



# Preliminary Information

## PIP5180B Diagnostic Tips For Direct Injected Engines Hard Start Cold

### Models

Brand:	Model:	Model Years:	VIN:		Engine:	Transmissions:
			from	to		
Buick	Enclave	2009 - 2018	All	All	3.6 LFY, 3.6 LLT	All
Buick	LaCrosse	2010 - 2016	All	All	2.4 LAF, 2.4 LUK, 3.0 LF1, 3.6 LFX, 3.6 LLT	All
Buick	Regal	2011 - 2017	All	All	2.0 LHU, 2.4 LAF, 2.4 LEA, 2.4 LUK	All
Buick	Verano	2012 - 2017	All	All	2.0 LHU, 2.4 LEA	All
Cadillac	ATS, ATS-V	2013 - 2018	All	All	2.0 LTG, 2.5 LCV, 3.6 LFX, 3.6 LF4	All
Cadillac	CTS, CTS-V	2008 - 2018	All	All	2.0 LTG, 3.0 LF1, 3.6 LF3, 3.6 LFX, 3.6 LLT	All
Cadillac	STS	2008 - 2010	All	All	3.6 LLT	All
Cadillac	SRX	2008 - 2016	All	All	2.8 LAU, 3.0 LF1, 3.6 LFX	All
Cadillac	XTS	2013 - 2018	All	All	3.6 LF3, 3.6 LFX	All
Chevrolet	Camaro	2010 - 2015	All	All	2.0 LTG, 3.6 LFX, 3.6 LLT	All
Chevrolet	Caprice PPV	2012 - 2014	All	All	3.6 LFX	All
Chevrolet	Captiva Sport	2012 - 2014	All	All	2.4 LEA, 3.0 LFW	All
Chevrolet	Equinox	2010 - 2017	All	All	2.4 LAF, 2.4 LEA, 3.0 LFW, 3.6 LFX	All
Chevrolet	Impala	2012 - 2018	All	All	2.5 LKW, 3.6 LFX	All
Chevrolet	Traverse	2009 - 2018	All	All	3.6 LFY, 3.6 LLT	All
GMC	Acadia	2009 - 2016	All	All	3.6 LLT	All
GMC	Terrain	2010 - 2017	All	All	2.4 LAF, 2.4 LEA, 3.0 LFW, 3.6 LFX	All
Saturn	Outlook	2009 - 2010	All	All	3.6 LLT	All

### Supersession Statement

This PI was superseded to update Model Years and refer to PIP4919. Please discard PIP5180A.

The following diagnosis might be helpful if the vehicle exhibits the symptom(s) described in this PI.

### Condition / Concern

Hard start, extended crank, or excessive black smoke from the exhaust when starting.

**NOTE:** Prior to proceeding with the diagnostics in this PI ensure the concern is not covered in the latest version of [PIP4919](#) showing normal conditions with these engines.

A comparison to a known good vehicle is also recommended.

**NOTE:** A button push or key turn to start to event time out is not a "NORMAL" condition on any of these vehicles.

### Recommendations / Instructions

#### Basic Tests:

Verify Fuel Quality?

Spark Test with ST125, if a coil issue is suspected then follow Ignition System Diagnostics.

Perform a Compression Test.

You should see 150-185 Average Compression, no cylinder should be less than 140 psi on a HFV6 engine non turbo charged.

You should see 170-200 Average Compression, no cylinder should read less than 100 psi on the 4 cylinder engine or turbo charged HFV6.

If the condition is a "Hard Start Cold" only, and you suspect that you may have a carbon issue causing a valve to stay open, follow the latest version of [16-NA-383](#) and perform a cold compression test.

Also install a vacuum gauge prior to cold start and watch needle for signs of a sticking valve.

#### Fuel System Check:

\*Follow all these steps in order.

The following tests should be done after an overnight cold soak.

Set your vehicle up with the CH 48027 digital pressure gauge and J37287 fuel line with shut-off valve.

Run vehicle to purge all air from fuel system and then shut vehicle off and let sit overnight.

Unplug the injector harness connector.

### **Next Morning:**

Key On and do not start engine – Using a CH 48027 Digital Pressure Gauge, verify “Key On” engine off, prime pulse fuel pressure should be between 55-60 psi. Record reading.

This test will confirm correct operation of the in-tank fuel pump assembly.

Use your Tech2 or GDS set in PSI to also confirm what the Fuel Rail Pressure Sensor is reading as this should always be close to what your Digital Fuel Pressure Gauge reads for low side pressure during this test.

This will also confirm if there is an off-set with the Fuel Rail Pressure Sensor.

Next you will crank the engine to see if it fires.

With the injector harness connectors unplugged, the injectors are now electrically disabled so no fuel should be delivered to the engine.

When cranking over the engine, if engine fires this means that one or more injectors have been leaking and have introduced fuel into one or more cylinders.

Reconnect the injector harness connectors and start the engine, let the vehicle run for ten minutes and then shut vehicle down.

You will now close the shut-off valve in the J37287 Fuel Line, which will now separate the engine side of the fuel system from the rear section of the return- less fuel system.

Using the CH 48027 Digital Pressure Gauge, look for a drop in the high side of the fuel system, by monitoring low side pressure.

With the J37287 valve closed, the system should hold at least 60 psi for a few hours.

If you see a rapid decrease in fuel pressure, this would indicate a leaking High Pressure Fuel Pump or leaking injectors since the fuel pressure cannot bleed off to the tank as your J37287 valve is closed.

All this is assuming that your gauge is good with no leaks or any leaks at the Schrader valve.

### **Warranty Information**

The correction for this concern may be one of several repairs described in the diagnostic tips above.

For vehicles repaired under warranty, please use the appropriate warranty labor operation based on the actual cause and repair.

Please follow this diagnostic or repair process thoroughly and complete each step. If the condition exhibited is resolved without completing every step, the remaining steps do not need to be performed.



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