



# Preliminary Information

## PIP5486F Ticking, Tap, or Rattle Noise From Engine With Possible Misfire DTCs.

### Models

Brand:	Model:	Model Years:	VIN:		Engine:	Transmissions:
			from	to		
Buick	LaCrosse	2017 - 2019	ALL	ALL	3.6 LGX	ALL
Buick	Regal	2018 - 2019	ALL	ALL	3.6 LGX	ALL
Cadillac	ATS	2016 - 2019	ALL	ALL	3.6 LGX	ALL
Cadillac	CT6	2016 - 2019	ALL	ALL	3.0 LGW, 3.6 LGX	ALL
Cadillac	CTS	2016 - 2019	ALL	ALL	3.6 LGX	ALL
Cadillac	XT5	2017 - 2019	ALL	ALL	3.6 LGX	ALL
Chevrolet	Camaro	2016 - 2019	ALL	ALL	3.6 LGX	ALL
Chevrolet	Colorado	2017 - 2019	ALL	ALL	3.6 LGZ	ALL
GMC	Acadia	2017 - 2019	ALL	ALL	3.6 LGX	ALL
GMC	Canyon	2017 - 2019	ALL	ALL	3.6 LGZ	ALL

<b>Involved Region or Country</b>	<b>North America</b>
<b>Condition</b>	<p>Customers may bring their vehicle into the dealership for a rattle, tick, or knock type noise. This noise may also be accompanied by DTC P0300, P0302 or P0305 on the Active Fuel management System (AFM) cylinders.</p> <p><b>Note: If there are any drivability concerns they should be addressed prior to the following diagnostic progression including any misfire DTC.</b></p> <p><b>Note: Please take a sound file or video with sound of the noise prior to any disassembly.</b></p> <p>This may be needed when contacting TAC or to be sent to engineering.</p> <p>This could be all the time, only under load, or intermittent depending on the severity of the noise.</p> <p>You may find this noise hard to isolate to one area in the engine.</p> <p>After you have recorded a sound file of the noise try to isolate the noise to a general area of the engine.</p> <p>At that point following the steps in this PI in ORDER may help pinpoint the concern.</p>
<b>Cause</b>	This condition may be caused by spongy stationary hydraulic lash adjusters (SHLAs) (lifters) or damaged switching roller finger followers (SRFF) or a left bank timing chain tensioner gasket not sealing. The condition could be all the time, only under load,

intermittent, or when first started after a hot soak depending on the cause.

### **Correction:**

**1) Perform injector diagnosis to ensure there are no leaking injectors causing a noise due to excessive fuel in one cylinder.**

- a) Perform GDS2 or AFIT test on injectors to isolate a leaking injector.
- b) Replace any out of specification injectors
- c) Reevaluate the noise.

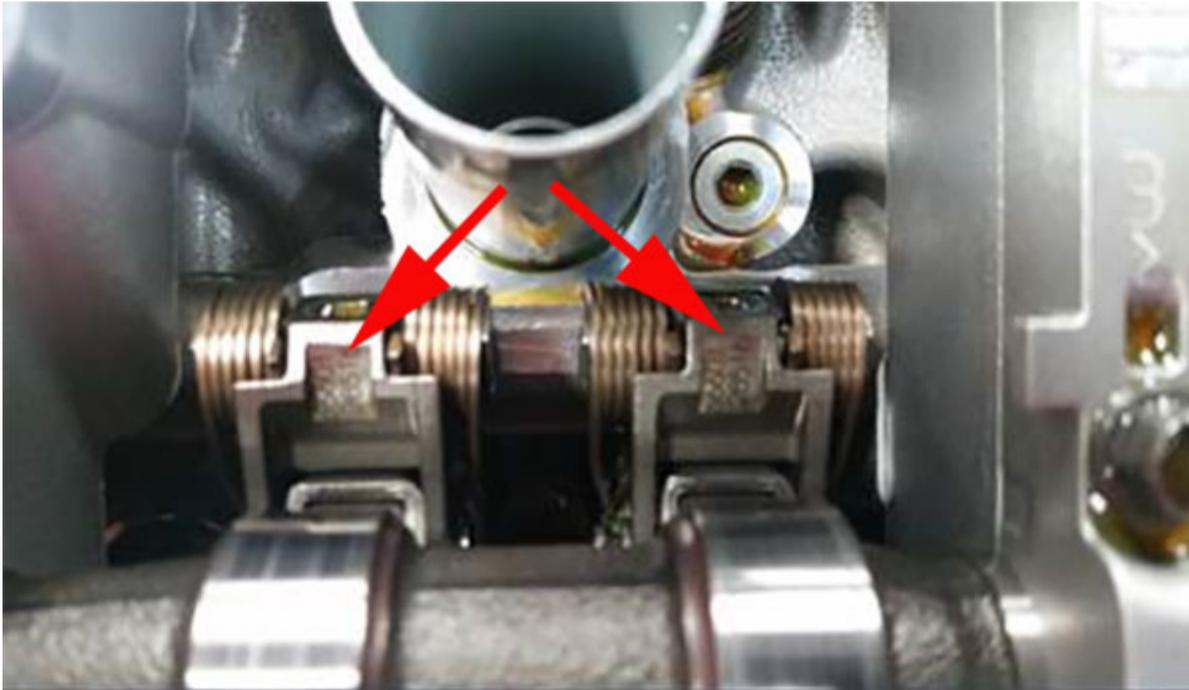
**2) Perform cylinder cancellation for each cylinder this may help pinpoint the source of a rattle noise.**

**3) Remove the intake manifold and visually inspect for excessive carbon on the intake valve stems and top of the valve causing noise.**

- a) If carbon is present then follow the latest version of [16-NA-383](#) to clean the valves or replace heads as needed.
- b) Reevaluate the noise concern.

**4) Remove the cam cover of the affected bank or both if unable to isolate to inspect for soft , spongy or damaged SHLAs or rockers on all cylinders.**

- a) Push down on the rocker end at the SHLA to test for soft or spongy feel. (See below)



- b) Check for any visible damage to non-AFM rocker clips. (See Below)



c) If soft , spongy, or damaged SHLAs or rockers are found on either the intake or exhaust side of any cylinder it will be necessary to replace all the affected cylinder SHLAs or rockers and retest.

**NOTE: If all shla's (lifters) are hard and no damage to rockers is visible proceed to step 5**

5) If the replacement SHLAs are still spongy it will be necessary to remove the affected head and inspect the head gasket for debris in the oil passages noted below.



a) If debris is found, inspect the camshaft caps for wear or discoloration due to lack of oil.

b) If wear or discoloration is found then replace the cylinder head assembly with camshafts.

c) If there is no wear or discoloration, clean the oil passages and replace the head gasket.

d) Change the oil and filter

e) Reevaluate the noise concern.

6) Without starting engine, crank engine over and ensure that the valves are opening and closing.

If they are not operating correctly it will be necessary to inspect the (SRFF) for any damage.

7) Inspect the SRFF' and rocker assemblies for any damage or dislodge.

Camshaft carrier assembly removal will be necessary to fully inspect the rockers and SRFF's.

Below are pictures of possible SRFF failures.

If any one of the SRFF's are damaged it will be necessary to replace all four on the affected cylinder.



For the above conditions engine replacement is not necessary.  
Please perform the repairs for these conditions.

8) Inspect the left bank timing chain tensioner gasket for not sealing correctly. (see below)



Replace the tensioner and gasket if this condition is found.

9) If noise condition is still present proceed to step 10.

10) Raise the vehicle while running or with an assistant inside.

a) With chassis ears or a stethoscope, listen to the right and left side of the engine

b) Once the noise is isolated or if unable to isolate, remove the piston and rod assemblies from the affected bank(s) to inspect for either; a loose rod bushing in the rod or a loose wrist pin in the bushing.

We have seen both.

c) There should be no metal through the oil for this condition.

d) If this is found a piston and rod assembly will repair this noise.

Once all of the above inspections and / or diagnostics are completed, if nothing is found to be the cause for the noise, engine replacement MAY be necessary.

If engine replacement is decided to be necessary, please have a TAC case started with diagnostic steps and pictures of the above processes.

**NOTE: This PI will be updated or changed to a TSB as more information and updated parts become available.**

## Warranty Information

**For Vehicles Repaired Under Warranty Use Appropriate Labor Operation For Process Performed.**

## Version History

Version	7
Modified	03/15/2017 - Created 12/01/2017 - Updated to add Model year 2/12/2018 - Updated to reference 16-NA-383 3/12/2018 - Updated to request inspection of non-afm rockers. 8/13/2018 - Updated to add 2019 MY and Buick Regal 9/25/2018 - Updated to add inspection of timing chain tensioner. 10/9/2018 - Updated lost information from last update.



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