1982 Fuel Evaporation Systems

MERCEDES-BENZ

380 Series

DESCRIPTION

The fuel evaporation system is designed to prevent fuel vapors from leaving the fuel tank and entering the atmosphere. The system includes a fuel tank with vapor separator, thermal valve, purge valve, canister and vent valve.

OPERATION

EVAPORATION SYSTEM ENGINE NOT RUNNING

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

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

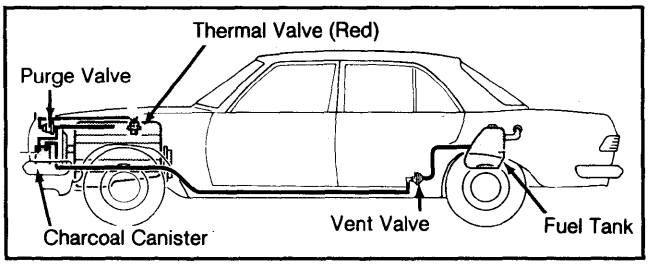
If system malfunction causes fuel tank pressure to increase above 1.5-4.5 psi (.1-.3 kg/cm²) relief valve portion of filler cap opens to vent excess pressure.

PURGE SYSTEM ENGINE RUNNING

The purge valve is installed in vacuum line between charcoal canister and throttle valve housing. A vacuum control line is routed from throttle valve housing through a thermal vacuum valve and on to the purge valve.

When the engine is running, throttle valve position is above idle, and engine coolant is above 122°F (50°C) canister purging takes place. As the throttle is opened further, more vacuum is applied to the canister and purge rate continues.

Fig. 1: Mercedes-Benz Fuel Evaporation System



TESTING

SYSTEM CHECK

1) Disconnect hose between purge valve and canister at canister. Place finger over hose end. Slowly increase engine speed to 2000 RPM. No vacuum should be present at idle, then vacuum should gradually increase with engine speed.

2) If no vacuum was present at hose, trace hose back to throttle valve housing. Blow through connection on housing and ensure hose is clear.

3) If vacuum is still not present, remove White/Black/Purple hose from purge valve. If vacuum is now present, replace purge valve. If vacuum is not present, replace thermal valve.

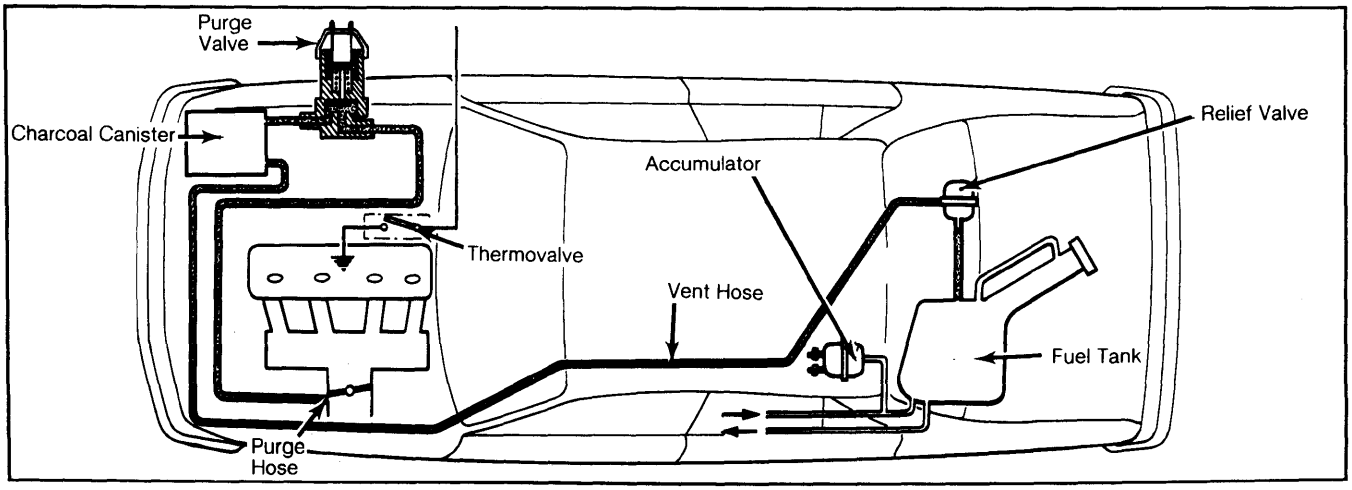
PEUGEOT

505 Gasoline

DESCRIPTION

The fuel evaporation system on Peugeot gasoline models is designed to prevent fuel vapors from entering the atmosphere. The system consists of a sealed fuel tank cap, relief valve, purge valve, thermovalve, accumulator, charcoal canister, and connecting hoses.

Fig. 1: Peugeot 505 Gasoline Model Fuel Evaporation System



1982 Fuel Evaporation Systems

PEUGEOT (Cont.)

OPERATION

When engine is off, vapors from tank are vented through relief valve to canister. When engine is running and cold, a small amount of air is drawn through the canister orifice and into the intake manifold. When coolant temperature rises over 104°F (40°C), thermovalve opens and vacuum flows to purge valve, which opens and allows air to be drawn through canister. All vapors are then drawn into the engine and burned. When engine is operated at full throttle, vacuum drops and purging stops until load is reduced.

MAINTENANCE

Check all components for leakage and deterioration. Replace as necessary.

PORSCHE

911SC, 924, 924 Turbo, 928, 944

DESCRIPTION

Porsche fuel evaporation control system is designed to prevent fuel vapors from being emitted into the atmosphere. The system consists of a non-vented fuel tank filler cap, an expansion chamber, an activated charcoal canister, a purge valve, a vent valve, 2 control valves on 944 and a series of vent lines interconnecting components between fuel tank and air cleaner.

On air-cooled models, a pressure line, used to purge the system, is connected between the engine blower assembly and charcoal canister.

OPERATION

Expanded fuel, caused by high ambient temperatures, is collected in the expansion tank. This fuel is returned to main tank by venting action as fuel is used from main tank.

Fig. 1: Porsche 924 & 924 Turbo Fuel Evaporation System

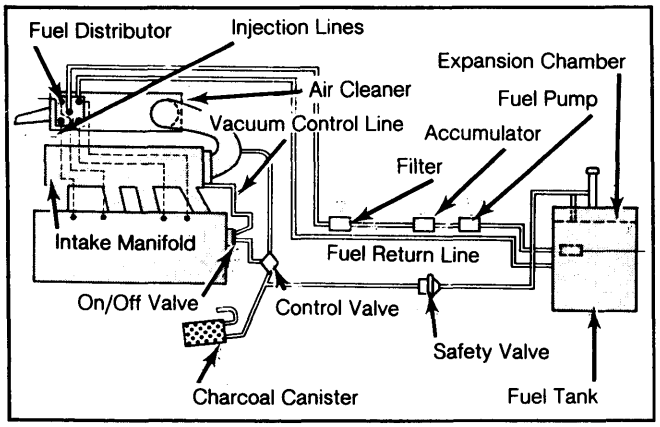


Fig. 2: Porsche 911SC Fuel Evaporation System

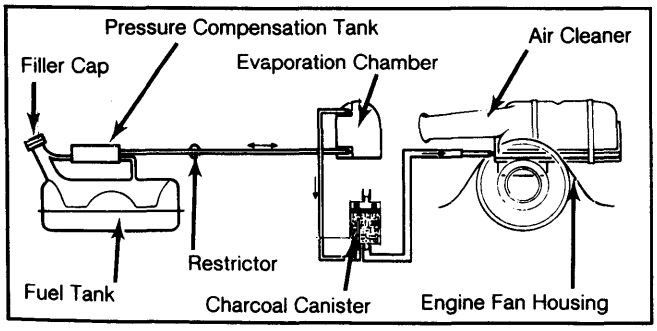


Fig. 3: Porsche 928 Fuel Evaporation System

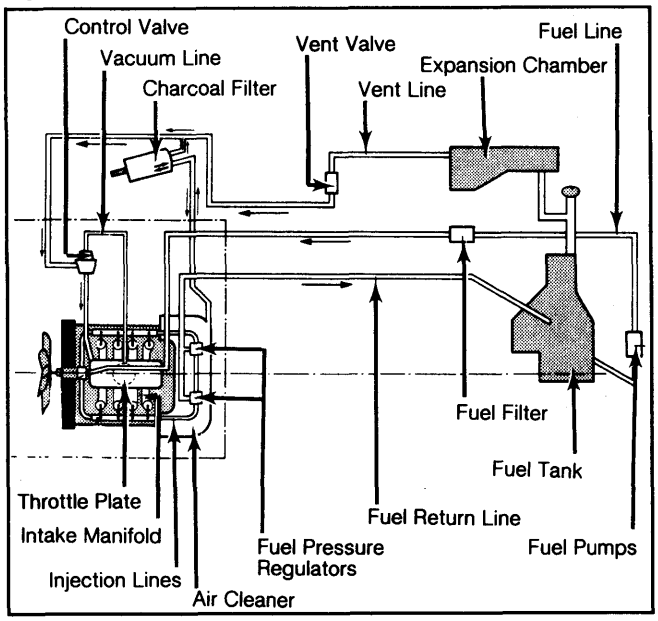
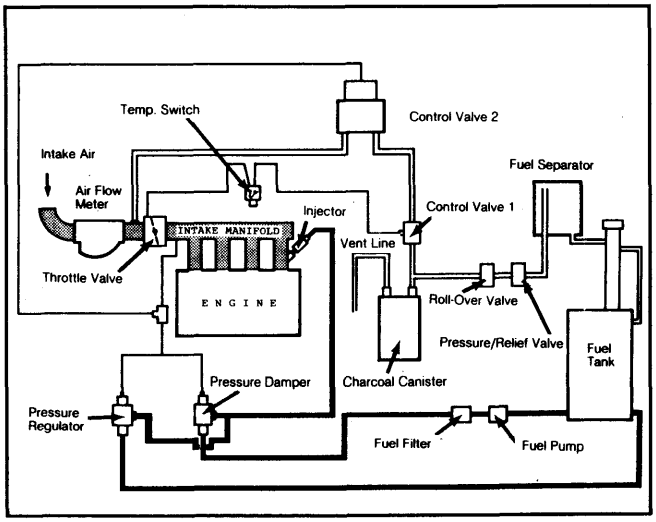


Fig. 4: Porsche 944 Fuel Evaporation System



Fuel vapors produced in main tank pass through a vent line to a carbon canister where they are stored in the activated charcoal in the canister. A second vent line connects canister to air cleaner. When engine is running, intake vacuum draws fresh air through carbon canister. This fresh air mixes with fuel vapors and is