FUEL DELIVERY AND EVAPORATIVE EMISSION CONTROL

Evaporative Emission Control System – 1997 MY

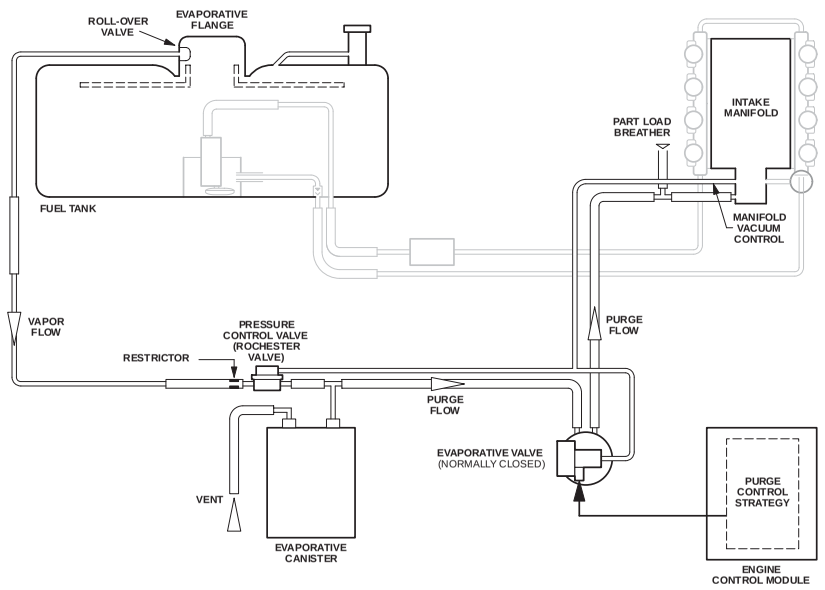
The fuel tank can be filled to approximately 90% of its capacity. The additional 10% of volume allows for expansion of the fuel, without escape to the atmosphere.

To limit evaporative emissions when the engine is switched off, the fuel tank pressure is maintained at a positive pressure of 0.069 – 0.092 bar (1.0 – 1.33 psi) by the tank pressure control valve (Rochester valve). Pressure above 0.092 bar (1.33 psi) is released by the valve to the charcoal canister.

When the engine is running, manifold vacuum acts on the tank pressure control valve, which opens the vent line from the fuel tank to the charcoal canister. Air enters the charcoal canister and flows to the tank to replace the fuel delivered to the engine, and maintain atmospheric pressure in the tank.

If the tank pressure control valve fails, the fuel tank cap will vent the fuel tank to the atmosphere at 0.138 – 0.172 bar (2.0 – 2.5 psi).

EVAPORATIVE EMISSION CONTROL SYSTEM



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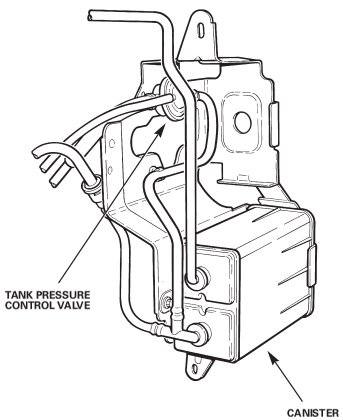
ECM Canister Purge Control

- When the ECM enables canister purge, air flows in the vent and through the charcoal canister to the intake manifold via the normally closed evaporative emission control valve (EVAPP) (purge valve).
- The ECM drives the EVAPP to control purge using a variable pulsed duty cycle from a mapped strategy.
- The purge flow rate is based on engine operating conditions and the concentration of fuel vapor in the charcoal canister.

EVAPORATIVE CANISTER ASSEMBLY



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Engine operating conditions

The engine operating conditions that determine the rate of canister purge are:

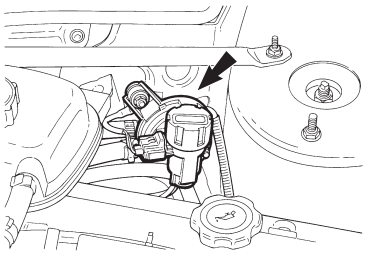
- Engine load and speed
- Coolant temperature
- Time since engine starting
- Closed loop fuel metering correction

During canister purge, the ECM inhibits traction / stability fuel injection intervention and fuel injection cutoff.

Determination of fuel vapor concentration

- The ECM determines the concentration of fuel vapor being drawn from the charcoal canister and makes a correction to the base fuel metering map.
- The determination is made by the ECM making step changes to the purge flow rate while no correction is made to the fuel metering calculation.
- The ECM determines the fuel vapor concentration by analysis of the closed loop fuel metering deflection.

EVAPORATIVE EMISSION CONTROL VALVE (EVAPP)



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Evaporative Emission Control Valve (EVAPP)

- The EVAPP is a vacuum operated, normally closed purge valve.
- The EVAPP incorporates a vacuum switching valve (VSV) that is supplied with EMS switched B+ voltage.
- The ECM drives the VSV portion of the EVAPP (ground side switching), which ports manifold vacuum to a diaphragm and opens the valve to allow purge flow to the intake manifold.
- The valve opening is modulated by the ECM from an operating strategy to control purge flow.

FUEL DELIVERY AND EVAPORATIVE EMISSION CONTROL

Enhanced Evaporative Emission Control System – 1998 MY ON

1998 MY ON vehicles are equipped with a twin canister enhanced evaporative emission system that provides reduced evaporative emissions and enhances the system's on-board diagnostic capabilities.

The enhanced evaporative emission system consists of the following components:

- Fuel tank pressure sensor (FTP Sensor)
- Fill level vent valve
- Two evaporative canisters
- Canister close valve (CCV) and filter
- Evaporative emission valve (EVAPP)

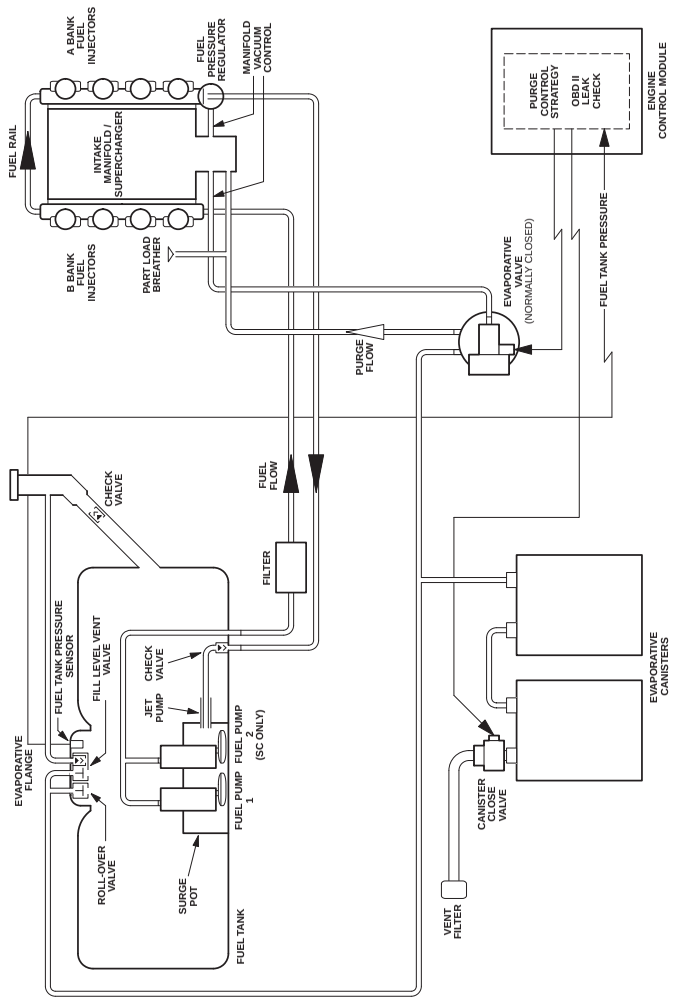
Enhanced Evaporative Emission Control System Operation

When the engine is switched off, the fill level vent valve and/or the roll-over valve ports fuel tank vapors through the vent line to the two carbon canisters. To maintain atmospheric pressure in the tank, air enters the canisters through a filter via the normally open canister close valve.

When the engine is running and canister purge is enabled, the ECM meters purge flow from the canisters and tank via the evaporative emission control (purge) valve (EVAPP). The ECM enables canister purge using a mapped strategy.

NOTES

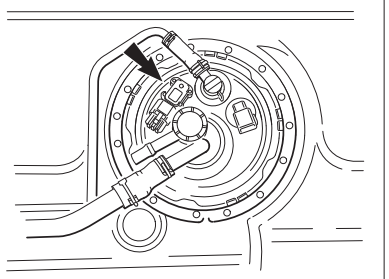
FUEL DELIVERY AND ENHANCED EVAPORATIVE EMISSION CONTROL SYSTEM – AJ26



FUEL DELIVERY AND EVAPORATIVE EMISSION CONTROL

Enhanced Evaporative Emission Control System – 1998 MY ON (continued)

FUEL TANK PRESSURE SENSOR



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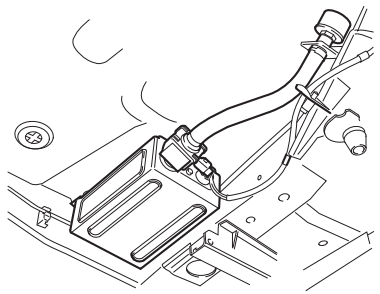
CANISTER CLOSE VALVE AND FILTER – XJ8 SEDAN



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Fuel Tank Pressure Sensor (FTP Sensor)

- The FTP sensor, located on the fuel tank evaporative flange, incorporates a pressure sensor capsule connected to a resistive element.
- The ECM supplies 5 volts to the resistive element, which outputs a voltage signal proportional to the fuel tank pressure.

Canister Close Valve (CCV)

- The normally open CCV, located on the second evaporative canister outlet, is operated by the ECM from the purge control / leak check strategy.
- A filter is installed on the vent hose to prevent debris from entering the canister.

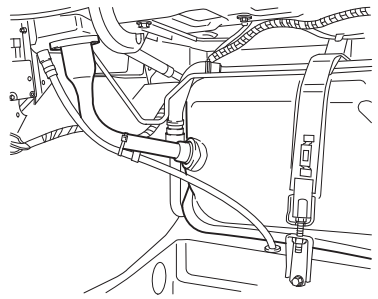
NOTES

On-Board Refueling Vapor Recovery (ORVR)

- ORVR, common to all 1998 MY ON vehicles, prevents the fuel tank vapor from being vented directly to the atmosphere during refueling.
- During refueling, vapor is vented through the EVAP system.
- The ORVR system consists of a unique fuel tank filler neck incorporating a check valve, unique vent lines and a fill level vent valve.
- The lower part of the filler neck has a reduced diameter.
- During refueling, the incoming fuel seals the gap between the reduced part of the filler neck and the refueling filler nozzle to prevent vapor from escaping up the filler neck.
- The check valve, located at the neck outlet to the tank, prevents fuel from backing-up in the filler neck.
- The fill level vent valve, located in the fuel tank evaporative flange, incorporates a float valve and a pressure relief valve.
- The valve sets the maximum fuel level in the tank and provides outlets to the EVAP system and to the filler neck.
- The roll-over valve also vents to the EVAP system. Note that the vapor inlet to the roll-over valve is located higher in the fuel tank than is the inlet to the fill level vent valve.

NOTES

ORVR FUEL TANK – XJ8 SEDAN



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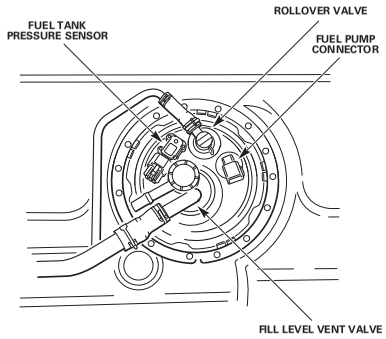
FUEL TANK EVAPORATIVE FLANGE



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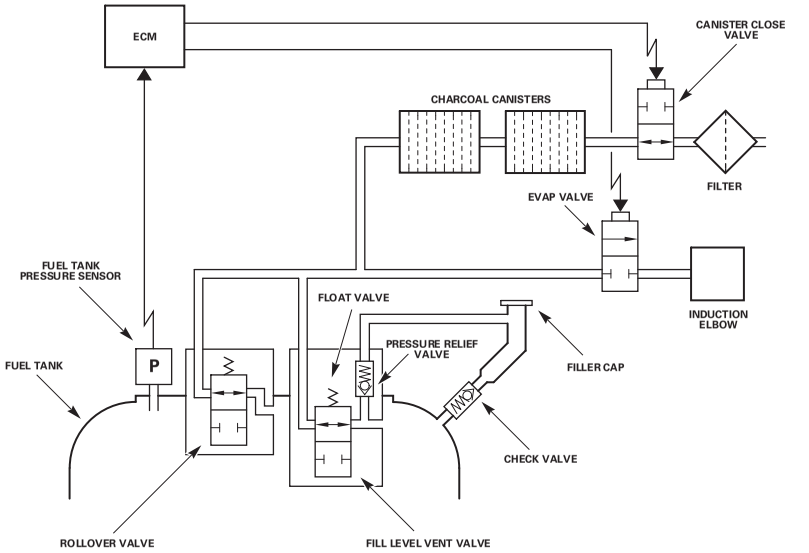
FUEL DELIVERY AND EVAPORATIVE EMISSION CONTROL

On-Board Refueling Vapor Recovery (ORVR) (continued)

ORVR Operation

- During refueling, the incoming fuel pushes fuel vapor through the roll-over valve and the fill level vent valve to the EVAP system.
- When the fuel level rises to close the float valve, ventilation is restricted causing a back pressure in the filler neck sufficient to operate the refueling filler nozzle automatic shut-off.
- After installing the filler cap, the fuel tank vents only through the roll-over valve until the fuel level drops to a level that allows the float valve to open the fill level vent valve.
- If the EVAP system fails so that the fuel tank cannot vent correctly, the fill level vent valve pressure relief valve opens to allow vapor flow to the atmosphere through the filler neck and cap.

ORVR SYSTEM

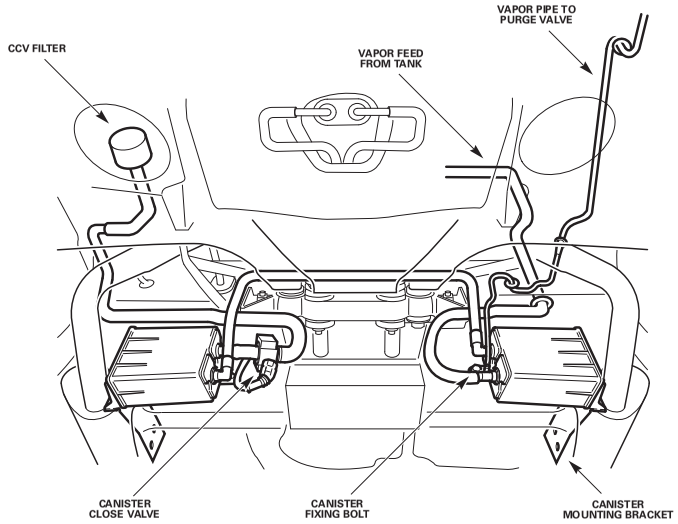


NOTES

On-Board Refueling Vapor Recovery (ORVR) – XK8

- The XK8 enhanced evaporative emission system with ORVR is similar to the system used on the XJ8 Sedan.
- Due to the large bore hoses required, the EVAP canisters and associated components are relocated to the rear of the vehicle behind the rear suspension/final drive assembly.
- The canister close valve (CCV) and vapor hoses are fixed directly to the bodywork.
- The EVAP canisters are bolted directly and via brackets to the body.
- The atmospheric vent pipe from the second canister is routed through a hole in the RH suspension housing with the CCV air filter fitted to the end of the pipe inside the housing.

EVAP CANISTER INSTALLATION – XK8



NOTES

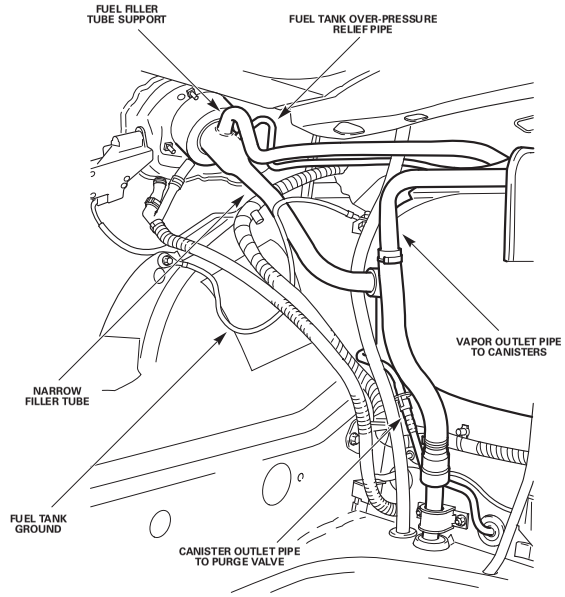
FUEL DELIVERY AND EVAPORATIVE EMISSION CONTROL

On-Board Refueling Vapor Recovery (ORVR) – XK8 (continued)

Fuel Tank Filler

Due to the relocation of the EVAP canisters, the vapor pipes pass through the floor of the trunk. Note that, on the convertible model, the closing panel behind the tank is modified to accommodate the vapor pipes.

FUEL TANK – XK8



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