

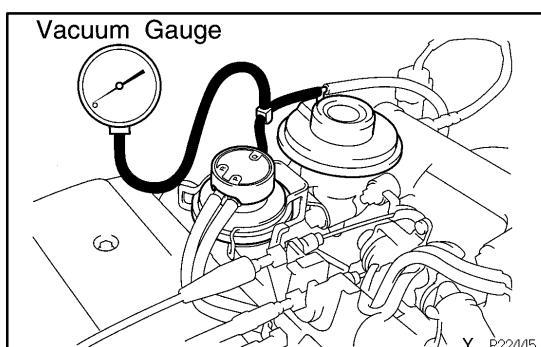
## INSPECTION

### 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 EGR vacuum modulator.

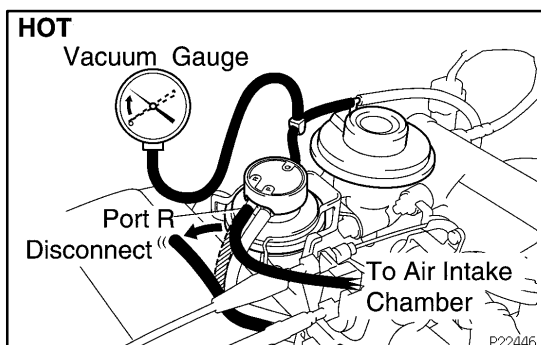
### 3. INSPECT SEATING OF EGR VALVE

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

### 4. CONNECT TOYOTA HAND-HELD TESTER OR OBD II SCAN TOOL (See page EM-10)

### 5. INSPECT VSV OPERATION WITH COLD ENGINE

- The engine coolant temperature should be below 47°C (117°F).
- Check that the vacuum gauge indicates zero at 2,500 rpm.
- Check that the EGR pipe is not hot.



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

- Warm up the engine to above 53°C (127°F).
- Check that the vacuum gauge indicates low vacuum at 2,500 rpm.
- Disconnect the vacuum hose port R of the EGR vacuum modulator and connect port R directly to the air intake chamber with another hose.
- Check that the vacuum gauge indicates high vacuum at 2,500 rpm.

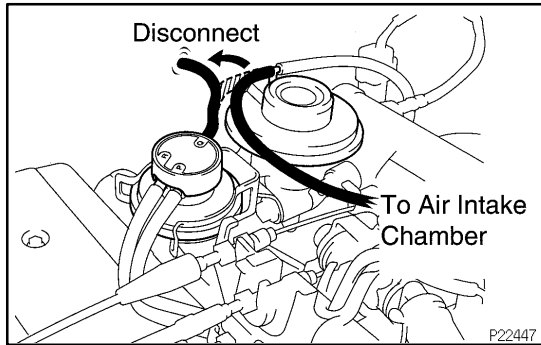
**HINT:**

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

**7. DISCONNECT TOYOTA HAND-HELD TESTER OR OBD II SCAN TOOL**

**8. REMOVE VACUUM GAUGE**

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



**9. INSPECT EGR VALVE**

(a) Apply vacuum directly to the EGR valve with the engine idle.

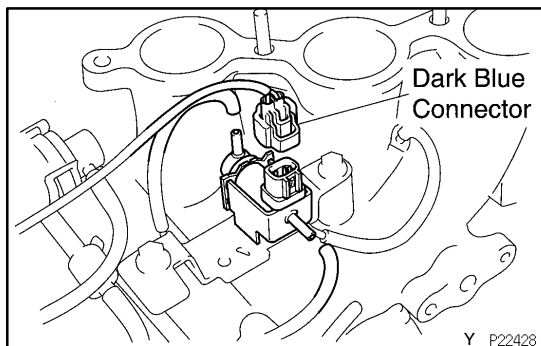
(b) Check that the engine runs rough or dies.

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

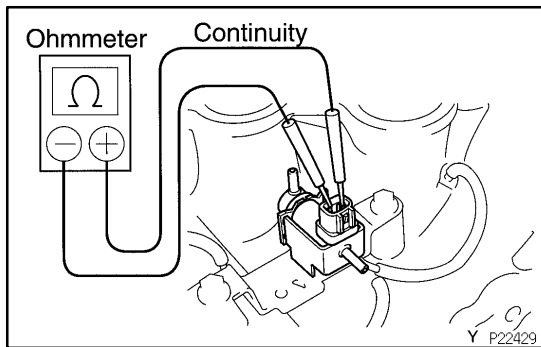
If no problem is found with this inspection, system is normal; otherwise inspect each part.

**10. CANCEL DIAGNOSTIC TROUBLE CODE**

**11. REMOVE AIR INTAKE CHAMBER (See page EM-28 )**



**12. DISCONNECT VACUUM HOSES AND CONNECTOR**

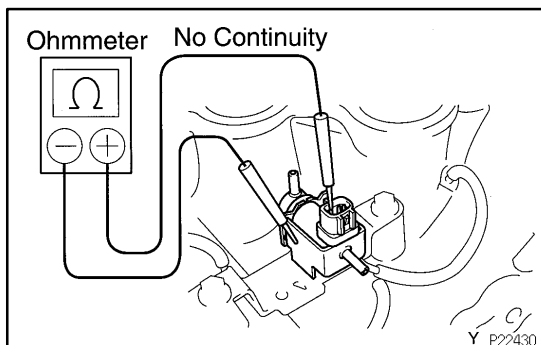


**13. INSPECT VSV FOR OPEN CIRCUIT**

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

**Resistance: 30 - 34 Ω at 20°C (68°F)**

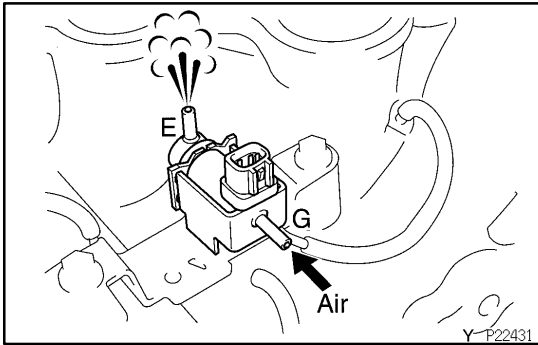
If there is no continuity, replace the VSV.



**14. INSPECT VSV FOR GROUND**

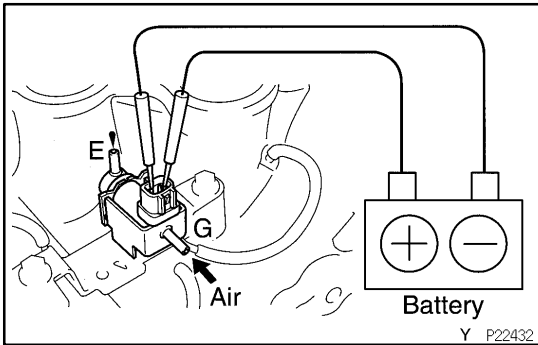
Using an ohmmeter, check that there is no continuity between each terminal and the body.

If there is continuity, replace the VSV.



**15. INSPECT VSV OPERATION**

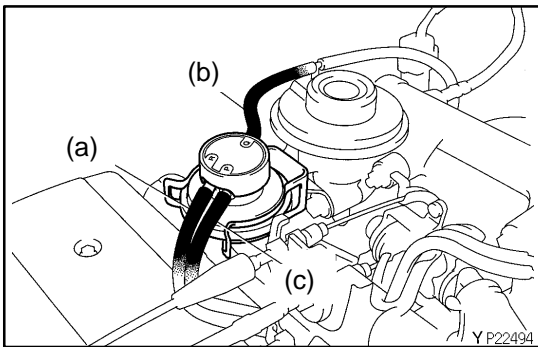
- (a) Check that the air flows from pipe G to pipe E.



- (b) Apply battery voltage across the terminals.
- (c) Check that the air does not flow from pipe G to pipe E. If operation is not as specified, replace the VSV.

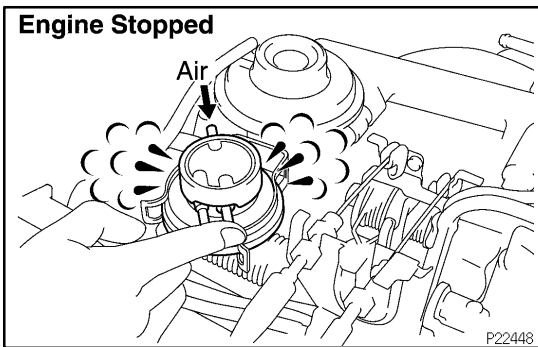
**16. RECONNECT VACUUM HOSES AND CONNECTOR**

- 17. REINSTALL AIR INTAKE CHAMBER (See page EM-54 )**



**18. DISCONNECT VACUUM HOSES FROM EGR VACUUM MODULATOR**

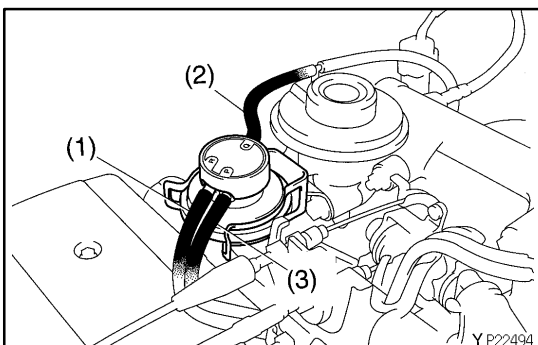
- (a) Disconnect the vacuum hose from R port.
- (b) Disconnect the vacuum hose from Q port.
- (c) Disconnect the vacuum hose from P port.



**19. INSPECT EGR VACUUM MODULATOR OPERATION**

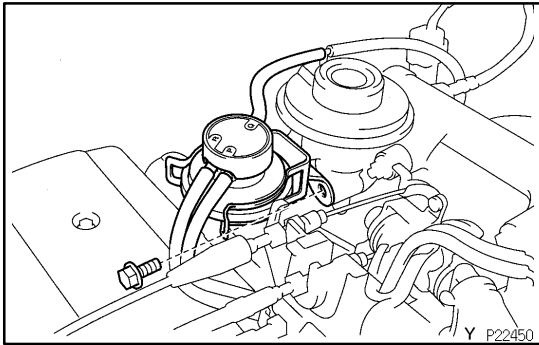
- (a) Block ports P and R with your finger.
- (b) Blow air into port Q, and check that the air passes through to the air filter side freely.
- (c) Start the engine, and maintain speed at 2,500 rpm.
- (d) Repeat the above test. Check that there is a strong resistance to air flow.

If operation is not as specified, replace the EGR vacuum modulator.

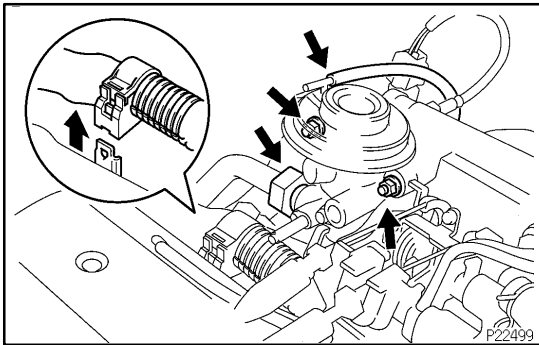


**20. RECONNECT VACUUM HOSES TO EGR VACUUM MODULATOR**

- (a) Connect the vacuum hose to R port.
- (b) Connect the vacuum hose to Q port.
- (c) Connect the vacuum hose to P port.

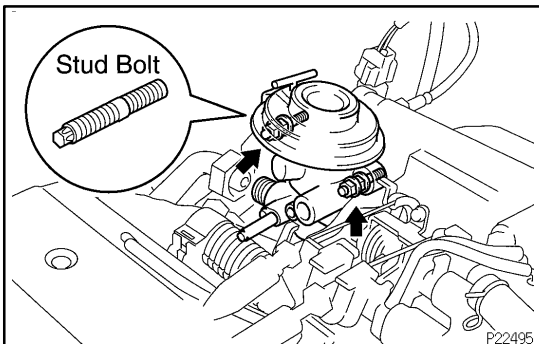


**21. REMOVE EGR VACUUM MODULATOR**

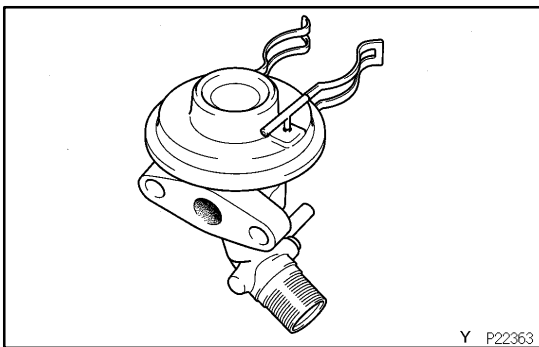


**22. REMOVE EGR VALVE**

- (a) Disconnect the vacuum hose from the EGR valve.
- (b) Disconnect the engine wire from the clamp.
- (c) Loosen the EGR pipe union nut.
- (d) Remove the 2 nuts holding the EGR valve to the air intake chamber.



- (e) Using 2 nuts, remove the 2 stud bolts, EGR valve and gasket.



**23. INSPECT EGR VALVE**

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

**24. REINSTALL EGR VALVE**

- (a) Using 2 nuts, temporarily install a new gasket, and EGR valve with the 2 stud bolts.  
**Torque: 9 N·m (90 kgf·cm, 78 in.-lbf)**
  - (b) Install the 2 nuts holding the EGR valve to the air intake chamber.  
**Torque: 18 N·m (180 kgf·cm, 13 ft-lbf)**
  - (c) Tighten the union nut of the EGR pipe.  
**Torque: 64 N·m (650 kgf·cm, 47 ft-lbf)**
  - (d) Connect the engine wire to the clamp.
  - (e) Connect the vacuum hose to the EGR valve.
- 25. REINSTALL EGR VACUUM MODULATOR**  
**Torque: 18 N·m (185 kgf·cm, 13 ft-lbf)**