
Evaporative Emission (EVAP) Systems

Overview

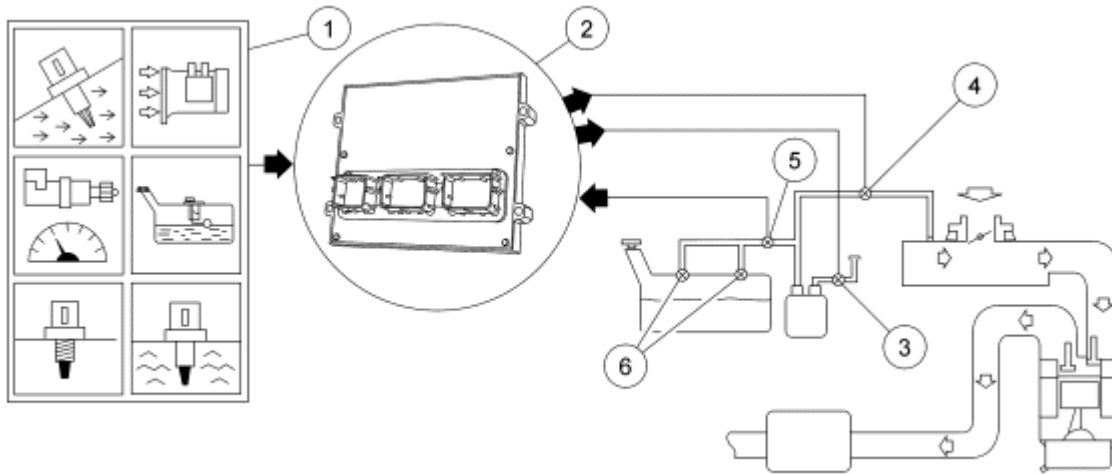
The EVAP system prevents fuel vapor build-up in the sealed fuel tank. Fuel vapors trapped in the sealed tank are vented through the vapor valve assembly on top of the tank. The vapors leave the valve assembly through a single vapor line and continue to the EVAP canister for storage until the vapors are purged to the engine for burning.

All applications required to meet on board diagnostics (OBD) regulations use the enhanced EVAP system. Some applications also incorporate an on-board refueling vapor recovery (ORVR) system. Refer to the Workshop Manual Section 303-13, Evaporative Emissions for vehicle specific information on the description and operation of the evaporative emissions system.

Enhanced Evaporative Emission (EVAP) System

The enhanced EVAP system consists of a fuel tank, fuel filler cap or capless fuel tank filler pipe, fuel tank mounted or in-line fuel vapor control valve, fuel vapor vent valve, EVAP canister, fuel tank mounted or fuel pump mounted or in-line fuel tank pressure (FTP) sensor, EVAP canister purge valve, intake manifold hose assembly, EVAP canister vent (CV) solenoid, powertrain control module (PCM) and connecting wires, and fuel vapor hoses. For additional information on the EVAP system components, refer to [Engine Control Components](#) in this section.

1. The enhanced EVAP system uses inputs from the engine coolant temperature (ECT) sensor or cylinder head temperature (CHT) sensor, the intake air temperature (IAT) sensor, the mass air flow (MAF) sensor, the vehicle speed and the FTP sensor to provide information about engine operating conditions to the PCM. The fuel level input (FLI) and FTP sensor signals are used by the PCM to determine activation of the EVAP leak check monitor based on the presence of vapor generation or fuel sloshing.
2. The PCM determines the desired amount of purge vapor flow to the intake manifold for a given engine condition. The PCM then outputs the required signal to the EVAP canister purge valve. The PCM uses the enhanced EVAP system inputs to evacuate the system using the EVAP canister purge valve, seals the enhanced EVAP system from the atmosphere using the CV solenoid, and uses the FTP sensor to observe total vacuum lost for a period of time.
3. The CV solenoid seals the enhanced EVAP system to atmosphere during the EVAP leak check monitor.
4. For E-Series, Escape/Mariner, Expedition, F-Series, and Navigator, the PCM outputs a duty cycle between 0% and 100% to control the EVAP canister purge valve. For all others, the PCM outputs a variable current between 0 mA and 1,000 mA to control the EVAP canister purge valve.
5. The FTP sensor monitors the fuel tank pressure during engine operation and continuously transmits an input signal to the PCM. During the EVAP monitor testing, the FTP sensor monitors the fuel tank pressure or vacuum bleed-up.
6. A valve inside the fuel tank-mounted fuel vapor tube assembly prevents liquid fuel from entering the EVAP canister and the EVAP canister purge valve under any vehicle altitude, handling, or rollover condition.
7. The enhanced EVAP system, including all the fuel vapor hoses, can be checked when a leak is detected by the PCM.



N0073086

Enhanced Evaporative Emission System