Noise Repair Techniques

REPAIR OVERVIEW

In this Job Aid, we are going to explain the causes of rattles and squeaks and provide you with some repair suggestions. This information is a general overview, and is NOT intended to take the place of specific repair information available in our service publications. Whenever possible, you should always follow published Honda repair procedures.

The information in this Job Aid is intended to give you some repair solutions for one-of-a-kind issues. If needed, you can also call Tech Line for advice.

Body noises tend to fall into five general categories:

- Clearance
- Misalignment
- Loose components
- Lubrication
- Body sheet metal/weld noise issues

CLEARANCE ISSUES

Clearance issues occur when properly aligned components make contact and generate noise. Most materials can create noise when there's a clearance issue.

You can address this concern with two options:

- Insulate the parts from each other
- Create clearance between the parts.

If a part is removable, you can insulate it using a material such as EPT foam, wiring harness insulator, or slip tape. The objective is to place a barrier between parts so that they cannot contact each other and generate noise. Use this approach for interior parts or other cosmetic components.

If the two parts touch, the simplest way to solve this issue is to create clearance between the two parts.

To accomplish this, gently bend or realign the part so there is no contact where the noise occurred (in most cases, 3mm is the minimum standard distance between parts).

Keep in mind, High Strength steels started appearing in our vehicles in 2009. These steels are very difficult to bend, and require special handling techniques.

CUSTOMER INFORMATION: The information in this bulletin is intended for use only by skilled technicians who have the proper tools, equipment, and training to correctly and safely maintain your vehicle. These procedures should not be attempted by "do-it-yourselfers," and you should not assume this bulletin applies to your vehicle, or that your vehicle has the condition described. To determine whether this information applies, contact an authorized Honda automobile dealer.

© 2016 American Honda Motor Co., Inc. – All Rights Reserved

MISALIGNMENT ISSUES

Misaligned parts create the same type of noises as clearance issues. For example, if the dash is shifted to one side, it may contact the door panel and cause a squeak.

Three things can cause misalignment issues

- Loose mounting fasteners
- Incorrectly set parts (from the factory or due to previous repairs)
- Deformed parts

For loose mounting fasteners, realign the part and secure its attaching hardware. Be sure to inspect the part carefully for cracked mounting holes or attachment points.

If the part is incorrectly set, you must loosen the fasteners, and then realign the part before securing it in place.

If the part is deformed, it may not properly align. If so, you can attempt to reshape it or insulate it from other parts, but if the deformation is too severe replacement is the only repair option.

LOOSE PART ISSUES

Parts may be loose for several reasons:

- Broken, incorrect or loose retaining clips
- Incorrectly tightened or cross-threaded screws or bolts.

These fastener issues can cause both clearance and misalignment issues.

Most retaining clip issues require new clips, but be sure to use the correct replacement parts. Many plastic panels are held in with push pins and other round retaining clips. These clips use different diameters from application to application, and use different grip lengths based on panel thickness and type of mounting base. Be sure to use the right clip, and return each clip to the correct mounting hole.

When you encounter a loose threaded fastener, be sure it is not cross-threaded. Cross-threaded bolts can jam in the bolt hole before they are fully tight. If this occurs, they may create a noise issue. For example, if a dash mounting bolt is cross-threaded, the bolt washer can rattle on rough roads (sounds like a jingling noise)

LUBRICATION ISSUES

During vehicle assembly, lubricants have two major functions:

- Reduce friction
- Provide a dampening effect

Reducing friction helps prevent groans caused by components such as stabilizer bushings. Dampening lubricants may prevent seat rollers or under dash linkages from clicking or creaking during vehicle movement.

In some cases, you may be able to use lubricants between two components to prevent a creak or a groan, such as a silicon spray applied between two trim panels.

BODY SHEET METAL/WELD NOISE ISSUES

Body noise issues fall into three general categories

- Lack of Clearance
- Excessive Clearance (Bowed Panels)
- Noisy Spot Welds

A lack of clearance creates creaks between two body components, while excessive clearance creates a deep popping noise called oil canning. Noisy spot welds can create a long creak or a quick pop.

Before repairing any Body Sheet Metal Noise Issues, research for Service Bulletins related to the noise you have or contact Tech Line additional repair options.

CLEARANCE REPAIR METHODS

Clearance repair options take two forms:

- Spread the Gap
- Reshape the Panel

In most cases, body noise repairs involve the use of a dead blow hammer and modifying the appearance of the panel. Because of this, only use these techniques on inner body panels, and if you damage the paint, use touch up paint to restore paint integrity and prevent corrosion.

To address a creak between two panels laid on top of each other, “massage” the area using the dead blow hammer and a 1” X 1” block of wood. Moving the metal 0.5 - 1.0 mm should be enough change to eliminate the creak.

If the creak occurs where two panels meet at an angle, a chisel driven between the panels can increase the panel gap.

To address excessive clearance or bowed panels, use a block of wood or metal dolly and attempt to reshape the panel to remove the bow. In some cases, placing a crease in the panel will eliminate the pop.

CONCERNS

HSS and UHSS Steel

Model changes since 2009 have gradually introduced greater amounts of high-strength (HSS) and ultra-high-strength steel (UHSS) to vehicle bodies. These changes have been made to meet the needs of increasing collision protection requirements, while keeping weight down to meet higher and fuel economy targets.

The body construction and tensile strengths of each steel part are listed in the General Information section of the body repair manual. UHSS rated at 980 MPa or more is found in the front upper and lower pillars, center pillar and side sill area, but some models place it in other areas as well.

Higher tensile-strength steel parts can be difficult if not nearly impossible to bend, dent, or otherwise "adjust" to resolve a noise condition. Always consult the appropriate body repair manual to determine the tensile strength of the steel parts in the suspected noise location.

If you’re working with a HSS or UHSS component and cannot resolve the issue, contact Tech Line or your DPSM for further instructions.

EXPANDABLE FOAM

Avoid filling body cavities with "hardware store" expandable foam to address body noises. This rarely fixes the noise, and can cause other problems. Expandable foam blocks moisture drainage paths, leading to corrosion. It is also very difficult to remove the cured foam during other services without body disassembly.

OILING JOINTS

In some cases, spraying oil in a sheet metal gap or joint can *temporarily* clear up a body creak or pop. While this appears to be an effective method to isolate the noise, we do not recommend it. Since the repair is temporary, the noise will return. However, until the noise comes back, you have no way of knowing if your repair attempt has cleared up the

issue. Rather than using oil, isolate the noise using a ChassisEar or other method, and spread the gap or reshape the panel to eliminate the noise.

WELD REPAIR METHODS

When considering welding to repair a body creak, you must **ALWAYS** consult the appropriate Body Repair Manual and determine what type of welding is permitted. The BRM identifies components using steel rated at or above 980 MPa tensile strength.

The following statement from the Body Repair Manual provides further information:

> *If ultra-high-strength steel is heated, the strength of the steel is reduced. If ultra-high-strength steel is damaged, for example, in a collision, and the reinforcement beams or the ultra-high-strength steel (UHSS) (1500 MPa) sheet are bent, the beams of the ultra-high-strength steel (UHSS) (1500 MPa) sheet may crack when attempting to straighten them. If a door beam is damaged, the whole door assembly must be replaced.*
>
> *For this reason, the door, bumper reinforcement beams, and the ultra-high-strength steel (UHSS) (1500 MPa) sheet should NEVER be repaired; and NEVER be welded by MAG welding; they must be replaced by only spot welding and MIG brazing if they are damaged.*

In addition, newer vehicles may require significant structural disassembly in order to isolate a weld noise and complete a proper weld repair.

MIG VERSUS MAG WELDING

Most wire feed welding requires a shield gas to isolate the weld arc from atmospheric gases. For most metals, an inert gas such as argon or helium is used, and we refer to this process as Metal Inert Gas or MIG welding.

In some cases an active gas such as CO2 or Oxygen is added to an argon base. This active gas affects the welds composition, and can change the structural composition of the metal. We refer to this process as Metal Active Gas or MAG welding.

For any steel rated at or above 980 MPa tensile strength, MAG welding repairs are prohibited.

Because of the concerns we've discussed here, any body noise repair that requires welding must be reviewed and approved by Tech Line. During the review, Tech Line will confirm the repair will not affect the body structure.

In the case of a warranty repair, you should also involve your DPSM, and get approval for any weld repair.

CONFIRMING THE REPAIR

Verifying the repair requires a test drive that confirms the noise is gone using driving conditions that generated the noise. To absolutely be sure that you have repaired the (correct) noise, include the customer in the test drive. This also demonstrates your level of concern, and if something goes wrong down the road, the customer will consider it a new issue, rather than a comeback.

HEADLINER RATTLE

Once the noise has been duplicated, you should start holding various components mounted to the roof. For example, a mirror base touching the front headliner garnish could cause a buzzing noise.

If pressing or pulling on components doesn't change the noise, remove the mirror, sun visors, and upper console components one at a time, and check for the noise after each removal.

If the noise remains, remove the headliner. The roof wiring harness is frequently attached to the headliner. Pay careful attention to the wiring harness attachments, since a loose wiring harness could generate a rattling noise.

If removing the headliner eliminates the noise, also check all the attachment points from missing or broken clips, and replace any that require attention.

MOONROOF RATTLES

There are two potential noise sources:

- The sunshade
- The moon roof assembly

There also two critical factors to consider when troubleshooting rattles:

- Moonroof position
- Sunshade position

In both cases, you can press against the parts during a test drive. Check for noises with the sunshade fully opened, shading a portion of the moonroof, and fully closed. If possible, find out if the owner hears the noise with the moonroof or sunshade in a specific position.

Check the fit of the moon roof glass when closed, and the clearance between the sunshade and the headliner as you move the sunshade back and forth. If needed, compare this clearance with a known good car.

During your test drive, push the moonroof and sunshade in all directions to see if the noise comes and goes.

If you can't isolate the noise, remove the sunshade first, and then the moonroof glass to see if anything changes.

With the glass removed, check the guide rail clearance. If everything looks good, you will next remove the headliner. Be sure to test drive after headliner removal, and confirm the rattle remains.

With the headliner removed, you can press on the guide rails, motor and cable guide tubes while driving the vehicle.

The last step is to remove the entire moon roof assembly and retest the car. Be sure to check the moon roof assembly for loose parts or clearance issues.

If the rattle remains, the issue is in the roof or body structure itself.

"A" AND "B" PILLARS *RATTLES AND CREAKS*

Most pillar noises involve the garnish (trim). Visually inspect all pieces for fit and proper mounting. If you can reach the pillar during a test drive, attempt to turn the noise on and off by pushing or pulling on the garnish.

If the noise continues, remove the garnish and check the drain tubes or antenna wires that run down the pillars. Drive the car again to confirm the noise remains with the trim removed, and to apply pressure to the components you exposed.

If wires or tubes rattle inside the pillar, you can stuff the cavity with rags or use EPT foam to hold components in place. Do not use expanding foams to isolate noises- You may create additional problems, and you have not confirmed the issue.

Pillar noises may also come from the metal or welds in the pillar. Remember you can jack up the car at its lift points to find a structural noise. See the section called "Locating the General Area of the Noise" for more information.

DASHBOARD RATTLES, CHIRPS AND CREAKS

If your test drive generated a dash noise, closely inspect the dash and its mounting points. Look the dash over closely for overall fit and clearance issues such as a door touching the dash.

The dash includes many mounting points, so check for cross-threaded bolts, cracked mounting holes, and supports that contact other components.

Try to duplicate the noise in your stall by pounding on the dash frame with your fist.

Pay close attention to interior temperatures, and the temperature and mode of operation of the HVAC system. If possible, determine if the noise is related to a specific temperature range.

Keep in mind that the noise may actually be coming from the front bulkhead or engine compartments. If you're confident you're hearing a dash noise, use the following sections to isolate the noise to a specific part or assembly related to the dash.

COMBINATION METER CREAKS, RATTLES, BUZZING, AND CHIRPING

Visually inspect the combination meter area for poor fit or gaps, loose parts and parts with contact issues.

During your test drive, push forward on the gauge assembly to see if the noise changes or goes away. Also squeeze the instrument panel together with the upper dash.

If possible, push the dash away from the driver's door and toward the instrument panel (This tightens the panel against the dash).

Check where the dash comes in contact with the console issue. Noises here can broadcast through the center air conditioning ducts.

If all of these isolation techniques do not change the noise, remove the combination meter and see if the noise remains. If so, continue to check and remove instrument panel assemblies.

GLOVE BOX *RATTLES*

Glove box rattles can usually be reproduced by pounding on the dash with your hand. However, you should drive the vehicle and push on the glove box to see if you can turn the noise on and off.

Pay particularly close attention to the latch and hinge assemblies. Either of these assemblies can work loose and cause fairly loud rattles. After repairs, check the glove box's body gasp, and confirm it opens and closes smoothly.

CENTER CONSOLE RATTLES AND CREAKS

After making a visual inspection for fit, push and pull on the console area parts while driving the car while listening to see if you can turn the noise off. If you can't find a fit issue or isolate the noise, remove the back half of the console (if possible). Test drive again, and check for rattles in any exposed shift cable(s), emergency brake cable and wiring harnesses.

If you don't isolate the noise, remove the console panel and repeat the test drive while checking lower dash components such as the audio screen and HVAC control panel.

During these checks, you may discover the noise source is located behind the console area. For example, a rattle from the heater box may appear to originate at the console.

LOWER DASH RATTLES AND CREAKS

The lower dash may include multiple layers designed to cover structural components or protect passenger's legs and knees. Because of this, you may remove several covers or panels before isolating a rattle or creak.

Like the glove box, try to reproduce the noise by pounding on the lower cover with your fist. If the noise remains, remove the lower cover and pound on the knee bolster itself.

Pay close attention to potential clearance issues between the knee bolster and other dash. Check the knee bolster frame for broken spot welds.
If you are unable to locate the noise with these isolation techniques, remove the knee bolster and test drive the car. If the noise remains and you've removed all the dashboard assemblies, the noise could be located behind the dash or in the engine compartment.

DOORS OR POWER WINDOWS *RATTLES*

The door contains many subsystems that could create noise including:

- Interior panels and trim
- Door latched and locks
- Power window assemblies
- Exterior mirrors
- Wiring harnesses

The following sections cover these systems in detail, but there are several steps you can use to help narrow down which sub system to focus on.

Moving the window up and down during a test drive may identify the window as a problem. However, closing the window may place pressure on the door frame, "killing" a noise related to an interior panel or trim piece.

You can also unlatch the door during a test drive. If the noise disappears, check for door striker or latch issues, or a clearance problem between the door panel and door frame.

During troubleshooting, you can lightly pound on the door with your fist to reproduce the noise. An open door sways on its hinges, making it easier to apply force and duplicate some noise issues.

INTERIOR PANELS SQUEAKS, FOAM CREAKS

If your test drive points to an interior panel noise issue, visually inspect for contact between the dash and door panel. Check to make sure that all clips are engaged, and the door panel is fully seated against the door frame. If the panel passes the visual checks, remove it and make sure any isolation pads are placed properly and not bunched up or torn. Also look carefully for missing attaching clips and witness marks in the door paint where panel contacts the door frame. Make sure all door panel attaching screws are tight and in place. If the door panel uses an upper and lower panel, check for creaks at the mating line.

If the noise remains after your checks, remove the door panel and test drive to see if the noise resides in a different area of the door. If so use the following sections to isolate which system contains the noise.

LOCK SYSTEM CREAKS AND RATTLES

Check the following areas is you suspect a lock system rattle:

- Striker / Latch
- Interior/ exterior handle
- Lock rods
- Power lock actuator

If the noise goes away when you unlatch the door on a test drive, visually inspect the door striker for loose or incorrectly positioned components. If everything passes, wrap tape around the striker and retest (door closed). If the noise stops, look for excessive wear in the latch assembly and striker.

Both Interior and Exterior door handles use a spring to keep the handle in the at rest position. During your inspection, make sure the spring hasn't broken, and that the handle base is tightly mounted to the door frame or inner panel.

To isolate lock rod noise, pulling slightly on the interior or exterior door handle or pushing and pulling the lock knob will take slack out of the system. You can also lock and unlock the doors during your test drive. If these actions affect the door noise, look for missing rod mounting clips or worn pivots on the lock rods.

If none of your external checks isolate the noise, remove the door panel and check the door lock actuator for loose mounting bolts or worn isolator pads.

MIRRORS RATTLES AND WHISTLES

In almost all cases, holding the mirror body or pressing on the mirror glass will isolate a mirror related rattle. Repair these issues by tightening the mounting points or replacing worn out components.

Because of the airflow around the exterior mirrors, they can become a source of wind noise (including whistles). If you remove a mirror to check this issue, be sure to tape up the mounting holes so you don't hear a different wind noise during the test drive.

If you determine an exterior mirror is the source of a whistle, make sure there are no gaps at the mirror base or a misaligned body gasket creating a slot or channel. A small imperfection at this body joint can easily create an unpleasant whistle or moan.

WINDOWS RATTLES

The window system has two potential noise sources:

- The glass and frame
- The lofting mechanism

To help narrow the source of the noise, press against the glass during the test drive and check for noises with the glass fully closed, partially down, and fully open. If possible, find out if the owner hears the noise with the window glass in a specific position.

Check the fit of the glass when closed, and make sure the window u-channel is properly inserted and not crushed or pulled out of the frame. If needed, compare this clearance with a known good car.

If the initial inspection does not identify an issue with the glass and window frame, remove the interior door panel and confirm the glass is tightly fastened to the lifting mechanism.

Check the guide rail clearance, and then check the lift mechanism for wear or looseness. If everything looks good, realign the glass to remove any tension in the system.

DOOR WIRE HARNESSES LIGHT TAPPING AND RUBBING NOISES

If you hear a light tapping or rubbing noise in the door, without a metallic click, suspect wiring harness issues. Remove the door panel and check the harness for broken retainers or a clearance problem.

SEAT FOAM AND COVER FOAM CREAKS, AND STICK AND RELEASE

When addressing Seat noise complaints pay close attention to the seating position used by the customer. You can often duplicate the noise in your stall by pushing on the seat and seat back, and releasing pressure quickly (use an open hand to spread the load). This is particularly true of noises generated when the seat material sticks together and then quickly releases.

To address the noise, remove the seat cover and insulate the friction points. Use wool felt or EPT foam to insulate the seat foam from the springs. For leather seat covers that "click", apply liquid soap between the cushion and seat back contact points.

SEAT FRAME POPS AND CREAKS

To address frame noise, isolate the source to the seat bottom or seat back. You may eliminate the noise by removing trim covers. If so, address any clearance issues between the cover and seat frame.

If the noise is in the base, check the bolt torque for the seat track bolts and recline mechanism.

If all the mounting points are tight, remove the seat covers and inspect the frames carefully while applying stress. Look closely for cracks or broken spot welds.

SEAT TRACKS ONE-TIME CLICK, CREAK OR CLUNK

Typically, this noise occurs during sudden stops or hard acceleration. If the seat uses a manual fore and aft adjustment, make sure both seat track locks engage by twisting your body while seated. If the lock engages during this check, the seat tracks are misaligned. Inspect the seat tracks for foreign objects, correct alignment, wear and sufficient lubricantion.

REAR SEAT LATCH MECHANISM AND HINGES RATTLES

During the test drive, fold the rear seat down to see if the noise disappears. If so, inspect the latch assembly and striker for wear, and adjust the striker to eliminate any play. Also check the rear seat back hinges for wear or excessive slack.

If the noise remains with the seat folded, remove the seat back and retest. If the noise goes away, shake the seatback and check for loose parts or trim pieces.

Also check for rattles in the fixed seat bolsters on each side of the folding seatback. Stuff rags between the bolsters and seat back, or remove the seat bolsters and retest the car.

TRUNK SPRINGS (UNDER REAR SHELF) TWANGING (TINNY RATTLE) AND CLICKING

Each trunk hinge has a long torsion spring, and noise is sometimes generated due to spring to spring contact or movement where the spring mounts to the body.

Make sure the springs are insulated from each other. Some models separate the springs with clips, while others use foam and zip ties. Also check for signs of rubbing or wear at the spring mounting points.

In some cases, removing the springs and reinstalling them can eliminate the noise.

TRUNK AREA WIRE HARNESSES LIGHT KNOCK OR RUBBING NOISES

Wire harnesses typically produce a light tapping or rubbing noise without a metallic click. To start your checks, look for broken harness retainers or a clearance problem.

You may be able to reproduce the noise by pounding in the shelf area. If not, have someone drive the car while you listen for knocks or noises coming from the trunk.

To help narrow down the source of the noise, remove the package tray and take a test drive. If the noise remains, wrap the harness and repeat the test drive.

"C" PILLAR AND SHELF GARNISHES RATTLES, CREAK, AND STICK AND RELEASE

Once you have isolated the noise, inspect the suspected area for trim alignment, fit and contact issues. Also check the suspected garnishes for looseness.

If you don't see a problem, remove garnish parts and retest after each removal.

Check for wire harnesses or drain tubes inside the pillar. If parts run through the box section, make sure the components are mounted tightly and insulate if needed.

The metal and/or welds that make up the pillar may also generate noise. Use a jack or curb to stress the body and attempt to duplicate the noise.

CENTER HIGH MOUNT STOP LIGHT RATTLES AND BUZZING

If you suspect the stop light has a buzz or rattle, you can perform a quick check by stuffing shop towels between the light housing and the back glass.

If the noise remains but you still suspect the light assembly, remove and retest.

If removing the stop light eliminates the noise, look for loose parts in the light assembly, or replace the part.

TRUNK AREA AND REAR EXTERIOR PANEL HINGES RATTLES AND SQUEAKS

During a test drive, releasing the trunk lid latch and listening for a change in the noise may help isolate the noise. The issue may also be in the fuel door lid, so be sure to check it for rattles, and if needed, release the fuel lid latch as well.

If you determine the noise is in the trunk hinges, make sure the trunk springs are in place and placing tension on the hinges. If so, remove the trunk springs and check the hinge joints for play. Check for loose garnishes or wires running through the hinge tubes.

TRUNK LATCHING MECHANISM RATTLES

If you suspect a trunk latch issue, release the trunk lid. If the noise goes away, first check the striker adjustment for looseness or clearance issues.

If the striker is adjusted properly, wrap electrical tape around the striker and retest. If the noise disappears, closely inspect the latch assembly and striker for wear and replace if needed.

TAILLIGHT ASSEMBLIES RATTLES OR KNOCKS

Once you've isolated the noise to the taillights, check for loose mounts or clearance issue between the taillight assembly and the body including poor fit or bent body panels.

If there are no fit issues, remove the taillight assembly and shake it. If you hear rattles in the assembly, remove the bulb sockets and check for broken or missing bulbs. If you discover a broken or missing bulb, attempt to shake the pieces out of the housing, reassemble the taillight and repeat the test drive. Identify the taillight has an internal rattle but you can't dislodge any loose pieces, replace the assembly.

TOOL STORAGE CLUNKS, RATTLES AND CHIRPS

If you have isolated the noise to the tool storage area, make sure all tools are properly packed and tightly stowed.

If no problems are found, remove the spare tire, jack, and tool kit one by one and test drive after each removal. Once you've determined the source of the noise, use tape or EPT foam to insulate the tool.

DECK LID OR REAR HATCH OIL CANNING, AND STICK AND RELEASE

After you have isolated the noise, visually inspect the fit of the deck lid or hatch relative to the body. Look for evidence that the panel is rubbing against the body. Inspect the underside for loose trim panels or missing body seals.

If no problems are observed, repeat the test drive with the panel unlatched and a rag placed between the latch and striker. If the problem remains, the noise may be from a different source. If the problem clears up, realign the deck lid or hatch to remove panel stress when latched.

LICENSE PLATE TINNY RATTLE OR BUZZING

Any time you have a rattle or buzz in this area, remove the license plate and test drive the car.

If the dealer or owner installed a license plate frame, make sure it fits properly over the license plate. Check to see if all license plate mounting bolts were installed, and confirm the bolt length is correct. Excessively long bolts may contact the inner truck structure or lock rods.

HOOD AREA AND FRONT EXTERIOR PANELS CREAKS

Be sure to question the customer carefully. This noise is usually heard when the car body is cold on the first drive cycle of the day. Frequently, it is impossible to duplicate this noise when the car is warm.

If needed, see if the car can stay overnight to allow a test drive first thing in the morning. If the noise is present, remove the windshield molding and retest to see if the noise goes away. If it does, grease the molding clips with DC-111.

HOOD RATTLES, KNOCKS, OIL CANNING, AND STICK AND RELEASE

During the test drive, pop the hood release to see if there is a change in the noise (stop prior to releasing the hood, and confirm the safety catch operation prior to proceeding).

If the noise goes away, check for an issue between the striker and hood latch. Inspect the fit of the hood when latched, paying close attention for any evidence that the hood panel is rubbing against the body.

Tape the striker and retest for the noise. If the noise goes away when the striker is taped, inspect the latch and striker assembly for wear.

Also inspect the hood for loose trim parts or windshield washer nozzles. Check the underside for broken retainers holding ducts or washer tubes. Also look for missing seals or body stops.

Also inspect the hinge mounting fasteners and the hinge. If all fasteners are tight, check the hinge for noticeable play with the hood both open and closed. You can also sandwich shop towels between the hinge halves with the hood closed during a test drive. This will slightly preload the hinge assembly and should eliminate any rattles.

FENDERS RATTLES

If you suspect a fender rattle, perform a thorough inspection in your stall. Start with a close inspection of the panel's alignment. Look for uneven body gaps or evidence of a “sprung” panel (a panel with stress applied by an incorrect body repair). Next, check that all mounting hardware is tight.

If the fender is properly aligned and tightly mounted, pound it with your fist to check for loose marker lights or sensors. Check several spots on the fender, preferably near any component mounting points.

Also check behind the fender for loose shields, components, or wiring harnesses. If needed, remove the splash shield to check the components between the fender and inner body structure.

FRONT AND REAR BUMPERS RATTLES AND SQUEAKS

Perform a thorough inspection in your stall. Start with a close inspection of the bumper's alignment. Look for clearance issues between the bumper cover and the body panels. Make sure all retaining clips are properly engaged.

Also look for loose bumper mounting fasteners and light assemblies. Check the gap between the bumper and headlights, taillights, grill or trunk lid. Contact between any of these surfaces and the bumper can create noises.

Also check behind the bumper for loose mounts, components, or wiring harnesses. If needed, remove the bumper to check for loose components inside the bumper structure.

HEADLIGHTS RATTLES OR WHISTLES

If you suspect a headlight problem, look for an improper crash repair. Open the hood and look over behind the headlights loose or misaligned parts and broken component mounts.

If there's no evidence of crash damage, pay close attention to any parts in full or partial contact with trim pieces or the bumper.

If the car passes the visual inspection, stuff rags between the gaps around the headlights and retest for the noise. Finally, you can remove the headlight assemblies one at a time and repeat the test drive.

GENERAL CHASSIS NOISES RATTLES, CLICKS, TWANGS, CREAKS AND CLUNKS

When troubleshooting chassis noises, pay close attention to the conditions present when the noise occurs. Because the chassis is a dynamic system, components may be in loaded or unloaded when they generate the noise. The steering axle can also change angles, and may only generate a noise at one specific angle. Braking, accelerating and turn also place loads on the suspension and may lead to a unique noise under one load condition.

During your test drive, keep these dynamic issues in mind, and see if you can define the conditions present when the suspension makes the noise. During your work bay inspection, try to duplicate the same conditions.

To isolate the noise, try bouncing the car up and down or moving the car side-to-side with your hands. Place the vehicle in park or first gear with the brakes released and rock the vehicle backwards and forwards.

Always do a visual inspection of all chassis parts and assemblies. Look for loose parts, bent or damaged parts and contact issues between parts. Look for rocks and debris caught between suspension components (for example, in between the spring coils).

Placing the car on a lift will allow you to pry and push on chassis components, but the suspension is in full drop with the springs fully extended. Because of this, the component load does not reflect the loads present during vehicle operation.

The following sections discuss isolation techniques for specific sub-assemblies in the suspension system. Review them for additional tips or isolation techniques.

STRUT ASSEMBLIES (INCLUDES SPRINGS) RATTLES, SQUEAKS, CLUNKS AND POPS

This category of noises can be very difficult to duplicate, and many customers have great difficulty describing the exact conditions present when the noise occurs. You and the customer may test drive the car and never hear the noise. If so, change conditions- Try making slow right and left-hand tums into a steep driveway or ramp.

During your inspection, start with a thorough visual inspection of the strut assembly and related components. You are look for damaged bushings and loose fasteners. Also keep an eye out for bent components or leaking shocks or struts. Replace any components that fail the visual inspection, and test drive again to check for noises.

If the visual inspection does not identify any issues, use the Chassis Ear on a test drive to try to localize the issue.

CHASSIS- STABILIZER BUSHINGS GRUNTS

When the car generates a “grunt” over speed bumps or large dips at low speeds, suspect a stabilizer bushing issue. These situations generate the most stabilizer bar rotation, making them the most likely culprit.

If the suspension passes an initial visual inspection, remove the stabilizer holder rubber bushings and inspect the stabilizer bar contact surface for damage. If there is no evidence of damage to the bushings, lube the bushings liberally with DC 111 and retest.

CHASSIS- BRAKE HARDWARE RATTLES, CLICKS

Lightly applying the brakes during a test drive can help isolate noises related to the brake hardware. If a little brake drag eliminates the noise, the issue is probably loose brake hardware.

If a “click” ONLY occurs when the vehicle changes direction, check for the brakes pads shifting in the caliper mount.

To inspect for brake noises, place the car on the lift and remove the tire and wheel assembly from the suspected axle, and look for component damage, excessive wear or missing parts.

NEVER test drive the vehicle with brake components removed. If the components are on a drive axle, you could remove the components with the car on a lift and drive the car to spin the wheels.

CHASSIS- ENGINE MOUNTS CLUNK

The best way to isolate an engine mount issue is to load the driveline forward and backward with the brakes set. If you hear a consistent “clunk” in either or both directions, inspect the engine mounts for an issue. Look for collapsed mounts, torn or ripped rubber isolators, or loose mounting brackets.

A NOTE ON ENGINE MOUNT NEUTRALIZATION

When you install an engine, transmission, or major suspension component, remember to neutralize the engine mounts. Failure to do so could lead to binding engine mounts which can transmit engine, power steering, A/C, and transmission noise and vibration into the body.

To neutralize the engine mounts follow this procedure:

- Insert the main engine mount bolts, finger-tight.
- Start the engine, apply the brakes, and engage Drive and Reverse several times each at idle.
- Shift to Park, and shut off the engine.
- Torque the main engine bolts to spec.