Fuel Evaporation

FORD CORTINA

Ford Cortina (1970 All Models)

DESCRIPTION & OPERATION

The Fuel Evaporative Emission Control System is designed to prevent fuel vapors being emitted to the atmosphere by use of a closed fuel supply system in which all fuel vapors are conducted through a vent line to the engine compartment where they are stored in a carbon canister (engine not running) and burned in the engine (when engine is running). The fuel system has the following modified parts:

Fuel Tank – Tank has an extended filler neck with a centrally located fill vent and a sealed filler cap to provide approximately 10% air space when the tank indicates "full". This provides for fuel expansion due to temperature fluctuations. Fuel tank on Sedan and GT models has four vent tubes with a pick-up point at each corner of the tank, Station Wagon with narrow tank has two vent lines with pick-up points at each end of the tank. These vent tubes provide venting action regardless of the vehicle angle and terminate in the vapor separator tank.

Vapor Separator Tank – Two-section flat type located in trunk compartment (Sedans & GT), cylindrical type located in body behind quarter trim panel (Station Wagon). Tank is designed to separate fuel vapors from any liquid fuel rising in the vent lines (liquid fuel and condensate are returned to fuel tank through vent line) and vapor vent line from separator is connected to three-way control valve.

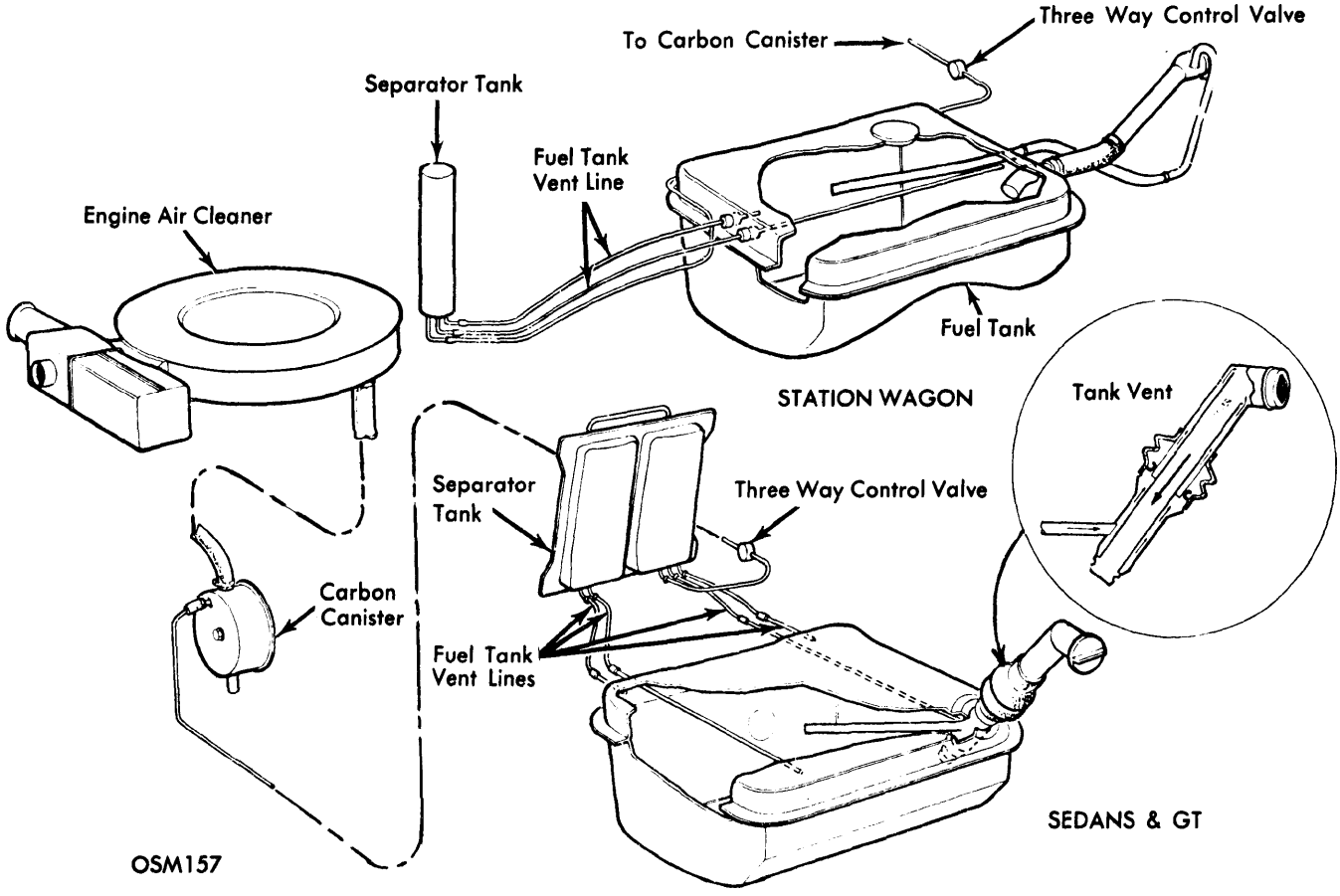
Three-Way Control Valve – This valve located near vapor separator and is connected in vapor vent line between separator and carbon canister in engine compartment. Valve controls venting of the fuel system under all conditions as follows:

1) When filling the tank, valve closes vent line to maintain an expansion volume within the tank and prevent overfilling (check valve opens at 0.3-0.5 psi and this pressure will not occur during filling operation).

2) Increase of pressure in tank due to thermal expansion will cause check valve to open (at 0.3-0.5 psi) and allow fuel vapor to flow to carbon canister. If a restriction prevents this vapor flow, the pressure relief valve will open (at 0.7-1.2 psi) venting the vapors to the atmosphere.

3) As fuel is drawn from the tank, or fuel volume decreases due to temperature decrease, vacuum valve will open (at vacuum of 0.25 psi) allowing air from the atmosphere to flow into the tank through a filter located in the control valve body. As soon as pressure balance is restored, valve will close.

Carbon Canister – Canister mounted in engine compartment is filled with activated carbon which adsorbs fuel vapors when engine is not running (vapor line from control valve is connected to end of canister). Canister is connected to



FUEL EVAPORATIVE EMISSION CONTROL SYSTEM (ALL MODELS)

FORD CORTINA (Cont.)

air cleaner by a hose so that, when engine is running, fuel vapors are drawn into air cleaner and burned in the engine. Canister also has an air intake on opposite side of case and outside air is drawn through the activated carbon when the engine is running. This action purges fuel vapors from the canister and renews its storage capacity.

MAINTENANCE

No periodic service is required. Canister must be replaced if damaged or contaminated by oil, liquid fuel, or water.

TESTING & DIAGNOSIS

System trouble will be indicated by restricted fuel flow, or deformed fuel tank. Inspect system for leaks, pinched or kinked lines, or inoperative three-way control valve.

PARTS REPLACEMENT

Component parts of system cannot be repaired and should be replaced if damaged or inoperative. Each component can be removed and replaced individually as follows:

Vapor Separator (Sedans & GT) – Disconnect four hoses at fuel tank vent pipes and hose at control valve beneath luggage compartment floor pan, free pipe lines from body clips. Push two pipe line grommets out of luggage compartment floor pan. Remove separator mounting screws, tilt separator 75° toward rear of vehicle and lift out while guiding pipes up through floor pan. Install separator by reversing this procedure.

Vapor Separator (Station Wagon) – Support rear end of vehicle on stands, disconnect two vent pipes at fuel tank and vent pipe at control valve, spring pipes clear of retaining clips. Free pipe retaining boot from location in luggage compartment floor and slide boot up on pipes. Remove trim panel from quarter inner panel by pulling retainer clips out. Take out separator mounting screws and remove separator with attached vent pipes and rubber boot. Install separator by reversing removal procedure.

Three-Way Control Valve – Remove by disconnecting two lines and taking out two mounting screws, then remove valve assembly, spacer, and gasket. Replace in same manner.

Carbon Canister – Disconnect large hose and vent line at canister, take out mounting bolt in center of canister face. When installing canister, tighten mounting bolt to 15-18 ft. lb.