1975-79 EXHAUST EMISSION SYSTEMS
Fuel Evaporation Systems

All Manufacturers

DESCRIPTION

The fuel evaporation control system is designed to prevent raw fuel vapors from escaping into the atmosphere. This is a closed system (not vented) and consists of a special fuel tank with "dome" design and/or a liquid/vapor separator, a pressure/vacuum fuel cap, an orifice valve (Ford), a rollover valve, a liquid check valve (Jeep), a purge valve, 1 or 2 charcoal canisters and necessary vapor and vacuum hoses.

NOTE: All models may not use all components. Refer to vacuum diagrams at end of each manufacturer's section for specific purge hose routing.

OPERATION

When fuel evaporates in the carburetor float chamber or fuel tank, fuel vapors pass through vent hoses to the charcoal canister. Fuel vapors are held on the activated charcoal surface until they are drawn into the intake manifold when the engine is running. Charcoal canister purging is done by engine vacuum drawing fresh air through the canister. This fresh air mixes with the raw fuel vapors in the canister, and is burned in the combustion process.

The liquid check valve incorporates a float and needle assembly. If fuel enters check valve (when fuel tank is above canister), float will rise and force needle to close vent passage, preventing liquid fuel from entering vapor hose to canister.

The rollover valve consists of a plunger and a stainless steel ball. When valve is inverted (as in a vehicle rollover), the stainless steel ball pushes the plunger against its seat, blocking fuel flow through valve.

Vehicles with large fuel capacity (over 25 gallons), a two-canister system is normally used. On the two-canister system, fuel vapors from the primary canister are purged through the carburetor port. Vapors from the secondary canister are purged through the PCV hose to the carburetor using a distributor vacuum signal applied to the purge switch. *See Figs. 1 and 2.*

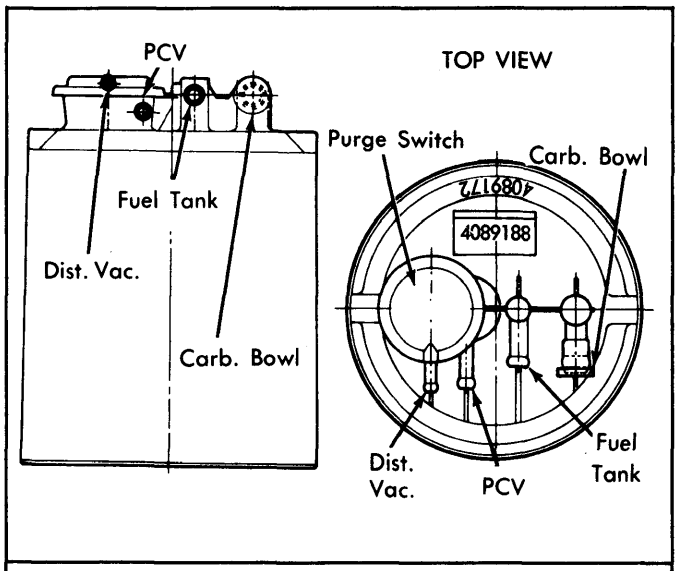

Fig. 2: Typical Charcoal Canister Port Identification

TESTING

GENERAL MOTORS

Purge Valve (On Canister) - 1) Remove purge valve control vacuum line. Check for vacuum at line with engine running at approximately 1500 RPM. If there is no vacuum present, check EGR system.

2) Apply external vacuum to the valve. Vacuum should hold. If not, replace the canister assembly. If vacuum holds, remove purge line and check for vacuum. If no vacuum, check PCV system.

Bowl Vent Valve - 1) Remove bowl vent vapor hose from carburetor. Check open condition of valve by connecting to a manual vacuum pumps. It should not be possible to draw more than 0.5" Hg if valve is open (as when engine is off).

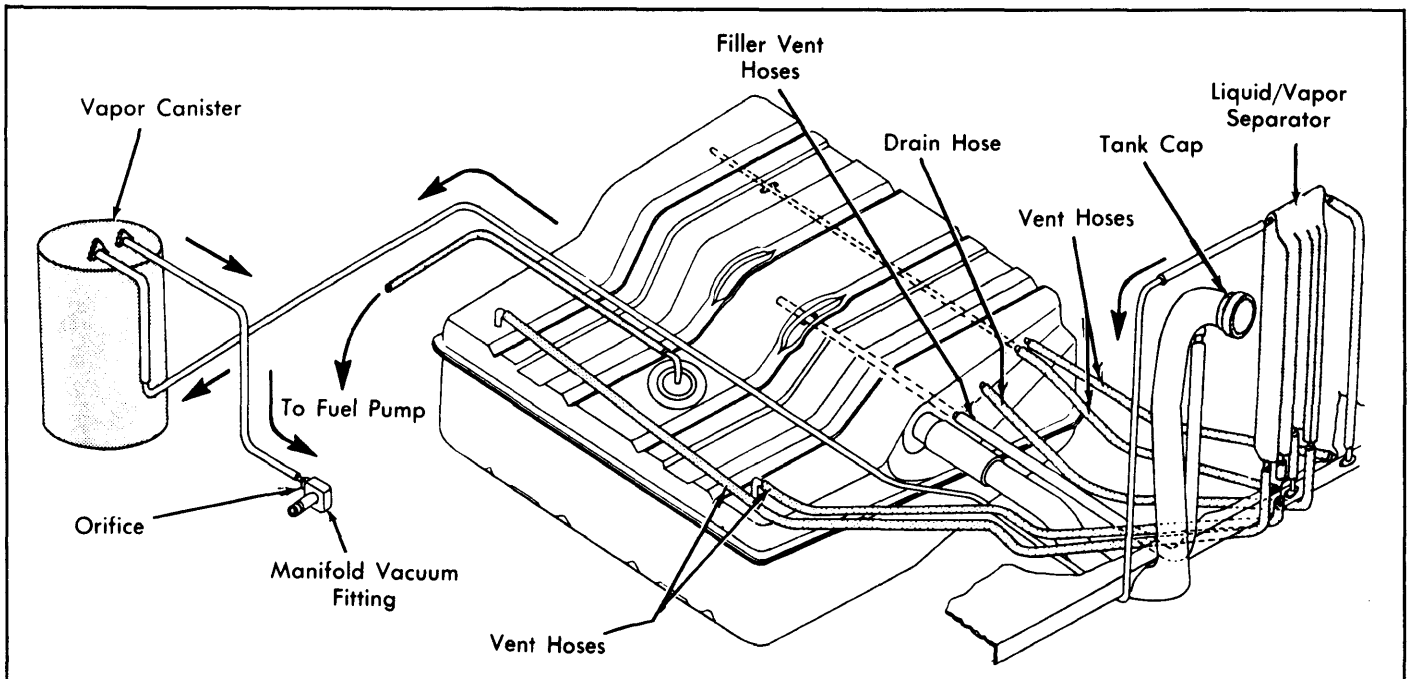

Fig. 1: Typical Single Canister Evaporation Control System

2) If high resistance or plugged system is found, check for plugged or restricted hose. Hose may be cleared with compressed air. If hose is clear, remove canister filter. If restriction persists, replace canister.
3) To check valve closed position, run engine at idle. Manifold vacuum will be applied to valve through control line. Bowl vent line should exhibit a plugged condition.
4) If valve is not closed, remove control vacuum line and check for vacuum. If no vacuum, check for hose restriction or leak. Replace hose if required. If vacuum is present, replace canister assembly.

NOTE: On Chrysler Corp. vehicles, ensure vapor hose from carburetor float bowl-to-charcoal canister is routed properly. This hose is too long on many models, causing a loop that traps fuel, blocking fuel vapor flow from carburetor. Common driver complaints are hard hot start and rich idle conditions.

MAINTENANCE

CHRYSLER CORP.

There is no required service on the fuel evaporation control system except replacement of the filter element in the charcoal canister. Replace filters every 18,000 miles on Heavy Duty emission models (over 8,500 lbs. GVW). On all other models, replace filter(s) every 22,500 miles for maintenance schedule "G", every 30,000 miles for maintenance schedule "D".

NOTE: Maintenance is determined by GVW rating on 1975-78 vehicles, and third character ("D" or "G") of "ENGINE FAMILY" identification number on underhood Vehicle Emission Control Information label for 1979 models.

FORD MOTOR CO.

No regular replacement of components is required with this system. Periodic inspection of system components should be made to be sure system is functioning properly. If vehicle has been operated in deep water (submerging canister), replace canister.

GENERAL MOTORS

The fiberglass filter in the bottom of the charcoal canister is to be replaced every 24 months or 30,000 miles for Light Duty emissions models, and every 24 months or 24,000 miles for Heavy Duty emissions models. If operated in severe conditions, more frequent replacement maybe required.

INTERNATIONAL HARVESTER

Operation of the evaporative control system is automatic and requires no adjustment. Every 15,000 miles, inspect all lines and components and replace charcoal canister air filter. Replace filter more often under dusty conditions.

JEEP

No adjustments are required with this system. The air inlet filter in the bottom of the charcoal canister should be replaced every 30,000 miles. A regular inspection of system components should be made and defective components replaced as necessary.