TECHNICAL

Subject: Steering Wheel Oscillation, Vibration, Shake at 80-129 km/h (50-80 mph)

Brand:	Model:	Model Year:		VIN:		Engine:	Transmission:
		from	to	from	to		
Chevrolet	Silverado 2500HD/ 3500HD	2020	2021				
GMC	Sierra 2500HD/ 3500HD						

Involved Region or Country	United States, Canada, Mexico, Middle East, Israel
Additional Options (RPOs)	NV8: STEERING-POWER, MAGNETIC SPEED, VARIABLE ASSIST
Condition	Some customers may comment on a steering dither (shake) or quick steering wheel oscillation at speeds of 80-129 km/h (50-80 mph).
Cause	The cause of the condition may be possible high road force, out of balance tire and wheel assemblies or a steering gear calibration that is not optimized.
Correction	Road test the vehicle with a PicoScope to determine the source of the vibration. If the tires are the source of the vibration, follow the Service Procedure below. If the PicoScope indicates there is another component causing the vibration, follow normal vibration diagnostics. The purpose of this bulletin is to outline the recommendations and procedures for diagnosing and repairing steering dither.

Service Procedure

Important:

- The first step in determining the cause of the vibration is a test drive with the appropriate diagnostic equipment installed on the vehicle. If the correct tools and procedures are not followed, an incorrect diagnosis will result.

- Before measuring tires on a GM approved tire force variation measurement equipment, the vehicle MUST be driven a minimum of 24 km (15 mi) to ensure removal of any flat-spotting. Refer to the latest version of Corporate Bulletin Number 03-03-10-007: Tire/Wheel Characteristics of GM Original Equipment Tires.

- If the wheels need to be removed, check for anything that could have caused a wheel to rotor mounting issue (i.e. pilot bore damage, rust or contamination on the rotor or wheel mounting surface, etc.).

- GM approved tire force variation measurement equipment MUST be calibrated prior to measuring tire/wheel assemblies for each vehicle.

Note: If the equipment being used is capable of performing a centering check, the centering check must be completed before taking measurements of balance or RFV.

1. Using a Pico Oscilloscope Diagnostic Kit, mount the PicoScope vibration sensor to the driver seat track.

Note: Only the use of the Pico Oscilloscope Diagnostic Kit with NVH should be utilized, available from GM Dealer equipment (CH-51450). Previous vibrations tools are NOT recommended due to the types and frequencies producing these vibrations.

- Seat Vibration – mount the sensor to the front right corner of the driver's seat bracket (1). Make sure the sensor is correctly oriented. A tri-axial sensor should have the threaded hole (X-axis) facing towards the front of the vehicle.

- Refer to *Oscilloscope Diagnostic Kit Description and Operation* in SI (Document ID #3687302) and *Vibration Analysis - Road Testing* in SI (Document ID #3686560).

Perform a road test, 80-129 km/h (50-80 mph) on a smooth road, and measure driver seat track vibration:

⇒ Drive the vehicle, 80-129 km/h (50-80 mph), a minimum of 10 minutes prior to measuring seat track vibration to warm up the tires. Then follow recommendations A or B below.

1.A.
T1 Y-axis less than 25 mg

- T1 Y-axis consistently under 25 mg and steering wheel dither persists, move to **step 2**.

1.B.
T1 Y-axis higher than 25 mg

- T1 Y-axis consistently over 25 mg, service all wheel and tire assemblies per the latest version of Corporate Bulletin Number 10-03-10-001.

- When mounting the wheels to the balancer, it is critical to make sure the assembly is held tightly centered during the measurement. Below are adapters that have been verified to maintain this relationship (Single rear wheel only).

- Balance and road force correct the assemblies. It is recommended to get the road force values to the specs below:

| Less than 30 lbs on the front tires |
| Less than 45 lbs on the rear tires |

- Move to step 2 below.

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2. If T1 Y-axis is less than 25 mg and steering wheel dither persists, load steering gear update calibration.

3. Clear out K43 data: using GDS 2, perform a "Learned Values Reset."

4. Perform a road test, 80-129 km/h (50-80 mph) on a smooth road, to confirm steering wheel dither has been reduced.

## Power Steering Module Programming for 2020 Models Only

Important: This procedure only applies to 2020 model year vehicles.

Caution: Before downloading the update files, be sure the computer is connected to the internet through a network cable (hardwired). DO NOT DOWNLOAD or install the files wirelessly. If there is an interruption during programming, programming failure or control module damage may occur.

Note: Carefully read and follow the instructions below.

- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.

- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. Install a GM Authorized Programming Support Tool to maintain system voltage. Refer to www.gmdesolutions.com for further information. If not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply. DO NOT connect a battery charger.

- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.

- Please verify that the radio time and date are set correctly before inserting USB drive into vehicle for programming, otherwise an error will result.

- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/ Maintenance (I/M) system status indicators to NO.

Caution: Be sure the VIN selected in the drop down menu is the same as the vehicle connected before beginning programming.
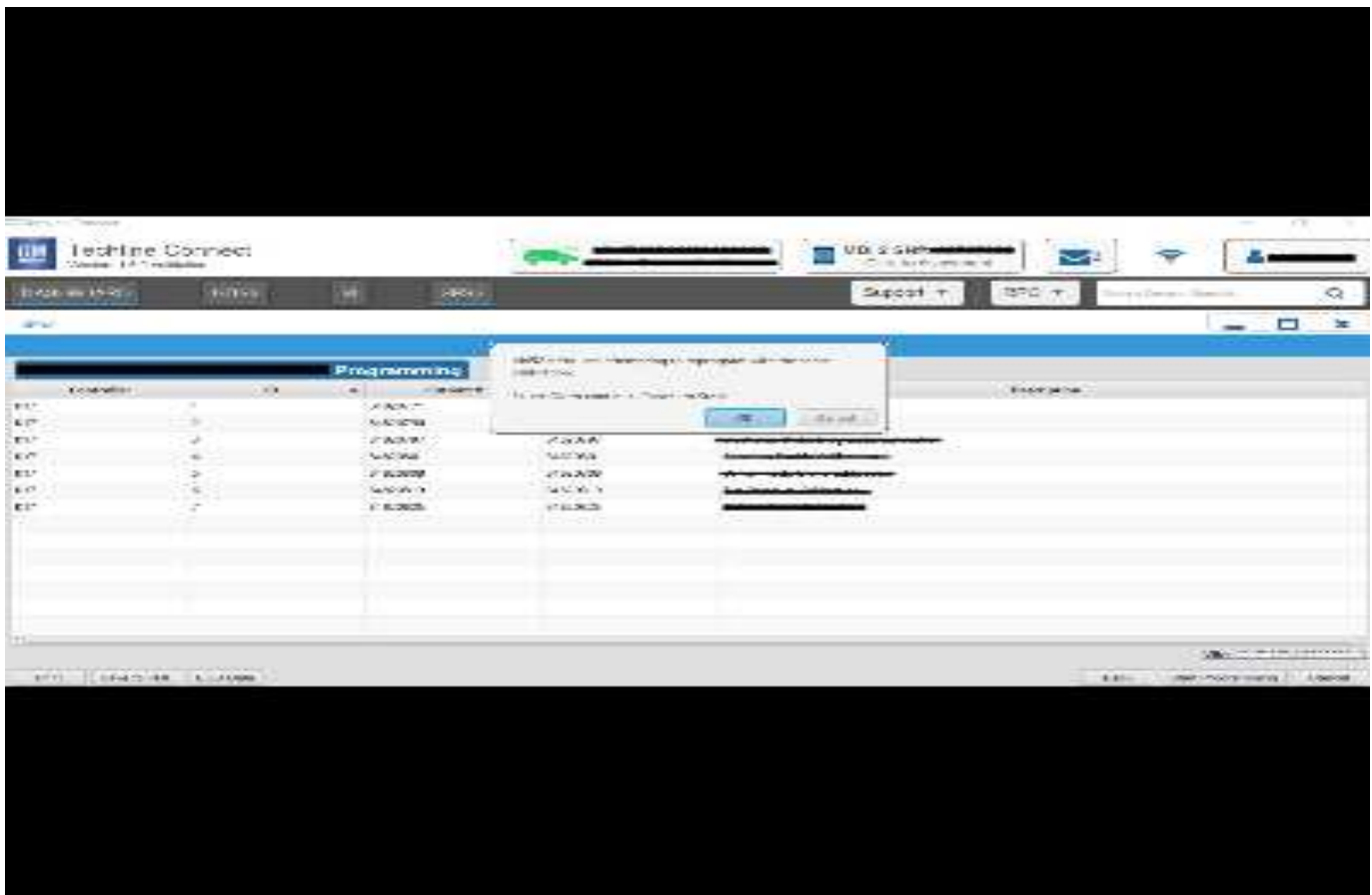
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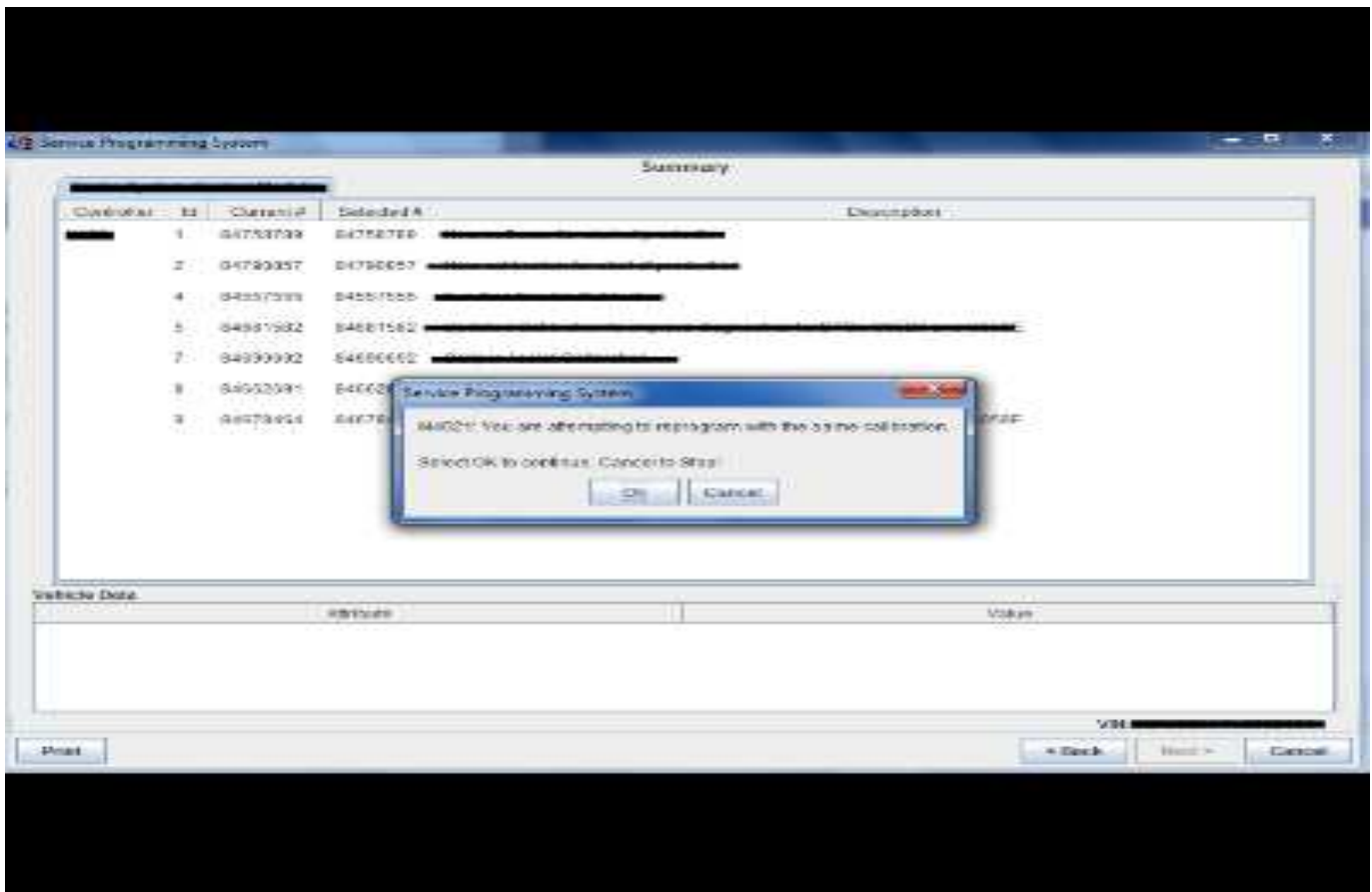
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Important: Techline Connect and TIS2WEB screens shown above.

Important: If the same calibration/software warning is noted on the TLC or SPS Summary screen, select OK and follow screen instructions. After a successful programming event, the WCC is located in the Service Programming System dialogue box of the SPS Summary screen. No further action is required. Refer to the Warranty section of the bulletin.

Important: When programming a module in GM's new Vehicle Intelligence Platform, or VIP, the power mode (ignition) needs to be off or errors may occur. This involves the 2020 Chevrolet Corvette, Cadillac CT5 and CT4, as well as the upcoming full-size Chevrolet, GMC, Cadillac SUVs and Buick Envision. Serial Data Message Authentication also needs to have the ignition off.

1. Reprogram the Power Steering Control Module. Refer to K43 Power Steering Control Module: Programming and Setup in SI. Modify as required

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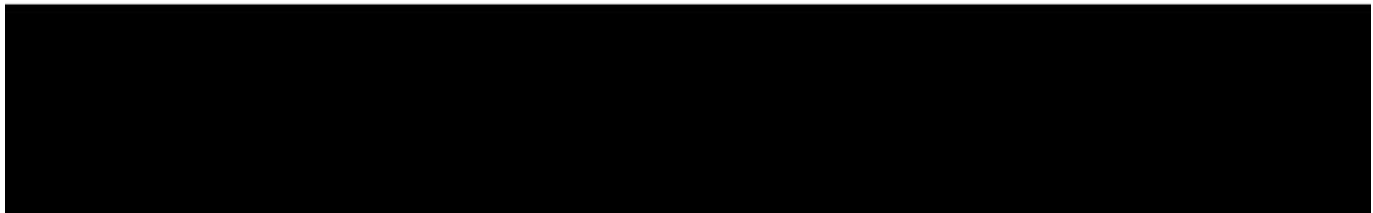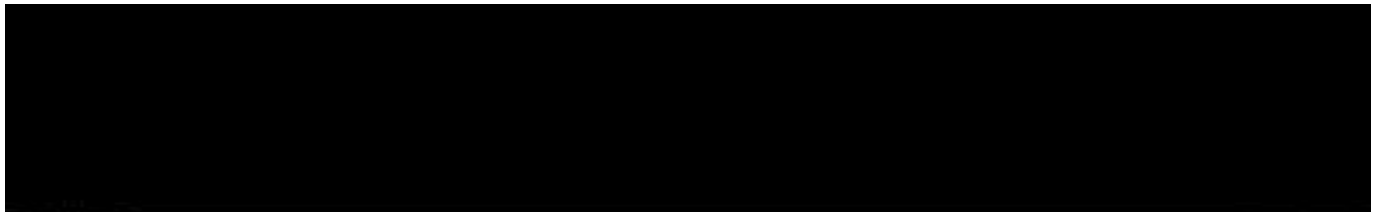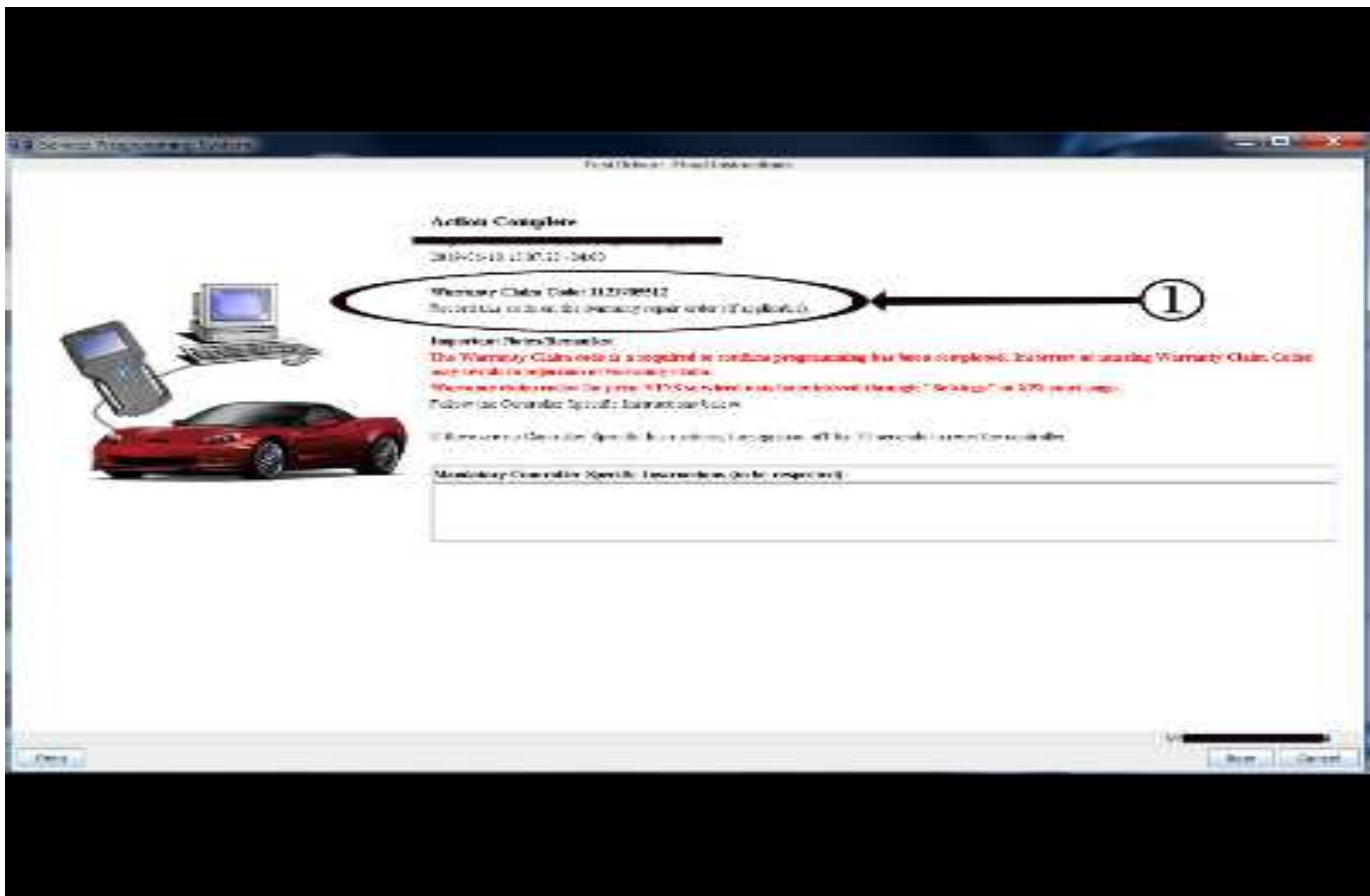
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Note: The screenshots above are an example of module reprogramming, and may not be indicative of the specific module you're reprogramming.

Important: To avoid warranty transaction rejections, you **MUST** record the warranty claim code provided on the SPS Warranty Claim Code (WCC) screen shown above on the job card. Refer to callout 1 above for the location of the WCC on the SPS screen

2. Record SPS Warranty Claim Code on job card for warranty transaction submission.

Warranty Information

For vehicles repaired under the Powertrain coverage, use the following unique labor operation. Reference the Applicable Warranties section of Investigate Vehicle History (IVH) for coverage information.

Labor Operation	Description	Labor Time
3087098*	Perform Pico Scope Vibration Measurement and Road Test	0.5 hr
2810625**	Power Steering Control Module Reprogramming with SPS	Use Published Labor Operation Time

Labor Operation	Description	Labor Time
8060212	Tire and Wheel Balancing – One	Use Published Labor Operation Time
8060213	Tire and Wheel Balancing – Two	Use Published Labor Operation Time
8060272	Tire and Wheel Balancing – Four	Use Published Labor Operation Time

*This is a unique Labor Operation for bulletin use only.

Important: **To avoid warranty transaction rejections, carefully read and follow the instructions below:

- The SPS Warranty Claim Code must be accurately entered in the "SPS Warranty Claim Code" field of the transaction.
- When more than one Warranty Claim Code is generated for a programming event, it is required to document all Warranty Claim Codes in the "Correction" field on the job card. Dealers must also enter one of the codes in the "SPS Warranty Claim Code" field of the transaction, otherwise the transaction will reject. It is best practice to enter the FINAL code provided by SPS/SPS2.

Warranty Claim Code Information Retrieval

If the SPS Warranty Claim Code was not recorded on the Job Card, the code can be retrieved in the SPS system as follows:

1. Open TLC/TIS on the computer used to program the vehicle.
2. Select and start SPS/SPS2.
3. Select Settings.
4. Select the Warranty Claim Code tab.

The VIN, Warranty Claim Code and Date/Time will be listed on a roster of recent programming events. If the code is retrievable, dealers should resubmit the transaction making sure to include the code in the SPS Warranty Claim Code field.

Version	2
Modified	Released October 21, 2019 Revised March 05, 2021 - Add 2021 to Model Year and Add to Only Reprogram Power Steering Module for 2020 Model Vehicles.