DTC	P0446	EVAPORATIVE EMISSION CONTROL SYSTEM VENT CONTROL CIRCUIT

CIRCUIT DESCRIPTION

The circuit description can be found in the EVAP INSPECTION PROCEDURE (see page 05−822).

INSPECTION PROCEDURE

Refer to the EVAP INSPECTION PROCEDURE (see page 05−822).

MONITOR DESCRIPTION

The ECM tests the Evaporative Emissions (EVAP) system using the fuel tank pressure sensor, Canister Close Valve (CCV), and EVAP VSV. The ECM closes the EVAP system and creates negative pressure (vacuum) into it. The ECM then monitors the internal pressure using the fuel tank pressure sensor (refer to the graphic on page 05−697).

P0446 (FOR SYSTEM DIAGRAM AND DTC DETECTION TIMING CHART, REFER TO DTC P0441 (see page 05−697))

The CCV is open under normal conditions. The CCV has the following features:

(1) After the EVAP VSV purges the EVAP from the fuel tank into the intake manifold, the CCV draws fumes from the fuel tank into the charcoal canister.
(2) Relieves pressure inside the fuel tank when the pressure has suddenly risen.
(3) Along with the EVAP VSV, creates negative pressure (vacuum) inside the fuel tank and performs leak tests.

The ECM checks if the CCV is ”stuck closed”. The ECM commands the CCV to open while the EVAP VSV is open. If high negative pressure (vacuum) develops in the fuel tank and stays for more than 4 seconds, the ECM determines that the CCV remains closed despite the open command. The ECM would then turn on the MIL and output a DTC. The engine coolant temperature is not related to the output of this DTC.

The ECM also has a method for checking if the CCV is ”stuck open”. The ECM commands the CCV to close while the EVAP VSV is open. If a sufficient amount of negative pressure dose not develop in the fuel tank, the ECM determines that the CCV remains open despite the close command. The ECM would then turn on the MIL and output a DTC.

DTC No.	DTC Detection Condition	Trouble Area
P0446	Open or close malfunction in CCV (2 trip detection logic)	• Vacuum hose has cracks, holes, or is blocked, damaged or disconnected • Fuel tank cap incorrectly installed • Fuel tank cap has cracks or is damaged • Open or short in vapor pressure sensor circuit • Vapor pressure sensor • Open or short in EVAP VSV circuit • EVAP VSV • Open or short in CCV circuit • CCV • Fuel tank has cracks, holes, or is damaged • Charcoal canister has cracks, holes, or is damaged • Fuel tank over fill check valve cracks, or is damaged • ECM

MONITOR STRATEGY

Required sensors / components (Main)	CCV, EVAP canister, EVAP hose, Fuel cap, Fuel tank and EVAP VSV
Required sensors / components (Related)	ECT, FTP, IAT, MAF and VSS (Vehicle Speed Sensor)
Frequency of operation	Once per driving cycle
Duration	Within 60 seconds
MIL operation	2 driving cycles
Sequence operation	None

TYPICAL ENABLING CONDITIONS

The monitor will run whenever the following DTCs are not present	See page 05−507
Altitude	Below 8,000 ft (2,400 m)
Battery voltage	11 V or more
FTP sensor	Not detected
IAT at engine start − ECT at engine start	−7 to 11.1°C (−12.6 to 20°F)
EVAP VSV and CCV	Not operated by scan tool
EVAP purge duty cycle	6 % or more (varies with MAF)
Refuel	Not refueled with engine running
EVAP pressure	−1.7 kPa (12.75 mmHg) or more
ECT at engine start	4.4 to 35°C (40 to 95°F)
IAT at engine start	4.4 to 35°C (40 to 95°F)
IAT	4.4°C (40°F) or more
Vehicle speed change	Steady speed
Time after engine start	Below 50 minutes
EVAP pressure change	Minimum change
Fuel tank level	Below 90 %

TYPICAL MALFUNCTION THRESHOLDS

P0446 (CCV stuck open):

EVAP canister purge valve close stuck	Detected

P0446 (CCV stuck closed):

Duration that the following conditions A and B are met	4 seconds or more
A. Accumulated purge volume	0.5 g or more
B. EVAP pressure	Below −1.7 kPa (−12.75 mmHg)

MONITOR RESULT

Refer to page 05−516 for detailed information.

The test value and test limit information are described as shown in the following table. Check the monitor result and test values after performing the monitor drive pattern (see page 05−518).

- TID (Test Identification Data) is assigned to each emissions−related component.
- TLT (Test Limit Type):
  If TLT is 0, the component is malfunctioning when the test value is higher than the test limit.
  If TLT is 1, the component is malfunctioning when the test value is lower than the test limit.
- CID (Component Identification Data) is assigned to each test value.
- Unit Conversion is used to calculate the test value indicated on generic OBD ll scan tools.

TID $02: EVAP system − LEV II Vacuum monitor

TLT	CID	Unit Conversion	Description of Test Data	Description of Test Limit
1	$01	Multiply by 0.183 (mmHg)	Test value of EVAP VSV stuck close: Determined by fuel tank pressure change during vacuum introduction	Malfunction criteria for EVAP VSV stuck closed
0	$02	Multiply by 0.0655 (seconds)	Test value of EVAP VSV stuck open: Determined by duration that fuel tank pressure is higher than criteria	Malfunction criteria for EVAP VSV stuck open
0	$03	Multiply by 0.0655 (seconds)	Test value of canister closed valve (CCV): Determined by duration that fuel tank pressure is lower than criteria	Malfunction criteria for Canister Closed Valve (CCV)
0	$04	Multiply by 0.0458 (mmHg)	Test value 0.04 inch leak: Determined by fuel tank pressure change	Malfunction criteria for 0.04 inch leak
0	$05	Multiply by 0.0458 (mmHg)	Test value 0.02 inch leak: Determined by fuel tank pressure change	Malfunction criteria for 0.02 inch leak