

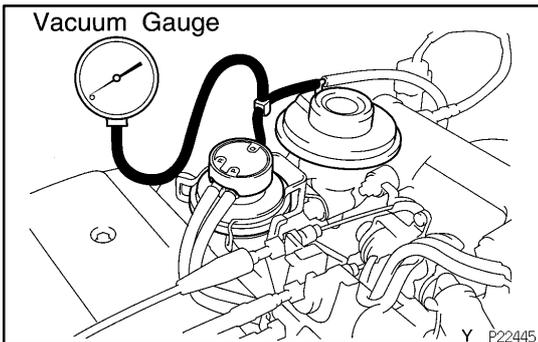
## INSPECTION

### 1. INSPECT AND CLEAN FILTER IN EGR VACUUM MODULATOR

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

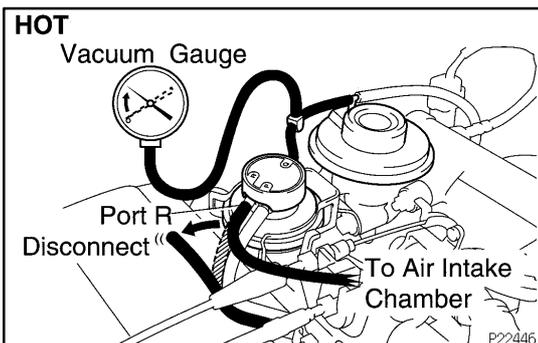
### 3. INSPECT SEATING OF EGR VALVE

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

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



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

- (a) Warm up the engine to above 53°C (127°F).
- (b) 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 air intake chamber with another hose.
- (d) Check that the vacuum gauge indicates high vacuum at 2,500 rpm.

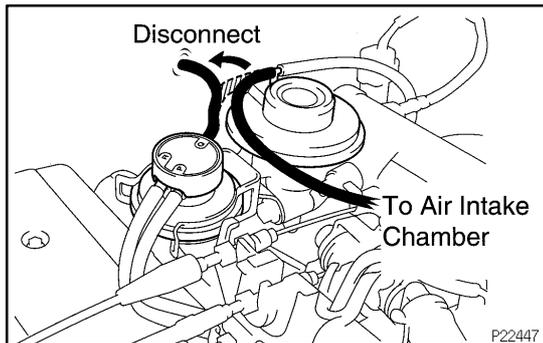
**HINT:**

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

**7. 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.

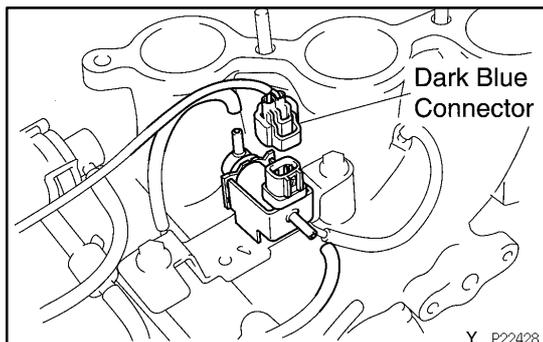


**9. INSPECT EGR VALVE**

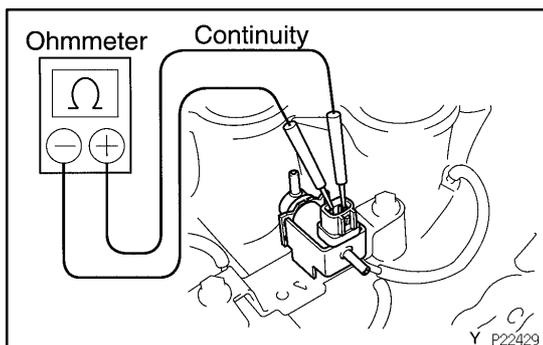
- (a) Apply vacuum directly to the EGR valve with the engine idle.
  - (b) Check that the engine runs rough or dies.
  - (c) Reconnect the vacuum hoses to the proper locations.
- If no problem is found with this inspection, system is normal; otherwise inspect each part.

**10. CANCEL DIAGNOSTIC TROUBLE CODE**

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



**12. DISCONNECT VACUUM HOSES AND CONNECTOR**

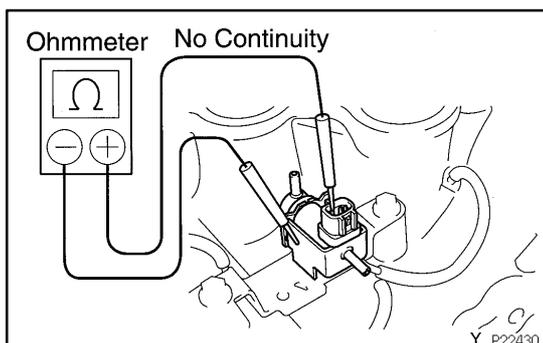


**13. INSPECT VSV FOR OPEN CIRCUIT**

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

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

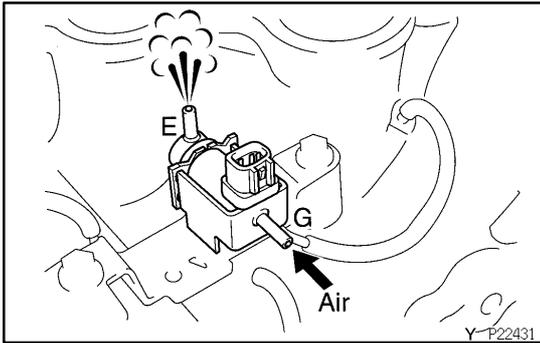
If there is no continuity, replace the VSV.



**14. INSPECT VSV FOR GROUND**

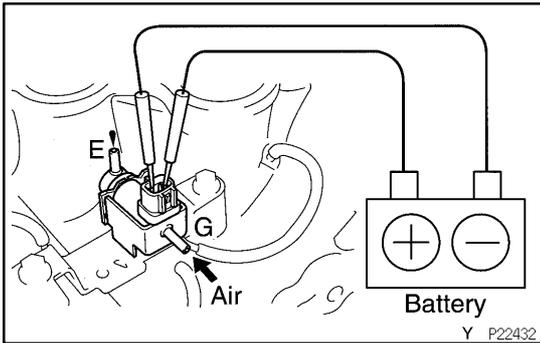
Using an ohmmeter, check that there is no continuity between each terminal and the body.

If there is continuity, replace the VSV.



**15. INSPECT VSV OPERATION**

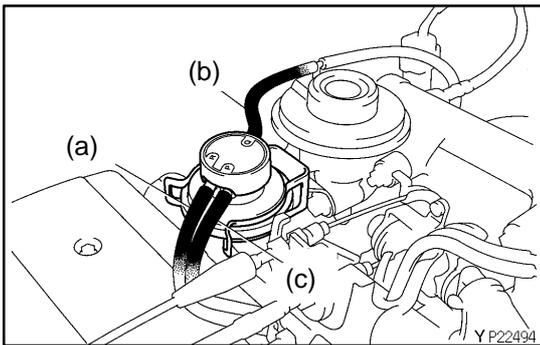
- (a) Check that the air flows from pipe G to pipe E.



- (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.

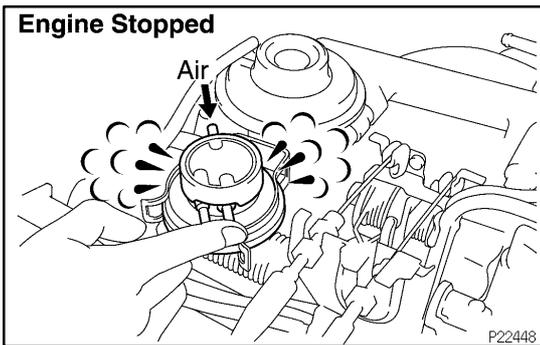
**16. RECONNECT VACUUM HOSES AND CONNECTOR**

- 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.

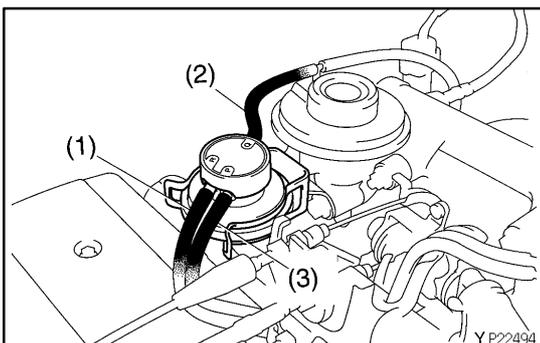


Engine Stopped

**19. INSPECT EGR VACUUM MODULATOR OPERATION**

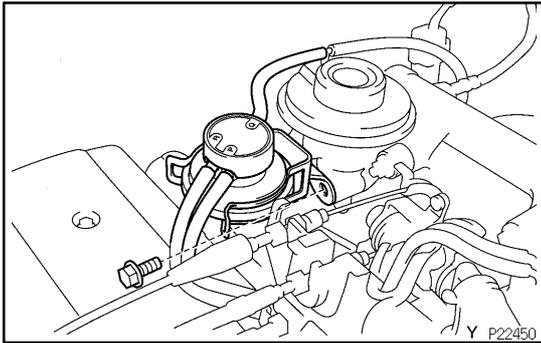
- (a) Block ports P and R with your finger.
- (b) Blow air into port Q, and check that the air passes through to the air filter side freely.
- (c) Start the engine, and maintain speed at 2,500 rpm.
- (d) Repeat the above test. Check that there is a strong resistance to air flow.

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

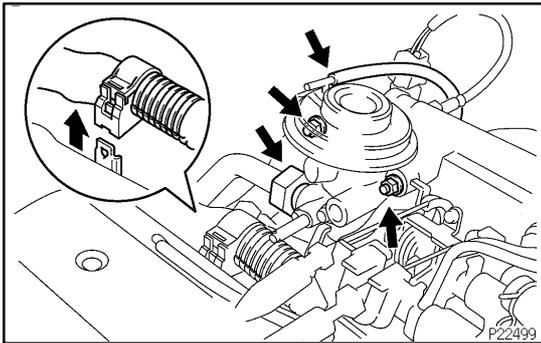


**20. RECONNECT VACUUM HOSES TO EGR VACUUM MODULATOR**

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

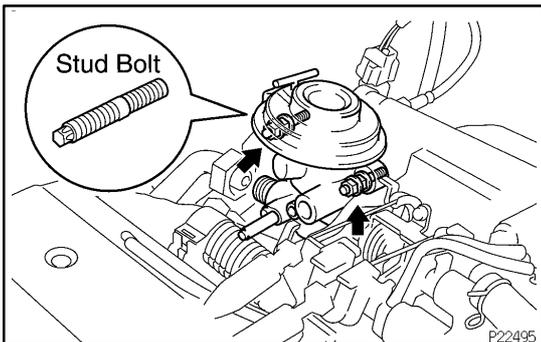


**21. REMOVE EGR VACUUM MODULATOR**

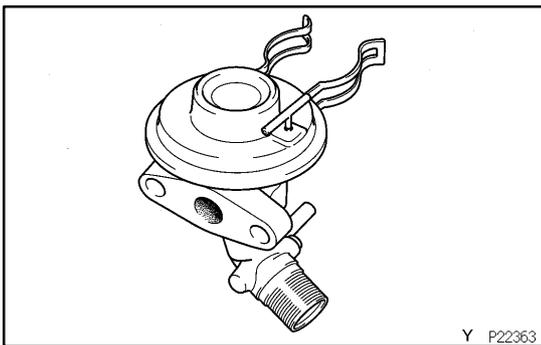


**22. REMOVE EGR VALVE**

- (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)**