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Reducing Wi-Fi Interference in the Service Department

A wireless network in the dealership service department offers the freedom of connecting a variety of devices without being tethered by wires. But wireless networks have limits since, in a Wi-Fi network, all users are sharing the same space and must take turns to “talk” or share information.



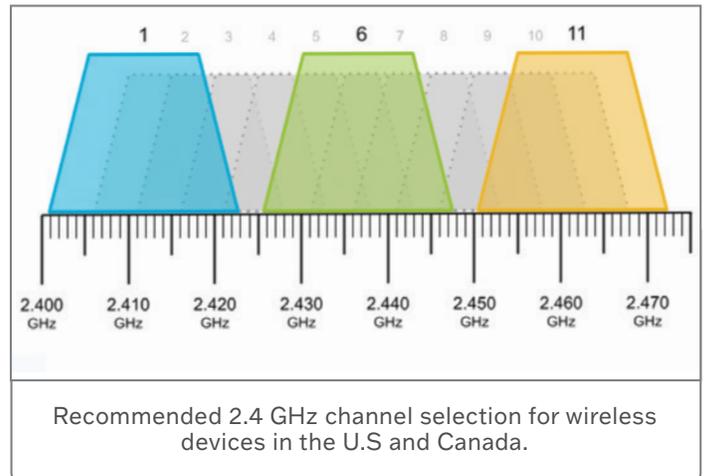
Wi-Fi is a convenience in the service department, but it has limits.

There are two primary frequency bands used for Wi-Fi. The most widely used is the 2.4 GHz band. The higher frequency 5 GHz band offers less potential interference but has a shorter range.

In the commonly used 2.4 GHz frequency band, there are 11 channels designated for wireless networks for use in the United States and Canada. The channels in the 2.4 GHz band are spaced 5 MHz apart. Wireless protocol requires 25 MHz of channel separation, which means that it is possible for adjacent channels to overlap and then interfere with each other.

There are two types of Wi-Fi channel interference that can take place within this frequency band: Adjacent-Channel interference and Co-Channel interference. With Adjacent-Channel interference, devices are trying to talk over each other while, with Co-Channel interference, devices are competing for time to talk on the same channel. Co-Channel interference is not a major concern until there are too many Wi-Fi devices on the same channel. However, Adjacent-Channel interference may lead to severe problems and channel selection for wireless devices. Wireless packet collisions can occur among overlapping adjacent channels and cause retries and, ultimately, slow response

when communicating. In a worst-case scenario, the result will be timeouts and connection failure.



WIRELESS MDI 2

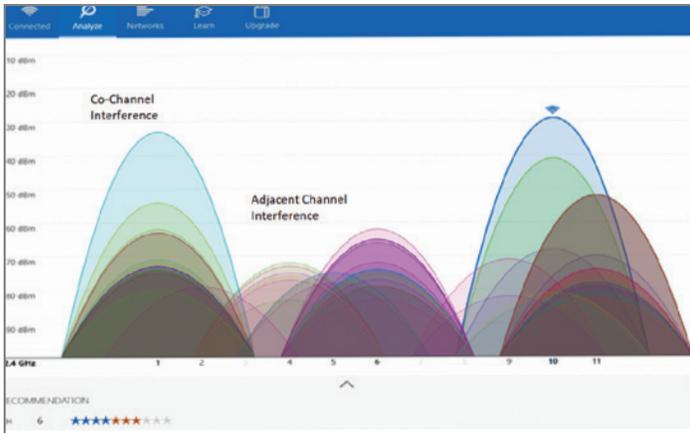
The MDI 2 in wireless point-to-point (P2P) mode uses two dongles that have tiny antennas with limited range. The MDI 2 signal strength is stronger with the MDI 2 located outside the vehicle.

The MDI 2 will automatically select a channel when booting up and may later change channel selection when the device is not in use. The MDI 2 will only auto select either channel 1, 6 or 11 according to an internal algorithm. These channels are the only non-overlapping channels in the 2.4 GHz band and are considered a better choice over other channels. The drawback in choosing either channel 1, 6, or 11 is that many other devices may select these channels as well and cause Co-Channel interference due to a large number of networks on the same channels, which will slow responses considerably. Yet, this is less problematic than dealing with Adjacent-Channel interference that occurs on all the other channels (2, 3, 4, 5, 7, 8, 9 and 10).

GM VEHICLE WI-FI

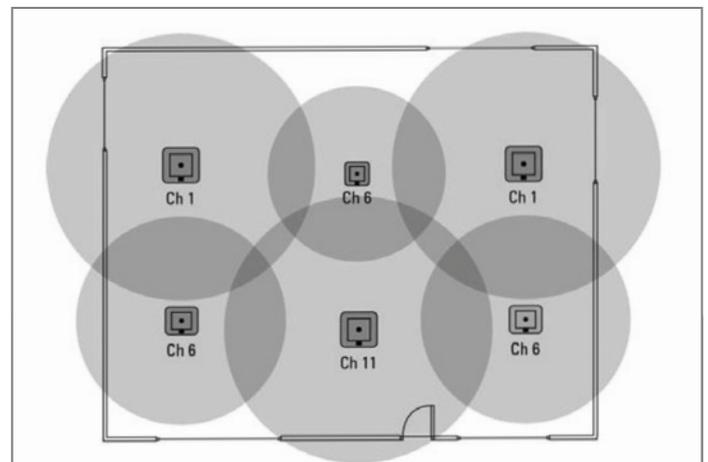
Beginning in the 2015 model year, GM vehicles began to support 2.4 GHz Wi-Fi. And in the 2020 model year, many GM vehicles also began supporting 5 GHz Wi-Fi. The radio in the vehicle dynamically selects and operates on the channel that has the least local traffic.

CONTINUED ON PAGE 3



Example of a very crowded Wi-Fi environment that will cause slow responses and even failure to connect to devices.

- Avoid using too many wireless devices at the same time within proximity of each other.
- If possible, configure your MDI 2 to use Wireless Access Point Mode via the MDI Manager.
- In ideal environments, Wireless Access Points sharing the same channel should be spaced apart far enough that their area of effect does not reach one another. Failing to maintain adequate spacing when using the same channel will cause signal interference.



Wireless Access Points sharing the same channel should be spaced apart.

TIP: A wired connection should be used when transferring data, such as during vehicle programming, to ensure critical devices do not experience disconnects, lag or fatal errors. If there is an interruption during programming, programming failure or control module damage may occur.

► Thanks to Chris Henley and Tarek Taleb

When in a service bay, each vehicle will have its own wireless hotspot. Adding these vehicles to a service department’s Wired Access Point can quickly oversaturate the wireless environment. For effective service, it may be necessary to move a vehicle away from other vehicles.

WIRELESS INTERFERENCE TIPS

In order to reduce wireless channel interference in the service department work environment, here are a few things that may help enhance prompt connections and responses:

- A scan of the wireless environment can provide useful information about your location. Turn off any wireless devices (MDI 2, vehicles with SSID, access points, wireless mouse/ keyboards, etc.) that are not currently in use.
- Use non-overlapping channels (1, 6 and 11 in the U.S. and Canada) or minimize overlap of signals by using channels as far apart as possible from other networks in range.
- Place your PC with the point-to-point dongle close to the MDI 2. Make sure there is a clear line of sight between the PC and the dongle under the MDI 2 plastic boot.
- Relocate point-to-point MDI 2 devices away from nearby routers, appliances and dense building materials.

FUEL ADDITIVES

IMPACT ON FUEL QUALITY



Various unproven products over the years have claimed to improve vehicle fuel economy. Many of these product benefits are based on unsubstantiated claims. In fact, the U.S. Federal Trade Commission summarizes results for products tested by the federal government at their website.

With recent changes in overall fuel prices, some customers visiting GM dealerships may have considered using a number of fuel additives in a quest to increase fuel economy. However, instead of delivering the desired improvement in fuel economy, some fuel additives or fuel alternatives may lead to poor engine performance, drivability concerns and damage to the engine that is not covered by the New Vehicle Limited Warranty.

IMPROPER FUEL ADDITIVES

GM does not recommend the use of fuel additives or any other products that claim to help increase fuel economy.

For example, kerosene or diesel fuel should never be added to any gasoline engine. Kerosene and diesel fuel are distillate fuels that have very low octane. Since they are heavier (higher density) than gasoline, they will cause heavy engine deposits, oil degradation and very poor drivability.

Acetone, ketones or methanol additives also should never be put in any gasoline engine. Some of these solvents may be incompatible with rubber and/or sealing components or may damage or corrode the fuel system. Damage to vehicle components that result from using non-approved or aftermarket additives are not covered by the New Vehicle Limited Warranty.

FUEL QUALITY

When diagnosing a possible fuel quality concern, reference the vehicle's Owner's Manual for fuel requirements and check the vehicle's RPO list.

Verify the following:

- Ask if the customer knows what fuel is in the vehicle.
- Ask if the customer knows what fuel is recommended to be used in the vehicle.
- At what operating temperature is there a concern: Hot or cold?
- At what ambient temperature is there a concern: Hot or cold?
- When does it occur – accelerating, decelerating, cruising, aggressive driving, cold, hot, accessories on, etc.
- Can it be driven through?
- Fuel sample

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Performance vehicles and turbocharged engines may see a greater concern if owners use a lesser octane gasoline than required or E85 fuel in non-compatible engines. Verify that the fuel being used is recommended for the engine.

MAXIMIZING FUEL ECONOMY

The best fuel economy possible for a vehicle is often achieved through proper maintenance and good driving habits. Performing common maintenance, such as replacing a dirty air filter and maintaining the proper tire pressure, can impact a vehicle's performance and efficiency.

Under-inflated tires are also a major contributor to poor fuel economy as low air pressure can create drag that the vehicle's powertrain must overcome, wasting fuel. The correct tire air pressure promotes fuel efficiency and reduces tire wear, further decreasing vehicle operational costs per mile.

Driving habits also can affect fuel consumption. Aggressive driving, such as quick or full-throttle acceleration from a standstill and heavy braking as well as high cruising speeds on highways will reduce the fuel economy of all vehicles.

FUEL SYSTEM TREATMENT

GM is aware that some companies are marketing tools, equipment and programs to support fuel injector cleaning as a preventative maintenance procedure. GM does not endorse, support or acknowledge the need for fuel injector cleaning as a preventative maintenance procedure. Fuel injector



cleaning is approved only when performed as directed by a published GM drivability or DTC diagnostic service procedure.

Due to the variation in fuel quality in different areas, the only preventative maintenance currently endorsed by GM regarding its gasoline engine fuel systems is adding GM Fuel System Treatment PLUS to a tank of fuel at each oil change. These fuel additives, which should be used when the vehicle exhibits loss of power, diminished performance, or a noted decrease in fuel economy, can help with the prevention and removal of deposits from the intake valves, fuel injectors and the combustion chamber.

More information about ways to optimize fuel economy, driving more efficiently, and detailed test information can be found at www.fueleconomy.gov, the official U.S. Department of Energy website.

For additional information and part numbers, refer to the latest version of Bulletin #05-00-89-072 and Bulletin #04-06-04-051.

► Thanks to Bryan Salisbury



Achieving Maximum Results in the Technician Excellence Program



In the first quarter of the Technician Excellence Program (U.S.), more than 9,000 enrolled technicians earned rewards. The first quarter payouts are scheduled for the week of July 18th.

To help ensure the success of the new Technician Excellence Program, the Service Technical College is closely monitoring technicians' questions and feedback. A number of enhancements were implemented in Q1 based on that feedback, including:

- Waived the minimum repair order (RO) count qualifier during program ramp-up. The RO count criterion has been restored as a Q2 payout requirement.
- World Class Technicians are now exempt from the RO count qualifier.
- Dashboard job aids were created for both dealer managers and technicians, providing details about interpreting and understanding the information on the Dashboard.
- Added visibility to the RO count detail on the Technician Excellence Dashboard, displaying the Vehicle Identification Number (VIN) and Job Card number.
- Clarified the 2022 Technician Excellence Program Guidelines to address frequently asked questions. "How To" steps have also been added to make navigating the program easier for dealers and technicians.

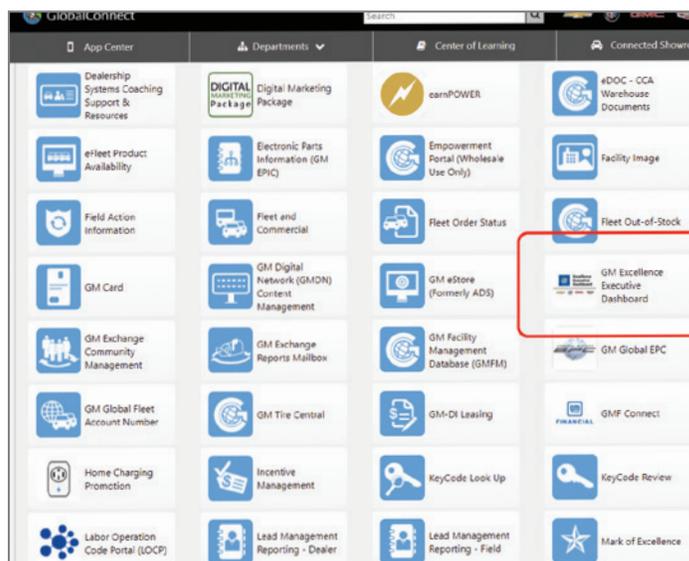
Q2 UPDATE FOR ENROLLED TECHNICIANS

Technicians are encouraged to use the GM Excellence Executive Dashboard found in the GlobalConnect App Center to monitor their progress in the program. The Dashboard includes technicians' progress and earning potential for each certification as well as indicates if they've met the qualifiers of the minimum

25 RO count and 100% completion in Emerging Issues and Fundamentals.

To help enrolled technicians maximize their earnings in the second quarter, here is an updated checklist to follow.

- Technicians receive earnPOWER rewards based on Gold, Master or World Class certifications when meeting other qualifiers. Technicians may show Master Technician Certification (MTC) or have World Class Certification (WCT) status, but may not be up to date on Fundamentals, Emerging Issues, and/or ASE certifications. All technicians should view the Program Dashboard to determine their overall status.
- Technicians should verify they have an active earnPOWER account. Access earnPOWER in the GlobalConnect App Center. earnPOWER account status is updated on the Technician Excellence Dashboard every Wednesday and Friday. Technicians can call 1-800-352-6638 for help with their accounts. For



Use the GM Excellence Executive Dashboard found in the GlobalConnect App Center to monitor progress in the program.

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active users, click on "Profile" in the earnPOWER app and verify all sections have green check marks, including Email and Password, Personal, Company, and Terms of Use.

- World Class Technicians Only – If the Technician Excellence Dashboard still shows an "N" for your My GM Rewards account, enroll by texting World Class (or WorldClass) to 81500. If you already have an account but are still showing "N" on the Program Dashboard, please email a screenshot from My GM Rewards showing your account number and email to henry.vandeventer@gm.com. My GM Rewards account status is updated every Monday.
- Technicians should be using the same email address on GlobalConnect, My GM Rewards (World Class Technicians), and earnPOWER.
- Technicians must be at 100% in the Fundamentals category on the Center of Learning by the end of the quarter (6/30/22).
- Technicians must be at 100% in the Emerging Issues category on the Center of Learning by the end of the quarter (6/30/22). To get there, a technician requires credit in these six courses:
 - 10221.11V –November 2021 EI
 - 10221.12V –December 2021 EI
 - 10222.01V –January 2022 EI
 - 10222.02V –February 2022 EI
 - 10222.03V –March 2022 EI
 - 10222.04V –April 2022 EI
- There is a 25 minimum repair order count to qualify for rewards. Current counts for technicians can be viewed on the Technician Excellence Dashboard and is updated weekly. Click the number for details. Eligible repair orders include those with your GM Identification Number (GMIN) on it that include a Warranty, Policy, Dealer-Installed Parts Warranty, or Field Action repair. PDI-related claims with your GMIN (e.g., dealer-installed accessory) are also included. World Class Technicians are exempt from the minimum repair order count.



LATEST GUIDELINES AND FAQs

The latest version of the Technician Excellence Program Guidelines is accessible via the Technician Excellence Dashboard. Select "Guidelines" in the menu on the Dashboard. The current version includes clarifications and additional information to answer frequently asked questions received over the past several months.

For additional information about the Technician Excellence Program, talk with your dealership service manager.

► Thanks to Patti Marino

Common Customer Trailer-Side Faults When Using the Trailering App

The 2019-2022 Silverado 1500, Sierra 1500; 2020-2022 Silverado 2500HD/3500HD, Sierra 2500HD/3500HD; and 2021-2022 Tahoe, Suburban, Yukon and Escalade offer a number of systems designed to help make towing easy. The in-vehicle trailering app (RPO U1D), for example, offers customization options for several trailer profiles, additional cameras, and trailer tire pressure and temperature monitoring.

Each vehicle system requires the proper operation of the trailer-side systems in order to work correctly. Conditions such as inoperative trailer lighting or trailer detection or intermittently flashing trailer lights while the vehicle is off may be the result of a poor connection on the customer's trailer. If any trailer-related issues are found, it's important to advise customers about the trailer wiring, connectors and trailer lighting. Trailer issues are not covered under the New Vehicle Limited Warranty.

TRAILERING LIGHTING

When a trailer is connected to the vehicle, the Trailer Lamp Control Module on the vehicle responds to the operator's lighting controls by applying voltage to the appropriate control circuit to the trailer connector of the vehicle. When the electrical connector from the trailer is plugged into the trailer connector of the vehicle, the voltage from the vehicle is then applied to the appropriate circuit on the trailer and the corresponding lamp on the trailer will illuminate. Fuse F74UA and F82UA are the power supply fuses to the Trailer Lamp Control Module. If a fuse is blown, an electrical fault likely exists on the trailer.

If it's necessary to determine the proper operation of the Trailer Lighting Control Module, connect the EL-52641 Trailer Simulator Test Tool to the vehicle's 7-way connector. The Trailer Lighting Control Module will detect the test tool and enable the trailer lighting outputs.

TRAILER WIRING FAULTS

Some common electrical failures found on trailers include loose connections, faulty ground circuits and water intrusion.



EL-52641 Trailer Simulator Test Tool

TIP: On 2021-2022 Tahoe, Suburban, Yukon, Escalade and 2022 Silverado 1500 and Sierra 1500 models, it is normal for the Driver Information Center to display a Check Trailer Wiring message when the trailer is disconnected from the vehicle while the ignition is in the Run position.

For any intermittent electrical issues on the trailer, check the trailer connector as well as the trailer lamp assemblies for a loose or broken connection. Wire nuts should not be used to service trailer wiring. Wire nuts are not properly sealed for automotive use and will allow moisture and debris into the electrical connection.

Also check for corroded or weak ground connections. Ground circuits are usually connected to the frame of the trailer using

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a screw or bolt. A faulty ground connection will not allow the flow of electricity through the circuit, resulting in defective lamp operation.

Lamps and wiring on boat trailer also may be damaged by water intrusion if not sealed properly. Water intrusion will usually lead to an electrical fault on the trailer and cause a high-current condition, resulting in a blown fuse.

TRAILERING APP

The available in-vehicle trailering app incorporates the functions of several vehicle systems in order to provide trailer lighting diagnostics, trailer tire pressure/temperature monitoring and trailer braking with an Integrated Trailer Brake Controller.

The trailering system consists of the following systems:

- Trailer lighting
- Trailer brakes
- Trailer battery charging system
- Trailer detection
- Trailer tire pressure monitoring system
- Trailer theft detection

Trailer lighting can be verified using the light testing feature on the trailering app. With the trailer connected to the vehicle, start the vehicle and select Start Light Test on the app. The trailer tail lamps, trailer turn/stop lamps and trailer backup lamps will turn on and off.



Depending on the settings, a Trailer Connected or No Trailer Connected status may be displayed by the trailering app.

When a trailer is connected with the vehicle ignition off, the Trailer Lighting Control Module will periodically pulse the lighting circuits of the trailer to verify it is still connected. Flashing or flickering lights is a normal condition.

If any trailer connections are lost, a message will appear on the Driver Information Center. Depending on the settings, a Trailer Connected or No Trailer Connected status may be displayed by the trailering app on the infotainment screen.

For additional information about typical trailer-side faults, refer to Bulletin #22-NA-108, Bulletin #22-NA-109 and Bulletin #22-NA-111.

► Thanks to David MaGillis, Kevin Minor and Hassan Abdallah

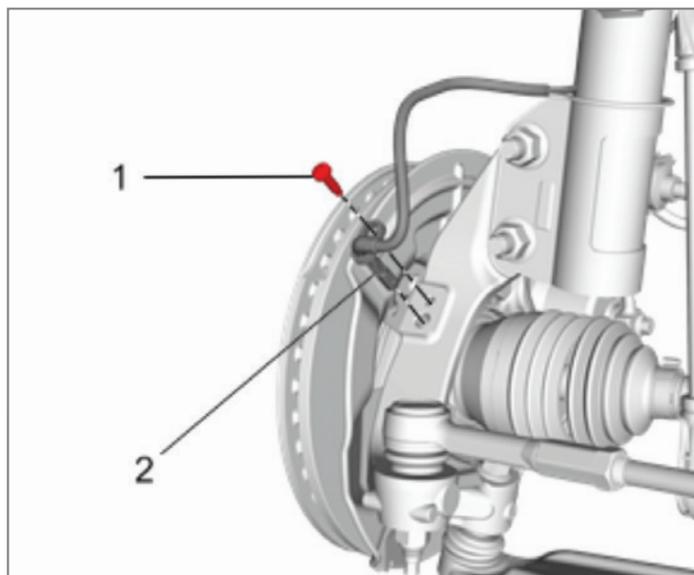
Intermittent Click Sound AT THE FRONT OF THE VEHICLE

Some 2017-2019 Bolt EVs may have an intermittent click sound at the front of the vehicle and the ABS, traction control and/or StabiliTrack warning lamps may illuminate on the instrument cluster. DTC P215B (Vehicle Speed – Output Shaft Speed Not Plausible) may be set along with wheel speed sensor DTCs C0035–C0051. These conditions may be caused by the fracturing of the front-wheel drive shaft anti-click washer, which also may result in possible damage to the ABS wheel speed sensor (WSS).

After verifying these conditions, replace the anti-click washer on the affected half shaft and then inspect the wheel speed sensor. If DTC P215B is set, the wheel speed sensor should be replaced.

To check the anti-click washer on each front-wheel drive shaft, separate the lower control arm from the steering knuckle and remove the anti-click washer from the outboard joint of the half shaft.

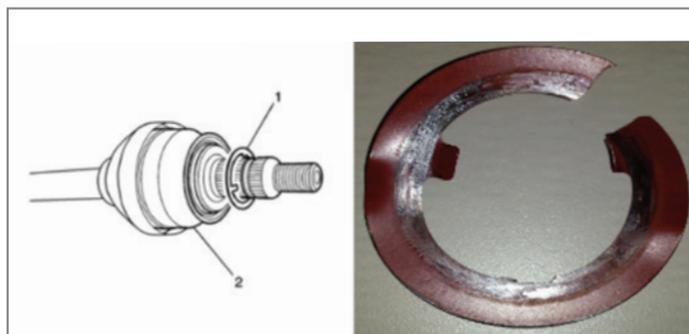
Also inspect the wheel speed sensor for any damage that may have been caused by contact with the oversized washer and replace the sensor if needed. If the wheel speed sensor is not damaged, reinstall the lower control arm to the steering knuckle.



Replace the wheel speed sensor (#2) if damaged.



Front-wheel drive shaft anti-click washer (#1)



Remove the anti-click washer from the outboard joint of the half shaft.

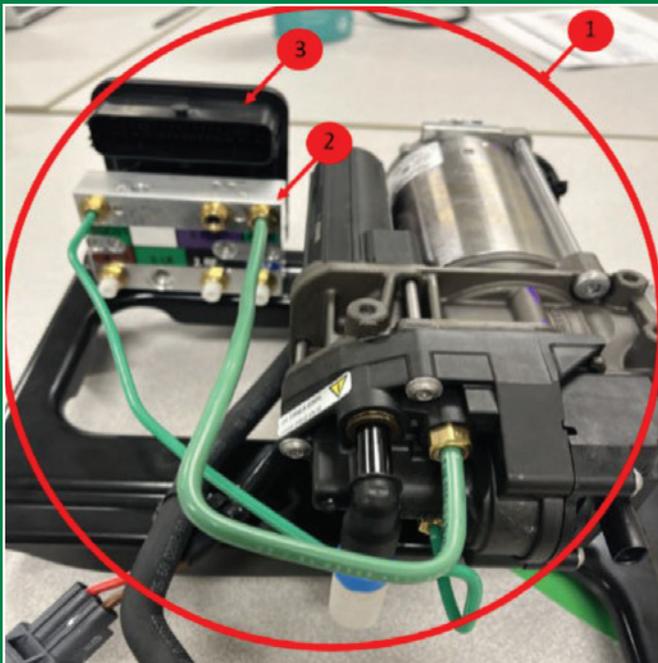
Refer to Bulletin #22-NA-089 for more information, including part numbers.

► Thanks to Jonathan Johnson

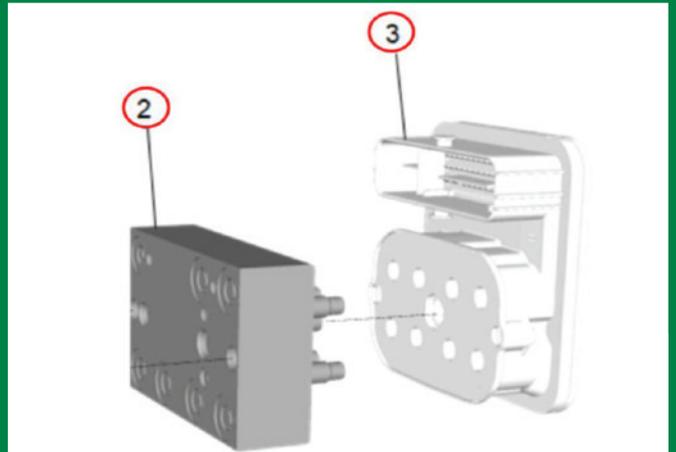
Component Names for the Air Leveling and Electronic Suspension Control Systems

The Air Leveling Suspension (RPO F47) and the Electronic Suspension Control System (RPO Z95) are available on 2021-2022 Tahoe, Suburban, Yukon and Escalade models. When servicing these systems, it's important to be clear on the names of each component to ensure the correct parts are being repaired and that the correct labor operations are being used.

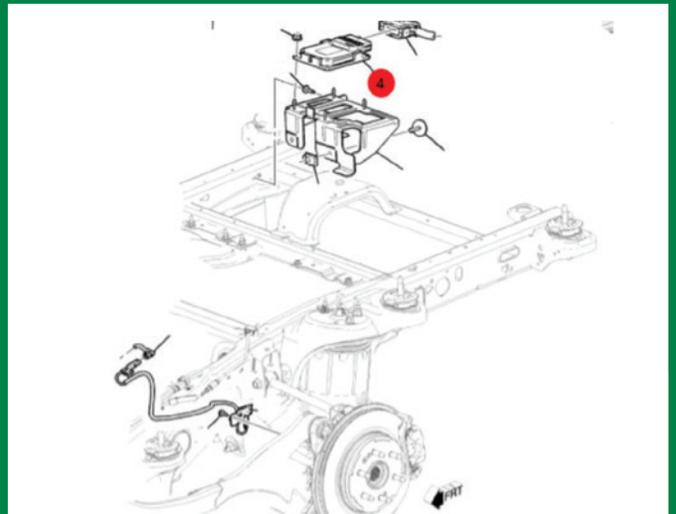
The Automatic Level Control Module of the Air Leveling Suspension is a complete assembly that would be replaced if the air compressor itself needed to be replaced. The Air Suspension Controller and Air Suspension Control Module are components of the Automatic Level Control Module and can be replaced separately.



Automatic Level Control Module (#1),
Air Suspension Controller (#2) and
Air Suspension Control Module (#3)



CAPTION: Air Suspension Controller (#2) and Air
Suspension Control Module (#3)



Suspension Control Module (#4)

Components include:

1. Automatic Level Control Module
2. Air Suspension Controller
3. Air Suspension Control Module

The Electronic Suspension Control System includes the Suspension Control Module.

For more information, including the associated labor operations for replacing the components, refer to #PIT5923.

► Thanks to Jim Will



Front Brake Squeal Sound During Light Brake Application

Some 2020-2022 Encore GX and 2021-2022 Trailblazer models may have a squealing sound originating from the front of the vehicle during light brake pedal application. The sound may occur at low speeds when the brakes are first applied or lightly applied, such as when exiting a parking lot or during first use after sitting overnight.

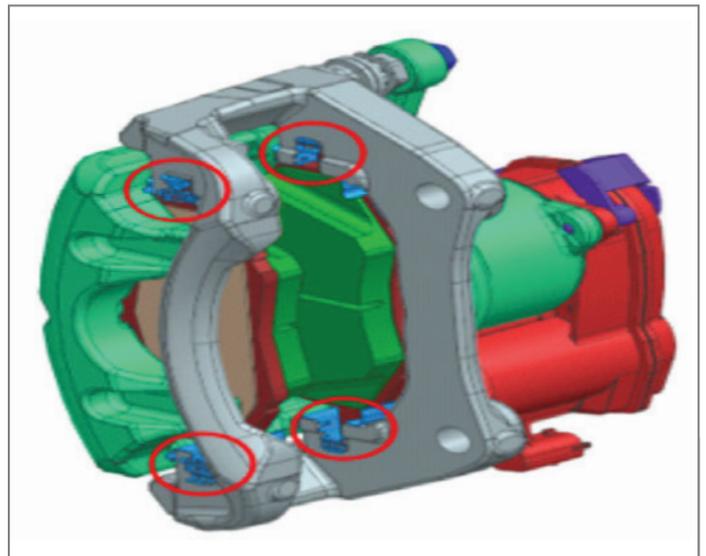
For 2020-2021 Encore GX and 2021 Trailblazer models built before March 20, 2020, apply grease on the caliper pad spring abutments and anti-rattle clips as well as replace the front brake pads and front disc pad wear sensors. Only Encore GX models are equipped with brake wear sensors.

For 2021-2022 Encore GX and Trailblazer models built between March 20, 2020 and February 14, 2022, remove the original front disc brake pads, apply grease on the caliper pad spring abutments and anti-rattle clips, and reinstall the pads.

For vehicles built after February 14, 2022, refer to Service Information to diagnose any brake system sounds.

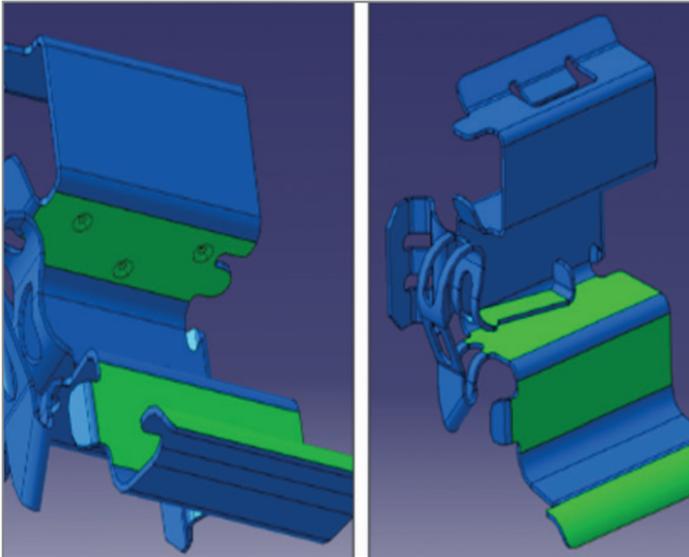
TIP: Some brake sounds are normal characteristics of all brake systems and do not indicate improper brake operation. Refer to Disc Brake System Description and Operation in the appropriate Service Information.

GREASING THE CALIPER PAD SPRING ABUTMENT AND CLIP



There are four pad abutments per caliper.

CONTINUED ON PAGE 13



Green areas indicate the locations where grease should be applied.



Apply grease to the pad spring abutment area on the caliper and anti-rattle clip.

There are four pad abutments per caliper.

The green areas shown above indicate the locations where grease should be applied.

Be sure to clean the pad spring abutment area on the caliper and anti-rattle clip before applying Molykote M-77 Grease. Apply

approximately 1.1 g of grease per caliper.

For additional information, including part numbers, refer to Bulletin #22-NA-079 and Bulletin #20-NA-095.

► Thanks to Frank Jakubiec

TECH LINK

GM TechLink is published for all GM retail technicians and service consultants to provide timely information to help increase knowledge about GM products and improve the performance of the service department.

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