TECH LINK

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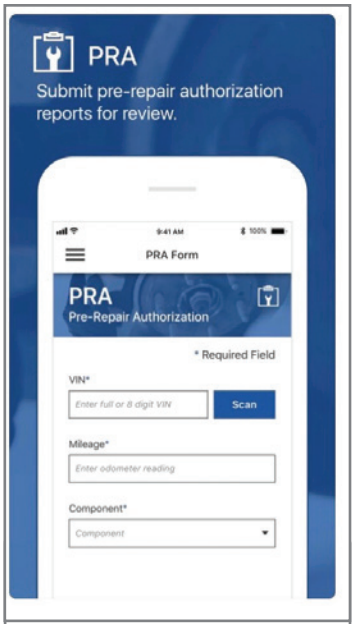
USE THE
Pre-Repair Authorization Process
FOR QUICK WARRANTY APPROVAL

Warranty replacement of wheels, seat covers and cushions, outside mirror assemblies, steering wheels, and interior door trim requires GM pre-authorization before repairs are made (U.S.). The Pre-Repair Authorization (RPA) process uses the Certified Service Mobile Toolbox (CSMT) app to submit an authorization request, which requires details of the repair and photos of the condition.



PRA is available through the CSMT app

The intent of the PRA process is to pre-screen product concerns while the customer is on the service drive to determine if the customers' concern is warrantable. If the determination is that the condition is not warrantable, the dealership has an opportunity to immediately communicate with the customer and provide an estimate for the repair. If the determination is that the condition is warrantable and therefore approved, a pre-authorization number for claim submission is provided and the replacement of the component may be performed.

CSMT APP

The CSMT is required to process RPA requests. In addition to the PRA app, it offers easy access to the Field Product Reporter app and Field Action updates. Simply click on the PRA tool to create and submit a request.

The CSMT app is free and available for use on most Apple® iPhones and Android™ devices. To use the app, find it in the Google Play Store for Android phones and in the Apple App Store for Apple phones. Once downloaded, log in using your GlobalConnect ID and password.

SUBMITTING A REQUEST

To make a PRA request once it's determined that one of the restricted components requires replacement, select the PRA tool on the CSMT app and enter the required vehicle and repair information.

Each request requires the following photos:

- Full Vehicle Information Number (VIN) plate located on bottom-left corner of the windshield. (Not required if the submission is for all four wheels.)
- Odometer reading displayed on the instrument panel (make sure the reading displayed is clear in the photo).
- Side (quarter) view of the vehicle (bumper to bumper, roof to tire).
- Full view of the component with labelling (all components will require a "zoomed-out" picture).
- Close-up of the issue (point out the issue with pencil, finger, tape or other marking).

Examples of photos with correct views and labels.

For more information on submitting photos, refer to Bulletin #18-NA-306. Use the built-in photo feature in the RPA app to take photos. Up to 10 photos can be attached to the PRA request and up to 30 seconds of video (to support noise concerns with the component). Additional photos from your phone's photo gallery can be attached to the request prior to submission if further visual support is needed beyond the 10 required photos taken via the app.

Once all photos have been taken, select the Next button to finalize the request. Review all information on the PRA Form Review screen. If needed, use the back arrow to go back and make any corrections. If the information is correct, select Next again to

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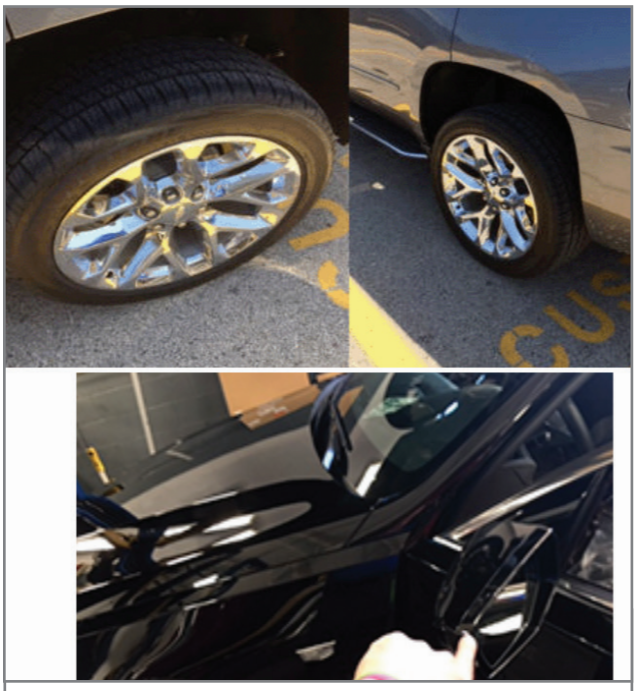
submit the request. Your email app will open and you must select the appropriate Send button. Android users must use Gmail for requests to be sent successfully.



Examples of photos with poor angles and no labels.

The request is reviewed by a PRA specialist who will then send a return email with a decision of "warrantable" or "non-warrantable," or a request for additional information needed. Responses will occur within one business day or less.

PROCESSING A PRE-AUTHORIZATION

Once the dealership receives an approval email with an Authorization number (PRA number), proceed with the repair and submit the warranty transaction:

- Use the labor code included in the approval email. This labor code must be used to avoid a claim reject.
- The VIN on the PRA request must match the VIN on the transaction.
- Select GM Pre-Repair Authorization in the Authorization/ Comments Section' and enter the Pre-Repair Authorization Number provided on the approval email response in the Comments section.

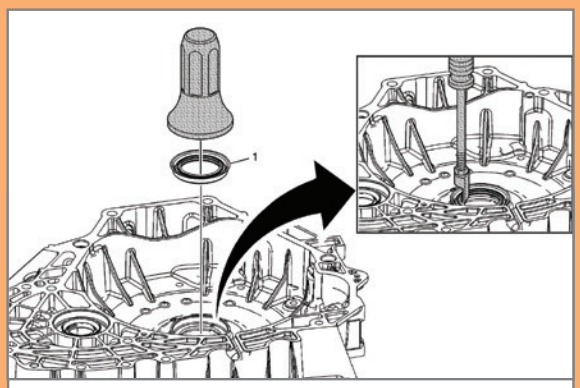
Refer to the latest version of Bulletin #18-NA-306 for additional information about the PRA process, including restricted labor codes.

▶ Thanks to Lisa Campbell and Patti Marino

Torque Converter Fluid Seal Leak

Fluid may be noticed leaking from the front of some 2019 XTS, Impala and Acadia models equipped with the 6T70, 6T75 or 6T80 automatic transmission (RPO MHM, M7U, M7W, M7V). The fluid may be transmission fluid coming from the front of the transmission in the torque converter area.

Some transmissions may have fluid leaking from or around the torque converter fluid seal, which may not have been installed correctly during assembly. The seal may have been damaged during installation of the torque converter or may be excessively worn due to the improper installation.



Torque converter fluid seal

Check the torque converter fluid seal for any leaking or damage and replace it if necessary. Removing and installing a new seal requires special tools DT 23129 Universal Seal Remover, DT 49861 Seal Installer, and GE 6125-1B Slide Hammer with Adapter or equivalent.

TIP: Support the back side of the torque converter housing while installing the seal. Install the seal until it stops moving. Do not apply excessive pressure to the seal once it is seated, which could cause damage to the torque converter housing casting.

Also inspect the torque converter for damage. Replacement of the torque converter is not necessary unless a pressure test shows a leak or if there is turbine hub damage.

Refer to Bulletin #20-NA-023 for additional information and part numbers.

▶ Thanks to Mark Kevnick

Special Tools Software Update Download Process

The Active Fuel Injector Tester (AFIT), R1234yf A/C Machine, Pico Scope NVH Tool, and TPMS and RF Tool are just a few of the special service tools that require occasional software updates in order to ensure the tool functions properly, offers the latest features, and is applicable to new GM models and systems.

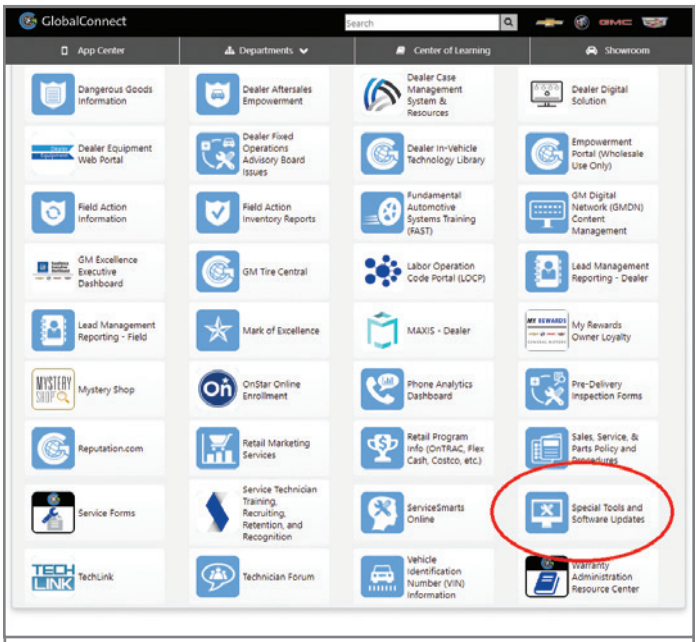
GM special tools

ACCESS THROUGH GLOBALCONNECT

The latest software updates for special service tools are available on the Home page of gmtoolsandequipment.com, which should be accessed through GM GlobalConnect. Accessing the software download through GM GlobalConnect enables dealerships to acquire the download at no-charge since payment will be made through their essential tools/parts account billing; if applicable.

SOFTWARE DOWNLOAD

1. Log in to GM GlobalConnect.
2. Click the Departments menu and select Service.
3. Under Applications on the Service page, select Special Tools and Software Updates.
4. You will be redirected to gmtoolsandequipment. (Downloads from the website must be made through the GlobalConnect link.)
5. Select Software Downloads for the latest software versions for GM service tools.
6. Click the setup links and follow the instructions to update the tool.



Access the software updates through GlobalConnect.

To perform a search for a software update on the special service tools website, search for the parent tool number for the hardware, not the software update number. For example, EL-50334-100A (Multimedia Interface Tester hardware), not the software item number, such as EL-50334-SW2. The software item number will not be found via keyword search.

To download the update, click the software link listed for the hardware and follow the instructions.

Always refer to the Update Instructions found under the list of Support Documents for more information, if available. (Fig. 16) The Update Instructions cover the steps that should be taken before as well as during the update process to avoid any errors and properly update the tool.

Links to the user guides for the tools also are provided.

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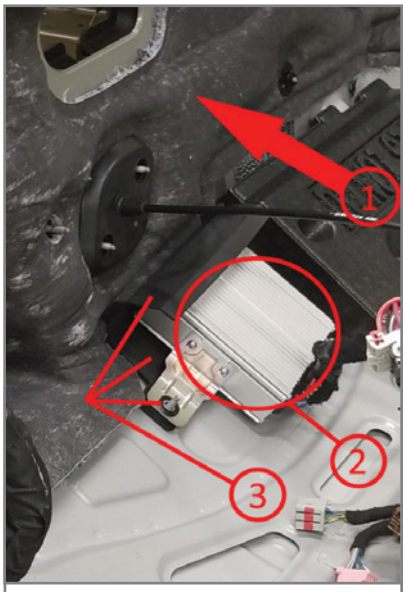
LOSS OF AUDIO OR ABNORMAL SPEAKER OPERATION

There may be several audio conditions, including loss of audio, loss of chime, loss of turn signal indicator sound, low or no audio from a speaker channel, or abnormal speaker noises, on some 2018-2019 Enclave and Traverse models equipped with the standard audio speaker system (RPO UQF). These conditions may be caused by condensation from the HVAC system entering the Active Noise Cancelation (ANC) module through the module vents.



ANC module (#2) and ANC module secondary shield (#3)

If these conditions are present, verify the conditions. If necessary, replace the ANC module and install an ANC module secondary shield to prevent additional moisture from entering the module vents.

The ANC module is located behind the console towards the front of the vehicle. Confirm audio is present by disconnecting the ANC module X2 connector and, using the appropriate diagnostic test probe, jumper the involved speaker circuit terminals to bypass the ANC module. The ANC module amplifies the audio signal so the speaker audio output will be at a lower level when bypassing the ANC module.

ANC module

If audio is not present, or abnormal speaker noise still exists, other conditions may be present. Follow the appropriate diagnostic information in the Service Information for each condition.

If audio is present at a lower level, or abnormal speaker noise is no longer present, replace the ANC module and install the ANC module secondary shield. The shield should be installed on the studs first before installing the new module.

▶ Thanks to Zach Gillett

Special Tools Software Update

CURRENT SOFTWARE FOR SPECIAL TOOLS

Software downloads for the following special tools are currently available:

- EL-50334-100A Multi-media Infotainment Tester 9MIT
- CH-47976 Active Fuel Injection Tester (AFIT)
- GE-50300-A R1234yf A/C Machine
- EL-50313 GR8 Battery Service Tool
- EL-50332-B EV Battery Depowering Tool
- CH-51450 Pico Scope NV Tool
- EL-52545 TPMS and RF Tool

▶ Thanks to Tim Lightfoot

Vehicle Systems Work Together to Deliver Trailering App Functionality

The Advanced Trailering System available on the 2019-2020 Silverado 1500 and 2020 Silverado HD and the ProGrade Trailering System available on the 2019-2020 Sierra 1500 and 2020 Sierra HD features an in-vehicle trailering app (RPO U1D) that uses the functions of several vehicle systems in order to deliver trailer lighting diagnostics, trailer tire pressure/temperature monitoring and trailer braking with an Integrated Trailer Brake Controller. For example, all trailer detections are identified by the Trailer Lighting Control Module while the trailer braking is controlled by the Trailer Brake Power Control Module.

When diagnosing any trailering conditions, keep in mind that several systems are working together. Here are a few items to be aware of with the systems that function with the trailering app.

TRAILER BRAKING

The trailer brake control system is used to control the amount of trailer braking power that is made available to trailers with brakes that require a controlled electrical output signal for actuation. The power output to the trailer brakes is based on the amount of braking being applied by the vehicle's brake system, the type of trailer brakes detected, and the set amount of output (trailer gain).

Trailer braking components include:

- K38A Chassis Control Module-Auxiliary (2500/3500 HD models only)
- K160 Brake System Control Module (1500 models only)
- K133 Trailer Brake Power Control Module
- S76 Trailer Brake Control Panel
- Manual Trailer Brake Apply
- Trailer Gain Adjustment
- Trailer Brake Driver Information Center (DIC) Display

The S76 Trailer Brake Control Panel, located on the instrument panel, contains the trailer gain and manual apply switches that allow the driver to adjust the amount of output, or trailer gain, available to the Electric or Electric Over Hydraulic brakes. It also allows the driver to manually apply the trailer brakes. The trailer brake control panel and switches are used along with the trailer brake display page on the Driver Information Center to adjust and display power output to the trailer brakes.

Trailer gain

Trailer gain should be set for a specific trailering condition and adjusted any time vehicle loading, trailer loading or road surface conditions change. Setting the trailer gain properly is needed for the best trailer stopping performance. A trailer that is over-gained may result in locked trailer brakes. A trailer that is under-gained may result in not enough trailer braking.

Adjust trailer gain in 0.5 step increments up to a 10 gain setting by using the gain adjustment +/– buttons on the trailer brake control panel switch. Adjust the trailer gain to just below the threshold of trailer wheel lock-up. To turn the output to the trailer off, set the gain to zero.

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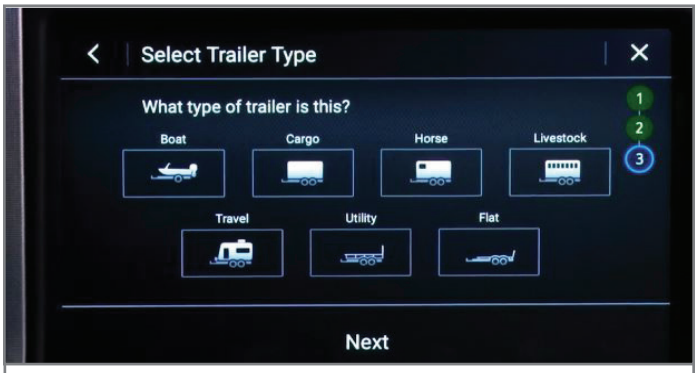
TRAILER BRAKE GAIN RECALL

After the electrical connection is made to a trailer equipped with electric brakes or electric over hydraulic brakes, the TRAILER CONNECTED message will be displayed momentarily on the DIC.

When a trailer is electrically connected, there also will be an option to create a profile, use a guest profile, or cancel. To turn the Trailer Detection Alert on, select ON in the Settings tab.

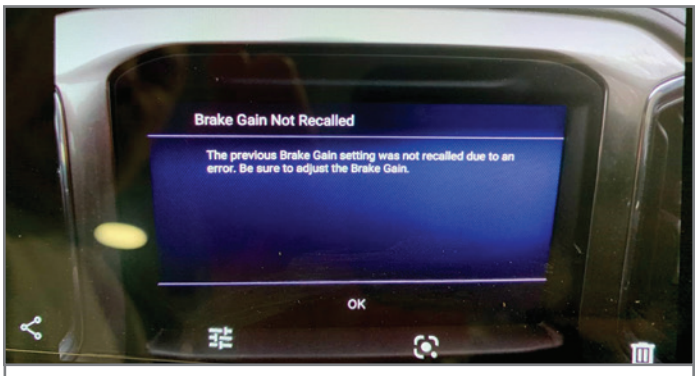
With a trailer connected and a trailer profile created, a trailer detection pop-up will appear on the infotainment screen with a list of all of the custom trailer profiles made on the vehicle. To load an existing trailer profile, select one of the profiles listed. Touching Cancel, Accessory/No trailer, or shifting the vehicle from Park, will select Accessory/No trailer as the active trailer profile.



Trailering profiles

The system can memorize the brake gain setting of a trailer profile or a guest trailer profile. When a trailer profile or guest trailer profile is selected, and a brake gain setting is set for that trailer profile, a quick notice on the infotainment screen will appear to indicate that the system has recalled that profile's brake gain setting.

If a trailer profile is already active and the brake gain setting had been set for that trailer profile, the quick notice will trigger whenever the ignition is turned on.



Brake Gain pop-up notification

If there was an error in setting the brake gain for a trailer profile, there will be a notification. The pop-up will not appear if the guest trailer profile is active or if there is no trailer connected.

TIP: Once the trailer is connected, the ignition may require a cycle to start the connection process. When the process of recalling the trailer has started, it must complete before the vehicle is placed in Drive; otherwise, the process will be interrupted before the brake gain is recalled. If this occurs, the brake gain will have to be applied manually.

TIRE PRESSURE MONITOR SYSTEM

The Trailer Tire Pressure Monitor System is designed to monitor the pressure of the trailer tires and warn the driver when a low-pressure condition exists. Trailer Tire Pressure Monitor System sensors for four tires are provided in the vehicle's glove box. The system can accommodate a trailer with up to six tires if additional sensors are purchased from the dealership. Also, the system can be paired with up to five individual trailers. The sensors must be mounted onto each tire and wheel assembly, and the sensors must be learned by the vehicle.

TRAILER TIRE PRESSURE MONITORING OPERATION

The Trailer Tire Pressure Monitor System sensors monitor the air pressure in the trailer tires and transmit the trailer tire pressure readings to a receiver located in the vehicle. The tire pressure values can be viewed in the trailering app on the vehicle's infotainment screen.

The sensor readings can only be received from a trailer that has axles no more than 23 feet from the rear of the truck. For example, if the first axle of a trailer is 27`6 " from the vehicle, the second axle is 30`6", and the third axle 33`6", the system can only receive data from axle #1.

The system is compatible with trailer tires that have placard pressure values from 15 - 100 psi (103 - 689 kpa). The hole in the wheel for the tire stem must be 0.453 inches (11.43 mm) in diameter. Use of the pressure sensors on a wheel with a different stem hole size could result in loss of air from the tire.

In addition, the system monitors the temperature of the trailer tires. If the system detects a high temperature on one or more of the trailer tires, a warning message will be displayed on the DIC. Common causes for high trailer tire temperature are underinflation, overloading, or tire damage.

▶ Thanks to David MacGillis and Steve Dice

Trailering App Trailer Connection and Lighting Diagnosis Update

The new trailering app (RPO U1D) available on the 2019-2020 Silverado 1500 and Sierra 1500 and the 2020 Silverado HD and Sierra HD uses the K68 Trailer Lighting Control Module (TLCM), or Trailer Interface Module, to constantly monitor for trailer connection status, trailer lighting faults, and trailer theft deterrent purposes through the lighting circuits of the trailer.

New trailering app

TRAILER CONNECTION STATUS

When a trailer is connected, the Trailer Lighting Control Module senses the trailer connection using the lighting circuits of the trailer and alerts the driver by requesting a trailer profile setup through the trailering app on the infotainment screen (P17 Info Display Module). The Trailer Detection Alert setting must be enabled for the alert to display when a trailer is connected.

Trailering app profile screen

With a trailer connected and the ignition off, the Trailer Lighting Control Module will periodically pulse the lighting circuits of the trailer to verify it is still connected. Depending on the configuration of the trailer lights, the trailer lights may periodically flash as part of the trailer connection detection or theft deterrent functions. These flashes may be more visible in dark ambient light environments and correspond to when the Trailer Lighting Control Module pulses the lighting circuits to ensure the trailer is still connected.

TIP: The flashing or flickering lights is a normal condition and this operation should be explained to the customer when a vehicle is brought to the dealership for a flickering/flashing lights condition. **GM is receiving CCND warranty claims for this condition and it should not be charged through warranty.**

Flashing or flickering lights is a normal condition of the trailer connection detection function.

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

The trailering app displays Trailer Connected or No Trailer Connected.

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TIP: Trailer disconnection detection by the Trailer Lighting Control Module requires that a trailer light circuit must be activated after the trailer is disconnected. If a trailer is disconnected while no trailer lights are active, the trailer will continue to be reported as connected by the trailering app. Always have the vehicle lights on when disconnecting the trailer to ensure the system properly detects the disconnection.

Other causes that may result in a trailer not being detected include poor trailer wiring or a poor connection at the trailer connector. It may be necessary to update the trailer wiring, trailer connector, or trailer lights.

TRAILER BRAKE SYSTEM

The available Trailer Brake System with an Integrated Trailer Brake Control and the trailering app both report trailer connection information. However, the Trailer Brake System and related DIC messages are independent from the Trailer Lighting Control Module trailer connection detection system that feeds the trailering app on the infotainment screen.

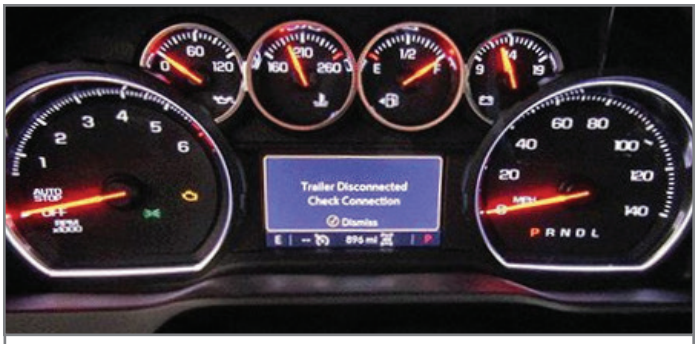
If the truck is equipped with a Trailer Brake System, a Trailer Brakes Connected message will display on the Driver Information Center (DIC) when a trailer with electric trailer brakes is connected. In addition, this system will display Check Trailer Wiring on the DIC every time a trailer with electric brakes is disconnected.

Integrated Trailer Brake Control

TRAILER DISCONNECTED MESSAGE

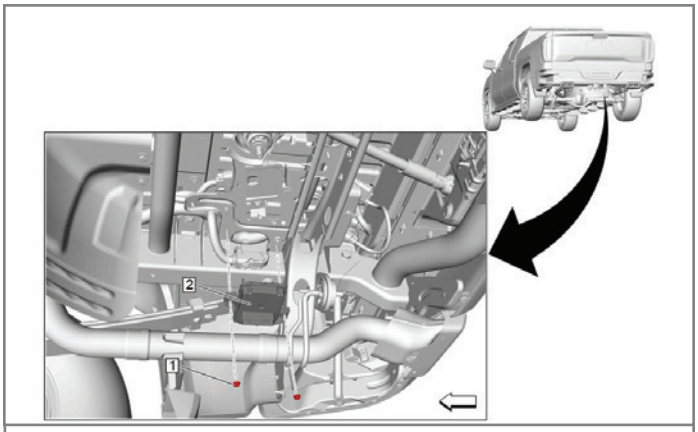
On some 2019 Silverado 1500 and Sierra 1500 models only, a "Trailer Disconnected, Check Connection" message may display on the DIC without a trailer being connected. If the Trailer Lighting Control Module on 2019 models detects enough of a load on any of the trailer tail lamps or stop/turn signal circuits, it may determine that a trailer has been connected. However, any moisture or corrosion in the trailer receptacle or Trailer Lighting Control Module connector, or anything left plugged into the trailer receptacle, such as trailer adapters with built-in test LEDs, may cause the module to think that a trailer is connected.

If this condition is found, remove anything plugged into the trailer receptacle and inspect for any moisture or corrosion in the trailer receptacle at the rear bumper, the available receptacle for



Trailer Disconnected, Check Connection message

when towing a 5th wheel trailer, the chassis harness connector that plugs into the trailer receptacle, and the Trailer Lighting Control Module connector. Clean and repair any connection issues.



K68 Trailer Lighting Control Module

TRAILER LIGHTING

For lighting operation, the Trailer Lighting Control Module receives serial data messages from the Body Control Module (BCM) indicating which lamps have been activated on the vehicle. The Trailer Lighting Control Module responds by applying voltage to the appropriate control circuits for the requested lamps to illuminate the lamps on the attached trailer. The Trailer Lighting Control Module constantly monitors the trailer's reverse, park, and left and right stop/turn signal lamps.

2019 model year vehicles equipped with a Trailer Lighting Control Module cannot drive as much current on each circuit when compared to the non-Trailer Lighting Control Module trailer lighting system. The Trailer Lighting Control Module drives four trailer circuits using four solid state drivers that are fed from one 30A lighting fuse. If the total current on the four circuits overloads the fuse, it will fail. If any single lighting circuit exceeds the driver threshold, it will deactivate the output for the balance of the key cycle and a reactivation of the lamp load is required. Individual DTCs are activated for each circuit and that load is turned off due to high current. If a trailer draws too much current, it may be helpful to change some or all of the trailer lighting to LEDs.

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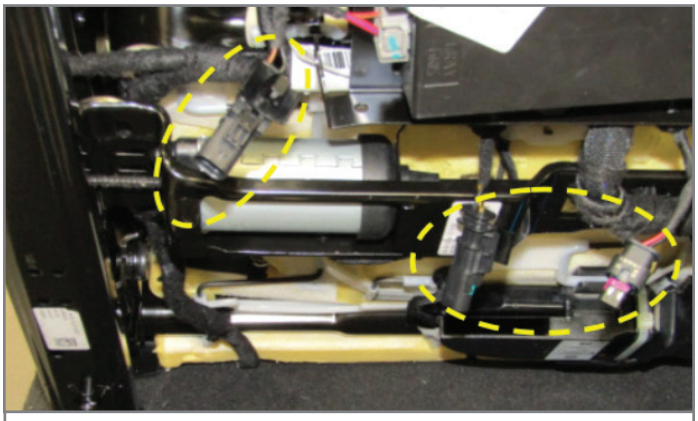
Safety Alert Seat Lane Departure Warning Inoperative

Some 2016-2019 Envision models may have a Service Driver Assist message displayed on the Driver Information Center along with an inoperative Lane Departure Warning actuator in the Safety Alert Seat (driver's seat). DTC B172E (Driver Seat Cushion Left Rear Haptic Movement) also may be set.

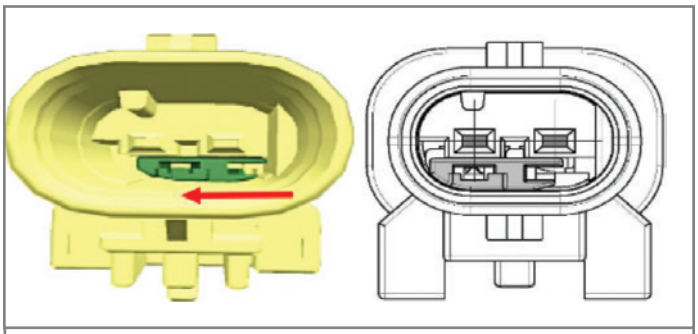
These conditions may be due to negative inductance energy driven to the actuator, overheating the Memory Seat Module chip and causing the Memory Seat Module to shut off the port for the actuator. If these conditions are found, replace the two front seat Lane Departure Warning actuators following the procedures in the appropriate Service Information.

The two front seat Lane Departure Warning actuators



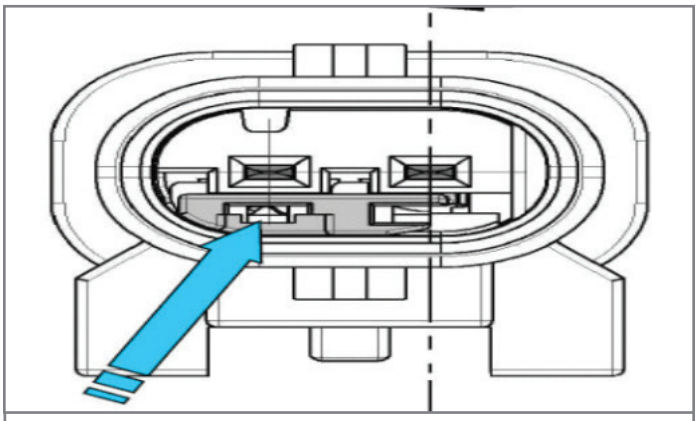
Actuator connectors

In addition, rework the actuator harness to swap the terminal polarity on the actuator connectors. Be sure to complete the harness rework before reassembling the seat.



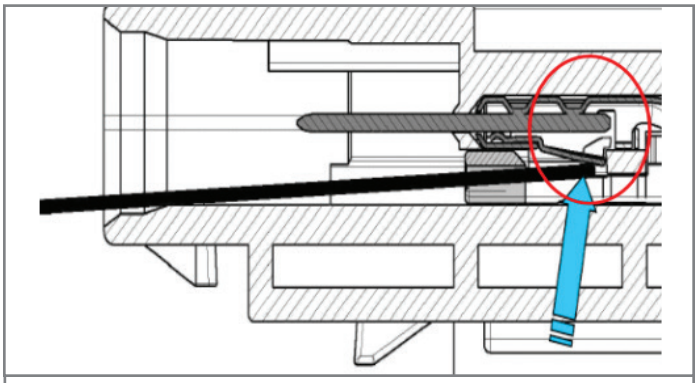
Use tool J-38125-12A to unlock the connector by moving the retainer to the pre-lock position.

To rework the harness, partially remove 4–5 inches (0–12.5 cm) of tape from the connector and then unlock the connector by moving the retainer to the pre-lock position using removal tool J-38125-12A.



Insert the removal tool through the gap.

Insert the removal tool through the gap, push the terminal spring and pull the wire. Remove the terminals one at a time.



Push the terminal spring and pull the wire.

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Trailering App Trailer Connection and Lighting Diagnosis Update

TIP: For 2020 model year vehicles, the trailer park lamps amperage capability has been increased and can handle electrical loads up to 16 amps. The park lamp circuit has been moved from terminal 5 to terminal 25 and is driven by an internal relay that allows for higher amperage values for the parking lamps. The park lamp circuits are not used for trailer connection detection on 2020 models.

TRAILER LAMP TEST LIGHTS

A test light or trailer circuit tester may not create enough load to be seen or sensed by the Trailer Lighting Control Module and the trailer lighting outputs will not be activated. If a tester draws enough load on one or more of the trailer lighting circuits, the Trailer Lighting Control Module will determine that a trailer is connected and enable the trailering light circuits (when activated on the vehicle). A single LED may or may not draw enough current to be sensed by the Trailer Lighting Control Module.

The available EL-52641 Trailer Presence Simulator Tester tool provides feedback on the vehicle signals sent to the trailer for the reverse lights, battery power, right turn signal and brake light, left turn signal and brake light, and brake controller output.

TRAILERING APP PROFILES

When a trailer is connected, the driver has the option of selecting a Guest profile or naming the trailer and storing settings for it on the trailering app. The settings can include basic information

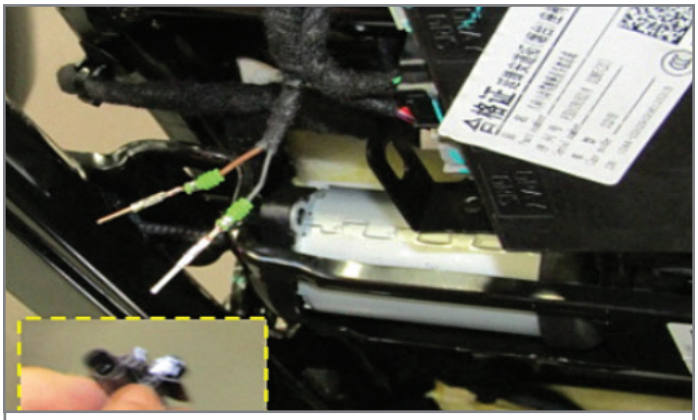
Trailer profile settings

— profile name, hitch type and trailer type — or more advanced information — Tow/Haul Mode reminder, Trailer Tire Pressure, and maintenance reminders.

If the trailering app is set up incorrectly for the connected trailer, several DTCs or DIC messages may appear. For example, if a trailer does not have any reverse circuit loads, yet a reverse circuit load is expected in the trailering app, the Trailer Lighting Control Module will set DTC B3890 (Trailer Backup Lamps Circuit) and messages may be displayed on the DIC and infotainment screen. If the trailer does not have reverse lamps or any loads on the reverse circuit, change the trailering app profile settings and clear any DTCs. Do not replace the Trailering Lighting Control Module.

▶ Thanks to Kevin Minor and Steve Dice

Safety Alert Seat Lane Departure Warning Inoperative



Swap the terminals from the actuator harness connectors.

Swap the terminals from the actuator harness connectors on both sides of the seat. Refer to Bulletin #20-NA-003 for the wire color for each cavity before and after the harness rework.

To assemble the terminals, with the retainer in the pre-lock position, push in the terminal until it locks. Reconnect the harness connector to each of the actuators and assemble the seat.

Finally, reprogram the Memory Seat Module. Contact the Techline Customer Support Center for an updated calibration for the Lane Departure Warning system to ensure the haptic motors vibrate at the appropriate level.

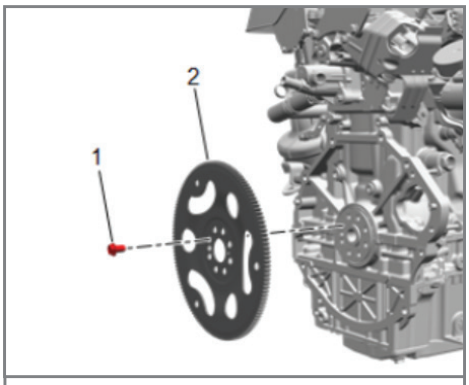
▶ Thanks to Pamela Francisco

Flex Plate and Starter Motor Damage

Some 2019-2020 Blazer, Impala and Acadia models equipped with the 2.5L 4-cylinder engine (RPO LCV) and 2019-2020 Equinox and Terrain models equipped with the 2.0L 4-cylinder engine (RPO LTG) may have a condition where the starter spins, but the engine is not cranking over. A grinding sound also may be heard when starting the engine.

FLEX PLATE

Inspect the automatic transmission flex plate for any damage or broken ring gear teeth. Replace the flex plate if damage is found. Remove any broken flex plate teeth or metal debris that may be found at the back of the engine assembly and in the transmission bell housing area.



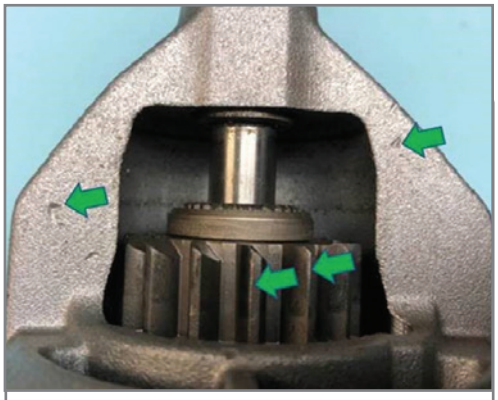
Inspect the flex plate for damage.

When replacing the flex plate, keep in mind that the fasteners have an adhesive patch and must be tightened to final torque within five minutes. Tighten the bolts evenly in sequence. Refer to the Automatic Transmission Flex Plate Replacement procedure in the appropriate Service Information.

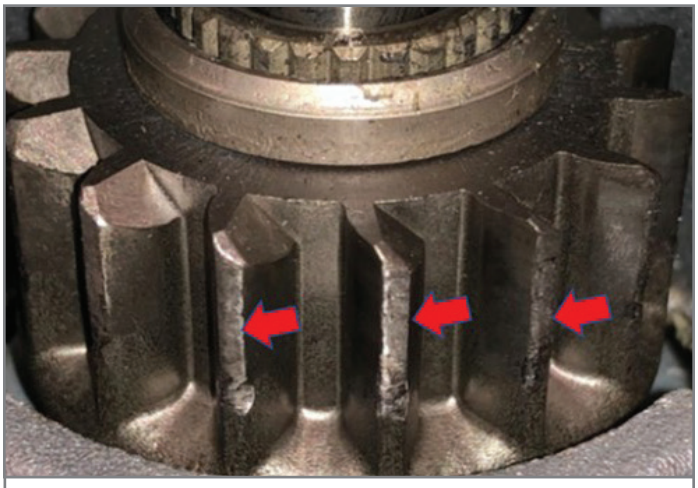
STARTER MOTOR

Also inspect the starter motor drive pinion teeth for any noticeable damage and determine if the starter assembly can be reused. If the starter pinion drive teeth or housing has only very small imperfections/pitting, reinstall the starter motor. It does not need to be replaced.

If the starter pinion drive teeth or housing have pieces chunks missing, replace the starter motor assembly.



Example of a starter that can be reused.



Example of a starter that should not be reused.

▶ Thanks to David Rutkowski

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