

Bolt EV



Battery Cell Inspection



Corvette Brake Service Tips

see page 4



What's in a Name? – Tires Designed for Specific Truck Applications

see page 6

Bolt EV Battery Cell Inspection 2

No Fob Detected Message 7

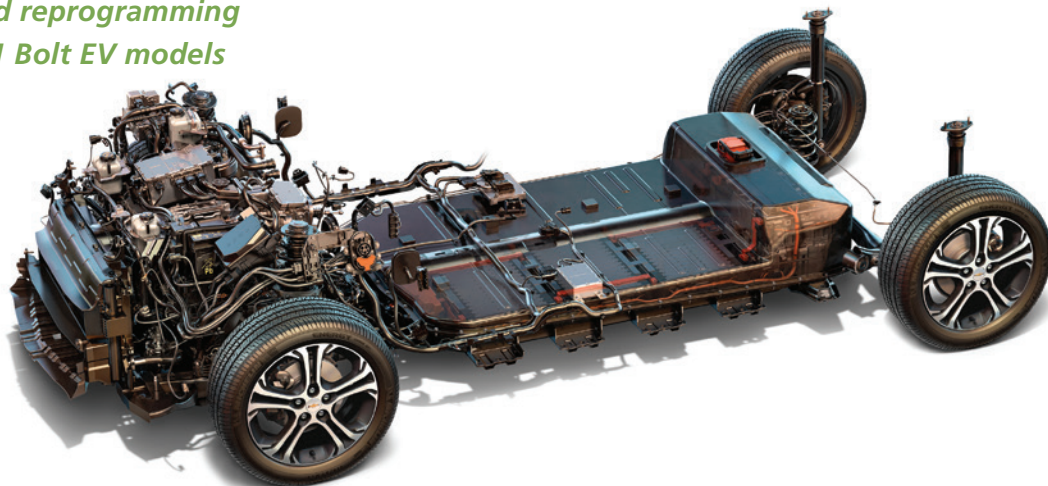
*Excessive Resistance in Cable
Causes Black Camera Screen 8*

*Damaged Camshaft Position
Sensor Exciter Wheel 9*

*Certified Service Mobile
Toolbox App Update
Required by June 1 10*

Bolt EV Battery Cell Inspection

Updated battery inspection and reprogramming procedures for some 2017-2021 Bolt EV models have been released to help determine battery cell voltage performance. The repair procedure also includes reprogramming for two control modules to add new battery cell diagnostics that provide early detection of a battery cell defect. 2022 Bolt EV, Bolt EUV, and later models will have the new battery diagnostics installed at the factory.



The updated inspection process enables technicians to properly evaluate the battery for defective cells and replace battery rows as needed.

BATTERY CELL VOLTAGE INSPECTION

Begin the battery cell voltage inspection by using GDS2 to navigate to the Hybrid/EV Powertrain Control Module 2 (HPCM2) Voltage Data screen, which shows the average battery cell voltage and the minimum cell voltage parameters. To determine if the battery passes the inspection, subtract these two values. If the difference is equal to or less than 0.08 volts, the vehicle passes inspection, which allows proceeding to the green path on the inspection flow chart.

If the difference between the average battery cell voltage and the minimum cell voltage parameters is more than 0.08 volts, then the blue path on the inspection flow chart should be followed. Creating a GM TAC case is only required when indicated on the flow chart.

CONTROL MODULE REPROGRAMMING

Once a battery has passed inspection or the necessary battery row(s) or pack have been replaced, the HPCM2 and the Body Control Module (BCM) should be reprogrammed. Both warranty claim codes for programming will be required for the warranty

claim. After reprogramming, charge the vehicle above 80% state of charge.

The new calibration installed during reprogramming includes two new diagnostics:

- Sustained cell delta voltage monitor
- Intermittent cell delta voltage monitor

Existing DTCs are being repurposed for the sustained cell delta voltage monitor, with one DTC for each of the 96 cell groups. A new DTC, P0BBD, is being added to the Bolt EV for the intermittent cell delta voltage monitor. These diagnostics run in the HPCM2 module. If either of these two new diagnostics set, the vehicle will stop charging and not be allowed to start on the next key cycle. Refer to the appropriate Service Information for details on how to diagnose these new DTCs.

The new module calibrations also allow for the use of a mixture of N2.1 and N2.2 cell chemistry battery sections in 2017-2019 Bolt EVs. With this change, a new N2.2 battery section (row) may now be used to service these older vehicles. The EV range will not increase with the use of the newer chemistry. Range is limited by the lowest capacity cell in the pack.

PARTS INFORMATION

If the vehicle fails inspection and a battery section (row) needs to be replaced, the new battery sections will arrive custom-

CONTINUED ON PAGE 3

QDS2

Data Display

Diagnostic Data Display | Graphical Data Display | Line Graph | DTC Display

Voltage Data

Parameter Name	Value	Unit	Control Module
Hybrid/EV Battery Voltage Sensor's Average	3.94	V	Hybrid/EV Powertrain Control Module 2
Minimum Hybrid/EV Battery Module Voltage	3.94	V	Hybrid/EV Powertrain Control Module 2
Hybrid/EV Battery Voltage Sensor with Minimum Value	65		Hybrid/EV Powertrain Control Module 2
Hybrid/EV Battery Pack State Of Charge	76	%	Hybrid/EV Powertrain Control Module 2

Parameter Name	Value	Unit	Control Module
High Voltage System Interlock Circuit	Energized		Hybrid/EV Powertrain Control Module 2
High Voltage System Interlock Circuit Status	Closed Circuit		Hybrid/EV Powertrain Control Module 2
Battery Charging System High Voltage Interlock Circuit	Energized		Hybrid/EV Powertrain Control Module 2
Battery Charging System High Voltage Interlock Circuit Status	Passed		Hybrid/EV Powertrain Control Module 2
Hybrid/EV Battery Pack Voltage	300.12	V	Hybrid/EV Powertrain Control Module 2
Hybrid/EV Battery Cell State of Charge Variation	1	%	Hybrid/EV Powertrain Control Module 2
Maximum Hybrid/EV Battery Module Voltage	3.99	V	Hybrid/EV Powertrain Control Module 2
Hybrid/EV Battery Voltage Sensor with Maximum Value	10		Hybrid/EV Powertrain Control Module 2

Check the average battery cell voltage and the minimum cell voltage parameters.

mile (0.8 km). Follow Bulletin #18-NA-236 to order the battery. Ancillary parts such as thermal pads, heat sinks, and coolant can be ordered through the normal part ordering process.

Most battery orders will take five days to complete. The new section (row) will be custom charged to your specification to save time during installation. A quick final pack balance is needed using the EL-50332-B tool, which should take only minutes with the pre-balance already complete. The final balance is critical for maximizing EV range for the customer. A copy of the repair order and the failed section must be returned to the GM Battery Service Center. Refer to Bulletin #18-NA-236 on how to return failed batteries.

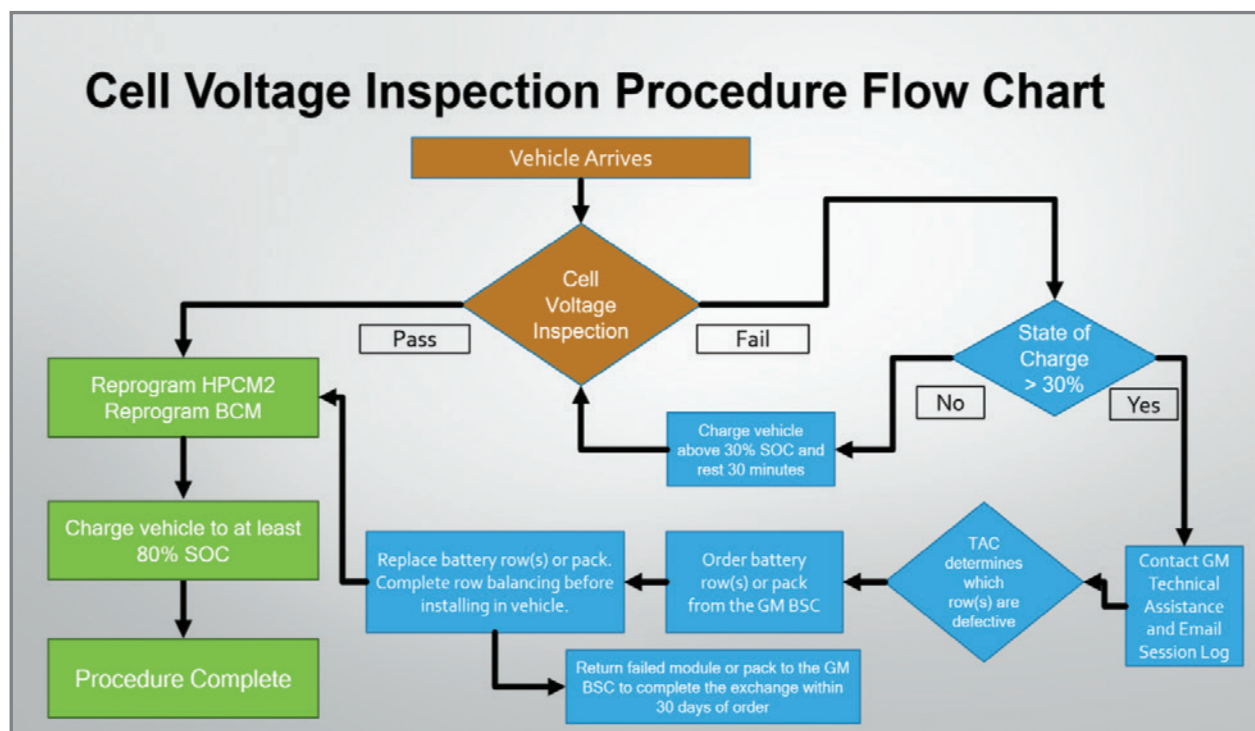
balanced, but must have a short, final balancing completed once installed into the battery pack. It will be faster to balance the replacement section if the state of charge displayed in green bars on the instrument cluster is less than 100% at the time of ordering. Battery sections cannot be ordered above 4.0v average cell voltage. Use software revision 10 or newer for the EL-50332-B EV/HEV Battery Service and Depowering Tool.

Once the section order has been placed, the vehicle should not be released to the customer, charged, or driven more than a half

During the battery cell diagnosis, most vehicles will pass the battery cell voltage inspection, requiring only the control module reprogramming. Use the appropriate labor codes in the field action bulletin to account for the different diagnostic pathways and the time involved to repair.

For additional information on battery cell inspection and reprogramming, check out the June 2021 Emerging Issues seminar.

► Thanks to Lane Rezek





Corvette

Brake Service Tips

The 2020-2021 Corvette Stingray features two brake options. RPO JL9 is the base brake system, while the heavy-duty RPO J55 brake system is standard on all models with the Z51 Performance Package. The high-performance brakes of the J55 system are designed for track use, with low-metallic brake pads that help provide extreme braking performance. With its ability to perform under race track conditions, the brake system offers a trade-off in some everyday driving situations, such as at parking lot speeds, where there is a potential for brake squeal.

Most brake squeal cases handled by the GM Technical Assistance Center (TAC) on the Corvette occur during normal, city driving. The brake squeal is intermittent and often is heard at very low speeds right before the vehicle comes to a complete stop.

BRAKE SQUEAL DIAGNOSIS

Begin diagnosis by listening for which side, or which corner, of the vehicle the noise is actually coming from while in the service drive. It's helpful to have an assistant standing outside of the vehicle to identify the correct location. Also ask the customer if there is a constant squeal sound, even when the brake pedal is not being applied, which may indicate that a pebble or small stone has lodged itself in between the rotor and one of the brake pads.

If a smartphone is available, any of the many available "Sound Analyzer" apps that are widely available can be downloaded to analyze the frequency of the squeal sound. By recording a short audio/video clip of the squeal sound and playing the recording into the app, it will show the frequency at which the sound is occurring. The most common frequencies of brake squeal on the Corvette are found in the 2,000–4,000 hertz range.

APPLYING COPPER PASTE

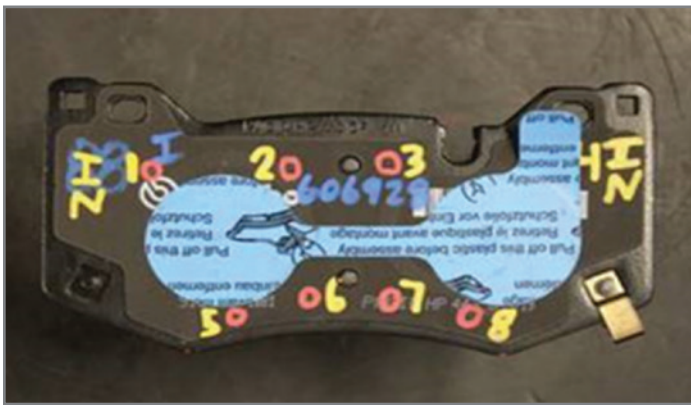
To address the potential for brake squeal, a copper paste is applied to the brake pad abutments at the factory. The paste helps to reduce the brake noise in this exact frequency range. It's possible to wash off the paste if a customer power washes the wheels or takes the vehicle through a "no-touch" car wash. If this occurs, it will require a reapplication of the copper paste to the brake pad abutments. Refer to Bulletin #17-NA-040 for more information, including how to reapply the paste.

Brake squeal sounds above 4,000 hertz, or 4kHz, will typically not be affected by the application of the copper paste. Sounds in that frequency range are considered normal for a high-performance braking system.

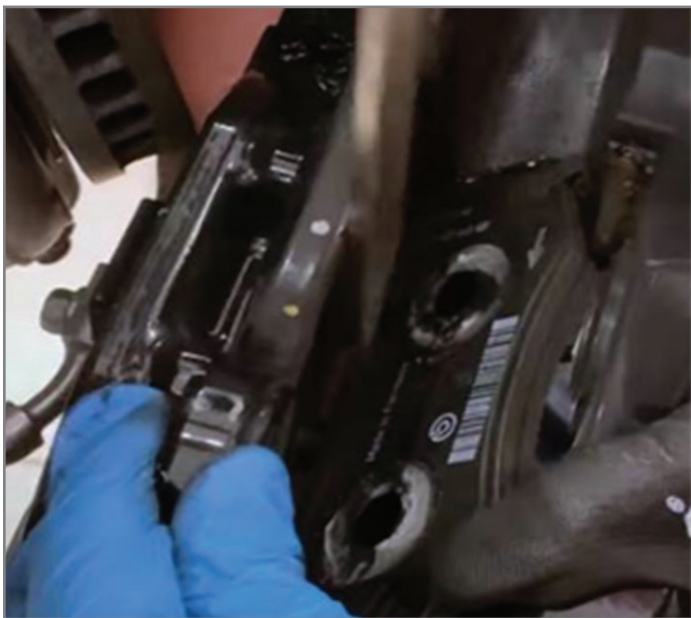
CONTINUED ON PAGE 5

TIP: The battery must be disconnected to prevent the brake master cylinder from pressurizing the hydraulic system during its automated self-diagnostic tests that can possibly occur when a door is opened or the key fob is activated. Disconnecting the battery also prevents Eboost DTCs from setting when bleeding the system or seating the pistons.

When removing the front brake pads on some Z51-equipped vehicles, a piece of double-sided tape that secures the front brake pads firmly to the caliper pistons may be noticed. As shown, the blue area is the peel-and-stick double-sided tape.



The blue area is the peel-and-stick double-sided tape.



An example of the front brake pads once they are separated from the caliper pistons.

To apply the copper paste correctly, the pads must be removed from the calipers. Note that for the pads to be removed from the front calipers, the calipers must be removed from the front knuckles. Remove as much of the remaining tape residue as possible before applying the paste as directed in the bulletin.

Once the copper paste has been applied to the front brake pads, reinstall them into the calipers. It's not necessary to replace the front brake pads during this service because of the double-sided tape.

Do not chamfer the edges of the brake pads to prevent future noises from occurring. Chamfering the brake pads will not provide any noise benefit and it may result in other issues with the brake system.

TIP: It may be helpful to explain to customers that the high-performance brake system will have a tendency to make some noise when used in a street setting. In low-speed driving, the brakes may not have the chance to get up to "operating temperature," so some noise is to be expected. If the vehicle continues to be driven in this type of manner, the brake squeal will almost certainly return after several days. This does not mean that there is a concern with the brakes on the vehicle.

TRACK EVENTS AND BRAKE FLUID

Both the RPO J19 and RPO J55 brake systems use DOT 4 brake fluid. Only the RPO J55 system is designed for track use. Prior to driving at a track event, the DOT 4 fluid must be flushed out and replaced with a higher boiling temperature brake fluid. Refer to the Owner's Manual for more information on fluid specifications. After the track event, the brake fluid should be changed back to DOT 4 fluid for street driving.

The J55 system includes brake bleeders on the top and bottom of the calipers. The bottom bleeder is to help with draining the brake fluid from the calipers, which is helpful when flushing the brake system after a track event. Pressure bleeding and manual bleeding are the only recommended procedures for flushing and bleeding the brake fluid. Never use vacuum bleeding on Corvette brake system.

► Thanks to Jeff Strausser

What's in a Name?

TIRES DESIGNED FOR SPECIFIC TRUCK APPLICATIONS

The original tires installed on GM vehicles are designed and tested for specific vehicle applications. Full-size trucks feature a variety of different tires that are designed to perform under all types of conditions and applications, including carrying heavy loads, pulling additional weight, and delivering traction on varying types of terrain. These features cannot be identified by simply looking at the tire tread or the name of the tire.

HT DOES NOT MEAN HIGHWAY TIRE

For example, some 2019-2021 Silverado 1500 and Sierra 1500 models are equipped with Goodyear Wrangler Fortitude HT tires (RPO XCK). These are all-terrain tires that are designed for a specific application. However, the tread of these tires is not as aggressive as some all-terrain tires installed on other models with Trail Boss or AT4 packages. In addition, the HT may be mistaken to stand for "Highway Tire." The HT is simply a name or model designation of the tire. It does not identify the features of the tire.

The Goodyear Wrangler Fortitude HT tires should not be replaced on a vehicle based on their appearance. If the RPO of the tire matches the tire model, the correct tires are installed on the vehicle.



TIRE SPECIFICATIONS FOR MODEL PACKAGES



There are two tires that are available as standard equipment on Silverado and Sierra trucks equipped with the Off-Road (2-inch lift) Suspension (RPO Z7X). These are the Goodyear Wrangler Fortitude HT tire (RPO XCK) and the Goodyear Duratrak tire (RPO RCP). Since the Duratrak tire is more aggressively styled, it may appear to be more of an "off road" tire than the Wrangler Fortitude HT tire.

The RPO XCK tire provides excellent traction and ride quality on all surfaces, including wet and dry pavement, snow and ice. The RPO RCP tire is designed for off-road driving conditions, which also may result in additional road noise on paved surfaces. When installing new tires, it's important to remind customers that any tire with an aggressive tread is likely to have additional on-road noise and less ride quality.

TIP: Vehicles equipped with the Off-Road Suspension (RPO Z7X) or the Enhanced Towing Performance Package

(RPO NHT) can only use the Goodyear Wrangler Fortitude HT tire (RPO XCK). These tires should not be swapped for a more aggressive appearing tire, which may be overloaded when the vehicle is used to tow at the maximum capacity. An overloaded tire creates a significant safety and handling issue.



► Thanks to David MacGillis

No Fob Detected Message



Some 2021 Tahoe, Suburban, Yukon and Escalade models may have a no crank/no start condition with a No Fob Detected message on the Driver Information Center. The Remote Keyless Entry (RKE) transmitter, or key fob, also is not detected when placed in the backup pocket in the center console.

If this condition is present, the key fobs will work manually (with a button press), but not passively (detected by the vehicle). No current passive antenna or immobilizer DTCs will be set in the Body Control Module (BCM).

In addition, the vehicle will have a battery state of charge above 12 volts, but it will not power mode to the Run or Accessory position. As a result, the transmission cannot be shifted from Park. The parking brake also may be engaged and cannot be released.

These conditions may be due to an internal BCM fault that causes the key fobs to not be recognized and a loss of the immobilizer.

Perform the following diagnostic steps if these conditions are found:

1. Verify that the active RKE functions are working for all transmitters (example: Locking/Unlocking/Alarm/Liftgate and Remote Start).
2. Verify all passive RKE functions are inoperative for both transmitters.
3. Verify Low Frequency (LF) "Passive" Antennas are not transmitting by using the EL-52545 TPMS and RF tool.

4. Verify that the RKE transmitters are not responding to the Passive Challenge with the EL-52545 tool, without pressing any buttons on the transmitters.
5. Check that the vehicle's battery state of charge is above 12V.
6. Verify that there are not any current antenna or immobilizer DTCs set in the BCM.
7. With both RKE transmitters outside of the vehicle, attempt to change the power mode by pressing the engine start/stop button once every 3 seconds, five times. Check for DTCs in the BCM. There should not be any current antenna or immobilizer DTCs set after performing this step.

If all questions can be answered as "yes," the BCM should be replaced.

Refer to the Keyless Entry System Malfunction documents in the appropriate Service Information for additional diagnostic procedures.

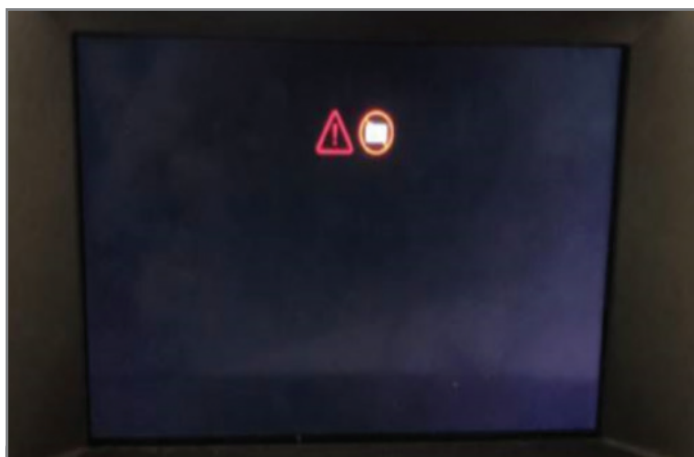
TIP: It may be possible to recover the vehicle from this condition by performing a battery disconnect/reset, allowing the vehicle's modules to completely power down.

For more information, refer to #PIT5841.

► Thanks to Jim Will

Excessive Resistance in Cable Causes BLACK CAMERA SCREEN

The infotainment screen on some 2020-2021 XT5, XT6 and Acadia models may intermittently show a black screen with red triangle and red camera icons when the vehicle is in Reverse. The black screen may be the result of the crimping of the coaxial cable connectors to the cable, which causes an excessive resistance that interrupts the video signal.



Black screen with red triangle and red camera icons

Once the condition is verified, there are several different repair procedures depending on the vehicle and model year. For complete repair information, refer to Bulletin #21-NA-048.

On 2020 models only, before making any repairs, check that the A11 Radio header is not loose. With the vehicle in Reverse, move the instrument panel coaxial cable, located behind the right kick panel, back and forth below the connection to the A11 Radio while watching the screen. This condition may be found on a small percentage of vehicles.

COAXIAL CABLE REPLACEMENT

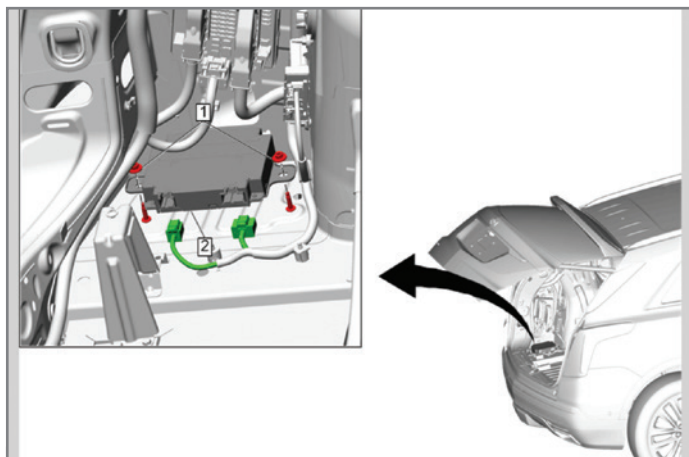
For vehicles that show there is excessive resistance in the coaxial cable, the coaxial cable must be replaced.

XT6 models – Replace only the short instrument panel coaxial cable from the in-line connector to the A11 Radio, located behind the right kick panel.

XT5 models – Replace the long body coaxial cable from the Video Processing Module (VPM) to the in-line connector as well

as the short instrument panel coaxial cable from the in-line connector to the A11 Radio, located behind the right kick panel. The body cable runs from the VPM to the in-line connection to the instrument panel short cable behind the right kick panel, to the liftgate connector, and to the connector to the cable to the rearview mirror in the top-left D-pillar headliner area.

Acadia models – Replace the long body coaxial cable from the Video Processing Module (VPM) to the in-line connector as well as the short instrument panel coaxial cable from the in-line connector to the A11 Radio, located behind the right kick panel. The body cable runs from the VPM to the in-line connector to the instrument panel short cable behind the right kick panel and to the liftable connector.



VPM on XT5 model

On XT5 and Acadia models, the long cable should be routed and affixed to the body wiring harness. The original body coaxial cable should have the ends removed and can be abandoned in the main body wiring harness.

Refer to Bulletin #21-NA-048 for additional details and parts information.

► Thanks to Tom Burlingame

Damaged Camshaft Position Sensor Exciter Wheel

There may be an intermittent extended crank or intermittent crank/no start condition on some 2020-2021 Silverado, Sierra; and 2021 Tahoe, Suburban, Yukon, and Escalade models equipped with the 3.0L diesel engine (RPO LM2). DTC P0341 (Camshaft Position Sensor Performance) may be set in the Engine Control Module.

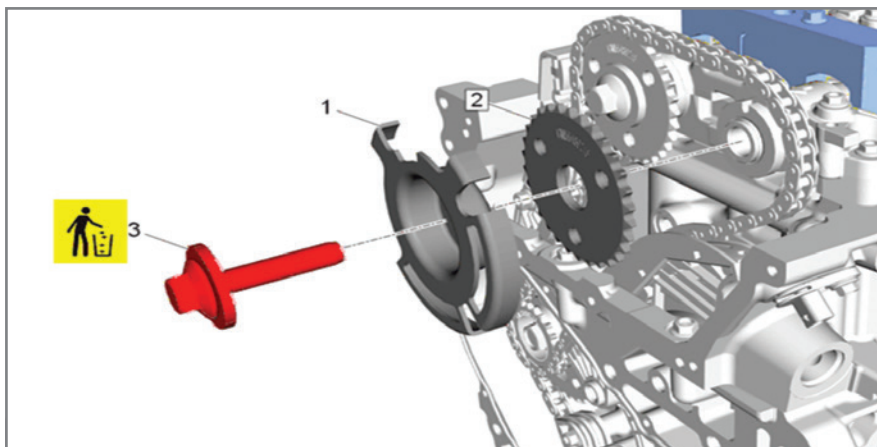
If these conditions are present, the camshaft position sensor exciter wheel, or trigger wheel, may be damaged. Remove the camshaft position sensor and use a bore scope to inspect for a bent exciter wheel on the camshaft. It will be necessary to roll the engine by hand, up to two revolutions, to inspect each wheel segment.

Shown is a normal exciter wheel (A) and a bent exciter wheel (B). The damaged wheel may or may not make contact with the timing chain.

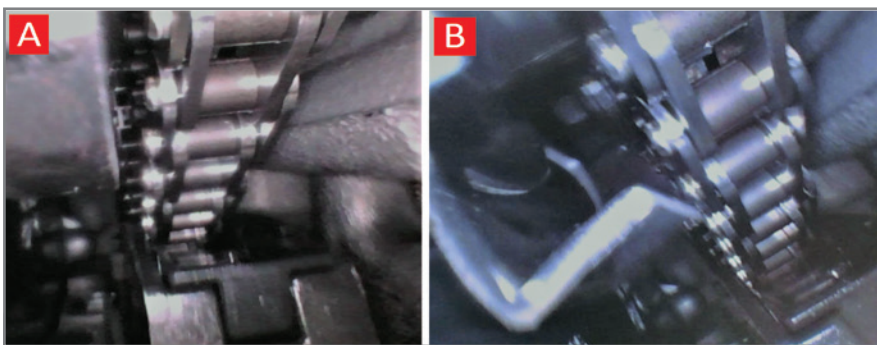
If the camshaft position sensor exciter wheel is bent, it should be replaced. If the wheel is not damaged, follow the appropriate Service Information diagnostics for an intermittent crank/no start condition.

For more information, refer to #PIP5806.

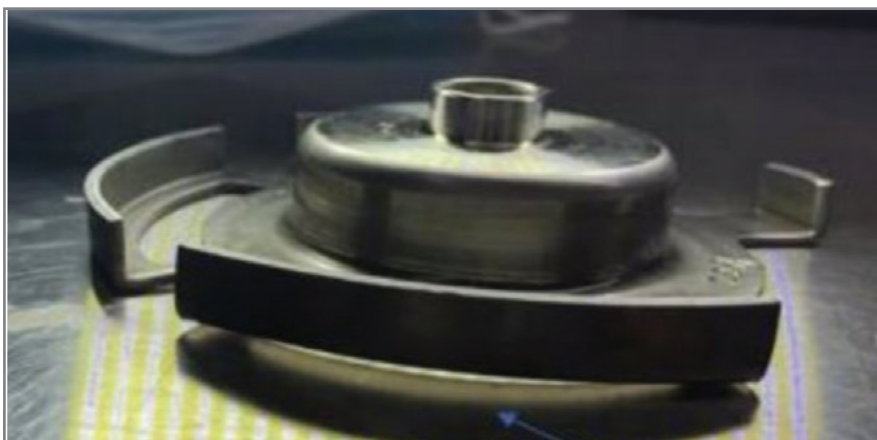
► Thanks to Robert Bastien



Camshaft position sensor exciter wheel (#1)



Normal exciter wheel (A) and a bent exciter wheel (B)



Bent camshaft position sensor exciter wheel.

Certified Service Mobile Toolbox App Update Required by June 1

The Certified Service Mobile Toolbox (CSMT) application, which includes the Pre-Repair Authorization (PRA) Process; Field Product Reporting (FPR) for U.S. dealerships or Product Information Reporting (PIR) for Canadian dealerships; and Field Action notifications, will require an update by all users by June 1, 2021. The system update includes the renewal of important security certificates. The update must be completed to be able to continue to use the tools provided in the app.

The CSMT system update (version 3.4) will be available beginning May 25, 2021.

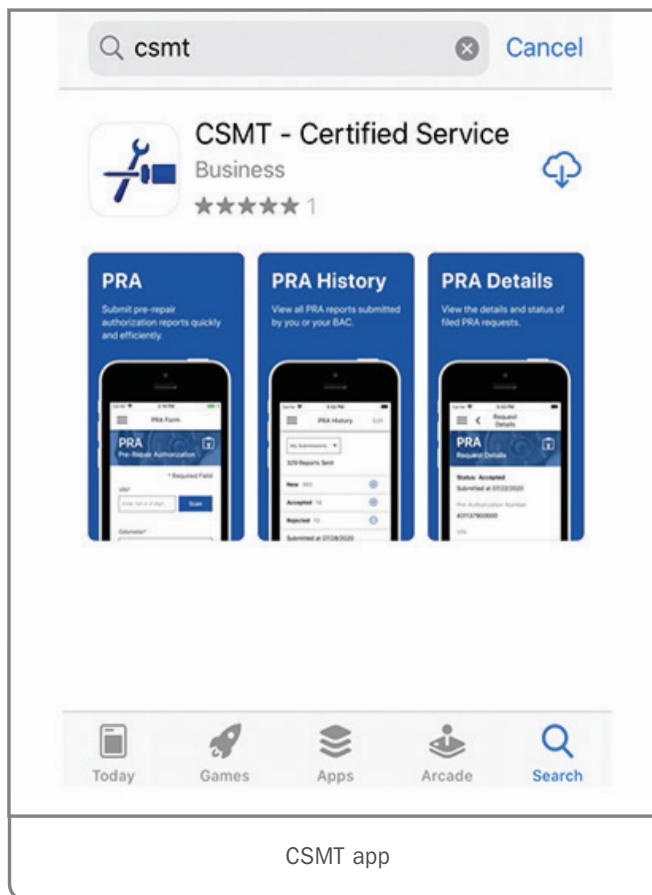
To prepare for the update to version 3.4, the operating system of the device using the app (iPhone, iPad, Android, etc.) must be:

- Operating system (iOS) version 12, 13 or 14 for Apple devices.
- Operating system (OS) version 8, 9, 10 or 11 for Android devices.

To check the version of your operating system, for Apple devices, go to Settings/General/About/Software Version, and for Android devices, go to Settings/About Phone/Software Information/Android Version. It's recommended to update your device to the latest version available.

Android users in the U.S. who are unable to update to a compatible system should contact the GlobalConnect helpdesk at 1-888-337-1010 (prompts 1, then 2) for assistance.

► Thanks to Patti Marino



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.

Publisher:
Michael O'Hare
GM Customer Care and Aftersales

Editor:
Lisa G. Scott
GM Customer Care and Aftersales

Technical Editor:
Mark Spencer
mspencer@gpstrategies.com

Production Manager:
Marie Meredith

Creative Design:
5by5 Design LLC
dkelly@5by5design.com

Write to:
TechLink
PO Box 500, Troy, MI 48007-0500

GM TechLink on the Web:
GM GlobalConnect

General Motors service tips are intended for use by professional technicians, not a "do-it-yourselfer." They are written to inform those technicians of conditions that may occur on some vehicles, or to provide information that could assist in the proper service of a vehicle. Properly trained technicians have the equipment, tools, safety instructions and know-how to do a job properly and safely. If a condition is described, do not assume that the information applies to your vehicle or that your vehicle will have that condition. See a General Motors dealer servicing your brand of General Motors vehicle for information on whether your vehicle may benefit from the information. Inclusion in this publication is not necessarily an endorsement of the individual or the company. All information contained herein is based on the latest information available at the time of publication and is subject to change without notice. Copyright © 2021 General Motors. All rights reserved.