1974-79 EXHAUST EMISSION SYSTEMS
Mercedes-Benz Fuel Evaporation

All Models (Exc. Diesel)

DESCRIPTION

The fuel evaporation system is used to prevent raw fuel vapors from escaping to the atmosphere. System consists of special fuel tank, special filler cap, vent valve, purge valve and charcoal canister.

OPERATION

ENGINE NOT RUNNING

Fuel tank pressure is maintained by the vent valve (a pressure/vacuum relief valve). When engine is off and vapors expand, the pressure/vacuum relief valve in vent valve opens, allowing fuel vapors to escape to the charcoal canister.

As fuel cools down, volume is reduced, creating a vacuum in fuel tank. Below a present value, the vacuum portion of vent valve opens, allowing air and/or fuel vapors from the canister to travel to the fuel tank and reduce the vacuum.

If system malfunction causes fuel tank pressure to increase above 1.5-4.5 psi (.1-.3 kg/cm²), relief valve portion of filler cap opens to vent excess pressure.

The breathing valve will compensate for any condition of less-than-atmospheric pressure in the fuel tank (due to decrease of fuel temperature or normal use of fuel from the tank). Valve opens and allows outside air to enter system.

The float chamber vent valve (carburetor models only) is a solenoid operated float chamber vent valve that is incorporated in the carburetor. This valve is operated by turning the ignition on or off. When the ignition switch is off, no current is received by the solenoid valve, allowing a spring to press the valve disc against the upper valve seat. This allows fuel vapors from the float chamber to be vented to the charcoal canister. When the ignition switch is turned on, the solenoid pushes the valve stem and disc against the lower valve seat. This closes the external vent to charcoal filter and the carburetor is vented internally. *See Fig. 2.*

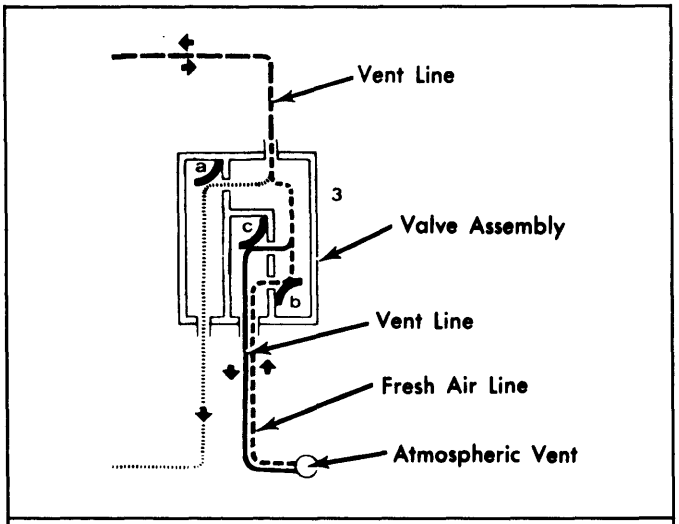

Fig. 1: Fuel Evaporation Valve System (All Models)

ENGINE RUNNING

The charcoal canister is connected to carburetor or throttle housing by a hose which contains the purge valve. When engine is running and vacuum in purge line exceed .9-1.4 in. Hg, the purge valve opens and vapors stored on charcoal can be drawn into the intake system.

As throttle plate opens, two purge bores (which end in a common passage) are exposed to venturi vacuum. This results in metered purging during light loads (partial throttle). At idle or coasting, these two bores are on atmospheric side of throttle valve, the purge valve is closed and no purging results.

TESTING

VENT VALVE SOLENOID

230 Models - 1) Remove plug on solenoid of float chamber vent valve and place one hand on solenoid. Reconnect plug. An audible "click" should be detected.

2) If not, connect test lamp to plug and turn on ignition. Test lamp should light when ignition is turned on. If not, check appropriate fuse. If still no light, replace solenoid.

PURGE VALVE

1) On 230 models, disconnect middle purge hose to carburetor at canister. On all other models disconnect black plastic hose at canister. On all models, start and run engine at idle, with finger on end of hose. No vacuum should be felt.

2) Increase engine speed to 2000 RPM. Vacuum should increase as speed increases. If there is no vacuum, check all canister hose connections and hoses for damage. Disconnect purge hose at throttle housing and repeat check. If vacuum is felt here, replace purge valve.

FLOAT CHAMBER VENT VALVE

Carbureted Models - 1) With ignition switch on, disconnect, then reconnect wire connector on solenoid. If solenoid is operating correctly, an audible click will be heard.

2) Remove center hose from charcoal canister and hold finger over hose opening. With engine at idle, no vacuum should be felt. Increase engine speed slowly to 2000 RPM. Vacuum should increase with engine speed.

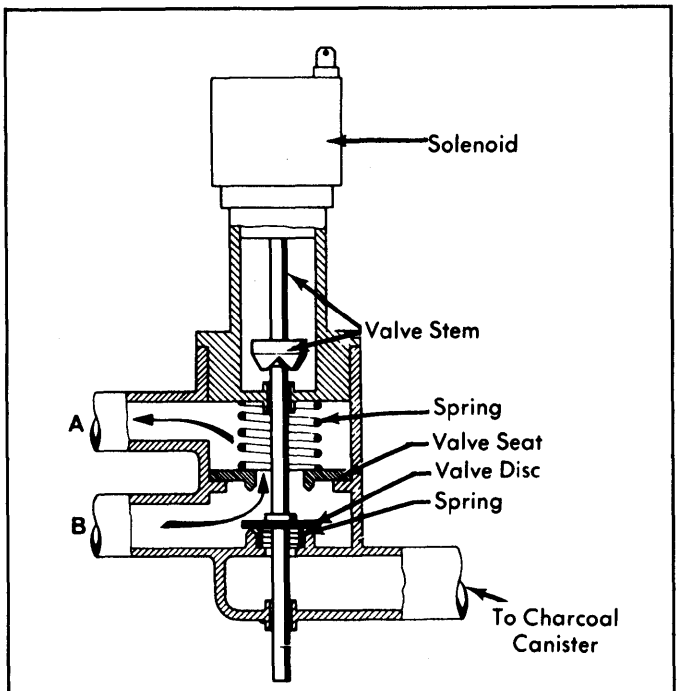

Fig. 2: Float Chamber Vent Valve (Ignition On)