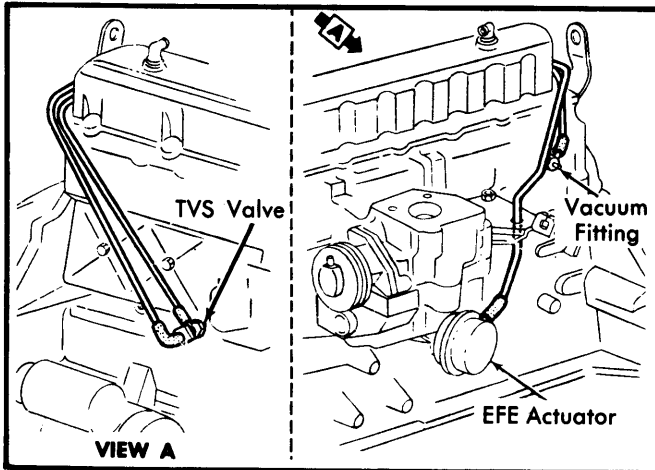


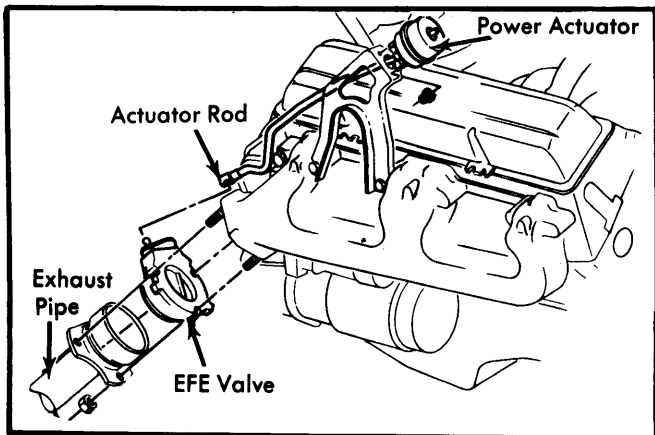
## GENERAL MOTORS EARLY FUEL EVAPORATION SYSTEM

### DESCRIPTION

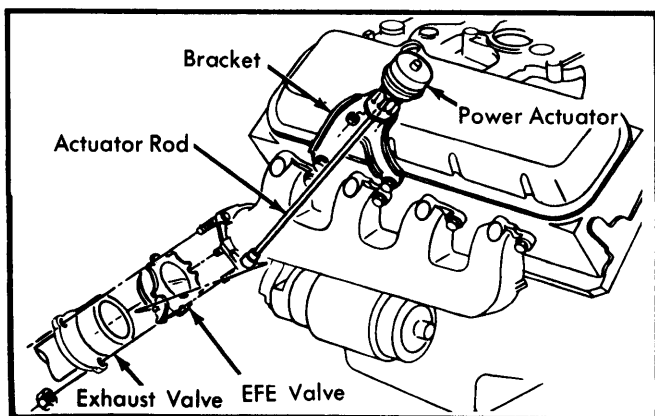
An early fuel evaporation (EFE) system is used on all Light Duty and some Heavy Duty emissions models. System provides improved cold driveability while reducing exhaust emissions.



**Fig. 1 Early Fuel Evaporation System  
6 Cylinder Engines**



**Fig. 2 Early Fuel Evaporation System  
305", 350" and 400" V8 Engines**



**Fig. 3 Early Fuel Evaporation System  
454" V8 Engines**

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

### OPERATION

**6 Cylinder Engines** – The thermal vacuum switch is a normally closed switch which is sensitive to oil temperature. With a cold engine, below 150°F, TVS is closed which allows manifold vacuum to the actuator valve. Vacuum pulls the diaphragm in the actuator, closing the EFE Valve. This causes the hot exhaust gases to be routed to the base of carburetor. When oil temperature is above 150°F, the thermal vacuum switch opens. This stops vacuum to actuator. Without vacuum, a spring pushes actuator diaphragm to its at rest position and opens the EFE valve.

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

### 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 (V8) or oil temperature reaches 150° F (6 cylinder), exhaust heat valve should move to the 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.