



Technical Journal

TITLE:

Vibrations due to wheel / tire

REF NO:
TJ 32161.6.1

ISSUING DEPARTMENT:
Technical Service

CAR MARKET:
United States and Canada

PARTNER:
3 US 7510 Volvo Car USA

ISSUE DATE:
2018-07-12

STATUS DATE:
2018-07-13

FUNC GROUP:
7726

FUNC DESC:
Summer tire, separate

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"Right first time in Time"

Attachment

File Name	File Size
TJ 32161.jpg	0.0944 MB

Vehicle Type

Type	Eng	Eng Desc	Sales	Body	Gear	Steer	Model Year	Plant	Chassis range	Struc Week Range
234							2017-2017		0000001-9999999	201617-999952
235							2017-9999		0000001-9999999	201624-999952
236							2017-9999		0000001-9999999	201646-999952
238							2018-9999		0000001-9999999	201646-999952
246							2018-9999		0000001-9999999	201717-999952
256							2016-9999		0000001-9999999	201505-999952
536							2019-9999		0000001-9999999	201746-999952

CSC Customer Symptom Codes

Code	Description
W2	Front/rear axle/Vibration/shake
V1	Tires/Vibration/out of round

VST Operation Number

VST Operation Number	Description
07726-6	Road Force Balancing



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 is not unique to Volvo cars but could be more frequent when using bigger tire dimensions, for more information about tire uniformity issues please reference either SAE or ISO information on this subject and which is readily available. https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=13&cad=rja&uact=8&ved=0ahUKEwj2ndir_aPaAhWitlkKHZ72DmwQFghtMAw&url=https%3A%2F%2Fwww.iso.org%2Fobp%2Fui%2F%231iso%3Astd%3A21715%3Aen&usg=AOvVaw1PGF-1BgNumOeW0r9dC3MO

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 are caused by driveline, or unknown cause, send a Vehicle Report.

It is more likely that the vibrations are coming from the wheels/tires, then check the steps below:

1. Unbalanced wheel.

Check that the rim is equipped with balancing weights. For newer wheels there should be visible white and yellow dots printed on tire (inner side) indicating the location of the balancing weights, yellow for inner side, white for outer side (see photo). If balancing weights are missing but there are white and yellow dots on the tire, then it is likely that the weights has been lost and it is then needed to rebalance the tire.

* A new type of balance weight will be introduced 2018 Q3 for higher accuracy and better adhesion to the rim.

* If it is found that the tire have rotated on the rim (causing imbalance), please send a TIE Vehicle Report and include photos if vehicle age is less than 12 months.

2. Tire pressure.

* Too high tire pressure will cause harshness and increased vibrations.

Check that tire pressure is according to the recommended tire pressure table in the Tire Label attached at the B-pillar. If possible use the Comfort or Recommended tire pressure.

3. * Tire bead not fully seat against the rim.

* It is possible that the tire bead may not fully seat against the rim. Please make sure the tire bead has fully expanded against the rim before balancing. Or there is a risk for incorrect balancing which could remain even after the tire bead has expanded into place.



4. R-Design and front spring expanders.
 - * If front spring expanders are not removed during PDS it will cause harshness and vibrations in the front suspension.Check and if needed remove front spring expanders.
5. Heavy vibrations due to loose cavity reducing foam inside tire.
 - * Cavity reducing foam are usually installed on bigger wheel sizes. Pirelli PNCS, Michelin Acoustic or Conti Silent is written outside the tire sidewall if cavity foam is equipped inside the tire.
 - * Loose foam has primarily been seen only on XC90/S90/V90 20" summer tires.If heavy vibrations occur, dismantle the 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 foam is loose, then also check if the foam has signs of humidity or water. If this is found, send a vehicle report with photos.
6. 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 or Road Force Elite).

Check TIE Service Product Journal (SPJ) 32993 for more requirements regarding the force measurement machines.

Some Volvo workshops does not have this machine, but it may be possible to contact the tire manufacturer for a better analyse of the tire, or contact external professional tire workshop.

Note: If a Vehicle Report is created, it is important to also include log files from the force variations machine (or photos). Note also include tire pressure for this measurement.
7. Flat spotted tires (due to long time 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 spots. Volvo Cars is delivering vehicles from factory using a transport tire pressure at 2.8-3.2 bar (40-46 PSI).
 - * During storage it is also important to follow the storage program (to drive the car and if needed also add air to the tires), in order to avoid tires being flat spotted.Remember to lower the tire pressure to Comfort / Recommended tire pressure first during the PDS. In most cases it should be possible to cure flat-spotted tires, but it require to drive the car so that tire temperature reach 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 you can refer to Special tool bulletin ST-227.



8. 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.

9. Rim run-out.

New rims are usually not causing any vibrations. However, rims damaged due to impacts (such as hitting a pot-hole) may cause vibrations.

A damaged rim should be detected in the wheel balancing machine or in a force variation machine.

It might be needed to remove the tire to see how severe the damage is.

Place both the suspect rim and a new rim besides each other and measure their height. If the suspect rim is oval or has less or higher height compared with the new rim then it is damaged and must be replaced (by customer or insurance).

10. 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, it can reduce the problem for the rear wheels.

11. * Vibrations due to the rim is asymmetrically installed on the wheel hub.

* The rim should be installed exactly on the center position on the wheel hub, else vibrations can occur if the rim is asymmetrically mounted on the wheel hub.

* Try to solve the issue by removing the wheel from the axle and then reinstall it. If there is a suspicion about too big play between rim and wheel hub;

Loosen the rim and clean the parts. Measure the diameter of the center hole in the rim, and also measure the diameter of the wheel hub center cone.

* The two diameters should be fairly equal, the rims should be slightly bigger (about 0.1 - 0.2 mm).

* In case the play is too big and it cause vibrations, send a TIE Vehicle Report with all measurements, photos and part number of the rim.

VEHICLE REPORT:

Yes, please submit a Vehicle Report if the service solution described in this TJ has no effect and it is believed that the vibrations are caused by something else than wheels/tires.

Use concern area "Vehicle Report" and sub concern area "Support not needed", use function group 2185.

Operation 07726-6 can be claimed up to a maximum of 2.5 hours.

If less than 2.5 hours is needed, the claim shall not exceed the actual punch time flagged.

Usage of operation 07726-6 is subject to the general operation time policy, *including a separate punch time* for each repair.

To view TJ attachment continue to next page. This TJ has one attachment.

