



# Service Bulletin

## INFORMATION

**Subject:**            **Vibration Analysis Worksheet**

**Models:**            **2015 and Prior GM Passenger Cars and Trucks**

***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.

**Vibration Analysis Worksheet**

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)):

1 \_\_\_\_\_ 2 \_\_\_\_\_ 3 \_\_\_\_\_ 4 \_\_\_\_\_ 5 \_\_\_\_\_ 6 \_\_\_\_\_ 7 \_\_\_\_\_ 8 \_\_\_\_\_ 9 \_\_\_\_\_ 10 \_\_\_\_\_

11 \_\_\_\_\_ 12 \_\_\_\_\_ 13 \_\_\_\_\_ 14 \_\_\_\_\_ 15 \_\_\_\_\_ 16 \_\_\_\_\_ 17 \_\_\_\_\_ 18 \_\_\_\_\_ 19 \_\_\_\_\_ 20 \_\_\_\_\_

21 \_\_\_\_\_ 22 \_\_\_\_\_ 23 \_\_\_\_\_ 24 \_\_\_\_\_ 25 \_\_\_\_\_ 26 \_\_\_\_\_ 27 \_\_\_\_\_ 28 \_\_\_\_\_ 29 \_\_\_\_\_ 30 \_\_\_\_\_

31 \_\_\_\_\_ 32 \_\_\_\_\_ 33 \_\_\_\_\_ 34 \_\_\_\_\_ 35 \_\_\_\_\_ 36 \_\_\_\_\_ 37 \_\_\_\_\_ 38 \_\_\_\_\_ 39 \_\_\_\_\_ 40 \_\_\_\_\_

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.

Refer to the latest version of Corporate Bulletin Number 00-03-10-006 for tire radial force variation information.

Right rear: Inner lateral: \_\_\_\_\_ Center radial: \_\_\_\_\_

Left rear: Inner lateral: \_\_\_\_\_ Center radial: \_\_\_\_\_

Right front: Inner lateral: \_\_\_\_\_ Center radial: \_\_\_\_\_

Left front: Inner lateral: \_\_\_\_\_ Center radial: \_\_\_\_\_

Mounting surface runouts (max. 0.005 in (0.127 mm))

Flange, right rear: \_\_\_\_\_ Hub, right front: \_\_\_\_\_

Flange, left rear: \_\_\_\_\_ Hub, left front: \_\_\_\_\_

Wheel stud runouts (max. 0.008 in (0.203 mm))

Flange, right rear: \_\_\_\_\_ Hub, right front: \_\_\_\_\_

Flange, left rear: \_\_\_\_\_ Hub, left front: \_\_\_\_\_

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.



WE SUPPORT VOLUNTARY TECHNICIAN CERTIFICATION