FORD MOTOR CO. FUEL VAPOR EMISSION CONTROL SYSTEM

DESCRIPTION

This system is designed to prevent fuel vapors from the fuel tank and carburetor from being emitted to the atmosphere. System consists of a sealed fuel tank, pressure/vacuum relief fuel cap, fuel tank vapor valve, vapor tube and hoses, carbon canister, purge control valve, solenoid vent valve, purge regulator valve, thermactor idle vacuum valve (TIV), thermal vent valve and external bowl vent solenoid.

NOTE – *Not all of these components are used on any one system, since usage depends on the calibration of the complete vehicle.*

OPERATION

FILL CONTROL/VENT SYSTEM

Fill limiting is accomplished through fill neck configuration and/or internal vent lines within the fill neck and tank. The vent system is designed to permit an approximate 10-12 percent tank volume air space when tank is filled to capacity. The air space provides for thermal expansion of fuel as well as being an aid to the in-tank vapor vent system.

VAPOR VENT SYSTEM

This system provides a vapor space above the gasoline surface in the fuel tank. This area is sufficient to permit adequate breathing space for the tank vapor valve assembly. All vapor valves make use of a small orifice that tends to allow only vapor and not fuel to pass into the line running forward to the vapor storage canister. This assembly mounts directly to the fuel tank using a rubber grommet.

Fuel vapors trapped in the sealed fuel tank are vented through the orificed vapor valve assembly in top of tank. The vapors leave the valve assembly through a single vapor line and continue to carbon canister in engine compartment for storage, until they are purged to the engine when engine is running.

In vehicles equipped with fuel/vapor return lines, vapor generated in fuel supply line is continuously vented back to the fuel tank. This action prevents engine surging from unwanted fuel enrichment and assists in hydrocarbon emission control.

CARBON CANISTER

Fuel vapor emitted through the fuel vapor valve and carburetor bowl vent is stored in a carbon-filled canister. There are 2 canister sizes, 925ML and 1400ML. Some models are equipped with 2 canisters, depending on fuel tank capacity and engine calibration.

CARBURETOR VENTING

Fuel vapors which might otherwise collect in the carburetor bowl and pass directly into the atmosphere are vented to the carbon canister when engine is stopped. Flow of these vapors is controlled by the fuel bowl vent valve, the purge control valve, or the fuel bowl thermal vent valve, depending on the particular carburetor and engine calibration used. When the engine is started, and depending on the operating mode when purging the system is most efficient, the vapors will be drawn into the engine for burning.

PURGE CONTROL VALVE

The purge control valve is in line with carbon canister and controls the flow of fuel vapors into and out of the canister.

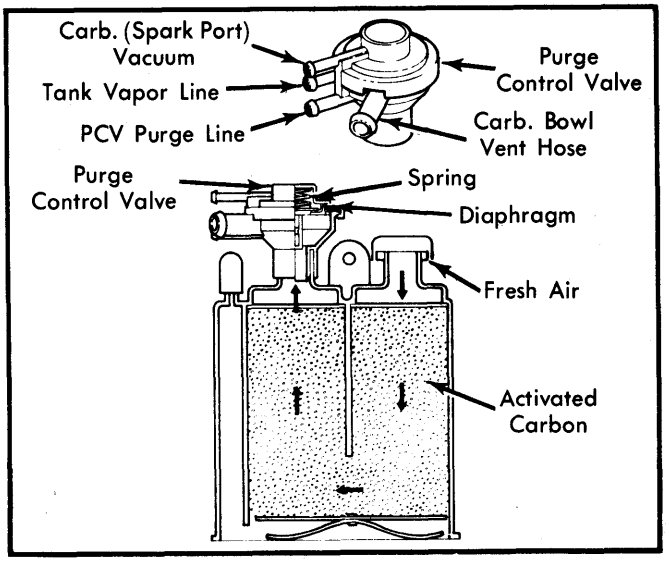

Fig. 1 Purge Control Valve & Carbon Canister

FUEL BOWL SOLENOID VENT VALVE

The fuel bowl solenoid vent valve is a normally open valve located in the fuel bowl vent line. It is used on some Motorcraft 2150 and 7200 carburetors. The 7200 carburetor also has a built-in fuel bowl vent valve. The solenoid vent valve closes off the fuel bowl vent line when the engine is running, and returns to the normally open condition when the ignition switch is turned off.

NOTE – *If lean fuel mixture is suspected as the cause of a problem, inspect either the solenoid vent valve or the fuel bowl vent valve for proper closing during engine operation. If the valve opens, allowing purge vacuum to affect fuel bowl balanced air pressure, the carburetor will give a leaner air/fuel mixture. On EEC equipped engines with 7200 feedback carburetor, the opposite condition will result from an open or leaking valve (rich mixture).*

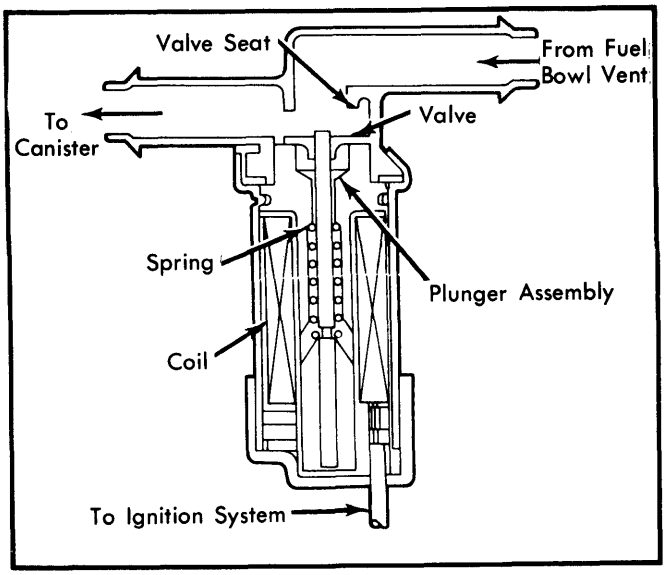

Fig. 2 Cutaway View of Fuel Bowl Solenoid Vent Valve

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FORD MOTOR CO. FUEL VAPOR EMISSION CONTROL SYSTEM (Cont.)

FUEL BOWL THERMAL VENT VALVE

The thermal vent valve is inserted in the carburetor-to-canister vent line and is closed when the engine compartment is cold. This prevents fuel tank vapors generated when fuel tank heats up before the engine compartment does from being vented through the carburetor fuel bowl.

THERMACTOR IDLE VACUUM VALVE (TIV)

A thermactor idle vacuum vent valve (TIV) is used with some evaporative emission systems to improve idle quality at hot start. To overcome this poor idle condition, the TIV valve bleeds air into the PCV tube, leaning the idle fuel mixture until the purge valve opens. The same vacuum that opens the purge valve closes the TIV valve.

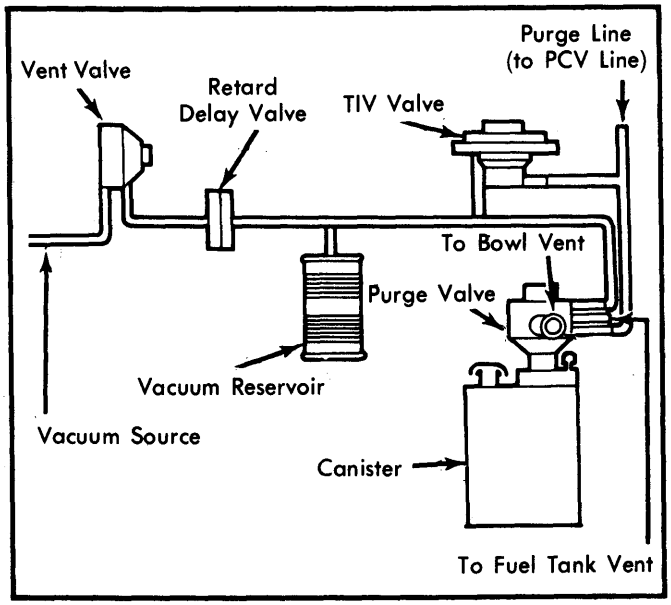

Fig. 3 Typical Installation of Thermactor Idle Vacuum Vent Valve

PRESSURE AND VACUUM RELIEF SYSTEM

This system consists of a sealed filler cap with an integral pressure/vacuum relief valve. Fuel system vacuum relief is provided after negative .50 psi, and pressure relief after 1.8 psi. Under normal conditions, the fill cap allows air to enter tank as fuel is used, while preventing vapors from escaping.

FUEL VAPOR RETURN SYSTEM

This system consists of a vapor return line from the fuel pump to fuel return outlet of the fuel sender. This reduces the amount of fuel vapor entering the carburetor. The system is used on the 2.3L, 4.2L, 5.0L and 5.8 HO Ford and Mercury; 3.8L and 4.2L Thunderbird and XR-7 (with tripminder); 3.8L and 5.0L Lincoln Continental.

AIR CLEANER ASSEMBLY

On some models, an auxiliary fuel bowl vent tube runs to the air cleaner. An air filter installed on the air cleaner end of the fuel bowl vent tube keeps dirt out of the carburetor fuel bowl.

MAINTENANCE

No scheduled maintenance is required. All hoses and connection should be checked periodically and replaced as necessary.

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