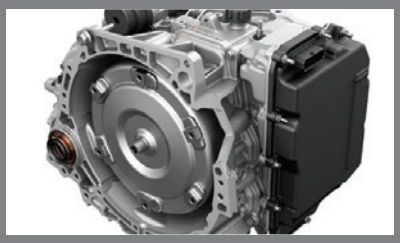
TECH LINK

March 2021, Volume 23, No. 5

TIPS FOR { Over-The-Air Software Programming



9T65 Transmission Replacement Pilot Program Update

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TIPS FOR

Over-The-Air Software Programming

Over-the-Air (OTA) software updates that are pushed to vehicles remotely continue to expand in frequency and use on GM models. Vehicles using the Global A electrical architecture can support three modules for OTA updates, such as the radio, OnStar, and Serial Data Gateway modules.

The new Vehicle Intelligence Platform (VIP) electrical architecture, introduced on some 2020 and 2021 model year vehicles, powers a new electronic system that is capable of managing up to 4.5 terabytes of data processing power per hour, which is a fivefold increase in capability over the previous Global A electrical architecture. On vehicles using the VIP architecture, virtually all modules can support OTA updates, which means that the OTA software is not only for the infotainment system.

OTA software update

When an OTA update has been downloaded to a vehicle and is available to be installed, a message is displayed on the infotainment screen notifying the driver of the impending update. The message to accept and install an OTA update will not appear until the minimum values for the battery State of Charge (SOC) and Outside Ambient Temperature (OAT) are met.

OTA SOFTWARE DOWNLOAD

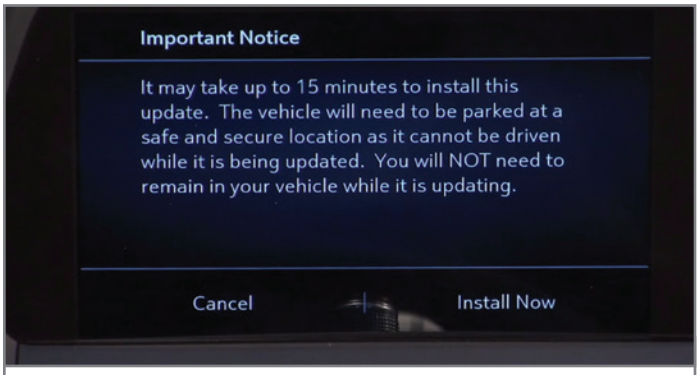
In order for an OTA update to be pushed to a vehicle, the vehicle must be parked for the entire download process. There is not a notification to the driver that the software update is being downloaded to the vehicle. Battery SOC and OAT values are not checked before a download. These checks are only performed once the software update is downloaded and ready to be installed.

The OTA software download can occur in increments. So if the vehicle is driven during the download process, the download will be paused until the vehicle is parked and download conditions are met again.

INSTALLING AN UPDATE

Once the OTA software is downloaded, a message on the infotainment screen will display a prompt to accept the installation. The customer does not need to remain in the vehicle during the installation of the software. However, the vehicle cannot be driven during the installation and certain vehicle features may not be available. It's not required for the ignition to be ON for the installation to begin.

Installation time will vary based on the size of the update. The average installation will take approximately 15 minutes. Depending on the module, it may take longer to complete. The "Accept" message on the infotainment screen will provide an estimation of the approximate installation time.



Installation time of the update will vary.

DEFERRING OR DECLINING AN UPDATE

When an OTA update is downloaded, customers have the option to defer or decline the installation. The standard policy for OTA software updates is to set the customer notifications to 30 ignitions cycles. If the customer does not act upon the prompts within this counter, the update package is removed from the vehicle.

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If a customer ignores the notification, the ignition cycle counter decreases by one immediately.

If the customer defers the installation by selecting the "Remind Me Later" option, the ignition cycle counter decreases by one, but it will not decrease again until after the customer-selected "Remind Me Later" period, regardless of the number of ignition cycles that occur during that period.

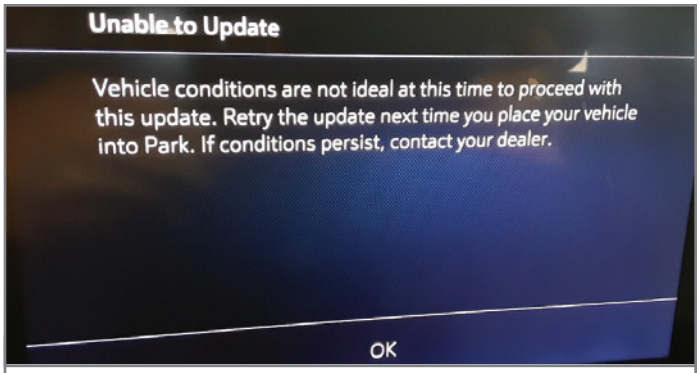
If the OTA update installation is deferred by the customer, it can be installed at a later date through the Vehicle Software menu under Settings > System on the infotainment screen.

If the customer selects the "Decline Update" option, the update package is immediately removed from the vehicle. In this case, the vehicle will not be re-enrolled to receive the OTA update at a later date, unless the update is a Field Action. OTA updates will not be installed in a vehicle without a customer's consent.

Updates can be installed through the Settings menu.

UNABLE TO COMPLETE

There are a number of criteria that must be met in order to successfully complete the software update installation on a vehicle. The most common cause of being unable to complete an installation is the State of Charge (SOC) of the 12V battery. If the 12V battery does not meet the minimum SOC requirement of 70 percent or greater along with an Outside Ambient Temperature (OAT) greater than 14°F (-10°C), the OTA update installation will not occur. The colder the ambient air temperature is, the higher the target SOC becomes. To determine the battery SOC for VIP vehicles, go to BCM / 12V BCM / 12V Battery / Battery Sensor Module – State of Charge in GDS 2.



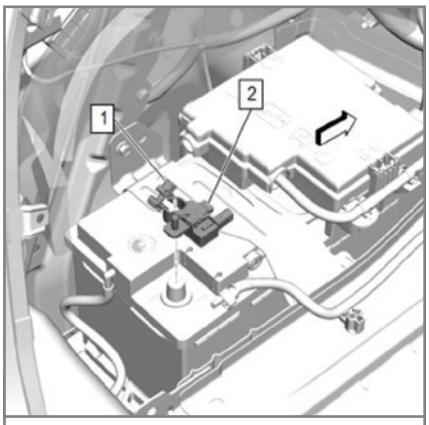
Several conditions will affect an OTA update installation.

There may be other conditions that will affect an OTA update installation. If any of these conditions are present, a "Vehicle Conditions Not Ideal" message may display on the infotainment screen stating that conditions are not ideal to proceed with the update installation. These conditions do not indicate a failure; only that the vehicle does not meet all the criteria necessary to complete the OTA update installation.

Some customers may comment that the radio appears to stay on or is backlit after exiting the vehicle. If this occurs, it's a telltale sign that an OTA update is in progress.

PROPER BATTERY CHARGING

If a low battery SOC is preventing the OTA update installation, the 12V battery should be charged to meet the target SOC of 70 percent.



Battery Sensor Module (#2)

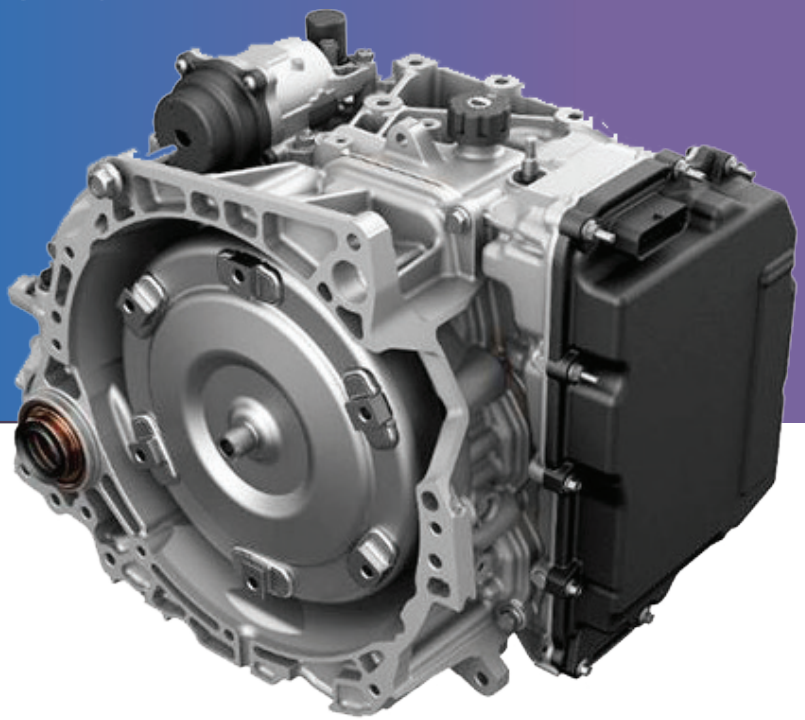
On some GM models, connecting the battery charger directly to the 12V battery posts will bypass the Battery Sensor Module, resulting in a default SOC value of 65 percent and a "Conditions Not Met" message.

TIP: The Battery Sensor Module is attached directly to the battery negative terminal. It determines the battery condition by calculating the battery SOC, functions, and state of health, which is used to help determine if the 12V Stop/Start system will allow an Auto Stop when the vehicle has come to a stop. To properly charge the battery, the negative lead of the charger must be connected to chassis ground, and not directly to the negative battery post. Connecting to chassis ground allows current to flow through the Battery Sensor Module during charging as well as be monitored. Connecting directly to the negative battery post charges the battery, but the current cannot be monitored by the Battery Sensor Module.

If a battery is improperly charged, the Battery Sensor Learn will be required to calibrate the Battery Sensor Module. With the ignition off, let the vehicle rest for a minimum of four hours without any interruptions (opening a door, using the key fob, etc.). Verify if the battery SOC is 70 percent or greater using GDS 2 before attempting to continue with an OTA update.

▶ Thanks to Mike Waszczenko

9T65 Transmission Replacement Pilot Program Update



Feedback on the pilot program for replacing the 9T65 9-speed automatic transmission (RPO M3V, M3W) instead of making internal repairs that is currently taking place at all GM dealerships has shown a reduction in repeat repairs for transmission replacements as well as increased quality control for returned transmission inspections.

The program, which applies to 2018-2021 Enclave, Traverse; 2019-2021 Blazer; 2020-2021 Acadia, XT5, and XT6 models, is designed to reduce the number of days needed to complete vehicle repairs by favoring transmission replacement over internal repairs. After diagnosis of an internal fault, technicians are directed to replace the transmission assembly (following the necessary guidelines).

The pilot program will continue to run until June 30, 2021 and applies to vehicles sold in the U.S. with less than 18,000 miles and less than 18 months from date of delivery (DOD). At the end of the program, further evaluations will be made regarding how to improve transmission performance and enhance the service repair and/or replacement process.

Transmission assemblies replaced during the program are requested by the Warranty Parts Center for engineering analysis. Early results of the program have seen the root causes of several concerns determined during teardown inspections of the returned transmissions. These root causes may not have been possible to identify if the assemblies had been disassembled for repairs at the dealership.

TRANSMISSION DIAGNOSIS

To determine a repair strategy on a 9T65 transmission – repair or replacement, first review several previously released bulletins covering 9T65 transmission operating and performance conditions. For a complete list of the bulletins as well as other Service Information documents to review, refer to Bulletin #20-NA-136. The bulletin also outlines the necessary steps to take to diagnose 9T65 transmission concerns.

If diagnosis determines internal components are the root cause or if parts are needed to complete repairs internal to the transmission, the transmission assembly should be replaced and not repaired. The repair order for the transmission replacement should include the condition, cause, and correction information as well as details on any DTCs, transmission fluid level, and fluid pressure testing.

TRANSMISSION REPAIRS ALLOWED

Certain repairs can still be made to the transmission, including:

- Replacement of external seals, including axle, valve body cover, and torque converter seals
- Replacement of transmission oil cooler, lines and accumulator
- Replacement of external mounts
- Replacement of external sensors, plugs, and caps
- Replacement of external transmission controls, including lever, cables, knobs, and module
- Replacement of torque converter assembly

Refer to Bulletin #20-NA-136 for additional information about transmission diagnosis and guidelines for the transmission replacement program.

▶ Thanks to Mark Kevnick

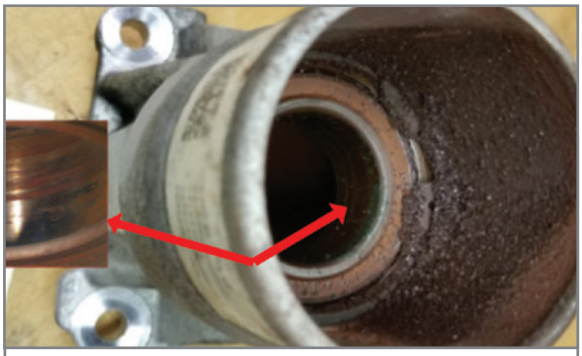
Whining/Groaning Sounds

DUE TO FRONT INTERMEDIATE SHAFT FRETTING

Some 2016-2020 CT6 and 2017-2019 ATS and CTS models may experience a fretting condition. This condition may cause a whining, whistle, squeaking or groaning sound during low-speed driving maneuvers (up to 40 mph or 64 km/h). Customers may describe the sounds to be coming from the engine or front wheel area.

The fretting occurs between the front intermediate shaft (IDS shaft) and the front intermediate shaft bearing/housing (IDS bearing) as a result of the slip fit interface between the bearing and the IDS shaft, combined with a bearing that has approximately 0.5 Nm of torque to rotate (TTR). This may also cause red dust/debris to appear within the IDS bearing/housing.

IDS shaft



IDS bearing/housing

To identify this condition, perform a road test to verify and diagnose the customer concern. Try and replicate the customer's driving maneuvers when the sound occurs. In most cases, the sound is heard while coasting without the brakes being applied.

Use the J-39570 Chassis Ears to determine if the sound is at the front intermediate shaft housing. If the sound is confirmed and isolated at the front intermediate shaft bearing/housing, replace both the IDS shaft and IDS shaft bearing/housing. Refer to the Front Wheel Drive Intermediate Shaft Replacement and Front Wheel Drive Intermediate Shaft Housing Replacement procedures in the appropriate Service Information.

Refer to #PIP5785 for more details and parts information.

▶ Thanks to Steve Schipansky and Scott Lewiston

No Transmission Movement After Valve Body Replacement

There may not be any transmission movement after replacing the transmission valve body on some 2015-2017 Escalade, Yukon Denali; 2015-2019 Corvette; 2015-2021 Silverado, Sierra; 2016-2018 CT6; 2016-2019 ATS, CTS; 2016-2021 Camaro; 2017-2021 Colorado, Express, Canyon, Savana; and 2020-2021 CT4 models equipped with the 8L45 automatic transmission (RPO M5N, M5T) or 8L90 automatic transmission (RPO M5U, M5X, MQE). The no movement condition may be due to the incorrect 1-2-7-8-R clutch fluid passage seal being installed or the seal is missing.

If the 1-2-7-8-R clutch fluid passage seal was installed during the valve body replacement, it will be necessary to remove the transmission valve body and measure the length of the seal to make sure the correct seal was installed.

The clutch fluid passage seal on the 8L45 transmission does not have any ID notches and the seal is 33.5 mm tall.

8L45 seal has no ID notches

The clutch fluid passage seal on the 8L90 transmission has five ID notches and the seal is 23.1 mm tall.

8L90 seal has 5 ID notches

For more details and parts information, refer to #PIP5784.

▶ Thanks to Terry Neuendorf

FSE Technician

RECOGNITION AWARDS

1ST QUARTER 2021

The GM Field Service Engineer (FSE) Technician Recognition Awards (U.S.) celebrate the skill and dedication of dealership technicians who have recently worked with FSE's on challenging repairs.

Technicians at GM dealerships in each region — East, Central, and West — are selected for recognition based on their focus on safety, customer satisfaction, personal accountability, training achievements, diagnostic abilities, and the level of repair documentation.

Each recognized technician receives a Service Excellence magnetic plaque and an Excellence in Service Award certificate.

1ST QUARTER 2021 TECHNICIAN RECOGNITION AWARDS

EAST REGION

Technician: Tony Costanzo

Dealership: Jon Hall Chevrolet, Daytona Beach, Florida

FSE: Scott Lewiston

Service Excellence: A 2017 Chevrolet Silverado HD had a vehicle surging condition during braking when towing a loaded gooseneck trailer. As the first step to identify the condition, Tony road tested the vehicle with the customer. He found that when coming to a stop, if the brake was applied just one time, the vehicle and trailer would stop normally. But if the brake pedal was applied, released and then reapplied, the vehicle would shudder until coming to a stop. After testing, making several adjustments, and trying multiple solutions, Tony arranged to have another vehicle, trailer and similar load brought in to test, compare, and swap trailers. At the conclusion of testing, we were able to identify and verify that the customer's concern was directly related to an excessive trailer load and trailer brake adjustments.

Technician: James Locke

Dealership: Rosenthal Chevrolet, Alexandria, Virginia

FSE: Charles Mielke

Service Excellence: James takes his job as a technician and shop foreman very seriously. He is always on top of the latest information, training and tools – for himself as well as all of the shop technicians. Recently, James was involved with a customer concern of an intermittent dead battery on a 2020 Chevrolet Silverado. The vehicle had been back to the dealership multiple times, but a diagnosis could not be made since the condition could not be duplicated. James took the time to go to the vehicle the next time the customer experienced the dead battery condition to better understand the issue and make progress toward a diagnosis. Ultimately, he found the battery itself to be the problem. It is an effort like this that "Think Customer" and "It's on Me" looks like.

CENTRAL REGION

Technician: Ted Reardon

Dealership: Tom Peacock Cadillac, Houston, Texas

FSE: Bruce Morris

Service Excellence: Ted is a very knowledgeable technician who embraces using all of the new diagnostics. He was one of the first technicians using the PicoScope for battery draw and always tries to improve his skills. As a result, he has become one the youngest shop foremen in the Houston area. Ted always strives to understand how it operates and why it's broken, making sure he stays with the diagnosis to the end.

Technician: Roger Morris

Dealership: Demontrond GMC, Houston, Texas

FSE: Bruce Morris

Service Excellence: Roger recently worked on a repair case that had been through three different technicians. Roger never stopped trying to understand the cause of the condition and was very thorough in diagnosing

CONTINUED ON PAGE 7

an issue that was damaging new replacement steering racks. Each time, the new rack would exhibit the same failure as the replaced part. Roger then noticed contact between the steering gear and cradle, even though the cradle did not appear damaged. Finally, a new cradle repaired the concern. His dedication and perseverance to find a resolution to the repair was a great credit to the dealer and GM.

WEST REGION

Technician: Frankie Garcia

Dealership: Mark Christopher Auto Center, Ontario, California

FSE: Wade Hanna

Service Excellence: Frankie was instrumental in helping identify a build issue with some Chevrolet pickup tailgates. Frankie opened a TAC case and worked diligently to replace the complete tailgate while taking multiple measurements for engineering. When there wasn't any change to the condition after repairs, Frankie walked the dealership lot to check similar vehicles to verify that every truck had the same issue. Engineering is now working on the issue. Frankie never questions anything asked of him. He works tirelessly and takes pride in his work. He helps other technicians at the dealership and goes above and beyond to try to solve an issue before having an FSE come out for assistance. Frankie has a "Don't Give Up" attitude when working to correct any issues on customers' vehicles.

Technician: Eduardo Cordova

Dealership: Mark Christopher Auto Center, Ontario, California

FSE: Wade Hanna

Service Excellence: Eduardo is the "go to tech" when answers are needed on a specific vehicle operation or diagnosis. He is extremely helpful and a very hard working technician. Recently, a 2017 Acadia had the A/C turning off while driving without any codes, no inhibit reasons and no information other than the ECM was turning off the A/C relay. Eduardo worked continuously on this vehicle trying to determine the root cause and repair. Every time he was asked, Eduardo provided session logs or more information with no resistance or concern as to how he would get paid. His dedication and pride in fixing customers' vehicles is evident in everything he does, which demonstrates his excellent work ethic. After many hours and much pain, Eduardo was able to identify a relationship between high battery voltage and the A/C compressor turning off. Even though Engineering stated that voltage has nothing to do with the A/C turning off, because of Eduardo's hard work, we were able to verify that it does. When voltage goes above 14.8 V, the ECM will turn off an A/C relay request. Eduardo was able to find a backed-out connector at the battery BEC that is the ground for the BCM, which controls alternator output. Once the connector was repaired, the concern was corrected. He always works very hard to take care of customers and does whatever is asked of him to make the correct repairs.

▶ Thanks to Hank Poelman

Latest Diagnostic Charge Battery Station Software Update Released

A new software update (DCAG1-32) is now available for the EL-52800 Diagnostic Charge Battery Station (DCBS). The DCBS replaces the EL-50313 Midtronics GR8 Battery Tester/Charger and is available for order through GM Dealer Equipment.

UPDATE DCAG1-32

All DCBS units should be updated to the software version DCAG1-32 to ensure battery testing is being performed with the latest technology and information.

The software update includes:

- Added 5GHz functionality for Wi-Fi connections with improved remote to trolley connectivity, greatly reducing failed connections and messaging.
- Ability to record pre-charge times and adds information to printout and job information.
- Database improvements with vehicle identification/ photos.
- Elimination of clamp connection failure message during low voltage battery testing.
- Adds 'End Current' data on printouts and job information.

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Head-Up Display Image NOT LEVEL

The Head-Up Display (HUD) image (RPO UV6) on some 2020-2021 Acadia models may be tilted or not level when displayed on the windshield. The tilted image may be due to the HUD image not being properly adjusted.

The controls for adjusting the HUD image position up or down are located on the left side of the instrument panel, along with the controls for brightness and display view. However, adjusting the rotation of the HUD image is performed using the Driver Information Center controls on the steering wheel and the DIC Options menu on the instrument cluster. This feature may only be available when the vehicle is in Park.

If the HUD image appears tilted, navigate to the Options menu on the instrument cluster. Scroll through the menu and select Head-Up Display. Next, select Head-Up Display Rotation to enter the adjustment mode.

Press the up or down arrow button on the DIC controls to adjust the angle of the HUD image on the windshield. Press the check mark button on the DIC controls to confirm and save the setting.

Customers may not be aware of the HUD image rotation adjustment feature. Information about the rotation adjustment feature was not printed in the vehicle Owner's Manual.

▶ Thanks to Jim Miller

HUD image

Use the DIC controls to adjust the angle of the HUD image.

UPDATING THE SOFTWARE

To complete the software update, connect the handheld remote to the PC using the USB cable. If the device has been updated previously, the required Optimus updating software application should already be on the PC. Open Optimus and follow the prompts to update the device.

If this is the first time updating the device, it will be necessary to download the Optimus updating software application. To download, go to the E-XTEQ website at www.e-xteq.com and select the Download option on the top menu bar. Once accessed, click Download Optimus and follow the prompts to install the Optimus updating software. After installation, open Optimus and follow the prompts to update the device.

Refer to the DCBS Software Installation Guide for more information.

When dealerships receive the new DCBS unit, it is critical that the Optimus software, which is included with the DCBS, be downloaded. The Optimus website is used to store all the testing records that are performed at the dealership. Additionally, all DCBS software updates that are released to keep the DCBS operating with the latest vehicle information and product enhancements will only be delivered to the handheld diagnostic remote through the Optimus program. Any new software availability prompts will be displayed on the handheld remote.

For assistance with accessing the website, downloading the software or any questions about the DCBS, contact EXTEQ Customer Support Center at 1-877-453-3265.

▶ Thanks to Rob Kennedy

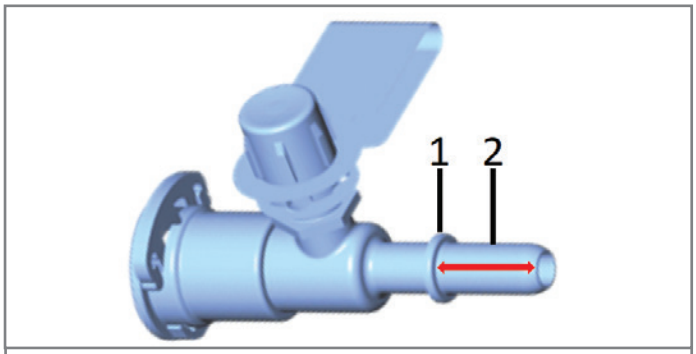
EVAP Testing Port Modification

The EVAP line connection style has changed on the 2020-2021 Corvette equipped with the 6.2L V8 engine (RPO LT2). If a vehicle requires the EVAP system to be tested for leaks, a modification must be made to the CH-52519 EVAP Service Port Access Tool.

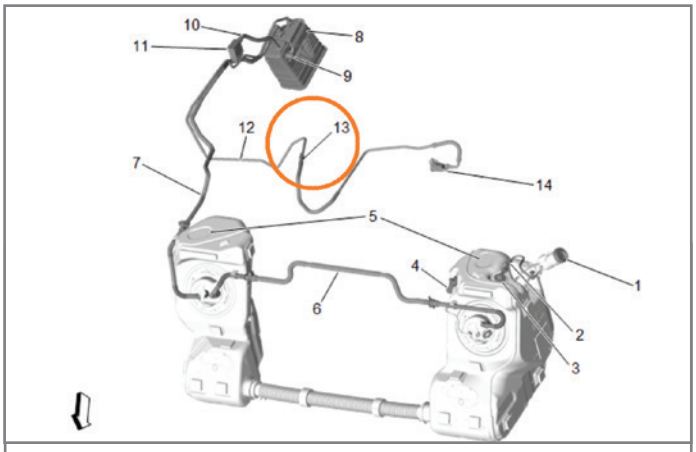
If the CH-52519 EVAP tool is not modified, or a commercially available low profile fuel line disconnect tool is not sourced to be used, it will result in the CH-52519 EVAP tool not being able to be removed from the EVAP purge line. The rib located on the CH-52519 EVAP tool needs to be modified in order for the tool to be removed from the purge line.

TIP: Performing this modification voids the tool warranty for CH-52519.

To modify the CH-52519 EVAP tool, partially file down the rib (#1) on the tool. File the rib evenly and do not file the rib flush as damage to the sealing surface may occur. Leave a small amount of rib material on the tool without damaging the sealing surface (#2). This modification should not have any effect on how the tool works with other vehicles.



1. File down the rib on the CH-52519 tool.
2. Do not damage this area of the tool or it will not seal properly.



CH-52519 tool installation location on the EVAP purge line.

Use care to not damage, cut, or scratch the tool when filing the rib. Any damage to the tool will result in the tool not sealing properly when installed.

Refer to Document I.D. 5757934 in the Service Information for more information about the installation location for the CH-52519 EVAP tool.

▶ Thanks to Richard Renshaw

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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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