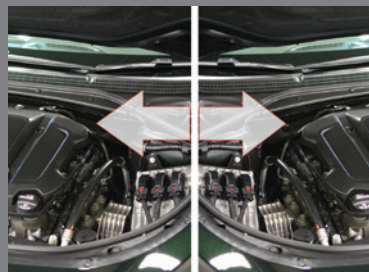


New Techline Connect Application Brings It All Together for Technicians



Complete All Steps
When Performing
Radio Programming

see page 4



Do Not Swap
Control Modules on
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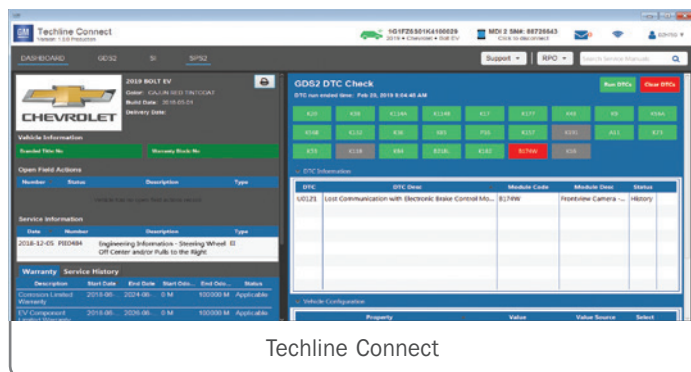
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Continuously after
Incoming Call 8*

*Incorrect Oxygen Sensor on
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New Techline Connect Application Brings It All Together for Technicians

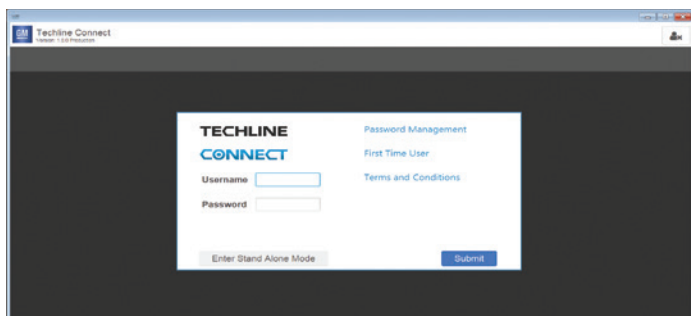
As technicians are at the forefront of GM's efforts to deliver the best customer service experience in the industry, new and enhanced tools and resources are always needed to help in exceeding customer expectations. The latest tool GM has developed for technicians brings diagnostic information and vehicle data together in one easy-to-use application.

Looking for total access to all GM service applications with one sign-on? Check. A quick connection to view vehicle-specific information? Got it. All data shared across applications and seamlessly integrated in an easy-to-navigate interface? Done. It's all available now through Techline Connect.



Techline Connect

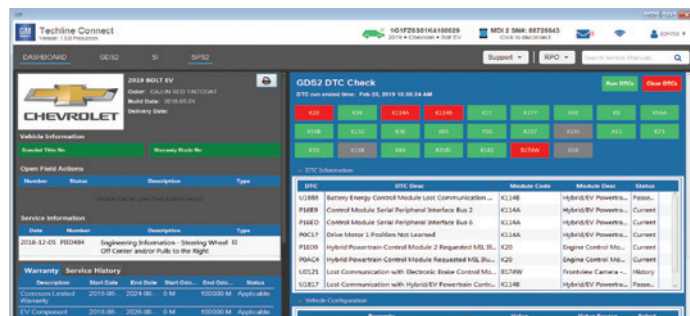
Techline Connect is a new dealership service application that checks all the boxes to help technicians efficiently and accurately manage the information available to them in the service department. The all-new technician-facing application integrates Service Information, reprogramming, diagnostics, and vehicle information into one interface accessed with one log-in — bringing together all the common resources technicians use every day for diagnosis and repairs. Rollout of the new application to dealerships begins in April 2019.



Use a single sign-on to access all applications.

NINE APPLICATIONS, ONE DASHBOARD

The Techline Connect application has a single sign-on for access to nine applications, seamlessly integrating Service Information (SI), a scan tool (GDS2), the Service Programming System (SPS), and other applications with vehicle-specific information. All information and applications are available on a technician-friendly dashboard with an intuitive interface that also automatically displays Investigate Vehicle History (IVH) information, Field Actions, and Warranty History when connected to a vehicle.



The dashboard offers quick access to IVH, Field Actions, and Warranty History.

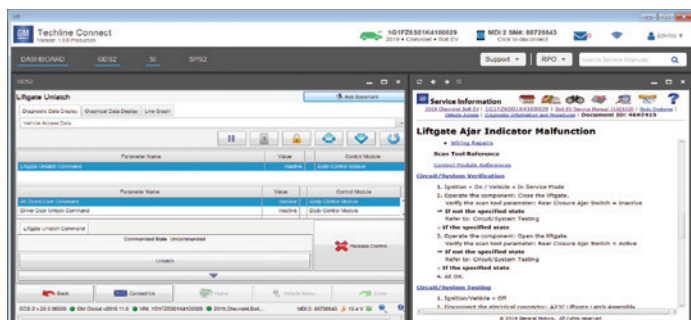
Technicians also are provided with a new Vehicle State-of-Health function — a vehicle-wide system check right from the application dashboard — that displays a quick and convenient overview of the vehicle being repaired to help quickly identify DTCs.

TIP: To open additional windows to view another application or multiple documents, such as GDS2 and Service Information, right-click and select Open In a New Page. Up to four panels can be opened at one time. Drag the top of the panel to move its location.

CONNECTING TO THE VEHICLE

Techline Connect provides a new work flow using the Multiple Diagnostic Interface (MDI) tool. Start by connecting the MDI to the vehicle, and then select the Select Device option in the Techline Connect tool bar, which will prompt an MDI connection — either USB, point-to-point or wireless.

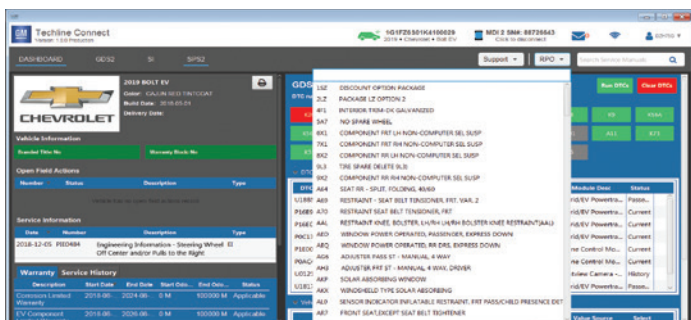
Once connected to the vehicle, Techline Connect will automatically retrieve the VIN and start a vehicle connection session. The vehicle connection data includes:



Multiple panels allow GDS2 and Service Information to be easily viewed at the same time.

- Vehicle Description – A marketing description of the vehicle, including color and vehicle image (when available)
- Investigate Vehicle History (IVH) – Key IVH and warranty information
- Vehicle-wide DTCs – A vehicle state-of-health check that searches for all DTCs

From the data provided, users can search vehicle information by Year/Make/Model and VIN. Use the Regular Production Options (RPO) drop-down menu to display RPOs for the connected VIN or another selected VIN. The RPO menu can be selected from any screen within Techline Connect.



VIN information specific to the vehicle is provided, including RPOs, IVH and DTC data

Techline Connect can be used without a vehicle connection as well. To search the Service Information, select the Vehicle option on the Techline Connect toolbar and enter a Year/Make/Model search or type a VIN (a VIN also can be entered by copying and pasting into the search box).

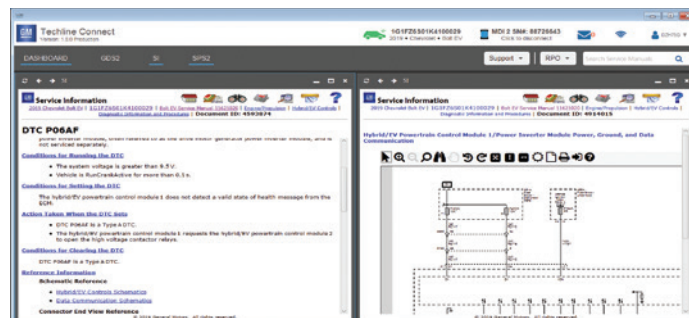
GDS2

Techline Connect also does not require an internet connection in order to use GDS2 Diagnostics, thanks to the Stand-alone Mode. Bypass the log-in by selecting Stand-alone Mode from the log-in screen. Techline Connect will open with only the GDS2 icon. There will be no connection to the Service Information and programming.

In the Stand-alone Mode, Techline Connect uses the MDI and vehicle connection function to establish vehicle communications.

SERVICE INFORMATION

Select the SI tab to begin using the Service Information, or enter a keyword in the keyword entry function on the far right of the dashboard. Techline Connect uses the connected VIN or the vehicle built in the Vehicle Selection drop-down menu to search SI. Several SI documents can be opened at the same time.



SI can be navigated in multiple panels

SERVICE PROGRAMMING SYSTEM

The Service Programming System (SPS) is integrated in Techline Connect too, so it's easy to update the calibration files of a vehicle's control modules using pass-thru programming.

The difference between the current SPS and the SPS in Techline Connect is that the vehicle connection is already established in the Techline Connect dashboard. There is no need to build the vehicle. Navigate SPS as you normally would for programming and other setup/configuration functions.

A FEW MORE TIPS

Access to Techline Connect does not require a log-in from GlobalConnect. Click the Techline Connect icon and log in directly using your GlobalConnect ID and password

Techline Connect updates are downloaded automatically using the Download Manager. Plus, the GDS2 lease is renewed automatically every time you log in to Techline Connect.

To optimize multiple panel use at the same time on one screen, Techline Connect works best with a high definition monitor and a screen display 15-inches or larger.

As Techline Connect is rolled out during the year, active dealerships will see the Techline Connect link in TIS2Web. Simply select the link to download the application and begin installation.

► Thanks to Mike Waszczenko



Click the Techline Connect icon to log in directly to the app.

Complete All Steps When Performing Radio Programming

Several radio-related performance issues may appear if all steps are not completed when programming the radio on 2018-2019 Regal, ATS, CTS, XTS, Terrain; 2019 CT6, XT4, Blazer, Camaro, Colorado, Equinox, Malibu, Silverado 1500, Volt, Canyon, and Sierra 1500 models equipped with the Infotainment 3 System (RPO IOS, IOT, IOU). Failure to follow all programming steps will result in repeat repair attempts and possible control module damage.

The radio programming procedures include programming software, calibrations, and resetting the Manufacturer Enable Counter (MEC). Do not load only the radio calibrations without loading the radio software.

Before proceeding with USB programming, using a USB 2.0 flash drive with a minimum capacity of 16 GB, check for any Infotainment System Over-the-Air (Info Sys OTA) updates. Go to Settings > System > Updates on the infotainment screen. If an update is available, decline the update by selecting Details and then scroll to the Decline Update option. After selecting Decline Update, a Decline Update confirmation is then needed. If there are not any Info Sys OTA updates that are available, proceed with USB programming.

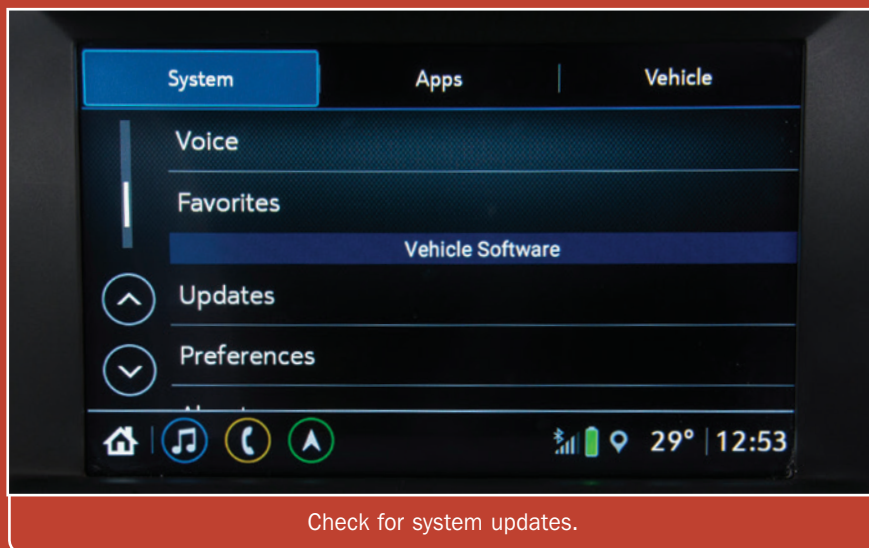
If USB programming is interrupted, a five minute recovery time period may be necessary before the software will reinitialize. Wait three minutes with the ignition off, all doors closed, and all vehicle systems off. When restarting the USB portion of the programming, the display will show a count-down timer for up to five minutes before proceeding with the USB File Transfer.

Upon completion of USB programming, remove the USB drive and follow the instructions on the infotainment screen. At the end of programming, choose the Clear DTCs function on the SPS screen.

When replacing a radio, the Manufacturer Enable Counter (MEC) must be reset. If the MEC is not reset, it can cause Wi-Fi Hotspot concerns. The counter is reset using GDS 2. After identifying the vehicle, select Module Diagnostics > Radio (select appropriate RPO) > Configuration/Reset Functions > Reset Manufacturer Enable Counter and follow the on-screen instructions.

For additional information when programming a replacement radio or an existing radio on the models identified with the Infotainment 3 System, refer to the A11 Radio: Programming and Setup procedures in the appropriate Service Information.

► Thanks to Jeremy Richardson



CVT7 Transmission Fluid Pressure Switch Replacement

There may be a transmission performance concern on some 2014-2017 Spark models equipped with the CVT7 continuously variable-ratio automatic transmission (RPOs M4M, MR8). The Check Engine MIL may be illuminated and DTCs P0871 (Transmission Fluid Pressure Switch 3 System Performance) and P2714 (Pressure Control Solenoid Valve 4 Stuck Off—Hydraulic/Mechanical Problem) may be set in the Transmission Control Module (TCM).

If DTCs P0871 and P2714 are set in the TCM, clear the codes and road test the vehicle. If the codes do not reset, no repairs should be made.

When either DTC P0871 or P2714 sets, the TCM commands the auxiliary gearbox into 2nd gear. If the codes do reset after the road test, replace the transmission fluid pressure switch. Refer to the appropriate Service Information.

REPLACING THE SWITCH

After removing the control valve body cover, remove the fluid strainer from the control valve body and discard the O-ring from the fluid strainer. A new O-ring must be installed to the fluid strainer.

Two fluid pressure switch harness bracket bolts secure the switch. Disconnect the fluid pressure switch connector to remove the switch from the control valve body.

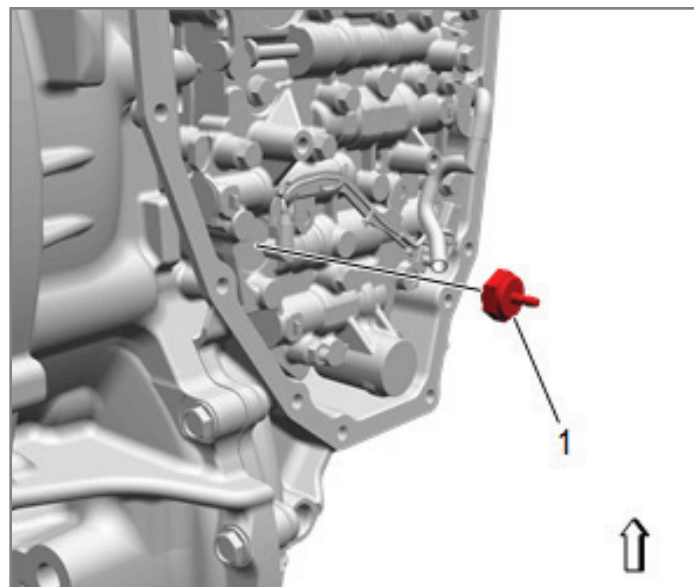
When reinstalling the control valve body cover, do not reuse the gasket. Install the 14 cover bolts by hand and then tighten all bolts to specification in the specified sequence.

Currently, the transmission fluid pressure switch must be ordered from the Warranty Parts Center (WPC). Refer to #PIP5521A for the necessary order form and for additional information.

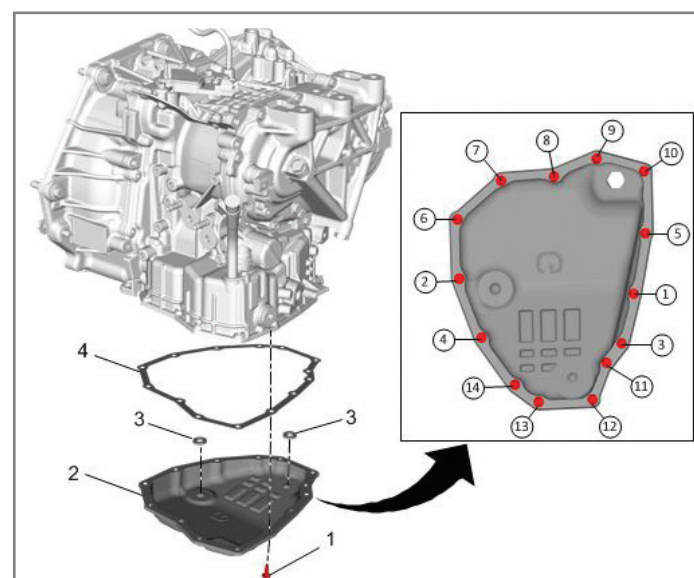
► Thanks to Terry Neuendorf



Road test the vehicle.



Transmission fluid pressure switch



Control valve body cover on the bottom of the transmission

Do Not Swap Control Modules on Global Architecture Models

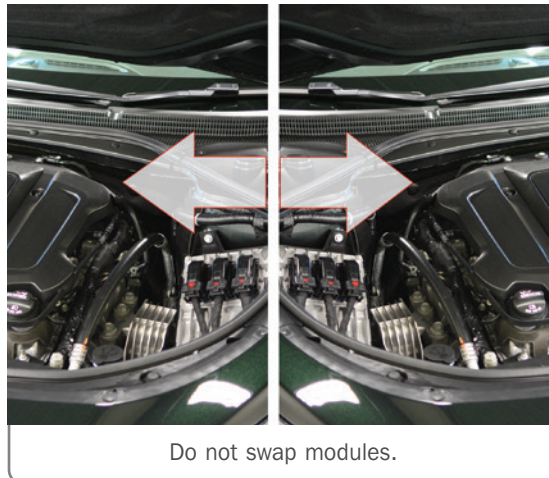
GM's Global Architecture, or Global A, electrical system does not allow control modules to be swapped between vehicles. This has been true since the first Global A vehicles were introduced in 2010; however, the Techline Customer Support Center (TCSC) continues to get calls asking for assistance after control modules have been switched on two vehicles.

Swapping control modules, including the ECM, BCM, EBCM, SDM, TCM, ECC (HVAC), EPS, HPCM, IPC, and Radio, between vehicles will damage both controllers and will result in a no start condition on both vehicles due to the new vehicle security code protocol.

These modules all have IDs that must match in order for the BCM to allow starting the engine. The control modules are coded to the vehicle when they are first programmed, which results in a unique ID being permanently stored in that module. Swapping these security-related modules will cause difficult and time-consuming remediation processes that may include the purchase of new components for both vehicles.

Global A models include:

2010-2018 SRX
2010-2019 LaCrosse, Camaro, Equinox, Terrain
2011-2019 Regal, Cruze
2012-2018 Verano
2012-2019 Sonic, Volt
2013-2019 Encore, ATS, XTS, Spark, Trax
2014 Silverado 1500, Sierra 1500
2014-2018 ELR, Caprice PPV, Spark BEV, SS



2014-2019 CTS, Corvette, Impala
2015-2019 Escalade, Colorado, Silverado, Tahoe, Suburban, Canyon, Sierra, Yukon
2017-2019 XT5, Acadia
2018-2019 Enclave, Traverse
2019 XT4, Silverado 1500, Sierra 1500

GM's diagnostic strategy does not support the practice of swapping control modules during the course of diagnosis or in order to expedite a repair. Features in today's vehicles are increasingly software-configurable. They can affect vehicle safety systems, anti-theft systems, performance, and customer personalization information.

SECURITY METHODS

There are a number of security methods in operation in the vehicles built using the Global A electrical architecture.

Security Code – The purpose of the security code is to protect the vehicle's security information against tampering. It's a random code, unique to each vehicle, generated at the vehicle assembly plant. The assembly plant stores the security code and the corresponding VIN for each vehicle. A correct security code match is required to allow specific vehicle theft deterrent functions to be performed. An example of this function is the learning of new key fobs to the vehicle.

Environmental ID – The purpose of the Environmental ID is to increase the time and complexity involved in attempting a vehicle theft by swapping control modules. The Vehicle Theft Deterrent Feature provides the capability to detect if modules have been substituted, indicating a potential theft situation, and will not allow continued running of the engine in that case.

Seed and Key – The purpose of Seed and Key is to protect certain control modules from unauthorized reprogramming when they are outside of the assembly plant environment. Each control module

CONTINUED ON PAGE 7

that implements Seed and Key is manufactured with a unique seed value and a corresponding key value stored in memory. The seed is a value that is reported to a reprogramming tool. The reprogramming tool must know the matching key value to unlock the control module so that it can be programmed. The reprogramming tool then sends the matching key to the control module. There is no way to read the key value out of a control module.

SYMPTOMS OF MODULE SWAPPING

A variety of symptoms may appear in a Global A vehicle containing one or more control modules swapped from a like vehicle. Depending upon which control

modules have been swapped, possible symptoms include:

- The VIN read by GDS and SPS does not match the vehicle.
- Current DTC B3902 – Incorrect IMMO ID Rec. set in IPC, SDM, ECM, HVAC, Steering Column Lock Control Module (if equipped) or BCM. There are no warning lamps or DIC messages and this DTC cannot be cleared.
- IPC module displays (- - -) for odometer and trip odometer values.
- Vehicle will enter power mode only if the key fobs that match the donor vehicle BCM are included in the swap.
- BCM and/or ECM has current DTC B389A – Environment Identification.

There is a Service Theft System message on the DIC, the Security MIL is illuminated and this DTC cannot be cleared.

- ECM odometer value is incorrect for vehicle.
- Radio displays Locked

On today's new models, it's incredibly difficult to keep track of which control modules cannot be swapped. Electrical architecture, model, model year, sales region, vehicle option content and configuration all play a role in how a vehicle is equipped and if swapping a module will be an issue. The best way to avoid it is to simply not do it.

► Thanks to Bret Raupp

Are You Programming or Reprogramming?

What's the difference between setting up a control module, programming and reprogramming? Each one is done at different times based on the state of the control module.

Here are some definitions that may make it easier to understand the different programming procedures.



► Thanks to Bret Raupp

Procedure	Description
Set-Up	A procedure that configures a Control Module to vehicle-specific content, operating location, etc. This is also known as "bit flipping" or "option configuration". It's done one time as part of a Control Module replacement procedure.
Learn	A procedure that stores operating ranges, component identifiers, etc. of components or systems. It's also known as "initializing". This is done one time as part of a component or control module replacement or in some instances after a battery disconnect.
Programming	A procedure for loading the operational software or calibration files into a newly installed control module performed using the Service Programming System (SPS) application.
Reprogramming	A procedure to update a module with new software or calibration files. This is a labor-only procedure performed using the SPS application.
USB Programming	A procedure to update a module with new software or calibration files using a vehicle USB port. This is a labor-only procedure performed using the SPS application and a USB flash drive.
Sequential Programming	A procedure to update more than one module with new software or calibration files in a predefined order or sequence. The sequence is critical to the outcome of the event and is done automatically by the SPS application.

2019 Service Manager Survey Going on Now

GM and other automotive manufacturers have teamed up to co-sponsor an annual industry study of service managers across the United States and Canada to help better understand industry trends and satisfaction levels with the services and support provided by each of the manufacturers. The feedback of service managers provided by the survey is extremely important and is shared within the GM Customer Care and Aftersales organization to enhance the level of service and support to dealerships.

TAKE THE SURVEY

The 2019 survey is open now. To access the survey, visit GMServiceManagerSurvey.com. The survey will be available until March 8, 2019.

When prompted, please enter U.S – GM or Canada – GM, as appropriate, as your Manufacturer/Brand Name and your 6-digit BAC code.

The survey automatically tracks your progress. So if you get interrupted or close your browser part way through the survey, you can return at any time and pick up where you left off.

As you complete the survey, please keep in mind:

- If you would like your ratings to be anonymous (written comments will not be anonymous so that you can be contacted to clarify or discuss your responses), you may indicate this at the beginning of the survey.
- If a question does not apply specifically to your operations, please leave the question blank.
- Be candid in your responses – completing the survey guarantees that your voice will be heard.
- Answer all the questions you can; seek assistance of others in your dealership if necessary.
- Please include comments, as they are important to ensure that GM clearly understands your concerns.

2018 RESULTS

In response to input on the 2018 survey, GM made several improvements to warranty administration and technical training.

Warranty Administration

- Consolidated service manager authorization requirements
- Eliminated transmission flow codes requirement
- Increased diagnostic time
- Created a warranty job aid card for labor operations
- Established a Warranty Administration Resource Center

Technical Training

- Enhanced Center of Learning functionality
- 80% of training is now available in the dealership
- Introduced new iVideo learning medium
- Placement Assessments and Hands-on Performance Checklists are available to test out of course components

Please complete the 2019 survey by March 8, 2019. The valuable information you provide will help us to work together to better support your efforts.

► Thanks to Philip Long

Ringtone Plays Continuously after Incoming Call

The ringtone on a mobile phone may sound continuously through the vehicle speakers after an incoming call on some 2018-2019 Sonic, Trax, Terrain; and 2019 Blazer, Camaro, Colorado, Equinox, Silverado 1500, Sierra 1500, and Canyon models equipped with the Infotainment 3 Low system (RPO IOR). The continuous ringtone, which will sound for the remainder of the ignition cycle, is found only with Android phones running OS 9.0 and that have the Android Auto app installed. The phone must be paired via Bluetooth or tethered to the infotainment system using Android Auto. The ringtone condition is caused by an integration concern between the vehicle and the phone.

The customer's phone settings can be changed in order to correct the ringtone

condition. Remind customers to always update their phones with the latest software available.

To update the phone:

1. Turn the vehicle ignition off.
2. Exit the vehicle and close all doors. Do not disturb the vehicle for at least four minutes.
3. While waiting the four minutes, uninstall the Android Auto app on the customer's phone.
4. In the customer's phone, select Settings > Connections > Bluetooth > Advanced Settings (the three dots in the upper right-hand corner of the screen) > Phone Ringtone Sync > Toggle to Off.
5. Enter the vehicle and turn on the ignition.

6. "Forget" Android Auto-capable devices on the infotainment system.

From the Home screen, select Settings > System tab > Phones, and locate all Android Auto devices in the list. For each device, select Edit (the pencil symbol) for the device/phone name, and touch "Forget Device."

7. Reinstall the Android Auto app, and then pair the device to the infotainment system. After pairing, Bluetooth calling should be fully operational.
8. Connect the phone by USB and approve Android Auto permissions.

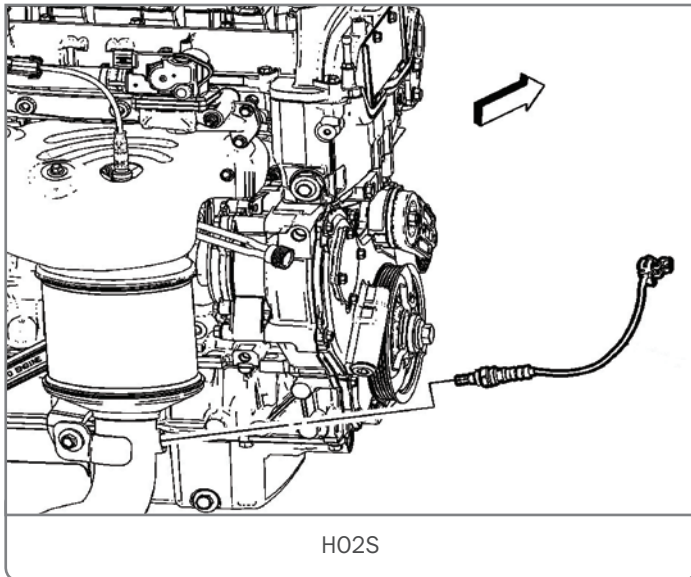
For additional information, refer to #PIT5655.

► Thanks to Jeremy Richardson

Incorrect Oxygen Sensor on 2.4L Engine

An engine stumble or stall after startup on some 2010-2017 Equinox and Terrain models equipped with the 2.4L 4-cylinder engine (RPO LAF, LEA) may be caused by a faulty aftermarket or incorrect upstream oxygen sensor (HO2S). In most cases, no DTCs will be set.

If an engine stumble or stall condition after a hot or cold start is found, monitor the upstream oxygen sensor voltage. The condition may occur more often when the vehicle is shifted into gear. The voltage may be skewing high, staying at 800mv or higher, which causes the ECM to believe the engine is running rich and results in an unnecessary lean out of the fuel system.



Check if the condition does not occur with the upstream oxygen sensor disconnected, which may confirm that the oxygen sensor is the issue. Do not remove the pigtail from the sensor. Inspect the faulty oxygen sensor to determine if it is an aftermarket part or is the incorrect oxygen sensor, such as a sensor for a different vehicle application or position.

Be sure to handle the oxygen sensor carefully. The external clean air reference is obtained by way of the oxygen sensor signal and heater wires. Any damage to the wires, connectors, or terminals could result in the obstruction of the air reference and degraded sensor performance.

TIP: A special anti-seize compound is used in the HO2S threads. The compound consists of liquid graphite and glass beads. The graphite tends to burn away, but the glass beads remain, making the sensor easier to remove. New or service replacement sensors already have the compound applied to the threads. If the sensor is removed from an exhaust component and, if for any reason, the sensor is to be reinstalled, the threads must have anti-seize compound applied before reinstallation.

GM Engineering is currently evaluating this condition and working on a repair recommendation. For additional information, refer to #PIP5624.

► Thanks to Tim Lightfoot

TECH LINK

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