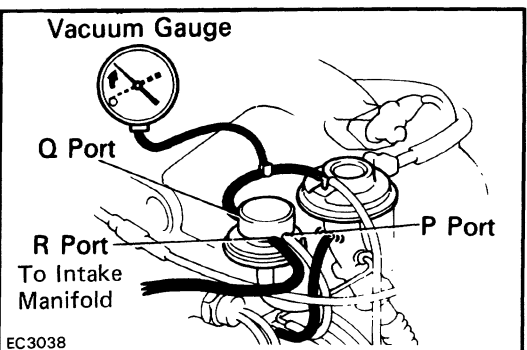
4. CHECK VSV WITH COLD ENGINE

- The coolant temperature should be below 53°C (127°F).
- Check that the vacuum gauge indicates zero at 2,500 rpm.



5. CHECK VSV AND EGR VACUUM MODULATOR WITH HOT ENGINE

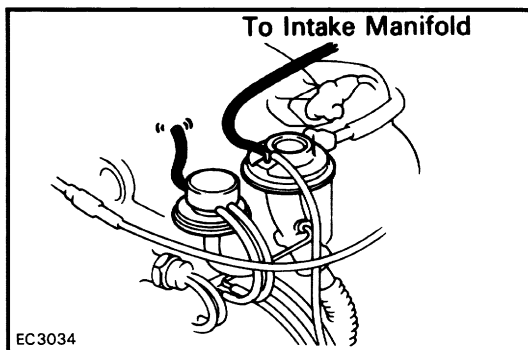
- Warm up the engine.
- Check that the vacuum gauge indicates low vacuum at 2,500 rpm.
- Check that the vacuum gauge indicates zero at idle.



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

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

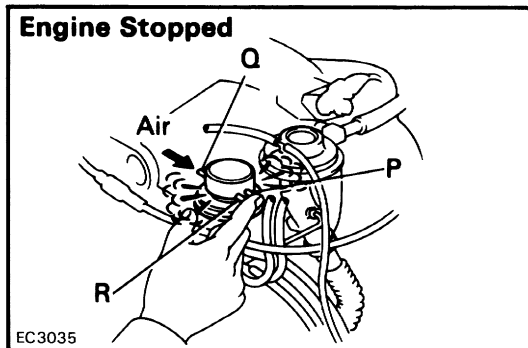
- Remove the vacuum gauge and reconnect the vacuum hoses to the proper locations.



6. CHECK EGR VALVE

- Apply vacuum directly to the EGR valve with the engine idling.
- Check that the engine runs rough or stops.
- Reconnect the vacuum hoses to the proper location.

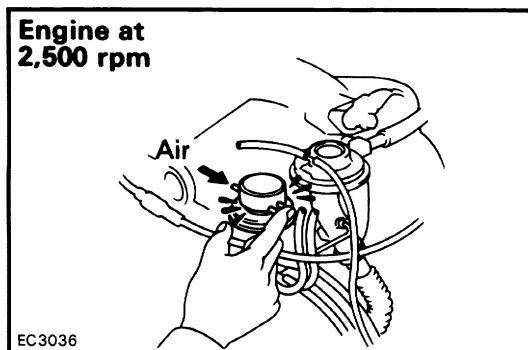
IF NO PROBLEM IS FOUND WITH THIS INSPECTION, SYSTEM IS FUNCTIONING; OTHERWISE INSPECT EACH PART



INSPECTION OF EGR VACUUM MODULATOR

CHECK EGR VACUUM MODULATOR OPERATION

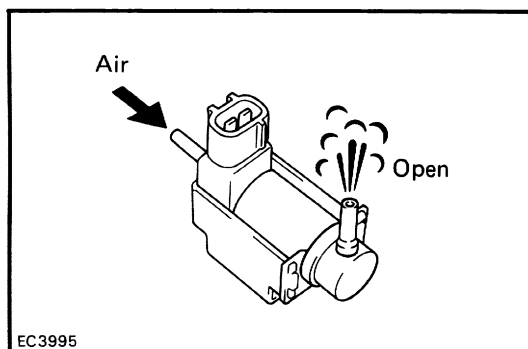
- Disconnect the vacuum hoses from ports P, Q and R of the EGR vacuum modulator.
- Block ports P and R with your finger.
- Blow air into port Q. Check that the air passes through to the air filter side freely.
- Start the engine and maintain speed at 2,500 rpm.
- Repeat the above test. Check that there is a strong resistance to air flow.
- Reconnect the vacuum hoses to the proper locations.



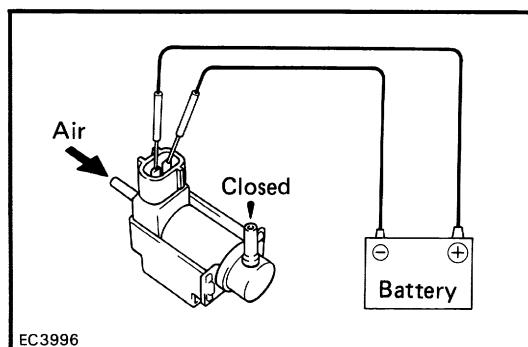
INSPECTION OF VSV

INSPECT VSV

- Blow air into a pipe and check that the VSV is open.



- Apply battery voltage across the terminals.
 - Blow air into pipe and check that the VSV is closed.
- If a problem is found, replace the VSV.



INSPECTION OF EGR VALVE

1. REMOVE EGR VALVE

Check the valve for sticking and heavy carbon deposits.

If a problem is found, replace it.

2. REINSTALL EGR VALVE WITH NEW GASKET

INSPECTION OF WATER TEMPERATURE SENSOR

(See page [FI-86](#))

INSPECTION OF THROTTLE POSITION SENSOR

(See page [FI-76](#))

INSPECTION OF AIR FLOW METER

(See page [FI-74](#))