Vibration Analysis Worksheet

This Bulletin has been revised to add the 2015 Model Year and to edit the ring gear backlash measurements in the Vibration Analysis Worksheet. Please discard Corporate Bulletin Number 03-00-91-001F.

When diagnosing vibration concerns, use the following worksheet in conjunction with the appropriate Vibration Analysis-Road testing procedure in the Vibration Correction sub-section in SI. FILL OUT ONLY THE APPLICABLE PORTION OF THE WORKSHEET THAT APPLIES TO THE VIBRATION / NOISE.

Refer to the appropriate section of SI for specifications and repair procedures that are related to the vibration concern.
To:
Dealer:
Fax Number:

VIN: __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __

Procedure Performed By:
Date:
Model:
Year: Gear Ratio:
Odometer:
VIN: __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __ __

TAC Case #, if applicable:

Conditions During Road Test Procedures
As condition occurs: Engine RPM:__________
Vehicle Speed:__________

Vibration/Noise detected during the following road test procedures:
Engine RPM:__________ Vehicle Speed:__________

Slow Acceleration Test: Yes:__________ No:__________
Neutral Coast-Down Test: Yes:__________ No:__________
Downshift Test: Yes:__________ No:__________

Neutral Run-Up Test: Yes:__________ No:__________
Brake Torque Test: Yes:__________ No:__________
Steering Input Test: Yes:__________ No:__________

Standing Start Acceleration (Launch Shudder) Test: Yes:__________ No:__________
Vibration/Noise Eliminated with TCC Commanded On: Yes:__________ No:__________
Vibration/Noise Eliminated with TCC Commanded Off: Yes:__________ No:__________
Vibration/Noise Duplicated on Hoist: Yes:__________ No:__________

When using the EVA, always take a snapshot. This will help determine which vibration shows up the most.

Important: Vibrate software can also be used to assist in vibration diagnosis. Refer to Vibrate Software Description and Operation in SI.

EVA Readings
Refer to Electronic Vibration Analyzer (EVA) Description and Operation in SI for more detailed information.

Important: As a reminder, place the EVA sensor where the vibration is felt by the customer or on the test drive i.e.: if the vibration complaint is from the seat then place the sensor on the seat track, if the vibration complaint is from the steering wheel then attach the sensor to the steering column. Ensure the word "UP" on the sensor is physically facing up. The typical areas are the seat track, the steering column or the instrument panel. Locating the EVA sensor on additional area (i.e. the right fender, left fender, right quarter panel, left quarter panel, rear seat track, etc.) may also assist in determining the component causing the vibration/noise. The key is to look for the same Hz reading with the greatest amplitude G readings.

FILL OUT ONLY THE APPLICABLE PORTION OF THE WORKSHEET THAT APPLIES TO THE VIBRATION/NOISE:

Sensor at Steering Column:
1st Line MPH/KPH:__________ HZ:__________ Gs:__________
2nd Line MPH/KPH:__________ HZ:__________ Gs:__________

Sensor at Drivers Seat Rail:
Sensor at Drivers Seat Rail:
1st Line MPH/KPH:__________ HZ:__________ Gs:__________
2nd Line MPH/KPH:__________ HZ:__________ Gs:__________

Sensor at Passenger Seat Rail:
1st Line MPH/KPH:__________ HZ:__________ Gs:__________
2nd Line MPH/KPH:__________ HZ:__________ Gs:__________

Driveshaft Runout:
Is runout within specification? Yes__________ No__________
Initial: Frt:__________ Center:__________ Rear:__________ Stub Shaft:__________
Current: Frt:__________ Center:__________ Rear:__________ Stub Shaft:__________

Pinion Flange Runout Reading:__________
Has a system balance been attempted: Yes__________ No__________ (If no, perform a System Balance)
Were the drums removed to system balance? Yes__________ No__________
Initial: HZ__________ Gs__________
Current: HZ__________ Gs__________

Hose clamps added: Yes__________ No__________
Prop shaft indexed? Yes__________ No__________

If a System Balance has been attempted but the vibration is still present or system balance was not able to be achieved, check the ring gear backlash at each tooth of the ring gear. Note that excessive ring gear runout may result in a first order tire speed or first order prop shaft speed concern.

Backlash at each tooth on the ring gear (readings should not vary more than 0.050 mm (0.002 in)):

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Does the vehicle have any of the following components attached?
Pinion damper: Yes__________ No__________
Pinion flange damper: Yes__________ No__________
Exhaust damper: Yes__________ No__________
Initial: Front angle:__________ Center Angle:__________ Rear Angle:__________
Current: Front angle:__________ Center Angle:__________ Rear Angle:__________

Were shims added to the following?
Transmission/transfer case mount: Yes__________ No__________
Pinion nose (rear springs): Yes__________ No__________
Center Support Mount: Yes__________ No__________

Tire Size and Brand:_____________________________________

Record wheel balance information below if available record weight information prior to balance and after balance.

Wheel/Tire balance
Right rear: Inner Weight:__________ Outer Weight:__________
Left rear: Inner Weight:__________ Outer Weight:__________
Right front: Inner Weight:__________ Outer Weight:__________
Left front: Inner Weight:__________ Outer Weight:__________

Wheel/Tire Runouts on vehicle (max. 0.050 in (1.27 mm))
Refer to the latest version of Corporate Bulletin Number 00-03-10-006 for tire radial force variation information.
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<table>
<thead>
<tr>
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<th>Right rear</th>
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<tbody>
<tr>
<td>Inner lateral</td>
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<td>Center radial</td>
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<tr>
<td>Mounting surface runouts (max. 0.005 in (0.127 mm))</td>
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<td>Flange, right rear</td>
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<td>Hub, right front:</td>
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<td>Flange, left rear</td>
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<td>Hub, left front:</td>
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<tr>
<td>Wheel stud runouts (max. 0.008 in (0.203 mm))</td>
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<td>Flange, right rear</td>
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<tr>
<td>Flange, left rear</td>
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<td>Hub, left front:</td>
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GM bulletins are intended for use by professional technicians, NOT a "do-it-yourselfer". They are written to inform these technicians of conditions that may occur on some vehicles, or to provide information that could assist in the proper service of a vehicle. Properly trained technicians have the equipment, tools, safety instructions, and know-how to do a job properly and safely. If a condition is described, DO NOT assume that the bulletin applies to your vehicle, or that your vehicle will have that condition. See your GM dealer for information on whether your vehicle may benefit from the information.

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