Subject: NOISE, VIBRATION AND HARSHNESS (NVH) — GENERAL TROUBLESHOOTING GUIDELINES	Service Alert No.: SA-051/25 Last Issued : 11/07/2025

BULLETIN NOTES

APPLICABLE MODEL(S)/VINS

2013-2025 CX-5	2016-2021 CX-3	2020-2026 CX-30	2024-2026 CX-90
2014-2026 Mazda3	2016-2023 CX-9	2022-2023 MX-30	2025-2026 CX-70
2014-2021 Mazda6	2016-2026 MX-5	2023-2026 CX-50	

DESCRIPTION

Noise, Vibration, and Harshness (NVH) Diagnostic Guidelines

Diagnostic Guidelines

When diagnosing NVH concerns, it is essential to first classify the issue into one of three primary categories: Noise, Vibration, or Harshness. Many customer complaints may involve overlapping symptoms, such as both noise and vibration, so identifying the dominant characteristic is critical. Once the primary symptom is determined, follow the appropriate diagnostic path. For example, if a concern includes both noise and vibration but is related to vehicle speed, the vibration diagnostic path should be followed.

When considering component replacement during the diagnostic process, it is best practice to start with the lowest cost or most accessible part unless diagnostic evidence clearly identifies a more expensive or complex component as the root cause. This approach helps minimize repair costs and avoids unnecessary part replacements.

For example, a growling or bearing whine noise may be mistakenly attributed to internal components in the differential, transfer unit, or transmission, when the actual source is a wheel bearing. Misdiagnosis like this can lead to unnecessary repairs, added time and cost. To help prevent this, always follow the guidelines in the repair procedure.

Noise, Vibration, and Harshness Defined

Noise is any undesirable sound, typically unpleasant or disruptive.
Vibration refers to motion, shaking, or trembling that can be felt or seen when an object moves back and forth or up and down.
Harshness is a ride quality issue where the vehicle's response to the road feels abnormally sharp or rigid to the occupant. It often indicates a firmer-than-expected reaction from the suspension system.

Noise, vibration, and harshness (NVH) is a term used to describe these types of customer concerns, which can lead to varying levels of dissatisfaction. While some degree of NVH is normal due to road and environmental factors, excessive or abnormal NVH may indicate a problem. These guidelines and the NVH Diagnostic Procedure are designed to assist technicians in accurately diagnosing, testing, and repairing NVH-related symptoms.

NVH Questionnaire

Click the "Questionnaire" link or scan the QR code below:	
NVH Questionnaire	
Note: When accessing the questionnaire on a mobile device, the PDF must be saved to your device in order to use the fillable form fields.	

NOTICE: It is not necessary to contact the National Technical Assistance Hotline for all NVH related concerns. However, if diagnostic assistance is required or MASH required component requires NVH diagnostics, the questionnaire must be completed prior to contacting the Hotline or submitting a MAR (Mash Approval Request). The completed questionnaire must be attached in Siebel (see Attaching Files to Hotline Cases). Warranty claims with NVH diagnostics also require the questionnaire to be attached to the warranty claim (see Warranty Information in this Service Alert).

Glossary of Terms

Amplitude	The quantity or amount of energy produced by a vibrating component (G-force). An extreme vibration has a high amplitude. A mild vibration has a low amplitude. See Intensity.
Boom	Low frequency or low pitched noise often accompanied by a vibration. Also refer to Drumming.
Buffet/Buffeting	Strong noise fluctuations caused by gusting winds. An example would be wind gusts against the side glass.
Buzz	A low-pitched sound like that from a bee. Often a metallic or hard plastic humming sound. Also describes a high frequency vibration. Vibration feels similar to an electric razor.
Chatter	A pronounced series of rapidly repeating rattling or clicking sounds.
Chirp	A short-duration high-pitched noise associated with a slipping drive belt.
Chuckle	A repetitious low-pitched sound. A loud chuckle is usually described as a knock.
Click	A sharp, brief, non-resonant sound, similar to actuating a ball point pen.
Clonk	A hydraulic knocking sound. Sound occurs with air pockets in a hydraulic system. Also described as hammering.
Clunk/Driveline Clunk	A heavy or dull, short-duration, low-frequency sound. Occurs mostly on a vehicle that is accelerating or decelerating abruptly. Also described as a thunk.
Conductor	The components that carry (transmit) a vibration frequency from the originator to the reactor.
Cycles Per Second (CPS)	Cycles per second. Same as hertz (Hz).
Cracks	A mid-frequency sound, related to squeak. Sound varies with temperature conditions.
Creak	A metallic squeak.
Cycle	The process of a vibrating component going through a complete range of motion and returning to the starting point.
Decibel (dB)	A unit of measurement, referring to sound pressure level, abbreviated dB.

Drone	A low frequency steady sound, like a freezer compressor. Also described as a moan.
Drumming	A cycling, low-frequency, rhythmic noise often accompanied by a sensation of pressure on the ear drums. Also described as a low rumble, boom or rolling thunder.
Flutter	Mid to high intermittent sound due to air flow. Similar to a flag flapping in the wind.
Frequency	The rate at which a cycle occurs within a given time.
G-force	The additional load or weight produced in an object during acceleration. When measuring the level or amplitude of a vibration without sound, the unit G is added to associate the force of the vibration to gravity. This is similar to measuring the weight of an object, which is also a function of gravity.
Gravelly Feel	A grinding or growl in a component, similar to the feel experienced when driving on gravel.
Grind	An abrasive sound, similar to using a grinding wheel, or rubbing sand paper against wood.
Hertz (Hz)	A unit of measure used to describe noise and vibration concerns expressed in cycles per second.
Hiss	Steady high frequency noise. Vacuum leak sound.
Hoot	A steady low frequency tone, sounds like blowing over a long neck bottle.
Howl	A mid-range frequency noise between drumming and whine. Also described as a hum.
Hum	Mid-frequency steady sound, like a small fan motor. Also described as a howl.
Intensity	The physical quality of sound that relates to the strength of the vibration (measured in decibels). The higher the sound's amplitude, the higher the intensity and vice versa. See Amplitude.
Knock	A heavy, loud, repetitious sound, like a knock on the door.
Moan	A constant, low-frequency tone. Also described as a hum.
Ping	A short duration, high-frequency sound, which has a slight echo.

Pitch	The physical quality of sound that relates to its frequency. Pitch increases as frequency increases and vice versa.
Pumping Feel	A slow, pulsing movement.
Rattle	A random and momentary or short duration noise.
Reactor	The component, or part that receives a vibration from an originator and conductor and reacts to the vibration by moving.
Rotational	A rotational noise can be described as a droning or whirring noise that gets louder as wheel speed/MPH or engine RPM's increase.
Roughness	A medium-frequency vibration. A slightly higher frequency than a shake. This type of vibration is usually related to drivetrain components.
Rustling	Intermittent sound of varying frequency, sounds similar to shuffling through leaves.
Shake	A low-frequency vibration, usually with visible component movement. Usually relates to tires, wheels, brake drums or brake discs if it is vehicle speed sensitive, or engine if it is engine speed sensitive. Also referred to as a shimmy or wobble.
Shimmy	An abnormal vibration or wobbling, felt as a side-to-side motion of the steering wheel in the driveshaft rotation. Also described as waddle.
Shudder	A low-frequency vibration that is felt through the steering wheel or seat during light brake application.
Slap	A resonance from flat surfaces, such as safety belt webbing or door trim panels.
Squeak	A high-pitched transient sound, similar to rubbing fingers against a clean window.
Squeal	A long-duration, high-pitched noise.
Tap	A light, rhythmic, or intermittent hammering sound, similar to tapping a pencil on a table edge.
Thump	A dull beat caused by two items striking together.
Tick	A rhythmic tap, similar to a clock noise.

Tip-In Moan	A light moaning noise heard during light vehicle acceleration, usually between 40-100 km/h (25-65 mph).
Transient	A noise or vibration that is momentary, a short duration.
Vibration	Any motion, shaking or trembling, that can be felt or seen when an object moves back and forth or up and down.
Whine	A constant, high-pitched noise. Also described as a screech.
Whistle	High-pitched noise with a very narrow frequency band. Examples of whistle noises are a turbocharger or air flow around an antenna.
Wind Noise	Any noise caused by air movement in, out or around the vehicle.

REPAIR PROCEDURE

Section Contents

General Knowledge

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7. Verify the Repair

I. NVH Concepts and Diagnosis

Be familiar with general NVH concepts and diagnosis.

A great source of information on NVH concepts and diagnostics is available through **Mazda Brand Academy (MBA)**. Specifically, refer to course NVH 40053WBT - Noise, Vibration, and Harshness (NVH). Familiarizing yourself with these concepts and the recommended diagnostic approach will enhance your ability to accurately identify and resolve NVH-related concerns

1.Customer Interview

Gather detailed information from the customer about their NVH concern.

All vehicles, whether equipped with internal combustion engines (ICE) or electric drivetrains, naturally produce some level of noise and vibration. In ICE vehicles, components like vibration isolators, mufflers, and dampers are used to reduce these to acceptable levels. However, electric vehicles (EVs) or Plug-in Hybrids (PHEVs) operate more quietly and often reveal subtle noises that may go unnoticed in ICE vehicles. As a result, EV drivers may report concerns that are actually normal characteristics of EV operation.

It is important to remember that driver perception plays a role. A person unfamiliar with a vehicle may believe that a normal sound or vibration is abnormal. As a technician, being familiar with the specific features and behavior of the vehicle, such as automatic overdrive or regenerative braking, is critical for accurate NVH diagnosis. Always evaluate the vehicle under relevant operating conditions, including toggling systems like overdrive, to properly isolate and assess the concern. Use the 5 Ws: Who, What, When, Where, and Why, to gather complete context from the customer and ensure an informed, accurate diagnosis.

Use the 5 Ws:

- **Who:** Who is hearing the noise (e.g., driver or passenger)? Do all occupants experience the concern equally no matter where they are sitting?
- **What:** Classify the symptom. What does the noise sound like, or what does the vibration feel like? Is it a high-pitched whine or a bass drum thump?

  > **NOTICE:** The "Glossary of Terms" found in the Description section can be used to support classifying the reported symptom.

- **Where:** Where was the vehicle being driven at the time of the concern? Where does the sound or vibration seem to come from?
  Examples: Right front tire? Steering wheel? Floorboard? etc.
- **When:** When does the condition occur?
  - During slow acceleration (include RPM and speed, if known)
  - While coasting in neutral
  - After downshifting into a lower gear
  - During sharp turns (e.g., U-turns, parallel parking)
  - While revving the engine in neutral
  - Under heavy acceleration or high engine load

- When braking After engine warm-up or cold soak
- Consider Environmental factors:
  - With windows or sunroof open (specify how much)
  - In specific weather conditions (hot, cold, rain, snow)
  - On particular roads or surfaces
  - Depending on vehicle attitude (e.g., uphill, downhill, leaning left/right)

- **Why:** Based on the answers above, look for the reason “Why” the symptoms are occurring and identify potential causes. The answer to the final “Why?” is the diagnosis, which should lead to the repair.

A thorough customer interview should be completed before any work is performed on the vehicle. The NVH Questionnaire must be used to record details from the customer interview, road test and diagnostic results.

2. Pre-Drive Inspection

Carefully inspect the vehicle inside and out and prepare for vehicle road test.

> **CAUTION: Road Test Safety**
> Before road testing a vehicle, ensure it is in safe operating condition by inspecting critical systems such as brakes, steering, lights, and fluid levels. Verify that there are no critical warning lamps illuminated on the instrument cluster. Confirm the driver’s field of view is clear when looking forward, to the sides, and rearward, and ensure all mirrors are properly positioned and unobstructed. Only drive in a safe, designated area and strictly follow all traffic laws and regulations.

Always perform a pre-drive check before road testing a vehicle. This quick visual inspection helps ensure the vehicle is safe to drive and identifies any obvious issues that could contribute to the NVH concern. Look for loose or damaged components, uneven tire wear, or anything that could affect safety or cause NVH symptoms. Address any concerns before proceeding with the road test.

Road Test Preparation Guidelines

- **Review Customer Feedback:** Carefully review the customer’s description of the concern. Understanding the specific issue is key to a focused and effective diagnosis.
- **Be Cautious of Noise/Vibration Location:** Do not rely solely on the reported location of the noise or vibration as the actual source may be elsewhere. A small vibration from one component (originator) can

travel through other parts (transfer path) and cause a more noticeable noise or vibration in another component (reactor).

- **Choose an Appropriate Test Route:** Conduct the road test on a quiet, low-traffic road where it's safe to reproduce the condition. Ideally, use a route that allows driving at the speed where the issue occurs.
- **Minimize External Noise Sources:** Turn off the radio and HVAC blower, and inspect for any aftermarket accessories or loose items that could generate noise or vibration during the test.

NOTICE: It may be necessary to road test the vehicle under the same conditions where the customer reports the concern. Keep in mind that the issue may be specific to certain road surfaces, so replicating those conditions during the test drive is important.

3. Verify the Concern

Verify the customer concern by carrying out a road test.

Test drive the vehicle under the conditions described by the customer. Confirm the presence and characteristics of the NVH concern (e.g., type of noise/vibration, frequency, location). The NVH Questionnaire must be used to record any road testing and diagnotic results.

CAUTION: Road Test Safety
Before road testing a vehicle, ensure it is in safe operating condition by inspecting critical systems such as brakes, steering, lights, and fluid levels. Verify that there are no critical warning lamps illuminated on the instrument cluster. Confirm the driver’s field of view is clear when looking forward, to the sides, and rearward, and ensure all mirrors are properly positioned and unobstructed. Only drive in a safe, designated area and strictly follow all traffic laws and regulations.

NOTICE: It may be necessary for the customer to ride along or drive the vehicle to clearly identify and point out the concern. During the road test, consider the customer’s driving habits and typical driving conditions. Keep in mind that the reported concern may actually be a normal operating characteristic for that particular vehicle.

NVH Symptom Descriptions and Diagnosis

Noise Symptoms

Noise is any unwanted sound heard while the vehicle is operating. Customers may describe it as a squeak, rattle, hum, clunk, or other sounds. The goal is to identify when and where the noise occurs and which system is involved.

Common Causes of Noise

- Loose or worn suspension or steering components
- Tire or wheel issues
- Engine, exhaust, or driveline components
- Interior trim or body panel movement
- Aftermarket parts or poor-fit accessories

Diagnosis Steps for Noise

1. Confirm the Conditions - Identify when the noise occurs:
    - While turning, braking, accelerating, or going over bumps?
    - Only at certain speeds or temperatures?
2. Inspect Related Systems - Once you have a suspected system, perform a basic inspection:
    - Look for loose, damaged, or worn parts.
    - Check for missing fasteners, bushings, or insulation.
3. Use a Listening Tool if Needed
    - If the noise source isn't obvious, use a device like the ChassisEAR to help pinpoint it while driving or testing the vehicle (refer to section 5. Isolate the Concern for suggested tools)
4. Determine the Actual Source

    If the noise is coming from a different area than expected, it may be a reactor—a part that's not causing the noise but reacting to it. In this case:

    - Trace the transfer path of the noise.
    - Decide if the noise is normal but amplified, or if the original source is faulty and transmitting the sound.
5. Refer to the Diagnostic Tests Overview to identify specific tests that can help isolate the issue. Based on the results, follow the appropriate diagnostic procedures outlined in the Workshop Manual for the isolated system.

Vibration Symptoms

Vibration is a repetitive shaking or oscillating movement felt through the seat, steering wheel, floor, or pedals. It can happen at specific speeds or under certain conditions, such as during acceleration or while cruising. The first step in diagnosing a vibration concern is to identify when and where it occurs. For example, if the vibration only happens at highway speeds, it may point to tires, wheels, or driveline components.

Common Causes of Vibration:

- Out-of-balance tires or wheels
- Bent wheels or damaged tires
- Worn or damaged suspension or driveline components
- Engine or transmission mount issues
- Aftermarket parts or modifications

Diagnosis Steps for Vibration:

1. Confirm the Conditions - note when the vibration happens:
    - At specific speeds?
    - During acceleration, braking or at a stop?
    - Constant or intermittent?
2. Inspect Tires and Wheels
    - Check for visible tire damage or irregular wear.
    - Inspect wheel condition.
    - Ensure proper tire balance and alignment.
3. Check for Modifications or Damaged Parts
    - Look for aftermarket wheels, tires, or suspension components.
    - Inspect driveline and suspension for wear or damage.
4. Consider Vibration Frequency
    - Low-frequency vibrations are often related to tires or wheels.

- Higher-frequency vibrations may come from the driveline or engine.

5. Refer to the Diagnostic Tests Overview to identify specific tests that can help isolate the issue. Based on the results, follow the appropriate diagnostic procedures outlined in the Workshop Manual for the isolated system.

Harshness Symptoms

Harshness is a customer-perceived condition that feels like there's little or no isolation between the road and the vehicle, especially from the tire, wheel, and suspension systems. It often feels like every bump, pothole, or road imperfection is directly transferred into the cabin.

Harshness can be caused by several factors, including:

- Rough road conditions
- Cold weather
- High tire pressure
- Damaged or worn suspension components
- Use of sporty or stiff tires
- Heavy-duty springs or shocks
- Aftermarket modifications that differ from original specifications
    - Note: Even if aftermarket tires are the correct size, they can still change how the vehicle rides and may lead to customer concerns.

Diagnosis Steps for Harshness

1. Confirm the Conditions
    - Determine if the harshness occurs only under specific conditions (e.g., driving over large potholes or during extreme cold). In such cases, the harshness may be considered normal.
2. Check Tire Pressure
    - Ensure all tires are inflated to the correct pressure as specified by the vehicle manufacturer. Overinflated tires are a common cause of harshness.
3. Inspect for Modifications or Damaged Parts
    - Look for aftermarket or modified components, such as non-OEM tires, wheels, springs, or shocks. Also, inspect for any damage to suspension parts.

4. Compare with a Known Good Vehicle

    - If the concern persists, compare the vehicle's ride quality to that of a known good vehicle of the same model and trim level with no reported ride harshness. To ensure an accurate comparison, both vehicles must be equipped with the same wheel and tire size, as differences in wheel diameter or tire profile can significantly affect ride characteristics.

5. If all checks show the vehicle is within specification and the harshness is still excessive compared to the known good vehicle, further diagnosis of suspension geometry, bushing condition, or NVH transfer paths may be required. Refer to the Diagnostic Tests Overview to identify specific tests that can help further isolate the issue.

Diagnostic Tests Overview

The following is a brief overview of each diagnostic test. Reviewing this information will help quickly identify the most appropriate procedure for making an accurate diagnosis. After reviewing, select and perform the test(s) that best apply, then proceed to the next step in the diagnostic process.

- **Slow Acceleration Test:** Typically the first test to perform when diagnosing an NVH concern, especially when a road test with the customer is not feasible.
- **Heavy Acceleration Test:** Helps determine if the concern is related to torque.
- **Neutral Coast Down Speed Test:** Assists in identifying whether the issue is related to vehicle speed.
- **Steering Input Test:** Helps evaluate the role of wheel bearings and other suspension components in a speed-related concern.
- **Brake Test:** Identifies vibrations or noises that are related to the braking system.
- **Road Test Over Bumps:** Helps isolate noises that occur when driving over rough or uneven surfaces.
- **Neutral Engine Run-Up (NERU) Test:** Identifies engine speed-related concerns without drivetrain load.
- **Drive Engine Run-Up (DERU) Test:** Detects engine-related issues under light load conditions.
- **Engine Accessory Test:** Helps isolate engine-driven accessories as possible sources of noise or vibration.
- **Electric Motor/Gearbox Noise Check:** For issues such as whining sounds, it can be helpful to shift into Neutral while the condition is present. This may help determine if the noise originates from the electric motor or gearbox.
- **Vehicle Cold Soak Procedure:** Helps identify concerns that occur during initial start-up or after the vehicle has been sitting for an extended period.

Slow Acceleration Test

Objective: Identify vibrations or noises occurring during gradual acceleration.

Procedure:

1. Gradually accelerate until the concern appears, note the vehicle speed.
2. Attempt to locate the area of the vehicle where the symptom originates.
3. Identify the possible source of the vibration or noise.
4. Proceed with further diagnostics or repairs as required.

Heavy Acceleration Test

Objective: Determine if the issue is torque-related.

Procedure:

1. Perform a hard acceleration from 0 to 64 km/h (0–40 mph).
2. Decelerate using a lower gear.
3. If the concern occurs during this test, it is likely torque-related.
4. Continue with appropriate diagnostics.

Neutral Coast Down Speed Test

Objective: Determine if the concern is vehicle speed-related (not powertrain related).

Procedure:

1. Drive the vehicle at a speed higher than the one at which the concern occurs.
2. Shift the transmission to NEUTRAL and coast down through the speed range where the concern appears.
3. If the concern is duplicated, it is speed-related.
4. Proceed accordingly.

Steering Input Test

Objective: Check for steering or suspension-related causes.

Procedure:

1. At the speed where the concern occurs, perform gradual sweeping turns in both directions.
2. If the concern worsens or disappears, consider:
    - Wheel bearings
    - Hubs
    - Tire tread wear
3. Continue with relevant inspections.

Brake Test

Objective: Identify brake-related noises or vibrations.

Procedure:

Warm-Up:

1. Lightly apply brakes several times from 80–32 km/h (50–20 mph).

Test:

1. Accelerate to 89–97 km/h (55–60 mph).
2. Lightly apply the brakes and slow to 30 km/h (20 mph).
3. Observe for vibrations or noises:
    - Vibrations may be felt in the steering wheel, seat, or brake pedal.
    - Noise may occur on brake application and fade when released.
4. If symptoms are identified, refer to applicable brake inspection procedures in the Workshop Manual.
5. If not, continue with additional road tests.

Road Test Over Bumps

Objective: Pinpoint suspension or chassis-related noises.

Procedure:

1. Drive over rough or bumpy terrain, one wheel at a time if possible.
2. Attempt to isolate the noise to a specific corner or end of the vehicle.
3. Proceed with inspection as needed.

NOTICE: Be realistic when attempting to duplicate the customer's concern. Avoid recreating extreme conditions that are unlikely to reflect normal driving, such as hitting large speed bumps at high speeds or oblique angles. When possible, interview the customer or perform the road test with them to ensure the noise being duplicated matches their description.

Neutral Engine Run-Up (NERU) Test

WARNING: Block all wheels and apply both parking and service brakes. Failure to follow these precautions can result in serious injury.

Objective: Determine if vibration/noise is engine speed-related, with minimal load.

Procedure:

1. On FWD vehicles with automatic transmissions, shift to PARK. For all others, shift to NEUTRAL.
2. Gradually raise engine speed to ~4,000 RPM.
3. Note engine RPM and vibration frequency, if measurable.
4. Try to locate the symptom source and affected component.
5. If source is identified, refer to the relevant diagnostic information in the Workshop Manual.
6. If not, proceed with road testing.

Drive Engine Run-Up (DERU) Test

NOTICE: This test should only be carried out on AT vehicles equipped with a torque converter. Do not carry out the Engine Load Test for more than 5 seconds or damage to the transaxle may result.

WARNING: Block all wheels and apply both parking and service brakes. Failure to follow these precautions can result in serious injury.

Objective: Detect engine speed-related concerns under light load.

Procedure:

1. Block front and rear wheels.
2. Apply parking and service brakes.
3. Shift to DRIVE and vary RPM from idle to ~2,000 RPM.
4. Repeat in REVERSE.
5. Note engine RPM and vibration frequency.
6. If symptoms appear:
    - Inspect engine, transmission, and transaxle mounts.
7. If engine speed is confirmed as the root, proceed to Engine Accessory Test.
8. If not, continue with road testing.

Electric Motor/Gearbox Noise Check

Objective: Identify if noise originates from electric motor or gearbox.

Procedure:

1. While noise is present, shift to NEUTRAL.
2. If noise changes or disappears:
    - Motor is likely the source.
3. If unchanged:
    - Gearbox may be responsible.

4. Proceed with relevant diagnostics.

Engine Accessory Test

WARNING: Before performing this procedure, block all wheels, set the parking brake, and firmly apply the service brake to prevent unintended vehicle movement. Failure to follow these safety precautions may result in serious personal injury.

NOTICE: When operating the engine with accessory drive belts removed, do not exceed one minute of engine run time. Exceeding this limit may result in severe engine damage.

Objective: Isolate engine accessories as possible noise/vibration sources.

Procedure:

1. Remove accessory drive belt(s).
2. Use a frequency measurement tool or listening device (e.g., ChassisEAR) for pinpoint accuracy.
3. Raise engine RPM to the level where the symptom occurs.
4. If the issue persists, accessories are not the cause.
5. If the issue stops, reinstall belts one at a time to identify the faulty accessory.
6. Once the source is found, proceed with specific component diagnosis.

Vehicle Cold Soak Procedure

Objective: Replicate conditions under which temperature-dependent symptoms occur.

Procedure:

1. Match test conditions to those reported by the customer, if available.
2. Document temperature and environmental factors.
3. Park the vehicle at the test location and let it sit for 6–8 hours at or below the known concern temperature.
4. Prior to starting:
    - Perform a visual inspection under the hood.

- Listen for operating coolant circulation pumps (for motor, electronics, heater, or battery).

CAUTION: Never touch or probe moving components.

4. Check MGSS Service Information

Review MGSS for relevant information and vehicle repair history.

Review MGSS for any applicable service bulletins (SA, TSBs), previous repair history related to the current concern.

5. Isolate the Concern

Use diagnostic tools to identify the NVH source and eliminate unrelated components.

Use appropriate diagnostic tools and techniques to pinpoint the source of the NVH issue. Eliminate non-related components systematically.

Click on the Image below to view information on NVH Diagnostic Tools and their application:

6. Perform Repair

Repair or replace faulty components according to the WSM.

Based on the diagnostic results, identify the faulty component(s) and carry out the necessary repair or replacement in accordance with the procedures outlined in the Workshop Service Manual.

7. Verify the Repair

Perform a post-repair road test to verify the issue is resolved and no new problems exist.

Conduct a post-repair road test to confirm that the NVH concern has been resolved and that no new issues have been introduced. Ensure all related systems are inspected and verified for proper operation after the repair is completed.

NOTICE: If the concern persists after all appropriate diagnostics and repairs have been completed, contact the technical hotline for further support. Prior to contacting technical hotline ensure all necessary information as outlined in "When to call Technical Hotline" found on the MGSS Help page has been prepared and available in addition to the completed NVH Questionnaire.

WARRANTY INFORMATION

NOTICE: The completed NVH Questionnaire must be attached when submitting related warranty claims, along with entire Repair Order including Technician notes and punch flag times.

Warranty Type:	NOISE, VIBRATION AND HARSHNESS, DIAGNOSIS
Symptom Code:	Input the applicable symptom code
Damage Code:	Input the applicable damage code
Part Number Main Cause:	Input the applicable PNMC OR If no problem found input 5555-NT-NVH
Quantity:	Input the applicable quantity
Operation Number / Labor Hours:	**S0003XDX:** Actual time up to 1.8 hours including post repair

	verification. **No problem found:** Diagnosis up to 0.9 hours **Note:** If S0003XDX diagnosis labor operation maximum time allowance is not enough to cover all diagnosis, you can use actual time for the remaining difference. The actual time labor operation code must be the PNMC component repaired or replaced.