



Service Bulletin

Bulletin No.: 24-NA-239

Date: January, 2025

INFORMATION

Subject: Information on Use of PicoScope for Noise Isolation and Diagnosis

Brand:	Model:	Model Year:		Build Date:		Engine:	Transmission:
		from	to	from	to		
Buick	Enclave	2020	2025				
	Encore		2022				
	Encore GX						
	Envision		2025				
	Envista	2024					
Cadillac	CT4	2020	2025				
	CT5						
	CT6		2020				
	Escalade Models						
	XT4		2025				
	XT5						
	XT6						
Chevrolet	Blazer	2020	2025				
	Camaro		2024				
	Colorado						
	Equinox		2025				
	Express						
	Silverado 1500		2021				
	Silverado 1500 LTD (RPO J21, VIN Digit 5 = W/Y)	2022	2022				
	Chevrolet Silverado 1500 - New (RPO J22, VIN Digit 5 = A/D)						
	Silverado 1500	2023	2025				
	Silverado 2500HD/3500HD	2020	2025				
	Suburban						
	Tahoe						
Traverse							
GMC	Acadia	2020	2025				
	Canyon						
	Savanna						
	Sierra 1500		2021				

Brand:	Model:	Model Year:		Build Date:		Engine:	Transmission:
		from	to	from	to		
	Sierra 1500 - Limited (RPO J21, VIN Digit 5 = 8/9)	2022	2022				
	Sierra 1500 - New (RPO J22, VIN Digit 5 = H/U)						
	Sierra 1500	2023	2025				
	Sierra 2500HD/3500HD	2020					
	Terrain						
	Yukon Models						

Involved Region or Country	North America, Israel, Argentina (Mercosur), Brazil (Mercosur), Bolivia (West), Chile (West), Colombia (West), Ecuador (West), Paraguay (West), Peru (West), Uruguay (West), Venezuela (West), Japan, Middle East
Condition	Some customers may comment on noise from vehicle.
Information	<p>Some vehicle noises are difficult to pinpoint or locate, the PicoScope can be used to help narrow down the sources of noise.</p> <p>Use the PicoScope to help isolate noises using the accelerometer as a microphone for structure-borne noise and the use of the microphone for airborne noise.</p> <p>Demonstrate to the dealer how to diagnose noises using the PicoScope accelerometer configured as a microphone. This device will pick up almost any structure-borne noise or vibration and will allow it to be closely analyzed in a recording. The PowerPoint shows the process where we set up the PicoScope for noise recording rather than vibration using an accelerometer as a microphone for structure-borne noise. When we are trying to isolate airborne noise, we will be using the Pico TA144 microphone and using the same setup procedure. The document attached also has guidelines for when and how to record sounds using a smartphone for review by Engineering and gives tips to get a higher-quality recording.</p>
Correction	Use PicoScope and the PicoLog application to help identify and isolate intermittent draws.

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.

Determine where the noise/vibration is coming from.

1. Get in the driver's seat and start the vehicle.
2. Determine if the complaint can be heard or felt from inside the vehicle. If not, determine if it can be heard or felt from under the hood.
 - Heard from driver's seat: Take a phone/audio recording from the driver's seat, along with engine speed (RPM), and vehicle speed. Send the recording to the assigned TAC representative or FSE.
 - Felt through steering wheel or seat: Proceed with using a PicoScope accelerometer to collect data. AS AN ACCEL NOT A MIC (used on seat track).
 - Heard from under the hood or outside the vehicle: Take a phone/audio recording where the noise is the loudest.

Note: If accelerometer is setup as a microphone, only channel B on PicoScope will be actively collecting data.

- Felt under the hood: Proceed with using a PicoScope accelerometer to collect data. AS A MIC.

Note: For best results using cell phone video/audio recordings, please refer to helpful guidelines outlined and the end of the guide or click [HERE](#) to be taken directly there.

Verify and if needed download the latest PicoScope NVH software.

- Type in “GM Tools and Equipment” into your web browser and go to the respective website link.
- Click on “Software Downloads” and scroll to the PicoScope NV Tool section.
- If a download is required, click on the latest software update link, and follow the onscreen instructions to download the software



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Note: Two versions of PicoScope will download automatically; GM NVH will be most commonly used.

- (1) GM NVH
- (2) PicoScope for GM

The screenshot displays the GM Special Service Tools website interface. At the top, there are navigation links for 'Home', 'English (United States)', 'My Preferences', 'Register', and 'Login'. A search bar is present with the text 'Keyword / Tool Number Search'. Below the navigation, there are links for 'My Wish List', 'Quick Order', and 'Shopping Cart'. The main content area is titled 'Software Downloads' and features a warning for GM dealers. It lists several software update packages with their respective tool numbers and descriptions:

- EL-50334-100A**: Multi-media infotainment Tester 9MIT. Software Link: MIT (Multi-Media Interface Tester) Software Update V.160919-01604_Dec_2016. Support Document(s): MIT User Guide (S65814 Rev C) Jan 2018.
- CH-47976**: Active Fuel Injection Tester (AFIT). Software Link: AFIT (Active Fuel Injector Tester) Software Update V20.00 January 2024. Support Document(s): AFIT Update Instructions, AFIT DMU Instructions Guide Rev B, AFIT Diesel Diagnostics Reference Guide, AFIT Quick Reference Guide Rev A, AFIT User Guide Rev A, AFIT S620 Diagnostic Guide, AFIT Vehicle Application Chart-1996-2025-SW20.
- GE-50300-A**: R1234yf A/C Machine. Software Link: R1234yf A/C Machine Software Update (GE-50300-300 V1.9 Jan_2020). Caution: This update is for GE-50300-A machines only! Do not attempt to load this update on a GE-50300 machine. Support Document(s): R1234yf GE-50300-A A/C Machine Software Update Installation Instructions, GE-50300-A Operator Manual.
- EL-50313**: GR8 Battery Service Tool. Software Link: GR8 Battery Tester Software Update Version: 192-675P. Support Document(s): EL-50313 GR8 Software Download Tutorial, EL-50313 GR8 Instruction Manual Nov_2008.
- EL-50332-B**: EV Battery Depowering Tool. Software Link: EL-50332-SWV10 (Rev 2) Battery Depowering Tool Software Update March 2021. Support Document(s): EL-50332 Instruction Manual - EN, EL-50332 Instruction Manual - FCN, EL-50332 Instruction Manual - ES.
- CH-51450**: Pico Scope NVH Tool. Please uninstall any previous versions of software before attempting a new download. Software Link: Pico Scope NVH Software Update V.7.0.116, February 2023. Support Document(s): NVH User Guide.

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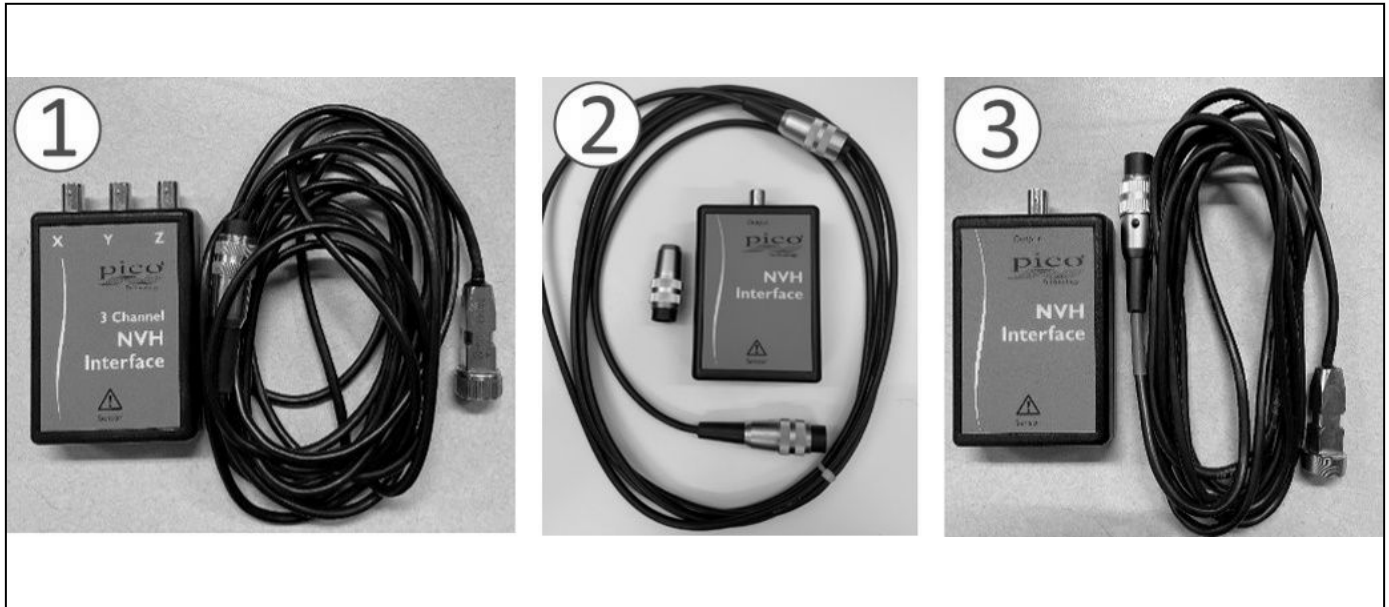
Set-Up for Vibration and/or Microphone Pico Readings

1. Accelerometer Setup:

- Screw the accelerometer connector into the sensor interface. The red LED will start to blink when it senses the connection. If the sensor interface doesn't show a red light, the 3V battery in it may need to be replaced.
 - If you are using a tri-axis, three output accelerometer, attach a blue, red, and green BNC cable to X, Y, and Z ports respectively. Then attach the blue, red, and green cables to channels A, B, and C on the backside of the PicoScope.
 - If you are using a single axis, single output, accelerometer attach the output to the X port using any colored cable.
- Common Locations for Accelerometers:
 - Interior- Drivers Front Outboard Seat Track Bolt (Large Hex)
 - Engine- Valve/Cam Cover Bolt, Oil Pan Bolt, Engine Block (Iron Block), Main Bearing Cross Bolt
 - Transmission- Transmission Mount Bolt, Transmission Bellhousing Bolt (Lower)

2. Microphone Setup:

- Screw the microphone into the female end of the sensor extension cable and the male end into the NVH interface box. The red LED on the sensor interface box will start to blink when it senses the connection. If the sensor interface doesn't show a red light, the 3V battery in it may need to be replaced.
 - Connect the single axis NVH interface box to channel "B" on the PicoScope using any colored BNC cable.
- Common Locations for Microphone:
 - Interior- Pico TA144 Microphone not recommended for interior sound measurements.
 - Engine- 0.5m or more away from noise source on engine, same relative location as ear.
 - Transmission- 0.5m away from bellhousing/exhaust (if stationary)



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- 1) Tri-Axis Accelerometer (TA-143)
- 2) Microphone (TA-144)
- 3) Single Axis Accelerometer (TA-183)

Software Setup

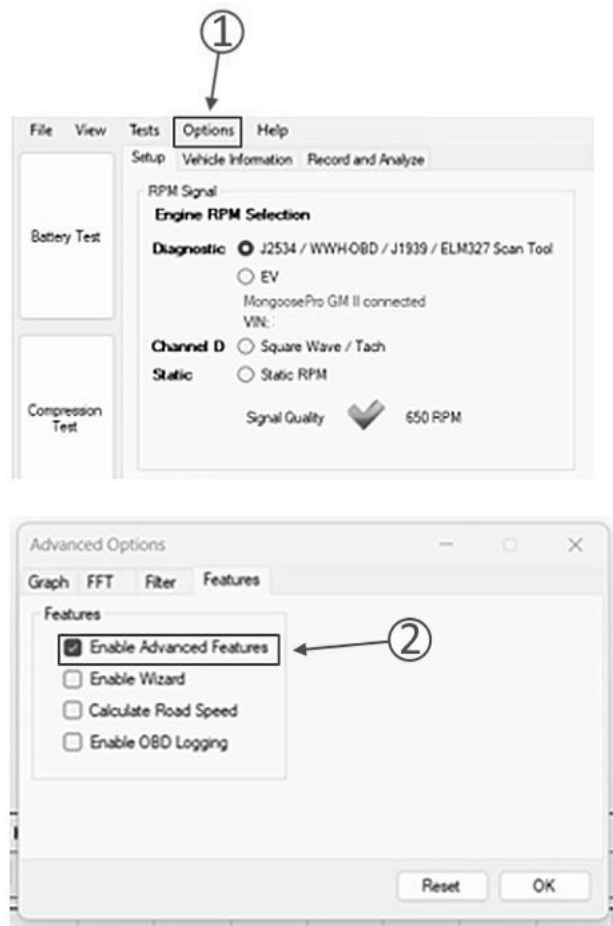
1. Setup the software to collect data:

- Plug the PicoScope USB cable into the computer that's going to be used for recording.
- Open the GM NVH software and click on the **NVH button**.
- Start a new test with the setup wizard and follow steps.
- For Using Vehicle CAN Data (Engine and Vehicle Speed).
 - Key on vehicle and connect either an MDI or J2534 (Mongoose) to the vehicle's OBD-II port.
 - Attach the MDI or a J2534 USB cable into the second USB port on the computer and wait for PicoScope to recognize/connect to vehicle. Vehicle VIN will appear once connected.

Note: If using a J2534 interface you may have a window open with a red "X" through a picture of a blue MDI box. Hit "Cancel" and continue to wait for the driver to connect. It may take several minutes to connect to the vehicle.

- For Static/Stationary Testing Only (idle speed), the static rpm option can be used.
 - Continue through the setup wizard and configure the vehicle appropriately.
 - Select the interface that was plugged in and then the correct sensor type. Make sure the accelerometer and/or microphone is setup as the correct model and note location.
- Go to the setup screen to finalize the wizard setup:

Note: For vibration, the device J2534 interface is required, so it must be set up and working before continuing to the Tri-Axis Accelerometer Setup section.



1. Select the Options tab.
2. Select the Enable Advanced Features box.

The image shows a software interface for configuring signals. It is divided into three main sections:

- RPM Signal:** Contains an "Engine RPM Selection" section with radio buttons for "Diagnostic" (selected as "MDI or approved J2534 Device") and "EV". Below this, it shows "MongoosePro GM II connected" and "VIN: 1G6DR5RW7P0144332". There are also radio buttons for "Channel D" (selected as "Square Wave / Tach") and "Static" (selected as "Static RPM"). A box at the bottom shows "Signal Quality" with a checkmark and "803 RPM". A circled "1" is next to this box.
- Vibration Signal:** Contains a "Mode" dropdown set to "3-axis" (circled "2"). Below this are "Box" (TA246 Interface) and "Sensor" (TA143 Accelerometer) dropdowns. To the right are checkboxes for "ChA(X) Fore/Aft", "ChB(Y) Vertical", and "ChC(Z) Lateral", all of which are checked (circled "3"). At the bottom, there is a "Location" dropdown set to "Engine compartment" (circled "4") and a "Notes" field with the text "Click here to add notes ...".
- Signal Options:** Contains a "Maximum Signal History Size" dropdown set to "250" (circled "5") with a "Sec" label.

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Tri-Axis Accelerometer Setup:

1. Verify that the RPM signal is displaying the correct value.
2. Verify the mode is set to 3-axis.
3. Verify that all the channels are selected
4. Verify that the location is set to where the accelerometer was placed:
 - If it is in the vehicle, set as passenger compartment.
 - If it is under the hood, set as engine compartment.
5. Set the signal history to 250 seconds (Default is 50 seconds).

RPM Signal

Engine RPM Selection

Diagnostic MDI or approved J2534 Device
 EV
 MongoosePro GM II connected
 VIN: 1G6DR5RW7P0144332

Channel D Square Wave / Tach

Static Static RPM

Signal Quality 798 RPM **1**

Vibration Signal

Mode **2**

Box **3**

Sensor **3**

Orientation: Vertical [Edit](#) **3**

Location **3**

Notes: [Click here to add notes ...](#)

Signal Options

Maximum Signal History Size
 Sec **4**

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Single-Axis Accelerometer Setup:

1. Verify that the RPM signal is displaying the correct value.
2. Verify that the mode is set to Single channel.
3. Change the orientation to match the placement of the accelerometer if needed.
4. Verify that the location is set to where the accelerometer was placed:
 - If it is in the vehicle, set as passenger compartment.
 - If it is under the hood, set as engine compartment.

Signal Quality Check:

- The **Vibration Signal** on the Setup tab includes a **Signal Quality** bar. The green signal quality bar is a visual indication the software is receiving a signal from the accelerometer. Verify the accelerometer has a response by tapping on (or next to) the accelerometer, the green bar should move respectively.


RPM Signal

Engine RPM Selection

Diagnostic MDI or approved J2534 Device
 EV
 MongoosePro GM II connected
 VIN: 1GCPWBEH2KZ0172EX

Channel D Square Wave / Tach

Static Static RPM

Signal Quality  1,315 RPM **1**

Vibration Signal **2**

Mode

Box **3**
 Sensor

Connect the output of the interface to the input of channel B

Location Notes:

Signal Options

Maximum Signal History Size Sec **4**

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Microphone Setup:

1. Verify that the RPM signal is displaying the correct value.
2. Verify that the mode is set to Single channel.
3. Check that the location is set to where the microphone was placed.
4. Set the signal history to 250 seconds (Default is 50 seconds).

Signal Quality Check:

- The **Microphone Signal** on the Setup tab includes a **Signal Quality** bar. The green signal quality bar is a visual indication the software is receiving a signal from the microphone. Verify the microphone has a response by speaking into or clapping next to the microphone, the green bar should move respectively.

Note: After completing the set-up wizard, it will redirect to the Record and Analyze tab. In the middle right of the Record and Analyze tab, there will be a **Details** button. Clicking on the **Details** button will bring up a new window where notes can be recorded. Enter specific details regarding accelerometer/microphone location along with any other important details regarding the test set-up.

Recording Data:

- Verify noise/vibration can be reproduce before recording.
- To Start recording, click on the **Start Recording** button in the lower left of the Record and Analyze Tab.
- Once finished testing, click on the **Stop Recording** button in the lower left of the Record and Analyze Tab.

Note: To reset current capture and clear any previously unsaved recorded data, click on the **Reset Current Capture** arrow that's to the right of the recording button.

- After finishing the recording, click file and select save. Click OK on the details box as this input is optional and save as a .pddata.
- Create an e-mail to TACSNAPSHOT@gm.com in the U.S. and TACSNAPSHOTCANADA@gm.com in Canada and in the subject line Put Vibration, your BAC, and last 8 of the VIN.

Helpful Guidelines for Audio/Video Recordings

Note: The Following Applies to Smart Phones Only.

Important Notes:

- Microphones are typically located at the bottom of the phone, where you speak, and by the cameras. It's important to try and keep the microphones free and clear of any obstructions such as fingers/hands while making the recording(s).
- Unless specified that noise is only heard with windows down only, ensure windows are rolled up, HVAC blower is off along with radio volume turned down to zero or off completely.
- *For Audio Recordings*, make note of location of phone and speed of engine at time of recording.
- For Video Recordings, capture engine speed, vehicle speed along, and current gear (if possible).

Maximizing Sound Quality for Audio Recordings (Settings):

- **Android Users:** Recommend downloading Wav.Editor in the Google Play Store since default phone audio settings vary by phone manufacture (.WAV is ideal).
- **Apple/iOS Users:** Go to Settings > Voice Memos > Audio Quality > Select Lossless.

Maximizing Sound Quality for Video Recordings (Settings):

- **Android Users:** Default newer phones will record video in high quality .MP4 format. Some older model phones that predate 5G phones (3G and 4G) may have default to lower quality compressed video format (.3GP). Verify video settings are correct first open camera app > switch to video mode > tap on recording settings > video size/resolution > Full HD (1920x1080).
- **Apple/iOS Users:** By default, videos recorded by iPhones are high quality .MOV format (H.264).

Version	2
Modified	Released October 28, 2024 Revised January 16, 2025 - Removed Corvette from Models section and added Middle East.

