HYUNDAI Technical Service Bulletin

Group	FUEL SYSTEM
Number	06-30-005
Date	NOVEMBER, 2006
Model	2001-2005 XG300/350, 1999-2005 2.4L SONATA, 2001-2006 2.4/3.5L SANTA FE

Subject

ENHANCED EVAPORATIVE EMISSION CONTROL DIAGNOSIS AND REPAIR FOR P0446

THIS BULLETIN SUPERSEDES TSB 04-30-001 TO INCLUDE ADDTIONAL VEHICLES.

DESCRIPTION:

Diagnostic trouble code P0446 (Scanner Description: EVAP System: Vent Control) sets when the fuel tank pressure sensor measures excessive vacuum in the fuel tank.

P0446 is **NOT** related to a system leak. The Hi-Scan **EVAP LEAK CHECK** will **NOT** check for a P0446.

NORMAL SYSTEM OPERATION:

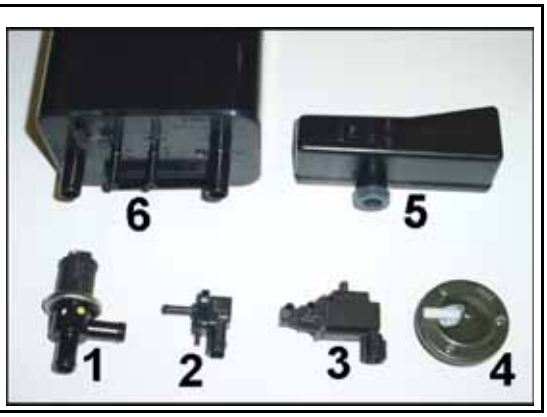
In an evaporative emissions system, fuel vapors and air in the charcoal canister are drawn into the intake manifold through the canister purge valve. The vapor/air drawn from the charcoal canister is replenished by fresh air being drawn through the EVAP air filter and canister close valve. Normally, there is a small but measureable amount of vacuum at the differential pressure sensor during purging.

During the system leak check (the vehicle **must** be driving at a steady speed over 1800 RPM), the canister close valve shuts and purging occurs until the system is drawn to 1.8 volts (measured at the differential pressure sensor). The vacuum will remain at 1.8 volts for up to 30 seconds (depending on the fuel level). This is NORMAL operation, and should not be confused with the diagnostic procedures described later.

In a system that sets P0446, the amount of vapors being purged from the canister is greater than the volume of fresh air entering into the canister. This causes the canister to build up vacuum. When the canister increases in vacuum, the remainder of the system (fuel tank, hoses, separator, etc.) will also increase in vacuum. The fuel tank pressure sensor measures and reports the vacuum level (in volts) to the ECM. If the vacuum level reaches beyond the ECM threshold, P0446 is set into ECM memory. If this condition occurs on two consecutive drive cycles, then the “Check Engine” light will illuminate.

Evaporative Emission Components:

1. Canister Close Valve (CCV)
2. Differential Pressure Sensor (DPS)
3. Canister Purge Valve
4. Fuel Cut Valve
5. CCV Air Filter
6. Charcoal Canister



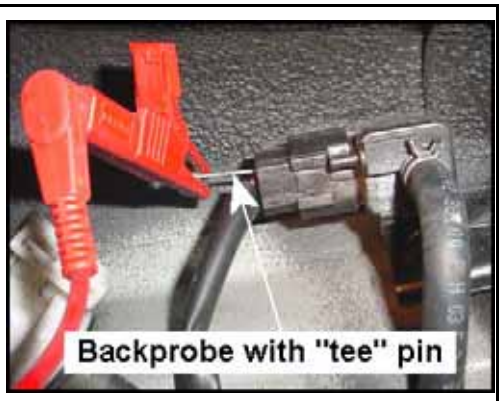
P0446: TROUBLESHOOTING TREE

P0446
EVAPORATIVE EMISSION
DTC VERIFIED

Pre-Test Conditions:
Ideal test conditions for steps A and B are for a vehicle that is still at operating temperature after customer drop off.

BACKPROBE DPS WITH A TEE PIN

KEY ON ENGINE OFF VOLTAGE = 2.5 VOLTS



A

With a DVOM, backprobe DPS signal wire; Key On, Engine Off and record voltage

DPS voltage below **2.4 volts**

GO TO B

OR

DPS voltage between 2.4 - 2.6 volts

GO TO C

OR

DPS voltage **above 2.6 volts**

Disconnect vapor hose to DPS. If voltage remains above 2.6 volts, replace DPS.

END

B

DPS BELOW 2.4 volts:

Tap the Canister Close Valve (CCV) with a small mallet and remeasure DPS voltage.

If DPS voltage **increases** to **2.4 - 2.6 volts**

Replace CCV;

GO TO C

OR

DPS voltage stays the same;

Remove CCV and Bench Test: CCV Normally Open Energized (12v) = Closed

GO TO C

C

Using a small 1/4" tube, bypass the canister purge valve by connecting the two purge hoses together.

Start the car and raise it on the lift. Measure DPS voltage with the engine idling.

2.0 volts or less = **GO TO D**

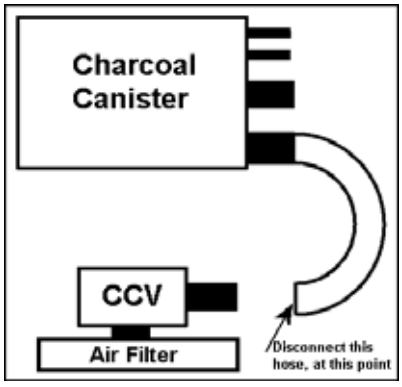
OR

If DPS Voltage is:

2.0 volts or greater

GO TO E

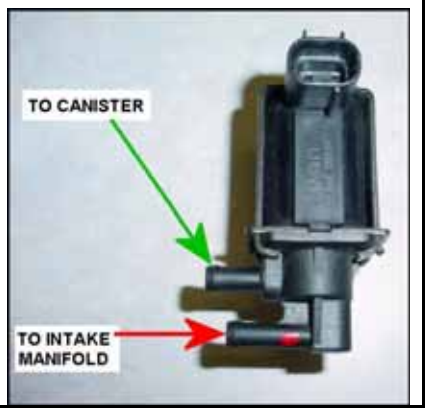
D	E	F
DPS voltage is less than 2.0 volts Disconnect the 1/2” hose from the canister to the CCV, at the CCV Observe the DPS voltage	Remove charcoal canister assembly and weigh bare canister to the nearest 0.1 pound. (No hoses, no ccv, no filter etc)	Lower the fuel tank and remove fuel cut valve and check if the valve rattles by shaking up and down. Listen to the float
If the DPS voltage is below 2.4 volts: **Reconnect the canister purge valve hoses.** **GO TO E**	If canister weighs: **4.5 lbs or more;** **Replace canister** **GO TO F**	The float should rattle If valve rattles, the float is OK; **(Torque Spec 18-26 in-lb)** **GO TO G**
OR	**OR**	**OR**
If the DPS voltage rises to 2.4 volts (or greater) **Replace the air filter.** **Reconnect the canister purge valve hoses.** **Clear code, test drive and repeat from Step A**	4.4 pounds or less Canister is OK Reinstall and reassemble **GO TO G**	No rattling from the float: **Replace fuel cut valve. (Torque Spec 18-26 in-lb)** **END**



Canister purge valve plumbing.

Port closest to electrical connector goes to the canister.

Port farthest from electrical connector goes to intake manifold.



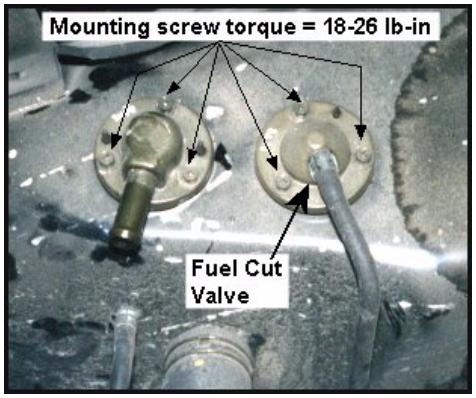
G

Inspect wiring harness joint connectors from ECM to Fuel Tank Pressure Sensor.

Insure proper contact of all connections. Check for: Pin-Socket tension, Corrosion Backed out pins, etc.

Refer to the appropriate ETM for your vehicle.

END



Mounting screw torque for fill vent valve and fuel cut valve.
18-26 lb-in.
DO NOT OVERTORQUE