

## **Service Bulletin**

Bulletin No.: 03-00-91-0011

Date: November, 2023

## **INFORMATION**

**Subject: Vibration Analysis Worksheet** 

Models: 2024 and Prior GM Passenger Cars and Trucks

This bulletin has been revised to add the 2023-2024 Model Years and first Important statement. Please discard Corporate Bulletin Number 03-00-91-001H.

Important: Service agents must comply with all International, Federal, State, Provincial, and/or Local laws applicable to the activities it performs under this bulletin, including but not limited to handling, deploying, preparing, classifying, packaging, marking, labeling, and shipping dangerous goods. In the event of a conflict between the procedures set forth in this bulletin and the laws that apply to your dealership, you must follow those applicable laws.

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						
VIN						
Procedure Performed By:						
Date:						
Model:						
Year:						
Gear Ratio:						
Odometer:						
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 RPMVehicle Speed						
Slow Acceleration Test: Yes No						
Neutral Coast-Down Test: Yes No						
Downshift Test: Yes No						
Neutral Run-Up Test: Yes No						

Bulletin No.: 03-00-91-001I

		Vib	ration Analysi	s Workshee	t				
Brake Torque Test: Yes	No								
Steering Input Test: Yes_	No	)	_						
Standing Start Acceleration				_No					
Vibration/Noise Eliminate	d with TCC Co	mmanded O	n: Yes	No					
Vibration/Noise Eliminate	d with TCC Co	mmanded O	ff: Yes	No					
Vibration/Noise Duplicated on Hoist: Yes No When using the Pico Scope, always save the file. This will allow for review and help determine which vibration shows up the most. Refer to <i>Vibration Analysis - Road Testing (CH-51450-NVH Oscilloscope)</i> in SI. <b>Pico Scope Readings</b>									
Refer to Oscilloscope Dia	•	•	•						
<b>Important:</b> As a reminder, the CH-51450-TA183 Accelerometer incorporates a 3 m (9.8 ft) cord that allows the sensor to be placed on virtually any component of the vehicle where a vibration concern is felt. 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 Accelerometer is properly orientated. The typical areas are the seat track, the steering column or the instrument panel. Locating the Accelerometer on additional areas (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 mg readings.									
FILL OUT ONLY THE AP	PLICABLE PC	RTION OF T	HE WORKSHE	ET THAT AI	PPLIES TO 1	HE VIBRA	TION/NOISE:		
Engine Readings:									
Initial: E0.5:	E1:	E2:	E3:	E4:_					
Current: E0.5:	_ E1:	E2:	E3:	E4	:	_			
Prop/Driveshaft Readings Initial: P1: P2 Current: P1:	2:	_							
Driveshaft Runout: Is runout within specificat Initial: Frt: Ce	enter:	Rear:	Stub	Shaft:					
Is runout within specificat Initial: Frt: Ce Current: Frt:	enter: Center:	Rear: Rear:_	Stub Stu	ub Shaft:					
Is runout within specificat Initial: Frt: Ce Current: Frt:	enter: Center:	Rear: Rear:_	Stub Stu	ub Shaft:		stom Balan	ca)		
Is runout within specificat Initial: Frt: Ce Current: Frt: Pinion Flange Runout Re Has a system balance be Were the drums removed	enter: Center: ading: en attempted: to system bal	Rear: Rear:_  Yes	Stub Stu No	ub Shaft: (If no, p		stem Balan	ce)		
Is runout within specificat Initial: Frt: Ce Current: Frt: Pinion Flange Runout Re Has a system balance be Were the drums removed Initial: HZ Gs	enter: Center: ading: en attempted: to system bal	Rear:Rear:Yesance? Yes	Stub Stu No	ub Shaft: (If no, p		stem Balan	ce)		
Is runout within specificat Initial: Frt: Ce Current: Frt: Pinion Flange Runout Re Has a system balance be Were the drums removed Initial: HZ Gs Current: HZ (Ce To Comment: HZ	enter: Center: ading: en attempted: to system bal s Gs	Rear: Rear:_ Yes ance? Yes	Stub Stu No	ub Shaft: (If no, p		stem Balan	ce)		
Is runout within specificat Initial: Frt: Ce Current: Frt: Pinion Flange Runout Re Has a system balance be Were the drums removed Initial: HZ Gs Current: HZ Hose clamps added: Yes_	enter: Center: ading: en attempted: to system bal GS N	Rear: Rear:_ Yes ance? Yes _ lo	Stub Stu No	ub Shaft: (If no, p		stem Balan	ce)		
Is runout within specificat Initial: Frt: Ce Current: Frt: Pinion Flange Runout Re Has a system balance be Were the drums removed Initial: HZ Gs Current: HZ Hose clamps added: Yes_Prop shaft indexed? Yes_If a System Balance has the ring gear backlash at first order prop shaft spee	enter: Center: ading: en attempted: to system bal G Gs N Deen attempte each tooth of ted concern.	Rear: Rear: Rear: Yes ance? Yes  lo o d but the vibr he ring gear.	StubStuNoNonoation is still previous that excess	ub Shaft: (If no, p	perform a Sys em balance w ar runout ma	ras not able y result in a	to be achieved, o		
Is runout within specificat Initial: Frt: Ce Current: Frt: Pinion Flange Runout Re Has a system balance be Were the drums removed Initial: HZ Gs Current: HZ Hose clamps added: Yes_ Prop shaft indexed? Yes_ If a System Balance has the ring gear backlash at first order prop shaft spee Backlash at each tooth or	enter:enter:enter:en attempted: to system bal sN  GSN  Deen attempte each tooth of to d concern.  In the ring gear	Rear: Rear: Yes ance? Yes  lo o d but the vibr he ring gear. (readings sh	StubStuNoNonoation is still previous that excess	ub Shaft: (If no, p	perform a Sys em balance w ar runout ma	ras not able y result in a	to be achieved, o		
Is runout within specificat Initial: Frt: Ce Current: Frt: Pinion Flange Runout Re Has a system balance be Were the drums removed Initial: HZ Gs Current: HZ Hose clamps added: Yes_Prop shaft indexed? Yes_Prop shaft indexed? Yes_If a System Balance has a the ring gear backlash at first order prop shaft spee Backlash at each tooth or Note: The Ring Gear tee	enter: Center: ading: en attempted: to system bal GS  N Deen attempte each tooth of ted concern. In the ring gear th need to be	Rear:Rear:Rear:	StubStubStubNo No No ration is still previous that excessould not vary m	ub Shaft:(If no, p	perform a System balance war runout ma	ras not able y result in a 2 in)):	to be achieved, of first order tire sp		
Is runout within specificat Initial: Frt: Ce Current: Frt: Pinion Flange Runout Re Has a system balance be Were the drums removed Initial: HZ Gs Current: HZ Hose clamps added: Yes_Prop shaft indexed? Yes_Prop shaft indexed? Yes_If a System Balance has a the ring gear backlash at first order prop shaft spee Backlash at each tooth or Note: The Ring Gear tee	enter: Center: ading: en attempted: to system bal GS  N Deen attempte each tooth of ted concern. In the ring gear th need to be	Rear:Rear:Rear:	StubStubStubNo No No ration is still previous that excessould not vary m	ub Shaft:(If no, p	perform a System balance war runout ma	ras not able y result in a 2 in)):	to be achieved, of first order tire sp		
Is runout within specificat Initial: Frt: Ce Current: Frt: Pinion Flange Runout Re Has a system balance be Were the drums removed Initial: HZ Gs Current: HZ Hose clamps added: Yes_Prop shaft indexed? Yes_Prop shaft indexed? Yes_If a System Balance has the ring gear backlash at first order prop shaft spee Backlash at each tooth or Note: The Ring Gear tee 1 2 3 11 12 13 12 13 12 13 12 13 12 13	enter: Center: ading: en attempted: to system bal G GS  N Deen attempte each tooth of ted concern. In the ring gear th need to be 4 3 14	Rear:Rear:	StubStubStubStubStubStubNoNoNostill prevalue that excessould not vary material prevalue for the still prevalue that excessould not vary material prevalue for the still preva	sent or systessive ring geore than 0.0	em balance war runout ma 50 mm (0.00)	ras not able y result in a 2 in)): 10 19	to be achieved, of first order tire sp		
Is runout within specificat Initial: Frt: Ce Current: Frt: Pinion Flange Runout Re Has a system balance be Were the drums removed Initial: HZ Gs Current: HZ Hose clamps added: Yes_Prop shaft indexed? Yes_Prop shaft indexed? Yes_If a System Balance has be the ring gear backlash at first order prop shaft spee Backlash at each tooth or Note: The Ring Gear tee 1 2 3 11 12 13 12 13 12 22 25	enter:enter:enter:en attempted: to system bal ss GsN een attempte each tooth of ted concern. In the ring gear th need to be seen attempted at a s1 14 314 3	Rear:	StubStubStubStubStubNoNoNoNoNoNoNote that excessould not vary more than the excessould not	sent or systessive ring geore than 0.0	em balance war runout ma 50 mm (0.00)91828	ras not able y result in a 2 in)): 10 19 29	to be achieved, of first order tire sp	eed or	
Is runout within specificat Initial: Frt: Ce Current: Frt: Pinion Flange Runout Re Has a system balance be Were the drums removed Initial: HZ Gs Current: HZ Hose clamps added: Yes_Prop shaft indexed? Yes_Prop shaft indexed? Yes_If a System Balance has at the ring gear backlash at first order prop shaft spee Backlash at each tooth or Note: The Ring Gear tee 1 2 3 11 12 13 12 23 23 32 23 32 3	enter:enter:enter:en attempted: to system bals.  GSN Deen attempte each tooth of the concern. In the ring gear th need to be each tooth of the concern. In the ring gear the need to be each tooth of the concern. In the ring gear the need to be each tooth of the concern. In the ring gear the need to be each tooth of the concern. In the ring gear the need to be each tooth of the concern. In the ring gear the need to be each tooth of the concern. In the ring gear the need to be each tooth of the concern. In the ring gear the need to be each tooth of the concern. In the ring gear the need to be each tooth of the concern. In the ring gear the need to be each tooth of the concern. In the ring gear the need to be each tooth of the concern. In the ring gear the need to be each tooth of the concern. In the ring gear the need to be each tooth of the concern. In the ring gear the need to be each tooth of the concern. In the ring gear the need to be each tooth of the concern. In the ring gear the need to be each tooth of the concern. In the ring gear the need to be each tooth of the concern. In the ring gear the need to be each tooth of the concern. In the ring gear the need to be each tooth of the concern. In the ring gear the need to be each tooth of the need tooth of the need to be each t	Rear:	Stub	sent or systessive ring geore than 0.0	em balance war runout ma 50 mm (0.00)91828	ras not able y result in a 2 in)): 10 19 29	to be achieved, of first order tire sp	eed or	
Is runout within specificat Initial: Frt: Ce Current: Frt: Pinion Flange Runout Re Has a system balance be Were the drums removed Initial: HZ Gs Current: HZ Hose clamps added: Yes_Prop shaft indexed? Yes_Prop shaft indexed? Yes_If a System Balance has at the ring gear backlash at first order prop shaft spee Backlash at each tooth or Note: The Ring Gear tee 1 2 3 11 12 13 21 22 23 3 Does the vehicle have an	center: Center: ading: en attempted: to system bals GS  Note en attempte each tooth of the concern. In the ring gear th need to be a concern.  14	Rear:	Stub	sent or systessive ring geore than 0.0	em balance war runout ma 50 mm (0.00)91828	ras not able y result in a 2 in)): 10 19 29	to be achieved, of first order tire sp	eed or	
Is runout within specificat Initial: Frt: Ce Current: Frt: Pinion Flange Runout Re Has a system balance be Were the drums removed Initial: HZ Gs Current: HZ Hose clamps added: Yes_Prop shaft indexed? Yes_Prop shaft indexed? Yes_If a System Balance has at the ring gear backlash at first order prop shaft spee Backlash at each tooth or Note: The Ring Gear tee 1 2 3 11 12 13 21 22 23 3 Does the vehicle have an Pinion damper: Yes	enter:enter:enter:en attempted: to system bals.  GSN Deen attempte each tooth of ted concern. In the ring gear th need to be each tooth of the concern. In the ring gear the need to be each tooth of the following the following No	Rear: Rear: Rear: Yes ance? Yes  d but the vibr he ring gear. (readings sh dry.  5  15  25  35 ing compone	NoStubStu	sent or systessive ring geore than 0.0	em balance war runout ma 50 mm (0.00)91828	ras not able y result in a 2 in)): 10 19 29	to be achieved, of first order tire sp	eed or	
Is runout within specificat Initial: Frt: Ce Current: Frt: Pinion Flange Runout Re Has a system balance be Were the drums removed Initial: HZ Gs Current: HZ Hose clamps added: Yes_Prop shaft indexed? Yes_Prop shaft indexed? Yes_If a System Balance has the ring gear backlash at first order prop shaft spee Backlash at each tooth or Note: The Ring Gear tee 1 2 3 11 12 13 21 22 23 Does the vehicle have an Pinion damper: Yes Pinion flange damper: Yes	enter: Center: ading: en attempted: to system bal G GS  N Deen attempte each tooth of ted concern. In the ring gear th need to be 4 3 14 3 24 3 34 y of the follow No s	Rear: Rear: Rear: Yes ance? Yes lo o d but the vibr he ring gear. (readings sh dry. 5 15 25 35 ing compone	NoStubStu	sent or systessive ring geore than 0.0	em balance war runout ma 50 mm (0.00)91828	ras not able y result in a 2 in)): 10 19 29	to be achieved, of first order tire sp	eed or	
Is runout within specificat Initial: Frt: Cocurrent: Frt: Pinion Flange Runout Re Has a system balance be Were the drums removed Initial: HZ Gs Current: HZ Hose clamps added: Yes_Prop shaft indexed? Yes_If a System Balance has be the ring gear backlash at first order prop shaft spee Backlash at each tooth or Note: The Ring Gear tee 1 2 3 11 12 13 21 22 231 32 3 Does the vehicle have an Pinion damper: Yes Pinion flange damper: Yes Exhaust damper: Yes Yes Exhaust damper: Yes	enter:enter:enter:en attempted: to system bal ss GsN een attempte each tooth of the concern. In the ring gear th need to be s4 14 314 314 3	Rear: Rear: Rear: Yes ance? Yes lo o d but the vibr he ring gear. (readings sh dry. 5 15 25 35 ing compone	Stub	sent or systessive ring geore than 0.0	em balance war runout ma 50 mm (0.00)  9  18  28  38	ras not able y result in a 2 in)): 10 19 29	to be achieved, of first order tire sp	eed or	
Is runout within specificat Initial: Frt: Cocurrent: Frt: Pinion Flange Runout Re Has a system balance be Were the drums removed Initial: HZ Gs Current: HZ Hose clamps added: Yes_Prop shaft indexed? Yes_If a System Balance has the ring gear backlash at first order prop shaft spec Backlash at each tooth or Note: The Ring Gear tee 1 2 3 11 12 13 21 22 23 3 Does the vehicle have an Pinion damper: Yes Pinion flange damper: Yes Initial: Front angle:	enter:enter:enter:en attempted: to system bal ss GsN een attempte each tooth of the concern. In the ring gear th need to be ss 14 314 314 3	Rear: Rear: Yes ance? Yes lo o d but the vibr he ring gear. (readings sh dry. 5 25 35 ing compone No Angle:	Stub_	sent or systessive ring geore than 0.0  8  17  27  37  gle:	em balance war runout ma 50 mm (0.00)  9  18  28  38	ras not able y result in a 2 in)): 10 19 29	to be achieved, of first order tire sp	eed or	
Is runout within specificat Initial: Frt: Ce Current: Frt: Pinion Flange Runout Re Has a system balance be Were the drums removed Initial: HZ Gs Current: HZ Hose clamps added: Yes_Prop shaft indexed? Yes_Prop shaft indexed? Yes_If a System Balance has a the ring gear backlash at first order prop shaft spee Backlash at each tooth or Note: The Ring Gear tee 1 2 3 11 12 13 21 22 23 3 Does the vehicle have an Pinion damper: Yes Pinion flange damper: Yes Pinion flange damper: Yes Initial: Front angle: Current: Front angle:	enter:enter:enter:en attempted: to system bals.  GSN Deen attempte each tooth of the concern. In the ring gear th need to be each as14	Rear: Rear: Yes ance? Yes lo o d but the vibr he ring gear. (readings sh dry. 5 25 35 ing compone No Angle:	Stub_	sent or systessive ring geore than 0.0  8  17  27  37  gle:	em balance war runout ma 50 mm (0.00)  9  18  28  38	ras not able y result in a 2 in)): 10 19 29	to be achieved, of first order tire sp	eed or	
Is runout within specificat Initial: Frt: Cocurrent: Frt: Pinion Flange Runout Re Has a system balance be Were the drums removed Initial: HZ Gs Current: HZ Hose clamps added: Yes_Prop shaft indexed? Yes_If a System Balance has the ring gear backlash at first order prop shaft spec Backlash at each tooth or Note: The Ring Gear tee 1 2 3 11 12 13 21 22 23 3 Does the vehicle have an Pinion damper: Yes Pinion flange damper: Yes Initial: Front angle:	enter:enter:enter:en attempted: to system bals.  GSN Deen attempte each tooth of the concern. In the ring gear th need to be each tooth of the concern. In the ring gear the need to be each tooth of the	Rear: Rear: Rear: Yes ance? Yes  do do d but the vibr he ring gear.  (readings sh dry.  5  25  35  ing compone  No  Angle: er Angle:	Stub_	sent or systessive ring geore than 0.0	em balance war runout ma 50 mm (0.00)  9  18  28  38	ras not able y result in a 2 in)): 10 19 29	to be achieved, of first order tire sp	eed or	

Bulletin No.: 03-00-91-001I November, 2023 Page 3

Vibration Analysis Worksheet								
Center Support Mount: \	/es	No						
Tire Size and Brand:								
Wheel/Tire Readings:								
Initial: T1:T								
Current: T1:	_T2:	T3:	T4:					
Pecord wheel halance in	oformation helo	w if available	record weig	ht information prior to balance and after balance.				
Necold wheel balance if	normation below	w II avallable	record weig	in information prior to balance and after balance.				
Wheel/Tire balance								
Right rear: Inner Weight	: 0	uter Weight:						
Left rear: Inner Weight:								
Right front: Inner Weight								
Left front: Inner Weight:				-				
3 -		3 _						
Aluminum Wheel/Tire Ri	unouts on vehic	le (max. 0.03	0 in (.762 m	m))				
		-	-	0-006 for tire radial force variation information.				
Right rear: Inner lateral:	•							
Left rear: Inner lateral:								
Right front: Inner lateral:								
Left front: Inner lateral:								
Hub Mounting surface ru	inouts (max 0 (	005 in (0.132	mm))					
Flange, right rear:	•	•	.,					
Flange, left rear:								
riango, ioitroar.	1105, 101111	Ont						
Wheel stud runouts (max	x. 0.010 in (0.25	54 mm))						
Flange, right rear:	Hub, righ	nt front:						
Flange, left rear:	Hub, left fr	ront:						
Sensor at Steering Colu	mn:							
Initial: MPH/KPH:	Source/H	łZ:	mgs:					
Current: MPH/KPH:	Source	e/HZ:	mgs:_					
Sensor at Drivers Seat F	Rail:							
Initial: MPH/KPH:	Source/H	ΙΖ:	mgs:					
Current: MPH/KPH:								
Sensor at Passenger Se	at Rail:							
Initial: MPH/KPH:	Source/H	IZ:	mgs:					
Current: MPH/KPH:	Source	e/HZ:	mgs:_					