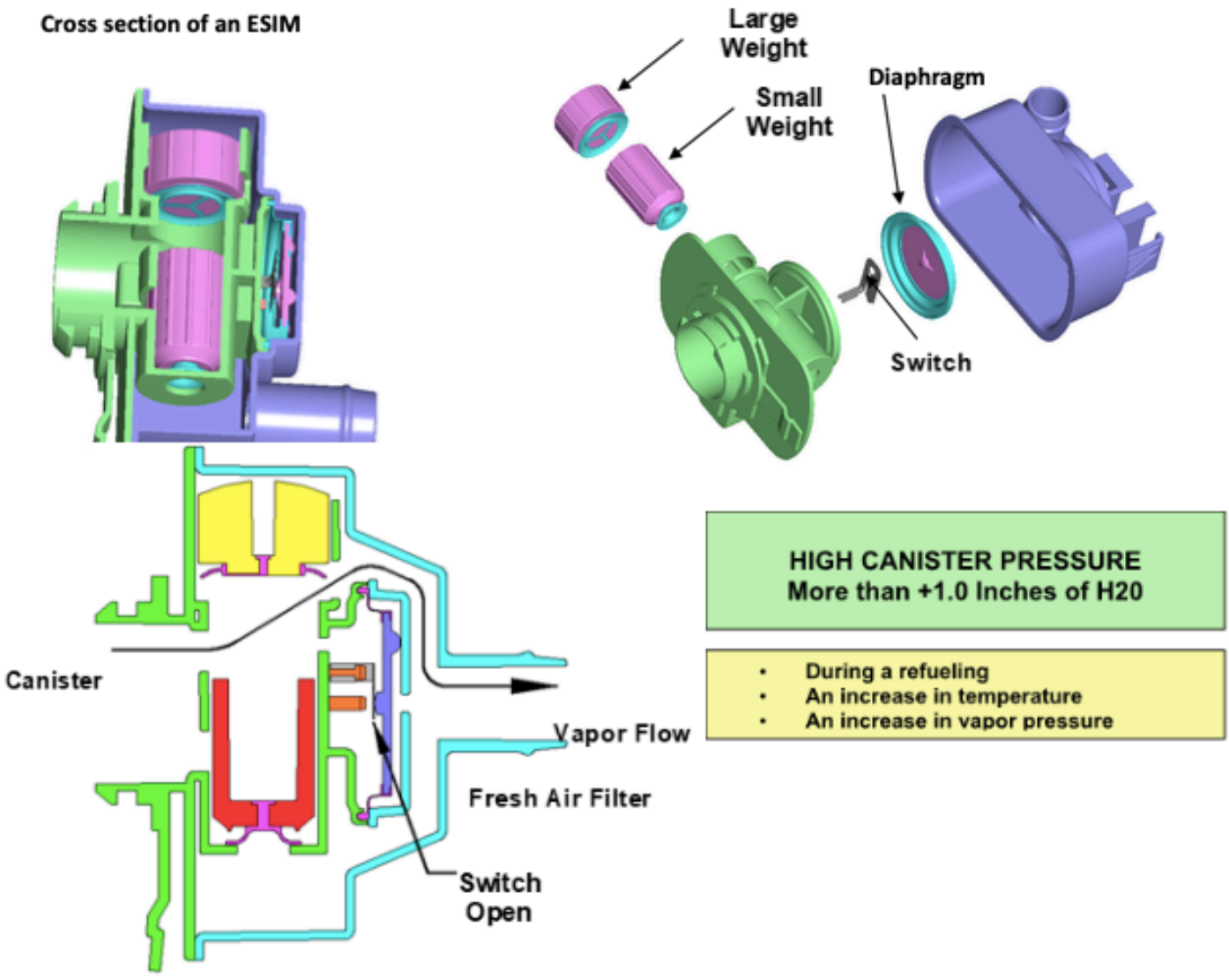
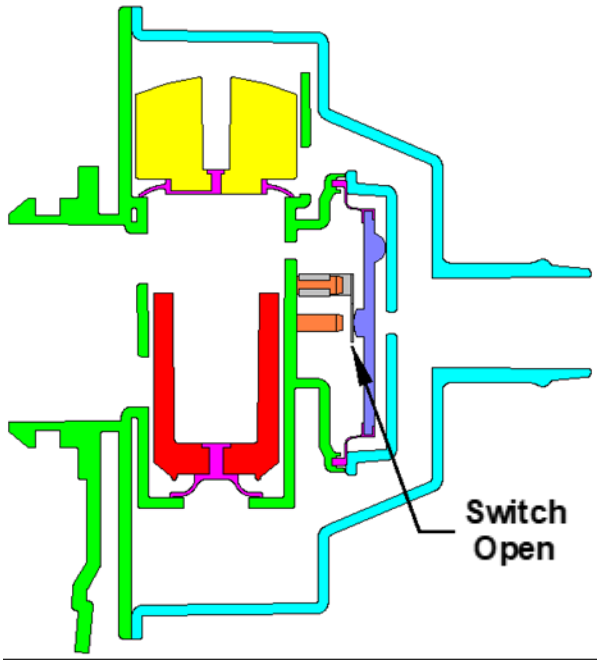
Analyzing DTC P0441 For EVAP Purge System Performance

When a vehicle comes in for a repair at the Dealership for DTC P0441 (EVAP purge system performance), that DTC is triggered by readings from the Fuel Tank Pressure Sensor. The purge flow monitor is used for detecting a restricted flow in the EVAP system. The DTC P0441 only occurs after a small leak test has successfully passed, which is checked by the Open or Closed state of the ESIM switch. The ESIM is a simple switch that is vacuum or pressure operated and either opens or closes a circuit to the PCM.

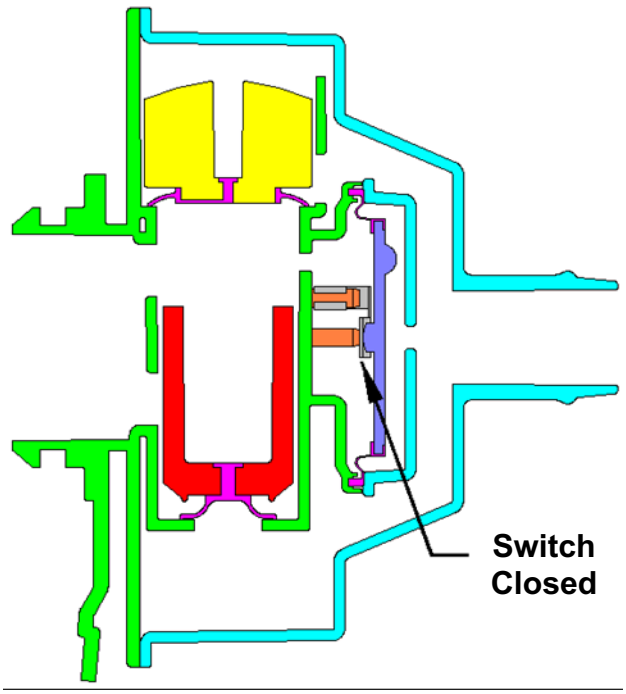
Following is a description of how the ESIM works:





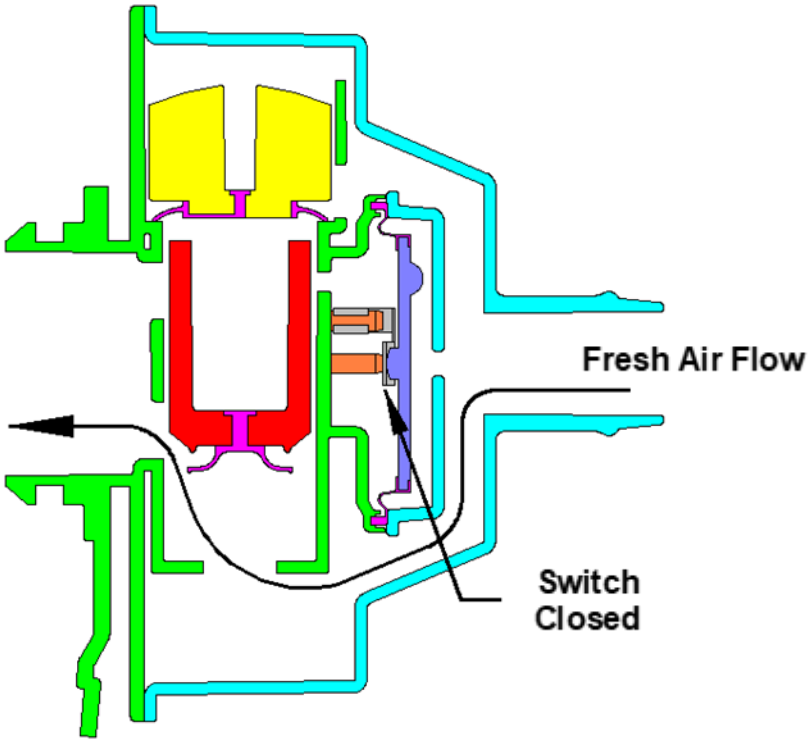
LOW PRESSURE or
LOW CANISTER VACUUM
Between +1.0 and -0.7 Inches of H2O

System is closed – No Venting



VERY LOW CANISTER VACUUM
Between -0.7 and -2.0 Inches of H20

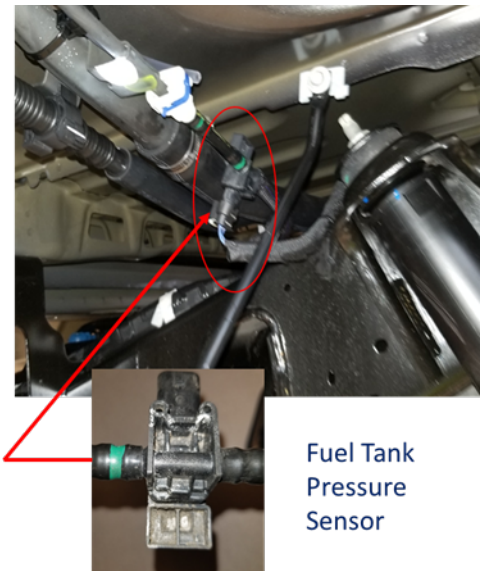
- **Gradual temperature decrease**
- **Just after purge is shut off**



HIGH CANISTER VACUUM
Less than -2.0 Inches of H20

- **Purging canister with engine on**
- **Significant temperature decrease**

As you can see in the above diagrams, the ESIM switch cannot cause a DTC of P0441 and should not be replaced. Typically, the Fuel Tank Pressure is on the **Fuel Vapor** Recirculation Tube and the ESIM switch is attached to the Vapor Canister on the **fresh air** hose side.





Before repairing the vehicle for P0441, check for other DTCs that might give you a clue on where the issue might be occurring.

- Are there DTCs that may be associated with circuit issues, such as P1457 (loose gas cap), P1456 (Fuel Tank Pressure Sensor) or P0440 (General Evaporative System Failure)?
- Is P0455 (large EVAP Leak) or P0457 (Loose Gas Cap) also occurring at the same time?

If so, do some research in the diagnostics with the other DTC(s) to determine if there could be a circuit issue or a large leak occurring where the system cannot pull a vacuum to check for P0441.

After running the ESIM/Purge Forced Flow Monitor test and the purge system is passing, and side 1 and side 2 actual pressures are well beyond the pass thresholds, then the purge system is passing and there is no need for a repair at this time. If the ESIM/Purge Forced Flow Monitor test fails, then follow the diagnostics for P0441.

Typical reasons for P0441:

1. Fuel Tank Pressure Sensor is not working properly (may include corroded sensor, wire is bad, pin pushed out).
2. Obstruction in plumbing - Purge lines in the engine compartment (includes plugs, kinks, melted).

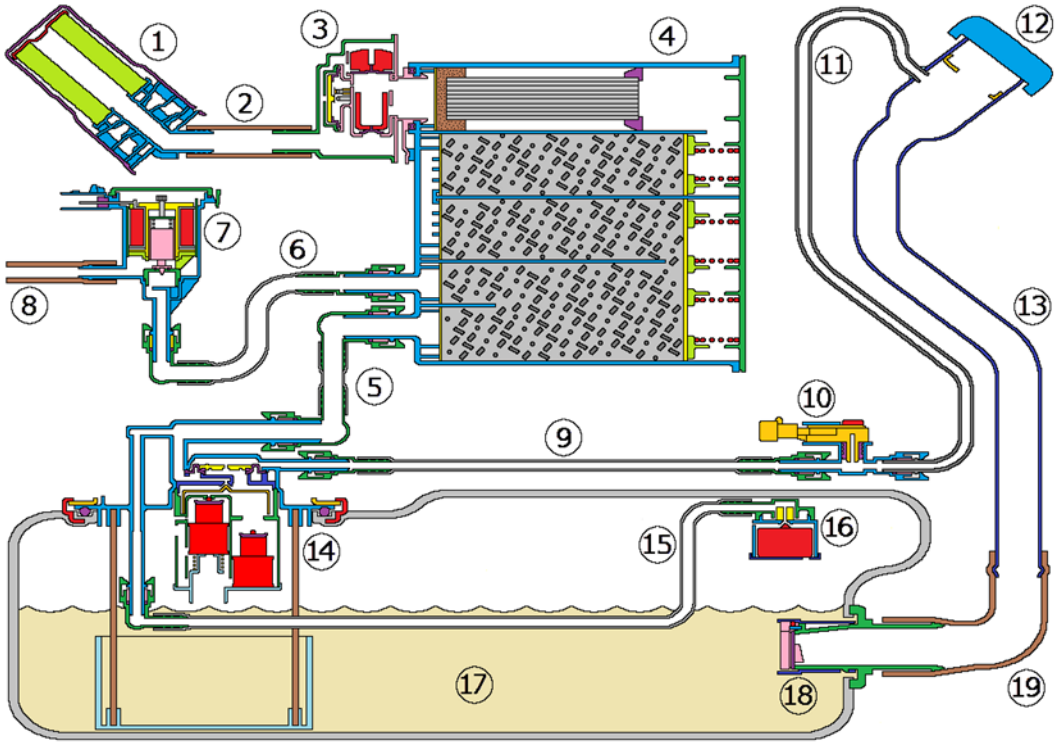
Other possible reasons for P0441:

1. Obstruction in plumbing - Purge lines from engine to canister (includes plugs, kinks, melted).
2. Obstruction in the intake manifold – restriction in the port (port partially flashed over).
3. Purge Valve – Not operating as expected (Not opening fully, sticking closed, obstructed with debris).
4. Canister Port – Restricted Purge Port. Line from canister to Purge Solenoid (port partially flashed over).
5. Multi-Functional Control Valve – Restricted run/loss orifice. Located in the fuel tank (internal orifice partially flashed over).

The following are NOT the reasons for P0441:

1. ESIM - the Evaporative System Integrity Monitor or Leak Detector cannot generate a P0441, so changing it will not correct the P0441 DTC.
2. Gas Cap, Capless Unit, Filler Tube, Filter - These should all light a different P-Code (not P0441).

Use the diagram below to help with understanding how the system works:



EVAP SYSTEM COMPONENTS (Typical non-Turbo Application)	
CALLOUT	**DESCRIPTION**
1	Filter – Fresh Air Inlet
2	Filter Hose (Filter to ESIM)
3	Evaporative System Integrity Monitor (ESIM)
4	Evaporative Canister (3 Carbon Chambers & Scrubber for LEV3/PZEV)
5	Canister Tube (Fuel Tank to Canister)
6	Purge Tube (Purge Valve to Canister)
7	Purge Valve (PV)
8	Manifold Hose (Purge Valve to Engine Manifold)
9	Recirculation Tube (Fuel Tank to FTPS)
10	Fuel Tank Pressure Sensor (FTPS)
11	Recirculation Tube (metal portion) (FTPS to Fuel Filler Tube)
12	Gas Cap or Cap-less Refueling Unit (if equipped)
13	Fuel Filler Tube
14	Multi-Function Control Valve (MFCV) in the Fuel Delivery Flange
15	GVV Tube (GVV to MFCV)
16	Grade Vent Valve (GVV)
17	Fuel Tank
18	Inlet Check Valve (ICV)
19	Hose – Fuel Filler Tube to ICV