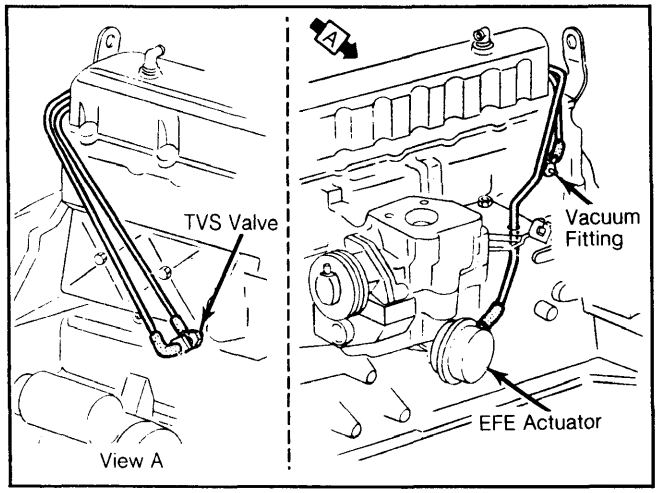
1982 Exhaust Emission Systems

GENERAL MOTORS EARLY FUEL EVAPORATION SYSTEM

DESCRIPTION

An Early Fuel Evaporation (EFE) system is used on all Light Duty and some Heavy Duty Emission models. System provides improved cold driveability while reducing exhaust emissions.

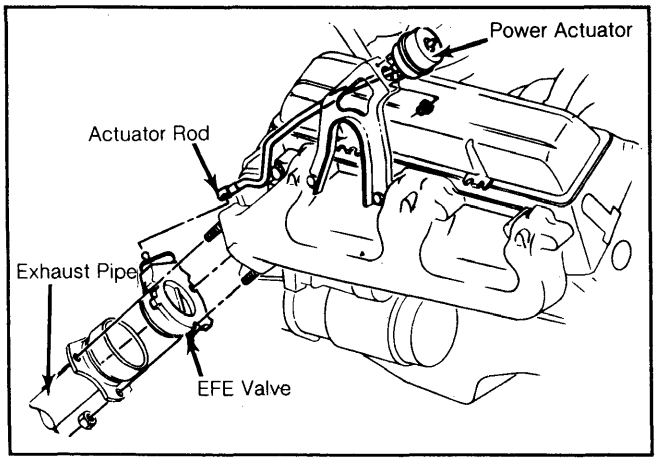
Fig. 1: General Motors EFE System for 6-Cylinder Engines



6-Cylinder engine EFE is controlled by oil temperature.

System consists of an EFE valve, an acutator and a thermal vacuum switch (TVS). The TVS is coolant temperature controlled on V8 engines and oil temperature controlled on 6-cylinder engines.

Fig. 2: General Motors EFE System for 5.0L & 5.7L V8 Engines



V8 engine EFE is controlled by water temperature.

OPERATION

6-CYLINDER ENGINES

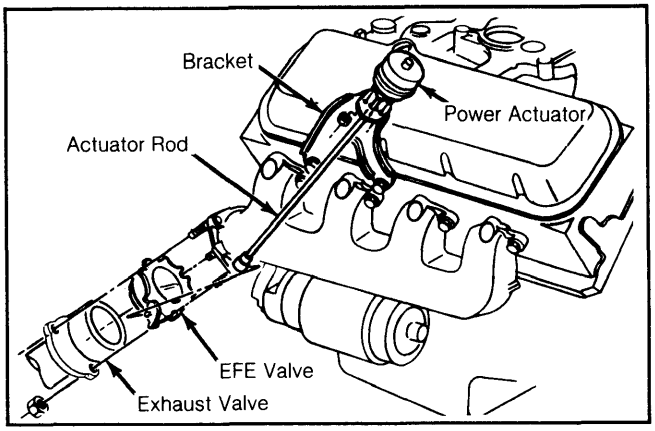
Thermal vacuum switch is a normally closed switch which is sensitive to oil temperature. With a cold engine, below 150°F (66°), TVS is closed which allows manifold vacuum to actuator valve. Vacuum pulls diaphragm in actuator, closing EFE Valve.

This causes hot exhaust gases to be routed to base of carburetor. When oil temperature is above 150°F (66°C), thermal vacuum switch opens. This stops vacuum to actuator. Without vacuum, a spring pushes actuator diaphragm to its at rest position and opens EFE valve.

V8 ENGINES

On V8 engines TVS is located in coolant outlet housing and directly controls vacuum. With coolant temperatues below 180°F (82°C), manifold vacuum is applied to actuator which closes EFE valve. This routes hot exhaust gases to base of carburetor. When temperatures reach 180°F (82°C), vacuum to actuator is stopped. This allows a spring to return actuator to its at rest position, opening EFE valve.

Fig. 3: General Motors EFE System for 7.4L V8 Engines



V8 engine EFE is controlled by water temperature.

TESTING

1) With engine cold, position transmission in "Neutral" or "PARK" and apply parking brake. Start engine and observe movement of actuator rod and exhaust heat valve. Valve should move to its closed position.

2) If valve does not close, disconnect hose at actuator and check for vacuum. If there is vacuum, replace actuator. If no vacuum is found, disconnect hose at TVS-to-vacuum source. If there is vacuum at hose, replace TVS. If no vacuum, check hose for leaks.

3) When coolant temperature reaches 180°F (82°C) on V8 or oil temperature reaches 150°F (66°C) 6-cylinder engines, exhaust heat valve should move to open position.

4) If valve does not open, disconnect hose at actuator and check for vacuum. If there is vacuum, replace TVS. If no vacuum is present, replace actuator.

MAINTENANCE

Periodically inspect vacuum hoses for damage, actuator for proper operation, linkage for binding and EFE valve for smooth operation.