

STAR Case



Case Number: S1821000001 Rev A

Release Date: 04/16/2021

Symptom/Vehicle Issue: Gear Ratio DTC's, Transmission Shift Concerns, Does Not Shift At Times, Shudders

Discussion: Tire circumference differences can cause all of the symptoms listed above. This document is written for many model years and many transmissions.

On an all-wheel drive, 4x4 (when driving in 4wd) or constant variable transmission (CVT) equipped vehicle, tire circumference if not all the same can cause shudders, binds and/or transfer case damage. In other vehicles with specific transmission applications such as the A580/NAG, gear ratio error DTCs may also be set due to excessive tire circumference variation. This variation produces individual wheel speeds that vary and exceed specified tolerances. If the vehicle exhibits any of the above-mentioned symptoms perform the below steps.

In addition, on vehicles equipped with a NAG transmission, the vehicle uses the ABS wheel speed sensor (s) as the output speed sensor of the transmission. Before determining the root cause of the transmission concern is internal, a few checks can be made first.

1. Verify and adjust tire air pressure to manufacturer's specifications for that vehicle. Use the Tire Pressure Placard pressure sticker located in the driver's doorjamb to set tire pressures Fig 1.

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Contact STAR Center, or your Technical Assistance Center Via ECCI or eCONTACT ticket if no solution is found

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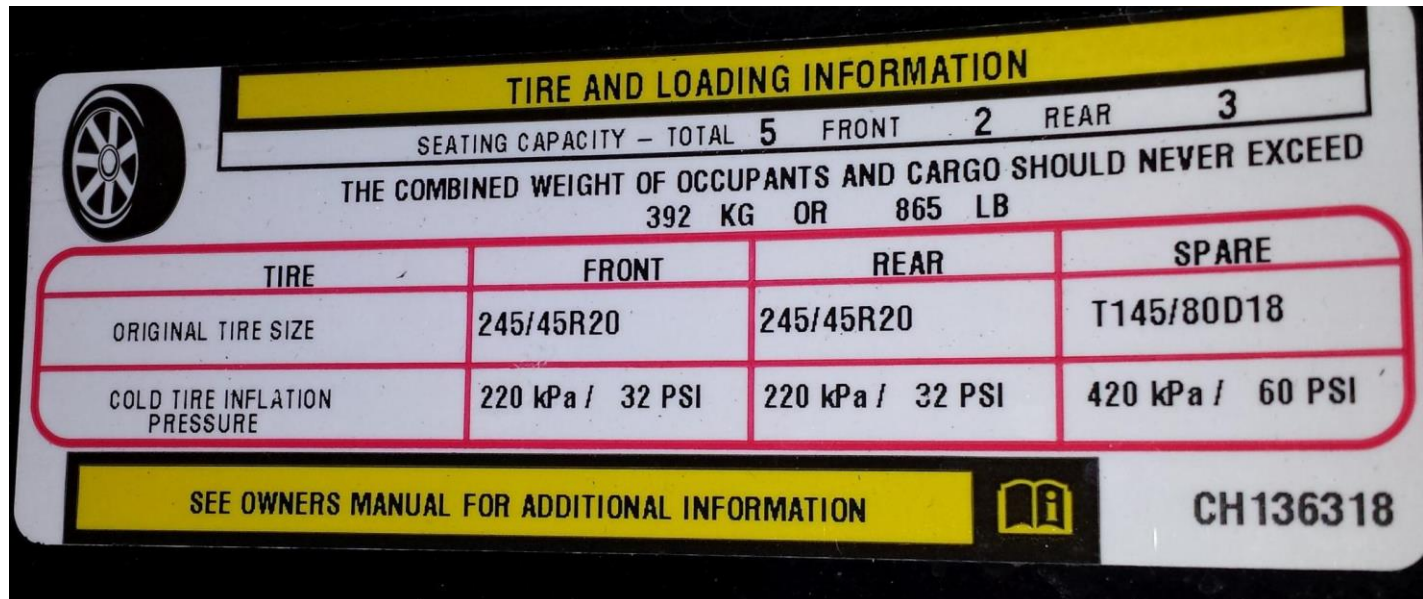


Fig 1 Example of Tire Pressure Placard Sticker located in driver's door jam.

2. Measure all road tires circumferences. They should be within an 1/8" of each other.

NOTE: Tire size/circumference variation can be caused by excessive tire wear variations. Circumference variation can also include tires that have the same advertised sidewall dimensions but are produced by different manufacturers.

To measure circumference use a cloth or flexible tape measure. Wrap the tape around the tire like shown below with the tape in the center of the tread (Fig 2). If the diameters are not within 1/8" circumference, inspect further to determine root cause and replace tire(s) as needed.

Possible causes of abnormal tire wear are (but not limited to) suspension or steering component failure or wear, alignment issues, bent components, hub or wheel bearing failure, lack of maintenance tire rotations.

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Fig 2 Measuring circumference

3. Test drive vehicle; verify all 4 wheel speed sensors read the same.
4. Make sure the vehicle has the proper gear ratio installed in differential.
5. Verify module programmed tires size matches the vehicles actual tires size and differential gear ratio.

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