VOLVO CAR
SERVICE AND PARTS BUSINESS

Technical Journal

TITLE:

Vibrations due to wheels and tire uniformity / force variation

REF NO:	ISSUING DEPARTMENT:	CAR MARKET:	
TJ 32161.1.0	Technical Service	United States and Canada	
PARTNER: 3 US 7510 Volvo Car USA		ISSUE DATE: 2017-01-25	STATUS DATE: 2017-01-30
FUNC GROUP: 7726	FUNC DESC: Summer tire, separate	Page 1 of 3	

"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

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 on the Internet, here is an example site explaining the issue:
https://en.wikipedia.org/wiki/Tire_uniformity

When wheels are assembled at our wheel supplier, they are 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 the rim so that force variations will be lower.

The thresholds target levels was reduced from 2016 week 35, it will ensure less vibrations.
New 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.

SERVICE:
Before carrying 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, then 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. Unbalanced wheel.
   It may happen that balance weights are missing, perform a normal wheel balancing.

3. 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 for cavity reducing foam. If the foam is loose then replace the tire according to the tire manufacturer’s warranty procedure.

4. 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(road force) in the tire (such as the Hunter GSP9700).
   Note: In case the workshop does not have a road force balancer in the shop, 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.

5. 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 an higher tire pressure to avoid flat spot. Volvo Cars are delivering the vehicles from factory using a transport tire pressure at 3 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.

6. 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.

7. 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 wax on inner surface of rim.

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.