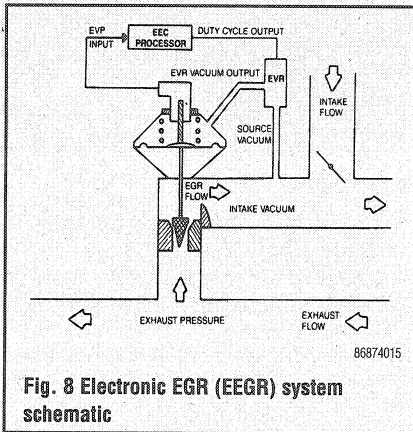


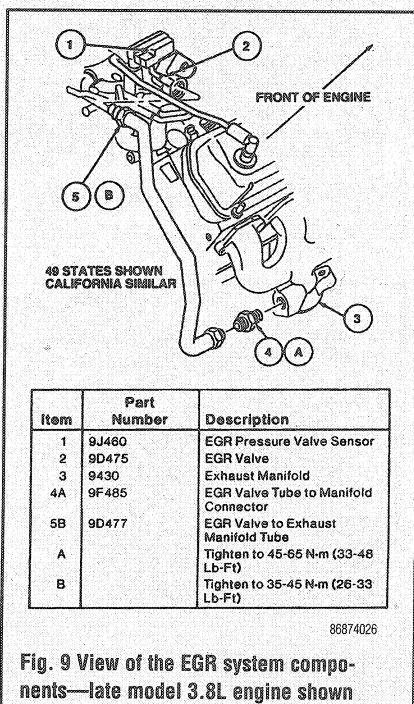
## 4-4 DRIVEABILITY AND EMISSIONS CONTROLS



The Differential Pressure Feedback Electronic (DPFE) EGR system operates in the same manner except it directly monitors the pressure drop across the metering orifice. This allows for a more accurate assessment of EGR flow requirements.

The Electronic EGR (EEGR) valve system is used on some vehicles equipped with the 5.0L engine. An electronic EGR valve is required in EEC systems where EGR flow is controlled according to computer demands by means of an EGR Valve Position (EVP) sensor attached to the valve. The valve is operated by a vacuum signal from the electronic vacuum regulator that actuates the valve diaphragm. As supply vacuum overcomes the spring load, the diaphragm is actuated. This lifts the pintle off of its seat allowing exhaust gas to recirculate. The amount of flow is proportional to the pintle position. The EVP sensor mounted on the valve sends an electrical signal of its position to the PCM.

The Pressure Feedback Electronic (PFE) EGR Transducer converts a varying exhaust pressure signal into a proportional analog voltage that is digitized by the PCM. The PCM uses the signal



received from the PFE transducer to compute the optimum EGR flow.

The EGR Vacuum Regulator (EVR) is an electromagnetic device that controls vacuum output to the EGR valve. The EVR replaces the EGR solenoid vacuum vent valve assembly. An electric current in the coil induces a magnetic field in the armature. The magnetic field pulls the disk back, closing the vent and increasing the vacuum level. The vacuum source is either manifold or ported vacuum. As the duty cycle is increased, an increased vacuum signal goes to the EGR valve.

### COMPONENT TESTING

Many of the following testing procedures require the use of a breakout box tool for EEC systems diagnosis. SUPER STAR II tester or NEW GENERATION STAR (NGS) tester or equivalent scan tools.

#### DPFE Sensor

1. Disconnect the pressure hoses at the DPFE sensor.
2. Connect a hand vacuum pump to the downstream pickup marked **REF** on the sensor.
3. Using a multimeter, backprobe the SIG RTN circuit at the DPFE connector.
4. With the ignition **ON**, signal voltage should be 0.20–0.70 volts.
5. Apply 8–9 in. Hg of vacuum to the sensor. Voltage should be greater than 4 volts.
6. Quickly release the vacuum from the sensor. Voltage should drop to less than 1 volt in 3 seconds.
7. If the sensor does not respond as specified, check the power and ground circuits.
8. If power and ground circuits are functional, the sensor is faulty.

#### EGR Valve Control Solenoid

1. Remove the EVR solenoid.
2. Attempt to lightly blow air into the EVR solenoid.
  - a. If air blows through the solenoid, replace the solenoid with a new one.
  - b. If air does not pass freely through the solenoid, continue with the test.
3. Apply battery voltage (approximately 12 volts) and a ground to the EVR solenoid electrical terminals. Attempt to lightly blow air, once again, through the solenoid.
  - a. If air does not pass through the solenoid, replace the solenoid with a new one.
  - b. If air does not flow through the solenoid, the solenoid is OK.
4. If the solenoid is functional but the problem still exists, check the power and ground circuits.

#### EGR Valve

1. Install a tachometer on the engine, following the manufacturer's instructions.
2. Detach the engine wiring harness connector from the Idle Air Control (IAC) solenoid.
3. Disconnect and plug the vacuum supply hose from the EGR valve.
4. Start the engine, then apply the parking brake, block the rear wheels and position the transmission in Neutral.
5. Observe and note the idle speed.

If the engine will not idle with the IAC solenoid disconnected, provide an air bypass to the engine by slightly opening the throttle plate or by creating an intake vacuum leak. Do not allow the idle speed to exceed typical idle rpm.

6. Using a hand-held vacuum pump, slowly apply 5–10 in. Hg (17–34 kPa) of vacuum to the EGR valve nipple.
  - a. If the idle speed drops more than 100 rpm with the vacuum applied and returns to normal after the vacuum is removed, the EGR valve is OK.
  - b. If the idle speed does not drop more than 100 rpm with the vacuum applied and return to normal after the vacuum is removed, inspect the EGR valve for a blockage; clean it if a blockage is found. Replace the EGR valve if no blockage is found, or if cleaning the valve does not remedy the malfunction.

### REMOVAL & INSTALLATION

#### DPFE Sensor

See Figures 10, 11, 12, 13 and 14

1. Disconnect the negative battery cable.
  2. Label and disconnect the wiring harness from the DPFE sensor.
  3. Label and disconnect the vacuum hoses.
  4. Remove the mounting screws and remove the DPFE sensor.
- To install:**
5. Position the DPFE sensor and tighten the mounting screws.

