

## Hydrolocking and BG Services

June 6, 2011 || 11-328

There has been some concern about hydrolocking engines the BG Air Intake System Cleaning Service and the BG Gasoline Direct Injection Service.

Hydrolocking most commonly occurs in the reciprocating internal combustion engine, when a volume of liquid greater than the volume of the cylinder at its minimum (end of the piston's stroke) enters the cylinder. Hence, the piston cannot complete its cycle; causing the engine to either stop rotating or mechanically fail.

The most common service in question is BG Air Intake System Cleaning Service using BG Air Intake System Cleaner, PN 206, and BG AIS Cleaning Tool, PN 9206. BG recommends strict adherence to the following steps:

- While performing a BG Air Intake System Cleaning Service, you must raise the engine RPM every two to three minutes. Slowly rev the engine to make sure chemistry accumulation has cleared.

**Important: If the intake is designed so that accumulation of the product is more likely to occur, raise the engine RPM more often. BG Tech Tip No. 06-247, BG Air Intake System (AIS) Cleaning and Dodge Neon Plenums, recommends to raise the engine RPM every 30 seconds to prevent hydrolocking. Lexus direct injected engines are also prone to accumulation in the intake system.**

- After the service, idle the engine for 15 minutes, so residual product can evaporate.

BG recommends strict adherence to the following steps in the BG Gasoline Direct Injection Service using BG Gasoline Direct Injection Cleaner, PNs 271 and 272:

- Remove spark plugs and place rags over the spark plug holes to block splash of product spraying.
- Crank the engine to remove residue in the combustion chamber and to avoid hydrolocking.
- Always allow vehicle to idle for 15 minutes after service. Any residual chemical left behind will be purged from the engine. Any type of solenoids, sensors, relays, modules, switches or valves can fail if the vehicle isn't allowed run time after the service.

BG is not liable for damage to engines when proper procedures are not followed. BG representatives are directly responsible for proper training of all BG processes and procedures.

## **Chevy Vortec Engines—Routine fuel injection cleaning on 1996 and newer.**

June 1, 2001 || 01-125B

This service can be performed without disconnecting any fuel lines.

1. Connect the BG Service Tool (9210, 9220 or 9221) to the fuel rail at the schrader valve using BG adaptor 97800.
2. With ball valve on the service tool in the closed position, start vehicle. Take note of the pressure reading on the bottom gauge of tool; this gauge indicates the pressure at which the fuel pressure regulator is set.
3. Turn off vehicle, disable the fuel system and remove the gas cap.
4. Connect pressurized air to service tool and adjust tool pressure to 5 lbs. less than the predetermined regulator pressure (pressure reading from step 2). Adjust pressure on tool using the bottom gauge as a reference. Turn ball valve to the open position.
5. Start vehicle and run until service tool is empty.
6. Disconnect service tool, turn fuel system back on, replace gas cap and test-drive vehicle.

A regular service program with BG 44K® or BG MI 3000® will help prevent future complications with the injection system.

## **Chevy Vortec engines — Cleaning injectors with stuck open or closed poppet nozzles**

June 1, 2001 || 01-125

1996 and newer Chevy Vortec engines utilize poppet nozzles in their fuel injection systems. The fuel injector assembly meters pressurized fuel through a poppet nozzle at each cylinder. Service bulletin no: 00-06-04-003 states that deposit build-up on the poppet nozzles may cause the poppet ball to stick open or closed.

Poppet nozzles stuck open will result in a loss of fuel pressure after the engine is shut down. This in turn will cause long cranking times before start-up. A stuck open nozzle could also cause dieseling. This can occur because the fuel injector could deliver fuel to the engine through the open nozzle even after the ignition is turned off.

If the poppet nozzles are stuck closed the fuel injectors aren't able to deliver fuel to the engine. This causes a misfire condition with a rough running engine.

Performing the BG Fuel Injector Cleaning Service can solve both these conditions. The BG Supply Tool (Part Nos. 9210, 9220 or 9221) with BG Fuel Injection System Cleaner, Part No. 210, should be used to perform this service, followed up with a can of BG 44K® in the tank.

Disable the vehicle's fuel system. To be sure that product isn't dumped back into the fuel tank, the fuel system needs to be looped. With the vehicle on a lift, disconnect the fuel pressure and return line at the fuel filter. On the engine side connect the two fuel lines together with fuel hose and clamps. Attach supply tool to fuel rail schrader valve using BG adaptor 97800. With product in tool adjust air pressure to 100 PSI. Start engine and run for 10 to 15 seconds, then adjust pressure down to 70 PSI. Run engine until supply tool is empty. Disconnect the supply tool and reconnect the fuel pressure and return lines. Turn vehicle's fuel system back on. Test-drive vehicle.

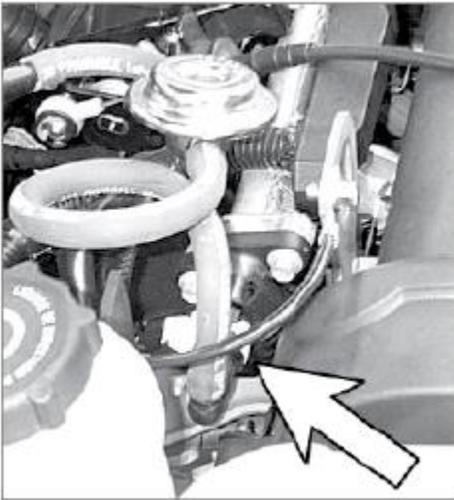
To help prevent future complications with the Chevy poppet nozzles, a regular service program with BG 44K® or BG MI 3000® is highly recommended.

Caution: The fuel pressure regulator on the Vortec engines has a high failure rate that can cause some of these same symptoms. Checking for proper performance of the fuel regulator is a must.

## Injector cleaning on 2000 Ford Focus

March 19, 2001 || 01-117

The 2000 and newer Ford Focus is equipped with multi-port fuel injection that is supplied by a returnless fuel system. This means there is no return fuel line back to the fuel tank, eliminating the need to loop or pinch off the return side of the fuel system. The fuel pressure is regulated between 35 and 65 PSI. The control module receives pressure information from a fuel pressure sensor mounted on the fuel rail. The control module is able to maintain constant fuel pressure by varying the fuel pump output.



The fuel injectors can be serviced easily by disconnecting the fuel line at the fuel rail.

Use BG fitting no. 57 with a cap to block off the open fuel line. Put BG fitting no. 14 on the fuel rail. Disconnect the fuel pump by unplugging at the fuel shut-off (inertia) switch. Hook up service tool and perform the service.

Reconnect fuel system and the service is complete.