Evaporative Emissions

NOTE: The vehicle emission vacuum routing diagrams are contained in the Description and Operation subsection of the Engine Emissions Control section. Refer to Section 303-08 .

The Evaporative Emission (EVAP) system consists of the:

- EVAP canister purge valve.
- EVAP canister assembly (includes the EVAP canister vent solenoid and the dust separator).
- fuel tank filler cap.
- fuel vapor tube assembly (includes the Fuel Tank Pressure (FTP) sensor).

The EVAP system:

- utilizes an On-Board Refueling Vapor Recovery (ORVR) system that captures the fuel vapors from the vehicle's fuel tank during refueling.
- prevents hydrocarbon emissions from reaching the atmosphere.
- stores fuel vapors in the EVAP canister that are generated during vehicle operation or hot soak, until they can be consumed by the engine during normal engine operation.
- routes the stored fuel vapors to the engine during engine operation.
- is controlled by the PCM which, using various sensor inputs, calculates the desired amount of purge flow. The PCM regulates the purge flow, induced by the application of intake manifold vacuum, by varying the duty cycle applied to the EVAP canister purge valve.

The fuel vapors are routed:

- from the fuel tank to the EVAP canister through the fuel vapor tube assembly.
- to the engine when the EVAP canister purge valve is opened by the PCM.

The EVAP canister assembly:

- is located under the rear of the vehicle, just behind the fuel tank.
- includes the EVAP canister vent solenoid and the dust separator.
- contains activated carbon.
- stores fuel vapors.

The EVAP canister purge valve:

- is normally closed.
- regulates purging of the EVAP canister.
- is controlled by the PCM.
- is located on the left front inner fender well.

The dust separator:

- prevents suspended dust and dirt particles from entering the EVAP system.
- is serviced as part of the EVAP canister assembly.

The EVAP canister vent solenoid:

- is normally open.
- seals the EVAP system for the inspection and maintenance (I/M 240) test and OBD II leak and pressure tests.
- is serviced as part of the EVAP canister assembly.

The fuel tank filler cap:

- relieves system vacuum below 3.8 kPa (15.26 in H_2O).

The FTP sensor:

- is serviced as part of the fuel vapor tube assembly.
- monitors the pressure levels in the fuel tank.
- communicates the pressure reading to the PCM during the OBD II leak test.

The fuel vapor tube assembly:

- includes the FTP sensor.
- prevents suspended liquid fuel from being drawn into the EVAP canister along with the fuel vapors.
- returns the liquid to the fuel tank.
- routes vapors between the canister vent solenoid and the fuel tank filler pipe assembly.

The EVAP system monitor:

- is a self-test strategy within the PCM, which tests the integrity of the EVAP system.
- monitors the EVAP system for leaks.
- monitors electronic EVAP components for irrationally high or low voltages.
- monitors for correct EVAP system operation.

The engine ON EVAP leak-check monitor:

- is executed by the individual components of the enhanced EVAP system. Intake manifold vacuum is utilized to reach a target vacuum on the fuel tank. The FTP sensor is used by the engine ON EVAP leak-check monitor to determine if the target vacuum necessary to carry out the leak-check on the fuel tank has been reached. Once target vacuum on the fuel tank is achieved, the change in fuel tank vacuum over a calibrated period of time determines if a leak exists.

The Engine Off Natural Vacuum (EONV) EVAP leak-check monitor is executed:

- once the engine ON EVAP leak-check monitor is completed and the key is turned OFF. The EONV EVAP leak-check monitor determines if a leak is present when the naturally occurring change in the fuel tank pressure or vacuum does not exceed a calibrated limit during a calibrated amount of time. A separate, low-power consuming microprocessor in the PCM manages the EONV leak-check. The engine OFF EVAP leak-check monitor is executed by the individual components of the enhanced EVAP system.