

## GENERAL MOTORS

### DESCRIPTION

Evaporation Control System (ECS) is designed to minimize the escape of fuel vapors to the atmosphere. Included in the system are a special fuel tank and filler cap, liquid-vapor separator, carbon canister, canister purge hoses, and carburetor modifications. Fuel vapors which would otherwise escape to the atmosphere are directed into the carbon canister. The carbon adsorbs the vapors and stores them. The vapor is removed from the canister during periods of engine operation as manifold vacuum draws the vapors into the engine and burns them. This system was first released in 1970 for vehicles originally sold in California. In 1971, the Federal Government required that all trucks with a gross weight of less than 6,000 lbs., were to be equipped with such a system.

### OPERATION

As vapor forms in the fuel tank, it passes thru the liquid-vapor separator. The function of the liquid-vapor separator is to return liquid fuel to the fuel tank and allow only vapor to enter the carbon canister. The vapors exit the separator via the vapor lines. From the vapor lines, it enters the activated charcoal canister. When the engine is started, air is drawn through the bottom of the canister to extract the vapors from the charcoal and induct them via the carburetor. There they become part of the air/fuel mixture and are burned in the combustion process. The components of the evaporation system and their function are as follows:

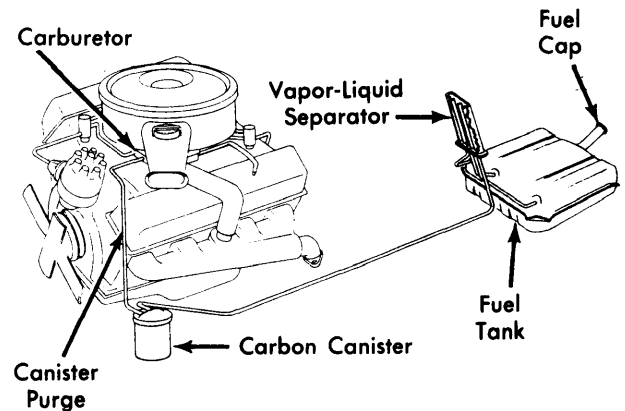
**Fuel Tank & Filler Cap** — The fuel tank is an integral part of the Evaporation Control System. In order to collect as much vapor as possible, the fuel level was reduced by lowering the filler neck from the highest point of the tank by approximately one inch. This allows room for expansion and vapor collection on top of the liquid. Fuel venting occurs at three positions on the tank. These vents allow fuel and fuel vapors to flow from the top of the tank to the liquid-vapor separator. In order to prevent a vacuum collapse or pressure expansion, the fuel tank cap has been modified to release excess pressure or allow additional air to enter during stages of high vacuum. The cap also has dual locking action. The second set of ears on the cap provides a slow bleed of any residual fuel tank pressure when the cap is removed.

**Liquid-Vapor Separator** — The purpose of this mechanism is to separate liquid from vapor. Pressure in the separator allows the vapor to leave the separator and enter the routing lines to the charcoal canister. Any liquid that accumulates in the separator is returned to the fuel tank via the center vent pipe. Some trucks use a single tank vent pipe with no separator. This is because of the shape and position of the fuel tank (high and narrow).

**Fuel Vapor Storage Canister** — The canister is located in the engine compartment of the vehicle and contains approximately 1 1/2 lbs. of activated charcoal. During periods of vehicle in-operation, vapors coming off fuel tank are adsorbed and stored in the charcoal. When the engine is started, stored vapors are drawn off the carbon by fresh air entering the bottom of the canister. Any vapors coming off the fuel tank during vehicle operation by pass the carbon bed and are inducted directly into the engine via the idle purge restrictor.

### MAINTENANCE

The only service normally required for system is to replace filter located in charcoal canister every 12 months or 12,000 miles. Replace more often if vehicle is driven in dusty areas. All other parts are serviced as a complete replacement. **NOTE** — When replacing vent lines use only replacement hose marked "EVAP".



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EVAPORATION CONTROL SYSTEM (ECS)