



Service Bulletin

File in Section: -

Bulletin No.: PIC5515C

Date: April, 2013

PRELIMINARY INFORMATION

Subject: Diagnostic Tip - Ratchet Click or Grind Noise In Front Of Vehicle Traveling Straight At Slow Speeds

Models: 2010 - 2014 Chevrolet Camaro

This PI was superseded to update model years and add warranty info section. Please discard PIC5515B.

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

Condition/Concern

A customer may comment of brief and intermittent ratchet, grind, or ABS pump motor noises heard from the front of the vehicle when traveling in a straight line at slow speeds, usually under 20 mph. This may be caused by a spike or drop in the speed of any wheel speed sensor. This spike/drop in speed signals the EBCM to prime for a stability or traction event. Typically no codes will be stored for this concern. No IPC indicator(s) will illuminate and no DIC message(s) will be displayed with this noise unless the StabiliTrak or Traction Control system goes active.

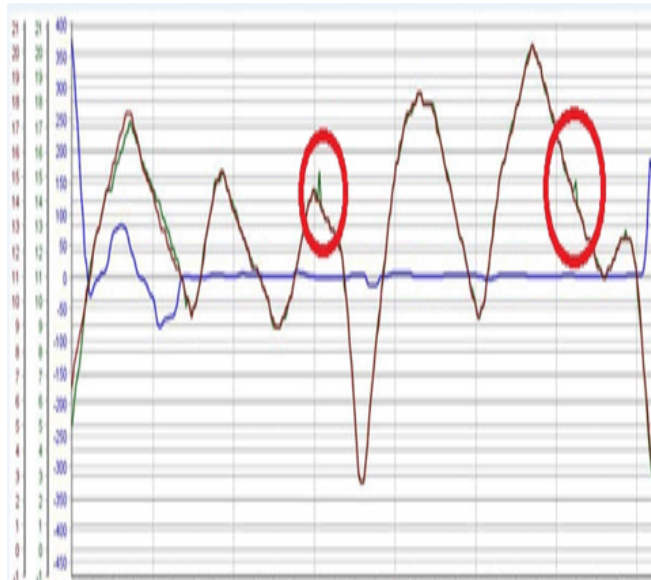
Recommendation/Instructions

Note: Do not attempt to replace the EBCM or BPMV for this concern. The EBCM and BPMV are on part restriction and will not be released for this concern.

Perform the following diagnosis to isolate the cause:

1. Connect GDS2, set to monitor EBCM > Antilock Braking Data then duplicate concern several times under the conditions described by the customer.
2. Turn off StabiliTrak and attempt to duplicate concern again. To turn off StabiliTrak, press and hold the StabiliTrak/TCS button until the Traction Control Off light AND the StabiliTrak Off light illuminate on the IPC. If concern does not occur when StabiliTrak is turned off then press and release the StabiliTrak/TCS button to turn the system back on and continue with this PI.
3. Review EBCM > Antilock Braking Data Session Logs in GDS2, specifically monitoring the WSS (Wheel Speed Sensor) parameters for one of the WSS inputs to either spike up or drop down in a speed inconsistent with the speed reading of the other 3 wheel speed sensors. Typically, a 3 mph or greater variance may be detected in one or more data session logs which will indicate which WSS and hub bearing need further inspection. In rare cases, it could be as little as 1 mph variance between WSS. It is suggested to use the Line Graph to plot out the Steering Angle Sensor (to know when the car is going straight) and both rear WSS parameters first. To do so, select the parameters you wish to plot by clicking on the parameters in the Diagnostic Display Data Display Tab, then click on the padlock to move that parameter to the top of the list. Once the parameters are selected, move to the Line Graph Tab to view an overlaid plot of the selected parameters. The front WSS parameters can be viewed later if the cause is not found in the rear, but the cause is more common to be found with the rear parameters. You must zoom in to view the fine detail needed to isolate the cause as this is only a slight difference spiking down or up from the other WSS.

Note: The WSS parameter may spike in areas of the Session Log other than where the pump motor activation occurs.



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In the example above, the vehicle is travelling straight (Steering Column Position in Blue); the Left Rear WSS (Green) is spiking; while the Right Rear WSS (red) is not.

Important: The WSS and the hub bearing are two separate components and are serviced separately. While swapping the WSS from side to side can be performed, it is not recommended as the WSS is not likely to be the cause unless physical damage is present on the WSS itself.

Note: Reference the latest version of PIC5428 for additional detail and illustrations in regard to Step 4.

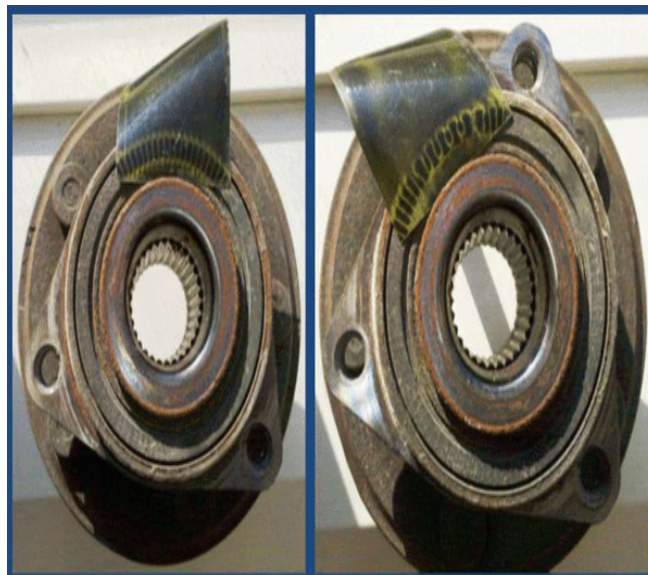
4. Inspect the WSS and the Hub Bearing for physical damage, contamination or debris.

* If there is contamination or debris, then clean the part, reassemble the vehicle and re-evaluate the concern.

* If there is physical damage, replace the damaged part.

Important: There is some confusion over where the encoder is located on the hub. It is the brown rubber ring, it is not located behind this ring and this ring is NOT just a bearing seal. It is the encoder.

Note: This photo depicts a condition of the encoder magnetic poles not alternating properly. Instead of the magnets being laid North, South, North, South, as the photo on the left illustrates, the poles may have been laid out of sequence as illustrated by the photo on the right. The magnetic paper is not readily available in most areas so this photo is only being used to illustrate that not all conditions are visible to the naked eye and that if this condition were present then swapping the WSS would not aid in isolating this cause. It may be necessary, as explained below, to swap the hub bearing from side to side to identify the condition shown in this photo.



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* If there is no evidence of physical damage, contamination or debris it is acceptable to swap the hub bearings from side to side, test drive the vehicle again and confirm the problem followed the hub. If the problem follows the hub, replace the hub. If problem stays with the WSS, replace the WSS.

Warranty Information

The correction for this concern may be one of several repairs described above. For vehicles repaired under warranty, please use the appropriate warranty labor operation based on the original cause in addition to well documented straight time.

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.