VOLVO CAR
SERVICE AND PARTS BUSINESS

# Technical Journal

**TITLE:**

## Wheel / tire vibrations

| REF NO: | ISSUING DEPARTMENT: | CAR MARKET: | |
|---|---|---|---|
| TJ 32161.2.0 | Technical Service | United States and Canada | |
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| FUNC GROUP: 7726 | FUNC DESC: Summer tire, separate | Page 1 of 4 | |

**"Right first time in Time"**

### Attachment

### Vehicle Type

| Type | Eng | Eng Desc | Sales | Body | Gear | Steer | Model Year | Plant | Chassis range | Struc Week Range |
|---|---|---|---|---|---|---|---|---|---|---|
| 234 | | | | | | | 2017-9999 | | 0000001-9999999 | 201617-999952 |
| 235 | | | | | | | 2017-9999 | | 0000001-9999999 | 201624-999952 |
| 236 | | | | | | | 2017-9999 | | 0000001-9999999 | 201646-999952 |
| 256 | | | | | | | 2016-9999 | | 0000001-9999999 | 201505-999952 |

### CSC Customer Symptom Codes

| Code | Description |
|---|---|
| V1 | Tires/Vibration/out of round |

### VST Operation Number

| VST Operation Number | Description |
|---|---|
| Gen.Op. | General Operation |

### DTC Diagnostic Trouble Codes

Rows beginning with * are modified
Note! If using a printed copy of this Technical Journal, first check for the latest online version.

### Text

**DESCRIPTION:**
If vibrations occur in the car while driving high speed / freeway driving, follow advice under Service.

Vibrations may occur due to several reasons, usually driveline (especially AWD vehicles), or wheels (tire uniformity).
Tire uniformity is not unique for Volvo cars but could be more frequent when using bigger tire dimensions.

Tire uniformity can easily be described as “out-of-round” or oval, and it cannot be eliminated by only performing a normal wheel balancing.
Note: More information can be read in Internet, here is an example site explaining the issue:
https://en.wikipedia.org/wiki/Tire_uniformity

When wheels are assembled at our wheel supplier, then it is balanced and also tested for tire uniformity.
Once a wheel is found to be outside the specifications it will be reworked (matched).
During matching, the tire will be rotated slightly on the rim to find a better position on rim so that force variations will be lower.

The thresholds target levels was reduced from 2016 week 35, it will ensure less vibrations.
* Factory specifications from 16w35: S90/V90 with 20” Pirelli tires = 105N, V90CC = 90N. All other vehicles / tires remain 120N at tire pressure 3.0 Bar (44 PSI).

From 17w09, a new assembly line will be used at our wheel supplier, it will automatically match tire/rim positions on all wheels, it will result in less tire uniformity / force variations.
The purpose of automatic matching is to let the wheel balancing machine find the tires’ optimal position on rim before being mounted.
* Wheels that have been matched properly will have a white dot printed on the tire from factory.

**SERVICE:**
**Before carry out this TJ, always start with TJ 20803 to sort out if the problem is related to driveline or wheels.**

If the vibrations is caused by wheels, the follow these steps:

1. Tire pressure.
   Too high tire pressure will cause harshness and vibrations.
   Check that tire pressure is according to the recommended tire pressure table in the Tire Label attached at the B-pillar.

2. * S90 / V90 R-Design, front spring expanders.
   * The spring expanders must be removed during PDS.
   * Check and if needed remove front spring expanders.

3. Unbalanced wheel.
   It may happen that balance weights are missing, perform a normal wheel balancing.

4. Cavity reducing foam loose inside tire.
   Note: this has been seen primarily on S90/V90 20” summer tires (introduced in production from 2016w40).
   If heavy vibrations occur, dismantle tire from the rim and check the cavity reducing foam.
   If the foam is loose then contact tire manufacturer for a replacement tire according to their warranty procedure.
   Note: If in case the tire has a too high force variations and is equipped with cavity reducing foam, check if there are any signs of water or humidity in the foam, for instance take a paper tissue and press it against the foam and check if paper tissue get wet. If water/humidity is found, send a Vehicle Report with photos.

5. Tire uniformity (force variations out-of-round tires).
   If vibrations occur and normal wheel balancing does not solve the issue, then the root cause could be tire uniformity and/or poor matching of rim and tire.
   The best way to detect and solve this is to use a special wheel balancing machine that can measure force variations in the tire (such as the Hunter GSP9700).
   NOTE: In case the workshop does not have a road force balancer it may be possible to contact an external professional tire workshop.
   If this is done, please save log files for force variations values and tire pressure in case it will be needed for further analysis.

6. Flat spotted tires (due to parking / storage).
   Flat-spotting can be a temporary problem since the tire will round out as driving warms it up. Cold ambient temperatures make rubber compounds stiffer, increasing their tendency to flatspot.
   The longer tires remain stationary, the likely they are going to be flat spotted. Tires on vehicles stored on the ground for many months can be permanently flat-spotted.
   Note that during transport or storage, it is important to keep a higher tire pressure to avoid flat spots.
   * Volvo Cars is delivering vehicles from factory using a transport tire pressure at 2.8-3.2 bar. Investigations are ongoing to increase the transport tire pressure to 3.0-3.4 bar.
   During storage it is also important to following the storage program, in order to avoid tires being flat spotted.
   Remember to only lower the tire pressure to correct tire pressure once the vehicle is about to be delivered to customer.
   * In most cases it should be possible to cure flat-spotted tires, but it requires to drive the car so that tire temperature reaches the temperature as when the car was parked.
   * Note: If the car was parked at warm temperatures or if the tire temperature was high when parked, then it may not be possible to drive the car enough to reach the same temperature during winter / cold weather conditions. In these cases try to contact a professional tire workshop to check if they have special equipment or procedure which can remove flat spots.

7. * Flat spotted tires (due to hard braking / misuse).
   * If customer deactivated the ABS system and braked the car with locked wheels, then it can make permanent flat spots which cannot be cured.
   * Damaged tires should be replaced.

8. Rim runout.
   Rims may get permanently damaged (deformed) if driving into pot-holes.
   A damaged rim should be detected in the wheel alignment machine, eventually remove tire from rim before measurement is done to see how severe the damage is.
   Damaged rims should be replaced.

9. Snow / ice / mud, etc. stored in rim (inner side).
   Clean rims from snow/ice/mud.
   To reduce the risk for having a repeat repair it could be good to apply some rim wax on inner surface of rim.
   * Also advice customer to install a mudflap / snow deflector, accessory kit PN 31449094, which will reduce the problem for the rear wheels.

**VEHICLE REPORT:**
Yes, please submit a Vehicle Report if the service solution described in this TJ has no effect. Use concern area “Vehicle Report” and sub concern area “Support not needed”, use function group 7726.