



Service Bulletin

File in Section: 04 - Driveline/Axle

Bulletin No.: 09-04-20-001D

Date: October, 2013

INFORMATION

Subject: Front Tire Chatter/Noise vs. Rear Differential Chatter

Models: 2006-2014 Chevrolet Corvette

This bulletin has been revised to add the 2014 model year. Please discard Corporate Bulletin Number 09-04-20-001C.

The purpose of this bulletin is to address a chatter noise during low speed tight turn conditions (i.e. parking lot, driveway, etc.) primarily during cooler ambient temperatures. The condition can be experienced in all directions: right, left, forward, reverse. The condition typically reduces or diminishes when the vehicle warms up, but may be worse when the pavement is wet.

Note: For the 2011-2013 model year, the Goodyear F1 tire, available on Corvette Grand Sports and Z06 models, has a significant tread design change. This new design is more susceptible to tire chatter or hop than the previous design.

This condition may be caused by two potential sources of chatter:

- Front tire hop
- Rear differential chatter/noise

The following subjective evaluation will help identify the correct source of the suspect noise.

Evaluation

Test Conditions/Location

- Vehicle condition: Condition typically occurs following an extensive ambient soak of the vehicle. A vehicle soak of at least eight hours during cool outside ambient temperatures is required prior to evaluation.
- Road surface: Clean (e.g. limited gravel), dry asphalt or concrete surface with sufficient space to complete two to three full vehicle turns at first gear idle speed.

Important: Limit the evaluation to four full vehicle circles.

1. With the engine running and the vehicle at rest, turn the steering wheel in the direction of the intended turns until full steering lock is achieved. Allow the steering wheel to come off of full lock position slightly to prevent power steering system damage.
A hand position at the bottom of the steering wheel (6 o'clock) assists in the evaluation, but is not required.
2. Engage the clutch in first gear (manual transmission) or release the brake and place the shifter in Drive (automatic transmission). The objectionable noise should be quickly detected once the vehicle has made one to two circles.
3. With the vehicle moving in a tight circle and the objectionable noise present, move the steering wheel in $\frac{1}{4}$ turn increments away from the full lock position. A maximum of $\frac{1}{2}$ to $\frac{3}{4}$ turn from full lock should be sufficient to determine the source.
4. With a hand at the 6 o'clock position as a reference indicating full lock, move the steering wheel to the 3 or 9 o'clock position and hold briefly to evaluate (two to three seconds). Continue turning from the 3 or 9 o'clock position to the 12 o'clock position and re-evaluate (two to three seconds). Repeat if necessary for a maximum of four complete vehicle circles.

For more information evaluating this condition, U.S. dealers should refer to the May 2010 Emerging Issues, Course Number 10210.05 — What's Hot: Cars: Corvette Vibration and Noise During Parking Lot Maneuvers (available at www.gmtraining.com). Dealers in Canada should refer to the June 2010 TAC TALK – Video on Demand (VOD).

Diagnosis

- Front Tire Hop: The objectionable noise will reduce in severity or cease during the turning sequence immediately when the steering wheel is turned ($\frac{1}{4}$ steering turn will typically dramatically reduce front tire chatter). In colder ambient temperatures ($<-18^{\circ}\text{C}$ (20°F)), an additional $\frac{1}{4}$ turn (total of $\frac{3}{4}$ turn) may be necessary to sufficiently eliminate the front tire noise.

If the diagnosis indicates the issue is tire hop, the condition is within the design criteria (normal condition) of the vehicle.

Important: DO NOT attempt repairs or change the differential fluid.

Inform the customer the noise is tire hop and is caused by the large amount of tire scrubbing across the pavement as the vehicle is turned.

- Rear Differential Chatter/Noise: At the $\frac{1}{4}$ and $\frac{1}{2}$ turn stops the objectionable noise WILL NOT reduce in severity (e.g. loud, volume) but may reduce in frequency (e.g. time between chatter events).

If the diagnosis indicates the differential is the source of the noise, follow the instructions below:

Important: DO NOT add a friction modifier in combination with DEXRON® LS fluid. The limited slip and active handling features may be adversely affected.

- 2005-2008 Models: Refer to the latest version of Corporate Bulletin Number 07-04-20-002. The service bulletin specifies to drain and fill, only with DEXRON® LS Gear Oil (75W-90), P/N 88862624 (in Canada, use 88862625) for customer concerns of rear differential chatter. Note: fluid used prior to is a synthetic 75W90 requiring 4-6 oz of friction modifier. DEXRON® LS contains friction modifier which does not require an additional additive.
- 2009 and later Models: At the start of production for the 2009 model year, DEXRON® LS Gear Oil (75W-90), P/N 88862624 (in Canada, use 88862625) was implemented to address rear differential chatter. Refer to Symptoms - Rear Drive Axle in SI for further diagnosis.

