

Fuel Tank Pressure Monitor General Description

MONITOR DTC TABLE

DTC	Document Title	See Page
P0440	EVAP leak Monitor Description (0.040 in.)	Ev-7
P0441	EVAP VSV Monitor Description	Ev-9
P0442	EVAP leak Monitor Description (0.020 in.)	Ev-7
P0446	VSV for Vapor Pressure Sensor Monitor Description	Ev-24
P0450	Vapor pressure sensor Monitor Description	Ev-94
P0451	Vapor pressure sensor Range/Performance Monitor Description	Ev-96

NOTE:

Some DTCs may have different meanings from those listed above depending upon the EVAP Monitoring strategy. To identify which strategy is used on each model, refer to EVAP Monitor Summary (See page [Ev-1](#)).

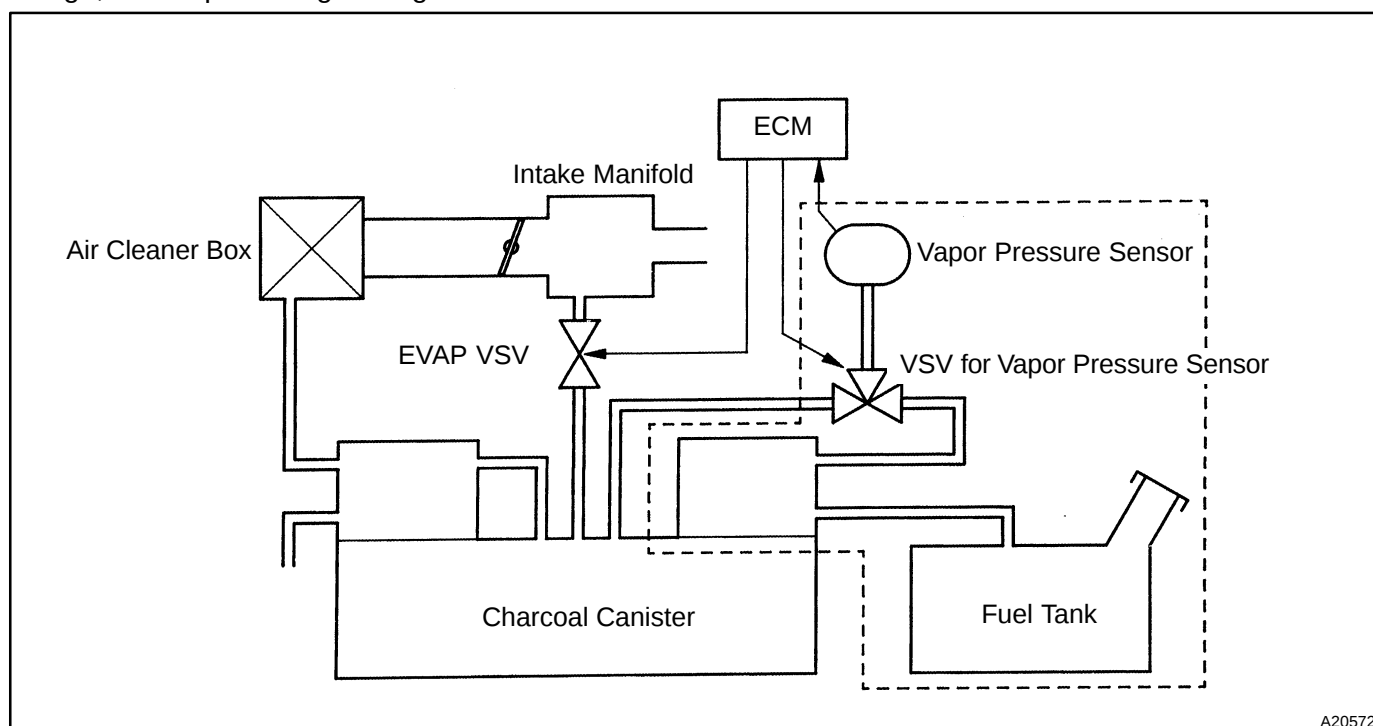
GENERAL DESCRIPTION

The EVAP control system is a system which utilizes the intake manifold vacuum to draw the evaporative emissions into the intake manifold and mix them with intake air. The ECM controls a duty-cycle type VSV (vacuum switching valve) to purge evaporative emissions from the charcoal canister.

The ECM uses the vapor pressure sensor to detect malfunctions in the evaporative emissions (EVAP) system. This diagnostic checks the function of the EVAP VSV and VSV for vapor pressure sensor, the integrity of these components and the fuel tank from the standpoint of fuel vapor emissions. When the VSV for vapor pressure sensor is closed, the ECM monitors the vapor pressure in the fuel tank. When it is open, the ECM monitors the vapor pressure in the charcoal canister.

The ECM senses pressure in the fuel tank using the vapor pressure sensor. The ECM supplies the sensor with a regulated 5 V reference-voltage and the sensor returns a signal voltage between 0.5 V and 4.5 V according to the pressure level in the fuel tank.

When the pressure in the fuel tank is low, the output voltage of the vapor pressure sensor is low. When it is high, the output voltage is high.



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1. EVAP Leak Monitor (DTC P0440 and P0442)

In this diagnostic, the ECM switches the VSV for vapor pressure sensor so that it will monitor the vapor pressure in the fuel tank. It is normal for the vapor pressure in the tank to change over a period time. If the ECM detects a very small change in the vapor pressures around atmospheric pressure in a 20 minute interval, it interprets this as a malfunction (leak) in the EVAP system. The ECM will illuminate the MIL (2-trip detection logic) and set a DTC.

2. EVAP VSV Monitor (DTC P0441)

In one part of this diagnostic, the ECM switches the EVAP VSV to apply manifold vacuum pressure to the EVAP system. The ECM then monitors the vapor pressure in the charcoal canister.

It is normal for the vapor pressure decrease when the EVAP VSV is opened. If the ECM detects no reduction in vapor pressure it interprets this as a “stuck closed” malfunction in the EVAP VSV.

In a second part of this diagnostic, the ECM checks the vapor pressure of the charcoal canister with the EVAP VSV off. If the vapor pressure of the canister remains low, the ECM interprets this as a “stuck open” malfunction in the EVAP VSV.

In either case, the ECM will illuminate the MIL and set a DTC.

3. VSV for Vapor Pressure Sensor Monitor (DTC P0446)

In one part of this diagnostic, the ECM closes the EVAP VSV. This allows for a gradual increase in canister pressure. The ECM monitors the vapor pressure in the charcoal canister. If the ECM detects no increase in vapor pressure it interprets this as a leak in the charcoal canister or vapor lines.

In a second part of this diagnostic, the ECM checks the VSV for vapor pressure sensor. When the VSV for vapor pressure sensor is switched from the charcoal canister to the fuel tank, the vapor pressure sensor should indicate a different pressure level. If there is little or no change in the indicated vapor pressure, the ECM interprets this as a malfunction in the VSV for vapor pressure sensor.

In either case, the ECM will illuminate the MIL (2-trip detection logic) and set a DTC.

4. Vapor Pressure Sensor Monitor (DTC P0450)

If the output voltage of the vapor pressure sensor is out of the normal range, the ECM will determine that there is a malfunction in the sensor or sensor circuit. The ECM will illuminate the MIL (2-trip detection logic) and set a DTC.

5. Vapor Pressure Sensor Range/Performance Monitor (DTC P0451)

The ECM checks for a “noisy” sensor or a “stuck” sensor.

The ECM checks for a “noisy” sensor by monitoring the fuel tank pressure when there should be little variation in the tank pressure due to the vehicle being stationary. If the indicated pressure varies beyond the specified limits, the ECM will illuminate the MIL (2-trip detection logic) and set a DTC.

The ECM checks for a “stuck” sensor by monitoring the fuel tank pressure for an extended time period. If the indicated pressure does not change over this period, the ECM will conclude that the fuel tank pressure sensor is malfunctioning. The ECM will illuminate the MIL (2-trip detection logic) and set a DTC.