



# Technical Journal

TITLE:

**Test schedule for vehicle speed dependent vibrations at highway speeds**

<b>REF NO:</b> TJ 20803.20.1	<b>ISSUING DEPARTMENT:</b> Technical Service	<b>CAR MARKET:</b> United States and Canada	
<b>PARTNER:</b> 3 US 7510 Volvo Car USA		<b>ISSUE DATE:</b> 2019-10-02	<b>STATUS DATE:</b> 2019-10-15
<b>FUNC GROUP:</b> 2180	<b>FUNC DESC:</b> Engine mounting	Page 1 of 8	

“Right first time in Time”

## Attachment

File Name	File Size
T9379EN01.docx	0.0435 MB
TJ20803 instruction_EN.pptx	0.7309 MB

## Vehicle Type

Type	Eng	Eng Desc	Sales	Body	Gear	Steer	Model Year	Plant	Chassis range	Struc Week Range
224							2019-9999		0000001-9999999	201835-999952
225							2019-9999		0000001-9999999	201817-999952
227							2019-9999		0000001-9999999	201846-999952
234							2017-2017		0000001-9999999	201617-999952
235							2017-9999		0000001-9999999	201624-999952
236							2017-9999		0000001-9999999	201646-999952
238							2017-9999		0000001-9999999	201646-999952
246							2018-9999		0000001-9999999	201717-999952
256							2016-9999		0000001-0999999	201505-999952



## CSC Customer Symptom Codes

Code	Description
C4	Complete vehicle/Unusual noise/While driving
F3	Complete vehicle/Unusual noise/During acceleration
F6	Complete vehicle/Unusual noise/During deceleration
8N	Driving/Unusual noise/Unsure when/at all times
F1	Driving/Unusual noise/At engine shut off
F2	Driving/Unusual noise/During acceleration
ZE	Idling/Unusual noise
XB	Exhaust system/Rattle/rumble
WX	Engine cooling fan (FC)/Unusual noise
F4	Clutch/Unusual noise/Noise from engine compartment
C3	Automatic transmission/Unusual noise
F5	Gear selector/Unusual noise
C6	Manual transmission/Unusual noise
D2	Front/rear axle/Unusual noise
WV	Suspension/Clicking/clonking noise/At start/stop
WY	Suspension/Clicking/clonking noise/Unsure when/at all times
X1	Suspension/Unusual noise
H3	Steering wheel/Squeak/rattle/Steering column/wheel
H4	Steering/Unusual noise/Unsure when/at all times
X8	Steering/Unusual noise/At full turn
E7	Suspension/Unusual noise
WZ	Suspension/Clicking/clonking noise
8J	Shock absorption/Unusual noise
1M	Wheels, tires, hubs/Unusual noise/Front
1N	Wheels, tires, hubs/Unusual noise/Rear
V6	Complete vehicle/Vibration/When driving below 45 MPH
V7	Complete vehicle/Vibration/When driving above 45 MPH
NY	Automatic transmission/Vibration
V9	Gear selector/Vibration
8A	Manual transmission/Vibration
W2	Front/rear axle/Vibration/shake
V2	Steering wheel/Vibration/shimmy/When driving above 45 mph
W3	Steering wheel/Vibration/shimmy/When driving below 45 mph
X7	Steering wheel/Vibration/shimmy/At idle
V1	Tires/Vibration/out of round

## VST Operation Number

## 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:

\* Update in some of the attached TJ instructions.

This TJ is for vibrations at 80-135 km/h.

When writing a report, attach force variation measurement as instruction says.

In case of complain of Noise, Vibration or Harshness, NVH, and you need help from CMQ, some “tools” have been created to help you to do a better and more precise fault tracing.

1. Question form to fill in and attach along with a vehicle report for faster support
2. Guideline to help you to sort out NVH related problems.

### SERVICE:

N/A

### VEHICLE REPORT:

Yes, together with a complete filled in attachment, included in this journal.

The attachment **MUST** be in English when sending in it to CMQ.

Use always function group 2180.

**To view TJ attachment continue to next page. This TJ has two attachments.**



<b>Title</b>	Fault-tracing schedule NVH	<b>Page:</b>	1 (3)
<b>Action</b>	Test protocol	<b>Operation number:</b>	

<b>Issue</b>	<b>Date</b>	<b>Cause</b>
1	2015-02	First issue

**Affected vehicles**

<b>Year</b>	<b>Model</b>	<b>Engine</b>	<b>Transmission</b>	<b>Steering</b>	<b>Chassis number</b>
All	All				

**Special tools**

<b>Description</b>	<b>Tool number</b>
CHASSIS-EAR	9814108

**Relevant vehicle**

<b>VIN</b>	<b>Model</b>	<b>Year</b>	<b>Engine</b>	<b>Transmission</b>	<b>Steering</b>

1.

**Note! ALWAYS** start by inflating the tyres to **comfort** pressure.

**Note! ALWAYS** test drive with the customer and allow the customer to describe the interference.

**Note! ALWAYS** record the noise and include in the report.

2.

### Questions to be filled in with the customer

1: When was the interference noticed for the first time?

Odometer: \_\_\_\_\_ KM

Odometer: \_\_\_\_\_ Miles

2: What type of interference?

- Noise
- Vibration

2:2 Experienced in?

- The steering wheel
- Floor
- Seats: Front
- Seats: Rear
- Seats: Third row (XC90)

3: When does the interference occur?

- Stationary vehicle during "revving engine"
- uphill
- Downhill
- Whilst driving
- Rolling vehicle
- Acceleration
- Deceleration

Speed: \_\_\_\_\_ km/h

Speed: \_\_\_\_\_ mph

Engine speed: \_\_\_\_\_ Rpm

Which gear(s)? \_\_\_\_\_

- Recurring
- Sporadic

4: Weather conditions when the interference occurs?

Outdoor temperature: \_\_\_\_\_ °C

- Dry road
- Wet road

5: What type of road surface?

\_\_\_\_\_

6: Vehicle status?

- Cold
- Hot

### Further questions

7: Engine temperature? \_\_\_\_\_ °C

8: If there is a sound file, where is it recorded?

- In the passenger compartment, front seat
- In the passenger compartment, rear seat
- Under the vehicle
- In the engine compartment

Describe at what second the noise is heard. \_\_\_\_\_ Sec?

9: Has Chassis-ear, 9814108, been used for fault tracing?

- Yes
- No

10: What type of recording equipment has been used? \_\_\_\_\_

11: Space for further comments.

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# VIBRATIONS IN SPA CARS AT CONSTANT SPEED AND MODERATE ACCELERATION (MAINLY 80 - 135 KM/H)

## ALL VEHICLES



### Tyres equipped with cavity reducing foam

If the vehicle has foam filled tyres, start with swapping wheels from a known good car. If vibration is gone, start refitting original wheels one by one until vibration returns. Remove the wheel/s which are causing the vibration and remove the tyre, from the wheel for inspection.

### Before the test

Check the status of the wheels regarding wear, damage, dirt and tyre pressure. (Comfort pressure)

Drive the car at least 15 minutes at Smooth, straight and dry road to get rid of the flat spot.

Lift the car directly after the 15 minutes' drive or demount the tires and store them lying, if you don't continue working with the car directly.

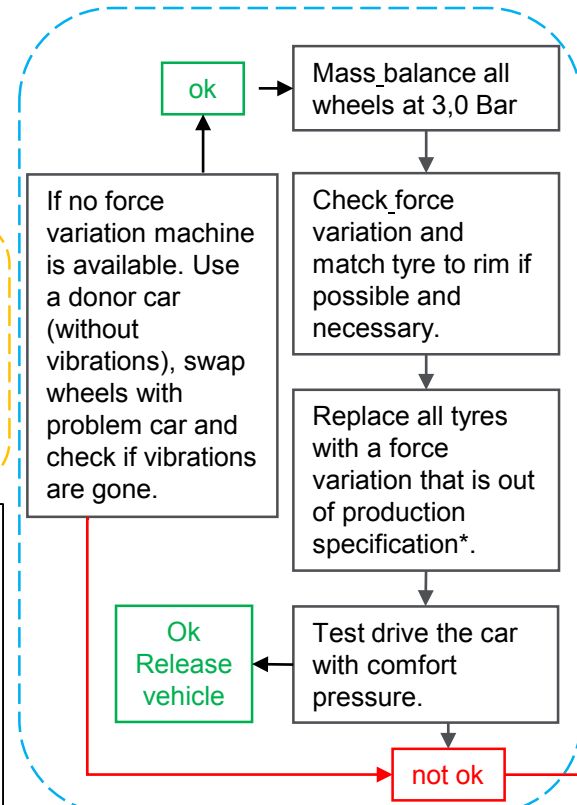
More info about vibration due to wheel/tyre, see TJ32161

\*The production requirement regarding force variation is set for a tyre pressure of **3.0 bar**.

- S60/V60 105N ( 23 lb. )**
- XC60 120N ( 26 lb. )**
- S90/V90 105N ( 23 lb. )**
- V90CC 90N ( 20 lb. )**
- XC90 120N ( 26 lb. )**

If the force variation value is higher than that, the tire is not up to specification and has to be replaced. Claim tyres which are out of production specification to the supplier.

### Wheels



### Analyse and report

Most customers will accept minor vibrations up to 120 N(26lb) at Comfort tyre pressure, however in some cases to be able to satisfy a critical customer it may be needed to lower the requirement to 65 N(14lb) by following the service procedures mentioned in TJ 32161.

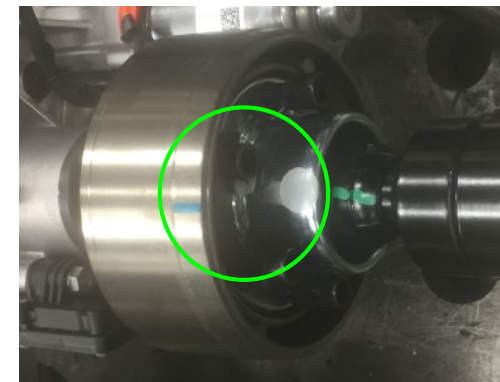
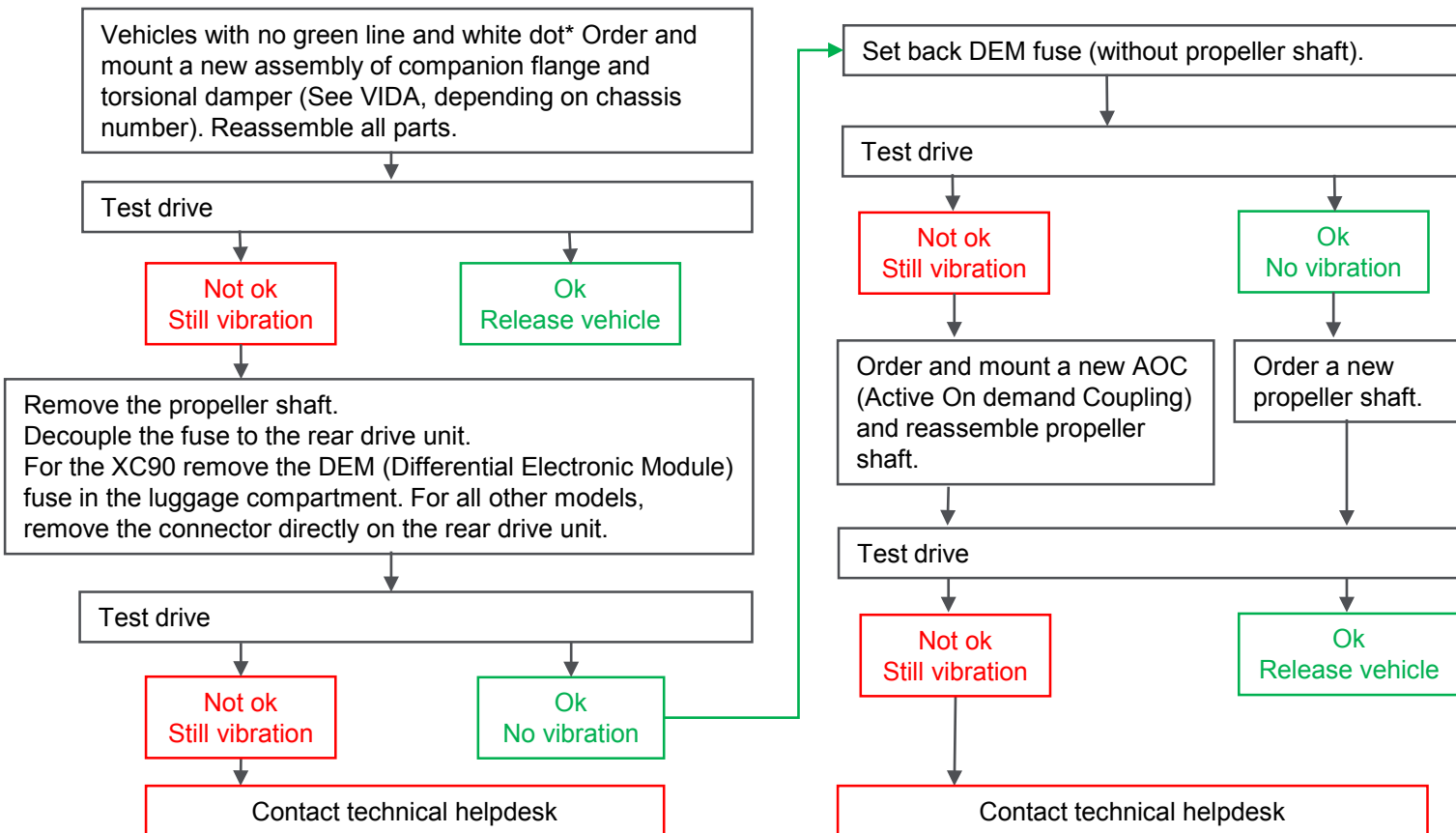
Measure force variation again and save the measurement values:

1. with comfort pressure
2. with a tyre pressure of 3.0 bar

Send force variation and pressure values to technical helpdesk

AWD see next page

# ALL WHEEL DRIVEN CAR *(MAKE SURE THAT TYRES ARE OKAY, SEE PAGE 1)*



\*White dot against blue line (+/-30 degrees)  
(Green line is just for supplier, clamp correctly mounted)  
**If not match blue line against white dot.**