



# Service Bulletin

## INFORMATION

**Subject:** Black Smoke and Rough Idle on Cold Start

**Models:** 2011-2017 Buick Regal  
2012-2017 Buick Verano  
2013-2017 Cadillac ATS  
2014-2017 Cadillac CTS Sedan  
2010-2017 Chevrolet Captiva, Equinox  
2013-2017 Chevrolet Malibu  
2014-2017 Chevrolet Impala  
2010-2017 GMC Terrain  
Equipped with Engine RPOs LAF, LEA, LCV, LTG, LKW, LHU or LUK

**Attention:** This PI also applies to any of the above models that may be Export vehicles.

*This PI has been revised to add the 2015-2017 Model Years. Please discard PI1223A.*

### Condition/Concern

Some customers may comment on black smoke, rough idle and minimal misfires on start up only.

This can be caused by the introduction of direct fuel injection systems.

### Recommendation/Instructions

A split-pulse injection strategy is utilized during engine cold start to reduce the time required to bring the catalytic converter up to operating temperature.

This split injection strategy lasts for about 20 seconds on cold start.

This process will cause the customer to see increased black smoke, soot, rough idle, or minimal misfires during cold start and should be considered normal.

To verify that the split-pulse injection is causing the roughness or misfires with no codes set, you should watch injector pulse width with the scan tool during the concern.

When in split pulse injector mode operation, the pulse width is about 50% more than a normal idle.

If after 20 seconds the pulse width of the injectors reduces and the engine idle smooths out, this is considered normal operation and no repairs should be attempted.

If the pulse width on the injectors drops by about 50% and the engine then smooths out, this is considered normal operation and no repairs should be attempted.

The use of TOP TIER fuels lessens the rough idle condition effects during split pulse injection by reducing the amount of carbon on valve train components and a more complete combustion leading to cleaner burn. Refer to the latest version of Service Bulletin 05-06-04-022 TOP TIER Detergent Gasoline Information and Available Brands.

This cold start strategy is enabled upon start up after the engine has soaked for sufficient time such that the catalytic converter requires rapid reactivation.

GM bulletins are intended for use by professional technicians, NOT a "do-it-yourselfer". They are written to inform these technicians of conditions that may occur on some vehicles, or to provide information that could assist in the proper service of a vehicle. Properly trained technicians have the equipment, tools,

safety instructions, and know-how to do a job properly and safely. If a condition is described, DO NOT assume that the bulletin applies to your vehicle, or that your vehicle will have that condition. See your GM dealer for information on whether your vehicle may benefit from the information.



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