P043F: EVAPORATIVE EMISSION SYSTEM LEAK DETECTION REFERENCE ORIFICE HIGH FLOW

OVERVIEW

Severity	:	Medium
DIY Difficulty Level	:	Intermediate
Repair Cost	:	**$200-$600**
Can I Still Drive?	:	**Yes**

What Does The P043F Code Mean?

The PCM has detected a discrepancy in the evaporative emissions system (EVAP) leak detection reference orifice when a code P043F is stored in your OBD-II vehicle. In this case, a high flow condition has been indicated.

The EVAP system is designed to capture fuel vapors (from the fuel tank) before they escape into the atmosphere. The EVAP system utilizes a vented reservoir (usually called a canister) to store excessive vapors until the engine is being operated under the appropriate conditions to burn them most effectively.

The pressure (developed when fuel is stored) acts as the propellant, causing the vapors to vent through the tubes and eventually into the canister. A charcoal element, contained in the canister, absorbs fuel vapors and holds them for release at the appropriate time.

Assorted sample orifices, a leak detection pump, a charcoal canister, the EVAP pressure sensor, the purge valve/solenoid, the vent control valve/solenoid, and a complex system of metal tubes and rubber hoses (stretching from the fuel tank to the engine compartment) are typical components of the EVAP system.

Engine vacuum is used by the EVAP system to draw fuel vapors (from the charcoal canister and through the lines) into the intake manifold where they can be burned instead of being vented into

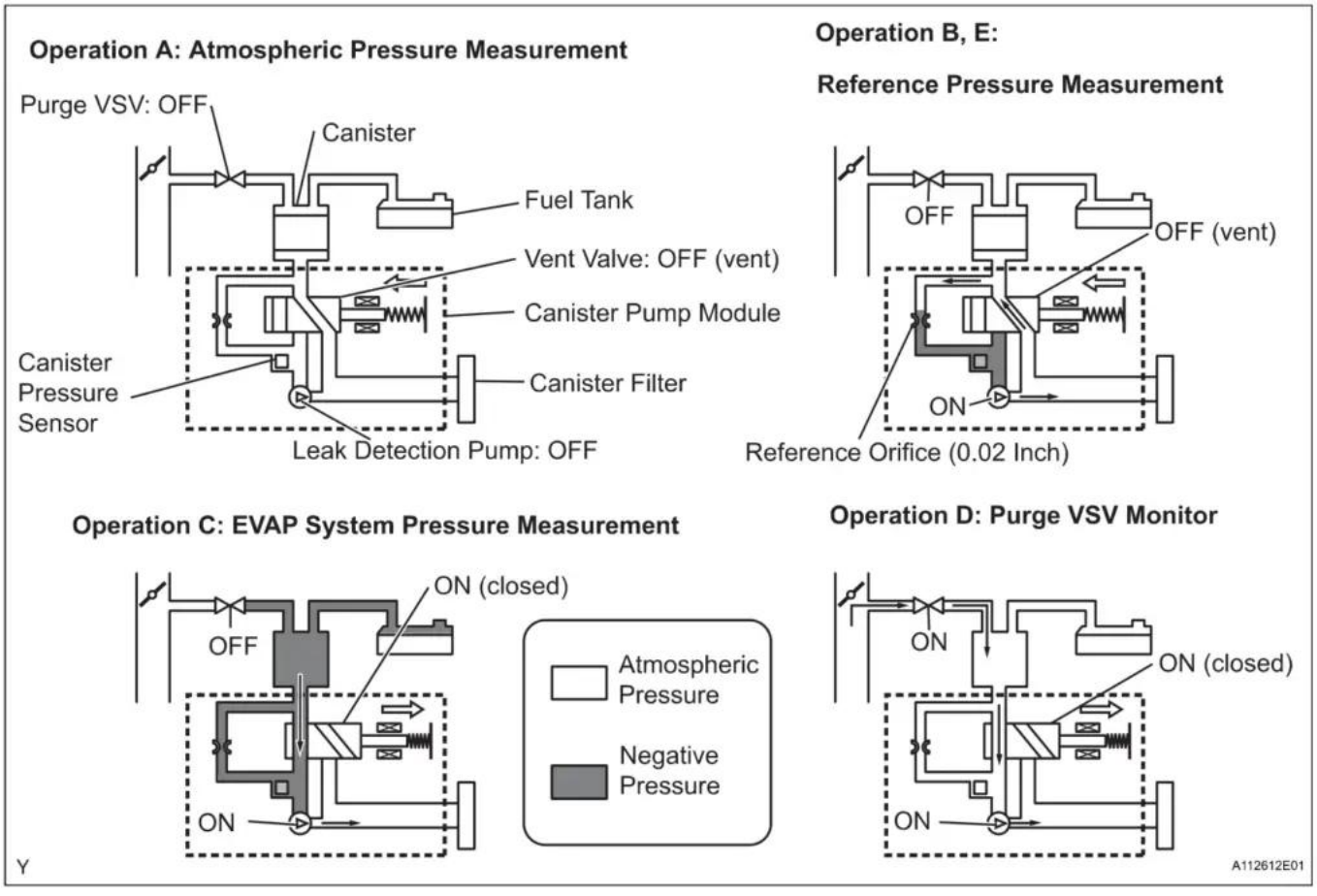
the atmosphere. The PCM electronically controls the purge control valve/solenoid which is the gateway of the EVAP system.

It is responsible for regulating intake vacuum to the EVAP canister so that fuel vapors may be drawn into the engine only when conditions are ideal for fuel pressure vapors to be burned most effectively.

Some EVAP systems utilize an electronic leak detection pump to build pressure within the system, so that the system can be tested for leaks/flow. Leak detection reference orifices may be placed at either a single point or in multiple points throughout the EVAP system. Leak detection reference orifices are typically of the in-line variety so that an accurate degree of flow can be measured with the leak detection pump activated.

The PCM uses input signals from EVAP pressure and flow sensors, in conjunction with the leak detection reference orifice/s, to determine if the leak detection system is functioning properly. The EVAP leak detection reference orifice may be a small filter type device or simply an area of the EVAP line which restricts flow in order for an EVAP pressure/flow sensor to obtain an accurate sample.

If the PCM detects a high flow condition through the EVAP leak detection reference orifice, a code P043F will be stored and a malfunction indicator lamp (MIL) may be illuminated.



P043F wiring diagram

What Are The Symptoms Of The P043F Code?

Symptoms of a P043F trouble code may include:

- No symptoms will likely be exhibited
- Hissing or humming sound (even when the ignition switch OFF)
- Slightly diminished fuel efficiency
- Other EVAP leak detection codes may be stored

What Are The Potential Causes Of The P043F Code?

Causes for this P043F engine code may include:

- Defective EVAP pressure sensor
- Faulty vent control or purge control solenoid
- Bad leak detection pump

How Can You Fix The P043F Code?

A diagnostic scanner, a digital volt/ohmmeter (DVOM), and a reliable vehicle information source will prove necessary for diagnosing a code P043F.

Use your vehicle information source to check for technical service bulletins (TSB) that match symptoms and codes presented in the vehicle being diagnosed. If you can find the appropriate TSB, it will likely direct you to the exact source of the malfunction without costing you a lot of time and trouble.

If there are other EVAP system codes present, diagnose and repair these before attempting to diagnose the P043F. The P043F could be in reaction to the conditions which have caused other EVAP codes.

Before getting your hands greasy, connect the scanner to the vehicle diagnostic port and retrieve all stored codes and freeze frame data. I like to write this info down as it may be helpful as my diagnosis unfolds. After you've done this, clear the codes and test-drive the vehicle to see if the code is reset.

Ideally, you'd like to test-drive the vehicle until one of two things occurs; the PCM enters readiness mode or the code is reset. If the PCM enters readiness mode, you have an intermittent problem (or you have repaired it inadvertently) and there's not a lot that you can do about it now. If it returns later, the failure condition may have worsened and you can take another run at it. If the P043F is reset, you know that you have a hard-and-fast malfunction and it's time to dig in and find it.

Begin with a visual inspection of any EVAP system related wiring harnesses and connectors that you can gain access to within a reasonable amount of time. Obviously, you aren't going to remove any major components to have a look but concentrate your efforts on high-temperature areas and areas where wiring, connectors, vacuum lines, and vapor hoses may interfere with moving components. A lot of cars are repaired during this phase of the diagnostic process, so focus and put a little effort into it.

Connect the scanner to the vehicle diagnostic port and observe the data stream. EVAP flow and pressure data should comply with manufacturer's specifications when the system is activated. In most cases, EVAP system activation (purge control solenoid and/or leak detection pump) may be possible using the scanner. Some EVAP sensor testing will need to be performed with the system activated.

Use the DVOM to test EVAP sensors and solenoids in order to compare them with manufacturer's specifications. Any related components that do not coincide with specifications will need to be replaced. If possible, gain access to the EVAP leak detection reference orifice to check for charcoal contamination. If charcoal contamination is found, suspect that the EVAP canister has been compromised.

Before testing system circuits with the DVOM, disconnect any related controllers to prevent damage. Test for the appropriate levels of resistance and continuity between individual EVAP components and the PCM using the DVOM. Circuits which do not align with specifications will need to be repaired or replaced.

- A loose or failed fuel cap will not cause a code P043F to be stored
- This code is applicable only to vehicle EVAP systems which utilize a leak detection system

Severity Description

EVAP leak detection codes, similar to the P043F, deal exclusively with the evaporative emission control system and should not be classified as severe.

Reference Sources

P043F Evap Leak Detection Reference Orifice High, OBD-Codes.