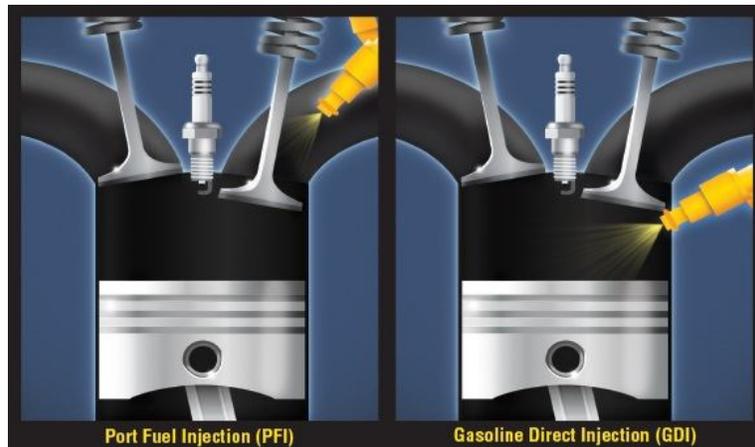




Use of the Total Intake System Cleaner with Direct Injected and Ford EcoBoost Engines

The #1 difference in these engines is WHERE the fuel enters the system. A Port Fuel Injected system enters through the air intake and sprays on the back of the valve. A Direct Injected system enters where the combustion chamber is the hottest.....right on top of the pistons inside the cylinders (SEE PHOTO).



This allows for a more even burn of the fuel, the intent being, added power and greater MPG.

The PROBLEM with this, is there is never any fuel being sprayed on the backs of the valves to help keep them clean with the detergent package that is already in the gasoline. Even a tank additive would NOT address this issue, because it would never reach the area where the carbon is being built-up!

Liquid Fuel System Cleaners are most often solvent bases therefore they must "scrub" to clean/remove carbon. Vacuum Drip Induction Cleaners settle where the air/vacuum takes it when doing this type of service. It also creates a very "lean" condition in the vehicle. GDI and Ford EcoBoost engines are ALREADY burning lean, so this creates an EXTREME lean condition when performing induction services utilizing the vacuum drip method in which may cause issues.

There have been issues with the Ford EcoBoost engines using a vacuum drip FSC because the carbon could become dislodged, potentially restricting the exhaust flow through the catalytic converter which could cause/result in catalytic converter overheating.

With traditional vacuum drip induction cleaning methods, liquid is being introduced through the air intake into the combustion chamber where it is NOT intended to be.

The cleaner is entering the system at the back of the valves and the fuel is entering the system in the cylinder. This results in a poor mixture of the cleaner and the gasoline and could lead to poor combustion or stalling of the engine.

When utilizing Total Intake System Cleaner Aerosol method, the above problems are not present. It is an "active" chemistry, not a "scrubbing" chemistry. While it does create a "leaner" condition in the vehicle, it is NOT extreme. The active chemistry is designed to break down and dissolve carbon deposits on contact, reducing solids in to ppm's as a gas omitting through the exhaust.

The Total Intake System Cleaner product formulation enters the combustion chamber via positive vacuum, at -42 degrees and "emulsifying" when meeting the warm/hot environment in the intake system thus creating an emulsion or active chemical fog. This method eliminates the above problem of adding liquid to the system, thus reducing the potential for hydrostatic engine/vapor lock or other potential service related issues.

The precise delivery/application method of the Total Intake System Cleaner fogs the entire intake system removing deposits by safely and effectively cleaning the upper engine, intake system and combustion chamber, dissolving carbon in difficult to reach areas from the plenum to the catalytic converter. Traditional vacuum drip induction cleaners have great difficulty reaching or cleaning areas, therefore limiting product performance.

There should be no adverse effects when using the Total Intake System Cleaner. It removes carbon deposits, restores power and performance, cleans intake valve seats, compression chamber and oxygen sensors helping to return compression to factory levels. The Total Intake System Cleaner product formulation when used/installed per label directions is safe and suitable for use in GDI or Ford EcoBoost engines.

*******IMPORTANT !!!!!!!!!!!!!!! *******

All vehicles should be at operating temperature including GDI and Ford EcoBoost engines when performing the Total Intake System Cleaner FSC Service.

This will assure that the "emulsification process" takes place properly and the "fog" is created.

Larry A. Barnes
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PHILLIPS 66 Finished Lubricants